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"A Statistical Analysis of Bank Performance in the Eastern Caribbean."

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A Statistical Analysis of Bank Performance in the Eastern Caribbean

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Abstract

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Table of Contents

I. Introduction and Motivation

II. Background[1]

A. The Eastern Caribbean Monetary System

The Eastern Caribbean Currency Union (ECCU) is comprised of eight countries that share a common regional central bank, the Eastern Caribbean Central Bank (ECCB)—six of which are independent member states, and are members of the IMF and the remaining two[2] are territories of the United Kingdom. This study focusses on banks in the independent member states—namely, Antigua and Barbuda, Dominica, Grenada, St. Kitts and Nevis, St. Lucia, and St. Vincent and the Grenadines—which are henceforth collectively referred to as the ECCB area.[3] These countries range in size from St. Kitts and Nevis, with 269 sq.km. to Dominica, with 750 sq. km., and with populations ranging in size from 41,000 in St. Kitts and Nevis (UPDATE) to 140,000 (UPDATE) in St. Lucia.

The ECCB was established in 1983. However, prior to this, the countries had shared a long tradition of monetary cooperation, with historical antecedents dating back to 1950 when the British Caribbean Currency Board (BCCB) was formed. The BCCB was replaced with the Eastern Caribbean Currency Authority (ECCA) in 1965 when the Eastern Caribbean dollar (EC$) was introduced and initially pegged to the pound sterling at a rate of EC$4.80=1 British pound. Following a series of depreciations of the pound sterling, the parity was redefined with respect to the U.S. dollar in 1976 and pegged to the U.S. dollar at the then prevailing market cross-rate of EC$2.70 to the U.S. dollar; the parity has since remained fixed at that level. The ECCA was replaced by the ECCB in July 1983.

The ECCB is required to maintain its external reserves at a level that is at least 60 percent of its monetary liabilities. In practice, however, the level of foreign exchange cover typically has exceeded this requirement, and at end-December 1998 it was 97.7 percent. The Bank is

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[1] The following discussion of ECCB institutional arrangements and macroeconomic developments in the ECCB area is drawn from the forthcoming *IMF Occasional Paper* (No. 195) entitled: "The Eastern Caribbean Currency Union: Institutional Arrangements, Recent Economic Developments, and Regional Policy Issues".

[2] The two U.K. territories are Anguilla and Montserrat.

[3] Member countries of the ECCB share a common currency (the EC$), which has been fixed to the U.S. dollar at EC$2.70=US$1 since 1976. The ECCB operates as a *quasi-currency board,* whereby lending to members is strictly limited by statute and 60 percent of its monetary liabilities are required to be backed with foreign currency asssets.

authorized to make temporary advances to member governments amounting to no more than 5 percent of each government's average annual recurrent revenue based on the three preceding financial years. In addition, holdings of treasury bills of any one government cannot exceed 10 percent of the estimated recurrent revenue of that government, as determined by the central bank for the current year. Holdings of government securities, other than treasury bills, may not exceed 15 percent of currency in circulation and other demand liabilities. Holdings of bonds issued by development finance corporations may not exceed 2.5 percent of the average annual government revenue over the preceding three years. The ECCB's provisions also call for a general reserve fund equivalent to 10 percent of demand liabilities, which must be replenished (according to prescribed rules), if necessary, before the distribution of ECCB profits to member countries.

B. The Eastern Caribbean banking system and financial intermediation

The banking system of the ECCB Area is comprised of 37 commercial banks, which are the most highly developed institutions in the financial sector (Table 2 showing "Banks by Territory"). Of these 37 banks, there are 18 locally-incorporated banks (called "indigenous" banks, regardless of the origin of ownership) and 19 foreign branch banks.[4] Among the foreign branch banks, four multinational banks operate within the ECCB Area banking system. They are: Barclays Bank, the Bank of Nova Scotia, the Royal Bank of Canada and the Canadian Imperial Bank of Commerce.

There were a number of mergers and privatizations in the 1990s in an attempt to improve the capitalization of some indigenous banks, and, during the review period, the number of "public" banks was reduced from six to four.[5] In 1992, the Republic Bank of Trinidad and Tobago acquired a 51% stake in the National Commercial Bank of Grenada, and in 1996/97 the Government of Grenada permitted Royal Bank of Trinidad and Tobago to purchase a 50% equity stake in the Grenada Bank of Commerce while retaining only a 10% equity.

[4] Foreign owned branch banks are incorporated in the metropole of the parent institution. There are locally incorporated foreign banks owned by non-Caribbean nations and Caribbean nationals from non-ECCB member countries.

[5] "Public" banks are defined as ... The trend towards privatization has continued beyond the review period, with two additional privatizations taking place in 1999. These included: the Caribbean Banking Corporation's (a subsidiary of Republic Bank of Trinidad and Tobago) acquisition of a 94% equity stake in Nevis Cooperative Bank, and the privatization of the National Commercial Bank, with the Government of St. Lucia retaining a 38% interest in the institution.

Entry and Exit of Public Banks

As shown in Table 3 (in Section IV), during 1990-92, the first subperiod of the analysis, there were 5 public banks in the region: one public bank in Dominica, St. Kitts and Nevis, and St. Vincent and the Grenadines, and two banks in Grenada. During 1993-95, the second subperiod of analysis, there were also a total of 5 public banks; however, the distribution across the countries changed somewhat. In this period, following the privatization of the National Commercial Bank, the number of public banks in Grenada was reduced from two to one. In addition, a public bank (the [ ] bank) was created in St. Lucia; while the status of the public banks in Dominica, St. Kitts and Nevis, and St. Vincent and the Grenadines was unchanged. During 1996-98, the final subperiod, there were 5 public banks in 1996, and 4 public banks thereafter as Grenada privatized its only remaining public bank in 1997.

Thus there were four public banks remaining after 1997, with one bank each in Dominica, St. Kitts and Nevis, St. Lucia, and St. Vincent and the Grenadines. In carrying out the statistical analysis for the period 1996-98, the public bank that was privatized in Grenada in 1997 was treated as if it were active during the whole subperiod, with zero values assigned to all variables for 1997 and 1998; and by the same token, the private bank that emerged from this privitization was assigned a zero value for 1996 and positive values for 1997 and 1998.

Three of the four countries that still maintained public banks after 1997 have relatively large public banks, as measured by total assets. For example, although there was only one public bank in Dominica out of a total of five banks—hence, the share of banks that is publicly-owned was 20 percent—the share of public bank assets in the country's banking system was about 39 percent. St. Kitts and Nevis has one public bank out of a total of six banks; thus St. Kitts and Nevis' share of banks that is publicly owned is about 17 percent, while the share of public bank assets in the country's banking system is about 40 percent. St. Vincent and the Grenadines has one public bank out of a total of five banks; thus St. Kitts and Nevis' share of banks that is publicly owned is 20 percent, while the share of public bank assets in the country's banking system is about 39 percent. This in part is explained by the fact that public banks are the main repository for deposits of the social security schemes, would serve as the major source of funds for the public banks.

St. Lucia, the fourth country with a public bank, has a moderate sized public bank, as measured by assets. St. Lucia has one public bank out of a total of seven banks; thus St. Lucia's share of banks that is publicly owned is about 14 percent, while the share of public bank assets in the country's banking system is about 10 percent. [CHECK: Is it mandatory in St. Lucia that social securities funds must be deposited in large part in the public bank?]

C. Commercial bank performance indicators

Commercial bank profitability

Table 1 shows consolidated commercial bank performance indicators for the ECCB region as a whole for the three sub-periods under review—namely, 1990-92, 1993-95, and 1996-98.[6] This data reveals a slight increase in the average return on assets[7], which rose from 2.3 percent during 1990-92 to 2.7 percent during 1993-95, before declining again to 2.4 percent during 1996-98. These rates of return are similar to rates observed in other regions of the world. [Cite some statistics] The change in profitability appears to have been driven primarily by changes in the interest margin, and more specifically interest income as a percentage of average total assets, as the ratio of interest expenses to average total assets was largely unchanged and averaged 3.5 percent during 1990-98.

Operating income declined consistently across the sub-periods under review, falling from 2.4 percent of average total assets during 1990-92 to just 1.8 percent during 1996-98. In addition, the ratio of operating expenses to average total assets rose over the review period from 4 percent to 4.4 percent during 1996-98. Contributing to this increase was a rather substantial and consistent increase in the ratio of loan loss provisions to average total assets, which rose from 1.5 percent during 1990-92 to 3.7 percent during 1996-98. Although the provisioning requirement was strengthened in July 1995, the continued increase in provisioning during the last sub-period suggests that there has also been a deterioration in the quality of banks' loan portfolios. Moreover, although time series data on the ratio of nonperforming loans to total assets is not available, Van Beek, Rosales, Zermeño, Randall, and Shephard (forthcoming IMF Occassional Paper, 2000) present evidence that this ratio rose between 1997-99.

Table 1 also shows that the average implicit interest rate spread (calculated as interest income divided by average loans minus interest expenses divided average deposits) increased over the review period—rising from 6.8 percentage points during 1990-92 to 7.8 percentage points during 1996-98. The average interest rate spread observed in the ECCB Area is relatively high by international standards. For instance, Randall (1998) showed that during 1991-96 the average implicit interest rate spread in the Eastern Carribean averaged 7.9 percentage points while the U.S. average was just 2.7 percentage points. However, a higher interest rate spread did not translate into higher profitability, primarily because of relatively high bank operating costs. High operating costs stemmed from such factors as indivisibilities of scale owing to the small size of the Eastern Caribbean economies, and other implicit costs such as

[6] In computing these averages, ratios of the included variables were taken relative to country banking system total assets, and then averages were computed for each sub-period across all banks of the region.

[7] Defined as net profits over average total assets.

various capital account restrictions[8], which cause many indigenous banks to restrict their lending to their home markets. In addition, many public banks (which are the depositories for the National Insurance Schemes) face additional legal restrictions which limit their portfolio choices to the home market, and at times to investment in public institutions at below-market rates.

By hampering the flow of funds both within and outside the ECCB region, these restrictions have contributed to the segmentation of the regional banking market and helped contribute to higher interest rate spreads. In addition, Randall (1998) argued that the existence of a 4 percent statutory mininimum on savings deposits rates could also exert upward pressure on interest rate spreads by raising banks' marginal interest costs (if the rate were binding) and possibly operating costs, if a proliferation of small savings acounts resulted.

Table 1. Eastern Caribbean: Commercial bank performance indicators

	1990-92	1993-95	1996-98
	Profitability Indicators (Percent of average total assets)		
Interest Margin	3.9	5.1	5.0
Of which:			
Interest Income	7.4	8.6	8.7
Operating Income	2.4	2.2	1.8
Net Profit	2.3	2.7	2.4
Implicit Interest Rate Spread	6.8	8.2	7.8
	Efficiency Indicators (Percent of average total assets)		
Interest Expense	3.4	3.5	3.7
Operating Expense	4.0	4.7	4.4
Of which:			
Provision for Loan Losses	1.5	2.7	3.7

Source: Calculated from data provided by the ECCB.

[8] These include: the Alien Land Holding Acts (which restrict foreign—including territories elsewhere within the ECCB region—ownership of domestic assets); restrictions pertaining to domestic residents on the purchase of foreign currency securities or real estate abroad; limits on outward capital flows; and restrictions which limit the tax exemption of government securites to domestic residents only.

Financial deepening

To assess the depth and stability of the ECCB area banking sector, the following indicators were calculated: (a) deposits in the banking sector as a percentage of GDP—used as a measure of financial deepening (i.e. monetization), and the ratio of loans to deposits for the system; (b) the coefficient of variation of the ratio of deposits to GDP for the period 1990-98, used as a measure of the variability of deposits; and (c) the structure of deposits between short- and long-term maturity. This exercise yeilded the following results:

(a) The degree of monetization was found to be fairly high, and increasing during the review period (CHECK). This ratio was 70 percent in 1990-92, 79 percent in 1993-95, and ... percent in 1995-98. The same is true for the ratio of loans to deposits for the system, which was also relatively high and increased during the period. This ratio was 80 percent in 1990-92, 81 percent in 1993-95, and 84 percent in 1996-98.

Deposit-GDP ratios in excess of 50 percent are considered high by international standards. For instance, Rojas-Suarez and Weisbrod (1996) observed that: (a) in 1994, the ratio of deposits in the banking sector to GDP were in the range of 32 to 37 percent for Brazil, Chile, Colombia, Mexico and Venezuela; and about 15 percent for Argentina and Peru. Thus by comparison the depth of the ECCB area financial system is relatively high.

Moreover, not only did the extent of monetization increase during the 1990s, but there is also evidence to suppport the view that the degree of monetization has been increasing in the region since the mid-1970s. The CAFAS Report (1987) shows that all countries in the ECCB area experienced an increased in their total bank deposits as a percentage of GDP from the mid-1970s to mid-1980s. For example, during the period from 1977 to 1985, this ratio rose from: about 62 percent to 80 percent for Antigua and Barbuda; 52 percent to 64 percent Dominca; 62 percent to 66 percent for Grenada; 97 percent to 129 percent for St. Kitts and Nevis; 63 percent to 78 percent for St. Lucia; and 73 percent to 82 percent for St. Vincent and the Grenadines.

(b) By comparison, for the period 1980-93, the change in the ratio of deposits to GDP, as measured by the coefficient of variation, was 274 percent for Argentina, 23 percent for Venezuela, 19 percent for Peru, 5 percent for Mexico, 3.4 percent for Colombia, and 2.5 percent for Chile; and (c) as a result of macroeconomic and political instability in Latin America, and negative real interest rates during 1980-94, investors prefered to hold short-term financial assets and banks preferred to make short-term loans.

more results (b) and (c) ....

III. Methodology

Data sources

The primary source of data were the balance sheets and income statements of each bank in the ECCB area, provided by the ECCB. Balance sheets were available for each semester of the period 1990-98, and income statements for each quarter of the review period. Each bank was then identified by a code, which conveys the following information: the country in which the bank operates; whether or not it is locally-incorporated or a foreign branch bank; and whether or not it is a private or public bank (see Table 2).

Methodology

Indicators taken from the balance sheets and income statements for each bank were arranged into a large matrix. The matrix's columns contains all relevant stock and flows variables, such as assets, deposits, loans, profits, interest paid and received. The matrix's rows contain a stack of banks for the period 1990:S1-1998:S2. Thus a particular cell in that matrix gives us a number that represents a variable, say assets, for a given bank, say A_F_1, at a given point in time, say 1995:S1 (the first semester of 1995). Thus running down the matrix for a given column, say the column assigned to assets, one observes the following: the stock of assets on a semiannual basis for the period 1990-98 for a particular bank of a given country, then the next bank on the same country and so on. Then another country is stacked, and so on.

Operating this matrix allows us to prepare the data for further analysis. For example, banks can be grouped either by country, by ownership, or by size. Also, additional variables can be easily created—usually ratios of two variables such as an individual bank's total asset as a percent of the system's total asset, and averages of all relevant variables for a group of semesters. By averaging, the whole sample period can be split into three subperiods—namely, 1990-92, 1993-95, and 1996-98; where a variable for each subperiod is an average of the values of that variable in six semesters. Banks were then ranked in descending order for many relevant variables either already contained in the matrix or newly defined. The latter allowed us to conduct nonparametric tests to gauge whether two sets of banks, say foreign and indigenous private banks, are statistically similar or not from the viewpoint of the variable under consideration.

The paper then employs a variety of techniques to assess Eastern Caribbean commercial bank performance and industry developments during the nineties based on the performance indicators mentioned above, including the computation of (i) bank concentration ratios; and (ii) various nonparametric analytical techniques.

Table 2. Eastern caribbean banks panel identified by country, code, and ownership

Country	Bank code	Bank Ownership
Antigua and Barbuda	A_F_1	Private Foreign
	A_F_2	Private Foreign
	A_F_3	Private Foreign
	A_F_4	Private Foreign
	A_I_1	Private Indigenous
	A_I_2	Private Indigenous
	A_I_3	Private Indigenous
	A_I_4	Private Indigenous
	A_I_5	Private Indigenous
Dominica	D_F_1	Private Foreign
	D_F_2	Private Foreign
	D_F_3	Private Foreign
	D_F_4	Private Foreign
	D_I_1	Private Indigenous
Grenada	G_F_1	Private Foreign
	G_P_2_1	Public Indigenous 1990-92
	G_F_2_2	Private Foreign 1992-
	G_F_3	Private Foreign
	G_P_1_1	Public Indigenous 1990-96
	G_I_1_2	Private Indigenous
	G_I_2	Private Indigenous
St. Kitts and Nevis	K_F_1	Private Foreign
	K_F_2	Private Foreign
	K_F_3	Private Foreign
	K_I_1	Private Indigenous
	K_I_2	Private Indigenous
	K_P_3	Public Indigenous
St. Lucia	S_F_1	Private Foreign
	S_F_2	Private Foreign
	S_F_3	Private Foreign
	S_F_4	Private Foreign
	S_I_1	Private Indigenous
	S_P_2	Public Indigenous
	S_I_3	Private Indigenous
St. Vincent & the Grenadines	V_F_1	Private Foreign
	V_F_2	Private Foreing
	V_F_3	Private Foreign
	V_I_1	Private Indigenous
	V_P_2	Public Indigenous

(i) The *Herfindahl Index* is used to examine the degree of competition in the banking industry and its evolution during the review period. This index is calculated for: the Eastern Caribbean banking system as a whole; the group of indigenous public banks; for indigenous private banks; and for foreign private banks.

The Herfindahl index, H, is defined as :

$$H = 100 * \sum_{i=1}^{N} a_i^2 , \quad a_i = \frac{A_i}{\sum_{i=1}^{N} A_i} ,$$

where A_i is the ith bank's atribute measuring its size (assets or deposits), and N is the number of banks during the period under consideration.

The higher is H, the greater the concentration of either assets or deposits in a few banks. It is straightforward to show that the lower limit of H (a totally even distribution of assets or deposits across banks) is 100/N, and upper limit of H (a totally unven distribution) is 100. The H index is calculated based on the distribution of assets by banks for the three subperiods considered and for various groups of banks (all banks, public, indigenous and foreign banks) and the results are reported below. In addition, the minimum bound of the H index (100/N) is reported for each group of bank and subperiod. Since the H index is affected by the number of banks, which varies across groups and subperiods, the ratio of the calculated value of H and the minimum bound for each bank group is also reported, so as to remove the influence of bank size and thereby facilitate comparisons across groups.

(ii) The *Run* and *Wilcoxon-Mann-Whithey*[9] nonparametric tests are employed to assess the statistical significance, and hence robustness, of differences in bank performance indicators across the three groups of banks in the ECCB region, with a view to identifying changing trends over time. A range of performance indicators are employed for each bank, such as: the share of assets in total assets; the share of non-interest expense in total assets; the share of profits in total assets; the share of interest income in total assets; the implicit loan rate (calculated as interest earnings over the total stock of loans); the implicit deposit rate (calculated as interest expenditure over total deposits); differences between the weighted average lending rate (as reported by the banks to the ECCB) and implicit lending rates; and differences between the weighted average deposit rate (as reported by the banks to the ECCB) and implicit deposit rates.

[9] This test is also called the "Rank-Sum" Test.

The Run Test

The Run test gives a simple way to evaluate the hypothesis that two independent random samples originate from the same population, and the Wilcoxon-Mann-Whithey test provides a more sensitive test for the robustness of such hypotheses.

The Run Test (as does the Wilcoxon-Mann-Whithey) permits an assessment of the statistical significance of differences observed in only two groups of banks at any given point in time; therefore the data must be partitioned according to the nature of the hypothesis being tested. More specifically, suppose $X_1, X_2, ..., X_n$ is a random sample for any given indicator—say the share of bank j's assets in total assets for a given country—of a continous random variable X, and $Y_1, Y_2, ..., Y_m$ is an independent random sample of that same indicator but for a continuous random variable Y—where X and Y might represent public banks and private foreign banks, respectively. The Run Test evaluates the hypothesis that the distribution of the X values (public banks) is the same as the distribution of Y values (private foreign banks)—i.e.the null hypothesis is $H_0 : F_X(t) = F_Y(t)$ for all t, versus the alternative (H_A) that H_0 is false.

To carry out the test for any given indicator, averages are calculated for that indicator for each sub-period (i.e. 1990-92, 1993-95, and 1996-98) for the entire panel of banks. Continuing with the previous example, the data for the asset share variable for the first subperiod, for example, is then assembled into one table. Given the hypothesis that public banks (variable X with "n" observations) and private indigenous banks (variable Y with "m" observations) are drawn from the same underlying bank population, all m + n values are combined together, and the combined sample is ranked in order of magnitude (either an ascending or descending order). The X values are then replaced by 1's and the Y values are replaced by 0's, generating a sequence of n 1's and m 0's. In this new series, a "*run*" is defined to be sequence of positions occupied by the same symbol, 0 or 1. If in fact, H_0 is true, we would expect the 0's and 1's to be thoroughly intermixed, giving a large value of "R", where "R" is defined as the number of runs.

To gain further intuition about the run test, suppose the median for X is smaller than the median for Y, then we would expect most of the 1's to occur early (late) in the ascending (descending) ranked sequence, leading to a fairly small number of runs. Alternatively, if the two medians are equal, but the interquartile range for X exceeds that of Y, we would expect most of the 0's in the middle, with 1's in both ends, again giving a relatively small number of runs. Thus we will reject $H_0 : F_X(t) = F_Y(t)$ for all t if we find $R \leq t_p$; where the probability of a Type I error is $\alpha = p$.

The *run test* can be formalized as follows:

Reject $H_0 : F_X(t) = F_Y(t)$ for all t if $R \leq t_p$;

where $\alpha = p$ is the probability of type I error, and $t_{0.05} = \frac{2(n)(m)}{n+m}\left(1 - \frac{1.64}{\sqrt{n+m}}\right)$

The Wilcoxon-Mann-Whithey Test

To implement the Wilcoxon-Mann-Whithey (or rank-sum) test, let W_Y be the sum of the ranks of the m Y values. It can be shown that:

$$E[W_Y] = \frac{m(m+n+1)}{2} \quad \text{and} \quad Var[W_Y] = \frac{mn(m+n+1)}{12}$$

The *Wilcoxon-Mann-Whithey* (or *rank-sum*) *test* can be formulated as:

Reject $H_0 : F_X(t) = F_Y(t)$ for all t if either $w_Y \leq t_{0.025}$, or $w_Y \geq u_{0.025}$

Where: w_Y is the sum of the *observed* ranks of the m Y values, and

$$t_{0.025} = E[W_Y] - 1.96\sqrt{Var[W_Y]} - 1/2 \quad \text{and} \quad u_{0.025} = E[W_Y] + 1.96\sqrt{Var[W_Y]} + 1/2$$

Although the intuition behind the Wilcoxon-Mann-Whithey Test is the same as that of the Run test, in practice the Wilcoxoon-Mann-Whithey Test is a more sensitive framework and provides a means of assessing the robustness of the results of the Run Test, particularly in cases where the Run test produces an inconclusive outcome.

IV. Empirical Findings

A. The structure of bank ownership

A taxonomy of the banking structure during 1990-98 is presented in Tables 3 and 4. The relative importance of foreign, private, and public banks in terms of percentage share (Table 3) and in terms of assets, deposits and loans (Table 4). These tables display two characteristics of foreign banks: the share of banks that are foreign-owned ("foreign penetration"), and the share of foreign banks' assets in total assets ("asset penetration"). The tables show that: (a) foreign bank penetration in the ECCB is relatively high, and (b) the degree of the foreign penetration is about the same as the degree of asset penetration.

Table 3. Number of banks in each of the ownership groups 1/

Periods	Total banks	Public banks	Private banks: Indigenous	Private banks: Foreign branches
1990:S1-92:S2	35 (100)	5 (14)	10 (29)	20 (57)
1993:S1-95:S2	37 (100)	5 (13)	11 (30)	21 (57)
1996:S1-98:S2	38 (100)	5 2/ (13)	12 (32)	21 (55)

1/ In parenthesis number of banks in each group as a percentage of total number of banks.
2/ One bank was privatized in 1996, thus thereafter the total number of banks were actually 37, of which 4 were public banks.

Table 4. Relative size (by assets, deposits and loans) of each of the ownership groups

Period/attribute	Total	Public banks	Private banks: Indigenous bks.	Private banks: Foreign bks.
1990:S1-92:S2				
Assets	100	22.6	21.6	55.8
Deposits	100	21.6	21.4	57.0
Loans	100	21.6	20.4	58.0
1993:S1-95:S2				
Assets	100	19.9	24.9	55.2
Deposits	100	19.3	24.8	55.9
Loans	100	19.6	24.0	56.4
1996:S1-98:S2				
Assets	100	18.4 1/	27.3	54.3
Deposits	100	18.3 1/	27.4	54.3
Loans	100	19.1 1/	26.8	54.1

1/ One bank was privatized in 1996, thus thereafter the total number of banks were actually 37, of which 4 were public banks.

From the viewpoint of the number of banks, the structure of the Eastern Caribbean banking system (public, indigenous private and foreign private banks) has remained quite stable in the last decade (Table 3). From the size viewpoint (measured either by assets, total deposits or total loans), foreign banks as a group have marginally decreased their importance in the system (as their share of assets declined from about 56 percent in the early 1990s to about 54 percent in the late 1990s).[10] However, indigenous banks as a group have largely increased

[10] This is a relatively high percentage compared with other countries. Claessens, Dermiguc-Kunt and Huizinga (1998) report the average share of foreign bank assets in total bank assets for several countries during 1988-95. For the sake of comparison, the share of some of the countries listed are: Argentina 10%, Australia 5%, Belgium 5%, Bolivia 36%, Brazil 30%, Canada 7%, Chile 25%, China 0%, Colombia 5%, Costa Rica 5%, Czech Republic 51%, Ecuador 52%, El Salvador 28%, Estonia 35%, Finland 0%, France 8%,

(continued...)

their importance in the system at expense of public banks as a group. In the last decade, indigenous private banks' assets as percentage of the system assets increased from about 22 percent to about 27 percent, while in the same period, public banks assets as a percentage of the system assets declined from about 23 percent to about 19 percent. The same conclusion emerges when gauging the importance of each group by their share of either deposits or loans (Table 4).

These results are quite interesting when compared with the degree of foreign bank penetration during the 1980s. The CAFAS Report (1987) shows that in 1985, total assets and total deposits of foreign banks as a percentage of the system total assets and total deposits were 64 percent and 63 percent, respectively. At the time, this report argued that "the financial system is dominated by a samll number of foreign commercial banks, despite the considerable success which the Governmments and the ECCB have had in fostering local banking institutions." However, it is now apparent that foreign banks have decreased their importance since the mid-1980s, but that private indigenous banks, and not necessarily the public banks (as the governments had originally intended) have an enhanced presence, thereby diluting the importance that foreign banks once had.

For the region as a whole, foreign bank penetration is important, as foreign banks' assets as a percentage of system total assets is about 54 percent, much higher than the percentage for Latin America at 28 percent (Table 6). Table 5 (below) provides a breakdown of the foreign penetration asset share by country in the ECCB area, and the GDP share by country. The differences in country foreign penetration is correlated with national income (the coefficient of correlation is 0.81), which suggest that the differences in foreign penetration by country is primarily due to national income rather than national differences in, for example, laws governing foreign investments in the banking sector. The latter is to be expected given the fact the ongoing attempts to harmonize capital account restrictions and the investment climate in general within the ECCB monetary union.

Table 5. Foreign Bank Penetration during 1996-98

ECCB area countries	Number of foreign: Banks as % regional total number of banks		Foreign bank assets as percent of regional banking system total assets	Share in total regional average (1996-98) GDP
Antigua and Barbuda	4	10.5	10.8	25.4
Dominca	4	10.5	6.2	10.8
Grenada	3	7.9	10.0	13.8
St Kitts and Nevis	3	7.9	8.5	11.6
St Lucia	4	10.5	13.5	25.7
St Vincent and the G.	3	7.9	4.7	12.6
Total	21	55.2	53.8	100.0

Germany 25%, Grece 77%, Hungary 61%, India 0%, Indonesia 16%, Israel 2%, Italy 1%, Jamaica 48%, Japan 21%, Jordan 95%, Korea 23%, and Lebanon 57%.

For the purpose of comparison, the number of foreign banks as a percentage of total banks and foreign bank assets as a percentage of total assets for various regions are reported below

Table 6. International Comparison of Foreign Bank Presence

	Number of foreign banks as a percentage of total	Foreign bank assets as a percentage of total
Regions		
Africa	31	27
Asia	28	30
Latin America	25	28
Middle East and North Africa	26	19
Transitional Economies	54	52
Industrial Economies	25	15

Source: Table 2 in Claessens, Dermiguc-Kunt and Huizinga (1998).

Elsewhere within Latin America, Argentina was found to have a similar degree of foreign bank penetration as the ECCB area. Out of the 95 banks that existed in Argentina in September 1999, 39 banks (i.e. 41 percent) were foreign; and those foreign banks hold assets in about 53 percent of the system assets. This would indicate that foreign banks are of similar size than that of domestic banks, which is confirmed by the nonparametric tests we performed. The first 47 banks (ranked by sized in descending order) covered about 96 percent of the system total asset. In this subset, foreign and domestic banks are quite intermixed, and the formal tests accept the hypothesis that they belong to the same size distribution.

Mexico has a lower degree of foreign bank asset penetration than the ECCB area. In Mexico, about 51 percent of the 37 banks that existed at end-1999 were foreign; howerver, those foreign banks hold only about 20 percent of the system assets. Thus, this suggests that foreign banks are relatively small in size.[11]

B. Bank Concentration

The Herfindahl index was calculated for the Eastern Caribbean banking system as a whole, for public, indigenous private, and foreign private banks as a group, in order to gauge the degree of competition in the Eastern Caribbean banking industry. In each case, the index

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[11] Under the arrangements enacted after the 1994 crisis, a singly foreign controlled bank can represent up to 6 percent of total capital of the banking system (up from 1.5 percent under NAFTA) and foreign controlled banks, in the aggregate, could represent up to 25 percent of total capital (up from 8 percent under NAFTA).

was calculated for three subperiods, namely: 1990-92, 1993-95, and 1996-98. The results of this exercise are presented in Table 7 below.

Table 7. Concentration indices (by assets) by period and group of banks

Indices	1990-92	1993-95	1996-98
All banks			
H	4.0	3.5	3.4
100/N	2.9	2.7	2.6
H*N/100	1.4	1.3	1.3
Public banks			
H	21.9	24.1	26.0
100/N	20.0	20.0	20.0
H*N/100	1.1	1.2	1.3
Indigenous priv ate banks			
H	20.1	14.7	11.9
100/N	10.0	9.1	8.3
H*N/100	2.0	1.6	1.4
Foreign private banks			
H	6.2	5.4	5.5
100/N	5.0	4.8	4.8
H*N/100	1.2	1.1	1.2

Table 7 reveals the following: (a) bank concentration from the view point of a bank's total assets is not a problem among the ECC banks, as indicated by the low H indices shown in the first raw of Table 7,[12] (b) the group of indigenous banks and the group of foreign banks tended to be less concentrated over time, (c) however, the group of public banks became more concentrated over time, (d) when considered all banks, they tended to be less concentrated over time, and (e) across groups, foreign banks are the least concentrated.

For the sake of comparison, we calculated the H index for Argentina and Mexico. For Argentina, the concentration index, H, by assets for all banks was about 12 percent during June-September 1999. This is about the same as the ECCB area; however, when controlling by the number of banks, Argentina has an index (H*N/100) of about 5 times larger than that for the ECCB area.

For Mexico, the concentration index, H, for assets for all banks was about 12 percent during June-September 1999. Thus, Mexico has a much larger concentration than the ECCB area. Mexico's higher degree of concentration is reflected in the fact that the three largest banks hold about 53 percent of the system total assets.

[12] Basically the same results are obtained when one measures concentration from the viewpoint of deposits rather than assets. When banks size are measured by their deposits, the concentration H index for all banks and for 1990-92, 1993-95, and 1996-98 are 4.0, 3.6 and 3.4, respectively.

C. Degree of dollarization

The degree of dollarization in the ECCB area banking system seems to be relatively low, thus indicating the absence of strong lack of credibility in the currency union and in the financial system. There was however, an increase in dollarization during the 1990s (check). For the system as a whole and for the three subperiods we study, the share of deposits denominated in U.S. dollars in total deposits ..., ..., ..., respectively, and the share of loans denominated in U.S. dollar in total loans for the same subperiods were ..., ..., ..., respectively. These shares in Argentina, Chile, Bolivia, Brazil, Peru, and Venezuela are ..., ... , respectively.

At a desagregated level, the data reveal the following: (a) in the late1990s more banks were receiving deposits and making loans donominated in U.S. dollar, and the banks that were already operating in U.S. dollar increased? Or decreased? Their participation. (b) in the subperiod 1996-98, as shown in Table 8, most banks were receiving deposits denominated in U.S. dollars, however, most banks had a share of less than 10 percent. (c) in the subperiod 1996-98, as shown in Table 8, the number of banks making loans in U.S. dollars was smaller than the number of banks receiving U.S. dollar denominated deposits; and most banks making loans in U.S. dollars had a share of less than 10 percent. (d) the banks operating in U.S. dollars were intermixed among foreigners, indigenous private, and public. Thus operating in U.S. dollars is not a peculiarity of foreign banks.

Table 8. Share of deposits and loans denominated in U.S. dollars in total during 1996-98

U.S. dollar denom. Deposits in total	0% - 10 %	11% - 30%	31% - 50%
Number of banks	27	6	2
Of which: foreign	16	2	1
Of which: public	4	0	0
U.S. dollar denom. Loans in total			
Number of banks	16	4	1
Of which: foreign	9	2	1
Of which: public	1	0	0

D. Nonparametric tests: The Run and theWilcoxon-Mann-Whithey Tests [13]

The Run Test and Wilcoxon-Mann-Whithey Tests were applied to the following bank performance indicators: (a) bank size, defined as the ratio of that bank's total assets to a country's banking system's total assets; (b) bank efficiency, defined as the ratio of non-interest expense to total assets; (c) bank profitability, measured as the ratio of bank profits to total assets; (d) net interest income as a percent of total assets; (e) implicit lending rate (interest income as a percent of total loans); (f) implicit deposit rate (interest expense as a percent of total deposits); (g) the difference between the weighted average of explicit (quoted) lending rates and the implicit lending rate; and (h) the difference between the weighted average of explicit (quoted) deposit rates and the implicit deposit rate. In all cases, the two groups of banks tested are: foreign versus indigenous private banks, excluding the public banks; and public versus private banks.

The application of the Run Test and Wilcoxon-Mann-Whithey Tests yeilded the following conclusions:

Bank size

The hypotheses examined were: (a) whether indigeneous private banks are statistically different in size than foreign banks, and (b) whether public banks were statistically different in size from the rest of the banks.

(a) To address the first question, public banks were excluded from the sample, and all private banks were ranked by size in descending order—i.e. from the largest to smallest bank—for each of the three subperiods considered. The inspection of the ranking, and the two nonparametric tests yielded the following two conclusions:

i. For each of the three subperiods, eight out of ten of the largest private banks are foreign and two are indigenous;
ii. In spite of this observation, by inspection, the ranking of foreign and indigenous private banks is quite intermixed, and in fact the results of the two nonparametric tests lead us to accept the null hypothesis of no difference in size between these two groups of private banks for all three of the subperiods under review. Furthermore, the confidence of the tests increases for the most recent subperiod, suggesting that those groups tended to have more similar distributions over time.

(b) To examine whether the size of public banks are statistically different in size from that of foreign and indigenous private banks, having established that foreign and indigenous private banks are similarly distributed, the sample was then grouped into public banks and private banks (combining indigenous and foreign banks). The two bank groups were then

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[13] The technical part of this section is based on Chapter 10 of Harold J. Larson (1982).

ranked in descending order. The inspection of the ranking, and the two nonparametric tests yielded the following conclusions:

1) The distribution of public banks is increasingly resembling that of the private banks, since the rankings of public banks has become more intermixed with that of private banks over time. For instance, during the subperiod 1990-92, the nonparametric tests indicate that public banks were relatively larger than the rest. However, for the subsequent periods, the tests show that the size of public banks tends to be more dispersed in the whole distribution of banks by size.
2) The two public banks that were privatized during the review period improved their position in the ranking following their privatization, as their market share increased.

Bank efficiency

Our findings regarding bank efficiency were as follows:
(i) For the period 1996-98, the average noninterest expense as a percentage of assets for the ECCB banking sector was 4.9 percent. By comparison, Claessens, Demirguic-Kunt, and Huzinga (1998) report that in industrial countries, banks' administrative expenses as a percentage of assets were 2.6 % and 6.1 % in Latinamerica.

(ii) The nonparametric tests reveal that, for the three subperiods, foreign and indigenous private banks belong to the same distribution, i.e., foreign and indigenous private are equally effcient from the viewpoint of non-interest expenses as percent of total assets.

(iii) The nonparametric tests reveal that, for the three subperiods, public banks and rest (foreign and indigenous private) do not belong to the same distribution. Interestingly, for the three subperiods, public banks are in the lower part of the ranking; thus, public banks are in general more effcient than the rest from the viewpoint of non-interest expenses as percent of total assets.

Bank profitability

(i) The nonparametric tests reveal that, from the viewpoint of profits as percent of total assets, for the three subperiods reviewed, foreign and indigenous private banks do not belong to the same distribution. In particular, foreign banks appear to be more profitable than indigenous private banks.

(ii) For the three subperiods, public banks and rest (foreign and indigenous private) belong to the same distribution, as public banks are intermixed in the ranking of profits as percent of total assets—thus, public banks are in general as effcient as private banks.

Net interest income as a percent of total assets

(i) The nonparametric tests reveal that, for the three subperiods, foreign and indigenous private banks do not belong to the same distribution. In particular, foreign banks exhibited higher net interest income as a percentage of assets than did indigenous private banks, thereby corroborating the results, cited earlier, that foreign banks exhibit greater profitability and similar cost efficiency.

(ii) For the three subperiods, public banks and rest (foreign and indigenous private) do not belong to the same distribution. For the three subperiods, public banks show lower net interest income as a percent of assets than the rest of banks. Interestingly, this result does not coincide with the earlier finding of similar profitability across bank groups and greater public bank cost efficiency.

Implicit lending rate *(interest income as a percent of total loans)*

(i) The nonparametric tests reveal that, for the three subperiods, foreign and indigenous private banks belong to the same distribution. Foreign banks obtained the same gross rate of return on loans (implicit lending rate) than indigenous private banks. This implies that there is arbitrage in the loan rate charged and that both groups of private banks experienced a similar incidence of problem loans. The issue of problem loans is further explored below.

(ii) The nonparametric tests reveal that, for the three subperiods, public banks and the rest (foreign and indigenous private) do not belong to the same distribution. For the three subperiods, public banks obtained lower gross rate of return (implicit lending rate) than the rest of banks. This implies that public banks have either a large proportion of subsidize loans or a large proportion of problem loans. This results are in agreement with the observation that public banks show lower net interest income as a percentage of assets than the rest of banks.

Implicit deposit rate *(interest expense as a percent of total deposits).*

(i) The nonparametric tests reveal that, for two subperiods: 1990-92 and 1996-98, foreign and indigenous private banks belong to the same distribution. For those periods, investors obtained the same gross rate of return for their deposits (implicit deposit rate) as either foreign banks or indigenous private banks. However, for the subperiod of 1993-95, foreign and indigenous private banks do not belong to the same distribution; and in particular, investors obtained a lower gross rate of return for their deposits at foreign banks than at the indigenous private banks.

(ii) The nonparametric tests reveal that, for the subperiods 1990-92 and 1996-98, public banks and the rest (foreign and indigenous private) belong to the same distribution, implying that investors obtained the same gross rate of return for their deposits (implicit deposit rate) at either public banks or the rest of banks. [Separate analysis for subperiod 1993-95]

Weighted average of explicit (quoted) lending rates minus the implicit lending rate

In the absence information on nonperforming loans, the quality of banks' loan portfolio was proxied by the difference between weighted average interest rate quotes on loans (based on data reported by the banks to the ECCB) and the implicit lending rate. If all bank loans were performing, then the quoted loan rate would be expected to equal the implicit lending rate, and in the presence of nonperforming loans, the implicit loan rate would be expected to be ***lower*** than the quoted rate.

As we proceeded in all previous cases, banks were ranked in descending order according to the value of the variable being measured (from positive to negative values). As suggested above, a positive value could indicate that the bank's return on loans were less than first anticipated, due perhaps to nonperforming loans. A value of zero of this variable for a bank, it would indicate that the bank's return on loans were as first anticipated, due may be the absence of nonperforming loans. A negative value of this variable for a bank, it would indicate that the bank's return on loans are higher than first anticipated, due may be the absence of nonperforming loans combined with other returns on the loan not capture in the quoted rate.

(i) The nonparametric tests reveal that, for the three subperiods, foreign and indigenous private banks belong to the same distribution. This would indicate that neither group of banks (foreing or indigenous private) are particularly affected by nonperforming loans.

(ii) The nonparametric tests reveal that, for the three subperiods, public banks and the rest of banks belong to the same distribution, although only marginally. However, given that this variable takes positive, zero, and negative values, and that about half of all banks take positive values and the rest negative values, it is pertinent to analyze not how public banks blend in with the whole distribution but in a dichotomic distribution of positive and negative values (with zero interpreted as negative). Running the tests base on this premise revealed that most of the public banks lay in the positive distribution: 5 out of 5 during 1990-92; 4 out of 5 during 1993-95; and 3 out of 5 during 1996-98. This would indicate that public banks had more problem loans than the rest of banks.

Weighted average of explicit (quoted) deposit rates minus the implicit deposit rate

The significance of this variable is as follows. A positive value suggests that on average, banks are paying less than the announced rates, perhaps capitalizing on their perceived solvency and name recognition among depositors. On the hand, a negative value would imply that the banks have to pay more than quoted to attract depositors, perhaps indicative of an implicit risk premium being paid to depositors.

(i) The nonparametric tests reveal that, for the three subperiods, foreign and indigenous private banks belong to the same distribution. This would indicate that neither group of banks (foreign or indigenous private) is systematically remunerating deposits by more or less than what is quoted. The same is also true for public banks.

E. Are there scale economies in the ECCB banking system

Explore here the issue of scale economy: plot banks size with efficiency variables to see whether larger banks are more effcient than smaller banks.

Also plot the banks' rate of growth in credit to the private sector with interest rate differential (may be forwarded, as credit boom is usually a lag indicator).

F. Is there evidence of a recent lending boom and widspread problem loans?

Given that lending booms can foster financial vulnerability by contributing to an eventual decline in in the quality of banks' assets, and that most financial crises were preceded by a period of rapid growth in banking system credit as a percentage of GDP, below we plot the ECCB bank credit to the private sector as a percentage of GDP for the period 1990-98.

[Insert Chart 1]

Analyze the chart and compare with the exericene of other countries in Latin America. Gavin and Hausmann (1996) plot the stock of credit to the private sector as a percentage of the GDP for several countries that experience banking crises and found that for most of them this measure exploded prior to the crisis. For example, for Mexico this measure jumped from 10 percent in 1990 to nearly 40 percent in 1994. A similar pattern of abrupt increase is observed for the rest of the countries they studied.

We do not have direct measures of the quality of loans (nonperforming loans) by individual bank. As a proxy for the quality of loans, we have plotted for each bank and for the period 1990-98 the difference between the weighted average of interest rates charge on loans and the implicit interest rate on loans. The first is weighted by the importance of each loan in the total and the second is obtained as a ratio of all interest receits to total loans. A persistent increase in this difference would indicated a deterioration in the quality of loans as they yield in fact less than one would have expected.

[Insert Chart 2]

V. Conclusion and Agenda for Future Research

VI. References

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Table 9. ECCB Countries: Selected Economic Indicators 1/

Indicators and Countries	1990-92	1993-95	1996-98
Growth per capita			
Antigua and Barbuda			
Dominica			
Grenada			
St. Kitts and Nevis			
St. Lucia			
St. Vincent and the Grenadines			
Inflation 2/			
Antigua and Barbuda			
Dominica			
Grenada			
St. Kitts and Nevis			
St. Lucia			
St. Vincent and the Grenadines			
Saving – Investment = CAB 3/			
Antigua and Barbuda	19.2-14.5=-4.7	19.2-14.5=-4.7	19.2-14.5=-4.7
Dominica			
Grenada			
St. Kitts and Nevis			
St. Lucia			
St. Vincent and the Grenadines			
Public Sector Overall Fiscal Balance 4/			
Antigua and Barbuda			
Dominica			
Grenada			
St. Kitts and Nevis			
St. Lucia			
St. Vincent and the Grenadines			
Public Sector Debt 5/			
Antigua and Barbuda			
Dominica			
Grenada			
St. Kitts and Nevis			
St. Lucia			
St. Vincent and the Grenadines			
Real Effective Exchange Rate 6/			
Antigua and Barbuda			
Dominica			
Grenada			
St. Kitts and Nevis			
St. Lucia			
St. Vincent and the Grenadines			
Terms of Trade 7/			
Antigua and Barbuda			
Dominica			
Grenada			
St. Kitts and Nevis			
St. Lucia			
St. Vincent and the Grenadines			

Source: IMF document SM/99/69
1/ Annual averages.
2/ End of period inflation, as measured by the consumer price index.
3/ Gross national saving, gross investment, and the external current account balance are in percentage of GDP.
4/ In percentage of GDP.
5/ In percentage of GDP, and includes external arrears.
6/ 1990 = 100; an increase (decrease) in the index indicates a real appreciation (depreciation) of the local currency.
7/ 1990 = 100; defined as unit value of exports divided by the unit value of imports, excluding tourism.

Commercial bank legal and prudential requirements

Legal requirments

Legal requirements faced by all licensed financial institutions include (a) a minimum paid-up capital requirement; (b) the maintenance of a statutory reserve fund; (c) restrictions on lending to related parties; (d) a restriction on large credit exposure; (e) restrictions governing the nature of bank investments; and (f) satisfaction of a reserve requirement.

- The minimum ***paid-up capital*** requirement for newly established locally incorporated banks is EC$5 million. The applicable minimum paid-up capital requirement for nonbank financial institutions is determined by the relevant ministry of finance in consultation with the ECCB, but it should not be less than EC$1 million. Foreign branch banks (namely, existing branches of foreign banks) are subject to an ***assigned minimum capital requirement*** of 5 percent of the branch's deposit liabilities, which is applied annually. This requirement is satisfied by the provision of a "letter of comfort" from the parent institution certifying that the assigned capital is being held in the books of the head office on behalf of each branch bank.

- Financial institutions are required to maintain a ***Statutory Reserve Fund*** equivalent to 100 percent of paid-up capital, and to transfer a minimum of 20 percent of annual profits to the Statutory Reserve Fund account until the fund is equal to the paid-up capital.

- Financial institutions are prohibited from providing unsecured credit to directors, external auditors/examiners and persons holding 10 percent or more of shares in the institution, except if a waiver is granted by the minister of finance after consultation with the ECCB. Moreover, credit facilities granted to such individuals cannot be provided at rates that are more favorable than those offered to other customers. Financial institutions are also prohibited from lending against their own shares.

- The stock of unsecured loans to any individual or group of related individuals must not exceed 15 percent of a bank's unimpaired capital and reserves, but this restriction can be waived if loans are secured by acceptable collateral valued at 20 percent or more of the loan amount, and/or upon a decision by a country's minister of finance after consultation with the central bank.

- The Banking Act contains provisions which limit the nature of banks' commercial activity, including constraints on the acquisition of real estate, except for purposes of business expansion, and ownership interests in business ventures.

- Licensed commercial banks must comply with the 6 percent **reserve requirement**, on both Eastern Caribbean dollar and foreign currency deposits.

Prudential guidelines

The ECCB first introduced **prudential guidelines** conforming to international best practices (as defined in the Basle Committee's banking supervision guidelines) in November 1994.

These guidelines are, in many cases, more stringent than the requirements of the UBA. The prudential guidelines have been adapted over time[14] and at present they govern: (a) large credit exposures; (b) provisioning requirements for nonperforming loans; (c) an aggregate limit of 10 percent on the ratio of nonperforming assets to total assets (this limit has been in effect since 1987); (d) the suspension of interest on nonperforming assets; and (e) compliance with capital adequacy standards adapted by the CARICOM Bank Supervisors from the Basle Committee guidelines.

- Prudential guidelines on ***large credit exposures,*** issued in 1994, are consistent with the Basle Committee's 1991 recommendations and require financial institutions to limit their exposure to any single individual or group of related persons to 25 percent of paid-up capital and reserves *irrespective of the security provided.*[15] [16]Institutions found to be in violation of this requirement are required to take immediate action to either reduce the exposure or increase the level of "Tier I capital" (see below).

- Under the ***"harmonized approach" to loan provisioning*** introduced in 1995, at least 70 percent of each financial institution's credit portfolio is subject to an annual review, at which time the quality of each bank loan is assessed and a grade is assigned that has associated with it a minimum provision level. This assessment is based on such criteria as the currentness and timeliness of debt-service payments; the presence and quality of collateral and/or other securitization; the degree of sensitivity to economic conditions; and the quality of the supporting loan documentation. Loans are then assigned the following labels, with the corresponding provisions: "pass," requiring no provision; "special mention," requiring no provision; "substandard" but fully secured by cash or government securities, which requires no provision; "substandard" with no securitization, requiring a 10 percent provision; "doubtful", requiring a 50 percent provision; and "loss", requiring a 100 percent provision. In addition, **a maximum tolerable limit of 10 percent on the *ratio of nonperforming***

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[14] In particular, in July 1995 the ECCB introduced additional prudential guidelines (including stricter provisioning standards) and expanded the reporting requirements of banks.

[15] Thus, this guideline is more stringent then the corresponding stipulation in the UBA, since unlike the UBA the guidelines do not allow for exceptions from the stipulated 25 percent. Since the provisions of the UBA have legal precedence over the prudential guidelines, there is a recognized need to harmonize the two documents.

[16] In this respect, a "group of related persons" is defined as "two or more persons, ... holding exposures from the same credit institution and of its subsidiaries, whether on a joint or separate basis, but who are mutually associated in that: (i) one of them holds directly or indirectly power of control over the other ... or; (ii) their cumulated exposures represent to the credit institution a single risk in so much as they are interconnected with the likelihood that if one of them experiences financial problems the other or all of them are likely to encounter repayment difficulties...." Relevant "interconnections" among persons include: "common ownership, common directors, cross guarantees, and direct commercial interdependency which cannot be substituted in the short term."

- *or "unsatisfactory" assets to total assets* was established; loans are classified as nonperforming when they have been in arrears for 90 days or more.

- Under guidelines governing ***the suspension of interest on nonperforming assets***, banks are required to stop accruing interest on accounts that are 90 days or more in arrears, unless there is adequate security and full collection is expected within three months. Moreover, except in the case of loans to government or loans with a government-guarantee, banks are prohibited from accruing interest on overdrafts when the approved limit has been reached and/or when credits to the account are insufficient to cover interest accruals for at least a three-month period. In the case of government and government-guaranteed loans, accrual of interest is permitted up to the limit of the guarantee or up to the value of the collateral. A loan's accrual status is restored when all the arrears of principal and interest have been paid, and in the case of overdrafts accrual status is restored when the account is operating within the approved limit and all interest arrears have been cleared. Accrued, uncollected interest should be reflected in an "interest in suspense" account on the balance sheet.

- There are also guidelines governing the conditions under which loans and advances can be renegotiated owing to weaknesses in the borrower's financial position and/or the emergence of payment arrears. These guidelines include considerations pertaining to the borrower's ability to service the loan under the new conditions and the adequacy of supporting securitization.

- Locally incorporated commercial banks are required to maintain the ratio of Tier I (or "core") capital to risk-weighted assets at a minimum of 8 percent.[17] This ***capital adequacy*** ratio was adapted by the CARICOM Bank Supervisors from the Basle Committee guidelines, with the aim to be somewhat more stringent than that of the Basle Committee. The latter had been designed with larger and better diversified banks in mind, and requires a ratio of *total* qualifying capital (Tier I and Tier II[18]

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[17] Tier I capital is comprised of paid-up ordinary share capital and surplus, paid-up perpetual noncumulative preference shares and share surplus; statutory reserves; capital reserves (excluding asset revaluations); general reserves (excluding reserves losses on assets); audited retained earnings (accumulated losses) *less* current year losses; bonus shares from capitalization of unrealized asset revaluation reserves; goodwill and other intangibles.

Risk weights for balance sheet items are as follows: (a) zero percent risk for foreign and domestic currency cash and government securities; (b) 20 percent for claims on domestic and foreign financial institutions; (c) 50 percent for fully secured real estate residential mortgages; and (d) 100 percent for other claims on the private sector and for real estate and equity investments. For off-balance sheet items: (a) a zero percent risk is attached to claims (with or without government guarantees) on domestic and foreign government entities; (b) a 20 per-cent risk is assigned to claims on domestic and approved foreign financial institutions, public sector entities and multilateral development banks; and (c) a 100 percent risk is assigned to claims on the private sector and other institutions.

[18] Tier II capital consists of fixed asset revaluation reserves (limited to 20 percent of Tier I capital); general provisions/reserves for losses on assets (limited to 1.25 percent of total risk-

(continued...)

capital less investments in financial subsidiaries not included in the group consolidation) to risk-weighted assets of 8 percent.

- The ECCB guidelines also specify a **liquidity requirement**, namely that the ratio of Tier I capital to deposits not be less than 1:20.

weighted assets); paid-up perpetual cumulative preference shares and share surplus; bonus shares from capitalization of unrealized asset revaluation reserves; unaudited undivided profits; asset revaluation reserves; mandatory convertible debt instruments; other hybrid capital instruments; and subordinated term debt and limited life preference shares (limited to 50 percent of Tier I capital).