

1984 Conference

STRUCTURE AND PERFORMANCE OF COMMERCIAL BANKING
IN TRINIDAD AND TOBAGO*

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Commercial banks are the pivot of the Trinidad and Tobago financial system. Apart from being the largest established financial formal institutions, their provision of financial services extends to the widest range of economic activities, economic transactors, and geographical areas. As a group, commercial banks account for more than one-half of financial asset holdings of the non-financial public and for more than one-half of their financial liabilities. Although subject to the regulatory control of the Central Bank, the sheer dominance of their size creates a counter-vailing power, making the regulatory authorities responsive to the banks' perceptions of their own interests.

Granted this pivotal position of the commercial banking industry, it is clearly important to study its operations. This

* The assistance of James Croal at Simon Fraser University with some of the econometric work is gratefully acknowledged.

essay describes and analyses the major aspects of commercial banking in the period 1965-1983. The discussion is prefaced by a brief historical review of the development of the industry prior to 1965. Subsequent sections examine the growth and structure of the industry in the post-1965 period, operating efficiency and profitability, and interest rate behaviour.

HISTORICAL PREFACE

Commercial banking began in Trinidad and Tobago with the establishment of the Colonial Bank (later to become Barclays Bank) in 1837. This was part of a British Caribbean - wide pattern of introducing commercial banking services in satisfaction of the financing requirements of colonial trade, and the need for safe deposit facilities. Thus in the same year, the Colonial Bank was also established by Royal Charter in Barbados (Worrell and Prescod 1983, Mc Clean 1975), Jamaica (Callender 1965), and Guyana. Between 1837 and 1902, no additional banks were established. The second bank Union Bank of Halifax made its appearance in 1902 and was amalgamated into the Royal Bank of Canada in 1910. Much later entrants into the commercial banking industry were Canadian Imperial Bank of Commerce in 1921, Bank of Nova Scotia in 1954, Chase Manhattan Bank in 1963, Bank of London and Montreal in 1960, First National City Bank

in 1965, National Commercial Bank in 1970 (by nationalisation of the Bank of London and Montreal), and Workers Bank of Trinidad and Tobago in 1971.

The spread of banking services did not increase substantively in the pre-1965 period. Few banks branches were established. In 1900, only one bank office existed in all of Trinidad and Tobago. By 1960, the number had increased to three only, increasing further to eight in 1950. A spurt occurred in 1954 when the total number of bank offices increased to eighteen, and expanded hereafter to forty-six in 1964. This growth in bank offices meant improved access to banking facilities by the population as indicated by the number of persons per bank office which decreased from 277,651 in 1900 to 20,675 in 1974. (Table 1). The potential economic significance of this growth in bank offices may be readily appreciated. "A greater number of bank offices can mean a greater fraction of the nation's savings channelled into investment through the mediation of the banking system which in turn may lead to a more efficient collection of investment projects." (Porter 1966, p. 60). No less important are the roles of the banking system as a cost efficient source of working capital to productive enterprises i.e., making working capital available at lower cost than self-finance and direct finance alternatives, and as an

efficient mechanism for domestic and international payments. However, it should not be thought that all sectors of the society had equal access to each type of banking service. The use of international financial services and credit services were largely confined to the business community.

No information is currently available on commercial bank assets and liabilities before 1946, when total assets - total liabilities amounted to \$67.3 million. (Table 2). Deposits comprised eighty-nine per cent of total liabilities, with demand deposits, savings deposits and time deposits separately comprising forty-seven per cent, forty per cent, and two per cent of total liabilities. On the asset side, balances held in banks overseas were the largest single asset, comprising sixty-one per cent of total assets in 1946. Next in order of quantitative share was loans and overdrafts (fourteen per cent), vault cash (nine per cent), and foreign money market investments (seven per cent). Vault cash also comprised ten per cent of deposit liabilities. Thus in 1946, the characteristic features of the commercial banking industry were oligopolistic deposit and credit markets, the virtual absence of time deposits as a financial instrument for savings mobilisation, the overseas investment of most of domestic financial asset accumulation, and foreign ownership of the banking system.

The period 1946-1964 witnessed substantial growth in the nominal and real values of bank assets and liabilities. The nominal value of total bank assets expanded at average annual rate of eight per cent from \$67.3 million at the end of 1946 to \$267.1 million at the end of 1964. The average annual rate of growth was somewhat faster between 1950 and 1960 (ten per cent) and slightly slower (seven per cent) between 1960 and 1964. Even when adjustment is made for price inflation which averaged 2.5 per cent (using the implicit GDP deflator or the retail price index), the measured growth in bank assets is still rapid i.e., ⁱⁿ the order of 7.5 per cent per annum. The average annual growth rate of bank assets was nearly equal to that of nominal gross domestic product valued at market prices. Nominal GDP grew at an annual average rate of 10.6 per cent.

It appears that economic growth stimulated bank growth rather than vice-versa. The main source of the growth in the bank industry's liabilities was deposits. Total deposits grew from \$59.0 million at the end of 1946 to \$247.7 million at the end of 1964, that is at an average annual rate of 10.6 per cent. Deposits remained the preponderant element in total bank liabilities (94 per cent in 1964). A large part of bank funds continued to be invested overseas. Foreign balances

TABLE 1: SPREAD OF COMMERCIAL BANK FACILITIES 1900-64

YEAR	NUMBER OF BANK OFFICES	POPULATION (000)	POPULATION PER BANK OFFICE (000)
1900	1	277.6	277.6
1910	3	351.2	117.1
1920	4	391.3	97.8
1930	5	413.1	82.6
1940	5	484.9	97.0
1950	8	635.8	79.5
1952	8	662.8	82.9
1954	18	697.5	38.7
1960	31	841.1	27.1
1964	46	951.0	20.7

Source: Table 4, Central Bank of Trinidad and Tobago (1974)

TABLE 2: GROWTH AND STRUCTURE OF COMMERCIAL BANK ASSETS AND LIABILITIES: 1946-64

PANEL A: GROWTH OF ASSETS AND LIABILITIES

ITEM	\$million				ANNUAL AVERAGE GROWTH RATE		
	1946	1950	1960	1964	1946-60	1950-60	1960-64
TOTAL ASSETS	67.3	77.7	204.0	267.1	8.0	10.1	7.0
TOTAL DEPOSITS	59.9	70.4	192.6	247.7	8.2	10.6	6.5
DEMAND DE- POSITS	31.6	36.5	82.5	103.2	6.8	8.5	5.8
SAVINGS DE- POSITS	26.8	25.8	85.7	114.8	8.4	12.7	7.6
TIME DEPOSITS	1.6	9.1	24.4	30.0	17.7	10.4	5.3
FOREIGN BAL- ANCES	40.3	41.1	82.7	38.7			
LOANS	9.6	19.0	83.0	121.5	15.1	15.9	10.0
FOREIGN MONEY MARKET INVEST- MENTS	4.8	2.4	2.6	*			
VAULT CASH	6.0	6.0	13.2	20.0			

PANEL B: STRUCTURE OF ASSETS AND LIABILITIES (PER CENT)

ITEM	1946	1950	1960	1964
<u>LIABILITIES</u>				
TOTAL DEPOSITS	89	91	94	93
DEMAND DEPOSITS	47	47	40	39
SAVINGS DEPOSITS	40	33	42	43
TIME DEPOSITS	2	12	12	11
<u>ASSETS</u>				
FOREIGN BALANCES	61	53	40	14
LOANS	14	24	41	45
FOREIGN MONEY MARKET INVEST- MENTS	7	3	1	
VALUT CASH	9	8	6	7

Source: Compiled from data in Central Statistical Office Annual Statistical Digest, Colonial Office Quarterly Digest of Statistics.

and money market investments together constituted fifty-six per cent of total bank assets in 1950 and forty-one per cent in 1960. Thus by virtue of bank portfolio operations, there was little feedback from asset growth to deposit growth via the impact of the bank's credit operations on domestic economic activity. This is so despite the fast rates of growth of loans recorded in Panel A of Table 2. The rapid average annual expansion reflects largely the low base from which the loan series starts in 1946.

A significant shift in the asset portfolios occurred between 1960 and 1964. At the end of the 1964, foreign assets were of minor quantitative significance in the asset portfolio, accounting for only fourteen per cent of total assets compared with forty-one per cent in 1960. In contrast, the share of loans and advances increased from forty-one per cent to forty-five per cent, which is too small a change to account for the major reduction in the share of foreign assets. The main portfolio changes associated with the decline in foreign assets were the introduction of Trinidad and Tobago government securities (short and long) into the local financial market on a substantial scale, the fast growth of inter-bank indebtedness among the local banks and a growth in foreign trade financing. At the end of 1964, Trinidad and Tobago government securities comprised 12 per cent of bank assets, while balances due by local banks accounted for 4.6 per cent, and commercial bills for 2.8 per cent.

The composition of deposit liabilities had also changed substantially by the end of 1964. Demand deposits diminished from 47 per cent in 1950 to 39 per cent in 1964, while savings deposits maintained its relative standing over the eighteen year period. The main change was the increase in time deposits from two per cent of total liabilities in 1946 to twelve per cent through most of the next eighteen years.

Altogether, at the end of 1964, several features of the commercial banking industry had considerably altered, while others remained the same. The unchanged features were the one hundred per cent degree of foreign ownership and the oligopoly situation. The changed features were the firm establishment of the time deposit instrument, the shift from foreign assets to domestic credit, and the involvement of the banks in an embryonic government securities market. It is against this historical background that the contemporary structure and operations of the banking industry is detailed and analysed.

GROWTH AND STRUCTURE OF COMMERCIAL BANKING INDUSTRY 1965-1982

SPREAD OF BANKING SERVICES

The commercial banking industry has grown considerably in the 17 years between 1965 and 1982. Several indicators of growth may be employed to chart this performance. One indicator is the number of bank offices (Table 3). Despite the fact that

there were only three new entrants into the industry between 1965 and 1982, there was a remarkable growth in banking facilities measured by the number of bank offices. These increased from 46 in 1964 to 88 in 1974 and still further to 112 in 1982. The population per bank office has decreased correspondingly. From 20,700 in 1964 to 11,714 in 1974 and 10,077 in 1982. Most of the growth in bank branches has occurred in urban areas. Whereas in 1966, the urban bank offices totalled forty and rural offices were twenty, by the end of 1981 the former had increased to seventy-seven and the latter to thirty-seven. However, the significance of urban-rural distinctions has been reduced by the spread of motorised transport, the expansion of the country wide road network, and the increased urbanisation of the population. The central inference therefore to be drawn from the statistics on the growth of bank offices is that the access of the population to some form of banking services was remarkably improved between 1965-1982.

Statistics on bank credit to the personal sector indicate that access to credit services was extended. The nominal value of personal sector credit increased from approximately \$54 million (29% total loans) at December 31, 1967 to \$237 million (35%) in 1974, and \$1.8 billion (37%) in 1982. If real estate loans are included, the degree of access indicated would be even greater

since real estate loans which are extended primarily to individuals increased from \$5.6 million (1% of bank assets) in 1970 to \$407 million (5% of the bank assets) in 1982. Similar conclusions can be made about access to other bank services such as foreign exchange transactions facilities utilised on an increasing scale commensurate with the rapid growth of foreign travel by residents of the country, and about payments services e.g., standing order arrangements, as contractual or habitual personal expenditures increased in importance.

Growth and Structure of Bank Deposits

Measured by bank deposit liabilities, there was a rapid expansion of the industry after 1965. The nominal value of total deposit liabilities increased from \$234 million at the end of 1965 to \$1 billion at the end of 1974, and still further to \$6.7 billion at the end of 1982. (Table 3). In average annual growth rate terms, the percentage growth rate was 21.8% per annum between 1965 and 1982, with most of the growth taking place between 1973 and 1982 when the average annual rate of expansion was 27.2 per cent. Deposit growth was considerably slower in real terms. The retail price index increased at an average rate of 10.1 per cent per year between 1965 and 1982, and 14.1% between 1973 and 1982, which implies that the annual growth rate of real deposits was approximately 11 per cent between 1965 and 1982, and 13 per cent between 1973 and 1982.

TABLE 3: GROWTH OF BANK OFFICES, DEPOSITS AND GDP, 1965-1982

Year	Bank Offices	Nominal Deposits \$billion	Real Deposits \$billion	Nominal GDP \$billion	Real GDP \$billion	Real Deposits As % Real GDP
1965	54	0.2	0.3	1.3	1.5	19.3
1970	81	0.4	0.4	1.7	1.7	25.5
1971	87	0.5	0.5	2.0	1.8	29.1
1972	87	0.7	0.6	2.2	1.9	30.6
1973	88	0.8	0.6	2.7	1.9	30.7
1974	91	1.0	0.6	4.3	1.9	33.9
1975	91	1.3	0.7	5.7	2.0	35.2
1976	92	1.7	0.9	6.2	2.0	43.0
1977	95	2.2	1.0	7.8	2.2	44.0
1978	99	2.7	1.1	8.4	2.3	47.0
1979	99	3.5	1.2	10.9	2.5	48.9
1980	105	4.0	1.2	15.4	2.6	45.5
1981	109	4.9	1.3	16.4	2.5	50.0
1982	112	6.7	1.6			

Note: Bank Office Statistics taken from Central Bank of Trinidad and Tobago Quarterly Economic Bulletin. Deposit and GDP data were obtained from IMF Financial Statistics. Deflator for deposits is retail price index (1970=100); deflator for GDP is the implicit GDP deflator (1970=100).

Growth was not uniform for the three major components of bank deposits, i.e., demand, savings and time deposits. Demand deposits expanded at 2.7% yearly from \$109.1 million in 1965 to \$138 million in 1973, and then at 37.2% per year to \$1.7 billion in 1982. Time deposits increased at 27.7% per annum from \$37.5 million in 1965 to \$337.7 million in 1973, and then at 29.2% per annum to \$2.6 billion in 1982. Savings deposits grew at 10.3% per year from \$121 million in 1965 to \$292.1 million in 1973 and subsequently at 29.4% yearly to \$2.3 billion in 1982. Thus time deposits grew much faster overall (26.5%) than either demand deposits or savings deposits, while the rate of growth of savings deposits was marginally faster than that of demand deposits (17.8% vs 16.6%).

As a consequence of these differences in growth rates, the structure of deposits changed substantially. Whereas in 1965, saving deposits comprised forty-five per cent. of total deposits, demand deposits forty-one per cent and time deposits fourteen per cent, by the end of 1973, the respective proportions were thirty-eight per cent, eighteen per cent and forty-four per cent. During the next eight years, the share of . . . time deposits increased slightly to thirty-nine per cent in 1982, and demand deposits increased substantially (26% in 1982) at the expense of savings deposits which fell further still to thirty-four per cent at the end of 1982. At a later stage, an

attempt will be made to interpret the comment on the implications of the pronounced shift in deposit composition away from savings deposits and towards demand and time deposits.

This sustained growth in bank deposits explains the continued dominance of the commercial banks in the financial system, despite the widening array of financial instruments and institutions. Commercial bank assets as a proportion of total assets of the overall financial system actually increased from thirty-eight per cent in 1977 to forty-four per cent in 1982.

An important proximate determinant of the growth in bank deposits is the growth in national income. Gross domestic product valued at constant market prices increased as a geometric mean annual rate of 3.5% between 1965 and 1981. As a consequence real GDP almost doubled over the entire period (Table 3). It may be inferred from the comparative rates of growth of real GDP and real deposits that the income elasticity of demand for bank deposits substantially exceeds unity. Because the growth rates differential was larger after 1973, one may infer further that the income elasticity of demand was greater in the post-1973 sub-period than in the pre-1973 sub-period. The faster growth of deposits is also reflected in the ratio of real bank deposits to real GDP (expressed in Table 3) which more than doubled between 1965 and 1981.

Interest rates do not appear to have stimulated deposit growth. Two measures of nominal deposit rates of interest are available. These are the weighted average rate of interest quoted on time and savings deposits accounts and the effective rate of interest measured by the interest actually paid on time and savings deposits as a percentage of average time and savings deposit balances during the accounting period. Both rates of interest were quite low between 1965 and 1982 as can be seen from the data in Table 4. The mean value of the weighted average rate was 4.8% and its coefficient of variation was .20. The corresponding statistics for the effective nominal rate of interest are 4.2% and .22. The low average level of the rates of interest imply that the slight variations which occurred are unlikely to have induced the massive expansion of deposits. Furthermore, if depositors are free of money illusion, interest rates may have independently exerted a depressing influence on deposit growth. Freedom from money illusion means that it is the real interest rate which matters in the deposit demand functions. Estimates of the real weighted average deposit rate and the real effective deposit rate are presented in Table 4. These estimates are derived by subtracting the expected rate of retail price inflation from the nominal rate of interest on assumption that deposits are deferred purchasing power and that price expectations are generated by a first-order autoregressive scheme. The estimates show that real rates of interest

on deposits were very low between 1965 and 1972, and increasingly negative thereafter. Theoretically, deposit demand is expected to ~~very~~ directly with the real rate of interest. For this reason it is reasonable to conclude that real rates of interest could not ^{have} stimulated the post-1965, and particularly the post-1973 growth of bank deposits in Trinidad and Tobago.

This conclusion about the influence of interest rates on deposit growth is reinforced by two additional considerations. The first is that there are significant transactions costs borne by depositors which exert a disincentive effect on deposit accumulation. Depositor transactions costs are the sum of service charges, withdrawal fees, and transportation expenses associated with journeying to and from bank offices. One may also include the imputed cost of waiting time. In Trinidad and Tobago, withdrawal costs which are confined to savings deposits are negligible, being roughly 0.2% for \$100 withdrawal. Transportation costs however can be quite large, depending upon the distance travelled and on the frequency of transactions. Utilising the minimum taxi fare of \$1.50 per one way trip as a guide, minimum transportation cost per \$100 withdrawal would be approximately 3 per cent. Service charges which have been confined to demand deposits ... average 3.2% of demand deposits (coefficient of variation equal 8%). The total of these depositor transactions costs is sizeable enough to have some dis-

incentive effects on deposit transactions and on the volume of bank deposits.

The second consideration is the relative invariance of the maturity structure of time deposits with respect to interest rates on the several maturity components of bank deposits. Panel A in Table 5 depicts the shifting maturity composition of time deposits. It can be seen that until 1974 short term time deposits (i.e., with maturity less than six months) were a relatively small proportion of total time deposits, and at that between 1967 and 1973, long term time deposits (i.e., maturity exceeding twelve months) were a sizeable proportion. After 1974 the proportion of short term time deposits increased considerably, amounting to thirty-six per cent in 1981, while the shares of medium and long term time deposits decreased to sixty-five per cent and one per cent respectively. In effect, the maturity structure of time deposits shortened after 1974, a trend which contrasted with that for bank deposits as a whole. On the other hand, the interest rate data in Panel B of Table 5 show no systematic trend for the term structure of interest rates to alter in favour of short period interest rates.

The final set of information pertinent to the analysis of bank deposit behaviour is based on econometric results for the household and business sectors for the 1965-1981 period. The

TABLE 4: DEPOSIT RATES OF INTEREST, 1965-1982

Year	Nominal Rates		Real Rates	
	Weighted	Effective	Weighted	Effective
1965	3.6	3.0	1.1	0.6
1966	3.9	3.6	1.5	1.2
1967	3.8	3.5	2.0	1.6
1968	4.4	3.9	2.1	1.6
1969	4.6	3.9	3.6	2.9
1970	5.0	4.5	2.8	2.3
1971	4.9	4.6	2.7	2.4
1972	3.6	3.7	1.6	1.1
1973	5.2	4.0	-8.1	-9.3
1974	6.0	5.6	-8.4	-9.8
1975	4.2	3.3	-11.6	-12.5
1976	3.8	3.3	-11.0	-11.5
1977	4.3	3.1	-8.9	-10.1
1978	4.7	4.2	-9.6	-9.6
1979	5.7	4.4	-7.8	-9.1
1980	5.9	5.6	-8.5	-8.8
1981	6.6	5.7	-8.3	-9.2
1982	6.2	5.6	-9.1	-8.7

Notes: Nominal weighted and effective rates were obtained from Central Bank of Trinidad and Tobago Quarterly Economic Bulletin. Real rates computed on basis of retail price index data from Central Statistical Office Annual Statistical Digest and Quarterly Economic Report.

following are the fitted functions where DD is real demand deposits, TSD is real time and savings deposits, Y^e is expected real GDP (expectations being generated by a first order autoregressive process) r_D is the weighted average deposit rate interest, and \dot{P}^e is expected rate of inflation.

Household Demand

$$\ln DD^H = -10.929 + 1.98 \ln Y^e - 10.182r_D + 0.348\dot{P}^e$$

(-3.52) (4.75) (-2.75) (0.35)

$$\bar{R}^2 = 0.6021 \quad F = 9.07 \quad D.W. = 1.99 \quad RHO(1) = 0.808$$

$$\ln TSD^H = -12.909 + 2.479 \ln Y^e - 2.403r_D + 0.842\dot{P}^e$$

(-4.31) (6.08) (-0.55) (0.78)

$$\bar{R}^2 = 0.8315 \quad F = 27.33 \quad D.W. = 2.11 \quad RHO(1) = 0.775 \quad RHO(2) = -0.258$$

Business Demand

$$\ln DD^B = 3.875 + 0.058 \ln Y^e - 13.126r_D + 1.718\dot{P}^e$$

(0.88) (0.09) (-3.56) (1.57)

$$\bar{R}^2 = 0.3840 \quad F = 4.32 \quad D.W. = 2.13 \quad RHO(1) = 1.49 \quad RHO(2) = 0.71$$

$$\ln TSD^B = 5.258 - 0.350 \ln Y^e + 4.636r_D - 2.237\dot{P}^e$$

(0.76) (-0.39) (1.17) (-1.92)

$$\bar{R}^2 = 0.0863 \quad F = 1.50 \quad D.W. = 2.43 \quad RHO(1) = 1.89 \quad RHO(2) = -0.91$$

All the equations have been purged of ~~social~~ correlation by the Cochrane-Orcutt method. The results are relatively good for the household demand equations. The model has far explanatory power for both demand and time and savings deposits. In the demand deposit equation the income variable and the deposit rate of interest are statistically significant at 5 per cent or better. For the time and savings deposits equation, only the income variable is statistically significant. The statistical results for the business demand equations are poor. The models have little or no explanatory power and the regression coefficients are generally unstable. Nonetheless, because the household sector owns as much as 65 per cent of total bank deposits, the econometric results on the household sector demand are of considerable economic significance. Basically, they indicate that expected incomes have been the main influence on deposit growth. The income elasticity of demand deposit is 1.98, while that for time and savings deposits is 2.48. The nominal deposit rate of interest does not seem to have had much influence on household demand for bank deposits. The interest rate elasticity of demand deposits is -0.508. The interest rate regression coefficient in the time and savings deposit equation is statistically insignificant, as are the inflation coefficients in both equations.

OWNERSHIP STRUCTURE OF DEPOSITS

Private individuals and households are the major holders of bank deposits, accounting for sixty-five per cent of total deposit liabilities between 1970 and 1982. Second in importance are business firms which held twelve per cent to fourteen per cent of bank deposits during the same period. The share of government and its non-financial agencies increased from 3.4% in 1970 to 5.2% in 1984 and further to 8.9% in 1982. Other financial institutions accumulate deposits in the commercial banks. In 1970, commercial bank deposits owned by private financial institutions amounted to \$26.7 million or six per cent of total bank deposits. This component of deposits became 7.6% in 1975, stabilising at that level for the remainder of the period. The stability of this component of bank deposits is another indication of the competitive strength of the commercial banks in maintaining their deposit position among individual, corporate, and government depositors. A weakened deposit position with respect to those categories of deposits would be reflected in a rise in the share of commercial bank deposits owned by other private financial institutions.

In contrast to the stability of the deposit share for private financial institutions, the proportion owned by govern-

TABLE 5: MATURITY AND INTEREST RATE STRUCTURE OF TIME DEPOSITS,
1965-1982

<u>PANEL A: DEPOSIT STRUCTURE (%)</u>	<u>1965</u>	<u>1970</u>	<u>1974</u>	<u>1975</u>	<u>1980</u>	<u>1981</u>	<u>1982</u>
Max. 3 MONTHS	5	10	17	12	20	22	19
3-6 MONTHS	5	12	9	13	16	14	14
6-12 MONTHS	85	51	71	74	61	65	66
OVER 12 MONTHS	3	27	3	1	3	1	0.7

<u>PANEL B: MEDIAN INTEREST RATES</u>	<u>1977</u>	<u>1978</u>	<u>1979</u>	<u>1980</u>	<u>1981</u>	<u>1982</u>
3 MONTHS DEPOSIT	5.5	6.00	7.88	7.62	8.00	7.50
6 MONTHS DEPOSIT	6.25	6.38	7.88	7.88	8.25	7.88
12 MONTHS DEPOSIT	6.50	7.00	8.00	8.25	8.75	8.63
DIFFERENCE BETWEEN 3 MONTHS & 6 MONTHS	0.75	0.38	0.00	0.26	0.25	0.37
DIFFERENCE BETWEEN 6 MONTHS & 12 MONTHS	0.25	0.62	0.12	0.37	0.50	0.75

Source: Central Bank of Trinidad and Tobago. Annual Report,
and Monthly Statistical Digest.

ment owned financial institutions has fluctuated considerably. It was 1.6% in 1970, 2.1% in 1975, 4.0% in 1980 and 2.3% in 1982.

The dominance of individuals among depositors is greatest for savings deposits. Their share of savings deposits rose from eighty-seven per cent in 1965 to ninety-six per cent in 1982, while the share of demand deposits which was only twenty-two per cent in 1965 increased to twenty-seven per cent in 1982. The share of time deposits lay between those two extremes - sixty-six per cent in 1965 and sixty-three per cent in 1982. Firms in primary activities other than finance accounted for forty-four per cent of demand deposits and eleven per cent of time deposits in 1965. By the end of 1982, the respective proportions were twenty-eight per cent and twelve per cent.

The changing structure of deposit ownership reflects the shift in deposit preferences by individuals as well as by businesses. Individuals and households displayed a greater preference for time deposits and a weaker preference for demand deposits and savings deposits during the 1970s (Table 6). Business enterprises on the other hand reduced the strength of their preference for demand deposits and shifted towards time deposits.

The changing patterns of deposit ownership and deposit preferences raise at least two issues. The first is whether particular deposit components or the maturity composition of deposits are responsive to interest rates or responded mainly to income growth. Second, since business holdings should be characterised by higher levels of deposit activity (encashments and credits), it is conceivable that the increasing weight of individuals and households in time deposits may have reduced deposit volatility to a greater extent than the overall trends in deposit composition indicate.

GROWTH AND STRUCTURE OF BANK ASSETS

As should be expected from the growth in total deposit liabilities, commercial bank assets expanded substantially in nominal and real terms between 1965 and 1982 (Table 7). The geometric mean growth rate was twenty-two per cent for nominal values and eleven per cent for real values. Similarly, assets grew more rapidly between 1974 and 1982 than between 1965 and 1973 (28% per annum versus 16% per annum).

Against this background of sustained asset growth, there were substantial changes in the composition of the banks' asset portfolios. It can be seen from Table 7 that cash assets, which had not increased much as a proportion of bank assets between

TABLE 6: DEPOSIT PREFERENCES, 1965-1982

<u>PANEL A: INDIVIDUALS AND HOUSEHOLDS</u>	<u>1965</u>	<u>1970</u>	<u>1973</u>	<u>1975</u>	<u>1980</u>	<u>1983</u>
DEMAND DEPOSITS (%)	14.4	8.6	7.5	9.2	9.6	9.7
SAVINGS DEPOSITS (%)	68.9	56.6	51.2	51.7	51.2	51.5
TIME DEPOSITS (%)	16.8	34.8	41.3	39.1	39.2	38.8
 <u>PANEL B: BUSINESSES</u>						
DEMAND DEPOSITS (%)	88.3	62.7	53.2	53.4	54.5	56.1
SAVINGS DEPOSITS (%)	2.0	6.1	4.4	2.6	1.5	2.7
TIME DEPOSITS (%)	9.1	31.2	42.4	43.9	44.0	41.2

Notes: Computed on basis of deposit data in Central Bank of Trinidad and Tobago Monthly Statistical Digest.

1965 and 1973, started to rise considerably in 1974, amounting to 19.6% of total bank assets in 1982. The growth was mainly in response to the massive injection of deposits resulting from the windfall gains accruing from the oil price shocks in 1973 and the rest of the decade. The banks could not fully utilise this additional loan capacity, especially because the government as a direct recipient of oil surpluses switched from being a net borrower from the banking system to a net creditor. A further influence is the legal cash reserve requirements which commercial banks must satisfy. In 1966, the Central Bank introduced a statutory legal minimum requirement of five per cent of total deposit liabilities. This was revised on several occasions subsequently, e.g., seven per cent in February 1973, and now stands at nine per cent. There is an additional marginal reserve requirement which raised effective cash reserve requirements to 13.6% at December 31, 1981 and 16.1% at December 31, 1982. Since 1967, commercial banks have also held secondary reserve cash assets at the Central Bank. These currently amount to five per cent of total deposit liabilities.

The relative importance of government securities in commercial banks asset portfolios has declined since 1965, despite a growth in the absolute financing of government through

this medium. The current values of government securities held by the banks increased from \$27.5 million in 1965 to \$98 million in 1972. After falling to \$72 million in the next year, it increased steadily thereafter to \$272 million 1982. Nonetheless, the percentage share fell from eleven per cent in 1970 to three per cent in 1982. This situation reflects supply constraints in the market for Treasury Bills. The government accumulated huge budgetary surpluses after 1973 and therefore did not need to borrow from the domestic financial system. As a consequence, the supply of government securities in the post-1973 period was motivated not by the financing requirements of government, but by the official desire to maintain a flow of investment assets to the local financial institutions in order to avoid a severe weakening of the emergent money and capital markets.

It is not certain how attractive government securities were as investment assets for the banks in situations of normal deposit growth. Average rates of return on these securities are typically lower than those on loans and advances (Table 8). The difference between these two rates of return has fluctuated significantly over the years. Both the absolute value of the return on loans and the interest rate differential should be adjusted downward in recognition that because loans are risky,

TABLE 7: COMMERCIAL BANK ASSET PORTFOLIOS, 1965-1982

<u>ITEM</u>	<u>1965</u>	<u>1970</u>	<u>1973</u>	<u>1974</u>	<u>1980</u>	<u>1982</u>
TOTAL ASSETS (\$mm)	273	491	912	1178	5216	8553
TOTAL ASSETS (REAL \$mm)	330	491	701	743	1557	2004
PERCENTAGE SHARES:						
(i) CASH ASSETS	6.0	7.5	8.2	17.6	14.7	19.6
(ii) T&T GOVT. SECURITIES	10.0	11.0	7.8	9.9	3.6	3.2
(iii) REAL ESTATE LOANS	1.2	1.1	2.7	2.6	3.4	5.2
(iv) OTHER LOANS	53.1	66.1	69.8	57.4	65.2	57.0
(v) FOREIGN ASSETS	13.2	3.1	0.4	0.2	1.9	1.6

Note: Asset deflator is Retail Price Index (1970=100). Cash assets includes deposits at Central Bank from 1970 onwards. Data source is Central Bank of Trinidad and Tobago Statistical Digest.

expected returns on loans are less than actual returns. Furthermore, it is possible that loan risk may vary over time so that fluctuations in the differences in rates of return may reflect fluctuations in risk-taking. Even after these qualifications are considered, it is likely that a significant and variable difference exists between the rates of return.

The standard theory of portfolio behaviour leads us to expect the share of government securities to respond to changes in the differential. However, empirical evidence on this issue is scant and tentative. Farrell and Baball (1981) estimated demand for Treasury Bills equations for sub-periods June 74 - September 76, October 76 - April 78, and May 78 - December 80. using monthly data. The difference between the average tender rate on Treasury Bills and the rate on Special Deposits at the Central Bank measured the price variable. The coefficient was correctly signed and statistically significant for the first and third sub-periods but statistically insignificant for the second period. Using quarterly data for the periods 1971 (ii)-1974 (iv) and 1975 (i) - 1980 (iv). Ramkisson (1982) regressed the sum of Treasury Bills and Special Deposits on the loan rate of interest and the weighted average of the Treasury Bill and Special Deposit rates of interest. The coefficient on the "own rate of interest" is correctly signed and statistically signifi-

TABLE 8: AVERAGE RETURNS ON COMMERCIAL BANK ASSETS

Year	r_{GS}	r_L	$r_L - r_{GS}$	TT GOVT SECURITIES AS % TOTAL ASSETS
1965	5.99	7.07	1.08	10.0
1966	5.83	7.39	1.56	9.5
1967	5.81	7.75	1.94	14.3
1968	4.99	8.24	3.25	15.1
1969	6.42	8.14	1.72	9.7
1970	5.73	8.63	2.90	11.0
1971	5.37	8.59	3.22	12.9
1972	5.00	8.26	3.26	12.9
1973	6.12	9.04	2.92	7.7
1974	5.42	10.76	5.34	9.9
1975	6.20	10.18	3.98	6.8
1976	9.89	9.97	0.08	6.2
1977	7.63	9.26	1.63	5.9
1978	8.62	10.30	1.68	5.2
1979	6.41	10.70	4.29	4.3
1980	8.26	11.34	3.08	3.6
1981	9.16	12.41	3.25	3.4
1982	7.85	13.79	5.94	3.2

Source: Central Bank of Trinidad and Tobago Monthly Statistical Digest.

Note: r_{GS} is average rate of return on Trinidad and Tobago government securities, r_L is average rate of return on loans.

cant in each case but the coefficient on the loan rate of interest is incorrectly signed and statistically insignificant. Finally, the data in the last two columns of Table 8 are weakly correlated. It is clear therefore that further evidence is required before a firm conclusion can be made about the influence of relative rates of return on commercial bank investment in government securities.

The largest component of bank assets is loans and advances. Table 7 separates real estate loans which have grown in importance from one per cent of total assets in 1970 to five per cent in 1982, and other loans and advances which varied between fifty-three per cent and seventy per cent of total assets during the seventeen year period. At the beginning of the period, commercial banks minimally participated in real estate financing. In 1966, they invested \$2 million which was only four per cent of total mortgage loans by financial institutions. Life insurance companies and thrift institutions were the main sources of mortgage funds. However, commercial bank participation developed swiftly between 1972 and 1982 when the mortgage market mushroomed in response to a rapid growth in residential and business construction and the fast growth in household incomes. Commercial banks direct mortgage lending rose to \$12.7 million in 1972, \$30.8 million in 1974 and \$406.9 million in 1982. Through the trust companies which they own as subsidiaries, the commercial banks also provided mortgage loans.

End of year balances for these were \$25.9 million in 1972, \$47 million in 1974, and \$439.3 million in 1982. By the end of 1977, the commercial banks directly or through the trust companies were lending more than the life insurance companies and thrift institutions together (\$228.3 million versus \$176.4 million). This dominance further increased so that at the end of the 1980, the commercial bank group had mortgage assets thirty per cent larger than the holdings of the life insurance companies and thrift institutions. Within the space of seventeen years, the commercial banks had moved from being a relatively insignificant element in the supply/^{of}real estate mortgage finance to a point where it controls over fifty per cent of institutional supply of mortgage credit.

The category "other loans" includes demand and term loans and overdrafts to government and its agencies, to the private productive sector, and to the personal sector for purposes other than mortgages. It is by far the most important earning asset. The nominal value of loan balances increased from \$144.8 million in 1965 at an average annual rate of twenty-five per cent to \$4.9 billion in 1982. Most of the growth occurred between 1976 and 1982, because the banks could not immediately utilise the sudden, large increase in deposit capacity during 1973 and 1974.

It is obvious that the actual supply of bank loans will vary directly with deposit capacity and thereby will also vary directly with the level of national income which is a major determinant of the supply of deposits to the banking system. It is not at all certain however that one can think of an ex ante supply relation between bank credit and the loan rate of interest. The doubt arises because of the oligopolistic nature of the commercial banking industry with its recent history of collusive loan pricing. It can be argued that the banks collusively set the loan rate of interest and stand ready to satisfy loan demands by creditworthy borrowers at that interest rate, subject to their lending capacity. Variations in actual loans around potential loan capacity will therefore tend to reflect conditions on the loan demand side of the credit market. The loan rate sensitivity of credit demand will influence the banks' loan pricing decisions.

Several empirical and theoretical studies of credit demand (notably Melitz and Pardue, 1973) identify permanent expected real income, the real loan rate of interest, and self financing capacity as important determinants of credit demand. Additionally, one would also expect the business demand for credit to be influenced by profit expectations. For this study

an attempt is made to estimate an aggregate demand function for real credit in order to provide some insight into these issues. Real bank credit (C) was regressed on expected real GDP (Y^e) the expected growth rate of real GDP (a profit expectation variable) i.e., \dot{Y}^e , the nominal loan rate of interest (r_L), the expected rate of inflation (\dot{P}^e) (to capture the price of effect on real loan rates), and the ratio of actual value of the GDP deflator to its expected value P/P^e , (on assumption that a positive error signals stronger product demand conditions and larger profits than expected). The following results are tentative because thus far no account has been taken of simultaneous equation bias stemming from the nominal loan rate of interest.

$$\begin{aligned}
 (1) \quad \ln BC &= 24.17 + 4.32 \ln Y^e \\
 &\quad (10.67) \\
 &\quad - 8.80 \dot{Y}^e - 18.26 r_L \\
 &\quad (-2.27) \quad (-3.57) \\
 &\quad + 2.032 \dot{P}^e - 0.553 P/P^2 \\
 &\quad (3.16) \quad (-1.99) \\
 R^2 &= .9855 \quad F = 163.59 \quad D.W. = 1.89 \quad c.v. = 1.49\%
 \end{aligned}$$

The model is well estimated in terms of the usual statistical "goodness of fit" criteria. The income elasticity of the demand for bank credit is 4.32 and the interest rate elasticity computed at the mean value of the nominal loan rate is

- 1.72. The demand for credit varies inversely with the nominal loan rate of interest. It also varies directly with the expected rate of inflation, which reduces the real loan rate of interest. Because the actual GDP deflator was less than expected in 13 of 17 observations, it is not surprising that this anticipated profitability indicator was negatively correlated with real loan demand. Rather surprising however is the estimated negative rather than expected positive relationship between credit demand and the expected growth rate of real GDP. The beta coefficients measure for individual contribution to explanations (Goldberger, 1964) are 1.26 for expected GDP, 0.09 for expected growth of GDP, 0.07 for the error of price expectations, 0.45 for the nominal loan rate, and 0.20 for the expected rate of inflation. It is therefore concluded that the main determinant of credit demand was the level of expected real income. Second in importance was the nominal loan rate and third was the expected rate of inflation. The other variables add little to explanatory power. Income levels, and real interest rates are the main determinants of the demand for real bank credit.

Foreign assets consist of balances with banks overseas and foreign securities. Bank balances accounted for more than ninety per cent of foreign assets until 1978 when foreign

securities rose to twenty per cent. The percentage shares of foreign assets in total assets presented in Table 7 are based on Central Bank data which excludes foreign securities. The estimates are therefore biased downwards, a fact of modest significance for the post-1979 period. Foreign assets were less important in commercial banks' asset portfolios between 1970 and 1982, than previously. They declined from thirteen per cent of total bank assets in 1965 to three per cent in 1970, and then averaged only 0.4% between 1971 and 1976. A slow recovery took place during the rest of the decade (1% in 1977 and 1978, 2% in 1979). This recovery continued into the 1980s.

Several explanations may be advanced for the diminishing importance of foreign assets. Perhaps the most important is the variations in the supply of Trinidad and Tobago Treasury Bills. Foreign assets perform two roles in the asset portfolios of commercial banks. They partly represent transactions balances held overseas for routine bank settlements. They also constitute a liquid investment asset. In the latter role they are substitutes for domestic Treasury Bills. *Ceteris paribus*, an increase in the supply of domestic Treasury Bills reduces the investment asset demand for overseas assets, and vice-versa. The demand for foreign assets also seems to have been affected by a foreign exchange rate shock in 1967 and 1971. In November 1967, the pound sterling de-

likely that the greater exchange rate risks engendered by the Smithsonian period dissuaded the holding of foreign assets above transactions balance requirements.

It is theoretically possible that the commercial banks' demand for foreign assets is influenced by foreign interest rates relative to domestic rates. Short term interest rates in both sets of financial markets can be effectively represented by the respective Treasury Bill rates. Comparative interest rate data for the United Kingdom, the United States of America, and Trinidad and Tobago are presented in Table 9. It can be observed that Treasury Bill interest rate differentials widened substantially in favour of both the United Kingdom and the United States of America after 1972, while the share of foreign assets instead of rising either fell or varied only minimally. These divergent trends lead to the conclusion that the banks' foreign asset behaviour was not responsive to foreign short term interest rates.

SECTORAL COMPOSITION OF LOANS AND ADVANCES

The sectoral composition of bank loan and advances is interesting for several reasons. Knowledge of the distribution of bank credit provides some insight into the sectoral allocation of finance and into credit effects on expenditures and economic activity. Another reason is that the pricing of bank credit may not be uniform across sectors. Third, interest rate elasticities

of credit demand may differ according to the borrowing sector. For these reasons, the efficient conduct of national credit policy requires that full account be taken of the sectoral dimensions of the bank lending.

Table 10 depicts the changing structure of bank loans during the 1965-1982 period. In 1965, the major sectoral recipients of bank credit were the distributive trades sector which received (23%), government (19%), personal (17%) and manufacturing (14%). Much smaller proportions were received by producing sectors such as agriculture (4%), construction (3.1), and transportation (4%). This pattern changed significantly during the next seventeen years, particularly after 1970. The main changes are the persistent decline in the distribution sector's share from twenty-five per cent in 1970 to ten per cent in 1982, the decline in the manufacturing share from twenty-one per cent to eleven per cent in the same years, and the continued rapid growth of the shares of the personal sector (28% in 1970, 34% in 1982), and real estate mortgages (2.5% in 1970, 7.7% in 1982). The share of the government sector fluctuated, falling sharply between 1974 and 1980, and then rising in 1981 and 1982. The share of construction finance became quite sizeable in 1980 and 1982 (9.7% and 8.6%), while that of agriculture stagnated at roughly 2.5% between 1970 and 1980, before declining to 1.2% in 1982.

This sectoral composition of bank loans reflects supply as well as demand factors. Among the supply side influences are the differences in lending costs among the various sectors. Commercial bank total lending costs are the sum of the cost of funds (interest and non-interest costs), loan administration costs, and risk costs. The cost of funds are uniform across borrowing sectors because bank loanable funds are deposits and not special purpose funds. Loan administration costs consists of costs incurred in loan evaluation as well as costs of loan recovery. These are unlikely to be uniform across the banks' credit clientele. Information costs are the core of loan appraisal costs. Because less is known about some borrowers and about some sectors, and because more needs to be known about unfamiliar or particularly risky credit proposals, evaluation costs will differ sectorally according to the sectoral distributions of prior knowledge and required knowledge. Furthermore, if delinquency rates differ sectorally, loan collection costs will vary sectorally also. Risk costs defined to be the loss of principal and interest through loan default are not expected to be uniform across sectors, largely because of their different production, marketing, and income characteristics. The more uncertain the availability and price of inputs and the more uncertain the production technology, the greater the risk of production failures and operating losses, and consequently

TABLE 9: COMPARATIVE TREASURY BILLS RATES: T&T, UK, US

PERIOD AVERAGE	TTBR	UKTBR	USTBR	UK minus TT	US minus TT	FOREIGN ASSETS AS % TOTAL ASSETS
1965	4.82	5.91	3.95	1.09	-0.87	13.2
1967	5.13	4.82	4.33	0.69	-0.80	6.3
1968	5.82	7.09	5.69	1.27	-0.13	1.6
1970	5.32	7.01	6.44	1.69	1.12	3.1
1971	5.11	5.57	4.34	0.46	-0.77	3.1
1972	3.74	10.18	4.07	6.44	0.33	0.4
1975	3.99	10.18	5.82	6.19	1.83	0.3
1976	3.98	11.12	4.99	7.14	1.01	0.5
1977	3.94	7.68	5.27	3.74	1.33	1.0
1978	3.54	8.91	7.63	5.37	4.09	1.2
1979	3.13	13.30	10.9	10.17	7.06	2.0
1980	3.08	14.86	12.13	11.78	9.05	1.9
1981	3.05	13.02	13.48	9.97	10.43	1.7
1982	3.05	11.13	10.20	8.08	7.15	1.6

Source: IMF International Financial Statistics and Bank of Jamaica Statistical Digest.

the more likely is involuntary loan default. Similarly the weaker are product markets and the more variable are producer and household incomes, the greater are credit risks.

Sectoral differences in loan administration costs and risks would give rise to sectoral differences in interest rates and other loan charges, provided that the bank credit market is imperfectly competitive, the market can be segmented, and opportunities for credit arbitrage are negligible. Under such conditions, the banks would act as price discriminating monopolists, charging each sector a different rate of interest. Oligopolistic competition, market segmentability, and weak opportunities for credit resale (i.e., arbitrage) are characteristics of commercial banking in Trinidad and Tobago. Price discrimination is therefore to be expected. No empirical information is currently available on sectoral loan rates, but information from the Jamaica banking industry which shares a common origin and has a similar structure suggests that differences do exist. In Jamaica at December 31, 1983 for example, the commercial banks weighted loan rate of interest was 21.89% for instalment credit, 14.53% for mortgage credit, 16.78% for personal credit, and 15.70% for commercial credit.

The banks have found it necessary to ration credit to particular sectors or categories of borrowers. There are two

basic reasons for this. One reason is the failure of the oligopolistically determined rate of interest to cover marginal lending costs for particular potential loans by particular banks. In situations of collusion or price leadership, actual loan rates will tend to reflect the average of marginal costs for the industry or the marginal costs of the price leader. If the marginal costs of individual banks lie below this price (perhaps because of different risk and administration costs), then lending will be restricted in those cases. The second reason is the possibility that ex ante risk is so great that at the correspondingly high interest rates only high risk borrowers are willing to borrow and the loan portfolio would become riskier (Stiglitz's principle of "adverse selection"). Therefore, the credit institution would refuse to lend at those higher rate of interest and would instead exclude the high risk loan projects.

The sectoral pattern of bank loans also reflects differences in sectoral demands for credit. The demand for credit by a particular customer or category of customer would be influenced by the size of its total financing requirement, its access to own financial resources and other credit sources, and the cost of credit from the several sources. The relative economic sizes of borrowers is one partial indicator of financing requirements. It needs to be supplemented by information

on the ratio of working capital to total production costs and on payments and sales revenue lags, because equivalent-size enterprises which differ in these other important aspects will have quite different financing requirements.

There is no firm statistical information currently available on sectoral financing requirements. However, preliminary results of a survey of business financing (Farrell, Najjar and Marcelle, 1983) provide some insight into financing patterns and the significance of bank credit. The data pertained to 1981 and 1982. It was established that for seventy-five per cent of the sample of sixty respondents, external funds were not less than fifty per cent of total funding of business activity. Ten per cent of the firms had external funding ratios of fifty-one to seventy per cent and a further twelve per cent had external funding ratios of seventy-one per cent to ninety per cent. External funding ratios varied between sectors. None of the firms in the petroleum sector had external funding ratios greater than sixty per cent; a third of those in the food, beverages and tobacco industry had ratios in excess of sixty per cent, as did forty per cent of assembly industry enterprises, eighty per cent of firms in the distribution sector, and all firms in the construction sector.

Unfortunately the survey did not report a frequency distribution for the share of bank credit in external funding. However, since the frequencies for the ratio of bank credit to total sources of finance were reported, some inferences are possible from a comparison of the two frequency distributions. For forty-seven per cent of respondents, bank finance accounted for less than fifty per cent of total financing, a further nine per cent had ratios between fifty-one and eighty per cent, and two per cent had ratios of eighty-one to one hundred per cent.

From the distributions of external financing ratios and bank credit ratios, it may be inferred that about sixty-eight per cent of respondents had bank credit amounting to not more than fifty per cent of total external funding. For sixteen per cent of the respondents, the ratio lay between fifty-one and eighty per cent, and for seventeen percent the ratio was greater than eighty per cent. Farrell et al explain this rather surprising result in terms of the predominance of creditor items and the reduction of inventories of currency and bank deposits. Their finding may not be generally valid. Flow of funds data compiled by the Central Statistical Office on the assets and liabilities of the local corporate sector as well as Central Bank data on business deposit balances reveal no downward trend in corporate liquid assets nor any disproportionate growth in trade credits. Instead, corporate indebtedness to commercial

banks increased as a proportion of total corporate liabilities between 1966 and 1978 (Bourne 1982) and may have continued to expand subsequently. The argument of this essay therefore is that differences in sectoral external funding are likely to be reflected in differences in the demand for bank credit.

Borrowing costs will not be uniform across sectors. One important source of non-uniformity is the segmentation of interest rates and other prices discussed earlier. Another reason for non-uniformity is the differences in non-interest transactions costs incurred by various credit applicants. Transactions costs include expenses associated with documentation of loan applications, the opportunity cost of waiting for loan approval and disbursement, production time lost in travel and attendance at the credit institutions, and travel expenses. Some credit applicants are likely to incur higher transactions costs than others not only absolutely but also in proportion to the dollar value of the loan request. Because some elements of transactions costs are fixed, e.g., application and documentation fees, unit transactions costs decrease as loan size increases. Furthermore unlike interest costs, non-interest transactions costs are incurred irregardless of whether the loan is granted. Unit transactions costs would be largest for unsuccessful credit applicants because they would have incurred costs but received no loans. Thus for loan applications with lower probabilities

of success, effective transactions costs, i.e., transactions costs scaled by the probability of loan rejection, are higher than for those applications with greater chances of success. Conceivably some potential applicants who perceive high probabilities of loan rejection will not demand credit when transaction costs are high. In this manner, the cost minimisation behaviour of credit customers may reinforce the banks' risk avoidance behaviour. Sectoral differences in interest rate elasticity of credit demand constitute a further reason for sectoral variations in borrowing costs. The interest-sensitivity of credit demand is likely to differ across credit customers, depending upon their intensity of credit needs, the price elasticities of demand for their products, and the relative weight of interest costs in total borrowing costs. Interest-elasticity will vary inversely with the intensity of credit need, and vary directly with the price-elasticity of product demand and the weight of interest costs in total borrowing costs.

To complete this section of the essay, commercial bank credit is related to sectoral gross domestic product and private consumption expenditure. The details are contained in Table 11. It can be seen that there are wide differences in the ratio of bank credit to sector economic activity. The mining sector has the lowest ratio of bank credit to GDP - a state of affairs

that reflects the strong internal financing capacity of the sector rather than any disfavour by the banks. The agricultural sector, while obtaining substantially increasing proportions of bank credit, has tended to have much lower ratios than all other production sectors identified in the Table. Especially striking is the high ratios of bank credit to GDP for the textiles, clothing and footwear industries and for the wood, metal and clay products sub-sector. It is noticeable that the credit-GDP ratio in construction rose sharply in 1976 (three years after the first oil shock which started a construction boom), and that the ratio for the distribution sector remained steady around a mean of thirty-five per cent except in 1975 and 1976 when it was twenty-three per cent. These ratios indicate the need for analysis along the lines of the preceding paragraphs in this section but the basic information required for that task is lacking. The ratio of bank credit to private consumption expenditures grew relatively slowly between 1972 and 1975 from 10.1% to 13.8%, but then increased rapidly to 24% in 1978. Subsequent growth of personal credit was restrained by the introduction of selective credit guidelines in November 1979 aimed at restricting personal sector credit to twenty-five per cent of total commercial bank loans. Although not entirely effective, the credit guideline restrained the growth of commercial bank lending to the personal sector. At the same time

personal disposable incomes continued to rise, thereby weakening the demand for credit relative to planned consumption expenditures. The rising trend in incomes and the credit restraint policy together caused a decrease in the ratio of credit to personal consumption expenditure.

COSTS, REVENUES AND PROFITS

Commercial banks like any other production enterprise incur costs of production and derive revenues from their operations. The main inputs into their production process are financial capital (largely bank deposits) and labour. In addition, banks utilise physical capital in the form of buildings, machinery and equipment, and also utilise intermediate inputs such as stationery, and services provided by utilities. The products of commercial banks are the credit services and other financial services they provide. Payments services (e.g., foreign exchange transactions) are the main non-credit financial services. These credit and non-credit services generate the incomes or revenues from banking operations. There is some ambiguity about the status of service charges on demand deposits. The reported accounts treat these charges as a revenue item which would suggest that demand deposits are an output. However, a considerable body of theoretical and empirical literature leads to the conclusion that demand deposits are an input. (For recent

TABLE 11: COMMERCIAL BANK CREDIT AS PER CENT OF GDP AT
FACTOR COST AND PRIVATE CONSUMPTION EXPENDITURE

	AGRIC	MINING	FOOD, BEV TOBA- CCO	TEXTILE CLOTHING FOOTWEAR	WOOD & METAL & CLAY PRO- DUCTS	CHEM- ICAL PRO- DUCTS	DISTRIB. HOTELS REST.	CON- STRUC- TION	PRI- VATE CON- SUMP- TION
1969	6.9	2.2	31.1	46.3	93.4	59.9	28.4	13.8	7.2
1970	9.8	2.9	22.4	46.1	113.2	56.8	33.6	14.4	8.4
1971	8.9	3.5	23.0	46.8	101.2	47.3	34.0	6.1	10.1
1972	12.6	4.4	38.3	58.5	133.3	42.1	39.2	5.9	10.9
1973	15.7	2.3	39.1	68.7	123.7	44.5	34.4	11.0	12.1
1974	13.7	1.1	3.10	58.6	125.6	94.6	25.9	8.9	12.9
1975	12.4	1.5	27.5	69.2	86.7	83.1	23.9	9.2	13.8
1976	12.6	1.7	29.4	41.7	60.8	53.7	23.2	22.4	17.5
1977	15.0	1.0	28.5	72.5	92.1	46.0	34.5	12.4	20.2
1978	20.2	2.8	30.5	51.8	105.8	56.1	35.2	14.7	23.9
1979	15.7	2.7	42.2	58.5	118.7	18.4	35.9	37.5	18.3
1980	28.0	0.9	30.8	49.5	115.4	15.0	33.4	29.3	18.7
1981	22.6	1.9	28.8	58.7	160.3	18.3	34.6	29.7	19.7

Notes: All data from Central Statistical Office Annual Statistical Digest. Bank Credit data are year-end balances. Production sector classifications for Mining, and Construction do not exactly match bank loan classification. GDP for Construction includes Quarrying, while credit for Mining includes Quarrying and GDP for Mining excludes non-petroleum activities.

reviews, see Sealey and Lindley (1977) and Clark (1984). It is argued that there is an implicit interest payment on demand deposits for its use as financial capital by the banks. Similarly, there is an implicit charge for the payments services (chequeing facilities) provided on these accounts. The service charge reported (and quoted) by the banks is in effect a net charge, the difference between the implicit fee for payment services and the implicit interest rate on demand deposits. This process of netting out explains the explicit payment of interest on demand deposit of accounts above certain minimum average sizes or with restricted chequeing facilities.

Considerable importance is attached to the operational efficiency of banks. They have a special place in the financial system as the depository of the society's financial surplus and as the most wide reaching source of credit and general financial services. The efficiency with which they perform these intermediary functions thus has pervasive effects. Furthermore, the capital value safety and interest earning of the savings of many individuals rest heavily on the efficiency of bank performance. In addition, the collapse in the stability of the financial system as a whole can have traumatic effects on depositors' confidence in the stability of the financial system as a whole.

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Considerable importance is attached to the operational efficiency of banks. They have a special place in the financial system as the depository of the society's financial surplus and as the most wide reaching source of credit and general financial services. The efficiency with which they perform these intermediary functions thus has pervasive effects. Furthermore, the capital value safety and interest earning of the savings of many individuals rest heavily on the efficiency of bank performance. In addition, the collapse in the stability of the financial system as a whole can have traumatic effects on depositors' confidence in the stability of the financial system as a whole.

The operating costs of the commercial banking industry increased greatly in absolute terms between 1945⁶ and 1982. Operating costs rose from \$15.1 million in 1965 to \$57.2 million in 1973 and increased ten times to \$573 million in 1982. (Table 12). The ratio of operating costs to total assets may be taken as a measure of the efficiency of bank intermediation. This intermediation cost ratio has tended to rise, increasing from .055 in 1965 to .064 in 1973 and .071 in 1982, thereby indicating that the efficiency of financial intermediation was less after 1973 than previously. Changes in the structure of operating costs documented in Table 12 provide some insight into the sources of cost increases. It is evident that interest costs account for a larger proportion of total operating costs after 1970, while labour costs and the costs of physical capital (i.e., buildings, machinery and equipment) declined relatively. Other operating costs including advertising expenditures, net losses on loans and investment, and provisions for loan losses were also a larger proportion of total costs in the post-1970 sub-period than before. The main reason for the rise in interest costs is the shift in deposit composition towards higher interest yielding time deposits and away from savings deposits. The change in the structure of deposits had the effect of raising interest expenses much faster than other operating expenses.

The operating revenues of the banking industry increased slightly more rapidly than operating costs. In 1965, total operating revenues were \$16.7 million (6.14% of total assets). By 1973, they had risen to \$75.7 million (8.3%), increasing further yet to \$777.3 million (9.7% of total assets) in 1982. The main contributor to the growth in operating revenues is loan revenues. Though the structure of asset portfolios did not alter in favour of loans, interest rates and other loan charges increased sufficiently to generate substantial income and served to offset the reduced earnings potential of government securities. As a consequence of the faster growth of operating revenues, net revenues tended to increase as a proportion of total bank assets. It can be concluded that despite the reduction in operational efficiency measured in terms of cost-effectiveness, the industry remained viable. It is worthwhile to stress however that continued viability was obtained because of bouyant loan demand which offset the demand reducing effects of higher interest rates. NB.

Although the ratio of net revenues to total assets provides an indication of commercial bank profitability, a better measure is the ratio of net revenues to shareholders capital. The latter measure of the rate of profit can be stated either on a pretax or post-tax basis. Table 13 presents both sets of

TABLE 12: OPERATING COSTS AND REVENUES OF COMMERCIAL BANKS

<u>ITEM</u>	<u>1965</u>	<u>1970</u>	<u>1972</u>	<u>1973</u>	<u>1974</u>	<u>1975</u>	<u>1980</u>	<u>1982</u>
OPERATING COSTS \$m	15.1	33.9	43.3	57.2	84.0	94.7	344.3	573.0
OPERATING REVENUES \$m	16.7	41.5	54.9	75.8	105.3	122.6	480.9	777.3
NET OPERATING REVENUES \$m	1.6	7.6	11.5	18.6	22.3	27.9	136.6	204.2
<u>PER CENT OF TOTAL ASSETS</u>								
OPERATING COSTS	5.54	6.90	5.71	6.27	7.05	6.09	7.05	7.15
OPERATING REVENUES	6.14	8.45	7.23	8.31	8.94	7.88	9.85	9.70
NET REVENUES	0.59	1.55	1.52	2.04	1.89	1.79	0.80	2.55
<u>PER CENT STRUCTURE OF COSTS</u>								
INTEREST COSTS	36.3	32.8	46.3	45.7	55.0	46.8	49.4	48.5
LABOUR COSTS	42.4	49.8	33.3	29.3	24.1	28.0	30.4	31.3
PHYSICAL CAPITAL	10.1	7.3	7.0	5.9	5.2	5.7	5.4	5.9
OTHER	11.2	10.1	13.4	19.1	15.7	19.5	14.8	14.3
<u>PER CENT OF STRUCTURE OF REVENUES</u>								
LOAN REVENUE	54.3	68.7	65.9	71.2	74.0	71.6	76.3	81.1
SECURITY INCOME	9.9	6.2	9.6	5.8	5.2	5.9	3.3	2.2
OTHER	35.9	25.1	24.4	23.0	20.8	22.5	20.4	16.8

Source: Central Bank of Trinidad and Tobago Quarterly Economic Bulletin
December 1974 and September 1973.

information for the five largest banks for the period 1972 to 1982. It is evident that the commercial banks have been very profitable during the 1970's. The pre-tax profits of some banks were as high as 71% of shareholders capital in 1978. Profit rates dipped in the middle of the decade, but recovered in the early part of the 1980s. During 1982, four of the five banks had pre-tax profits of 44% to 59% of shareholders capital. For the same banks, post-tax profits were between 29% and 62% of shareholders capital.

RISK AND CAPITAL ADEQUACY

By "risk" in this context is meant the probability that operating losses will be sufficiently large and sufficiently protracted to fully absorb the enterprises' capital and result in insolvency. A commercial bank is de facto insolvent when it has insufficient liquid assets to redeem its deposit and other debt liabilities or when the realized market value of its assets is less than the value of its debt liabilities. Enterprises will differ among each other and through time with respect to the probability of losses, i.e., with respect to the degree of riskiness in their operations.

Risks may arise from a number of possible sources ranging from unexpected changes in interest rates to problems of loan default, reductions of investment values, and fraud.

TABLE 13: RATE OF PROFITS ON SHAREHOLDERS' CAPITAL

YEAR	PRE-TAX					POST-TAX				
	BANK 1	BANK 2	BANK 3	BANK 4	BANK 5	BANK 1	BANK 2	BANK 3	BANK 4	BANK 5
1972		46			23		22			23
1973	53	71			10	27	37			10
1974	44	66			-34	24	34			-34
1975	47	46		40	1.3	22	26		20	1
1976	42	42		59	13	23	21		26	12
1977	47	55	13	52	26	22	28	6	24	18
1978	41	41	13	61	29	20	21	5	29	17
1979	54	45	18	46	24	26	23	7	22	12
1980	43	51	19	48	50	19	26	15	23	25
1981	47	57	20	57	69	45 ⁽²⁾	29	8	28	34
1982	44	57	13	59	59	42 ⁽²⁾	30	7	29	29

Notes: Computed by author from published balance sheets and income and expenditure accounts. Data pertain to accounting year ending in the specified calendar year. Accounting years are not uniform.

Capital adequacy is defined in relation to risk. Bank capital has the primary function of providing protection against potential loss. Derived functions are the maintenance of depositor confidence and the related existence of an institutional structure for financial intermediation. Although depositors are not sensitive to or knowledgeable about small changes in the financial conditions of the banks, dramatic deterioration in those conditions with the prospect of insolvency would impair depositor confidence sufficiently to generate 'deposit runs' which may not be confined to the problem enterprise.

Maisel (1981, p. 39) has stated that capital is adequate when portfolio risks are controlled and sufficient capital is maintained to reduce possible losses and insolvency to an acceptable minimum. Gardner (1981) indicates that a bank can adjust its risk position to its capital cushion or adjust its capital cushion to its risk position. These two statements reveal the interdependence of risk and capital adequacy. It is important to realise, however, that neither the degree of risk nor the value of capital are entirely controllable by the banks. Although a credit enterprise can manage its overall portfolio risk to some extent by credit screening and by portfolio diversification, there is always an element of uncontrollability stemming from exogeneous changes in the economic system and from errors

of judgement, ^k Likewise, the market value of banks' capital assets may be affected by circumstances outside its control. It is necessary to recognise that financial enterprises may lie within a continuum from low risk-high capital adequacy to high risk-low capital adequacy, and that a problem of financial danger may exist long before an enterprise reaches the extreme right of the continuum.

APPROACHES TO RISK AND CAPITAL ADEQUACY ASSESSMENT

Three broad approaches to evaluation of risk and capital adequacy can be identified. The first, traditionally used by regulatory and supervisory agencies, seeks to determine or to interpret portfolio quality and capital adequacy by operational 'rules of thumb' derived from historical judgements. This approach involves the assessment of loan quality, internal operating systems, and compliance with regulatory determined capital and liquidity norms. It also involves the comparison of actual values of selected accounting ratios with ad hoc 'ideal' ratios. This approach is perhaps best illustrated with reference to the US bank examination system. Sinkey (1977) observes that the purposes of bank examination are to determine asset quality, to establish the nature of liabilities, to ascertain compliance with laws and regulations, to evaluate controls, procedures, accounting practices, and in-

insurance, to evaluate management and its policies, and to determine capital adequacy.

Any one of three capital ratios can be used to combine these objectives. They differ with respect to the adjustment made for sub-standard and doubtful loans.

1. FIDC Adjusted Capital Ratio (ACR):

$$ACR = |K + R + N - L - 0.5D|/A$$

where

K is total capital accounts, R is valuation reserves, N is nonbook sound banking values, L is loss classification (loan loss write offs), D is doubtful classifications, A is average gross assets for the accounting period.

The ACR treats actual loan losses as an equivalent impairment of capital, and assigns a 50% probability loss estimate to doubtful loans.

2. FIDC Net Capital Ratio (NCR)

$$NCR = |K + R + N - L - D - S|/A$$

where

S is substandard loans.

Note that this ratio implicitly assumes a 100% loss probability for doubtful and for sub-standard loans.

3. Probability Weighted Capital Ratio (WCR)

$$WCR = |K + R + N - \gamma_L L + \gamma_D D + \gamma_S S| / A$$

where γ are the prospective probabilities. The difference between WCR and NCR is that the probabilities are historically derived rather than assumed. The probabilities γ can be estimated as the ratio of actual write-off to the value of the particular loan category in any year, or better still as the expected value of the ratio over a number of periods.

On the basis of his study of US banks, Sinkey concluded that the NCR is the most important discriminator between problem and non-problem banks.

An important limitation of these ratios is their post hoc diagnostic orientation. That is to say, they serve more as aids to post-mortem of "failed" institutions than as guides to preventive action. A further weakness of the approach is its reliance on just a small subset of data available on the financial institution without any statistical basis for confidence in their information content.

Prompted by these limitations and by the recent historical experience of the failure of the traditional bank inspection approach to prevent the insolvency of a few banks in the US, a number of financial specialists have attempted to develop a superior alternative. This second approach may be broadly termed the "early warning" approach. The essence of "early warning

systems" is the use of a cluster of financial ratios to both evaluate and predict the financial performance of depository institutions. Its diagnostic and predictive uses allow regulatory agencies as well as the enterprises themselves the opportunity to take corrective action at an appropriate stage.

The early warning approach selects a cluster of financial ratios from a much larger set of a priori useful ratios on the basis of their power to statistically discriminate between problem banks and non-problem banks. The basic statistical methodology is multiple discriminant analysis. In its particular application to financial enterprises, the method of discriminant analysis involves (a) the classification of the enterprises into the two categories i.e., problem and non-problem (b) the identification and measurement of financial characteristics on which the groups are expected to differ. These characteristics are the discriminants. Each enterprise is assigned a score according to the discriminant function:

$$Z_i = a_{i1}X_1 + a_{i2}X_2 + \dots + a_{in}X_n$$

where Z_i are the scores, the a_{ij} are the weighting coefficients, and X_i are the financial characteristics. The discriminant functions are formed in such a way as to separate as fully as possible the enterprises into the two categories. Ideally, this requires identical scores for members of a given group. The technique proceeds further to seek the minimum number of

discriminators consistent with an arbitrarily chosen level of discriminatory power or to maximise discriminatory power.

Sinke's early warning system utilises seven discriminants: interest and fees on loans as a percentage of total operating revenue; total operating expenses as a percentage of total operating income; Federal government securities as a percentage of total assets; State and local government securities as a percentage of total assets; total loans as a percentage of total assets; net borrowed reserves as a percentage of total assets; capital and reserves against loan losses as a percentage of total assets. These ratios measure revenue concentration, operating efficiency, liquidity and asset composition, loan volume, liability management, and capital adequacy.

Other characteristics may be employed in an early warning system. For example, a list of six early warning variables compiled by Korobow, Stuhr and Martin (1977) includes gross capital as a ratio to risk assets as an alternative measure of capital adequacy, and net liquid assets as a percentage of total assets as a measure of liquidity.

One weakness of the early warning approach is the absence of a time series basis for the discriminant functions. These are based on cross-sections at a point in time or on a series of cross-sections at various points in time. The aim, however,

is to appraise the prospective financial condition of an enterprise on the basis of its financial history and the likely future values of critical variables.

A third approach (Maisel 1981) permits this time series orientation, but does not necessarily exclude the use of cross-section data. The approach, as developed thus far, involves (a) the estimation of separate components of total risk, such as interest rate risk (i.e., the losses possible from changes in effective interest rate margins), risks from failure to maintain margins, and risks from losses; (b) the summing of these components into the total risk; (c) the comparison of the money value of these risks with the economic value of shareholder's capital.

Because "risk" is the danger of erosion of net earning assets (defined as total assets minus cash and deposits at the monetary authorities, settlement balances with other depository enterprises, fixed assets and acceptances) through losses, both the estimates of money losses and capital should be related to net earning assets, although, as Maisel (1981) admits, the use of total assets is not necessarily misleading.

The risk component approach requires some estimates of the probability distribution of those risks. Two methods have been tried. One is some variant of an autoregressive or statistical time series scheme applied to the historical data on the loss components. The other tries to generate the distributions

by structural econometric models which relate one or more facet of financial enterprise behaviour to the movement of industry or economy-wide economic variables. The second method is intuitively more appealing, especially since it allows recognition that structural or cyclical changes may render the past a poor guide to the future. However, this method has not in practice been as efficient as the time series methods.

The Trinidad and Tobago commercial banks have not exposed themselves to much interest rate risk. Interest rate risks arise when ever changes in either the effective duration of assets or in market determined rates of interest reduce the spread between average interest returns and average interest costs. If the spread becomes negative there is a clear case of capital erosion. This has not been the experience in the Trinidad and Tobago banking industry. Imperfectly competitive pricing of both loans and deposits and bouyant deposit supply and loan demand conditions have combined to result in effective interest rate spreads considerably larger between 1975 and 1982 than between 1965 and 1974 (Table 14). However, this ^{Table 15?} experience does not rule out the possibility that future loan delinquency problems as well as less bouyant economic conditions may depress interest rate spreads. This outcome would depend on the extent to which loan delinquencies ensue from the economic recession and thereby cause a lengthening of effective

loan maturity. Another consideration would be the extent to which the recession also increases the interest sensitivity of business loan demand and thereby reduce the scope for loan rate increases. The change in interest rate spreads would also depend upon the extent to which the recession reduces the income capacity to save thereby increasing the interest-sensitivity of deposit rates of interest and reducing the scope for deposit rate reduction.

Some insight into these questions is obtained from an examination of recent trends in deposits, and in the volume of composition of loans in relation to some measure of income capacity to repay. As shown in an earlier section, total loan balances expanded much faster than national income (proxied by GDP) between 1975 and 1982. The annual rate of expansion was even faster for real estate loans. Moreover the latter assets increased their share of total bank assets. The real estate market is especially sensitive to cyclical swings with the consequence that economic downturns quickly depress market values of bank collateral and lock them into delinquent loans. At the same time, bank lending has been slow to respond to the deceleration in the rate of growth of income. Furthermore, not only has bank lending grown more rapidly than deposits it also has been slow to respond to the deceleration of deposits growth. These trends raise three

possibilities. First, it is possible that loans have been pushed beyond future capacity to repay. Second, it is likely that in the future loan demand will grow more slowly than in 1970s. Third, deposit growth is unlikely to be fuelled as much by income growth and, apart from being less interest-sensitive, will not be readily available to meet liquidity requirements.

Turning now to the early warning variables, it can be recalled that operating efficiency (measured by ratio of expenses to total assets) deteriorated. Furthermore, commercial bank revenues are highly concentrated and have tended to become even more concentrated between 1979 and 1982. This revenue concentration parallels the concentration of the assets portfolio on loans and the decreased short debt financing of the government. It is likely that the degree of revenue concentration will be reduced during the rest of the 1980s as the government becomes a major issuer of shortterm securities once more and as the loan performance of the banks deteriorates. This prediction of reduced concentration per se does not signify a healthier financial conditions, i.e., less risk, since it would result less from better portfolio management than from an exogeneously induced deterioration in loan portfolios.

Some broad risk and capital adequacy measures are presented on an individual bank basis in Table 14. The first two sections of the Table reveal both the variability of risk-taking and liquidity among the banks and the growth of risk-taking since the mid-1970s. The third section provides an indicator of risk-taking capacity. Since probabilistic default rates on risk assets are unlikely to be 100 per cent, these capital/risk asset percentages are biased downwards in a realistic decision-making context. Ideally, one would want to express capital as a percentage of expected losses on risky assets but this information is not obtainable from the published accounts. It does appear, however, that the trend towards lower capital to risk assets ratio synchronous with an economic downswing is financially imprudent.

INTEREST RATE BEHAVIOUR

Interest rates on loans and deposits have been so critical to the financial performance of the banks that a closer examination of their behaviour is warranted. Table 15 presents the basic data on loan and deposit rates of interest for the period 1965 to 1982. Two alternative series are available for both loan and deposit rates of interest. The first series is comprised of value-weighted rates quoted by the banks at the end of each quarter. Quarterly rates are averaged to obtain representative

rates for the year. The second data series is obtained by dividing actual interest receipts on loans by average loan balances for each year. It is evident that effective loan rates of interest exceed quoted loan rates, and that effective deposit rates are less than quoted deposit rates. Correspondingly, effective interest rate spreads are substantially larger than the spread on quoted rates of interest. Because it is the effective or actual spread which influences bank profits, the spread on quoted rates substantially understate the profit potential of the banks.

Interest rate spreads have increased considerably during the 1970s and early 1980s. Between 1965 and 1969, the average spread was 3.68% for quoted rates and 3.94% for effective rates. The corresponding mean values for the next decade were 3.95% and 6.06%. Between 1980 and 1982, the average spread for quoted rates was 5.71%, while that for effective rates of interest was 7.29%.

A recursive relationship seems to exist between the loan rate of interest and the deposit rate of interest, with the relationship running from the loan rate to the deposit rate (Bourne, 1979). Loan rates are uniform among the banks. In the prevailing situation of industry concentration, price uniformity implies either collusion or some kind of price leadership. In either case, loan rates are determined by the under-

TABLE 14: RISK AND CAPITAL ADEQUACY INDICATORS: COMMERCIAL BANKS
1974-1982

	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982
<u>RISK ASSETS % TOTAL</u>											
<u>ASSETS</u>											
Bank 1	81	72	57	57	57	76	71	75	74	71	68
Bank 2	81	78	81	72	71	76	75	77	74	70	70
Bank 3	-	-	-	-	-	40	42	49	50	50	51
Bank 4	63	75	67	70	68	51	72	63	66	73	65
Bank 5	83	84	63	64	65	65	75	70	76	75	
<u>LIQUID ASSETS % TOTAL</u>											
<u>ASSETS</u>											
Bank 1	7	11	31	31	40	22	26	22	23	25	28
Bank 2	8	12	9	22	23	12	14	12	14	18	19
Bank 3	-	-	-	-	-	33	26	18	24	26	27
Bank 4	12	11	9	15	15	11	7	17	12	15	23
Bank 5	12	15	31	24	22	25	16	19	14	14	
<u>CAPITAL % RISK ASSETS</u>											
Bank 1	3	5	5	5	6	7	8	6	9	9	10
Bank 2	5	6	6	7	9	8	11	10	9	9	8
Bank 3	-	-	-	-	-	22	25	15	12	9	10
Bank 4	8	7	7	8	7	9	6	9	10	8	8
Bank 5	20	16	9	19	16	12	9	9	8	7	

Notes: Computed from commercial banks balance sheets. Dash "-" denotes unavailability of data.

lying structural determinants of the demand for bank loans and by the interest rate elasticity of loan demand. Bourne (1979) has constructed and estimated a simple equilibrium model of interest rate determination which explains the weighted average loan rate of interest in terms of the fundamental determinants of loan demand i.e., the level of GDP (Y), the expected rate of price inflation, and the nominal loan rate of interest. Additional explanatory variables employed were the Euro-dollar interest rate, and the ratio of bank loans to total deposits as a measure of utilised loan capacity. For the 1968 to 1978 period, the conclusions are that the most important determinant of the bank loan rate is the rate of price inflation, followed by the gross domestic product, the Euro-dollar interest rate, and the loan-to-deposit ratio. Given the loan rate and their non-interest costs of operations, the banks will set the deposit rate of interest at the level which maximises profits, as the following simple model taken from Spellman (1981) makes clear.

Let bank profit be defined as total revenues less total costs:

$$\Pi = r_L D - r_D D - C(D) \quad (1)$$

where Π is profits, D is deposits in one-to-one correspondence with loans, r_L is the loan rate of interest, r_D is the deposit rate of interest, and C is non-interest costs.

TABLE 15: RATES OF INTEREST ON DEPOSITS AND LOANS: 1965-82

YEAR	WEIGHTED LOAN RATE	AVERAGED QUOTED DEPOSIT RATE	RATES SPREAD	EFFECTIVE RATES LOAN RATE	DEPOSIT RATE	SPREAD
1965	7.07	3.57	3.50	6.96	3.06	2.27
1966	7.39	3.86	3.53	7.41	3.63	3.78
1967	7.75	3.80	3.95	7.93	3.48	4.45
1968	8.25	4.39	3.86	8.58	3.91	4.67
1969	8.15	4.57	3.58	8.45	3.92	4.53
1970	8.64	5.04	3.60	9.56	4.52	5.04
1971	8.59	4.89	3.70	9.64	4.56	5.08
1972	8.26	3.62	4.64	8.41	3.72	4.69
1973	9.04	5.24	3.80	9.94	4.04	5.90
1974	10.75	6.00	4.76	12.49	5.62	6.87
1975	10.11	4.21	5.90	11.30	3.31	7.99
1976	9.97	3.80	6.17	10.15	3.29	6.86
1977	9.25	4.31	4.94	9.86	3.12	6.74
1978	9.86	4.66	5.20	9.48	4.19	5.29
1979	11.39	5.69	4.70	10.56	4.39	6.17
1980	11.22	5.91	5.31	12.13	5.60	6.53
1981	12.17	6.57	5.60	12.58	5.70	6.88
1982	12.47	6.25	6.22	14.07	5.61	8.46

Notes: Weighted average quoted rates are weighted by loan and deposit values. Effective rates are actual interest payments divided by average deposits or loans for the calendar year.

The demand for deposits function is:

$$D = D(r_L, Y, \dot{P}^e) \quad (2)$$

where Y is real income, and \dot{P}^e is the expected rate of inflation. $\partial D / \partial r_L$ is hypothesized to be negative.

Assume that the non-interest cost function is characterised by constant elasticity, so that

$$C = (D)^\alpha \quad (3)$$

where α is the constant cost elasticity.

Substituting for D from (2) and for C from (3) into equation (1), and setting the derivative of π with respect to r_L equal to zero yields

$$r_L = D \frac{\partial r_D}{\partial D} + r_D + \frac{\partial C}{\partial C}$$

$$= D \frac{\partial r}{\partial D} + r_D + \alpha C$$

$$\text{since } \frac{\partial C}{\partial D} = \alpha D^{\alpha-1} \text{ and } c = \frac{C}{D} = \alpha D^{\alpha-1} \quad (4)$$

Assume that the interest elasticity of demand for deposits, i.e., $\frac{\partial D}{\partial r} \frac{r}{D}$, is a constant ϵ . Then the optimal deposit rate is given by:

$$\frac{r^*}{D} = \frac{\epsilon}{1 + \epsilon} (r_L - \alpha c) \quad (5)$$

That is, the profit-maximising deposit rate is a proportion of the difference between the loan rate and marginal non-interests costs. The proportion is itself determined by the interest elasticity of demand for deposits, i.e., by ϵ .

SUMMARY AND CONCLUSIONS

This essay after a brief historical review of the development of commercial banking in Trinidad and Tobago, up to 1964, provided a detailed description and analysis of the central structural features and operations of the industry between 1965 and 1982. It has been shown that the spread of banking services expanded greatly. There was also tremendous growth of bank deposits in both nominal and real terms, especially after 1973. Moreover, the structure of bank deposits changed substantially, with time deposits substituting for demand deposits mainly. The changes in bank deposits are attributable largely to the growth in national income, and only to a small extent to interest rate changes.

The rapid expansion of bank deposits had its parallel in the growth of bank assets. The main element of asset growth was direct bank credit to the business and household sectors. Government securities drastically diminished as a proportion of bank assets. These asset portfolio changes reflected a few basic developments in the real sector. One was the accumulation of huge budgetary surpluses by the government and the consequent absence of any need to engage in deficit financing from the commercial banks. Another was the rapid spurt in residential construction and ownership, and in consumer durable expenditure

which combined to boost loan demand. Third, also boosting loan demand, was the high expected rate of inflation which reduced the real cost of credit to potential borrowers. Significant sectoral changes occurred in the pattern of bank lending. The distribution and manufacturing sectors absorbed smaller proportions of bank credit, while the personal sector obtained must larger proportions than previously. The sectoral shifts in loans seems to have been primarily due to changing patterns of loan demands, and only to a lesser extent to changes in the banks' risk preferences.

The Trinidad and Tobago banks have tended to be less cost-efficient in recent years. Operating costs have risen as a proportion of total bank assets. The main components of costs increases have been interest expenses, although loan loss provisions have increasingly important. Despite the reduction in cost-efficiency, the banks have become increasingly profitable. Loan charges have risen substantially enough to generate huge profits. It is unlikely that such high levels of profits will persist. Economic recession will increase costs by raising the rate of loan delinquencies and defaults, and will restrain loan rates of interest thereby handicapping revenue adjustment.

The spread between loan rates of interest and deposit rates of interest widened considerably after 1973. The banks set the

loan rate of interest in keeping with the fundamental influences on loan demand i.e., to ensure a target loan volume given the interest elasticity of loan demand and the other structural demand factors. The deposit rate is then determined subject to the loan rate and non-interest operating costs. Because the interest elasticity of demand for bank deposits is low, only a small proportion of the difference between loan revenues and non-interest operating costs is paid as a rate of interest to depositors.

REFERENCES

BOURNE, COMPTON (1979); "Commercial Bank Interest Rates in Trinidad and Tobago, 1969-1976." Central Statistical Office Research Papers. No.10, 1979: 1-13.

_____ (1980): "Notes on Financial Changes in Trinidad and Tobago:1966-1978". Social and Economic Studies, 31, 4, 1982: 171-191.

CALLENDER, CHARLES VICTOR (1965): The Development of the Capital Market Institutions of Jamaica. Social and Economic Studies 14, 3, Supplement 1965.

Central Bank of Trinidad and Tobago (1973). History of Banking: Trinidad and Tobago, 1776-1972. (Port of Spain, 1973).

CLARK, JEFFREY A: "Estimation of Economies of Scale in Banking Using a Generalised Functional Form". Journal of Money, Credit and Banking, 16, 1, 1984:53-68.

FARRELL, TERRENCE W. and BALIRAM BABALL: "The Market for Treasury Bills in Trinidad and Tobago". Research Department, Central Bank of Trinidad and Tobago. Mimeo, May 1981.

FARRELL, TERRENCE W., ANNETTE NAJJAR and HAZEL MARCELLE: "Corporate Financing and Business Use of Bank Credit in Trinidad and Tobago (Preliminary Results of a Survey)", Research Department, Central Bank of Trinidad and Tobago, Mimeo, October 1983.

GARDNER, EDWARD P.M. Capital Adequacy and Banking Supervision. Bangor, University of Wales Press, 1981.

GOLDBERGER, A.S.: Econometric Theory. New York, John Wiley and Sons, Inc., 1964.