DOES CAPITAL ACCOUNT LIBERALIZATION MAKE CARIBBEAN ECONOMIES MORE OR LESS SUSCEPTIBLE TO SUDDEN STOPS?

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ABSTRACT

During the last thirty years, a number of Caribbean countries have embarked upon a process of capital account liberalization. This study explores the effect of liberalization on the "sudden stop" of capital inflows. Using a probit model framework and an index of capital account liberalization, the effect of liberalization on the probability of a sudden stop occurring was examined. The analysis produced mixed results, as increased liberalization appeared to raise the probability of a sudden stop taking place in several countries but reduce it in others. This suggests that other factors such as the speed of liberalization and the conditions under which liberalization takes place may also be important.

Keyword: Capital account liberalization, sudden stops, capital controls, probit models

JEL Classification numbers: C25, F 32

1.0   Introduction: Theoretical Overview

With the substantial growth in capital flows over the past decade and the increasing integration of the global economy, capital account liberalization has attracted much debate. Discussions centre on the role of volatile private capital flows in international payments and appropriate government policies. According to the World Bank Global Development Finance (2007) report, net private capital flows to developing countries surged to approximately US$571.0 billion in 2006 from US$228.9 billion in 1998. Thus, due to the rising value of cross-border capital flows, the focus on capital account liberalization has garnered much attention.

The liberalization of the capital account is said to have important implications for financial markets and institutions. Johnston, Darbar and Echeverria (1997) postulated that liberalization aids in the development of deeper, more competitive and diversified financial markets. In cases where the foreign financial firms are allowed to operate directly in the country, the architecture of domestic financial markets is purported to improve. Therefore, the main benefit from capital account liberalization at the national level and from global financial integration are those derived from the increased efficiency of both national and global capital markets. Nevertheless, the efficient use of capital flows and the extent to which such flows contribute to continued advancements in economic performance is dependent on the level of development and efficiency of the domestic financial system. As a result, synchronization and sequencing the liberalization of the capital account must be consistent with the reforms of domestic financial markets and institutions. Moreover, according to the International Monetary Fund (2004), capital controls entail an administrative cost, lead to distortions—as substitution takes place from controlled to exempted transactions—and tend to breed corruption, while giving rise to rent-seeking activities. Therefore, reduced controls are said to lead to smaller administrative costs, while minimizing distortions and corruptions that are associated with maintaining controls.

Within all economies, with special emphasis on the developing countries, the potential benefits of opening the capital account encompass increased variety in the international portfolios of home country investors, augmented diversification of capital sources on the part of both public and private borrowers, greater competition and hence improved competence for their financial services sectors; deeper financial markets and the increased efficiency of intermediation, and higher domestic savings and investments. Moreover some authors have stated that free capital mobility supports an efficient global allocation of savings and a better diversification of risk, promoting enhanced economic growth and welfare.

More importantly, countries are encouraged to adopt a coordinated and comprehensive approach to capital account liberalization[2]. Adopting an all-inclusive approach would entail coordination between the liberalization of portfolio capital flows with domestic financial sector reforms, interest rate liberalization, development of indirect monetary control procedures and the strengthening of banks and capital markets through improved regulations. The absence of synchronization between the domestic financial sector and the capital account reforms can result in distortions and regulatory incentives for movements that are unrelated to the underlying economic conditions, thus leading to greater instability in capital movements.

In addition, a comprehensive move necessitates the establishment of an appropriate and consistent mix of macroeconomic and exchange rate policies[3]. The re-orientation of monetary and exchange rate policy may be necessary in order to provide the appropriate autonomy of monetary policy in dealing with capital inflows. However, a gradualist approach to liberalization is still recommended, since having well-planned and sequenced reform does not necessarily imply an unhurried approach. With the gradualist approach, the slower the process the more conducive it is to minimizing the adjustment costs and building political consensus.

However, regardless of the noted benefits of capital account liberalization and the approach adopted, there are specific risks and potential costs associated with such a move. Capital inflows are generally welcome in developing countries for their role in financing investment, thereby assisting in long-term development and in the short-term smoothing of consumption. Nevertheless, in developing countries where there are relatively weak domestic financial markets, highly volatile capital flows can create challenges for policy makers, as they can inflate domestic markets for financial assets and real estate. Over the years, the rapid expansion in capital inflows has been associated with stock and property market booms, while massive outflows have been linked to swift declines in investment values. In cases where financial markets are weakly supervised, even modest outflows of external private capital can overwhelm both local financial institutions and their regulatory authorities; while creating additional macroeconomic management problems.

Further, if these private capital flows are procyclical, increasing during expansionary periods and declining or even reversing in times of recession, then such flows can create problems for macroeconomic stabilization. The surge of private capital inflows can lead to macroeconomic problems through its effect on either the exchange rate or the domestic money supply, combined with the risk of the abrupt cessation of these inflows or outflows. If international capital flows into developing countries are not the product of

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[2] See Johnston and Sundarajan (1999)
[3] ibid

"one-off" stock adjustments, but reflect normal response to changing incentives, then this surge is likely to be reversible[4].

Hence, several authors such as Johnson, Darbar and Echeverria (1997) are proponents of a distinct sequencing pattern and the adoption of a gradual approach, in order to avoid macroeconomic problems when countries seek to liberalize their capital accounts. For instance, Chile failed at its first liberalization attempt during the 1974-1979 period, due primarily to the rapid pace of the reform, inefficient policy design and implementation, a weak supervisory framework, excessive risk taking and unsound lending practices. Consequently, the country's weak prudential controls and rapid expansion of credit, led to banks over-exposing themselves through excessive borrowing abroad during this period.

Moreover, there is not a single comprehensive definition which describes a "sudden stop". For example, authors such as Jeanne and Rancière (2006) and Calvo et al. (2004) define a sudden stop in terms of a sharp decline in capital inflows. Catão (2006) expands the definition to take account of the overall balance of payments developments in identifying a sudden stop. The author therefore notes that a precipitous decline in capital inflows would have to be accommodated by an improvement in the current account balance or alternatively a reduction in external reserves, to conclude that a sudden stop has occurred. More notably, Frankel and Cavallo (2004) incorporated the concept that a sudden stop has to also "disrupt" the wider economy. In this regard, the researchers identified a decline in net output in either the same year or the year immediately after a decline in capital flows occurs, as one of the criteria to be used in defining a sudden stop episode. Countries that are susceptible to sudden stops include emerging economies, which are reliant upon capital inflows for economic development. Consequently, the occurrence of a sudden stop, *ceteris paribus*, could in the short-term negatively impact the country's external reserves, with implications for trade payments and government's external debt servicing. In the medium term, depending on the severity and duration of the sudden stop, countries economic growth could slow or even contract, particularly in those industries which rely on foreign financing for capital investment such as large-scale tourism and real-estate investment projects, with ripple effects on other sectors, such as the construction industry.

Given the potential negative impact which sudden stops could have on economies such as those in the Caribbean, this paper seeks to explore the relationship between capital account liberalization and sudden stops in the Caribbean. The remainder of the paper is organized as follows: section two discusses selected countries' liberalization experience.

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[4] See Helleiner (1990)

In section three, the methods for measuring the degree of capital account liberalization over the last 15 years for specific countries are examined and the degree of openness for specific Caribbean economies based on one of the techniques is computed. The methodology employed to measure sudden stops is examined in section four, while section five analyzes the results obtained for the Caribbean economies. The implications of the results are analyzed in section six and the following section summarizes the study and provides a few insights into further research.

2.0   Capital Account Liberalization- Country Experiences

For the Caribbean, the first economies that embarked on capital account liberalization in the 1970s were Guyana, Jamaica and Trinidad & Tobago[5]. For **Guyana,** the liberalization of the capital account commenced in 1979. Initial liberalization attempts were geared more towards capital inflows, with capital outflows evolving slowly. From 1979-1990, according to the IMF's annual report entitled, "*Annual Report on Exchange Restrictions*"[6], Central Bank approval was required and was frequently granted for investors with "approved status" to remit the full value of their investment less all taxes owed. Further, permission was needed and was sometimes granted for residents to export capital and residents who migrated were not allowed to transfer their capital assets, other than a settling allowance of G$100 per member of each family[7]. Emigrants to Guyana required approval, which was frequently granted, to transfer capital assets up to a maximum of G$24,000 per family and G$17,300 each year after.

On the outflows side for Guyana, only foreign investors with "approved status" from the Central Bank, which was sometimes granted, were allowed to invest in new projects that benefited the balance of payments and the entire economy. Meanwhile, specified currencies obtained by residents through capital transactions had to be turned over to an authorized dealer and non-residents needed approval to lend funds. Further, publicly owned enterprises were encouraged to borrow abroad to finance special projects and for capital injection; however, approval had to be obtained from the Government Debt Committee. Nevertheless, from 1991 when the country moved to full liberalization, approvals were no longer required from the Central Bank for residents to export capital, to transfer capital assets and for specified currencies obtained by residents through capital transactions to be handed over to an authorized dealer. However, approval still has to be sorted and is frequently granted for some remaining transactions (see appendix Table 1).

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[5] These are the Caribbean countries that abolished the fixed exchange rate arrangement and adopted a floating exchange rate regime.
[6] This report was later renamed "*Annual Report on Exchange Arrangements and Exchange Restrictions*".
[7] Guyanese dollar (G$) is the official currency for Guyana

With regards to **Jamaica**, liberalization measures focused mainly on outflows, with the partial removal of restrictions on these outflows. Beginning in 1979, even though approval was required for direct investment in the country by non-residents, this permission was frequently granted along with written approval that at any time the original investment plus any capital gain could be repatriated. Further, permission still has to be sought and is frequently granted for non-residents repatriation of receipts for sale of land to residents. However, there is one stipulation, which states that the original amount of funds brought to Jamaica to facilitate the transaction and the balance has to be paid in ten equal installments, not exceeding $10,000 Jamaican dollars in one year[8] (see appendix Table 2).

Trinidad and Tobago began its transition by pursuing limited liberalization in 1979 and then gradually moved to full liberalization in 1993. In this country, from 1979 to 1992 permission was required and was frequently granted for the repayment of commercial credit, for gifts to non-residents and emigration allowances and for transfers to other CARICOM countries. Moreover, legacies were transferred in full, but the Central Bank reserved the right to have the transfers made over a four-year period. Pertinent to outflows, the proceeds from securities that were sold by residents in external markets had to be repatriated via an authorized dealer. Approval had to be sought and was frequently granted for the funds to be used to purchase the same type of security in an outside market. Meanwhile, permission was frequently and freely given for direct investment. However, from 1993 Trinidad & Tobago moved to full liberalization and approvals were no longer required from the Central Bank for transactions pertaining to inflows and outflows. Moreover, receipts were not taxed and restrictions were fully abolished (see appendix Table 3).

3.0 Methodology for Creating Index of Liberalization
3.1 Definition of the Index of Liberalization

According to Altar et al. (2005), two types of indicators can be used to measure the degree of capital account openness. These indicators are rules-based and are used to measure the intensity levels of capital flows. The rules-based category aspires to create a scale for the capital account liberalization level of each country. Based on the criteria used, each country is ranked and rated to the extent to which it meets the agreed standard. Moreover, Feldstein and Horioka (1980) examined the savings and investments level in some countries to determine the degree of capital mobility. For instance, in cases where the capital account

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[8] To the best of the authors' knowledge, these measures still exist.

is not liberalized, savings and investments will not equal to one and if it equals one then it can be assumed that the capital account is heavily regulated. Another useful indicator of the capital account openness is the speed of convergence between the national interest rate level and the interest rate on the international capital market.

As noted, the definitions and measurement of capital account liberalization or 'openness' is difficult and complex as stated in the analytical work conducted by numerous academics and international organizations. However, the methodological system used in this study was based on research by Quinn (1997), which utilized a coding system based on rules, both explicit and implicit, that govern restrictions on capital payments and receipts. The author measured the degree to which countries restrict inward and outward capital account flows. The chosen measurement proved to be less complex than the other studies and is comprehensive in that the data allows for an enumerative value to be assigned to the level of 'openness'. This methodological choice used was the *sine qua non* condition in making this analysis more comprehensive and inclusive.

The rating system for payments and receipts followed these rules:

- If approval is rare and surrender of receipts is required, the X = 0
- If approval is required and sometimes granted, then X = 0.5
- If approval is required and frequently granted, then X = 1
- If approval is not required and receipts are heavily taxed, the X = 1
- If approval is not required and receipts are taxed, then X = 1.5
- If approval is not required and receipts are not taxed, then X = 2.

In this study, the data files analyzed were obtained from the IMF's "*Annual Report on Exchange Restrictions*". The publication provided time series data on the general restrictions on capital account transactions for the countries used in the study. However, the data was also augmented in some cases by additional information obtained from the various central bank records.

Based on the above mentioned rules, each capital control on either a significant payment or a receipt for a particular year was evaluated and a code assigned between 0 (heavily restricted) and 2 (minimum restrictions). Once all the significant transactions were coded, the results were summed and averaged and the resultant value rounded to the nearest 0.5 of a decimal place. The countries included in this review were: The Bahamas, Barbados, Guyana, Jamaica, St. Lucia and Trinidad & Tobago. The data series obtained spanned the period 1979 to 2005.

3.2   Result Based on the Technique Used

The level of capital account liberalization or openness is represented in chart 1 (see appendix). Some countries' regulations and legislations were quite stringent, while others were more liberal with regards to capital flows. According to results, the most restricted initial capital account regime was noted for St. Lucia, which imposed very tight controls prior to 1996. However, in 1996 the country made a significant change in its capital controls, which allowed residents to make direct investments in other countries. In contrast, The Bahamas experienced very little change in its capital controls over the review years, showing a constant degree of openness until 2006 when the country announced a number of measures aimed at further liberalisation of the capital account[9]. Meanwhile, for the time period examined, Guyana seemed to have encouraged capital inflows and outflows based on the high scores noted. In 1991, the country moved even further in the liberalization of its capital account by allowing the free outflow of capital with the implementation of the Cambio market, along with little taxation on capital investment gains. In Jamaica, capital controls moved from a relatively restricted regime to a higher degree of openness, as all explicit capital restrictions in relation to capital inflows were removed in 1991, resulting in a more liberalized capital account. In the case of Trinidad and Tobago, the economy experienced rapid liberalization of its capital account. The controls in place from the start of the review period, were not as stringent as those in most of its counterparts in the other countries and there existed little taxation. Then in 1993, the country completely liberalized its capital account, removing restrictions on inflows as well as outflows. There was a gradual change in capital controls for Barbados and this country is still in the transition phase to full liberalization. There are still quite stringent controls in place as it relates to inheritance and dowries in Barbados, while all controls as it relates to investment on the CARICOM Stock Exchange up to a pre-set limit were eliminated in 2001.

3.3   Definition of a Sudden Stop

Several different definitions were initially investigated to analyse the frequency of sudden stop periods for the countries used in the study. Given that the paper focused on determining the importance of the degree of liberalization in determining sudden stop periods for each country, a modified version of the Calvo et al. (2004) criteria was selected. This method identified several sudden stop periods for each of the countries used in the model. In this regard, the following definition of a sudden stop was employed in the paper. A sudden stop is said to have occurred if:

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[9] See The Central Bank of The Bahamas Annual Report and Statement of Accounts 2005, p.29.

1. The year-on-year fall in capital flows exceeds one standard   deviation below the sample mean.

2. The sudden stop period ends the first time the annual change in capital flows falls one standard deviation above the sample mean.

Table 4 shows the sudden stop periods identified for all of the countries used in the analysis. Moreover Chart 2 (see appendix) illustrates the sudden stop period for each country separately as well as for all of the countries combined. Based on the definition used, the results show that all of the countries appeared to have experienced sudden stop episodes during the 1981-83 period. Moreover, three of the countries, The Bahamas, Barbados, and Trinidad & Tobago had sudden stops in capital flows during the 1989 to 1993 period. The final major sudden stop episode occurred from 1998 to 2004, when The Bahamas, Barbados, Jamaica and Trinidad & Tobago all experienced at least one year of sudden stops.

4.0   Methodology for Examining Sudden Stops

The next step involved the modelling of the factors which increased the probability of a sudden stop occurring for the countries included in the analysis. The explanatory equation is shown as equation (1):

$$SS_t = \alpha + \beta CL_{t-1} + \gamma X_{t-1} \qquad\qquad (1)$$

$where$:

$SS = Sudden\ stop\ period$

$\alpha = Intercept\ term$

$CL = Degree\ of\ Capital\ Account\ Liberalization\ as$
  $measured\ by\ the\ Index$

$X = Matrix\ of\ explanatory\ variables\ used\ in$
  $previous\ studies$

The set X of explanatory variables is composed of a number of regressors proposed in part by authors such as Frankel and Cavallo (2004), Jeanne and Rancière (2006), and Razin and Rubinstein (2006). The variables were selected based on their applicability to the Caribbean environment. For example, according to a report by The Economic Commission for Latin America and the Caribbean (ECLAC) for 2007, FDI among Latin America and Caribbean countries amounted to 3.6% of the region's GDP in 2007, on par with developing Asia and Oceania. Moreover, according to Frankel and Cavallo, *"the stability of FDI flows reduces the likelihood of a sudden stop".* For this reason, the ratios of FDI to GDP (FDIGDP) as well as FDI to Reserves (FDIRES) were included as explanatory variables.

The ratio of goods exports and imports to GDP (OPEN) was used as a proxy for a country's "openness to trade". There are several studies which either support or refute the claim that a country's openness to trade reduces the possibility of a "sudden stop". Given the fact that Caribbean economies are

highly exposed to the rest of the world in terms of their dependence on imports and exports to sustain their economies, this variable was included in the analysis; however no *a priori* assumptions were made concerning its sign.

The ratio of foreign debt to GDP, as noted by Frankel and Cavallo (2004) in their research, is included to control for the level of financial openness. As the authors note, *"without (foreign) debt to service, there are no sudden stops"*. Moreover, given that in some Caribbean countries, the external reserves are utilized to service the foreign debt of the Government as well as public corporations, the extent that foreign debt accumulates as a percentage of GDP (FXDEBTGDP), and reserves (FXDEBTRES), would suggest that the risk of a sudden stop is rising. The final debt variables included in the model comprised the ratio of (Foreign + Domestic Debt)/GDP (DEBTGDP) as well as the ratio of foreign debt to exports of goods and services (EXDEBTEXP), which capture the ability of an economy to repay its obligations from its domestic production and foreign debt from its international earnings respectively. It is expected that increases in both variables will increase the probability of a sudden stop.

The variables foreign liabilities to money supply (DLD1) and dollar deposits to total deposits (DLD2) are used to capture the *"balance sheet"* effects in the study. According to Frankel and Cavallo (2004), *"the mismatch between the currency denomination of assets and liabilities in the private and public balance sheets......... increases the output costs of external shocks....."* This is especially pertinent for the Caribbean economies, as an increase of these ratios implies that both the public and private sectors are increasing their foreign currency borrowings, thereby raising the likelihood of a sudden stop occurring.

Given that Caribbean economies have in their histories undergone changes in their exchange rate regimes, it seems prudent to introduce a measure in the analysis, which examines the effect of the exchange rate regime on the probability of a sudden stop. Razin and Rubinstein (2006) found that the probability of a financial crisis, increased with the imposition of an exchange rate peg and fell with the imposition of capital controls. For the purpose of this study, a proxy for the exchange control regime proposed by Razin and Rubinstein was utilized, which defined a peg "spell" as the number of years from t-2 to t-6 in which the country has an exchange rate peg (PEG).

The variables foreign reserves in months of imports (IMPMONTH) and the ratio of foreign assets to the current account deficit (FXCAD), were included in the study, as "rule-of-thumb" measures of external reserve adequacy. The ratios of the Deficit/Surplus to GDP (DEFGDP) was also utilised as an additional regressor to capture the role played by Government in the domestic economy. As Jordan et al. (2005) note, an expansion in the ratio of the fiscal deficit/GDP (DEFGDP) was an important indicator in

predicting a "current account crisis" for Barbados. The ratio of Expenditure/Revenue[10] (PUBLIC) was also included as an additional measure of Government activity with the *a priori* assumption that an expansion in the ratio would increase the probability of a sudden stop.

The growth in claims on the private sector/GDP variable (CLAIMSGDP) was used to test the effect of credit on the likelihood of sudden stops occurring through its impact on imports and the country's external reserves[11]. Finally the inclusion of the difference between domestic and foreign interest rate variable (RATE) was based on a study by Catão, who included an indicator of the differential between domestic and foreign interest rates in a model of "currency crises". In the study, the author proposed that "the expectation that a currency drop will be higher as… the domestic interest rate drops relative to its foreign counterpart".[12] In the context of the Caribbean, a narrowing in the interest rate differential between domestic short-term rates and the word interest rates[13] is expected to increase the likelihood that capital inflows may slow or even reverse i.e. a sudden stop may occur.

All of the variables were lagged to avoid any endogeneity problems as noted by Calvo et al. The regressions for each country were analyzed using a probit model framework. In this model the probability that y = 1 is given by:

$$\Pr(\, yi = 1 \,|\, xi\,,\, \beta\,) = 1 - \Phi(-xi'\,\beta\,) = \Phi(\,xi'\,\beta\,) \qquad\qquad (2)$$

where Φ is the cumulative distribution function of the standard normal distribution, and has a standard normal distribution function given by:

$$\Phi(\,w\,) = \int_{-\infty}^{w} \frac{1}{\sqrt{2\pi}}\exp\left\{-\frac{1}{2}t^{2}\right\}dt \qquad\qquad (3)$$

The models were estimated using the method of maximum likelihood.

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[10] A variant of this variable was also utilised by Catão in his "currency crisis" models.
[11] Jordan et al found evidence that the growth in domestic credit was an important predictor of a future current account crisis in Barbados.
[12] The author's results for this regressor, showed that an expansion in the interest rate differential increased the probability of a sudden stop occurring, which differed from the *a priori* expectations.
[13] In the case of the Caribbean this rate in proxied by the average between the US T-bill and 3-month CD Rate

5.0   Results and Analysis

5.1   Liberalization Variable

Given the short data series and the relatively large number of variables used in the analysis, two sets of results consisting of five separate models were estimated (Table 5). The first group comprised a minimum of three of the explanatory variables from the X matrix[14]. The second set of results featured the addition of the liberalization variable to each of the five previous regression equations. The results are shown in the appendix (Tables 6 to 10)[15].

The preliminary assessment from the results of the probit models, based on the McFadden R^2 statistics[16], show that overall the explanatory power of the regression equations increased with the addition of the liberalization variable to the various models, as on average, regressions with the liberalization variable were 16.8% better at modeling the dependent variable than a constant probability model, compared to just 13.8% in models without the liberalization variable. However, the impact of the variables in the regressions changed for the various countries. As the tables illustrate, the inclusion of the liberalization index generally increased the probability of a sudden stop episode occurring in the following year for Barbados, Guyana and Jamaica. This was reversed for Trinidad and Tobago and St. Lucia, where the inclusion of the liberalization variable reduced the probability of a sudden stop episode occurring in the next year.

As noted previously, due to the fact that the liberalization index remained unchanged for The Bahamas during the review period, it was not used in the analysis; however, tests of the other explanatory variables were still conducted and the results utilized in the analysis. Table 6, (appendix), shows the results for the matrix of explanatory variables.

The increased probability of a sudden stop for Guyana and Jamaica with the inclusion of the liberalization index can perhaps be as a result of the hurried approach to liberalization that was adopted by these two countries, in addition to deteriorating BOP positions and their relatively under-developed financial markets. On other hand, Trinidad & Tobago's more favourable reaction could be a reflection of the gradual and phased approach to liberalization and a relatively developed financial market. With regards to St. Lucia, where the inclusion of the liberalization variable reduced the probability of a sudden stop, this can perhaps be linked to the fact that the country is part of the Eastern Caribbean Currency Union, which

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[14] Some variables were not available for a number of the countries examined in the study.

[15] As noted earlier, only one series of regressions were conducted for The Bahamas since there was no variance in the liberalization index over the period.

[16] As Verbeek (2000) notes, "usually goodness-of-fit is quite low for discrete choice models".

to some extent restricts the country's direct exposure to international capital flows. However, for Barbados, the economy is still in the transition phase of liberalization and hence the result is indeterminate.

5.2   Matrix of Other Explanatory Variables

The matrix of other explanatory variables also revealed some interesting results. For example, an increase in the import reserve cover (IMPMONTH) generally decreased the probability of a sudden stop occurring in the next period. Moreover, an increase in the interest rate differential between the domestic interest rate and the world interest rate (RATE) reduced the probability of a sudden stop occurring a year later for several countries, but produced mixed results for others. In addition, perhaps reflecting the volatile nature of capital flows in the region, an increase in FDIGDP appeared generally to increase the probability of a sudden stop occurring in the next year[17].

The other explanatory variables used in the analysis produced different results for the various countries indicating that country specific circumstances are perhaps as important as general internationally accepted assumptions in determining if a country experienced a sudden stop. For example, the DEFGDP variable increased the probability of a sudden stop occurring in the next period for two of the countries, but reduced it for one of the countries in the analysis. The OPEN variable also appears to exhibit different signs for the various countries; while the PEG variable produces, in large measure, mixed results for the relevant economies. With regards to the debt variables (FXDEBTGDP, FXDEBTRES and DLD1), the general results varied for each country. The FXDEBTGDP reduced the probability of a sudden stop happening in the following year for one country but increased the probability for two other countries. Similarly the FXDEBTRES increased the probability of a sudden stop occurring for one country but reduced it for another, while the results for DLD1 were also indeterminate.

5.3   Robustness Checks

In order to examine the robustness of the results, the models were re-estimated using two alternative definitions of sudden stops. The first alternative definition was outlined by Frankel and Cavallo, who defined a sudden stop as a fall in the financial account in year t which is at least 2 standard deviations below the sample mean[18]; and is associated with a fall in both GDP and the current account balance in either year t or t+1 of any magnitude. The second alternative definition of a sudden stop was provided by

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[17] This result was also found by Frankel and Cavallo, although the authors provided no interpretation.
[18] For the purpose of this study a fall in financial account flows, which was one standard deviation below the sample mean, was used.

Levchenko and Mauro (2006), who noted that a sudden stop occurs when the financial account worsens by more than 5% of GDP compared to the previous year. Chart 3 shows the aggregate number of sudden stop periods identified from all three definitions of sudden stops (see appendix). Note that all three definitions exhibit similar patterns, whereby the sudden stop episodes are concentrated in three distinct periods, namely 1981 – 1985, 1987 – 1992 and 1999 - 2002.

The results, which are available from the authors, show that the sign of the liberalization variable for St. Lucia and Trinidad remained stable; however, the signs for Barbados and Guyana were reversed. This indicated that the results for Barbados and Guyana were sensitive to the definition of sudden stops used; however, the impact of liberalization on the probability of a sudden stop occurring appeared to be stable for the other countries used in the analysis. It is also important to note that under the two alternative definitions of sudden stops, there was no sudden stop period identified for Jamaica.

5.4   Diagnostic Tests

The next series of tests checked for the normality of the various models in the analysis using the Jarque-Bera normality test. The results for the majority of the models showed that the null hypothesis of normality was rejected, as a result the maximum likelihood estimators were inconsistent, and hence the statistical inference of the individual coefficients was not conducted.

The next series of tests focused on the predictive ability of the models. The prediction statistics showed in the appendix (Tables 6 to 10**)** revealed that in general the probit models were on par with predictions produced by constant probability models. On average, the percentage gain from models with the liberalization variables was 0 with a maximum of 25%. Hence overall, the models appeared to be relatively weak in terms of their predictive ability. However, Frankel and Cavallo (2004) note that crisis models usually have relatively low explanatory power and predictive ability.

6.0   Conclusion

The study has sought to analyse the effect of capital account liberalization on the probability of a sudden stop occurring for several countries in the Caribbean, which have over the last 25 years reduced the controls and restrictions on their capital accounts but to different degrees. This analysis is particularly pertinent given the recent trends to liberalize capital controls globally in order to facilitate the increased movement of capital across borders.

Overall, the results have shown that the effects of liberalization—based on the definition used—on Caribbean economies have been mixed and are likely determined more by country-specific factors such as Government's policy measures rather than uniform effects. This is not surprising given the complexity of the issues involved and the types of formal and informal policies adopted by countries in the design of their capital account regimes and the measures opted to loosen these controls.

The study also raised several issues which would be interesting to investigate further. Firstly, although it is mentioned as a possible factor affecting the results of the liberalization variable, it would be beneficial to explicitly examine the effect of the speed of the capital account liberalization on the probability of a sudden stop.

Further, it would be useful to analyse the results for the Caribbean region as a whole, as well as for individual country groupings such as the Organization of Eastern Caribbean States. This could be done by adding more countries to the study and utilizing a panel framework to analyse the results.

APPENDIX

Table 1: Guyana's Liberalization Status (1979-2005)		
	Partial Liberalization	**Full Liberalization**
Receipts (Inflows)		
Foreign investors with "approved status" from the Central Bank can invest in new projects that will benefit the BOP and economy	√	
Specified currencies obtained by residents via capital transactions turned over to an authorized dealer		√
Non-residents lend without Central Bank approval	√	
Public owned enterprises can borrow abroad to finance special projects and for capital injection	√	
Companies and subsidiaries owned by foreign entities borrowing	√	
Payments (Outflows)		
Investors allowed to remit the full value of their investment less all taxes owed	√	
Resident permitted to export capital		√
Guyanese who migrate allowed to transfer their capital assets		√
Emigrants to Guyana allowed to transfer capital assets		√
Partial liberalization indicates that approval is required and is frequently granted *Full liberalization indicates that approval is not required and receipts are not taxed*		
Source: *IMF's Annual Report on Exchange Arrangements and Exchange Restrictions (1979 – 2006)*		

Table 2: Jamaica's Liberalization Status (1979-2006)		
	Partial Liberalization	**Full Liberalization**
Payments (Outflows)		
All residents require approval to invest abroad and approval only granted if they result in tangible benefits to the country	√	
All residents purchasing local assets from non-residents require approval and approval only given if they result in tangible benefits to the country	√	
Approval required for direct investments in Jamaica by non-residents, with written permission to repatriate original investment plus any capital gain – restriction: exception of certain types of investments in real estate	√	
Approval granted for repatriation of receipts for sale of land to residents of Jamaica (original amount of funds brought to Jamaica to facilitate the transaction and the balance to be paid in 10 equal installments not exceeding J$10,000 in one year	√	
Required approval for domestic bank credit to be lent to non-residents and to non-resident controlled companies	√	
Based on humanitarian grounds, permission may be granted to remit capital or income to Jamaican nationals (up to J$4,000)	√	
Partial liberalization means that approval is required and is frequently granted. *Full liberalization means that approval is not required and receipts are not taxed.*		
Source: *IMF's Annual Report on Exchange Arrangements and Exchange Restrictions (1979 – 2006)*		

Table 3: Trinidad & Tobago's Liberalization Status (1979-2006)		
	Partial Liberalization	**Full Liberalization**
Receipts (Inflows)		
Residents transferring securities to non-residents		√
Repatriation of proceeds from securities sold by residents in external market and purchase of same type of securities in an outside market		√
Restrictions pertaining to direct investment – foreigners are required to get a license under the Aliens (Landholding) Ordinance to be able to hold land and hold shares in local companies	√	
Payments (Outflows)		
Repayment of commercial credit freely permitted		√
Gifts to non-residents and emigration allowances		√
Transfers to other Caricom countries		√
Legacies transferred in full		√
Allowing international institutions to borrow in T&T		√
Securities denominated in other currencies besides T&T dollars permitted to be imported or exported		√
Sale of securities or investments by non-residents		√
Extending credit to non-residents, firms and non-residents controlled local companies		√
Partial liberalization means that approval is required and is frequently granted *Full liberalization means that approval is not required and receipts are not taxed*		
Source: *IMF's Annual Report on Exchange Arrangements and Exchange Restrictions (1979 – 2006)*		

Chart 1
Capital Account Scores

Source: Authors' Calculations

Table 4: Countries Surveyed and Sudden Stop Periods		
Countries	**No. of Sudden Stop Periods**	**Years**
The Bahamas	4	1982-1983,1992,1999-2001,2004
Barbados	4	1982,1984,1992,2002
Guyana	2	1984,1996
Jamaica	4	1984,1985,1997,2001
St. Lucia	3	1982-1983,1994,1998
Trinidad and Tobago	4	1984,1990,1999,2003

Source: Authors' Calculations

Chart 2
Years of Sudden Stops
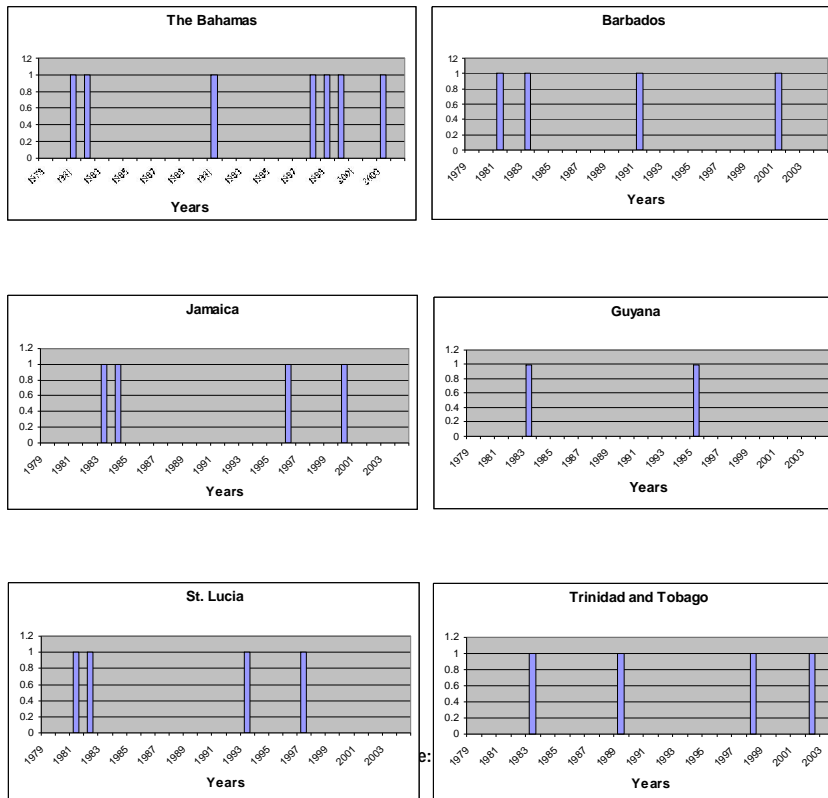
Table 5: Regression Independent Variables	
NAME	**VARIABLES**
FOREIGN ASSETS/CURRENT ACCOUNT DEFICIT	FXCAD
GROWTH IN CLAIMS ON PRIVATE SECTOR/GDP	CLAIMSGDP
FOREIGN DEBT/GDP	FXDEBTGDP
FOREIGN DEBT/RESERVES	FXDEBTRES
INWARD DIRECT INVESTMENT/GDP	FDIGDP
INWARD DIRECT INVESTMENT/RESERVES	FDIRES
DEFICIT (-) OR SURPLUS/GDP	DEFGDP
(GOODS EXPORTS F.O.B + GOODS IMPORTS F.O.B)/GDP	OPEN
PEG SPELL = NO. OF YEARS FROM T-2 TO T-6 IN WHICH COUNTRY HAS BEEN ON PEG	PEG
FOREIGN LIABILITIES/MONEY SUPPLY	DLD1
DOLLAR DEPOSITS/TOTAL DEPOSITS	DLD2
FOREIGN RESERVES IN MONTHS OF IMPORTS	IMPMONTH
WEIGHTED AVG. DEPOSIT RATE – World Interest Rate (Avg. between US T-bill and 3 months CD rate)	RATE
EXPENDITURE/REVENUE	PUBLIC
DEBT: FOREIGN/(GOODS EXPORTS: F.O.B. + SERVICES: CREDIT)	EXDEBTEXP
(DEBT: FOREIGN + DEBT: DOMESTIC)/GROSS DOMESTIC PRODUCT (GDP)	DEBTGDP
LIBERALIZATION VARIABLE	LIBX

Table 6

THE BAHAMAS
Dependent Variable: Sudden Stop = 1

MODELS

VARIABLES	1	2	3	4	5	6	7	8	9	10
CONSTANT	-0.396817 (0.3931)	-1.420919 (0.2939)	-0.094727 (0.9129)	-0.208881 (0.9543)	-3.100705** (0.0109)					
FXCAD	0.021113 (0.1238)									
CLAIMSGDP			-2.466269 (0.7591)							
FXDEBTGDP		-9.257221 (0.6380)								
FXDEBTRES			-2.950465** (0.0428)							
FDIGDP				19.87613 (0.1332)	28.16458** (0.0338)					
FDIRES DEFGDP			-43.07111** (0.0498)							
OPEN	0.095588 (0.6654)			0.091614 (0.4784)						
PEG										
DLD1										
DLD2	-14.22404 (0.5947)									
IMPMONTH		0.546171 (0.2416)			84.176 (0.1435)					
RATE		-0.272531* (0.0979)			-0.247502* (0.0640)					
PUBLIC				-0.934804 (0.7812)						
EXDEBTEXP DEBTGDP										
LIBBAH										
McFadden R- Squared	0.02194	0.08123	0.167858	0.092671	0.258895					
LR Statistic	0.664562	2.353606	5.084361	2.806959	7.501381					
Prediction Test: Total Gain+	0.00	0.00	0.00	0.00	8.33					
Percent Gain++	0.00	0.00	0.00	0.00	28.57					
Jarque-Bera Normality Test	5.182312 (0.074933)	3.548910 (0.169576)	2.183267 (0.335668)	3.623356 (0.163380)	2.618894 (0.269969)					

* Significance at 10% level

** Significance at 5% level

*** Significance at 1% level

+ Change in "% Correct" from default (constant probability) specification
++ Percent of incorrect (default) prediction corrected by equation
Source: Authors' Estimates

Table 7

JAMAICA
Dependent Variable: Sudden Stop = 1

MODELS

VARIABLES	1	2	3	4	5	6	7	8	9	10
CONSTANT	-1.110112 (0.6217)	-1.068302** (0.0361)	-0.678696 (0.4109)	-0.836015 (0.1007)	-1.848968* (0.0770)	-5.105512* (0.0782)	-2.067477* (0.0761)	-1.444161 (0.2540)	-1.051974 (0.2933)	-5.057327*** (0.0002)
FXCAD	-0.192421 (0.1988)			-0.132359 (0.1922)		-0.192577 (0.1902)			-0.124664 (0.1414)	
CLAIMSGDP										
FXDEBTGDP										
FXDEBTRES										
FDIGDP		-0.401741 (0.9839)		0.227663 (0.9894)	10.26989 (0.5422)		-3.046863 (0.8813)		-1.850372 (0.9190)	4.168675 (0.8210)
FDIRES			-0.902419 (0.3991)					-0.858202 (0.4219)		
DEFGDP	-1.337941 (0.7167)									
OPEN						-2.722230 (0.4643)				
PEG	0.073411 (0.7267)	0.073411 (0.7267)	-0.060592 (0.8352)		-0.252461 (0.1987)		0.181981 (0.3591)	0.048039 (0.8574)		0.037471 (0.8075)
DLD1	1.316643 (0.1542)				2.101226 (0.1216)	3.690909*** (0.0059)				2.650504** (0.0452)
DLD2										
IMPMONTH	-0.014611 (0.9491)	-0.014611 (0.9491)		-0.175931 (0.4476)			-0.073275 (0.7393)		-0.202854 (0.3748)	
RATE			-0.007683 (0.8281)					-0.008352 (0.8102)		
PUBLIC										
EXDEBTEXP										
DEBTGDP										
LIBJAM						1.636737** (0.0251)	0.464042 (0.3778)	0.027150 (0.5710)	0.152652 (0.7488)	1.191742** (0.0166)
McFadden R- Squared	0.152507	0.022533	0.02538	0.063563	0.107252	0.256679	0.022533	0.030868	0.06529	0.159409
LR Statistic	3.404678	0.50351	0.566595	1.419038	2.39439	5.730311	0.503051	0.689126	1.457585	3.558777
Prediction Test: Total Gain+	-3.85	0.00	0.00	0.00	0.00	3.85	0.00	0.00	0.00	3.85
Percent Gain++	-25.00	0.00	0.00	0.00	0.00	25.00	0.00	0.00	0.00	25.00
Jarque-Bera	10.65997 (0.004844)	18.41727 (0.000100)	17.02230 (0.000201)	14.65137 (0.000658)	20.31416 (0.000039)	10.69544 (0.004759)	17.01486 (0.000202)	16.35042 (0.000282)	14.63449 (0.000664)	15.71388 (0.000387)

* Significance at 10% level
** Significance at 5% level
*** Significance at 1% level

\+   Change in "% Correct" from default (constant probability) specification
\++ Percent of incorrect (default) prediction corrected by equation
Source: Authors' Estimates

Table 8

ST. LUCIA
Dependent Variable: Sudden Stop = 1

VARIABLES	1	2	3	4	5	6	7	8	9	10
					MODELS					
CONSTANT	4.282420 (0.1991)	2.490460 (0.3490)	2.064596 (0.4516)	-3.122912*** (0.0026)	3.898729 (0.2500)	5.757761* (0.0907)	2.380151 (0.3672)	2.626785 (0.4780)	-2.932375* (0.0639)	3.898729 (0.2500)
FXCAD	5.599671* (0.0880)					5.558160* (0.0638)				
CLAIMSGDP										
FXDEBTGDP										
FXDEBTRES										
FDIGDP		4.382088 (0.6120)					5.035489 (0.5795)			
FDIRES				3.007567*** (0.0007)					2.896733*** (0.0008)	
DEX										
DEFGDP										
OPEN	-0.820130 (0.6400)		-1.599159 (0.5579)		-2.729468 (0.1563)	-1.897112 (0.3315)		-2.051883 (0.5292)		-4.967491* (0.0841)
PEG	-0.114601 (0.8598)				-0.696675 (0.2518)	-0.020529 (0.9773)				-0.665101 (0.2582)
DLD1	-8.270775 (0.2068)			-4.258230 (0.5637)		-7.380772 (0.2747)		-2.781311 (0.6686)		
DLD2										
IMPMONTH	-1.817906* (0.0244)	-1.370522 (0.1085)				-1.773481** (0.0215)	-1.352250 (0.1133)			
RATE	0.051533 (0.7343)			0.451684** (0.0148)	-0.248146 (0.1810)	0.043820 (0.7729)			0.455030** (0.0169)	
PUBLIC										
EXDEBTEXP										
DEBTGDP										
LIBLUCIA					-0.751446 (0.5225)	-0.347270 (0.7843)	-0.272533 (0.8399)	-0.297273 (0.8217)	-0.325021 (0.1238)	-1.344475 (0.3356)
McFadden R- Squared	0.360445	0.295056	0.245839	0.423143	0.148484	0.368321	0.297294	0.247148	0.424515	0.181102
LR Statistic	8.046857	6.486371	5.488296	9.302168	3.264193	8.222683	6.535571	5.517536	9.332324	3.981264
Prediction Test: Total Gain+	7.69	4.00	3.85	8.00	0.00	7.69	4.00	3.85	8.00	8.00
Percent Gain++	50.00	25.00	25.00	50.00	0.00	50.00	25.00	25.00	50.00	50.00
Jarque-Bera	24.38578 (0.000005)	9.355011 (0.009302)	13.04933 (0.001467)	51.08069 (0.000000)	11.22730 (0.003648)	24.01363 (0.000006)	10.87324 (0.004354)	13.49326 (0.001175)	53.32191 (0.000000)	18.52390 (0.000095)

* Significance at 10% level
** Significance at 5% level
*** Significance at 1% level

+Change in "% Correct" from default (constant probability) secification
++Percent of incorrect (default) prediction corrected by equation

+ Change in "% Correct" from default (constant probability) specification
++ Percent of incorrect (default) prediction corrected by equation

Source: Authors' Estimates

Table 9

GUYANA
Dependent Variable: Sudden Stop = 1

MODELS

VARIABLES	1	2	3	4	5	6	7	8	9	10
CONSTANT	-1.432811*** (0.0013)	-1.135740 (0.2259)	0.780364 (0.2320)	7.041071** (0.0119)	-2.558864 (0.2398)	6.740348* (0.0950)	-1.778845 (0.4162)	-1.042572 (0.5736)	8.058378** (0.0246)	
FXCAD										
CLAIMSGDP	4.80065 (0.2462)	4.614100 (0.2644)		10.72050* (0.0710)	5.622188 (0.2676)		5.537993 (0.2500)		9.818149* (0.0847)	
FXDEBTGDP										
FXDEBTRES										
FDIGDP										
FDIRES										
DEFGDP	0.313792 (0.8445)		0.330465 (0.8330)		0.427642 (0.7351)			0.147975 (0.9124)		
OPEN	1.064140** (0.0447)			1.34695** (0.0487)		0.869821* (0.0585)			1.192634 (0.0355)	
PEG										
DLD1	-10.31346 (0.4471)	-7.256769 (0.4999)	-8.053497 (0.3598)			-5.222610 (0.7360)	-8.706604 (0.3502)	-8.039049 (0.3632)		
DLD2										
IMPMONTH										
RATE	-0.051580 (0.1422)	-0.049541 (0.4663)	-0.040509 (0.3159)		-0.061175* (0.0582)		-0.072959 (0.1511)	-0.041976 (0.2519)		
PUBLIC	1.504370 (0.1964)			2.016226 (0.1143)		1.890693 (0.1612)			2.191454 (0.1034)	
EXDEBTEXP										
DEBTGDP										
LIBGUY					0.382442 (0.6060)	0.567189 (0.3516)	0.298379 (0.6388)	0.090927 (0.8765)	0.383307 (0.4974)	
McFadden R- Squared	0.035323	0.041248	0.024727	0.212108	0.040464	0.170345	0.025042	0.025042	0.215159	
LR Statistic	0.498122	0.581674	0.348695	2.99111	0.57062	2.402182	0.353133	0.353133	3.034134	
Prediction Test: Total Gain[+]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Percent Gain[++]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Jarque-Bera	105.1984 (0.000000)	103.1626 (0.000000)	108.4777 (0.000000)	67.48521 (0.000000)	103.2284 (0.000000)	77.41444 (0.000000)	101.6453 (0.000000)	108.2928 (0.000000)	65.26095 (0.000000)	

* Significance at 10% level
** Significance at 5% level
*** Significance at 1% level

[+] Change in "% Correct" from default (constant probability) specification
[++] Percent of incorrect (default) prediction corrected by equation
Source: Authors' Estimates

Table 10

BARBADOS
Dependent Variable: Sudden Stop = 1

VARIABLES	1	2	3	4	5	6	7	8	9	10
					MODELS					
CONSTANT	-2.315305 (0.4946)	0.747307 (0.6553)	-7.830503 (0.1431)	-5.566639 (0.1619)	-2.652891 (0.1576)	-2.313236 (0.5669)	-20.28321 (0.1118)	-33.08059 (0.1518)	-14.73218 (0.1202)	-4.906315 (0.3038)
FXCAD	-0.124061* (0.0773)					-0.124066* (0.0841)				
CLAIMSGDP	-7.581880 (0.5335)					-12.20280 (0.3329)				
FXDEBTGDP		20.13417 (0.1838)					24.21300 (0.1854)			
FXDEBTRES*			0.575189** (0.0348)					0.918518** (0.0244)		
FDIGDP	26.33822 (0.7181)					175.4618 (0.2398)				
FDIRES				6.933471 (0.1941)					8.42881* (0.0931)	
DEFGDP				8.631365 (0.5214)					9.525126 (0.4523)	
OPEN	2.599512 (0.4132)	4.853605 (0.2185)	0.303775 (0.8894)	2.163941 (0.4496)		2.599438 (0.4069)	-2.261173 (0.7277)	-1.363994 (0.5591)	2.475328 (0.4171)	
PEG										
DLD1	(3.114078) (0.6085)		15.39453** (0.0464)			-3.108154 (0.7209)		9.376150 (0.2736)		
DLD2										
IMPMONTH		-0.027572 (0.9497)	-0.200305 (0.4766)				-2.352258 (0.1072)	-3.691142 (0.1974)		
RATE			-0.132610 (0.5022)		0.018868 (0.9220)			0.056826 (0.8265)		0.020778 (0.9178)
PUBLIC EXDEBTEXP	0.498178 (0.8953)					0.498207 (0.8957)				
DEBTGDP		-3.271699 (0.4872)	-1.246548 (0.7532)		-0.001457 (0.9995)		7.768194 (0.3778)	-5.172673 (0.3902)		
LIBBAR							9.029855* (0.0990)	16.78600 (0.1946)	5.551079 (0.2222)	0.897677 (0.5989)
McFadden R- Squared	0.102387	0.095133	0.166667	0.191858	0.167454	0.102387	0.217356	0.371092	0.286109	0.18051
LR Statistic	2.285766	2.123828	-0.357072	4.283196	3.621515	2.285766	4.852423	8.025592	6.387326	3.903886
Prediction Test: Total Gain[+]	0.00	0.00	0.00	3.85	4.17	0.00	0.00	8.33	7.69	4.17
Percent Gain[++]	0.00	0.00	0.00	25.00	25.00	0.00	0.00	50.00	50.00	25.00
Jarque-Bera	12.92768 (0.001559)	14.38445 (0.000752)	5.644416 (0.059474)	22.23931 (0.000015)	19.68298 (0.000053)	12.92868 (0.001558)	7.568157 (0.022730)	5.650121 (0.059305)	21.36983 (0.000023)	21.08488 (0.000026)

* Significance at 10% level
** Significance at 5% level
*** Significance at 1% level

+ Change in "% Correct" from default (constant probability) specification
++ Percent of incorrect (default) prediction corrected by equation
Source: Authors' Estimates

Table 11

TRINIDAD & TOBAGO
Dependent Variable: Sudden Stop = 1

MODELS

| VARIABLES	1	2	3	4	5	6	7	8	9	10
CONSTANT	-.845443 (.2339)	-9.037887** (0.0371)	-1.854659 (0.1502)	-5.594598* (0.0873)	-1.620992 (0.4080)	-0.212384 (0.8614)	-4.952911 (0.2956)	-0.708678 (0.6806)	-8.451618** (0.0214)	-1.888866 (0.3148)
FXCAD	0.014167 (0.7476)					0.014676 (0.7415)				
CLAIMSGDP FXDEBTGDP	22.23644 (0.3610)						41.48558 (0.1870)			
FXDEBTRES FDIGDP		2.778494 (0.7264)						7.727878 (0.5017)		
FDIRES	-0.012501 (0.6544)			0.043790 (0.4783)	-0.014697 (0.6080)				0.074338 (0.2559)	
DEFGDP OPEN		1.079865 (0.5947)			0.039677 (0.9891)			3.227153 (0.1591)		2.276368 (0.3685)
PEG	-0.058504 (0.7575)				0.080351 (0.7093)	-0.108076 (0.5263)				0.169118 (0.5028)
DLD1				7.053041 (0.2669)					5.287183 (0.4450)	
DLD2 IMPMONTH	-0.569698 (0.5938)				0.192853 (0.4638)		-0.904900 (0.3648)			0.341770 (0.3406)
RATE			-0.051347 (0.5440)					0.045667 (0.6220)		
PUBLIC	6.614684* (0.0654)			3.754717 (0.1598)			5.318139 (0.1091)		5.191404* (0.0606)	
EXDEBTEXP DEBTGDP LIBTT					-0.28956 (0.6191)	-0.028956 (0.6191)	-1.179706 (0.2051)	-1.095148 (0.1797)	0.476599 (0.2630)	-0.692779 (0.2455)
McFadden R- Squared	0.024827	0.208244	0.024126	0.112531	0.034806	0.028956	0.234256	0.05872	0.136679	0.062041
LR Statistic	0.545779	4.577924	0.512773	2.473832	0.765166	0.636554	5.149759	1.248015	3.004678	1.363884
Prediction Test: Total Gain+	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Percent Gain++	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Jarque-Bera	15.82562 (0.000366)	10.00446 (0.006723)	11.00980 (0.004067)	12.18871 (0.002256)	15.18499 (0.000504)	15.42599 (0.000447)	9.098934 (0.010573)	9.244948 (0.009828)	11.14499 (0.003801)	13.77819 (0.001019)

* Significance at 10% level
** Significance at 5% level
*** Significance at 1% level

+ Change in "% Correct" from default (constant probability) specification
++ Percent of incorrect (default) prediction corrected by equation
Source: Authors' Estimates

Chart 3: Total Number of Sudden Stops for The Three Models
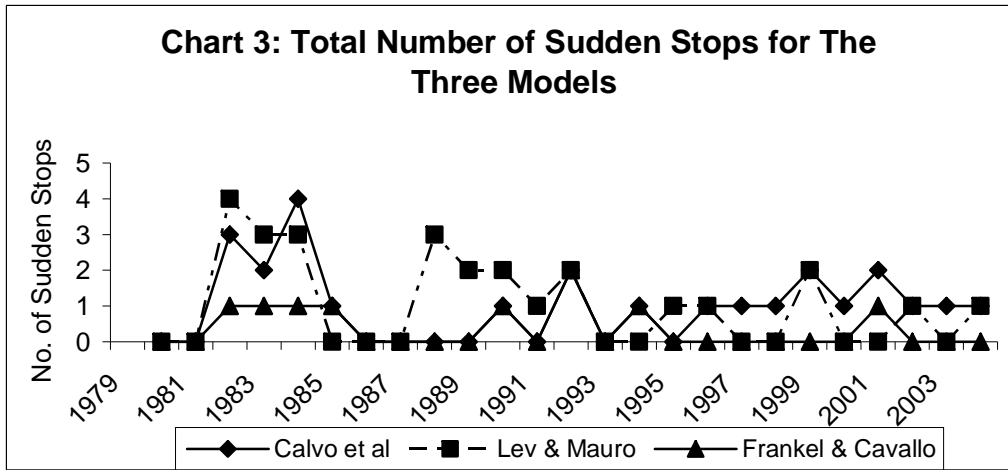
Source: Authors' Estimates

REFERENCES

Altar, M., L. Albu., I. Dumitru. and C. Necula. 2005. "The Impact of Capital Account Liberalization on Exchange Rate and The Competitiveness of The Romanian Economy", European Institute of Romania.

Calvo, A. G., A. Izquierdo., and L. F. Mejia. 2004. "On The Empirics of Sudden Stops: The Relevance of Balance-Sheet Effects", Working Paper #509, Inter-American Development Bank, University of Maryland and National Bureau of Economic Research.

Catão, A.V. L. 2006. "Sudden Stops and Currency Drops: A Historical Look", Working Paper 06/133, International Monetary Fund.

Economic Commission for Latin America and the Caribbean. 2008. "Foreign Investment in Latin America and the Caribbean", United Nations Publication, UNECLAC, Santiago, Chile: No. LC/G. 2360-P/1.

Feldstein, M. and C. Horioka. 1980. "Domestic Saving and International Capital Flows," *The Economic Journal*, Vol. 90, No. 358, 314-29.

Frankel, F. and D. Cavallo. 2004. "Does Openness to Trade Make Countries More Vulnerable to Sudden Stops, or Less? Using Gravity to Establish Causality", Faculty Research Working Paper Series, RWP04-038, Harvard University.

Helleiner, K. G. 1990. "Capital Account Regimes and the Developing Countries", International Monetary and Financial Issues for the 1990s, Vol. VIII.

International Monetary Fund. 1979-2006. "Annual Report on Exchange Arrangements and Exchange Restrictions". Washington, D.C.: International Monetary Fund.

International Monetary Fund (IMF). 2004. "The IMF's Approach to Capital Account Liberalization", Washington, D.C.: International Monetary Fund.

Jeanne, O. and R. Ranciére, R. 2006. "The Optimal Level of International Reserves for Emerging Market Countries: Formulas and Applications", Working Paper 06/229, International Monetary Fund.

Johnston, R. B., M. S. Darbar, and C. Echeverria. 1997. "Sequencing Capital Account Liberalization: Lessons from the Experiences in Chile, Indonesia, Korea, and Thailand", Working Paper 97/157, November, International Monetary Fund.

Johnston R. B and V. Sundararajan. 1999. "Sequencing Financial Sector Reforms: Country Experiences and Issues", Washington, D.C.: International Monetary Fund.

Jordan, A., R. Skeete and K. Coppin. 2005. "Are Persistent Current Account Deficits in Barbados Sustainable?" *Journal of Eastern Caribbean Studies*, Vol. 30, No. 3, 44-72.

Levchenko, A., and P. Mauro. 2006. "Do Some Forms of Financial Flows Help Protect from Sudden Stops?" Working Paper 06/202, International Monetary Fund.

Quinn, P. D. 1997. "The Correlates of Change in International Financial Regulation", American Political Science Review, Vol. 91, No.3, 541-546.

Razin, A. and Y. Rubinstein. 2006. "Evaluation of Currency Regimes: The Unique Role of Sudden Stops". *Economic Policy*, Vol. 21 No.45, 119-152.

Verbeek, M. 2000. "A Guide To Modern Econometrics". USA: John Wiley & Sons.

World Bank. 2007. Global Development Finance. Washington, D.C. World Bank.