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The Nature and Measurement of Financial Liberalisation: An Application to the Caribbean

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1. Introduction

Over the last two decades the effects of financial liberalisation have been heavily debated and researched as many countries have implemented policies to transform their financial systems from that of heavy state involvement and controls to greater private ownership, fewer restrictions and better prudential oversight. Within the Caribbean region, financial liberalisation has been an important component of the developing Caribbean Community (CARICOM) Single Market and Economy (CSME). In fact, Chapter 3 of the Revised Treaty of Chaguaramas – Right of Establishment, Provision of Services and Movement of Capital -envisages the creation of the Single Market by making provisions for the free movement of goods, services, capital, selected categories of skills and the right of CARICOM nationals to set up business in any CARICOM country.

This paper attempts to quantify the financial liberalisation efforts of some of the countries in the Caribbean region. The task at hand is far from simple. Indeed, as noted by Kaminsky and Schmukler (2003), in spite of the proliferation of research on financial liberalisation, information on the evolution of the financial regulations is very fragmented and measures of the actual liberalisation process are even more disjointed. This is especially so for Caribbean countries¹. In fact, only one index was found in the literature search: Quinn's (1997) measures of international financial liberalisation², which includes Caribbean countries, but only for selected years. As a result, there is a dearth of research on the effects of financial liberalisation in the region.

¹ This is not because the topic of financial liberalisation has less importance in the region but often because of a lack of consistent data.

² In principle financial liberalisation can be parcelled into two measures: international or external financial liberalisation, which is the opening of the domestic financial system to the free flow of international finance and domestic financial liberalisation, which is the removal of restrictions on the functioning of domestic banks and other financial institutions.

The few studies that have been done tend to either concentrate on descriptive analyses of the liberalisation process (as with Peart, 1995; El-Hadj, 1997) or use rather *ad hoc* proxies to reflect it (for example, Williams, 1996; Howard, 2001). Therefore, this paper provides a much more extensive and up-to-date set of measures of financial liberalisation for the Caribbean.

2. Understanding the Concept of Financial Liberalisation

The concept of financial liberalisation can be traced as far back as Bagehot (1873), who argues that the financial system plays a critical role in the adoption of better technologies that effectively mobilise resources, thus encouraging economic growth. However, the concept really gained prominence following the seminal works of McKinnon (1973) and Shaw (1973), in which they argue that “financial repression” is a major impediment to or a drag on economic growth in developing countries. They define financial repression as the set of government legal restrictions imposed on the activities of financial intermediaries, preventing them from functioning at their full capacity level. These restrictions are essentially taxes on the financial system and usually consist of one, or a combination, of the following: the banking system may be forced to hold a proportion of its assets in the form of government debt through the imposition of high reserve and statutory ratios; there may be quantitative controls and selective credit allocation in order to force lending to sectors that government deems a priority; there may be state ownership of part of the banking system and finally, there may be interest rate ceilings to prevent competition from the private sector with public sector fund-raising and to encourage low-cost investment.

The development literature argues that the main rationale for financially repressive policies is the government’s inability to raise taxes through conventional means, either because of political constraints or administrative inefficiencies (Agénor, 2000). In most developing countries the tax base is narrow and inadequate which, combined with government’s limited ability to collect taxes, leads to high tax rates and a heavy reliance on direct taxation and monetary financing. This is further aggravated where capital markets are insufficiently developed to provide government with an investors’ base for its debt instruments. Thus, by directing banks to lend to areas they might otherwise not even consider, and instructing them to hold high reserves and liquidity ratios, government manipulates the financial system for its development goals and at the same time creates a captive market for its debt instruments.

In a sample of 24 developing countries, Giovannini and De Melo (1993) estimate that over the period 1972-87 government revenues obtained from financial repression (measured as the difference between foreign and domestic

interest rates multiplied by the stock of domestic government liabilities) as a share of gross domestic product (GDP) ranged from 0 percent in Indonesia to 6 percent in Mexico and Zimbabwe. They stress that governments in developing countries have been able to extract such revenues via artificially low interest rates. Overall, their findings suggest that the revenue from financial repression can be quite substantial and thus financial liberalisation would generate a sizeable budgetary problem unless accompanied by appropriate fiscal measures to substitute for the revenue loss. Similar results are reported by Fry *et al.* (1996) and Easterly and Schmidt-Hebbel (1994) for other developing countries.

The liberalisation thesis contends that these restrictions induce significant economic distortions and as such financial systems remain under-developed, while lending patterns are inefficient and often fail to achieve their distributional goals. Furthermore, in the presence of high inflation, real interest rates often become negative, resulting in low saving and capital flight. This in turn leads to reduced investment and growth. Both McKinnon and Shaw (M-S) maintain that financial liberalisation, involving the establishment of higher interest rates that equate the demand for and supply of saving, in addition to the removal of credit controls, will lead to increased saving, foster a more efficient allocation of investment and contribute positively to economic growth.

Three decades have passed since the formulation of the M-S hypothesis, and the concept of financial liberalisation has evolved to encompass more than the removal of credit controls and the “freeing-up” of interest rates. It is now seen as a part of a broader policy framework on financial sector reform. Indeed, under the auspices of the International Monetary Fund (IMF) and other international institutions, financial liberalisation has been a key component of economic policy reforms implemented in developing countries. This is further encouraged by the view that there are additional benefits to financial liberalisation beyond the original M-S framework. For example, many authors (including Goldberg and Saunders, 1981; Walter and Gray, 1983; Levine, 1996; Bekaert and Harvey, 2000; Claessens *et al.*, 2001; Bonaccorsi di Patti and Hardy, 2005) argue that increasing foreign competition, by allowing foreign institutions and financial services to enter the domestic market, raises efficiency levels in the local markets, reduces the cost of capital to local firms and leads to a more developed domestic financial sector. In fact, the mere presence of foreign banks should in itself improve the range and quality of financial services available, enable the transfer and practice of modern banking technologies, and enhance local access to international capital. Others claim that the internationalisation of markets helps to discipline policy makers, who might be tempted to exploit an otherwise captive domestic capital market (Stulz, 1999; Mishkin, 2001).

In their attempt to summarise the literature on financial liberalisation, Williamson and Mahar (1998) identify six dimensions of financial liberalisation:

the elimination of credit controls; the deregulation of interest rates; making banks autonomous (that is, freeing them from *ad hoc* interference in day-to-day management); private ownership of banks; free entry into the banking sector or, more generally, the financial services industry and the liberalisation of international capital flows. The last two dimensions are often combined and referred to as international financial liberalisation (*IFL*), while the others are collected under the heading of domestic financial liberalisation (*DFL*).

Financial market imperfections, including asymmetric information, imperfect competition and moral hazard, may result in market failures that can only be rectified by government intervention in financial markets (see, for example, Stiglitz and Weiss, 1992; Stiglitz, 1994; Caprio *et al.*, 1994; Caprio *et al.*, 1994; Arestis *et al.*, 2002). One such intervention is in the form of prudential regulation and supervision. The argument here is that since government is the *outcome-based* insurer of the financial system, either explicitly (deposit insurance) or implicitly (some banks are 'too big to fail'), any financial crisis would have significant adverse fiscal and social repercussions; even more so where the capacity to honour contracts and to assemble information relevant to financial transactions is least advanced. Thus, some form of prudential regulation is necessary to induce banks to invest wisely. One avenue is capital requirements which deter excessively risky activities as financial institutions are forced to have more of their own capital at risk so that they internalise the inefficiency of gambling. The measurement of financial liberalisation needs therefore to distinguish between regulations retained for appropriate prudential reasons and other regulations.

3. Possible Approaches to Measuring Financial Liberalisation

Measuring financial liberalisation is not an easy task, primarily given its multifaceted nature. Data are also not readily available on every dimension and even where they are available they may be extremely fragmented. In addition, any effort to produce quantitative measures of financial liberalisation usually involves some degree of subjectivity. Thus, there are very few studies providing a comprehensive indicator of financial liberalisation. In general they tend to concentrate separately on measures to capture either the liberalisation of the domestic financial sector or the capital account or the stock market. Cases where an overall measure of financial liberalisation is produced, weighting problems arise.

Table 2A.1 (in Appendix) depicts the various types of restrictions that may be imposed on the financial system. Panel A shows the various restrictions on the free flow of international finance and is subdivided into controls on payments and transfers and controls on capital transactions. The categorisation is based

on the IMF's annual report, *Exchange Arrangements and Exchange Restrictions* (AREAER), which contains detailed information on each member country's exchange arrangements, administration of controls, prescription of currency, regulations on import and import payments, payments for invisibles, exports and export proceeds, proceeds from invisibles, capital account transactions, and gold. The detailed nature and consistent framework of the AREAER has resulted in it becoming the primary source of information on capital regulations in empirical analysis.

Panel B shows the potential restrictions on the operations of the domestic financial sector. The dimensions listed there are generally agreed in the literature; however, gathering information on regulations in any one dimension is rather difficult as there is no single institution compiling and classifying data in a systematic manner over time and across countries. Thus, most researchers construct their own liberalisation chronology using surveys like that of Williamson and Mahar (1998), Johnston and Sundararajan, (1999) and Caprio *et al.* (2001) and also individual country bulletins on laws enacted.

Measures of financial liberalisation can be categorised as being either rules-based, where they are constructed from the legal statutes and laws of the respective country (from sources like the AREAER), or outcome-based, where liberalisation is measured by a variable that is supposed to represent the outcome of the liberalisation process (for example, interest rates or the volume of credit by deposit money banks to the private sector to capture DFL, or actual capital flows as an indicator of capital account openness). The rules-based measures are often differentiated into 0/1 indicators or some continuous version thereof. Table 1A.1 in the Appendix gives a summary of the various measures.

Empirical work on the effects of financial liberalisation seems to have been directed at constructing rules-based indicators. In fact, no growth, saving or investment study that uses the degree of correlation between national investment and saving rates or the interest rate differential as indicators of financial liberalisation could be found, while there are a few (for example, Kraay, 1998) utilising actual capital flows to estimate the effects of capital account restrictiveness on growth. It is difficult to determine from the latter approach how much, if any, of the changes in an outcome indicator can be attributed to a change in a country's liberalisation stance.

With respect to the rules-based measures, there has been an increasing effort to incorporate greater detailed information to produce indicators that more closely represent the liberalisation process, both in terms of dimensionality and the level of intensity. In terms of DFL, Kaminsky and Schmukler (2003), Wyplosz (2002) and Abiad and Mody (2005) are the most ambitious. In each case, the author(s) uses/use available information on the restrictions operating in the respective domestic financial system to construct

indices that allow for varying levels of intensity. Abiad and Mody (2005) are particularly comprehensive in the coverage of the dimensions of DFL. It is proposed, therefore, to use a similar approach to Abiad and Mody to produce indicators of DFL for those Caribbean countries for which data are available.

On the issue of international financial liberalisation (IFL), the rules-based indicators of Quinn (1997) are the most commonly utilised, as they have the widest coverage, in terms of dimensionality and levels of intensity. Although Quinn's indicators have been constructed for a number of Caribbean countries, this has only been done for the years 1973, 1982, 1988 and 1997. The current study follows a similar procedure to Quinn and constructs indicators of IFL for as many Caribbean countries as the data allow. However, it not only uses the detailed reports of the IMF's *AREAER* as in Quinn but, for greater clarity and also to ensure closer alignment with practice, it supplements these reports, where possible, with additional information from the respective central banks.

4. Financial Liberalisation in the Caribbean

Following the establishment of the various central banks in the region in the early 1960s and early 1970s a wide range of policy instruments were employed to maintain monetary stability. These included primary and secondary reserve ratios, interest rate controls and moral suasion. Also in keeping with objectives of currency stability, virtually all of the Caribbean central banks at one point or another have utilised exchange controls as a general policy tool. However, coming into the 1980s, these economies, faced with growing balance of payments problems and rising fiscal deficits, were forced to seek ways to improve their domestic financial systems to achieve more efficient mobilisation and allocation of resources.

The process of financial liberalisation in the Caribbean is most evident during the early 1990s, mainly as a result of the countries engaging in IMF stabilisation and structural adjustment programmes, which were designed to restore economic growth. The adoption of such policies was in an effort to liberalise the domestic financial systems and, in some cases, included the lifting of restrictions on capital flows and the floating of exchange rates.

Credit Controls

All the countries reviewed abolished credit controls during the early 1990s, but have placed greater reliance on reserve requirements, which continue to be an active policy tool today. In this regard, while Guyana, Jamaica and Trinidad and Tobago have abandoned secondary reserve requirements and only maintain the cash reserve requirement, Barbados, The Bahamas and the Organisation of Eastern Caribbean States (OECS) have retained both instruments.

Interest Rates

One of the first monetary measures adopted by central banks in the region was the control of interest rates on deposits which was subsequently extended to loans. However, the deregulation of interest rates has been a common feature of the liberalisation process, as the countries adopted more indirect instruments of monetary policy. Only Barbados and the OECS currently have controls on interest rates in the form of a floor on the deposit rates. These countries view this policy as one that complements their fixed exchange rate regime.

Privatisation

There has been a general trend towards the privatisation of commercial banks in the region. Currently, there are very few state-owned banks and it is expected that these will soon be privatised. In Barbados, the Barbados National Bank was partially privatised after 30 years of state control.

Exchange Controls

The area of exchange controls was perhaps the most emphasised dimension of the financial liberalisation programmes undertaken by Caribbean countries in the 1990s. This is because such controls were viewed as a hindrance to the inflow of much-needed capital for economic growth. Also, financial liberalisation is seen as an essential part of the proposed CSME which, through Chapter 3 - Right of Establishment, Provision of Services and Movement of Capital - makes provisions for the free movement of goods, services, capital, selected categories of skills and the right of CARICOM nationals to set up business in any CARICOM country. Thus, the signing of Chapter 3 has encouraged CARICOM countries to speed up the liberalisation process. Guyana, Jamaica and Trinidad and Tobago have removed all restrictions on both the current and capital accounts, albeit at different paces. While Jamaica fully liberalised both accounts simultaneously, Guyana phased the process over a five-year period, starting with current account transactions and then moving to the capital account. Trinidad and Tobago sequenced the liberalisation efforts over a three-year period. Fixed-exchange rate countries of Barbados, The Bahamas and the OECS have liberalised current account transactions, while choosing to gradually remove restrictions on capital accounts.

Barriers to Entry

Not much has changed in this dimension since the establishment of the various central banks in the early 1960s and early 1970s. The legislation governing the operations of regional central banks (Central Bank Act) details the necessary criteria for entry to the respective banking system and this is

complemented by a Financial Institutions Act. It is not clear whether or not these criteria are restrictive. Nevertheless, there are very few documented cases of an application for a banking licence being refused, although there are several cases of licenses being revoked.

Bank Autonomy (Government Regulation of Operations)

From the inception of the various central banks the focus has been on prudential regulation and supervision as opposed to direct involvement in the day-to-day operations of banks. So, except for the Government of Jamaica's direct intervention in the operations of some banks following the financial crisis of the 1990s as part of the restructuring programme, this has not been an area of concern in the region.

In summary, the Caribbean countries have made significant progress in the implementation of financial liberalisation programmes over the last 15 years. All countries have eliminated controls on credit allocation, deregulated interest rates, embarked on a path of privatisation and reduced or abolished exchange controls. However, they have all kept reserve requirements as part of their monetary policy programmes. Another interesting feature of the process is that those countries with fixed exchange rate regimes have, up to December 2005, all maintained significant restrictions on the capital account and have also continued to administer a minimum deposit rate, while those with floating rate regimes have fully liberalised those areas.

5. Measuring International Financial Liberalisation

As discussed earlier, given the comprehensive nature of the Quinn (1997) measure and the fact that it appears to capture the relative importance of each financial restriction on capital and current transactions by both residents and non-residents, and conveys changes in the financial regulations of each country, it is the preferred rules-based measure on the degree of IFL employed in this paper. However, a comparison is made with the IMF's summary dummies and other outcome-based measures.

The indices for CARICOM countries are constructed based on the decision rules set out in Table 1.1. In this regard Quinn's coding rules are modified to better reflect practices within the CARICOM region; for example, Quinn assigns a value of 0 to "surrender of proceeds", here a value of 0.5 is used since in some cases permission is given to retain proceeds for specific purposes. Also, Quinn's "some payments require approval" is replaced with "authorised banks are allowed to provide foreign exchange for transactions within certain limits". Table 1.2 demonstrates the process of constructing the indices using 1991 as an example. Capital Receipts and Payments are measured

by “Capital” which is scored on a 0 – 4 scale. Inward and outward current account transactions are based on a scale of 0 – 8 (note that current account transactions include both goods and services, each of which is on a scale of 0 – 4). Finally, there is the category of “international agreement” which is scored on a 0 – 2 scale. The resulting 0 – 14 scale gives a measure of IFL³.

Table 2.1: Decision Rules Coding the IMF Text

Values	Descriptions
<i>Goods and Invisibles Payments and Receipts</i>	
X = 0	All receipts and payments are blocked.
X = 0.5	All receipts and payments are necessarily surrendered.
X = 1.0	All receipts and payments require approval from the Central Bank. Receipts and payments heavily taxed.
X = 1.5	Authorised banks are allowed to provide foreign exchange for transactions within a certain limit. Transfers do not require approval but are taxed.
X = 2.0	Transfers are free.
<i>Capital Payments and Receipts</i>	
X = 0	Approvals are rare.
X = 0.5	Surrender of receipts is required.
X = 1.0	Approval is required from the Central Bank or Minister of Finance. Approval is not required but transfers are heavily taxed
X = 1.5	Approval is required but liberally or routinely given. Approval is not required but transfers are taxed.
X = 2.0	Approval is not required and transfers are not taxed.
<i>International Agreements</i>	
X = 0.5	Member of CARICOM Country is a member of a currency zone.
X = 1.0	IMF Article VIII Status

³ Without any clear rationale for applying different weights, the different categories are summed across. However, in using the indices in other empirical work there is the possibility of employing them separately or experimenting with different weighting.

**Table 2.2: An Example for the Construction of the Indices
using 1991 IMF Data**

	Capital Payment	Capital Receipts	Payment for imports	Payment for invisibles	Receipts for exports	Receipts for invisibles	Agreement	Score	
								C	IFL
Antigua and Barbuda	2.0	2.0	1.5	1.5	2.0	2.0	2.0	4.0	13.0
Barbados	1.0	1.0	1.5	1.5	0.5	0.5	0.5	2.0	6.5
Belize	1.5	1.5	1.5	2.0	0.5	0.5	1.5	3.0	9.0
Dominica	1.0	1.0	1.5	1.5	0.5	0.5	2.0	2.0	8.0
Grenada	1.0	1.0	1.5	1.5	0.5	0.5	1.0	2.0	7.0
Guyana	1.0	1.0	1.5	2.0	1.0	0.5	1.5	2.0	8.5
Jamaica	2.0	2.0	1.5	2.0	2.0	2.0	1.5	4.0	13.0
St. Kitts and Nevis	1.0	1.5	1.5	1.5	0.5	0.5	2.0	2.5	8.5
St. Lucia	1.0	1.0	1.5	1.5	0.5	0.5	2.0	2.0	8.0
St. Vincent and the Grenadines	1.0	1.5	1.5	2.0	0.5	0.5	2.0	2.5	8.5
Suriname	1.0	1.0	1.5	1.5	0.5	0.5	1.0	2.0	7.0
Trinidad and Tobago	1.0	1.0	1.0	1.5	1.0	0.5	0.5	2.0	6.5

Notes: C - Capital Liberalisation; IFL - International Financial Liberalisation.

In constructing the indices, one major concern is that the conversion of the qualitative text to a quantitative measure is, in some cases, somewhat subjective. It usually comes from the wording of the text; for example, the export proceeds text for St. Lucia states that, "Proceeds must, in principle, be surrendered". Since the coding rule used here requires 0.5 if proceeds are surrendered, then St. Lucia gets 0.5 for 'Receipts for exports', but how should this phrase really be interpreted? The phrase "in principle" would seem to suggest that it is not a 'hard and fast' rule and perhaps should be given a higher score than 0.5. Another example is that of "approval required". How does one really determine the severity of controls? Is "approval required" a matter of formality or do these central banks really have control over these transactions? The text for Belize alludes to the fact that approval was given freely for capital transactions; clearly this does not deserve a 1.0, but should Capital Receipts and Payments be given a 1.5 or a 2.0? This paper opted for 1.5.

Where possible an attempt is made to confirm some of the interpretations by consultation with various market participants.

The IFL indices for twelve CARICOM countries for the period 1979 – 2002 are set out in Table 1.3. The table highlights capital account liberalisation, C, and also gives a total for IFL for each country. In this regard, the construction of these indices would be fruitless if they did not reflect the actual or observed financial liberalisation processes in the region. Hence, a check is made to see if movements in the indices were consistent with observed changes in financial liberalisation in some of the CARICOM countries.

In their article, “Measuring Financial Development in Barbados: 1978 – 1998”, Bynoe-Mayers and Craigwell (2002) create a financial index for Barbados, which shows that Barbados was minimally liberalised until 1993. They note that the Central Bank of Barbados really began to liberalise exchange controls in 1994. This is consistent with the indices presented in Table 1. 4, as the IFL index for Barbados moved from 6.5 in 1993 to 7.5 in 1994. Doyle (1997) claims that there are many implicit and explicit hindrances to free capital movement. For example, Central Bank approval is required for residents borrowing large sums abroad or by non-residents borrowing in Barbados, and for any borrowing by authorised dealers to finance their domestic operations. This is captured in the indices, with capital account liberalisation being around 7.5 for the latter years. The IFL index of 9.5 for Barbados in 2002 reflects the fact that the Central Bank still maintains a hold over capital account transactions and also that the surrender of proceeds for exports and invisibles is mandatory. Since Barbados operates under a fixed exchange rate regime, which it has steadfastly defended over the last three decades, some degree of capital controls is required in order to protect the international reserves and give some measure of policy autonomy. For this reason it is observed that the Capital index is currently one of the lowest in the region, even lower than that of the OECS area, which also operates a fixed exchange rate system. The pooling of international reserves by the eight member countries of the OECS, during the time period under examination, appears to have permitted more relaxed controls.

Nevertheless, even within the OECS, there are noticeable differences in the indices. More specifically, the index for Antigua and Barbuda shows that this economy is far more liberalised than say, Grenada or Dominica. At first glance it would appear inconsistent for Antigua and Barbuda, a member of the OECS, to be classed as almost fully financially liberalised from the early 1980s and not the other member countries. One view expressed by market participants is that precarious fiscal policies pursued by the Government caused the opening up to foreign capital to close the savings - investment gap.

El Hadj (1997) argues that Trinidad and Tobago had active government intervention in the financial sector in the 1980s; this is evident in an index of

5.5 for Trinidad and Tobago throughout the 1980s. The movement of the index from 5.5 to 6.5 in the late 1980s and then to 7.5 in 1992 reflects the government's decision to move to a dual exchange rate in the late 1980s and early 1990s and the removal of exchange controls on trade in services and capital flows in 1991. In 1993, Trinidad and Tobago introduced a floating exchange rate and removed all restrictions on the capital account; this is captured in the IFL index, which moved from 7.5 to 13.

In the 1980s, Jamaica had one of the most complicated financial systems in the Caribbean region, consisting of a number of restrictions and regulations. The IFL index for Jamaica was 5.5 in the early 1980s highlighting the fact that restrictions on current account payments and capital flow controls were used extensively. Jamaica began financial sector reforms in 1985, but undertook an extensive process of financial liberalisation in its effort to achieve macroeconomic stability in 1991. Currently the index for Jamaica is 13 emphasising the fact that Jamaica is one of the most financially liberalised economies in CARICOM.

Table 2.3:

Indices of Capital Account Liberalisation and International Financial Liberalisation in the Caribbean

	Antigua and Barbuda		Barbados		Belize		Dominica		Grenada		Guyana	
	C	IFL	C	IFL	C	IFL	C	IFL	C	IFL	C	IFL
1979	4	11	1.5	6	3	7	2	6.5	2	6.5	1	5.5
1980	4	11	1.5	6	3	7	2	7	2	6.5	1	5.5
1981	4	11	1.5	6	3	7	2	7.5	2	6.5	1	5.5
1982	4	11.5	1.5	6	3	7.5	2	7.5	2	6.5	1	5.5
1983	4	11.5	1.5	6	3	8.5	2	7.5	2	6.5	1	5.5
1984	4	12.5	1.5	6	3	8.5	2	7.5	2	6.5	1.5	6
1985	4	12.5	1.5	6	3	8.5	2	7.5	2	6.5	1.5	6
1986	4	12.5	1.5	6	3	8.5	2	7.5	2	6.5	1.5	6
1987	4	12.5	1.5	6	3	8.5	2	7.5	2	6.5	1.5	6
1988	4	13	2	6.5	3	9	2	8	2	7	1.5	6
1989	4	13	2	6.5	3	9	2	8	2	7	1.5	6.5
1990	4	13	2	6.5	3	9	2	8	2	7	1.5	7.5
1991	4	13	2	6.5	3	9	2	8	2	7	2	8.5
1992	4	13	2	6.5	3	9	2	8	2	7	3	11
1993	4	13	2	6.5	3	9	2	8	2	7	3	11
1994	4	13	2	7.5	3	9	2	8	2	8	3	12
1995	4	13	2	7.5	3	9	2	8	2	8	4	12
1996	4	13	2	7.5	3	9	2	8	2	8	4	12
1997	4	13	2	7.5	3	9	2.5	9	2.5	8.5	4	13
1998	4	13	2	7.5	3	9	2.5	9	2.5	8.5	4	13
1999	4	13	2	7.5	3	9	2.5	9	2.5	8.5	4	13
2000	4	13	2	7.5	3	9	2.5	9	2.5	8.5	4	13
2001	4	13	2.5	9	3	9	2.5	9	2.5	8.5	4	13
2002	4	13	2.5	9.5	3	9.5	2.5	9	2.5	8.5	4	13
2003	4	13	3	11	3	9.5	2.5	9	2.5	8.5	4	13

Notes: C-Capital Liberalisation; IFL – International Financial Liberalisation

Table 2.3 Cont'd:

Indices of Capital Account Liberalisation and International Financial
Liberalisation in the Caribbean

	Jamaica		St. Kitts and Nevis		St. Lucia		St. Vincent		Suriname		Trinidad and Tobago	
	C	IFL	C	IFL	C	IFL	C	IFL	C	IFL	C	IFL
1979	0.5	4.5	n.a.	n.a.	2	7	2	6.5	2	6.5	1.5	5.5
1980	0.5	4.5	n.a.	n.a.	2	7	2	7	2	6.5	1.5	5.5
1981	0.5	4.5	n.a.	n.a.	2	7.5	2.5	8	2	6.5	1.5	5.5
1982	0.5	4.5	n.a.	n.a.	2	7.5	2.5	8	2	6.5	1.5	5.5
1983	0.5	5	n.a.	n.a.	2	7.5	2.5	8	2	6.5	1.5	5.5
1984	0.5	5	2.5	7	2	7.5	2.5	8	2	6.5	1.5	5.5
1985	0.5	5	2.5	8	2	7.5	2.5	8	2	6.5	1.5	5.5
1986	1	5.5	2.5	8	2	7.5	2.5	8	2	6.5	1.5	5.5
1987	1	6	2.5	8	2	7.5	2.5	8	2	6.5	1.5	5.5
1988	1.5	6.5	2.5	8.5	2	8	2.5	8.5	2	7	2	6.5
1989	1	6	2.5	8.5	2	8	2.5	8.5	2	7	2	6.5
1990	1	6.5	2.5	8.5	2	8	2.5	9	2	7	2	6.5
1991	4	13	2.5	8.5	2	8	2.5	8.5	2	7	2	6.5
1992	4	13	2.5	8.5	2	8	2.5	9	2	7	2	7.5
1993	4	13	2.5	8.5	2.5	8.5	2.5	9	2	7	4	13
1994	4	13	2.5	8.5	2.5	8.5	2.5	9	2	7.5	4	13
1995	4	13	2.5	8.5	2.5	8.5	2.5	9	2	7.5	4	13
1996	4	13	2.5	8.5	2.5	12	2.5	9	2	7.5	4	13
1997	4	13	2.5	8.5	2.5	12	2.5	9	2	7.5	4	13
1998	4	13	3	9	2.5	12	2.5	9	2	7.5	4	13
1999	4	13	3	9	2.5	12	2.5	9	2	8	4	13
2000	4	13	3	9	2.5	12	2.5	9	2	8	4	13
2001	4	13	3	9	2.5	12	2.5	9	2	8	4	13
2002	4	13	3	9	2.5	12	2.5	9	2	8	4	13
2003	4	13	3	9	2.5	12	2.5	9	2	8	4	13

Notes: C - Capital Liberalisation; IFL - International Financial Liberalisation;
n.a. - not available

According to El Hadj (1997), Guyana had a highly restrictive trade regime consisting of trade prohibitions, quantitative restrictions and licensing for both exports and imports. The IFL index for Guyana was 5.5 in the early 1980s. The movement of the indices from 6.5 in 1989 to 7.5 in 1990 and 8.5 in 1991 is indicative of the fact that the Guyanese government had begun a process

of restructuring and privatising the financial sector. El Hadj also points out that the Government of Guyana had undertaken the supervisory functions necessary for stabilising a liberalised financial system. This is captured in the IFL indices as it reflects Guyana making steady steps to full liberalisation (5.5 to 6 to 6.5 to 7 and so on) and not a major jump as Jamaica did in 1991 (6.5 to 13) and Trinidad and Tobago in 1993 (7.5 to 13).

Overall, the indices imply that all the CARICOM countries have made significant progress in the opening up to the flow of international capital, although a few still maintain restrictions on their capital accounts. Alesina and Perotti (1994) postulate that “strong” governments are less likely to ease capital account restrictions. Correlation of the indices with financial conditions in some of the CARICOM countries allows one to conclude that overall the indices are reliable and accurately reflect the process and degree of IFL in the region.

Comparison with Alternative Indicators

The first comparison is with the “on/off” summary dummies of the *AREAER*. The *AREAER* report was revamped in 1996 and thus introduced a structural break in the summary indicators. To deal with this, the current study applies a similar methodology to that of Miniane (2004) where the summary indicators of the post-1996 editions are extended to the pre-1996 period using the detailed text of the pre-1996 editions. However, whereas Miniane concentrates solely on capital account liberalisation and thus only extends the summary indicators relating to capital account restrictions, this article is also interested in IFL and hence focused on all the summary indicators.

To construct the indices across both periods, it is necessary to start with the *AREAER* editions of 1996 to 2004 (note that each report presents the information for the previous year) and sum across the five categories; exchange rate structure, arrangements for payments and receipts (averaging across its two sub-categories), controls on payments for invisible transactions, proceeds from exports and/or invisible transactions (averaging across its two sub-categories) and capital account transactions (averaging across its 13 sub-categories).

Since there are five main categories, each taking on a value of 1 if no restrictions are in place or a 0 otherwise, the maximum value for the IFL index for any country is 5. In addition, the resulting value for the category of capital account transactions gives the index of capital account liberalisation (C), which has a maximum value of 1. The next task is to extend the indices back to the pre-1996 period. For this, one can start with the detailed text of the 1995 edition and code (assigning a value of 1 if no restrictions are in place or a 0 otherwise) as many of the five main categories and their sub-categories as possible for the year 1994. Next, use the “Changes” sections of both the 1995 and 1996 editions to code any remaining sub-categories. If after this a value cannot be assigned

to a particular sub-category, give it the value it had in 1995. The process is repeated for each year back to 1979⁴.

Although the indices constructed from the IMF dummies and the new set of indices based on the disaggregated data developed in this paper – hereafter called *IFLindex* – are generally in agreement concerning the evolution of capital and financial liberalisation, in some cases they differ slightly. These differences can usually be attributed to inconsistencies between the narrative and summary dummies of the respective *AREAER*. For example, the new index of capital account liberalisation scores Belize as having a closed capital account throughout the sample and seems at odds with the pre-1999 index C, which suggests it had an open capital account up to 1985. However, closer inspection of the pre-1996 summary indicators implies that these are themselves not consistent with the narrative of the text on which they are based. In each edition of the report up to that of 1995, the text under the heading of “Capital” is the same for Belize – *All capital transfers require approval of the Central Bank but control is liberally administered*. Yet, the summary table scores the capital account as being open for the period up to and including 1985 and closed thereafter. The new construct avoids this inconsistency by being fully rules-based, in that, unless the text indicates explicitly that a particular restriction is not operative or enforced, it is scored as being in place. The failing of the *AREAER* to provide consistent information in this case becomes even more apparent with the new reporting format of the 1996 edition, where each of the 13 sub-categories of Capital Transactions is listed as having restrictions in place, even though the exchange control stance of Belize had not changed. Take another example, that of Guyana, where the narratives of both the 1992 and 1993 editions of the *AREAER* report the country as having a market-determined exchange rate system and, in addition, that there were no taxes or subsidies on the purchase or sale of foreign currency during those years. Nevertheless, the summary table codes 1991 as having no exchange restrictions and 1992 as having exchange rate restrictions (more than one rate for imports and exports, import rates different from export rates and a separate exchange rate for capital transactions), even though the wording in the detailed texts is identical.

The indices are generally consistent with the modified Quinn indices in terms of the degree of openness across countries, where Antigua and Barbuda, Trinidad and Tobago, Jamaica and Guyana are considered as being the most open and Barbados and the other OECS countries as being more restrictive.

Several outcome-based measures of international financial openness are also constructed. As discussed in the review section, the main assumption here is that more capital inflows, as a share of GDP, indicate greater IFL. However,

⁴ In an effort to conserve on space, the resulting indices for C and IFL and their sub-indices are not presented here but are available from the authors.

this may not necessarily be the case as many factors can influence capital flows and some may have absolutely nothing to do with openness. Yet, these are often used in empirical analysis because of the availability of data and because they are less prone to subjectivity.

Four outcome-based variables are examined; two based on flows and two based on stocks. The flow variables are in line with Kraay (1998) and are the sum of FDI and portfolio inflows as a share of GDP and combined FDI and portfolio net flows also expressed as a ratio of GDP. The stock variables are accumulated FDI and portfolio inflows to GDP and accumulated net FDI flows and net portfolio flows as a share of GDP.

The stock variables are defined as cumulative flows, starting mostly in the mid-1970s, depending on data availability. One drawback in calculating the stock measures is that it is not possible to include the capital stocks that were in existence, if any were, at the beginning of the period. Also, there is insufficient information to incorporate valuation changes as Lane and Milesi-Ferretti (2001) did. Unfortunately, the only Caribbean countries included in the data set of Lane and Milesi-Ferretti are Jamaica and Trinidad and Tobago. Nevertheless, in comparing the net-stocks index with that of Lane and Milesi-Ferretti (which is the closest to the authors' definition) for these two countries correlation coefficients of 0.81 and 0.76 for Trinidad and Tobago and Jamaica, respectively, are obtained. More importantly, the general trends are similar.

Another point to note about the construction of the outcome-based measures is that outflows of both direct and portfolio investment from Caribbean countries tend to be rather small amounts. Thus, there is very little difference between the two flow variables, whether inflows are considered or the net position, and similarly, little difference exists between the stock variables.

The flow variables, though quite volatile, appear in most cases to be higher in the latter half of the sample period, which implies an increasing degree of financial openness for these countries. However, their volatile nature makes it difficult to rank the countries in terms of openness. In this regard, the stock variables may be more informative. The move towards greater openness in the early 1990s is clearly evident in the individual country series. In addition, the ratios being larger for some countries, for example, the OECS, suggests that they are more open to the flow of international capital than others, such as Barbados, Guyana and Jamaica. However, it is in the ranking that these indicators differ from the *IFLindex* developed here. This reinforces the point that there are other factors beyond openness that influence these ratios. For example, placing Jamaica lower than any of the OECS countries, with the exception of Antigua and Barbuda, is not consistent with the *AREAER*, which shows Jamaica having significantly fewer restrictions on capital transactions. Indeed, the counter argument is that outcome-based measures are not expected

to be identical to the rules-based measures and, furthermore, that there is no need to conclude that one measure is better than another.

Figure 2.1 plots the *IFLindex*, the alternative measure, which is developed from the disaggregated *AREAER* dummies (*AREAERindex*)⁵, and the preferred outcome-based measure, the stock of capital inflows (*stocks*). In analysing Figure 2.1 it is perhaps best to relate the two alternative indices (*AREAERindex* and *stocks*) to *IFLindex*, which have already been discussed in detail. In this regard, the first main point that can be derived from these plots is that the outcome-based measure paints a similar picture to *IFLindex* concerning the evolution of IFL for every country in the sample, with the exception of Suriname. In fact, for some countries the two measures are highly correlated. For example, the *stocks* index for Barbados began rising in the latter half of the 1980s and picked up momentum in the late 1990s, which coincides well with *IFLindex*, the correlation coefficient being 0.96. Another example is that of Guyana where there is a relatively high correlation between the two indices (0.87).

The other main observation is that there is an almost even split between the number of countries where *AREAERindex* is in agreement with the other two indices and where it is not. For those countries where it is not in agreement, it more than often indicates that the level of IFL did not change over the period, as in the cases of Barbados and Dominica, or involved only one adjustment, as with Belize and St. Kitts and Nevis. This may be reflecting the fact that for the *AREAERindex* to change, each sub-category of any main category must be affected. For example, the detailed text of the 1989 *AREAER* for Barbados states under the heading “Changes During 1988” that *Authorised dealers were empowered to approve, without reference to the Central Bank, applications for foreign exchange remittances of cash gifts, legal fees.* Thus, the *IFLindex* would have increased by 0.5 points during 1988, reflecting the easing of restrictions on the category “Payments for Invisibles”, in accordance with the coding rules employed in this paper. However, since there are still limits on certain transactions within that category, the *AREAERindex* remains unchanged.

Perhaps a more extreme case of the above is that of Antigua and Barbuda, where the *AREAERindex* actually declined over the period, suggesting a tightening of restrictions. This is the only instance where the *AREAERindex* depicted a completely opposite trend to the other two indices. Antigua and Barbuda began the period with a high value for the *AREAERindex* (3.9 out of a possible 5), as it had the highest capital account liberalisation score in the sample (a 0.9 out of a possible 1), reflecting the fact that only one restriction was in place on the capital account (out of a possible 13) for which Ministry of Finance approval is required for the extension of financial and commercial

⁵ The two rules-based measures have been rescaled out of 100 for comparative purposes.

credits to non-residents. In 1986, the detailed text indicated that Arrears are maintained with respect to external accounts and thus the NewDummies index fell from 3.9 to 3.4, then in 1996 the text stated that Purchases of local real estate by non-residents needed the approval of Cabinet and the applicant must have an alien landholding licence, consequently the index dropped to 3.3. However, if bearing in mind that the *IFLindex* makes allowance when approval, though required, is liberally or routinely given, and that in both the above instances this has been the case, then these would not have resulted in a decline in the *IFLindex*. In addition, *IFLindex* incorporates international agreements and *AREAERindex* does not.

Figure 2.1:

Comparative Measures of International Financial Liberalisation

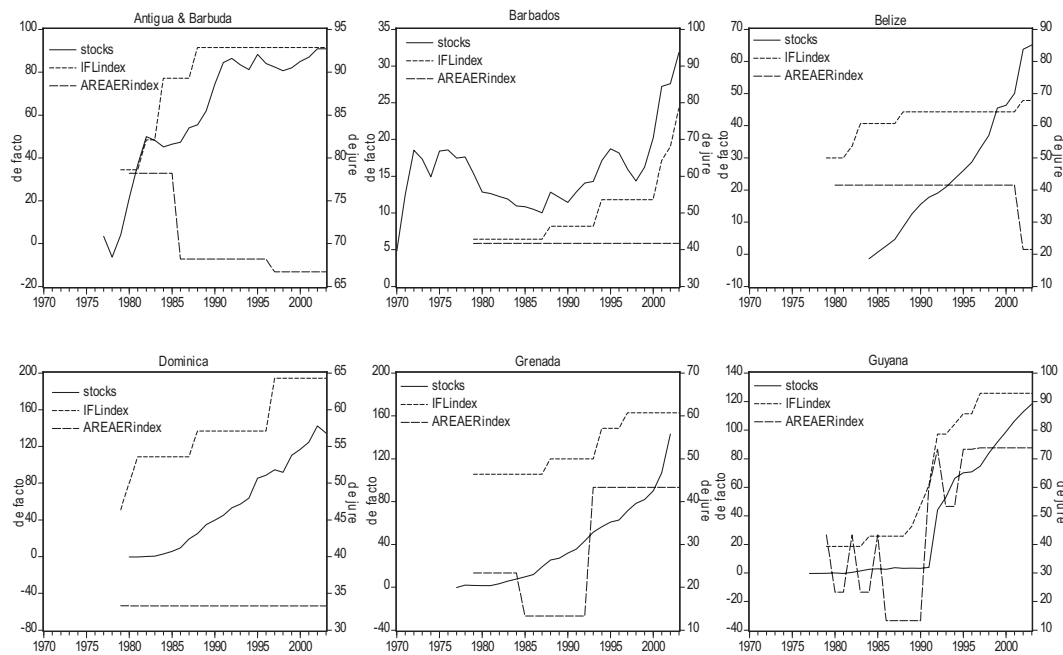
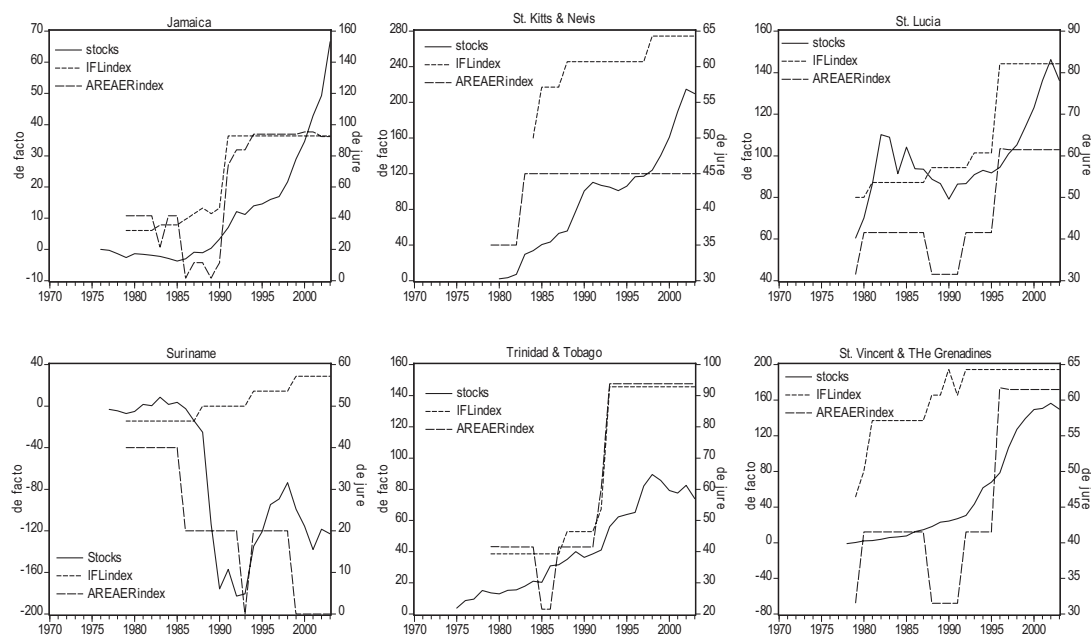


Figure 2.1: Cont'd:

Comparative Measures of International Financial Liberalisation



6. Measuring Domestic Financial Liberalisation in the Caribbean

To construct the rules-based measure of DFL the various possible restrictions that can be imposed on the financial system, which is discussed in the review section and identified in Table 1A.1, Panel B dimensions I-VI, are coded. Specifically, the index is based on the following five dimensions: credit controls; interest rate controls; entry barriers; state ownership and regulations, which combines regulation of operations and prudential regulations. Each dimension is assigned a value of 0, 0.5 or 1 where a 1 indicates full liberalisation; thus the index has a maximum value of 5. The criteria for assigning the values are presented in Table 1. 4 and although there is always a degree of subjectivity involved in rules-based indicators, by applying the coding rules in a consistent manner for each country, this can be reduced.

All efforts were made to collect data on the various policies and regulations implemented in the financial sectors of the individual Caribbean countries. However, this proved extremely difficult since, unlike the case of IFL where the IMF systematically collects and publishes data on rules and regulations affecting the flow of international finance, there is no centralised agency documenting the rules and regulations governing operations of the domestic

financial systems. Hence, the various publications of the individual central banks, their websites and any published information on the financial systems were utilised. Unfortunately, one could only gather sufficient information to compute the indices for Barbados, Jamaica and Trinidad and Tobago.

Figure 2.2 presents the indices of DFL for the above three countries and reveals a similar pattern of evolution for these countries. All three countries had fairly restrictive systems prior to the mid-1980s. They then embarked on a process of gradual liberalisation over the next decade and maintained fairly liberal systems thereafter. Another broad conclusion that can be drawn from the figure is that Trinidad and Tobago had the most liberalised financial sector of the three countries throughout the sample period. Finally, there are a number of stops and reversals of the liberalisation process in the cases of Barbados and Jamaica.

Barbados began the period with an index value of 2.5, reflecting mainly the absence of selective credit controls, while the legal cash reserve and securities requirements were only 2 and 1 percent, respectively. However, the Central Bank of Barbados had only just been established and its inception, unfortunately, coincided with a period of rising inflation, liquidity problems in the financial system and a deteriorating external position (Haynes and Holder, 1989). As such, the Bank sought to stabilise the economy and channel the flow of credit away from the consumption-oriented sectors to the productive sectors. Thus, over the next few years the Bank utilised selective credit controls, continually increased the reserves requirements and manipulated interest rates. These policy actions are responsible for the index falling to 1.25 by 1976 and further declining to 1 by 1982. The main positive contributing factor to the index over this period is the existence of legislation allowing for prudential regulations with respect to the commercial banks; however, these were limited to capital requirements and concentration ratios.

The restrictive policy framework was maintained until 1991, when the Central Bank began the process of financial liberalisation as part of the IMF's structural adjustment programme. The ceiling on the average lending rate was removed in August 1991, and the Rate of Interest Order of 1973 was revoked in 1992 with financial institutions being allowed to set their own mortgage rates. However, the Bank continued to administer a minimum deposit rate, which it used for monetary policy purposes.

Selective credit controls were abandoned in 1993 and reserves requirements were gradually reduced (accounting for the moderate upward trend in the index from the latter half of the 1990s) and are now at 17 percent (5 percent cash reserve and 12 percent securities requirement). In addition, new legislation was enacted in 1992 giving increased regulatory and supervisory powers to the Central Bank.

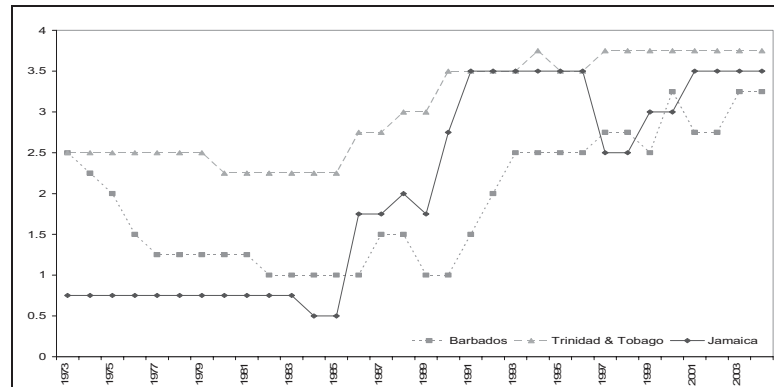
Table 2.4:

Criteria used in Defining Domestic Financial Liberalisation

Values	Descriptions
	<i>Credit Controls: Directed credit</i>
0	Controls on credit are pervasive; sectoral credit ceilings and selective credit restrictions are widely employed.
0.5	Controls on credit are not pervasive; there are some sectoral credit restrictions in place.
1.0	There are no quantitative credit restrictions.
	<i>Credit Controls: Excessively high reserves ratios</i>
0	Reserve ratios are greater than 25 percent.
0.5	Reserve ratios are between 10 and 25 percent.
1.0	Reserve ratios are below 10 percent.
	<i>Interest rate controls</i>
0	There are restrictions on interest rates; Ceilings and floors are in place or rates are only allowed to vary within a band.
0.5	Some interest rates are allowed to be market determined.
1.0	All rates are market determined.
	<i>Entry Barriers</i>
0	Licensing requirements are used to limit entry and there are limits to the participation of foreign banks and restrictions on bank specialisation.
0.5	Licensing requirements are in place but are transparent. There are no limits to the participation of foreign banks or restrictions on bank specialisation.
1.0	In addition to the above, laws have been enacted to increase bank competition.
	<i>Regulations</i>
0	Operational restrictions are present.
0.5	There are no operational restrictions but clearly a need to improve the regulatory and supervision framework (e.g. the adoption of international guidelines).
1.0	There are no operational restrictions and policies have been implemented to strengthen the regulatory and supervision framework.
	<i>State ownership</i>
0	The banking sector is dominated by state-owned banks.
0.5	There is some state ownership of the banking system but it is less than 25 percent.
1.0	The state has no ownership in the banking system.

Figure 2. 2:

Indices of Domestic Financial Liberalisation
(for Selected Caribbean Countries)



The index also depicts episodes of policy reversals as evidenced by it rising and falling over the period. For example, credit ceilings were removed in 1987 but then reinstated in 1989. Again, in 1999 the index dipped, as the combined reserves requirements ratio went above 25 percent, but recovered quickly and peaked to 3.25 in the following year, as the ratio again slid below 25 percent and the Government also began the process of privatising the only state-owned bank. Furthermore, in 2001 and 2002 the introduction of indicative lending rates for commercial banks caused the index to drop to 2.75; however, these were abolished in 2003. Thus, the index appears to fit the stylised facts of the liberalisation process in Barbados quite well.

At the start of the sample period, Trinidad and Tobago also had an index value of 2.5 and maintained this until 1980. As with Barbados, selective credit controls were used extensively by the Central Bank of Trinidad and Tobago to curb consumer instalment credit; however, unlike its counterpart, the CBTT never placed direct controls on interest rates but relied mainly on the rediscount rate to signal warranted interest rate changes. In addition, the cash reserve requirement remained below 10 percent during this period (commercial banks were persuaded to voluntarily hold a secondary reserve in the form of government securities). In 1980, commercial banks were instructed to keep additional reserves equivalent to 15 percent of any increase in deposit liabilities over levels prevailing at the end of 1979, and this explains the slight dip in the index in 1980.

Nothing significant in terms of financial liberalisation occurred during the first half of the 1980s. However, following the collapse of several non-bank

financial institutions, the Central Bank Act and the Financial Institutions (Non-Banking) Act (1979) were amended in 1986 to broaden the supervisory powers of the CBTT and also provided for the establishment of a deposit insurance corporation and a deposit insurance fund, which required the compulsory membership by all licensed financial institutions. Capturing this improvement in the regulatory framework, the index increased to 2.8 in 1986. Over the next couple of years the liberalisation process continued to gain momentum, reflected in the index reaching 3.8 by 1994. During this period selective credit controls were gradually phased out and were eliminated by 1994. In addition, the regulation and supervision of the financial system was enhanced with the passage of the Financial Institutions Act (1993) and a shift towards risk-based supervision by the CBTT. Also, the Government launched its privatisation programme, beginning with the Development Finance Company. Except for the two years (1995 and 1996) when the reserves ratio exceeded 25 percent, there were no significant changes to the liberalisation stance. The ratio is currently 11 percent (end of 2004).

Many commentators, including Peart (1995), King (2000) and the World Bank (2003), argue that Jamaica had one of the most repressive financial systems in the Caribbean region during the 1970s to mid-1980s. It was characterised by restrictions on interest rates, the wide use of quantitative credit controls, excessively high reserves ratios, government involvement in the operations of financial institutions and bureaucratic controls on entry. This description of Jamaica's financial system is borne out in the index, which is the lowest of the three indices for the period up to 1985. The index commenced the period with a value of 0.8, with the only positive contributing factors to the index being the weighted average of the cash and liquid assets ratio of 21 percent, which is below the 25 percent criterion (see Table 1. 4). The Banking Law of 1960 provides a regulatory framework for the prudential oversight of commercial banks. However, the Bank of Jamaica, faced with depleting external reserves, widening fiscal deficits and the adverse economic shocks of the 1973 international oil crisis, continued to use the required reserves ratio (particularly the liquid assets ratio) as part of their monetary policy to restrain credit expansion and redirect it to priority areas. By 1984, the required cash and liquid assets ratios had reached 14 and 40 percent respectively, which is captured by the fall in the index in that year.

In 1986 Jamaica embarked on a process of financial liberalisation as part of a World Bank structural adjustment loan agreement. Peart (1995) notes that the reform of interest rate policies, monetary policy implementation and the development of the money and capital markets were the main areas of focus. To this end, the overall ceiling on private credit extended by commercial banks and other financial institutions was removed, leaving just the ceiling on consumer credit. There was a phased reduction in the liquid assets ratio over the period

1986-1988, from 38 percent to 20 percent, equating it with the cash reserve ratio. In addition, the BOJ introduced certificates of deposits, with a market-determined interest rate, to facilitate monetary policy. Also, as part of the structural adjustment loan agreement, the Government embarked on the privatisation of the financial sector by selling 51 percent of the shares in the National Commercial Bank, the largest commercial bank, in 1986. The index is consistent with these observed liberalisation efforts, rising significantly in 1986, reflecting the easing of credit restrictions and the privatisation, and climbing even further in 1988 as the weighted average reserve required ratio fell under 25 percent.

Credit ceilings were re-imposed in 1989, which Peart (1995) argues was an unavoidable necessity given the exigencies following the destruction caused by Hurricane Gilbert during that year. However, these were eventually eliminated in 1991. The savings deposit rate was deregulated in the previous year. The index rose significantly in 1990 following the removal of interest rates restrictions and again in 1991 after the abolition of quantitative credit restrictions and the privatisation of the Workers Savings and Loan Bank. However, between 1991 and 1996 the index is unchanged. This is because the BOJ continued to use reserve requirements, in particular the liquid assets ratio, to influence credit flows; by 1993 the cash reserve requirement had reached 25 percent and the liquid asset requirement 50 percent. The cancelling effect of these policies is reflected in the index remaining unchanged between 1991 and 1996. King (2000) posits that reserves ratios were moved to levels that were much higher than prudentially necessary and constrained the sector from performing the amount of intermediation that would otherwise have obtained⁶. King concludes that the impact of the abandonment of credit and interest rate controls was contradicted by high reserves⁷.

During this period, the number of financial institutions increased by over 94 percent (King, 2000), aided by the absence of entry barriers. However, the supervision and regulation of these institutions was inadequate and did not provide sufficient sanction and intervention powers to bank supervisors (World Bank, 2003). In addition to the weak regulatory framework, the Planning Institute of Jamaica (1999) notes other deficiencies in the financial system including the mismatch of assets and liabilities, the increasing level

⁶ Similarly, Peart (1995) suggests that the reserve ratios were above levels required for prudential purposes and in effect provided government with a captive market for the financing of its deficit and distorted the allocation of credit in favour of the public sector.

⁷ According to Lander and Zavala (2002), the contractive monetary policy was an attempt to control high inflation but had the effect of increasing real interest rates, which adversely influenced portfolio quality, investment, economic activity and the fiscal accounts. In addition, the rise in interest rates encouraged short-term capital inflows, increasing the liquidity of the system, and thus forcing the Central Bank to adopt a contractionary monetary policy stance to fight this effect and to control inflation. This, however, encouraged the rise of interest rates, thus resulting in a vicious circle.

of non-performing loans and rapidly rising operating costs. All of this occurred within an environment of rising inflation (over 80 percent), lower real output (less than 1 percent) and increasing government domestic debt, which expanded from roughly 21 percent in 1991 to almost 40 percent by 1996. Thus, by 1996 the banking system was in crisis and forced intervention by the Government⁸. Part of the Government's response was a substantial reversal of the earlier privatisation process in an effort to prevent the collapse of many of these institutions. In fact, by the end of 1998, the Government had the majority ownership in all but one commercial bank, all but two insurance companies, along with several non-bank institutions (King, 2000). This is consistent with the decline in the index in 1997 and 1998. The index rises over the remainder of the sample period as Government restructured the financial system⁹, including improving the regulatory and supervisory framework¹⁰.

Comparison with Alternative Indicators

In this section, the rule-based indicator developed in this paper (*DFL*) is compared with three outcome-based indicators. The first indicator, Liquid Liabilities to GDP (*LLY*), measures the size of the financial sector relative to the economy and is often referred to as an indicator of financial depth. The second indicator, Deposit Money Bank Assets to Central Bank Assets (*B-CB*), represents the relative importance of commercial banks versus the central bank in the financial system. It is calculated as the ratio of deposit money bank assets to the sum of deposit money and central bank assets. The final indicator, Private Credit by Deposit Money Banks and other financial institutions to GDP (*PCY*), is a proxy of the activity of financial intermediaries in one of their main functions; channelling savings to investment (Beck *et al.*, 2000).

The financial indicators are developed for the three Caribbean countries using the data base of Beck *et al.* (2000)¹¹, which provides relatively consistent

⁸ The Jamaican 1996 banking crisis has been extensively discussed in the literature (see for example, King, 2000; Lander and Zavala, 2002 and the World Bank, 2003) and often in the context of how not to liberalise a heavily restrictive system.

⁹ In mid-1996, the Financial Institutions Services (FIS) institution was established to solve the liquidity and solvency problems of the banks. Early in 1997, the Financial Sector Adjustment Company (FINSAC) was created to manage the failed financial institutions through three stages: intervention, rehabilitation or investment, and privatisation (divestment). In March 1998, the FINSAC acquired the five insurance companies and the five commercial banks.

¹⁰ The Banking Act, the Financial Institutions Act and the Building Societies Act were amended in late 1997 with the main purpose of empowering the regulatory authorities to take decisive action to bring about the restructuring of any financial institution which ceases to be viable. A Deposit Insurance Act was passed in 1998 and in March 2001 Parliament approved the Financial Services Commission Act, designed to strengthen financial sector supervision.

¹¹ The database is available on <http://www.worldbank.org/research/projects/finstructure/database.htm>.

measures of various financial indicators across countries, and updated where necessary utilising the IMF's International Financial Statistics (CD Rom July, 2005) and the World Development Indicators (CD Rom, 2004). The resulting indicators are presented by country in Figure 1.3 along with the new rules-based index, *DFL*.

In the case of Barbados, all the indicators started rising at the beginning of the 1980s and have continued trending upwards. In addition, there is a high degree of correlation between *DFL* and each of the other three financial indicators over the full sample period, with correlation coefficients of 0.81, 0.73 and 0.82 for *B-CB*, *LLY* and *PCY* respectively. However, as discussed earlier, the liberalisation process began in Barbados around 1991 and, therefore, the behaviour of the indicators in the post-1991 period is of particular interest. In this regard, the average annual rate of increase of each indicator is higher for the period 1991-2003 than in the previous decade. In 1980 the *LLY* indicator had a value of 0.40 and by 1990 it had risen to only 0.54 (an annual average increase of 0.19 percent), while by 2003 it had expanded to 0.83 (an annual average increase of 1.1 percent). Both *B-CB* and *PCY* exhibit a similar pattern. The former rose at an annual average rate of 3.67 percent in the post-1991 period, compared with 2.37 percent in the 1980s, while the rates for the latter are 2.66 and 2.37, respectively. Thus, it can be concluded that the post-1991 period in Barbados featured a more developed financial system than did the 1980s, greater involvement of the commercial banks relative to the Central Bank and higher levels of private sector credit, all consistent with the new rules-based index of liberalisation, *DFL*.

Choosing a preferred outcome-based measure of domestic liberalisation for Barbados is not an easy task, as each indicator explains well the pre- and post-liberalisation periods. However, the preference is for *B-CB* because it has the highest pre-1991 correlation with the rules-based index (0.82 as opposed to 0.67 and 0.53 for *LLY* and *PCY*) and picks up best the turning points in the liberalisation process. For example, in 1993 the rules-based index increased as a result of the abolition of selective credit controls and while the *B-CB* indicator also rose in 1993 the other two outcome-based measures did not: *LLY* remained unchanged from the previous year and *PCY* declined.

The figure for Jamaica suggests that the *B-CB* reflects the liberalisation process more closely than the other two indicators (the correlation coefficient between *B-CB* and the rules-based index is 0.52, as opposed to 0.05 and -0.4 for *LLY* and *PCY*). *B-CB* had been on the decline from the start of the sample and reached a low of 0.48 in 1984, identifying the BOJ as owning more than 50 percent of the total assets of the financial system for that year. In 1985 the ratio began to rise, which is consistent with the financial reforms of 1985-86, and continued to do so up until 1992. However, between 1993 and 1998

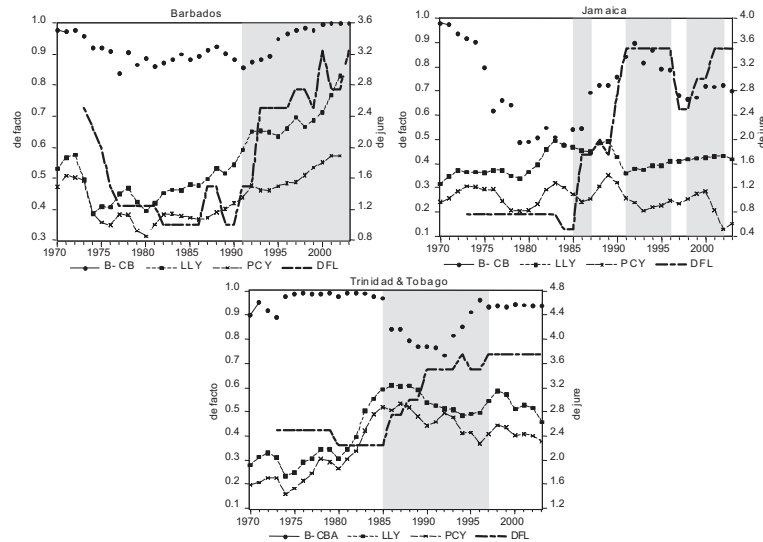
the ratio trended downwards which, as discussed above, is the period when the influences of the contradictory policies were strongest. Both the *LLY* and *PCY* indicators, which show hardly any evidence of financial intermediation during the 1990s, also substantiate this latter point. Thus, the stylised facts of the financial liberalisation process in Jamaica are clearly evident in the new rules-based index and to a lesser extent in the *B-CB* indicator.

The outcome-based measures for Trinidad and Tobago appear to reflect more the underlying economic climate and less the liberalisation process. Between 1973 and 1982, the economy performed extremely well, aided by the significant increases in oil prices. During this period growth in real economic output averaged over 6.4 percent per annum, external reserves boomed (moving from US\$58.3 million in 1973 to US\$3.4 billion by 1982), the balance of payments recorded surpluses, and real incomes expanded at an average annual rate of 5.6 percent. Financial institutions benefited tremendously from the good economic fortunes as total financial assets rose from US\$0.7 billion in 1973 to just over US\$7 billion by 1982. In fact, this period in the evolution of the Trinidad and Tobago financial system is characterised by high liquidity levels, a rapid expansion in private sector credit and an increasing number of financial institutions, particularly non-bank financial institutions. This rapid development in the financial sector is reflected in the outcome-based indicators over the pre-liberalisation period, 1970 to 1985¹². *B-CB* is relatively high, averaging 0.97, while both *LLY* and *PCY* show impressive rates of expansion, the former increasing from 0.28 to 0.59 and the latter from 0.20 to 0.52.

¹² It could be a bit misleading to refer to this period as *pre-liberalisation* as this conveys the impression that the financial system was heavily restricted during this period with restrictions on all dimensions. However, this is not the case and in fact, as depicted in Figure 2.1, Trinidad and Tobago had the most liberalised financial sector of the three countries during this period. The reference, then, is simply the period before significant gains occurred in the liberalisation index.

Figure 2.3:

Measures of Domestic Financial Liberalisation



In 1983 the Trinidadian economy slipped into a seven-year recession (real output fell by over 9 percent in the first year) as international oil prices began sliding, which had an adverse impact on the financial sector, with many of the non-bank financial institutions going under. Conditions worsened in 1986 with the collapse of oil prices and led to the authorities adopting an IMF stabilisation and structural adjustment programme in 1988, which included the reform and liberalisation of the financial sector as a key component.

As discussed earlier, the liberalisation process began in earnest in 1986 and culminated with the removal of credit restrictions in 1994. The outcome-based ratios declined gradually between 1983 and 1994 and, even after the liberalisation period, never returned to pre-liberalisation growth rates. One possible explanation of why the ratios, in particular *PCY*, did increase significantly after liberalisation is that the opening up of the financial sector and lifting of restrictions allowed corporations the option of doing their banking business offshore. Consequently, companies in the oil and gas sector tended to source their financing offshore, as their borrowing needs were usually too large for the domestically-based banks (although the sector's output is a major contributor to gross domestic product).

7. Sequencing of Domestic and International Liberalisation

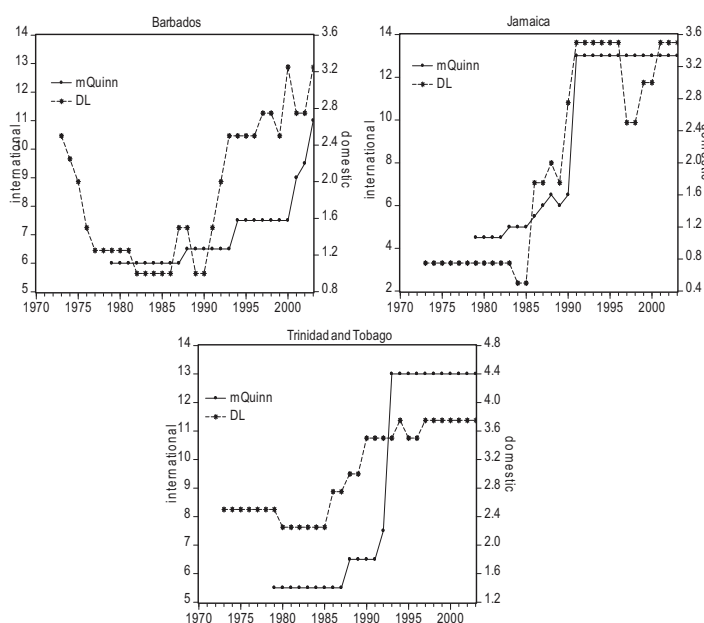
Figure 2.4 examines the sequencing of domestic and external financial liberalisation for the three countries using the new rules-based indicators

constructed for Barbados, Jamaica and Trinidad and Tobago. In each figure, the new index for IFL is plotted on the left axis and the new index for DFL, on the right. The most obvious conclusion that can be drawn from the figures is that both the pace and sequencing of liberalisation varied considerably across the three countries.

Barbados began lifting restrictions on the domestic banking sector in 1991, with most of the effort occurring between 1991 and 1993, and continued gradually into the later years. At the same time it maintained restrictions on the flow of international capital, although there was some easing of restrictions on personal capital transactions (cash gifts, legal fees, commissions, dividends, travel and education) and capital market securities, where authorised dealers were allowed to approve (without reference to the Central Bank of Barbados) applications for such remittances.

Figure 2.4:

Sequencing of Financial Liberalisation in Selected Caribbean Countries



Jamaica undertook domestic financial liberalisation and external financial liberalisation simultaneously and quite rapidly, with the majority of restrictions being removed between 1990 and 1993. As discussed earlier, little attention was paid to supervision and regulation during this period and the absence of entry barriers allowed an influx of financial institutions. In addition, previously nationalised financial institutions were privatised to

weak investors (World Bank, 2003). The increased competition led to excessive risk-taking by many financial institutions and, as Lander and Zavala (2002) note, the lax regulatory environment meant that (1) financial institutions did not properly manage the implicit credit risk they were assuming, so that an oversized credit growth resulted, and (2) clear arbitrage opportunities arose for large financial conglomerates¹³ and for large banks with international holdings. If the contradictory policy environment created by the removal of quantitative credit controls and rising reserves ratios is added to this, the resulting financial crisis of 1995-96 was inevitable. Thus, the Jamaica liberalisation story may be one of inappropriate sequencing, where IFL occurred before the domestic financial system was made ready to accommodate it.

The process of domestic financial reform and liberalisation in Trinidad and Tobago started in February of 1986 with the passing of the Central Bank Act and the Financial Institutions (Non-Banking) Act (1979) and culminated with the abolition of selective credit controls, effective from January 1, 1994. Significant liberalisation episodes along the way included the commencement of the phased reduction in quantitative credit restrictions in 1988, and the adoption of the Financial Institutions Act in August of 1993. However, considerable restrictions on the flow of international finance remained in place up until the elimination of exchange controls on current and capital transactions in April 1993.

Thus, unlike the Jamaican experience, greater attention was paid to supervision and regulation prior to and immediately after opening up to the flow of international capital. Note that there is only a three-month gap between the removal of exchange controls and the passage of the Financial Institutions Act, which not only enhanced the regulatory structure but also brought the non-bank financial institutions under the same legislative framework as the commercial banks. This unification of regulatory and supervisory practices did not occur in the case of Jamaica. Perhaps it was the hindsight of the collapse of the five non-banks in the pre-liberalisation period that caused Trinidad and Tobago to tighten up the regulation of non-banks with the opening up of the financial sector.

8. Conclusion

This paper constructs indices of both domestic and international financial liberalisation for Caribbean countries, and uses these to explore the nature and processes of financial liberalisation in the region.

¹³ According to Green (1999), these large financial conglomerates usually comprised a merchant bank, a commercial bank, a building society, an insurance company and other business firms and were mainly formed to take advantage of the arbitrage opportunities created by the existence of differential reserve requirements and differences in supervision practices across the various sub-sectors.

With respect to international liberalisation, three of the indices, the two rules-based measures, *IFLindex* and *AREAERindex*, and the outcome-based measure, *stocks*, are consistent with the stylised facts for the individual countries. However, the preference is for the *IFLindex* indicator over the *AREAERindex*, as the former is capable of capturing more subtle changes in the process. Also, the *IFLindex* is favoured over the *stocks* measure, since the latter is influenced by policies other than liberalisation, as evident for a number of the countries, Jamaica being the prime example of this. Similarly, the rules-based measure of domestic financial liberalisation, computed from chronological information on the rules and regulations of the individual countries, matches well *a priori* knowledge of the liberalisation process in the respective countries. Unfortunately, information for this index only allowed for its construction for Barbados, Jamaica and Trinidad and Tobago, as data on regulations and policies are not available for the other countries. Among the outcome-based indices of domestic financial liberalisation, the *B-CB* index, which is the ratio of deposit money banks assets and the sum of deposit money and central bank assets, matches most closely with the preferred rules-based index.

In terms of the process of financial liberalisation across the region, the main findings may be summarised as follows. First, the indices show that the order in which restrictions were removed, both on the domestic sector and on the flow of international finance, differed substantially across countries and over time. In addition, the pace of liberalisation varied by country and was often characterised by stops in and even reversals of policies. Also, the paper finds that the countries typically proceeded with external liberalisation after or alongside liberalising the domestic sector. This is in keeping with the conventional thinking on the sequencing of liberalisation. In the case of Jamaica, however, not enough attention had been paid to the issue of prudential regulation and this led to other problems, culminating in a financial crisis.

APPENDIX

Table 2A.1:

Possible Restrictions on the Financial Sector	
PANEL A: RESTRICTIONS ON INTERNATIONAL FINANCIAL TRANSACTIONS	
A. Controls on Current Payments and Transfers	
<i>I. Exchange Arrangement</i>	
1	Classification: Ranging from an exchange arrangement with no separate legal tender, currency board arrangement, pegged exchange rate and its various forms, to an independent float.
2	Exchange rate structure: Unitary, dual or multiple.
3	Exchange tax: Tax on foreign exchange transactions.
4	Exchange subsidy: Subsidy for foreign exchange transactions using separate, non-market exchange rates.
5	Forward exchange market: Is it prohibited or official cover of forward operations required?
<i>II. Arrangements for Payments and Receipts</i>	
1	Prescription of currency requirements: Official requirements affecting the selection of currency and method of settlement for transactions.
2	Payments arrangements between countries: Bilateral and regional payments arrangements, which can be operative or inoperative. Also, clearing, barter, and open accounts.
3	Administration of control:
4	International security restrictions: In accordance with the IMF and UN sanctions.
5	Payments arrears: Existence of an officially announced or unofficial queuing system for foreign currency to settle debts.
6	Controls on trade in gold (coins and/or bullion): Existence of separate rules for trading in gold.
7	Controls on exports and imports of bank notes: Existence of regulations on exports and imports of domestic and foreign currency bank notes.

Table 2A.1(Cont'd):

Possible Restrictions on the Financial Sector	
III. Resident Accounts	. Foreign exchange accounts held domestically (prohibited, approval required). . Foreign exchange accounts held abroad (prohibited, approval required).
IV. Non-resident Accounts	. Foreign exchange accounts (prohibited, approval required). . Domestic currency accounts (prohibited, approval required).
1 Blocked accounts:	Existence of regulations prohibiting or limiting the conversion and/or transfer of balances.
V. Imports and import payments	
1 Foreign exchange budget:	Existence of a foreign exchange plan for the importation of specific types of goods and/or services.
2 Financing requirements for imports:	Existence of minimum financing, advance payments and/or advance imports deposit)
3 Documentation requirements for release of foreign exchange for imports:	Domiciliation requirements, preshipment inspection, letters of credit, import licenses used as exchange licenses and other.
4 Import taxes collected through the exchange system:	Taxes levied on foreign exchange made available for imports.
VI. Exports and export proceeds	
1 Repatriation requirements:	. Obligations of exporters to repatriate export proceeds. . Regulation requiring the surrender of repatriated proceeds.
2 Financing requirements for exports:	Existence of export-financing regulation.
3 Documentation requirements:	Domiciliation requirements, letters of credit, guarantees, pre-shipment inspection, and other.
4 Export taxes collected through the exchange system:	Taxes levied on foreign exchange earned by exporters.

Table 2A.1 (Cont'd):

Possible Restrictions on the Financial Sector	
VII. Payments for invisible transactions and current transfers	
1 Trade-related payments:	. Freight/insurance, unloading/storage cost, administrative expenses, commissions, and customs duties and fees, etc. . Prior approval requirements, quantitative limits, and bona fida tests.
2 Investment-related payments:	. Profits/dividends, interest payments, amortisation of loans or depreciation of FDI, and payments and transfers of rent etc. . Prior approval requirements, quantitative limits, and bona fida tests.
3 Payments for travel:	. Travel for business, medical treatment, tourism, etc. . Prior approval requirements, quantitative limits, and bona fida tests.
4 Personal payments:	. Medical expenditures abroad, study expenses abroad, pensions, and family maintaince/alimony, etc. . Prior approval requirements, quantitative limits, and bona fida tests.
5 Foreign workers' wages:	. Prior approval requirements, quantitative limits, and bona fida tests.
6 Credit card use abroad:	. Prior approval requirements, quantitative limits, and bona fida tests.
7 Other payments:	. Subscription/membership fees, authors' royalties, legal fees, etc. . Prior approval requirements, quantitative limits, and bona fida tests.
VIII. Proceeds from invisible transactions and current transfers	
1 Repatriation requirements:	. Obligations of exporters to repatriate export proceeds. . Regulation requiring the surrender of repatriated proceeds. . Limitations on the use of receipts.

Table 2A.1(Cont'd):

Possible Restrictions on the Financial Sector		
B. Capital Account Transactions		
<u>Controls on inward and outward capital flows</u>		
	<u>Inflows</u>	<u>Outflows</u>
I. Controls on capital and money market instruments		
1 Capital market securities: shares or other securities of a participating nature, and bonds and other debt securities with an original maturity exceeding one year.	. Local purchases by non-residents . Sale/issue abroad by residents	. Sale/issue locally by non-residents . Purchase abroad by residents
2 Money market instruments: securities with an original maturity not exceeding one year.	. Local purchases by non-residents . Sale/issue abroad by residents	. Sale/issue locally by non-residents . Purchase abroad by residents
3 Collective investment securities: share certificates or any evidence of investor interest in an institution for collective investment, such as mutual funds.	. Local purchases by non-residents . Sale/issue abroad by residents	. Sale/issue locally by non-residents . Purchase abroad by residents
II. Derivatives and other instruments: other negotiable instruments and nonsecuritised claims not covered under I.	. Local purchases by non-residents . Sale/issue abroad by residents	. Sale/issue locally by non-residents . Purchase abroad by residents
III. Credit operations		
1 Commercial credits	. Local purchases by non-residents	. Sale/issue locally by non-residents
2 Financial credits	. Sale/issue abroad by residents	. Purchase abroad by residents
3 Guarantees, securities, and financial backup facilities		

Table 2A.1(Cont'd):

Possible Restrictions on the Financial Sector

<i>IV. Direct investment</i>	. Inward direct investment	. Outward direct investment
<i>V. Liquidation of direct investment</i>		. limits on repatriation of profits
<i>VI. Real estate transactions: acquisition of real estate not associated with IV.</i>	. Local purchases by nonresidents	. Sale locally by nonresidents . Purchase abroad by residents
<i>VII Provisions specific to commercial banks and other credit institutions:</i> regulations that are specific to these institutions, including differential treatment of non-resident deposit accounts and/or deposit accounts in foreign exchange (reserve requirements, liquid asset requirements, interest rate controls, investment regulations, credit controls, open foreign exchange position limits).	. Borrowing abroad . Non-resident deposits	. Maintenance of accounts abroad . Lending to non-residents . Lending locally in foreign currency
<i>VIII. Provisions specific to institutional investors:</i> such as insurance companies and pension funds and including currency-matching regulations on assets/liabilities composition.	. Limits (max.) on securities issued by non-residents . Limits (min.) portfolio invested locally	. Limits (max.) portfolio invested abroad
<i>IX. Personal capital movements:</i> including deposits, loans, gifts, endowments, inheritances, legacies, and the settlements of debts abroad by immigrants.	. To residents from non-residents . Transfer into the country by immigrants	. By residents to non-residents . Transfer abroad by emigrants

Table 2A.1(Cont'd):

Possible Restrictions on the Financial Sector	
X. <i>Other controls imposed by securities laws:</i> any additional regulations on capital transfers imposed by law.	. Controls on the listing of foreign securities on local markets.
PANEL B: RESTRICTION DOMESTIC FINANCIAL SECTOR	
<i>I. Credit controls:</i>	
1. Directed credit	Preferential loans including directed credit toward favoured sectors or industries, also ceilings on credit toward other sectors.
2. Reserve requirements	Excessively high reserve requirements are considered restrictive. . Including whether the government directly controls interest rates, or whether floors, ceilings, or interest rate bands exist.
II. <i>Interest rate controls:</i>	. Policies that introduce new instruments with floating rates are taken as measure that increase interest rate liberalisation.
III. <i>Entry barriers:</i>	Including licensing requirements, limits on the participation of foreign banks, and restrictions relating to bank specialisation or the establishment of universal banks. Measures aimed at fostering competition in the financial markets are considered as increased liberalisation.
IV. <i>Regulation of operations:</i>	Any operational restriction, such as on staffing, branching, and advertising.
V. <i>State ownership:</i>	Includes financial institutions under special government administration. Measures of privatisation are considered as increased liberalisation.
VI. <i>Prudential regulation:</i>	Any law (e.g. Banking Act) aimed at strengthening the prudential regulation and supervisory powers of the authorities (Central Bank).
VII. <i>Restrictions on securities market</i>	
1. Establishment of securities market.	
2. Measure to deregulate and strengthen the securities market.	

APPENDIX

Table 2A.2:

Summary of the Various Measures of Financial
Liberalisation in the Literature

<u>Author(s)</u>	<u>Description of financial liberalisation measure</u>	<u>Comments</u>
IMF's AREAER [Rules- based]	Generates a 0-1 indicator (0 means always restricted, 1 means never restricted) of the existence of rules or restrictions that inhibit cross-border capital flows or discriminate on the basis of citizenship or residence of transacting agents. Available for all IMF member countries over 1967-1995	Prior to 1996 the AREAER reported the 0-1 dummy for 6 categories: bilateral payments arrangements with members and non-members, restrictions on payments for current account transactions, restrictions on payments for capital account transactions, import surcharges, advance import deposits, and surrender or repatriation requirements for export proceeds. Changed in the 1997 issue to provide 0-1 dummies on the sub-categories of the above six groups. The set of categories that reflect the presence of capital controls has expanded to 13 including, for the first time, a distinction between restrictions on inflows and restrictions on outflows. Others used averages of the 0-1 dummies across the various categories (Johnston and Tamirisa, 1998; Rossi, 1999; Miniane, 2004), <i>others used the sum over different categories</i> (Brune et al., 2001).
Quinn, D., (1997) [Rules- based]	<i>International financial liberalisation index:</i> Measures the extent of a country's restrictions on the flow of international finance using the detailed text of the IMF's AREAER. Capital account openness is scored on a graduating 0-4 scale, current account openness on a 0-8 scale, and international agreements on a 0-2 scale, where the larger	Note that Quinn, by using a graduating scale (increments of 0.5) to reflect the severity of restrictions, introduces a degree of subjectivity. Quinn deals with this by having two independent coders and then rectifying the differences. One of the most widely used indicators. Also, in Quinn and Inclan (1997), Quinn and Toyoda (2003), and

Table 2A.2(Cont'd):

**Summary of the Various Measures of Financial
Liberalisation in the Literature**

	number represents more liberalised. The resulting 0-14 range indicator is an overall measure of the intensity of international financial liberalisation. Quinn constructed the index for 1950-97 for 21 OECD countries and for the years 1959, 1973, 1982, 1988, 1997 for 43 developing countries.	Quinn (2003), and many others since. Only available up to 1997 since it is questionable whether the pre-1996 editions of the <i>AREAER</i> contain enough text information to make disaggregation comparable to the post-1996.
Montiel, P. and C. Reinhart, (1999) [Rules-based]	Capital account Liberalisation Intensity Index, combines the IMF's <i>AREAER</i> indicator with country-specific information (annual reports of country's central bank) to construct an index capturing the intensity of capital controls. Takes on values 0, 1 or 2, with a higher number represents stronger capital account restrictions. Available for 15 emerging economies over 1990-96.	"... an improvement over the straight IMF indicators, it is still extremely general, and does not capture the subtleties of actual capital restrictions" (Edwards, 2000). "... over the period 1990-96, there would be little difference between using the range of values 0, 1, and 2, or using only 0 and 1" (Edison <i>et al.</i>, 2004).
Grilli and M. Milesi-Ferretti (1995) [Rules-based]	Share indicator: uses the summary line of IMF's <i>AREAER</i> to measure the proportion of years the country's capital account is reported as free of restrictions. The resulting variable is a 0,1 indicator of the presence or absence of capital controls.	Has been used in many other studies including Rodrik (1998) and Klein and Olivei (1999).
Kraay, Aart, (1998) [Outcome-based]	Capital account openness: uses data on actual capital inflows and outflows (the sum of the inward and outward foreign direct investment, portfolio investment and other investment items in the financial account of the balance of payments) as a percentage of GDP.	Analogous to using trade volumes as a measure of trade openness. Others have used portfolio and direct investment assets and liabilities as a percentage of GDP as an indicator of financial openness (Lane and Milesi-Ferretti, 2001;

Table 2A.2 (Cont'd):

**Summary of the Various Measures of Financial
Liberalisation in the Literature**

		IMF, 2001; O'Donnell, 2001; Edison <i>et al.</i> , 2002; Chanda, 2005).
Bekaert G., and C. Harvey, (2000) [Rules-based]	Equity market liberalisation indicators- three 0-1 dummy variables: <i>Official Equity Market Liberalisation index</i>, which reflects chronologically any regulatory change after which investors officially have the opportunity to invest in the domestic equity market. The variable takes the value of one when the event makes it possible for foreign portfolio investors to own the equity of the particular market and zero otherwise. The second is based on break points in capital flows, estimated through a regime-switching model based on the time series of net U.S. capital flows. <i>First Sign</i>: the earliest of three possibilities: a launching of a country fund, an American Depositary Receipt (ADR) or announcement of Official Liberalisation.	Originally constructed for Argentina, Brazil, Chile, Colombia, Greece, India, Indonesia, Jordan, Korea, Malaysia, Mexico, Nigeria, Pakistan, Philippines, Portugal, Taiwan, Thailand, Turkey, Venezuela, Zimbabwe. Extended by Bekaert <i>et al.</i> (2005) to 95 countries. A similar measure has been used by Bekaert (1995), Levine and Zervos (1998), Henry (2000a,b) and Bekaert <i>et al.</i> (2001). The chronological of Important Financial, Economic and Political Events are available at http://www.duke.edu/~charvey/Country_risk/chronology/chronology_index.htm
Edison and Warnock (2003) [Outcome-based]	Capital account Liberalisation Intensity Index: 1 minus the ratio of the market capitalisation of the constituent firms comprising the IFC Investable index to those that comprise the IFC Global index for each country. The IFC Global index is designed to represent the overall market portfolio for each country, whereas the IFC Investable index represents the portion of domestic equities that are available to	Constructed for 29 emerging market economies. A similar measure has been used by Bekaert (1995), Henry (2000a,b), Bacchetta and van Wincoop (2000), and Aherane <i>et al.</i> (2004).

Table 2A.2 (Cont'd):

**Summary of the Various Measures of Financial
Liberalisation in the Literature**

	foreign investors. A ratio of 1 indicates that all of the stocks are available to foreign investors.	
Bandiera et al. (2000) [Rules-based]	Financial liberalisation index:- the combination (principal component analysis) of 8 dummy variables representing the various dimensions of liberalisation: Domestic financial liberalisation: interest rates, pro-competition measures, reserve requirements, directed credit, banks' ownership, prudential regulation International financial liberalisation - capital account and exchange rate liberalisation.	Similar measure used in Laeven (2003).
Kaminsky and Schmukler (2003) [Rules-based]	Financial liberalisation index:- average of the two indices below. Domestic financial liberalisation: focus on interest rate regulations and complement with information on the regulations reserve requirements, credit allocation and foreign currency deposits. Capital account liberalisation: regulations on offshore borrowing by domestic financial institutions, offshore borrowing by non-financial corporations, multiple exchange rate markets, and controls on capital outflows.	The criteria for classification are: fully liberalised if 1) There are no controls (ceilings and floors) on interest rates, and 2) There are likely no credit controls and deposits in foreign currencies are likely permitted. Partially liberalised if there are controls in either lending or borrowing rates (ceilings or floors) and maybe controls on 2. Repressive if there are controls in lending rates and borrowing rates (ceilings and floors) and likely to be controls on 2.

Table 2A.2 (Cont'd):

**Summary of the Various Measures of Financial
Liberalisation in the Literature**

Demirguc-Kunt and Detragiache (1998 a,b) [Rules-based]	Domestic financial liberalisation: Use the first date in which some interest rates were liberalised create a dummy variable with zeros for periods in which interest rates are subject to controls and ones for the liberalised periods.	Constructed for 53 developing countries.
Abiad and Mody (2005) [Rules-based]	Financial liberalisation index:- aggregation of six dimensions: directed credit/reserve requirements; interest rate controls; entry barriers and/or lack of pro-competition policies; restrictive operational regulations; the degree of privatisation in the financial sector; and controls on international financial transactions.	For each dimension, a country is given a score on a graded scale, with zero corresponding to being fully repressed, one to partially repressed, two to largely liberalised, and three to fully liberalised.

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