Banking in Barbados, 1960-82

by

DeLisle Worrell
Research Department
Central Bank of Barbados

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As the Barbados economy grew in the last two decades we witnessed an expansion of commercial banking, with new banks joining the old established, a proliferation of branches throughout the country and publicity campaigns to attract new custom to individual institutions. How rapid was the accumulation of resources in the banking system during this period? What determined the demand for bank funds and how did the banks try to accommodate the supply and demand? This study analyses these three questions. The first part looks into the reasons for the growth in deposits, banks' main source of funds. The second seeks reasons for changes in credit. The third section discusses interest rate and liquidity management, the mechanism by which banks adjusted to imbalances in the flow of deposits and the public's credit requirements.

In 1960 there were five banks operating in Barbados, four foreign-owned commercial banks and the Government Savings Bank. Commercial banking dates back to 1837, with the establishment in Barbados of the Colonial Bank. Now Barclay's International, it has had an uninterrupted presence on the island since that time. The others were all Canadian; the Royal Bank of Canada set up its Barbados branch in 1911 and the Canadian Bank of Commerce opened in 1920. The newest arrival in 1960 was the Bank of Nova Scotia, whose Barbados branch was then one year old. The Government Savings Bank, established in 1914, was the only

one with a wide network of branches; post offices throughout the country were used as its agents. Only two local banks are recorded, neither successful. The more recent and more importan was the Barbados Cooperative Bank, established in 1938. It failed to survive a liquidity crisis in the 1950s. The West India Bank (1840-47) one of several of that name to be found in the Caribbean in the nineteenth century, was never of much account.

Bank deposits totalled $60.4 million in 1960, equivalen to 45% of that year's GDP. They were the banks' only source of funds. Very little was on fixed deposit (only eight percent of the total); savings deposits were the principal form of interest bearing claim on banks, with 61% of the total. Only 66% of deposits were on loan to the public; another 12% was invested i- long term Government securities. Much of the remainder was placed abroad, and net foreign assets were the equivalent of 11% of deposits.

Commerce, agriculture and Government accounted for mos bank credit at the beginning of our period. In 1966, when a sectoral breakdown of credit first becomes available, their combined share was 68%. Banks avoided loans of three years and over, for the most part: short term loans and overdrafts made 72% of the total.

By 1982 an extensive network of bank branches had developed. Existing banks had opened new offices, the Governme Savings Bank had acquired commercial banking functions (and a

change of name to the Barbados National Bank) and two American banks were in operation in Bridgetown. Deposits rose to $880 million at the end of 1982, the equivalent of 44% of GDP. Greater sophistication among depositors was reflected in increasing use of the time deposit, which accounted for 33% of the total. Interest-bearing deposits amounted to 80% of the total; the 20% share of demand deposits compares with a 31% share in 1960.

Commercial banks extended their services to a broader range of customers and promoted new lending instruments. Consumer instalment credit was a novelty in 1960, but it grew widespread in the 1960s, giving households much greater access to bank finance. Some banks developed a sizeable mortgage portfolio in the 1970s, augmenting the flow of funds to the personal sector. By 1982, households absorbed over 20% of total credit outstanding, compared to just eight percent in 1966.

Banks developed some interest in the producing sectors which grew to importance in the 1960s - tourism and manufacturing. Their combined share of total credit rose from 14% in 1967 to 30% in 1982. However, Government and the distribution sector continued to make very heavy claims on bank resources. Agriculture lost some ground, in line with its declining importance in national output. The demand for bank funds in Barbados pre-empted all the available financial resources, and there was no net foreign asset holding at the end of 1982.

The banks' increased interest in household clients is reflected in the ownership of deposits. A much larger proportion of the population held accounts with banks at the end of the period. Banking was no longer the preserve of the society's more affluent members. In 1960 when per capita income in Barbados was about $500 the average size of a deposit account was about the same (Chart 1). In 1982 the average deposit was less than half the value of per capita income, although total deposits had grown just as quickly as total income. Banks were relying much more on the "small man" as a source of funds.

Commercial banks became subject to Central Bank direction in 1973, but the monetary authority made no attempt to restructure the banking system. Existing exchange control regulations, derived from UK sterling area restrictions, were redefined and modified for Barbados' circumstances, but the system remained liberal. Requirements for bank liquidity were instituted and interest rate stipulations were made and changed from time to time. The Central Bank developed a market for Government securities and provided advances and discounts for commercial banks. Banks could also obtain insurance for credit to exporters from a fund set up by the Central Bank for that purpose. Selective credit restrictions were in effect for the last five years of the period, directed solely at credit for purchase of consumer durables.

Deposit Growth

Deposits of the public were commercial banks' only ongoing source of funds during the 1960s and 1970s, although banks occasionally borrowed from the Central Bank or from their overseas offices for particular purposes. Deposits rose steadily throughout the period, at an average of 9.8% per year. We expect that rising national income will prove important for the growth of deposits, and that deposit interest rates in Barbados, competitive interest rates abroad and the rate of inflation may also have played a part.

Bank deposits in Barbados are the main form of household saving, apart from home ownership. They should therefore increase with rising income. Firms' deposits are usually working balances which will grow with the firm's activity and the number of companies in business. Both factors will be reflected in the growth of national income.

An individual may save simply out of habit or because he wishes to achieve a goal such as the down payment on a consumer item, a chosen level of liquid funds to meet unexpected expenses or to become more wealthy. If saving is merely habitual interest rates may not affect the rate of saving very much. However, if the individual has a specific goal both interest rates and the rate of inflation should influence the amount he saves. The higher the interest rate the less he needs to put aside, whereas increasing prices require higher levels of saving. If the objective is to become wealthier higher interest rates may

stimulate greater savings effort and interest rates need to be higher than the rate of inflation, if we wish to avoid deposit erosion. If prices are rising faster than the return on deposi one may earn more by buying and selling than by leaving funds deposit.

In Barbados many holders of large deposits may hold s of their funds with institutions abroad, allowing them to shif funds from Barbados overseas if foreign interest rates are mo attractive. For example, trading firms may offer longer credi to customers abroad where the interest they may charge is hig than they would earn on local deposits, and exporters may take full advantage of the period allowed between sales and the repatriation of export proceeds. Foreign firms may retain earnings in Barbados if local interest rates are sufficiently attractive, but if they are non-competitive it may be profitab to repatriate profits, even where they then become subject to in the country of origin. It is more troublesome for indivi to shift deposits abroad, but a sufficiently large differenti between local and foreign interest rates will provoke evasion the exchange controls designed to arrest speculative capital flows.

In line with this rationale we tested an equation wh changes in bank deposits were determined by changes in GDP, t difference between time deposit interest rates and the GDP deflator (the 'real' interest rate, in economists' jargon) an the difference between time deposit rates in Barbados and tho on the London Eurodollar market. The GDP is a good proxy for

national income, for which a sufficiently long series is not readily available; the difference between them, indirect taxes plus net local earnings of foreigners, is not large and follows much the same trends as GDP[1]. In calculating the real interest rate one may choose to employ either the retail price index (RPI) or the GDP deflator. We would have preferred the wholesale price index (WPI) because business, which ought to be most sensitive to interest rates, will be affected by that rate. In the absence of a WPI, we report on tests using the deflator, which should be closer to the WPI than the RPI would be. Small differences between local and foreign interest rates may not affect deposits very much because depositors need to earn sufficient premiums to give a margin over bankers' charges and other transactions costs. The results analysed assume that deposits are unaffected by differentials less than three percentage points.

Our tests indicate that a $10 million increase in GDP generated a deposit increase ranging between $0.9 million and $3.2 million between 1960 and 1980 (Table 1). The real interest rate had no measurable effect, while foreign interest rates appear to have had a perverse affect. When foreign rates were three percentage points or more higher than local rates deposits seem to have been depressed, by $2.4 million to $8.4 million for each point of the differential. However, we suspect that this result may be unreliable because of unexpected correlation between the interest rate differential and the change in GDP (Table 2).

The results may have been affected by changes during the period in the way the financial system worked or in the public's desire for bank deposits. The appendix reports a test which includes a dummy variable to capture any shift in the deposit function that may have come with the introduction of the Central Bank; it did not pick up any measurable impact. An inspection of Chart 2 does not suggest any marked shifts in deposit behaviour, though the rate of accumulation seems to have accelerated over the period of analysis. The appendix also reports results of tests based on hypotheses that we find less plausible than those we have analysed. The results with GDP in constant values are poor, and nominal interest rates are insignificant, just as real rates are.

The increase in savings deposits associated with a $10 million increment to GDP lies within the range from zero to $1.6 million. Interest rates had no effect; we compared the rate of interest on savings deposits with the rate of inflation, and with the rate on time deposits, but neither turned up a significant relationship with deposit growth. The difference between local savings deposit returns and interest on deposits abroad has a perverse effect on savings deposits, a result similar to that for total deposits. Again the problem may lie with significant correlation between this variable and GDP changes (Table 3).

Time deposits rose between $0.1 million and $1.5 million for a $10 million increase in GDP. Higher real interest rates seem to have depressed time deposit levels; an increase of one percentage point is associated with a fall in time deposits ranging from $0.1 million to $0.6 million[2]. Although this is a result many economists would find unusual, it is quite plausible if depositors are saving with a particular target in mind. With higher real interest rates the target may be attained with less effort. The differential between local and foreign interest rates has no effect.

Interest-bearing deposits as a whole conform to the pattern of savings deposits. They increase $0.2 million to $1.5 million with a $10 million rise in GDP, and they fall $1.5 million to $7.5 million for every percentage point of the local-foreign rate differential, so long as that differential is three points or more. Real interest rates have no significant effect.

Demand deposits depend on the variation in bank customers' cash flow. The indicator of business used in our test is the variance of net movements in overdrafts and demand deposits, which, for convenience, we label 'cash flow'. The level of demand deposits rises with increases in this variance. Real interest rates are also included in the equation; if

interest rates are high firms might wish to switch to interest-bearing deposits whenever possible, while high infla rates might induce greater economies in the use of cash balan However, interest rates turn out to have no effect. Increase demand deposits bear no systematic relationship to changes in GDP.

We wondered whether there were noticeable difference the deposit behaviour of firms and households. The breakdown available only from 1973, making the series too short to perm reliable estimation using the least squares method employed s far. We calculated the ratio of changes in interest-bearing deposits[3] to changes in GDP instead, for firms and household If GDP movements were the only determining factor of any importance the ratio would not change very much from year to year. Such changes as can be observed are compared with trer in real interest rates and the differential between local and foreign rates. For firms the ratio is positive every year e 1978, indicating that time and savings deposits usually rose GDP (Chart 3). Deposits seem a little less buoyant between and 1981 when foreign interest rates were very much higher t in Barbados, but erratic fluctuations in the deposits/GDP ra make this a tentative conclusion. The effect of negative re interest rates in the years 1979 to 1981 cannot be separated the effect of the higher foreign rate, but the correspondenc between real rates and the ratio is not close. The test det

no influence of interest rates on the time and savings deposits of households (Chart 4). The ratio of interest-bearing deposits of households to GDP becomes positive in the 1978 to 1981 period when interest rate effects were most adverse.

The expansion of GDP was the main factor behind the growth of bank deposits in Barbados between 1960 and 1982. The variation in business activity also affected deposit levels, to the extent that it altered firms' liquidity position. We have been able to detect few systematic effects from interest rates, except perhaps a tendency for time deposits to fall when real interest rates rise. It may be that interest rates changes and large differentials between local and foreign rates did not persist long enough to affect the results for the period as a whole.

The Demand for Credit

Bank credit grew even more rapidly than deposits between 1960 and 1982; by the end of the period banks' resources were fully utilised by the local economy. We made tests on the basis that bank credit will increase with growth in GDP and the levels of activity in producing sectors, and that credit will tend to fall as interest rates rise. We report the results of tests where real interest rates were used; a producer should not curtail his borrowings if interest rates are no higher than the rate of inflation because increases in his product price will provide revenue to cover the costs of financing the loan. In the same circumstances we would not expect individuals to borrow less because the price increases will inflate the total of personal incomes for the nation as a whole.

The observed level of credit at any time is the outcome of an interaction of supply and demand. We may perform a test on credit demand only if there is a generous supply of funds at each prevailing interest rate. Supply conditions will not influence interest rates very much under these circumstances. We consider this a reasonable working hypothesis except when banks are illiquid. Between 1960 and 1982 we have identified only six years when banks were short of funds - 1960, 1961, 1962, 1973, 1981 and 1982. Since most of the equations tested include only one of these years (1973) we believe that they adequately reflect the demand function.

The demand for credit depends mainly on levels of GDP and economic activity. A 10% rise in GDP increased overall credit demand between two percent and nine percent (Table 4). The household sector was by far the most responsive, with credit demand expanding between 10% and 15%. In the producing sectors credit demand rose in line with the expansion in activity. For a 10% rise in value added, increases in credit demand ranged from five percent, the minimum for agriculture, to 17%, the maximum for construction. Credit demand was strongest in the construction sector and weakest in distribution, relative to the growth in value added in each sector. The demand for credit for agriculture was the most variable.

Interest rates had no measurable effect on the demand or credit, for the economy as a whole or for any sector tested. ank customers evidently do not adjust their credit requirement nen interest rates deviate from trend by small amounts. roducers are able to pass on the increased finance costs in ricing their output while households accommodated to additional nterest costs by readjusting spending patterns. With moderate ates of inflation and growing incomes for most of the 1960-82 eriod, there is no reason to expect noticeable credit ontraction in response to small interest rate increases. ending rates rose dramatically on only two occasions, in 1973 nd 1981 to 1982; these episodes do not afford sufficient data to analyse the effects of very large interest rate changes.

A breakdown of bank loans by maturity, available since 1973, allows us to uncover changing patterns of credit in the last ten years of the period (Chart 5). The public made greater use of term loans and less of overdrafts in 1982 than in 1973. Most term loans in 1982 carried maturities of five years and longer, whereas in 1973 maturities of one to three years were most common. The substantial rise in personal mortgages outstanding with banks (135%) was the principal factor behind the change. Increased lending for tourist construction was an additional, much less important, influence. Loans to tourism with maturities of five years or more increased from $3.2 million to $46.9 million and made up 46% of loans to that sector in 1982. Smaller amounts of long-term funds went for manufacturing and distribution; manufacturing rose from $1 million to

$25.8 million, while distribution went from $5 million to $11 million. Of total credit with maturity of five years or more at the end of 1982 households owed 27%, the tourism sector 26%, manufacturing 14% and distribution 6%.

Bank overdrafts grew more slowly than term loans; noteworthy increases in manufacturing and public utilities were offset by declines in distribution and agriculture. Overdrafts of $146.2 million accounted for 55.5% of bank advances in 1973; the 1982 figure of $329.4 million accounted for 44% of that year's advances. The increase in loans of up to one year mainly reflects expanded discount facilities for financing the sugar crop. Credit for consumer durables, which made one to three years loans largest category in 1973, was contained by Central Bank restrictions. Personal loans in this category fell from 12.6% of all term loans in 1973 to 6.9% in 1982.

The public utilities and firms in manufacturing and distribution mainly relied on overdrafts, with much smaller amounts of term loans, mainly for five years or more. The pattern did not change in the ten years of observation, except that manufacturers used a little more term credit, relative to the dominant overdraft, in 1982. The sugar industry shifted from overdrafts to short-term borrowing because they could not take advantage of Central Bank's discounts otherwise. The industry borrowed hardly anything at maturities over one year. The construction sector economised on its use of bank credit, cutting back slightly from $34.9 million outstanding in 1973.

Construction firms relied equally on overdrafts and term loans in 1982, whereas in 1973 loans were relatively larger. Tourism was the only sector where loans with at least five years maturity were more significant than overdrafts and short-term accommodation.

All firms used banks mainly to finance working capital; overdraft facilities and short-term borrowings were the mechanisms most frequently used. However, there was some borrowing for construction and purchase of equipment, at longer term. Only in the tourism sector did firms use banks to finance capital formation to any extent. Households approached banks to borrow at short-term for purchasing consumer durables and for long-term mortgages.

Interest Rates and Liquidity Management

Interest rates are the principal instrument by which banks adjust to the demand and supply of funds. In Barbados long term trends are patterned on foreign interest rates; if differences beteween local and foreign rates are large the inducements for capital flows become irresistable. However, small differentials are possible because of informational and transfer costs, although bankers may sometimes argue among themselves about the size of a tolerable margin. Banks in Barbados use this difference to adjust the spread between the rates they earn on advances and the rates they pay on deposits.

The behaviour of loans and deposits in Barbados gives no reason to suppose that the supply and demand for funds will be affected by small interest rate changes. The increase in national income will determine the supply of deposits and the demand for credit, producing a change in bank reserves. After allowance for Central Bank reserve requirements this leaves a level of excess reserves. Banks cannot do much to eliminate the excess. Small interest rate movements will have no effect while large variation provokes destabilising foreign capital flows and risks the possibility of a destructive price war among the banks themselves. However, within a narrow band on either side of prevailing foreign interest rates, banks have leeway to raise the spread between deposit and loan rates to compensate for inadequate loan demand. Between 1975 and 1980 deposits grew more rapidly than loans and bank excess liquidity increased each year (Chart 6). In 1975 the spread between deposit and loan rates rose to 3.5%, compared with 1.5% to two percent between 1971 and 1974, and it remained at that level until 1981, when it widened even further (Chart 7). The extraordinary spreads of 1981 and 1982 reflect the great uncertainty about interest rate prospects at that time.

There is a wide range of deposit interest rates, and with a quarter of all deposits in current accounts, the average cost of deposits to the banks is always close to the bottom of the range. The maximum rate available on time deposits was 1.5 to two percentage points higher than the savings deposit rate, except when all rates rose to very high levels. In 1973 and 1974 the differential widened to four points, while in 1981 and 1982 it

varied between 2.25 and 2.5 points. Longer time deposit maturities attracted a premium of one to 1.5 points except in 1973 and 1974 - when the differential disappeared - and in 1981. Nineteen eighty-one and 1982 were years of exceptional interest rate uncertainty and bankers everywhere were afraid to commit themselves to long-term interest rate contracts. For most of this period time deposits in Barbados attracted the same rate whatever their maturity, and during the months of November and December 1981 shorter maturities attracted higher rates.

The market for bank deposits was not particularly competitive. Differences of up to three points persisted between banks for the same category of deposits, and the system never exhibited a uniform rate structure. The average cost of deposits to the banks, calculated by dividing their interest payments into the average of deposits outstanding for the period, was never higher than the minimum rate on savings deposits. The average interest rate on time and savings deposits was one to two percentage points higher.

The prime interest rate on commercial bank loans ranged from 2.5 to three percentage points above the maximum deposit rate until 1981, when the difference was stretched to four to five points. The prime rate varied among banks; at different times during the period the difference ranged from one half to 1.5 points. The average loan rate was about half a point above the highest prime rate up to 1980; in 1981 the average rose a full point above the highest prime. The spread between the

highest rate and the lowest (apart from bad debts and loans with stipulated rates) rose from four points to six at the same time. The average return on lending, calculated by dividing interest earnings on loans into average loans outstanding, was about the same as the average loan rate for most of the period.

The interest rate on treasury bills followed the prime lending rate, except for 1981 when a high public sector borrowing requirement and low bank liquidity drove up Government's cost of borrowing (Charts 8 and 9). In 1975 the bill rate fell relative to the prime rate in a situation where liquidity levels were comfortable and the Government's needs were low.

Between 1960 to 1981 commercial banks borrowed abroad to supplement deposits in the face of strong loan demand (Chart 10). For the remainder of that decade banks held net foreign assets, as loan demand failed to keep up with the increase in deposits. The availability of Euromarket funds brought a dramatic shift in 1972; banks borrowed heavily in Eurodollars during that year, for onlending to Government and the private sector. Rising Euromarket interest rates and greater instability in the rates discouraged borrowing in the late 1970s. However, banks were forced to borrow abroad briefly in the second half of 1981 when increased liquidity requirements imposed by the Central Bank and slow deposit growth left them short of disposable funds. A penal rate discouraged resort to the Central Bank's discount window.

Conclusion

Banking activity grew in response to rising national income in the years since 1960. Expansion provided funds for deposit with banks and provoked greater demand for credit by firms and households. Households gained greater access to the banks with the development of consumer instalment credit and the mortgage market, the most influential banking innovations in the period. Credit maturities and the allocation among sectors responded to changes in the pattern of production in Barbados. Banks serviced the working capital needs of leading sectors and provided some funds for fixed capital formation in tourism.

Domestic interest rate changes were too small to affect the growth of deposits or loans. Local rates followed trends in foreign interest rates in a gradual and orderly fashion, except for short episodes in 1973 and 1981. The relationship between loan and deposit rates changed a little; banks compensated for low credit demand in the late 1970s and for interest rate instability in the early 1980s by widening the spread between deposit and loan rates. Rates among different deposit categories followed the usual pattern of higher rates for longer maturities except for a short period in 1981 when considerable interest uncertainty prevailed in major money markets as well as in Barbados. On loans the range from the prime to the highest rate on regular loans widened as interest rates rose.

Footnotes

1. Many analysts prefer to test 'real' deposits (nominal values deflated by a price index) against real GDP. The procedure has merit only if the deflator for GDP is different from that for deposits.

2. The retail price index is used to compute the real interest rate which gives the results reported here. The equation using real interest rates calculated with the GDP deflator produced an insignificant coefficient on GDP, a result we reject a priori.

3. One could do the same for demand deposits, but the results will not be instructive because they bear no systematic relationship to GDP.

Table 1

Factors Affecting Deposit Growth[a]

	ΔGDP[b]		Interest Difference[d] Local-Foreign		Real Interest Rate		'Cash Flow'[e]		R^2	Durbin-Watson Statistic	Estimatio Period
	High[c]	Low[c]	High	Low	High	Low	High	Low			
All Deposits	3.2	0.9	-8.4	-2.4	Not significant				0.8691	1.82	1960-8
Savings Deposits	1.6	-	-6.2	-1.6	Not significant				0.8277	2.03	1960-8
Time Deposits	1.5	0.1	Not significant		-0.6	-0.1			0.5380	2.11	1960-8
Interest-bearing Deposits	1.5	0.2	-7.5	-1.5	Not significant				0.8404	1.89	1960-8
Demand Deposits			Not Included		Not significant		1.98	0.38	0.4453	0.87	1968-8

Notes: a) Results derived from equations in Appendix A
b) The coefficients in this column indicate the effect of a $10 million increase in GDP
c) The high and low values are two standard errors on either side of the mean of the estimate
d) Interest rate differentials with an absolute value of three or more
e) 'Cash flow' is our shorthand for the change in overdrafts minus the change in demand deposits

Table 2

Correlation Matrix: Total Deposits

	$r_t-\dot{p}$	D(r_t-r_t)
ΔGDP	-0.27	-0.78
$r_t-\dot{p}$		0.07

r_t: interest rate on 6-month time deposits
$\dot{p}$: GDP deflator
r_f: rate on 6-month Eurodollar deposits in London
D: dummy variable

Table 3

Correlation Matrix: Savings Deposits

	$r_t-\dot{p}$	$r_s-\dot{p}$	r_s-r_f
ΔGDP	-0.27	-0.22	-0.71
$r_t-\dot{p}$		0.99	0.18
$r_s-\dot{p}$			0.15

r_s: maximum rate on savings deposits

Table 4

Credit Demand Elasticities[a,b]

	High[c]	Low[c]	R^2	Durbin-Watson Statistic	Estimation Period
Total Credit	0.86	0.18	0.9888	2.27	1961-80
Credit by Sector Distribution	0.90	0.59	0.9400	0.97	1967-80
Manufacturing	1.04	0.78	0.9454	0.96	1967-80
Agriculture	1.47	0.52	0.5893	1.11	1967-80
Construction	1.65	0.87	0.7922	0.72	1967-80
Personal	1.50	1.02	0.9012	0.62	1967-80

Notes: a) A real interest rate variable was included in all the equations tested, but the value of its coefficient was never significant so it is not included in the table (See Appendix B)

b) Total GDP used to estimate coefficients for total credit and personal sector credit; value added used in other sectors

c) The range represents two standard deviations on either side of the point estimate

Appendix A

Deposit Equations (t-statistics in brackets)

All deposits:

$$\Delta TLD = \underset{}{10.94} + \underset{(2.57)}{0.21}\,\Delta GDP + \underset{(3.22)}{0.20}(r_t - \dot{P}) - \underset{(0.47)}{5.49}D(r_t - r_f) \quad \underset{(-3.61)}{}$$

$R^2 = 0.8691$ DW = 1.82 Period: 1960-80

$$\Delta TLD = \underset{}{3.07} + \underset{(0.48)}{0.44}\,GDP + \underset{(3.24)}{1.45}(r_t - R\dot{P}I) + \underset{(1.89)}{0.32}D(r_t - r_f) \quad \underset{(0.09)}{}$$

$R^2 = 0.8271$ DW = 1.76 Period: 1960-80

$$\Delta TLD = \underset{}{4.85} + \underset{(0.71)}{2.21}\,DCB + \underset{(0.18)}{0.40}\,\Delta GDP + \underset{(2.60)}{1.09}(r_t - \dot{P}) - \underset{(1.51)}{0.65}\,(r_t - r_f) \quad \underset{(-0.23)}{}$$

$R^2 = 0.8395$ DW = 2.13 Period: 1960-81

$$\Delta TLD = \underset{}{29.40} - \underset{(3.38)}{0.09}\,\Delta y - \underset{(-1.04)}{0.21}(r_t - \dot{P}) - \underset{(-0.41)}{7.74}\,D(r_t - r_f) \quad \underset{(-4.07)}{}$$

$R^2 = 0.7755$ DW = 1.83 Rho = 0.48 Period: 1960-81

$$\Delta TLD = \underset{}{24.63} + \underset{(1.74)}{0.31}\,\Delta GDP - \underset{(3.68)}{2.56}r_t - \underset{(-0.01)}{2.72}D(r_t - r_f) \quad \underset{(-1.36)}{}$$

$R^2 = 0.8250$ DW = 2.09 Period: 1960-81

Savings deposits:

$$\Delta SD = \underset{}{6.58} + \underset{(0.79)}{0.08}\,\Delta GDP - \underset{(1.75)}{4.54}(r_t - \dot{P}) + \underset{(-1.28)}{5.12}(r_s - \dot{P}) - \underset{(1.44)}{3.92}(r_s - r_f) \quad \underset{(-2.98)}{}$$

$R^2 = 0.8277$ DW = 2.03 Rho = 0.31 Period: 1960-80

Time deposits:

$$\Delta TD = \underset{}{4.74} + \underset{(1.99)}{0.08}\,\Delta GDP - \underset{(2.28)}{0.37}(r_t - R\dot{P}I) - \underset{(-2.77)}{0.27}(r_t - r_f) \quad \underset{(-0.31)}{}$$

$R^2 = 0.5380$ DW = 2.11 Period: 1960-80

$$\Delta TD = \underset{(3.14)}{7.45} + \underset{(0.95)}{\Delta 0.03\ \Delta GDP} - \underset{(-2.69)}{0.66(r_t-\dot{P})} - \underset{(-0.90)}{0.78\ (r_t-r_f)}$$

$R^2 = 0.5304$ DW = 2.14 Period: 1960-80

Interest-bearing deposits:

$$\Delta TSD = \underset{(3.17)}{15.01} + \underset{(2.20)}{0.13\ \Delta GDP} - \underset{(-0.57)}{0.20(r_t-\dot{P})} - \underset{(-3.00)}{4.47D(r_t-r_f)}$$

$R^2 = 0.8404$ DW = 1.89 Rho = 0.25 Period: 1960-80

Demand Deposits:

$$DD = \underset{(2.84)}{48.83} + \underset{(2.98)}{1.18VCF} - \underset{(-1.26)}{1.74(r_t-\dot{P})}$$

$R^2 = 0.4453$ DW = 0.87 Period: 1968-82

Definition of variables:

D:	dummy variable with value of unity when $\lvert r_t-r_f \rvert \geq 3$, zero otherwise
DCB:	dummy variable with value of unity from 1973 onward
DD:	demand deposits
P:	GDP deflator
r_f:	interest rate on Eurodollars in London
r_s:	maximum rate on savings deposits in Barbados
r_t:	maximum rate on time deposits
RPI:	retail price index
SD:	savings deposits
TD:	time deposits
TLD:	total deposits
VCF:	variance of 'cash flow', defined in text
y:	real GDP

Appendix B

Credit Equations

Total credit:

$$\text{Ln CR} = \underset{(2.43)}{2.90} + \underset{(3.06)}{0.52\ \text{Ln Y}} + \underset{(1.50)}{0.03\ \text{Ln}(r_\ell-\dot{P})}$$

$R^2 = 0.9888$ DW = 2.27 Rho = 0.84 Period: 1961-80

Distribution sector:

$$\text{Ln CRD} = \underset{(0.77)}{0.29} + \underset{(9.38)}{0.744\ \text{Ln YD}} - \underset{(-1.16)}{0.03\ \text{Ln}(r_\ell-\dot{P})}$$

$R^2 = 0.94$ DW = 0.97 Period: 1967-80

Manufacturing sector:

$$\text{Ln CRM} = \underset{(-1.93)}{-0.52} + \underset{(13.98)}{0.91\ \text{Ln YM}} - \underset{(-0.44)}{0.01\ \text{Ln}(r_\ell-\dot{P})}$$

$R^2 = 0.9454$ DW = 0.96 Period: 1967-80

Agriculture:

$$\text{Ln CRA} = \underset{(-1.19)}{-1.18} + \underset{(4.15)}{0.99\ \text{Ln YA}} + \underset{(0.17)}{0.01\ \text{Ln}(r_\ell-\dot{P})}$$

$R^2 = 0.5893$ DW = 1.11 Period: 1966-80

Construction:

$$\text{Ln CRC} = \underset{(-2.11)}{-1.59} + \underset{(6.49)}{1.26\ \text{Ln YC}} - \underset{(-0.92)}{0.07\ \text{Ln}(r_\ell-\dot{P})}$$

$R^2 = 0.7922$ DW = 0.72 Period: 196 -80

Household sector:

$$\text{Ln CRH} = \underset{(-5.09)}{-3.92} + \underset{(10.37)}{1.26\ \text{Ln Y}} - \underset{(-0.47)}{0.04\ \text{Ln}(r_\ell-\dot{P})}$$

$R^2 = 0.9012$ DW = 0.62 Period: 1967-80

Definition of variables:

r_ℓ: prime loan rate

YA, YC, YD, YM: value added in the sector whose credit demand is being estimated

CHART 1

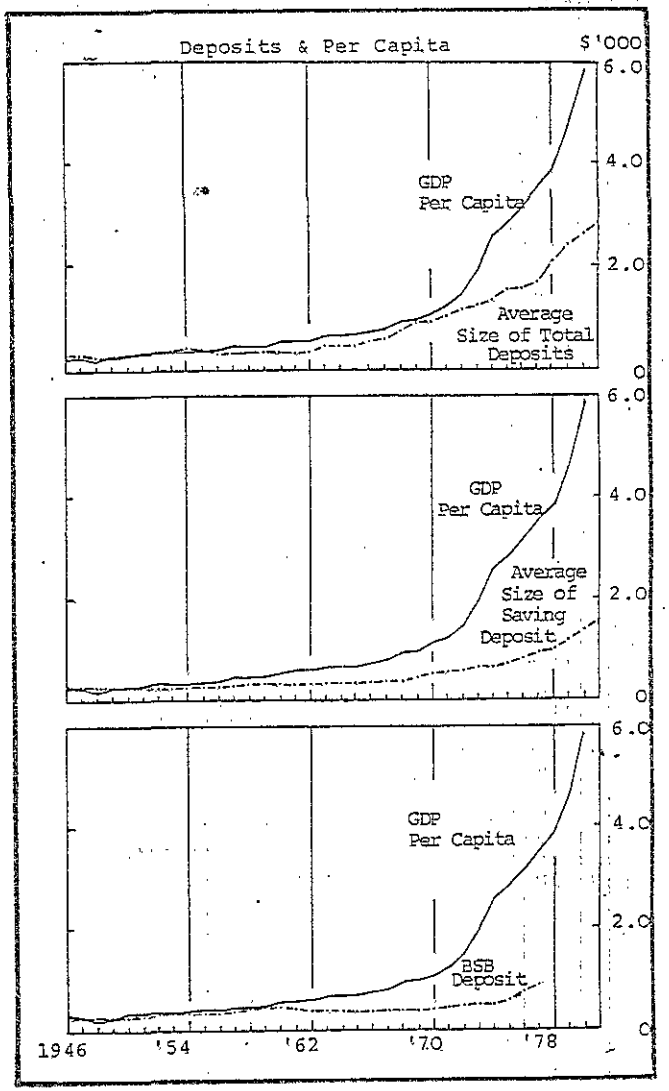


CHART 2

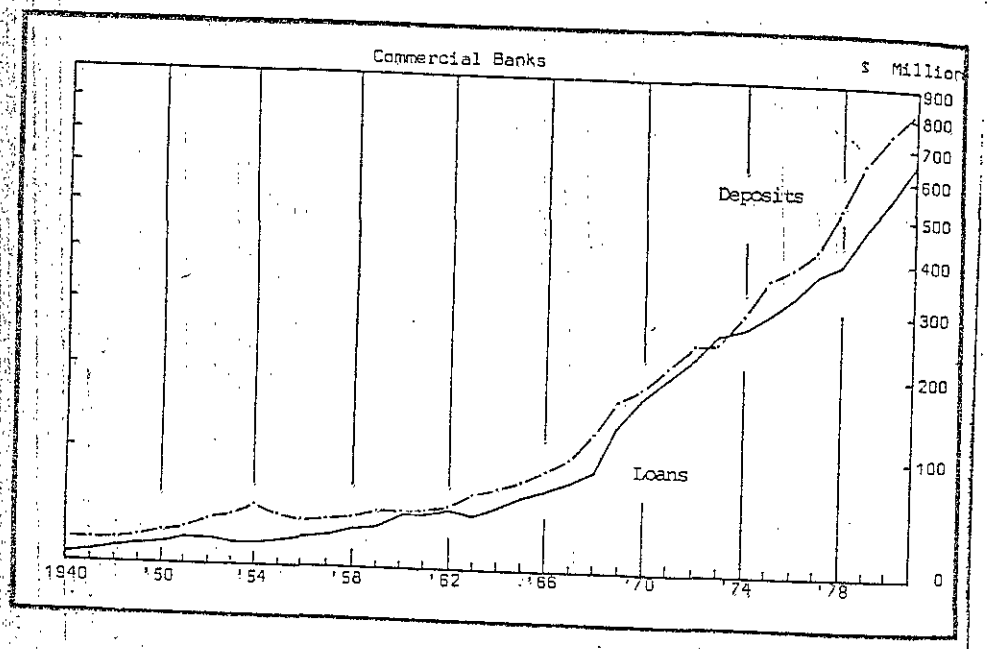


CHART 3

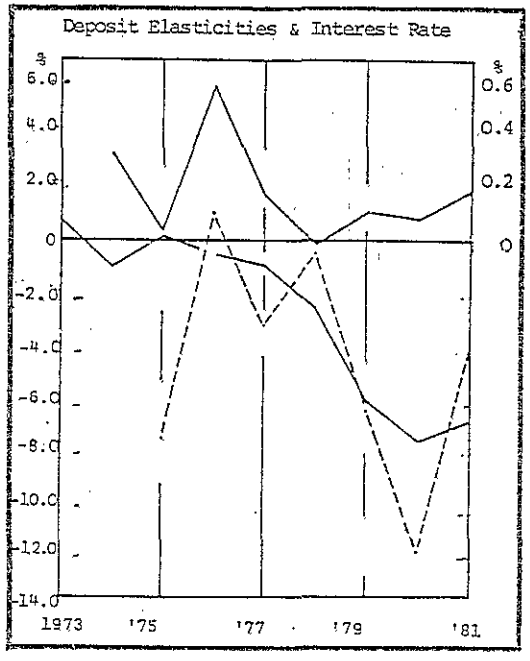
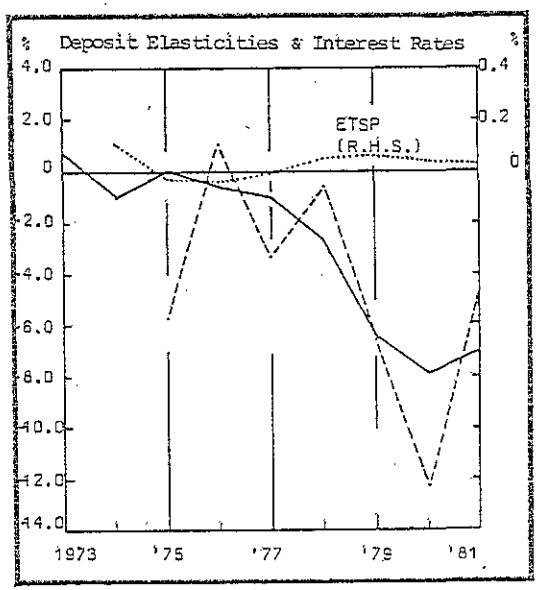
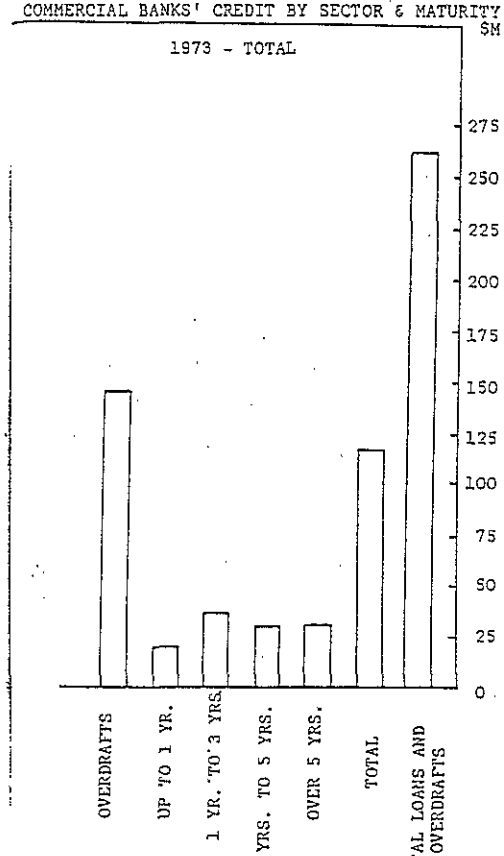


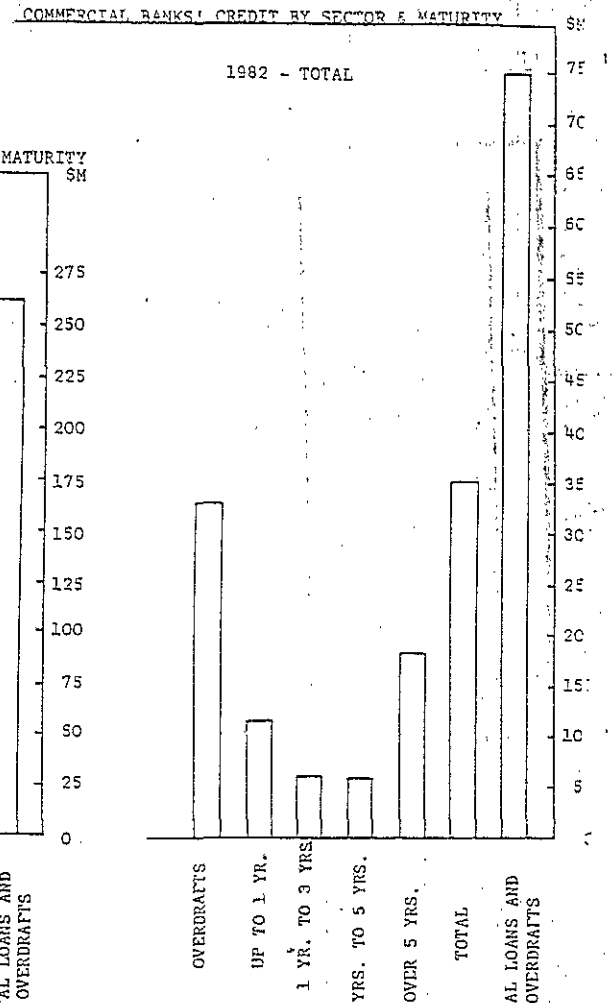
CHART 4



ETSP - Elasticity of demand deposits - GDP for personal sector

CHART 5 (i)





COMMERCIAL BANKS' LENDING BY SECTOR & MATURITY

CHART 5 (iv)

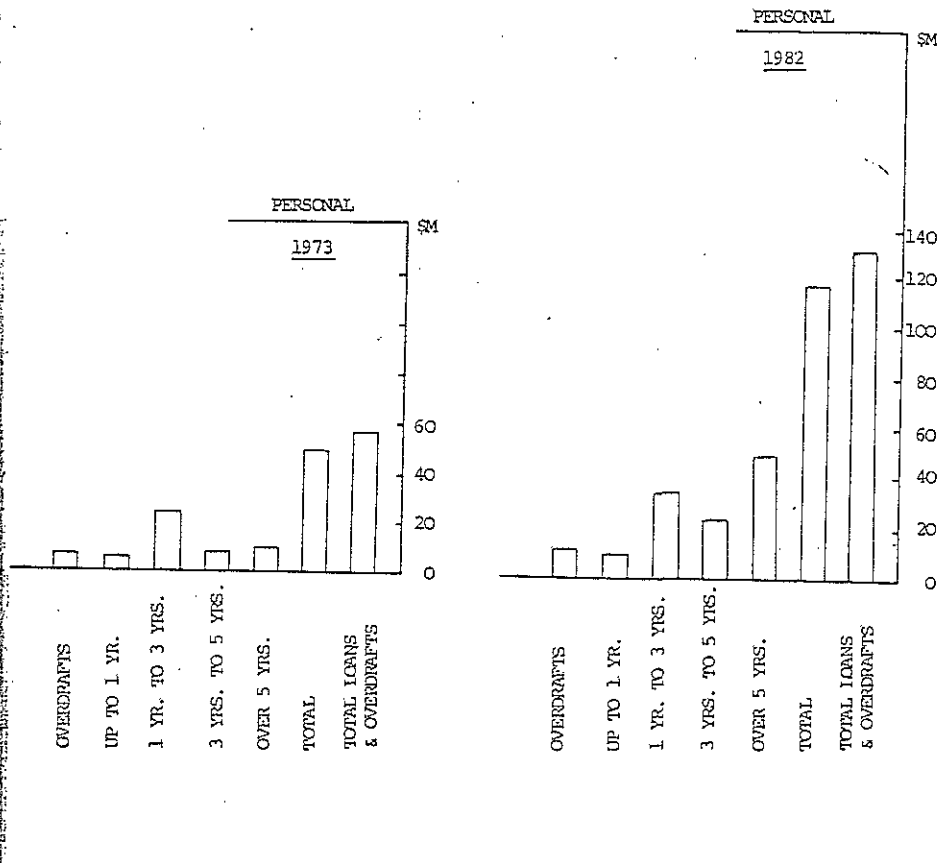


CHART 6

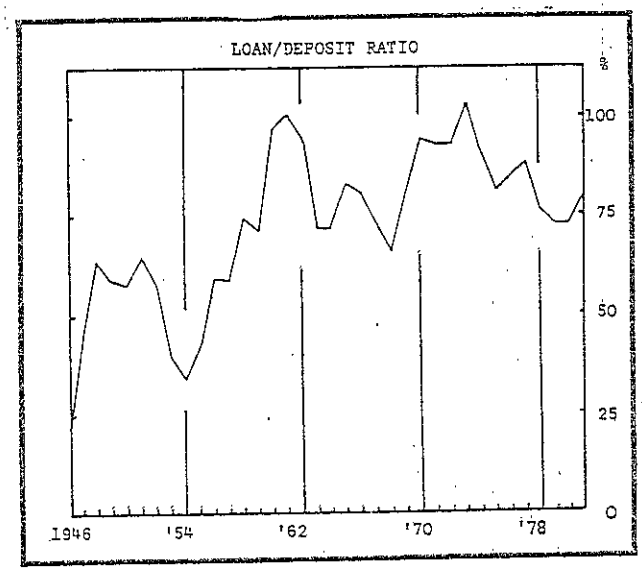
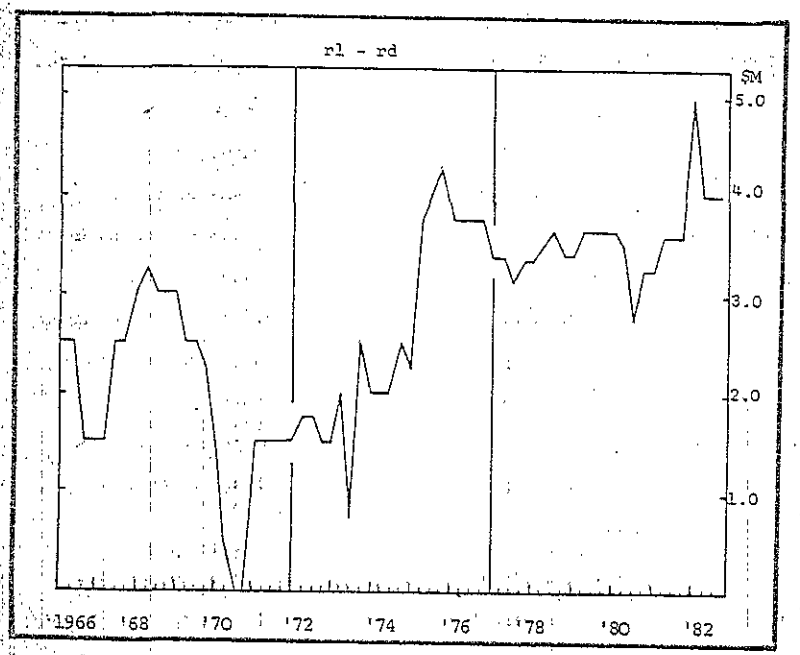


CHART 7



rl - prime

rd - 12-month time deposit rate

CHART 8