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The Impact of Financial Liberalisation on Financial Development: Evidence from the Caribbean

Kevin Greenidge and Alvon Moore

1.   Introduction

In today's increasingly globalised environment, developing countries are being encouraged to liberalise their financial systems under the notion that this would lead to greater financial development, thereby promoting sustained economic growth. Indeed, the literature has provided evidence that financial liberalisation, involving the removal of restrictions on the functions and operations of the domestic financial system, and on capital and financial account transactions, can lead to financial development contingent on the prerequisite institutional and regulatory frameworks. However, most of this evidence relates to developed countries or to emerging market countries in Asia and, to a lesser extent, Latin America. This study, therefore, attempts to examine the nexus between financial liberalisation and financial development in the three Caribbean countries of Barbados, Jamaica and Trinidad and Tobago.

The empirical relationship between financial liberalisation and financial development is examined using the Stock and Watson (1993) dynamic ordinary least squares (DOLS) technique, which is primarily chosen because of the relatively small size of the sample under review. The variables utilised are common to the finance literature and include the real deposit rate, real per capita income, the number of bank branches, measures of financial development (identified by Demetriades and Luintel, 1996, 1997; Bandiera et al., 2000; Abiad and Mody, 2005) and indicators of financial liberalisation (from Chapter 2 of this book, see also Greenidge, 2006).

The selected countries provide for an interesting study, as they have had different experiences with financial liberalisation. Jamaica liberalised its financial system quite substantially in the mid-70s but re-imposed most of the restrictions in the early 1980s and then removed them, very quickly and abruptly, in the early 1990s. In Trinidad and Tobago, the process of liberalisation was more gradual and culminated with the floating of the exchange rate in 1993. In Barbados, financial liberalisation was implemented at a much slower

pace and focused initially on removing restrictions on the domestic financial system, while stepping up the pace of the liberalisation of international capital flows in the late 1990s and early 2000 period. Additionally, emphasis was placed on the maintenance of the fixed exchange rate regime, and its link with the level of foreign reserves.

The next section reviews the literature, identifying and discussing the link between financial liberalisation and financial development, as proposed by McKinnon (1973), Shaw (1973) and the endogenous growth models. Section 3 specifies the model, data and technique used, while section 4 reports the results. Section 5 concludes the paper with some summary remarks.

2. Review of Literature

Theoretical Issues

The theoretical basis for a relationship between financial liberalisation and financial development originates from the seminal works of McKinnon (1973) and Shaw (1973), and the endogenous growth literature. The financial liberalisation thesis assumes that investments cannot take place unless it is preceded by the accumulation of financial capital. McKinnon's model stipulates that the higher the real rate of interest, the more willing the investor to accumulate real money balances before investing, while Shaw argues that the accumulation of financial capital is caused by higher real interest, mainly through an increase in the extent of financial intermediation. Thus, both McKinnon and Shaw emphasise the real interest rate as the principal determinant of financial capital in the financial system. As such, controls on interest rates" keep the real rate of return on deposits artificially low, thereby discouraging the accumulation of financial capital, and creating a negative impact on financial development in the process.

However, in an environment of collusive behaviour it is possible that, even in the presence of interest rate controls, banks can use non-interest rate methods (for example, bank expansion) to affect the volume of deposits and thus financial development. Similarly, in the presence of asymmetric information, interest rate restrictions may positively affect agents' perception of the stability of the financial system by addressing the issues of excessive risk taking. Indeed, Stiglitz (1994) argues that the prevalence of financial market failure in developing countries not only justifies the need for government intervention, in terms of improving the functions of those markets, but that such intervention will also lead to faster economic growth.

The quest for a deeper understanding of the relationship between financial restraint/liberalisation has influenced researchers to look beyond the real interest rate as the main determinant of financial deepening. Other

financial policies, whether restrictive or not, have been identified and examined as to whether they have an impact on financial deepening, over and above the standard interest rate effect.

As discussed in Demetriades and Luintel (1996) and Arestis and Demetriades (1999), the endogenous growth literature offers additional channels, other than the real interest rate, through which financial sector policies may affect financial development. These include directed credit programmes, which may have a direct effect on the type of investments, and reserve requirements, which could influence resource allocation. With regards to reserve and liquidity requirements, Arestis et al. (2002) outline the work done by Fry (1995) who considers reserve and liquidity requirements as a tax on financial intermediation, which widens the spread between deposit and the loan interest rates and reduces the size of the financial system. However, Arestis et al. (2002) posit that if reserve and liquidity requirement policies are applied properly, they can have a direct positive effect on the development of the financial system by ensuring that banks are sufficiently liquid.

In addition, international financial liberalisation, which is the removal of restrictions on the flow of international finance, can also lead to the development of the financial sector by allowing investors to engage in more portfolio diversification, thereby lowering the cost of capital and increasing the availability of funds (Bekaert et al., 2000; 2001). Similarly, the literature argues that international financial liberalisation, through increased capital flows, can mitigate the effects of restrictions on the domestic financial sector, allowing real interest rates to rise to their equilibrium levels (see the discussions in Klein and Olivei, 1999).

Empirical Findings

The empirical literature in this area is quite recent and rapidly expanding, led by the works of Demetriades and others (see, for example, Demetriades and Luintel, 1996; 1997; 2001; Arestis, 2005). Earlier research focused on the relationship between financial development and economic growth, and not so much on the relationship between financial policies and financial development (see, for example, King and Levine, 1993; Levine, 1997; Rajan and Zingales, 1998; Chapter 3 of this book).

In two separate papers, Demetriades and Luintel examine the effects of 'repressionist' policies on financial development in Nepal (1996) and India (1997). In both studies the variables used included: the number of bank branches; financial repression, measured by collecting information on interest rate controls, reserve and liquidity requirements and directed lending; financial depth, given by the ratio of bank deposit liabilities to nominal GDP; the real deposit rate and growth per capita GDP, as a measure of economic growth.

Both studies utilise the Stock and Watson approach to co-integration and error-correction modelling. The authors concluded that bank expansion contributed to financial development in both countries. However, they found that the reserve and liquidity requirements as well as interest rate controls have a positive effect on financial deepening. Therefore, the removal of such restrictions is expected to adversely affect financial development. Conversely, non-interest rate controls have a negative effect on financial development and thus the elimination of such restrictions is expected to impact positively on financial development. No evidence was found supporting the widely held view that the real interest rate is an important determinant of financial development.

Arestis et al. (2002) analyse the effects of financial policies on financial development in six countries. They specify an equation for financial development using economic development, the real interest rate, and an index of interest rate restraint, reserve requirement and liquidity ratios as the exogenous variables. The interest rate restraint variable is a summary measure of the average of the deposit and lending rate. The reserve requirement and liquidity ratio variable is also a summary measure constructed using the principal component method. Johansen's (1988) co-integration approach and error correction modelling (ECM) is used to estimate the long-run relationship between the variables and the short-run dynamics of the model. Arestis et al. (2002) concluded that the real interest rate has a positive and significant long-run influence on financial development. They also reported that financial policies have additional direct long- and short-run impacts, which may vary across countries and depend on institutional differences. Accordingly, the effects of financial liberalisation on financial development are country-specific.

In a more recent paper, Demetriades and Law (2005) examined the relation between capital account liberalisation and financial development after controlling for the influence of a country's institutions. Using annual data from 43 developing countries, covering the period 1980 to 2000, Demetriades and Law employ cross-country estimation methods and dynamic panel data analysis to estimate their model. They use banking sector and capital market development indicators to represent financial development. From Knack and Keefer (1995), Demetriades and Law use the five political risk indicators (PRS), of corruption, rule of law, bureaucratic quality, government repudiation of contracts and risk of expropriation. They also utilised private capital inflows and the capital account liberalisation indicator constructed by Chinn and Ito (2002) as proxies for capital inflows. Total trade to GDP and import duties to total imports were employed to represent trade openness. From the evidence provided, Demetriades and Law, contrary to the predictions of the McKinnon and Shaw thesis, surmised that the real interest rate has no significant effect on financial development; however, institutional quality and the simultaneous

opening of both the capital and trade account has a positive influence on financial development.

In an effort to investigate the effects of financial liberalisation on banking crisis and financial development, Demirguc-Kunt and Detragiache (1998) estimate a multivariate logit model using a panel data set of 53 developed and developing countries. The variables utilised included an index of banking crisis variables, interest rate controls as a proxy for financial liberalisation, six indices for institutional quality, and control variables capturing macroeconomic development and characteristics of the banking system. They surmised that, even in countries with macroeconomic stability, financial liberalisation exerts a negative influence on the stability of the banking system. The authors also found that for countries that were initially in a state of financial repression (this is, where real interest rates are negative), the positive effects of financial liberalisation on financial development appeared strong even in the presence of a crisis. In those countries that were initially in a state of financial restraint (this is, where real interest rates are positive, but artificially low), the influences of financial liberalisation on financial development were cancelled out by the negative effect of a banking crisis. Thus, a gradual approach, along with institutions promoting a strong regulatory and supervisory framework, seems necessary for the positive impacts of financial liberalisation on financial development to be realised.

The general conclusion is that financial liberalisation can have real effects on financial development. At the minimum, the liberalisation thesis suggests that domestic financial liberalisation can aid the process of financial deepening. However, a positive impact from financial liberalisation to financial development is not a foregone conclusion but depends on the structure of the financial system. For example, in the presence of unofficial credit markets, an increase in interest rates in the official markets, following the removal of interest rate restrictions, is more likely to crowd out loans in the unofficial markets by attracting funds away from those markets and thereby impede the process of financial development.

3.   Econometric Analysis

Model Specification and Data

The following model of financial development, which is well known in the empirical literature (see for example, Fry, 1995; Demetriades and Luintel, 1996, 1997, 2001; Arestis et al., 2001, 2002) is estimated:

$$LFD_t = a_0 + a_1 LRGDPPC_t + a_2 LRDR_t + a_3 IFL_t + a_4 DFL_t + a_5 B_t + \varepsilon_t \qquad (4.1)$$

LFD is the logarithm of financial development. LRGDPPC is the logarithm of real per capita GDP and is constructed as real GDP divided by the mid-year population. It is included to capture the demand for financial services to accommodate increased economic activity (see, Arestis et al., 2002). LRDR is the real deposit rate given as the weighted average deposit rate and expressed as $\ln[(1+i)/(1+\Delta CPI)]$, where CPI is the consumer price index and i is the nominal interest rate on deposits. The data sources for both these variables are the International Financial Statistics (CD ROM, 2006: 6) and the World Development Indicators (CD ROM, 2005) of the International Monetary Fund (IMF) and World Bank, respectively. LB is the logarithm of bank branches and the data for this are collected from the countries' respective central banks. IFL and DFL are indices of international financial liberalisation and domestic financial liberalisation, respectively. These are sourced from Chapter 2 above and Greenidge (2006).

Measuring Financial Development

As noted by Levine et al. (2000) and others, it is difficult to construct accurate measures of financial development to compare across countries and over time. Bandiera et al. (2000) argue that the ideal indicator would be one that captures both the various aspects of the deregulatory and the institution-building process in financial sector development. They, however, concede that this is next to an impossible task. Nevertheless, the current study employs a number of indicators, which it is believed will capture, with a reasonable degree of confidence, the evolution of countries' financial sectors since these indicators focus not only on size but also on the activity of financial intermediaries. Furthermore, the indicators are combined into a single measure using principal component analysis, thereby effectively reducing any biases or errors that may be associated with any individual indicator. This is a common practice in the literature (see, for example, Demetriades and Luintel, 1996, 1997; Bandiera et al., 2000; Abiad and Mody, 2005). In this regard, this paper works with a weighted average of a selected number of the principal components, where the number of components chosen (in declining order of the amount of variance they account for) is sufficient to ensure that the summary measure accounts for at least 95% of the total variation of the original indicators. In addition, the database of Beck et al. (2000), which provides relatively consistent measures of financial development across countries, is utilised and updated where necessary using the IMF's International Financial Statistic (CD ROM October, 2006) and the World Development Indicators (CD ROM 2005).

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. It is the broadest measure of financial intermediation since

it includes all three financial sectors (Central Bank, Deposit Money Banks and other Non-Bank Financial Institutions) and is calculated as the ratio of currency plus demand and interest bearing liabilities of banks and other financial intermediaries to GDP. It has been used extensively in empirical work (see, for example, McKinnon, 1973; King and Levine, 1993; Beck et al., 2000; and Levine et al., 2000), as it is believed to be positively correlated with the quality and level of financial services provided. It should, however, be noted that, on its own, this measure could lead to erroneous conclusions since it does not differentiate between allocation to private and public sector entities. So that a financial system that is channelling most of its credit to state-owned enterprises may be classed as having a developed financial system, when in fact it may be failing in its role to allocate resources efficiently.

The second indicator of financial development - Deposit Money Bank Assets to Central Bank Assets (BCB) - measures the relative importance of banks versus the central bank in the financial system. It is calculated as the ratio of deposit money banks assets to the sum of deposit money and central bank assets. The intuition behind this measure is that commercial banks are better able to execute the basic functions of the financial system (such as the allocation of resources, the mobilisation of financial savings and the evaluation of potential returns and risks of investment projects) than the central bank. Thus, it is expected that banks and other financial institutions will gain relative importance as the financial sector develops.

The final indicator - Private Credit by Deposit Money Banks and other financial institutions to GDP (PCY) - is a measure of the activity of financial intermediaries in one of their main functions: channelling savings to investment. It captures credit to the private sector as opposed to credit to the public sector and concentrates on that issued by intermediaries other than the central bank. The assumption behind this measure is that financial systems that provide more private sector credit are doing more towards the mobilisation of savings and the facilitation of transactions than those that simply provide credit to the government and public sector.

Figure 4.1, which plots the measures of financial development for the three selected Caribbean countries, indicates that they have experienced relatively similar patterns of evolution, making the most strides in the 1980s and 1990s. In the case of Barbados, all the indicators started rising at the beginning of the 1980s and have continued trending upwards. In this regard, Craigwell, et al. (1994) note the 1980s was marked by the entrenchment of the non-bank financial institutions (NBFIs) in the Barbadian financial system, which more than doubled their share of deposits and loans contributions between 1980 and 1990. Similarly, Bynoe-Mayers and Craigwell (2002) conclude that Barbados was minimally developed up until 1986, but since then may be described as somewhat developed.

The financial system of Trinidad and Tobago also experienced rapid growth during the 1980s although linked to different factors. Forde et al. (1997) attribute this to the wide-sweeping reforms initiated by the Central Bank of Trinidad and Tobago following the collapse of many NBFIs at the beginning of the 1980s (as many of the sectors supported by the NBFIs contracted).

The Jamaican financial system showed a significant level of expansion between 1960 and 1975, as reflected in the LLY and PCY indicators. However, unlike Barbados and Trinidad and Tobago, this period also featured a falloff in banking activity relative to the Central Bank (captured by the BCB indicator), which lasted up to the mid-1980s. Peart (1995) refers to this as a period of "strong financial repression" characterised by strong public sector leadership, government involvement in the operation and development of financial institutions, bureaucratic controls on entry, and the dominance of commercial banks in the financial intermediation process. Banking sector activity picked up in 1986 as the Government implemented policies aimed at liberalising the financial sector as part of a structural adjustment programme with the World Bank, which was designed to create an environment conducive to efficient financial intermediation. Unfortunately, following the onslaught of Hurricane Gilbert all such policies were reversed, but later re-implemented in 1991. This is captured adequately by the decline in the overall indicator in 1989, which then picked up in the mid-1990s following the introduction of new regulatory measures in the financial system.

Figure 4.1:

**Financial Development in Barbados, Jamaica
and Trinidad and Tobago**
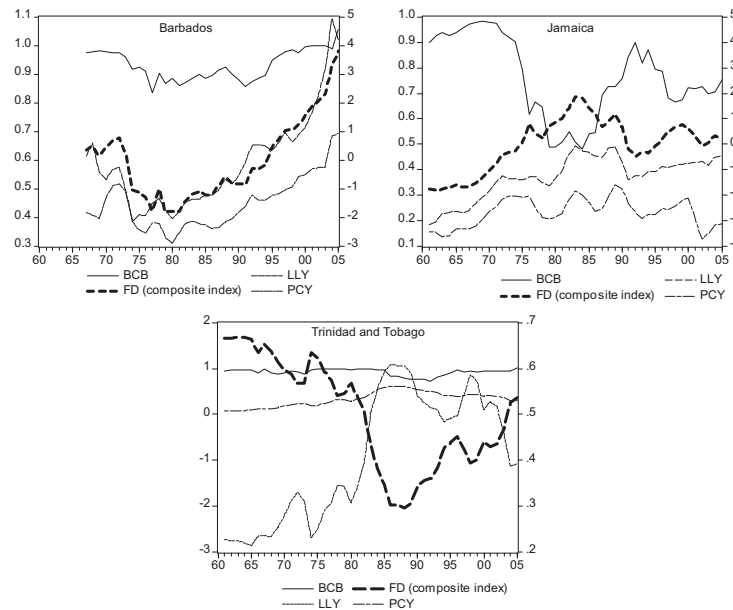
Measuring Financial Liberalisation

As Chapter 2 of this book (see also Greenidge, 2006) has already thoroughly assessed the financial liberalisation measures pertaining to the Caribbean, the discussion in this section will be relatively brief, summarising the more salient features.

Figure 4.2 plots both measures of domestic and financial liberalisation for the three selected countries. Perhaps the most striking feature is that both the order and pace of liberalisation differed significantly across the three countries. In Barbados, the process of domestic financial liberalisation began in 1991, with the majority of restrictions being eliminated between 1991 and 1993, and continued gradually into the later years. However, Barbados maintained restrictions on the flow of international capital (mainly on outflows), although there was some easing of restrictions on personal capital transactions and on capital market securities, where authorised dealers were allowed to approve (without reference to the Central Bank of Barbados) applications for such remittances. In recent years, the process of international financial liberalisation has been accelerated, with few restrictions remaining to date.

Figure 4.2:

Financial Liberalisation in Barbados, Jamaica and Trinidad and Tobago
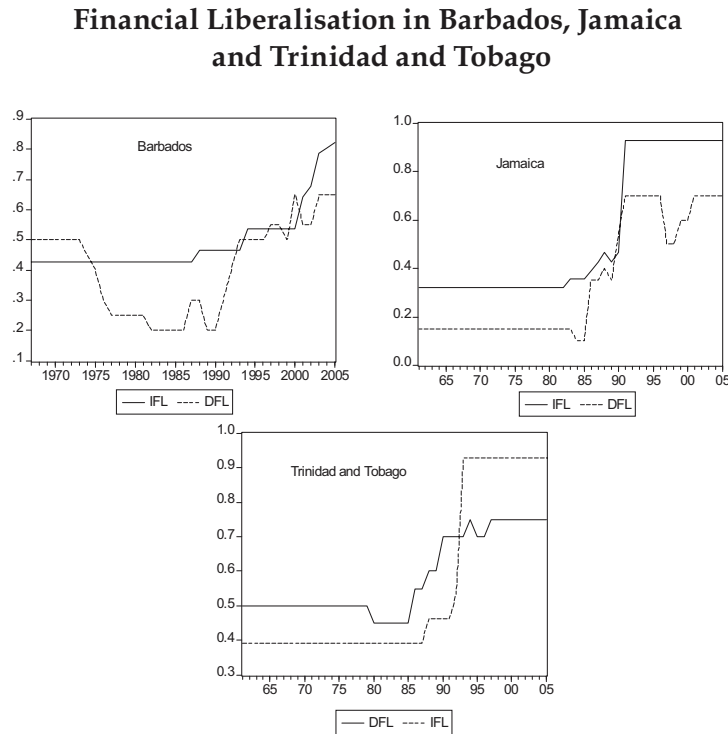
For Jamaica, the process of financial liberalisation took place in basically two phases. The first occurred between 1986 and 1988 as part of a structural adjustment loan agreement with the World Bank, involving the removal of credit controls and the phasing out of reserve requirements along with the commencement of a privatisation programme. The process was, however, halted and later reversed following the passage of Hurricane Gilbert in 1989. The second phase of liberalisation began in late 1990 with the removal of ceilings on credit allocation and the deregulation of interest rates and culminated in 1991 with the elimination of all exchange controls. Hence, Jamaica undertook domestic and external financial liberalisation simultaneously and quite rapidly. At the same time, not enough attention was paid to supervision and regulation, while the absence of entry barriers allowed an influx of financial institutions (Greenidge, 2006). In addition, a number of financial institutions were privatised to weak investors. The lax regulatory environment and increased competition resulted in excessive risk taking by many financial institutions and a rise in regulatory arbitrage behaviour by large financial conglomerates and large banks with international holdings. Indeed, many commentators (see for example, the World Bank, 2003) cite inappropriate sequencing of and

inadequate preparation for financial liberalisation as the main causes of the 1995-96 financial crisis.

The process of domestic financial liberalisation in Trinidad and Tobago commenced early in 1986 with the amendment of the Central Bank Act and the Financial Institutions (Non-Banking) Act (1979) and concluded in 1994 with the abolition of selective credit controls. 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.

4.   Methodology

The model is estimated using Stock and Watson (1993) dynamic ordinary least squares (DOLS) technique, detailed in Section 3 of Chapter 2. In this regard, the estimation of the long-run relation for Equation (4.1) is based on the following regression:

$$LFD_t = B'X_t + \sum_{j=-K}^{K} \lambda'_j \Delta X^I_{t-j} + \xi_t \tag{4.2}$$

where X^I denotes the sub-set of I(1) variables of X, B is the vector of long-run coefficients and the inclusion of ΔX^I_{t+j} takes care of the possible endogeneity of X. The equation is estimated in most cases with K=1, but then a 'general to specific' procedure (see Campos et al., 2000) is applied to reduce the model to a more parsimonious congruent specification where only significant variables are retained.

In order to investigate the short-run dynamics, the estimates from Equation (4.2) can be used to formulate a general error correction model of the form:

$$\Delta LFD_t = \sum_{j=1}^{P} {}_j \Delta LFD_{t-j} + \sum_{j=0}^{p} \varphi'_j \Delta X^1_{t-j} + \sum_{j=0}^{P} \gamma'_j Z_{t-j} + \xi_j \sum_{j=1}^{P} (LFD_{t-1} - B'X^*_{t-1}) + \varepsilon_t \tag{4.3}$$

which specifies changes in financial development as a function of lagged values of the first difference of the non-stationary variables, stationary variables that may have short-run effects (Z), and stationary combinations of the non-stationary variables, which represents the long-run relation between financial development and its determinants. This long-run relation among variables is given by the elements of B and the rate at which financial development responds to disequilibrium in the long-run relation is given by ζ. Note that X^*

is the subset of X′ that is significant in the co-integrating vector. In estimating Equation (4.3), a general-to-specific approach will be used in order to reduce it to a more parsimonious representation.

5.   Results

The first step is to examine the stationary properties of the variables using the ADF, PP and the KPSS unit root tests. These tests are now quite common in empirical analysis and need no further explanation. The results are reported in Table 4A.1 (see Appendix). For Barbados, the three tests suggest that DFL, LRGDPPC and LFD are I(1) variables, while IFL, LB and LRDR appear to be I(0). In the case of Trinidad and Tobago, the tests indicate that all the variables can be considered as I(1) processes. With Jamaica, all the variables appear to be I(1) with the exception of LRDR, which seems to be I(0).

Tables 4.2, 4.3 and 4.4, present the final parsimonious long- and short-run models for Barbados, Trinidad and Jamaica. The models passed the battery of diagnostic tests (the notes beneath the tables explain the various tests), indicating that none suffers from mis-specification, autocorrelation, heteroscedasticity or non-normality and can therefore be accepted with a high degree of confidence.

In the case of Barbados (Table 4.2), GDP per capita enters with the expected positive coefficient, suggesting that higher levels of economic development are associated with increased levels of financial development in the long run. However, there are no significant short-run effects from this variable. The real interest rate has a positive and significant long- and short-run impact on the level and the rate of financial development, which is consistent with the McKinnon and Shaw prediction that the real rate of interest is an important determinant of financial development.

The findings for Barbados also suggest that changes in the number of bank branches have a positive effect on financial development in the short term. Thus, by providing greater public access to banking services, branch expansion has contributed to financial development in Barbados. The results also indicate that both international and domestic financial liberalisation have additional direct significant long- and short-run effects, which are independent of any influences operating through the real interest rate. Finally, the coefficient on the error-correction term implies a relatively rapid speed of adjustment towards equilibrium following any shock to the system.

Table 4.1:

Estimation Results for Financial Liberalisation and Financial Development in Barbados

Long-run Estimates:
$LFD_t = \quad 0.070 \quad + \quad 0.267*LRGDPPC_t + 0.858*LRDR_t \quad + 0.081*IFL_t \quad + \quad 0.121*DFL_t$ $\qquad\quad (0.020^{+++}) \;\; (0.06^{+++}) \qquad\qquad (0.186^{+++}) \qquad (0.0158^{+++}) \qquad (0.02^{+++})$ $R^2 = 0.917$; JOINT - $F_{(4,36)} = \;\; 99.42\,[0.000]$; DW =2.2; AR- $F_{(2,34)} = 1.138\,[0.332]$; ARCH- $F_{(1,34)} = 0.430\,[0.517]$; Norm. -$\chi^2(2) = 0.147\,[0.929]$; HET- $F_{(8,27)} = 1.105$ [0.391]; RESET - $F_{(1,35)} = 0.240\,[0.628]$; Chow(1983) = 474[0.944]; Chow(1999) = 0.813 [0.526].
Parsimonious Error-Correction Model:
$\Delta LFD_t = 0.068 \quad + \quad 0.062*\Delta IFL_t \;\; + \;\; 0.140*\Delta DFL_t \;\; - \; 0.890*ECT_{t-1} \qquad - \;\; 0.201*dum73$ $\qquad\quad (0.013^{+++}) \;\; (0.015^{+++}) \qquad (0.032^{+++}) \qquad (0.145^{+++}) \qquad\qquad (0.016^{+++})$ $\qquad\quad + 0.633*\Delta LRDR_t \;\; + 0.848*\Delta LB_t$ $\qquad\quad (0.150^{+++}) \qquad\qquad (0.319^{++})$ $R^2 = 0.694$; JOINT - $F_{(6,29)} = 10.98\,[0.000]$; DW =2.11; AR- $F_{(2,27)} = 0.484\,[0.622]$; ARCH- $F_{(1,27)} = 0.254\,[0.618]$; Norm. -$\chi^2(2) = 1.218\,[0.544]$; $F_{(11,17)} = 0.292$ [0.979]; RESET - $F_{(1,28)} = 0.112\,[0.741]$; Chow(1986) = 0.636[0.832]; Chow(2000) = 1.380 [0.263].

Notes: Heteroscedasticity and autocorrelation consistent standard errors are in parentheses. [+], [++] and [+++] denote significance at the 10%, 5% and 1% levels, respectively. The F-statistic for the respective diagnostics tests are shown and the associated p-value in square brackets. R^2 is the fraction of the variance of the dependent variable explained by the model and JOINT is a test of the joint significance of the explanatory variables, DW is the Durbin Watson statistic, AR is the Lagrange multiplier test for p-th order residual autocorrelation correlation, RESET = Ramsey test for functional form mis-specification (square terms only); Norm is the test for normality of the residuals based on the Jarque-Bera statistic ($\chi^2 (2)$). ARCH is the autoregressive conditional heteroscedasticity test for up to p-th order (see Engle, 1982). HET is the unconditional heteroscedasticity test based on the regression of squared residuals on the squared fitted values. Finally, Chow (n) is Chow's (1960) test for parameter constancy based on breakpoints in the sample (two breakpoints are tested - the sample mid-point and 90th percentile).

Table 4.2:
Financial Liberalisation and Financial Development
in Trinidad and Tobago

Long-run Estimates:
LFD_t = -2.988 + 0.234*$LRGDPPC_t$ + 0.707*DFL_t + 0.204*LB_t + 0.247*$\Delta LRGDPPC_{t-1}$
(0.781+++) (0.064+++) (0.226+++) (0.034+++) (0.097++)
R^2 = 0.856; JOINT - F(4,35) = 53.6 [0.000]; DW =1.85; AR- F(2,33) = 1.819 [0.178]; ARCH- F(1,33) = 0.032 [0.859]; Norm. -χ^2(2) = 0.112 [0.945]; HET- F(8,26) = 1.074 [0.411]; RESET - F(1,35) = 3.6e^{-005} [0.995]; Chow(1983) = 1.091[0.435]; Chow(1999) = 1.869 [0.155].
Parsimonious Error-Correction Model:
ΔLFD_t = 0.213*ΔLFD_{t-1} + 0.807*$\Delta LRGDPPC_{t-1}$ + 0.782*ΔDFL_t + 0.33*ΔLB_t - 0.374*ECT_{t-1}
(0.065+++) (0.242+++) (0.367++) (0.091+++) (0.073+++)
R^2 = 0.48; JOINT - F(5,35) = 3.305 [0.021]; DW =2.11; AR- F(2,33) = 0.909 [0.413]; ARCH- F(1,33) = 0.475 [0.496]; Norm. -χ^2(2) = 3.51 [0.173]; HET- F(10,24) = 0.559 [0.830]; RESET - F(1,34) = 0.020 [0.889]; Chow(1983) = 1.01 [0.498]; Chow(1999) = 0.284 [0.836].

Notes: Same as Table 4.1

The results for Trinidad and Tobago indicate that real per capita income, domestic financial liberalisation and bank branches have long- and short-run positive effects on financial development. The error-correcting term is correctly signed and highly significant which means that the level of financial development is co-integrated with the determinants. In addition, its magnitude suggests a moderate adjustment towards equilibrium. Interestingly, international financial liberalisation and the real interest rate proved insignificant in explaining either the long- or short-run behaviour of financial development. One possible reason why international financial liberalisation is insignificant in the case of Trinidad and Tobago may be the fact that, unlike domestic financial liberalisation, restrictions on the flow of international capital were removed quite rapidly (basically within a one-year period). Moreover, as discussed in Greenidge (2006), prior to the liberalisation period, the majority of capital inflows were channelled into the energy sector as the Government actively pursued foreign direct investment for that sector. This did not change with the opening of the capital account and inflows continued to be concentrated in the energy sector, with little linkages to the

other sectors of the economy. Thus, there are hardly any gains in terms of the development of the financial sector that can be attributed to the opening up of the capital account.

The findings for Jamaica show that real per capita income and the real interest rate have a positive influence on both the level and the rate of financial development. The error-correcting term is negative and significant, confirming a co-integrating relation between the level of financial development, real per capita income and the real interest rate. In addition, its magnitude suggests that roughly one-fifth of the deviations from this equilibrium are corrected each year. However, the analysis failed to show any significant relationship between financial development and either domestic or international financial liberalisation, in the short- or long-run. This is not surprising given the fact that the liberalisation process was pursued in an environment of inadequate regulation and supervision. Moreover, since both international and domestic financial liberalisations took place simultaneously and at a rapid pace, there was probably insufficient time for the domestic sector to be prepared and be strengthened to accommodate the influx of funds that occurred.

Table 4.3:

Financial Liberalisation and Financial Development in Jamaica

Long-run Estimates:

LFD_t = 0.329 + 0.389*LRGDPPC$_t$ + 0.728*LRDR$_t$ + 0.405*ΔLRGDPPC$_{t-1}$
(0.064^{+++}) (0.143^{+++}) (0.286^{+++}) (0.101^{+++})

R^2 = 0.613; JOINT - $F(3,36)$ = 64.4 [0.000]; DW =1.77; AR- $F(2,34)$ = 0.556 [0.579]; ARCH- $F(1,34)$ =0.347 [0.560]; Norm. -$\chi^2(2)$ = 3.16 [0.206]; HET- $F(6,29)$ = 0.675 [0.736]; RESET - $F(1,35)$ = 1.190 [0.283]; Chow(1983) = 0.783[0.699]; Chow(1999) = 0.314 [0.815].

Parsimonious Error-Correction Model:

ΔLFD_t = 0.016 + 0.123*ΔLFD_{t-1} + 0.332*ΔLRGDPPC$_t$ + 0.184*ΔLRDR$_t$ - 0.233*ECT$_{t-1}$
(0.006^{+++}) (0.046^{+++}) (0.169^{+++}) (0.074^{+++}) (0.056^{+++})

-0.130*dum73 + 0.068*dum83
(0.029^{+++}) (0.032^{++})

R^2 = 0.59; JOINT - $F(6,33)$ = 34.92 [0.000]; DW =2.02; AR- $F(2,31)$ = 0.616 [0.547]; ARCH- $F(1,31)$ = 0.189 [0.667]; Norm. -$\chi^2(2)$ = 2.86 [0.240]; HET- $F(10,22)$ = 0.425 [0.919]; RESET - $F(1,32)$ = 0.344 [0.562]; Chow(1983) = 1.61 [0.223]; Chow(1999) = 0.180 [0.909].

Notes: Same as Table 4.1

6. Conclusion

This paper examines the relationship between financial liberalisation and financial development in a selected group of Caribbean countries. It employs the indicators of financial liberalisation developed in Greenidge (2006) and presented in Chapter 1 of this book, which allows the liberalisation process to be disaggregated into domestic and international financial liberalisation. In addition, this paper utilises a single country estimation approach, since the literature argues that the success of liberalisation policies largely depends on the institutional structure of the countries, and thus is likely to be country-specific.

The main finding of the paper is that the direct effects of financial liberalisation on financial development varied across the countries and appears to reflect the pace at which such policies were implemented. Barbados

took a very gradual approach to both domestic and international financial liberalisation and the results suggest that both dimensions of financial liberalisation had a positive impact on the rate and equilibrium level of financial development. However, in Jamaica, where the paces of both domestic and international financial liberalisation were quite rapid, there appears to be no significant effects of financial liberalisation on financial development. In Trinidad and Tobago, domestic financial liberalisation occurred at a pace faster than in Barbados but much slower than in Jamaica, and here the impacts were positive. On the contrary, international financial liberalisation in Trinidad and Tobago took place at a pace just as rapid as in Jamaica and no significant effects were uncovered.

Finally, the findings support the notion that financial liberalisation policies can have real direct effects on financial development, over and above that caused by movements in the real interest rate.

APPENDIX

Table 4A.1:

Results of Tests for Stationarity

		Barbados	Trinidad	Jamaica
DFL	Level	-0.632 [-0.713] {0.276}+++	1.333 [1.374] {0.673}++	0.764 [0.734] {0.719}++
	Δ	-5.458*** [-5.442] *** {0.403}	-7.000*** [-7.004]*** {0.217}	-5.986*** [-5.979]*** {0.136}
IFL	Level	2.869*** [-2.361]** {0.667}++	1.133 [1.024] {0.656}++	0.956 [0.956] {0.705}++
	Δ	-4.747*** [-4.832] *** {0.509}++	-5.519*** [-5.523]*** {0.179}	-6.087*** [-6.089]*** {0.152}
R	Level	-2.489** [-2.444]** {0.435}+	-2.571 [-2.491] {0.194}	-3.178*** [-3.102]*** {0.147}++
	Δ	-6.714*** [-9.794] *** {0.312}	-6.104*** [-7.421]*** {0.159}	-6.513*** [-13.499]*** {0.500}++
LB	Level	-5.491*** [-5.973] *** {0.501}++	0.744 [1.988] {0.714}++	0.752 [0.753] {0.498}+++
	Δ	-4.754*** [-4.753]*** {0.541}++	-7.458*** [-7.579]*** {0.595}++	-5.953*** [-53953]*** {0.423}+++
LRGDPPC	Level	-2.037 [-2.541] {0.736}++	1.085 [1.458] {0.477}++	0.756 [0.499] {0.136}
	Δ	-3.739*** [-3.723] *** {0.305}	-3.121*** [-3.009]*** {0.152}	-5.280*** [-5.403]*** {0.105}
LFD	Level	0.626 [0.378] {0.394}+	-1.855* [-1.785]* {0.655}++	-2.357 [-2.180] {0.395}+
	Δ	-5.096*** [-5.124] *** {0.070}	-4.422*** [-4.422] *** {0.093}	-5.576*** [-3.777] *** {0.137}+

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

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