MONEY and FINANCE in TRINIDAD and TOBAGO

COMPTON BOURNE & RAMESH RAMSARAN

REGIONAL PROGRAMME OF MONETARY STUDIES

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REGIONAL PROGRAMME OF MONETARY STUDIES

MONEY AND FINANCE IN TRINIDAD & TOBAGO

6 OCT 1987

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PREFACE

This collection of essays is one product of our continuing effort to understand and stimulate discussion on the financial sector in Trinidad and Tobago. Although written independently, the essays are intended to be complementary in their coverage of major facets of the financial system and its operations.

Part One, written by Compton Bourne, deals with financial structure and institutions. The contemporary financial structure is described and reviewed in the first essay which is followed by a flow of funds analysis of the growth and evolution of the sector between 1966 and 1978. The next three essays provide detailed analyses of the commercial banking industry which predominates in the financial system, the growth and functioning of the stock market, and the innovational but potentially damaging emergence of finance companies.

Part Two is concerned mainly with macro-financial relations. Written almost entirely by Ramesh Ramsaran, this section includes extensive empirical investigations of money stock determination and control, the demand for money, aggregate savings behaviour, and the role of key monetary-macro behavioural relationships in the long run economic growth process.

The study of Trinidad and Tobago money and finance would not be complete without some account of developments within the fiscal sector. Part Three provides two detailed analyses of government expenditures and revenues, followed by an introductory treatment of the public debt.

We do not believe that these essays mark the end point of analytical work, even on the topics covered at greatest length in this volume. Rather, it is our desire to see a flowering of scholarship in the immediate future and we would be gratified if our essays contribute to that eventuality.

Many individuals and institutions have rendered valuable assistance and encouragement with the preparation of the essays. In particular, West Indies Stockbrokers Enterprises provided basic data underlying some of the computations in the Essay, "Economic Aspects of Trinidad and Tobago Stock Market"; Terrence Farrell and other colleagues at the Central Bank of Trinidad and Tobago facilitated access to published data, arranged forums for discussion, and made constructive comments on several aspects of the essays; Eric St. Cyr at the St. Augustine campus (UWI) supplied written comments and advice and, most importantly, was always available for consultation; Simon Jones-Hendrickson at the College of the Virgin Islands was his usual prompt, constructive self; James Croal at Simon Fraser University helped with some of the econometrics; and last but not least, Adlith Brown never lost hope in the final product but sadly did not live to see it.

Compton Bourne
Ramesh Ramsaran

To my wife, Pamela, and sons, Clairmonte and Olatunji, for their love and support.

CONTEMPORARY FINANCIAL STRUCTURE OF TRINIDAD AND TOBAGO

1

Compton Bourne

INTRODUCTION

This introductory essay on the contemporary financial structure of Trinidad and Tobago serves two purposes. The first is to provide a general background for the detailed analysis of financial growth and performance available in later essays in this volume. The second objective is to supply some information on those sector components which are not dealt with elsewhere in the collection of essays. It is hoped that readers will, thereby, obtain a fuller picture of the structure and performance of the financial system and will be aware of the need for study of relatively neglected institutions, instruments and processes.

The term "financial structure" while evocative is not intuitively clear, nor does it have a unique meaning among economists and financial analysts. In microeconomic connotation, financial structure pertains to the maturity and instrument composition of a firm's financial liabilities. From a macroeconomic perspective, financial structure refers to the institutional and instrument composition of the economy's financial sector. Thus, according to Goldsmith [2], "the presence, nature, and relative size of financial instruments and financial institutions characterizes a country's financial structure." It is the latter macroeconomic concept of financial structure that is utilised in this essay and those that follow.

Financial structure and economic structure are closely interrelated. It is difficult, if not impossible, to understand one without some background information on the other. For this reason, the discussion of financial structure is preceded by a brief account of the major economic characteristics of the country.

MAIN ECONOMIC CHARACTERISTICS

Trinidad and Tobago is a twin-island economy with an estimated population of 1.2 million in 1985. The landed area is 5,128 square kilometres which gives it a population density of approximately 229 persons per square kilometre. Nearly one-fourth of the population is urban,[1] but because of the small size of the country and a good network of public transport facilities, the distinction between town and country is grossly exaggerated by this statistic. The population has been growing at roughly 0.6 per cent per annum over the past decade, compared with 0.9 per cent during the previous one.

About 40 per cent of the population is not within the "economically active" age category. However, this statistic is not a true indicator of the dependency ratio, especially since open unemployment is measured at 15 per cent of the labour force in 1985.

Compared with most developing countries and with the industrial economies, Trinidad and Tobago has a reasonably high standard of living. Life expectancy is 72 years; the infant mortality rate does not exceed 31 per 1,000; adult literacy is 95 per cent, and secondary school enrolment is 61 per cent.

Although the average index of per capita food production decreased from 100 in 1974-1976 to 70 in 1981-1983,[2] the country's strong import capacity enabled a daily per capita calorie supply 27 per cent in excess of the nutritional requirement.

The sectoral distributions of gross domestic product and employment provide reasonable insights into the basic production structure of the economy. Dealing first with the structure of gross domestic product as shown in Table 1.1, a few observations can be made. Evidently, the main economic sectors are petroleum; manufacturing; construction; distribution; transportation etc.; finance, insurance and real estate; and government. The relative importance of the sectors is somewhat blurred by movements in relative prices. Petroleum prices, in particular, distort the percentage shares when GDP is measured in current prices rather than in constant prices. The drastic slide in world petroleum prices in 1985 eroded the premier position of the petroleum industry in current value GDP. With respect to employment (Table 1.2), four sectors account for over 50 per cent of total employment. These sectors are agriculture, manufacture, construction and quarrying, and distribution and hotels. Sixteen per cent of the employed labour force is located in government services and in the education and health services industries.

TABLE 1.1: PERCENTAGE SECTORAL COMPOSITION OF NOMINAL AND REAL GROSS DOMESTIC PRODUCT, 1980 and 1985

	Nominal		Real	
SECTOR	**1980**	**1985**	**1980**	**1985**
Petroleum	42.1	24.0	12.8	12.7
Agriculture	2.3	3.4	3.0	3.7
Manufacture	5.6	6.7	9.7	10.1
Construction and Quarrying	11.3	11.0	15.0	11.2
Distribution and Restaurants	9.0	9.3	14.9	11.7
Transport, Storage and Communications	10.7	10.1	16.9	15.1
Finance, Insurance, Real Estate	6.1	10.1	10.7	14.0
Government	7.4	15.3	8.1	9.2
Other	5.5	10.1	8.9	12.3
ALL	**100.0**	**100.0**	**100.0**	**100.0**

Source: *Review of the Economy*, Central Statistical Office, Government of Trinidad and Tobago (GOTT).

The economy is trade-dependent. Exports of goods and services comprised 33 per cent of gross domestic product in 1985, and imports 34 per cent. Most of the trade is with the industrial countries of Euro-America. Merchandise trade with the United States of America (U.S.A.) comprised 48 per cent of total merchandise trade in 1984; the European Economic Community accounted for a further 17 per cent.

After a decade of rapid economic growth fuelled by petroleum exports, the economy is in recession. Real gross domestic product (in 1970 prices) grew at 5 per cent between 1970 and 1981, but then decreased by 4 per cent in 1983; 11 per cent in 1984, and 6 per cent in 1985. The unemployment rate was 15 per cent in 1985 compared to 10 per cent in 1980. The inflation rate, which averaged 19 per cent per year between 1970 and 1981, has decreased to an average of 5 per cent between 1982 and 1985. Thus, the contraction in real economic growth is mitigated, somewhat, by a considerable deceleration in the inflation rate.

Despite the economic recession, per capita income is still high enough to place Trinidad and Tobago among middle income developing countries. With a per capita income of U.S.$6,850 in 1983, Trinidad and Tobago outranked all developing countries except Libya, Saudi Arabia, Kuwait and the United Arab Emirates, and compares well with industrial market economies such as New Zealand and Italy. Such a high level of material well-being sustained for almost a decade had an important bearing on the shape of the financial system.[3]

TABLE 1.2: PERCENTAGE SECTORAL COMPOSITION OF THE EMPLOYED LABOUR FORCE, 1985

SECTOR	1985
Petroleum and Natural Gas	3.3
Agriculture	11.7
Manufacture	11.5
Construction and Quarrying	15.1
Distribution & Hotels	17.7
Transport, Storage, Communications	7.4
Finance, Insurance, Real Estate	3.0
Public Administration and Defence	6.7
Education, Health Services	8.9
Other	14.7
ALL	**100.0**

Source: Review of the Economy, Central Statistical Office, GOTT.

TYPES AND OWNERSHIP OF FINANCIAL INSTITUTIONS

The financial system contains a wide array of institutions. Depository institutions are the most prevalent. At the end of 1985, there were eight commercial banks with 115 branches; 14 Finance Companies; three Building Societies, and six Trust Companies in operation. Altogether, the non-banking financial institutions maintained 85 branch offices. All the financial institutions are engaged in the joint activity of savings mobilization and credit. Life insurance companies which mobilise savings on a contractual basis, but are not classified as depository institutions, numbered 22. There were three mortgage finance institutions in existence, and two long term development banking institutions (general and agricultural). Other important types of financial institutions include the central bank; the National Insurance Board; the stock exchange; and a Unit Trust Corporation. In addition, there are, approximately 435 credit unions and 191 friendly societies. The depository institutions are mainly privately owned. Within the commercial banking industry, one of the larger banks is government owned. Government ownership is the norm for the development banks and the regulatory financial institutions i.e. central bank and the stock exchange. The insurance industry is privately owned. Foreign ownership, which predominated in the traditional financial sector until 1970, has become relatively less important partly because of divestment among the banks and insurance companies and partly because of the growth of new, non-traditional enterprises such as development banks and finance companies. Even where foreign ownership has persisted, it has had little bearing on financial performance since management is localised and portfolio choice is constrained by foreign exchange regulations. It is worth noting, however, that only eight of the 22 life insurance companies are Trinidadian and that (as shown later) there is still the potential for outflows of funds *via* the insurance industry.

RELATIVE SIZES OF FINANCIAL INSTITUTIONS

The numbers of the various types of financial institutions do not adequately characterise the structure of the system. It is worthwhile to examine their relative sizes in terms of the proportion of total assets for which they account. Table 1.3 provides a monetary and percentage breakdown for recent years of the assets of the financial system, excluding credit unions and friendly societies.[4] It can be seen that the monetary sub-sector consisting of the central bank and the commercial banks account for the majority of assets in financial institutions. At the end of 1984, the assets of the central bank totalled $4.2 billion or 21 per cent of assets in all financial institutions while commercial bank assets amounted to $10 billion or 51 per cent of total financial assets in the system. Finance companies, mortgage finance and trust companies and life insurance companies are of roughly equivalent quantitative rank, comprising individually between 6 per cent and 8 per cent of system-wide financial assets. The quantitative standing of the development banks has improved somewhat during the first half of the 1980s. Placed in the context of the entire financial system, thrift institutions are of minor significance.

Another useful way of depicting the relative sizes of the several types of financial institutions is to compare their shares of those financial liabilities

TABLE 1.3: INSTITUTIONAL COMPOSITION OF ASSETS OF THE FINANCIAL SYSTEM AT YEAR END: 1980, 1983, 1984

	1980		1983		1984	
TYPE OF INSTITUTION	$m	%	$m	%	$m	%
Central Bank	7188.6	49	5906.3	29	4207.5	21
Commercial Banks	5215.9	35	9607.6	47	10059.8	51
Finance Companies	485.3	3	1303.9	6	1260.6	6
Mortgage Finance and Trust Companies	654.7	4	1346.8	7	1593.5	8
Thrift Institutions	60.2	0.4	80.4	0.4	83.6	0.4
Life Insurance Companies	806.1	5	1183.3	6	1672.7	8
Development Banks	297.3	2	864.5	4	945.0	5
TOTAL	14708.1	100	20292.8	100	19822.7	100

Source: *Quarterly Statistical Digest*, Central Bank of Trinidad and Tobago, GOTT.

most closely corresponding to the community's financial savings. For present purposes, the community's financial savings is defined as the sum of the currency and government deposit liabilities of the central bank; the deposit liabilities of the commercial banks, finance houses, trust and mortgage finance companies and thrift institutions; and the debt obligations of the development banks to the government. The surrender value of life insurance policies should be included, but data are not available.

The information in Table 1.4 shows that presently commercial banks account for more than one-half (62 per cent) of financial savings. This high proportion compared to 1980 represents a return to the financial structure, characteristic of the period before the petroleum boom. The boom years witnessed an unprecedented growth in monetary growth and fiscal savings which caused financial savings in the central bank to be atypically large.[5] The subsequent collapse of all revenues resulted in a sharp reduction in government deposits at the central bank and thus in the contraction of the central bank's share of financial savings from 52 per cent in 1980 to 15 per cent in 1984. Mortgage finance and trust companies are third in importance when measured in terms of financial savings mobilization. The statistics in Table 1.4 show continued relative growth. In contrast, finance companies, which rank fourth, have experienced a stagnation of relative shares. The position of development banks depends greatly upon the public budgetary process. It shall be argued in a later section of this essay that the development banks are likely to experience a considerable diminution in their savings mobilisation role. Finally, the relative insignificance of thrift institutions is emphasized by the data in Table 1.4.

TABLE 1.4: INSTITUTIONAL COMPOSITION OF FINANCIAL SAVINGS AT YEAR END: 1980, 1983, 1984

	1980		1983		1984	
TYPE OF INSTITUTION	$m	%	$m	%	$m	%
Central Bank	5545.1	52	2974.6	23	1820.1	15
Commercial Banks	4065.2	38	7248.1	56	7639.7	62
Finance Companies	319.8	3	959.9	7	868.0	7
Mortgage Finance and Trust Companies	537.5	5	1124.9	9	1338.6	11
Thrift Institutions	20.0	0.2	21.4	0.2	21.5	0.2
Development Banks	220.4	2	582.4	4	639.5	5
TOTAL	**10708.0**	**100**	**12911.3**	**100**	**12327.4**	**100**

Source: Quarterly Statistical Digest, Central Bank of Trinidad and Tobago.

TYPES OF FINANCIAL INSTRUMENTS

The types of financial instruments in existence and their relative importance is more completely depicted in Essay II which utilises Flow of Funds data available up to 1978. For later years, data are not available on the financial assets and liabilities of the household and corporate sector. Therefore, only a partial picture can be portrayed for the immediate present. Table 1.5 contains

TABLE 1.5: STRUCTURE OF FINANCIAL LIABILITIES OF FINANCIAL INSTITUTIONS BY TYPE OF INSTRUMENT: 1980, 1984

	1980		1984	
TYPE OF INSTRUMENT	$m	%	$m	%
Currency	562	4.8	879	6.2
Demand Deposits	6742	57.8	3654	25.8
Savings Deposits	1384	11.9	2477	17.5
Time Deposits	2563	22.0	6110	43.1
Balances due to Private Financial Institutions	163	1.4	351	2.5
Balances due to Government	220	1.9	639	4.5
Foreign Liabilities	26	0.2	68	0.5
TOTAL	**11660**	**100**	**14178**	**100**

Source: Quarterly Statistical Digest, Central Bank of Trinidad and Tobago.

information on the types of financial liabilities of financial institutions in 1980 and 1984, and Table 1.6 does likewise for financial assets. The main omissions are corporate securities, the inclusion of which would cause a small reduction in the percentage shares of the other financial instruments.

It can be seen from the details in Table 1.5 that deposits are the major types of financial instruments viewed from the liability side of financial institutions. In 1984, demand deposits comprised 26 per cent; savings deposits 17 per cent and time deposits 43 per cent of financial liabilities. Currency comprised 6 per cent. A pronounced change in the share of demand deposits occurred between 1980 and 1984, mainly as a consequence of the depletion of government deposit balances at the central bank in response to fiscal difficulties. "Balances due to government" are the liabilities of the development banks, incurred in funding their credit activities. These trebled absolutely and relatively between 1980 and 1984. Foreign debt instruments are a negligible part of the instrument structure of the financial sector.

Viewed from the asset side (Table 1.6) loans and advances are the main financial instrument among financial institutions, accounting for 48 per cent in 1984. This proportion is particularly impressive when one considers that total financial assets includes the foreign exchange reserves of the country. A rapid diminution of those reserves explain the steep fall in the value and percentage share of foreign assets (mainly foreign government securities) between 1980 and 1984. Mortgage loans comprised 15 per cent of total financial assets in 1984,

TABLE 1.6: STRUCTURE OF FINANCIAL ASSETS OF FINANCIAL INSTITUTIONS BY TYPE OF INSTRUMENT: 1980, 1984

	1980		1984	
TYPE OF INSTRUMENT	**$m**	**%**	**$m**	**%**
Currency	142	1.1	318	1.9
Deposits with Central Bank	773	5.8	1453	8.7
Trinidad & Tobago Government Securities	326	2.4	528	3.2
Balances due to Private Financial Institutions	84	0.6	201	1.2
Commercial Bills	72	0.5	76	0.5
Loans and Balances	4022	30.2	7984	47.7
Mortgage Loans	1077	8.1	2521	15.1
Private Securities	281	2.1	472	2.8
Foreign Assets	6557	49.2	3190	19.0
TOTAL	**13334**	**100.0**	**16743**	**100.0**

Source: Quarterly Statistical Digest, Central Bank of Trinidad and Tobago.

but only 8 per cent in 1980. Next in order of importance are deposit balances with the central bank. These which amounted to almost 9 per cent in 1984 are determined principally by legal reserve requirements and the growth in deposit liabilities of commercial banks and non-bank depository institutions. It is noteworthy that Trinidad and Tobago government securities are a very small proportion of financial instruments held by the financial institutions. Since these institutions are the main holders of short term and long term government securities, the small share of government liabilities in their asset portfolios implies a rather minor role for the government securities market in the financial sector as presently constituted. It would be unwise, however, to conclude that government securities will remain relatively insignificant. Budgetary difficulties may well force greater reliance by the government on local debt financing with a consequent impulse for growth in government securities market transactions.

FINANCIAL INSTRUMENT STRUCTURE OF INSTITUTIONS

There is some degree of instrument specialization within the financial sector, partly by force of legal constraint and partly by choice. For instance, with respect to liabilities, the central bank has sole legal authority for the issue of domestic currency and is the sole banker to the government. Its financial liabilities, therefore, consist largely of these two types of instruments. Commercial banks and other depository institutions, through choice as well as legal constraints, incur, virtually, no foreign liability. In contrast, the development banks are not empowered to mobilise deposit funds and are, consequently, more reliant on government loans and foreign debt. The practice has been to have little recourse to foreign credits. The financial liabilities of finance companies and trust and mortgage companies are mainly time deposits (88 per cent and 97 per cent respectively in 1984), the former being legally prevented from acquiring short term deposits.

With respect to financial assets, foreign assets are the predominant instruments for the central bank (73 per cent in 1984). For commercial banks, loans and advances comprise 70 per cent of total financial assets; mortgage loans 7 per cent; deposit balances with the central bank 15 per cent; and Trinidad and Tobago government securities 4 per cent. The financial asset portfolio of finance companies was mainly comprised of loans and advances (81 per cent) in 1984 with a further 10 per cent in private securities; and 7 per cent balances due by private financial institutions. Trust and mortgage finance companies devoted almost 88 per cent of their financial asset portfolio to mortgage loans in 1984. The development banks have their assets almost exclusively in loans and advances which comprised 97 per cent in 1984.

Thrift institutions and life insurance companies have no less undiversified portfolios. For the former, mortgage loans comprised 75 per cent in 1984, currency was 10 per cent; foreign assets 8 per cent and balances due by private financial institutions 5 per cent. Life insurance companies had 54 per cent of their financial assets in mortgage loans, 22 per cent in foreign assets; 12 per cent in currency; 9 per cent in Trinidad and Tobago government securities; 7 per cent in loans and advances; and 7 per cent in private securities.

INSTITUTIONAL PREDOMINANCE AMONG FINANCIAL INSTRUMENTS

Particular financial institutions predominate among certain financial instruments. The main source for loans and advances is the commercial banks which, in 1984, accounted for 77 per cent of total loans and advances. Next in order of importance are the finance companies with 11 per cent; and the development banks with 10 per cent, Trust and mortgage finance companies control 49 per cent of mortgage loans, followed by life insurance companies and commercial banks with 24 per cent each. Local government securities are held primarily by commercial banks and life insurance companies whose percentage shares were 61 per cent and 20 per cent respectively in 1984. Somewhat puzzling is the large proportion of currency (42 per cent in 1984) held by life insurance companies. Only the commercial banks (understandably, given their payments functions and the liquidity of their deposit liabilities) possess a larger proportion (54 per cent) of the currency held by financial institutions.

The central bank and the commercial banks are the major issuers of demand deposit liabilities. The commercial banks have a near-monopoly position in the market for savings deposits, accounting for 99 per cent in 1984. The share of thrift institutions is, thus, negligible. With respect to time deposit liabilities, there is less institutional concentration. In 1984, the share of commercial banks, finance companies, and trust and mortgage finance companies respectively were 64 per cent, 14 per cent, and 22 per cent.

LIQUIDITY OF FINANCIAL INSTRUMENTS

Two considerations lead to the conclusion that the financial system is very liquid. First, there is the dominance of monetary institutions, i.e. the central bank and the commercial banks, with their primarily short term structure of liabilities and assets. Second, there is the direct evidence on the proportionate shares of explicitly short term liabilities such as currency and demand deposits (and even savings deposits to a large extent), and the percentage shares of commercial bank loans and advances and deposit balances with the central bank.

The description of the present financial structure has identified the principal components of the financial system. Evidently, monetary institutions and their assets and liabilities are sufficiently prominent as to warrant the detailed analyses undertaken in the later essays. Finance companies, although less quantitatively significant, have been an important institutional innovation, one which in actuality has comprised the viability of the private institutions as a group. For this reason, they are the subject of a separate essay.

Since no essay in this volume deals separately with mortgage finance and trust companies, nor with life insurance companies and development banks, this essay will now attempt to provide brief reviews of the features of their operations.

MORTGAGE FINANCE AND TRUST COMPANIES

At the end of 1985 there were eight mortgage finance and trust companies in operation compared to six in 1980. The mortgage finance and trust companies are all affiliates of the commercial banks, specialising in the long term end of the

financial services industry. This sub-sector has grown rapidly. Total assets doubled between 1981 and 1985 from $0.9 million to $1.9 million.

TABLE 1.7: COMPOSITION OF LIABILITIES OF TRUST AND MORTGAGE FINANCE COMPANIES 1980, 1985

	Deposits		Share Capital		Foreign		Balances Due to Local Fin. Instns.		Total
Year	$m	%	$m	%	$m	%	$m	%	$m
1980	450.4	81	74.0	13	0.1	.02	8.7	1.6	19.4
1981	613.7	77	142.0	18	0.2	.03	9.0	1.1	34.0
1982	788.2	86	53.5	6	3.8	.4	6.3	0.7	69.3
1983	1101.1	85	72.7	6	14.1	1.1	11.7	0.9	99.5
1984	1235.3	83	97.3	6	23.6	1.6	11.4	0.8	110.6
1985	1462.5	84	107.4	6	22.3	1.2	16.3	0.9	122.2

Note: "Other Assets" not included in the Table.

Source: Quarterly Statistical Digest, Central Bank of Trinidad and Tobago.

Table 1.7 depicts the composition of liabilities for the 1980-1985 period. As stated earlier, time deposits are the main liabilities, comprising 82 per cent in 1980 and 85 per cent in 1985. Shareholders' equity, i.e. share capital and reserves, have tended not to exceed 10 per cent of total liabilities, except in 1981 when they comprised 21 per cent approximately. "Other liabilities" as a category consist of inter-branch transactions, provisions for taxes and miscel laneous items. Tax provisions are the major element.

The main earning assets of trust and mortgage finance companies are real estate mortgage loans. Table 1.8 shows that the percentage share of this asset in total assets has been no less than 75 per cent during the 1980-1985 period. A considerable proportion of assets are liquid. Defining cash and deposit balances as liquid assets, it can be seen from the data in Table 1.8 that liquid assets comprised between 6 per cent and 10 per cent during the period. Statutorily, the institutions are required to maintain cash and deposit balances with the central bank amounting to less than 5 per cent of average deposit liabilities. Before March 16, 1983, the statutory minimum liquidity ratio was 3 per cent. The trust and mortgage finance companies have not been especially inclined to invest in capital market instruments. In 1985 for instance, their holdings of government securities, public sector investments and private sector securities totalled only $19.9 million or 11 per cent of total assets.

The deposit base of trust and mortgage finance companies is fairly diversified, even though the household sector is the single largest source of deposits. Between 1983 and 1985, the household sector contributed 45 per cent of total

TABLE 1.8: COMPOSITION OF ASSETS OF TRUST & MORTGAGE FINANCE COMPANIES 1980, 1985

	Mortgage Loans		Local Securities		Balances due by Fin. Instns.		Deposits at Central Bank		Total
Year	$m	%	$m	%	$m	%	$m	%	$m
1980	493.1	89	4.1	0.7	25.7	4.6	0.0	0.0	550.9
1981	682.3	86	6.3	0.8	58.5	7.4	7.2	0.9	794.7
1982	708.7	77	12.4	1.3	106.5	11.6	22.0	2.4	919.9
1983	949.0	73	15.7	1.2	89.5	6.9	51.3	3.9	1298.9
1984	1152.6	78	19.2	1.3	105.4	7.1	45.2	3.1	1477.4
1985	1361.3	79	20.0	1.1	115.4	6.7	60.2	3.4	1729.6

Note: "Other Assets" not included in the Table.

Source: Quarterly Statistical Digest, Central Bank of Trinidad and Tobago

deposits. Business firms provided on average 10 per cent, the public sector 16 per cent, and other financial institutions 19 per cent, with the share of the last group mentioned tending to decrease from a high point of 26 per cent in 1983. Three main factors underlie the deposit performance of trust and mortgage finance companies. One is the economic prosperity of the 1973-1982 period which reflected itself in high personal incomes and financial investment capacity. Another is the deliberate government policy of channelling mortgage funds through the private financial institutions. The primary link was the National Insurance Board which is the recipient of quasi-fiscal national insurance contributions levied from the household and business sectors. Those fiscal contributions have been systematically allocated by the National Insurance Board to trust and mortgage finance companies. The third factor is the attractiveness of interest rates offered on time deposit liabilities. Median interest rates on one to three year deposits averaged 10.1 per cent in 1984 and 9.6 per cent in 1985, compared to median commercial bank one year time deposit rates of 8.6 per cent and 8.2 per cent in the same years.

The trust and mortgage finance companies are not less expensive than commercial banks in the provision of mortgage loans. In 1984 and 1985, the median interest rate on residential mortgages averaged 13.8 per cent and 13.7 per cent, which the median rate on commercial mortgages was 14.6 per cent and 14.7 per cent. In comparison, the commercial banks charged median mortgage loan rates of 12.75 per cent and 12.5 per cent in 1984 and 1985. In other words, mortgage credit from the trust companies cost on average one or two percentage points more, depending on whether the customer is engaged in commercial or residential activity.

LIFE INSURANCE COMPANIES

The life insurance industry in Trinidad and Tobago has received detailed attention by Odle [3]. Odle was especially concerned with the efficiency of financial resource use, investment in overseas assets as a conduit for capital loss from the economy, and the long term structure of income and expenditures. In this essay, the scope of review is much more limited. Nothing more than a brief outline of the principal trends in resource mobilization and asset portfolio operations is attempted.

Life insurance companies mobilize financial savings by offering insurance policies to the household sector. A life insurance policy typically has two components: (a) contractual payments of risk coverage; and (b) financial investment component. The latter component is the element of savings mobilization. It is represented by the surrender value of the policy. Clearly, the savings element is greater or lesser, depending on the expenses incurred by the insurance companies in providing risk coverage services. Expressed differently, the saving coefficient of a premium payment depends greatly on the operational efficiency of the companies. Nonetheless, trends in gross premium incomes serve as crude proxies of the savings mobilization performance of the life insurance industry. Premium income increased remarkably between 1974 and 1983, totalling $51 million in 1974 and $207 million in 1983, but by 1983 growth had begun to slacken (Table 1.9). Whereas incomes from new premiums grew fairly continuously until 1982, there was a 24 per cent decrease in 1983. Renewal premiums also declined in the same year.

TABLE 1.9: PREMIUM INCOME OF LIFE INSURANCE COMPANIES, 1974 – 1983 ($m)

Year	New Premium	Renewal Premium
1974	12.9	38.3
1975	16.9	44.4
1976	21.4	58.7
1977	25.7	65.8
1978	30.1	91.7
1979	23.0	103.1
1980	39.8	124.0
1981	44.8	166.3
1982	76.4	154.8
1983	58.1	148.9

Source: *Annual Statistical Digest*, Trinidad and Tobago Central Statistical Office.

Much of the financial savings mobilized by life insurance companies have been allocated to mortgage loans which are the largest type of asset held by the industry (Table 1.10). Mortgage loans expanded from $95 million in 1975 to $618 million in 1984. Investments in Trinidad and Tobago government securities increased from $82 million to $140 million in 1983, before decreasing in 1984 to $106 million. The life insurance companies are also active in the corporate securities market. Their investments in these instruments burgeoned in 1980 when their value rose from $63 million at the start of the year to $197 million by year end. Activity levels remained high until 1984 when the value of investment declined by more than 50 per cent to $77 million approximately. It is significant that investments in foreign government securities and other foreign assets having been relatively small until the end of 1983 suddenly assumed prominence in precisely the same year that domestic capital market instruments contracted. Foreign equity rose from $59 million to $249 million within one year and other foreign investments from $27 million to $127 million. A somewhat sharp increase also occurred with respect to vault cash and bank deposits. The abrupt shift in the percentage share of foreign assets within the total asset portfolio is intriguing in view of the official policy established early in the 1970s of discouraging acquisition of foreign assets. One possible explanation is a tacit recognition by the economic authorities that the life insurance industry needed to adhere to the principle of matching their primarily long term liabilities with primarily long term assets in the face of the suddenly weak and risky local corporate equity market.

DEVELOPMENT BANKS

The two development banks are the Agricultural Development Bank (ADB) established in 1968 and The Trinidad and Tobago Development Finance Company (DFC) which was established in 1970. As its title indicates, the former institution specialises in agricultural credit, while the latter is general purpose with an emphasis on industrial activities. Both institutions are owned and managed by the public sector. Aspects of the Agricultural Development Bank's operations have recently been analysed by Crawford [1]. The DFC has not been exposed to critical analysis as yet.

The Agricultural Development Bank has been very much reliant on government contributions for its funding. Although its statutory provisions permit funding by means of deposit liabilities, share issue to the general public, and debt obligations to international and regional agencies, the Bank has not utilised the first potential source at all, and has only marginally employed the latter two methods of funding. Of total accumulated funds ($234 million) obtained between 1972 and 1982, 91 per cent were derived from government capital subscriptions ($10 million in the first three years) and government advances. Compulsory share subscriptions by loan customers accounted for a further 6 per cent. The InterAmerican Development Bank (IADB) and the Caribbean Development Bank (CDB) have been negligible sources. A statistical picture on a somewhat different basis (a balance sheet approach) is presented in Table 1.11 which identifies the monetary value and percentage shares of several types of financial liabilities. Again the predominance of government funding is evident.

The data in Table 1.11 also reveal the growth of the Agricultural Development Bank between 1973 and 1983. Total liabilities were $17.9 million in 1973, but by the end of 1982 amounted to $245.6 million, before decreasing slightly

TABLE 1.10: SELECTED ASSETS OF LIFE INSURANCE COMPANIES
1975–1984: $m and %

Year	Cash and Deposits		T&T Gov't. Securities		Corporate Securities		Foreign Securities & Other Assets		Mortgage Loans		Total Assets
	$m	%	$m	%	$m	%	$m	%	$m	%	$m
1975	34.9	10	82.1	23	26.8	23	63.7	18	95.3	26	362.1
1976	48.4	11	90.6	20	45.6	20	55.7	12	121.3	27	444.3
1977	54.3	11	93.3	18	52.8	18	75.2	15	152.5	30	511.3
1978	74.7	12	139.7	22	58.8	22	58.9	9	181.7	29	629.0
1979	85.7	13	130.2	19	63.3	19	75.0	11	199.5	30	665.9
1980	23.8	2	121.6	15	196.9	15	52.1	6	288.7	36	806.1
1981	63.8	6	132.5	13	241.8	13	25.6	2	356.0	35	1026.8
1982	44.3	4	133.8	12	254.6	12	43.1	4	411.6	36	1127.5
1983	95.8	8	140.6	12	156.9	12	86.2	7	428.1	36	1183.3
1984	132.4	8	106.3	6	76.6	4	376.4	22	618.2	37	1672.7

Note: Column totals do not add to total assets because of omission of some other assets.

Source: *Quarterly Statistical Digest,* Central Bank of Trinidad and Tobago.

TABLE 1.11: SELECTED LIABILITIES OF AGRICULTURAL DEVELOPMENT BANK 1973–1974: $m (%).

	Long Term Govt. Loans		Govt. Capital Contribution		Borrowers Capital Contribution		Other Long Term Loans		Total Liabilities
Year	$m	%	$m	%	$m	%	$m	%	$m
1973	2.9	16	8.3	46	0.8	4	2.8	16	17.9
1974	9.5	37	10.3	40	1.1	4	1.2	5	25.9
1975	12.5	36	10.3	30	1.4	4	6.0	17	34.2
1976	23.0	52	10.3	23	1.9	4	5.6	13	44.3
1977	37.5	63	10.4	17	2.8	5	5.3	9	59.4
1978	67.5	75	10.4	11	4.6	5	3.0	3	90.5
1979	86.0	78	10.4	9	7.0	6	3.5	3	110.8
1980	126.0	81	10.4	7	9.5	6	3.2	2	156.2
1981	159.0	82	10.4	5	12.1	6	2.9	1	193.1
1982	205.0	83	10.4	4	15.0	6	2.6	1	245.4
1983	199.0	85	25.4	11	15.8	7	2.2	1	232.7

Source: *Annual Statistical Digest,* Trinidad and Tobago Central Statistical Office.

to $232.7 million in 1983. The heavy reliance on government funding is likely to be problematic in the immediate future. The weakening of international petroleum prices has created a fiscal crisis for the public sector resulting in severe cut backs in budgetary allocations everywhere. Furthermore, the credit performance of the Bank, particularly the loan recovery record, has been poor so that external funding possibilities have been seriously compromised. Crawford [1] estimates that credit arrears were about 18 per cent of the value of the loans portfolios in 1982. The potential for deposit support is also vitiated by doubts about the financial health of the Bank.

The Agricultural Development Bank is, essentially, a medium and long term credit institution. These two types of loans expanded from $12.3 million (69 per cent of total assets) in 1973 to $211.6 million (91 per cent of total assets) in 1983. Short term loans amounted to only 4.5 per cent in 1982. The Bank lends directly to farm enterprises (individuals) and through agricultural credit societies and cooperative credit societies. The permissible range of enterprise type i.e. crops and livestock is not restrictive. Despite the wide latitude enjoyed by the Bank with respect to its channels of credit disbursement and the types of farm enterprises, there is reason for believing that it services only a small proportion of the farming community. However, its credit portfolio

compares favourably with the agricultural credit portfolio of the commercial banks whose loan balances for agriculture in 1983 totalled $71.6 million.

The Agricultural Development Bank extends credit on a concessionary basis. Loan repayment periods are medium or long (i.e. between two and 30 years), and interest charges are substantially below those prevailing on private commercial credit. Agricultural credit cooperatives receive credit at 1 per cent per annum for on-lending to their members at 3 per cent per annum, while individual credit customers are charged up to 6½ per cent. These interest rates are not only below those charged by private lenders; they are also less than the prevailing rates of inflation and the ADB's effective average lending costs. There is, thus, a sizeable implicit subsidy to borrowers represented by the difference between the inflation rate and the loan rate of interest, and a large explicit subsidy measured by the difference between the average lending costs and the loan rate of interest. The *pros* and *cons* of interest rate subsidies are reviewed in Crawford [1] and the many references cited therein. The consensus of the empirical evidence drawn from many less developed countries is that concessionary interest rate policies undermine the viability and efficiency of rural credit markets. Specific work bearing on this consensus is required for Trinidad and Tobago.

The Trinidad and Tobago Development Finance Company is quite similar to the Agricultural Development Bank in terms of the structure of its funding and its assets and credit policies. The Trinidad and Tobago government has been the main source of loanable funds. Share capital from the government has not increased since 1979, but advances have been provided at a charge of 4 per cent per annum. These advances have grown remarkably from $5 million (46 per cent of total liabilities) in 1973 to $152.7 million (57 per cent) in 1983. The data also reveal that long term loans which amounted to $186.5 million in 1983 are the principal type of credit extended by the DFC. This credit institution not only shares a common structure and *modus operandi* with the Agricultural Development Bank, but it also experiences similar problems with respect to credit portfolio performance and future funding.

CONCLUSION

This essay has sought to present a general introduction to the present-day financial structure of Trinidad and Tobago. As such, no component has received detailed attention. Nonetheless, the main institutional and financial instrument components of the financial system have been identified with a view to indicating their claims to the further analyses conducted in the remaining essays in the volume. These components have been shown to be the monetary institutions, and monetary and quasi-monetary instruments. While this essay did not sketch the integration of the fiscal sector with the financial sector, it is clear from the references to the role of fiscal tendencies in relation to depository and development banking institutions that fiscal operations warrant close analysis as attempted in subsequent essays.

NOTES

[1]The *World Development Report,* World Bank, 1985 cites a statistic of 22 per cent in 1983.

[2]*World Development Report,* 1985.

[3]See Essay II for the analysis of this point.

[4]This omission of credit unions and friendly societies is not of much consequence. In 1983, total assets of credit unions were only $199.5 thousand and assets of friendly societies only $12.4 thousand.

[5]This phenomenon is analysed by Bourne in Essay II.

REFERENCES

[1] CRAWFORD, Cleopatra, "Agricultural Credit in Trinidad and Tobago with Special Reference to the Agricultural Development Bank", M.Sc. (Economics) Thesis, University of the West Indies, Trinidad, 1984.

[2] GOLDSMITH, Raymond W., *Financial Structure and Development,* Yale University Press, New Haven, 1969.

[3] ODLE, Maurice A., *The Significance of Non-Bank Financial Intermediaries in the Caribbean,* Institute of Social and Economic Research, University of the West Indies, Kingston, Jamaica, 1972.

FLOW OF FUNDS ANALYSIS OF FINANCIAL CHANGES: 1966-1978

11

Compton Bourne

INTRODUCTION

The writings of Brothers and Solis [1]; Goldsmith [4]; Gurley [5] and Odle [8] to cite only a few scholars amply demonstrate the evolution of the financial sector during the process of long term economic development. Structural changes in the productive organization of the economy, changes in instruments of government, and changes in corporate and private wealth all contribute to fundamental alteration in the mix of financial institutions and instruments over time, and to overall significance of the financial sector within the economy. It is, of course, possible for the long term evolution of the financial sector to be stunted and distorted by short term economic developments and by short period economic policy. Numerous studies document the retarding influence of inflation and of interest rate and credit policy on the development of the financial sector.

This essay examines financial sector changes within an economic framework somewhat different from those identified above. Rather than gradual growth of wealth concomitant with development of the productive and government structures, the Trinidad and Tobago economy experienced a sudden, exogenously determined increase of income and wealth. The government itself was a major direct recipient of these windfalls. Furthermore, while inflation was relatively rapid in terms of the prior historical experience of the country, regulatory constraints on the credit market were no more than mildly restrictive.

Financial transactors were largely able to respond to changes in incomes, wealth and inflation. Thus, changes in the financial system can be attributed mainly to changes in wealth and prices.

The essay seeks to highlight developments within the Trinidad and Tobago financial system in the immediate period of the oil boom. The structure of the system post-1974 is compared and contrasted with that of the pre-1974 period, and some interpretative comments attempted. The latter, however, are more suggestive than definitive. Detailed analysis of the changing characteristics of the financial sector are attempted in Essays 3, 4 and 5.

GROWTH IN REAL INCOMES, PRICES, AND GOVERNMENT REVENUES

The economy of Trinidad and Tobago grew rapidly in the second half of the 1970s. Real gross domestic product increased from $1,398 million in 1966 to $1,625 million in 1970, $1,807 million in 1974 and $2,435 million in 1978. The average annual rate of growth of output between 1975 and 1978 was 6 per cent, which was treble the growth rate between 1971 and 1974 and double that experienced between 1966 and 1970. Statistics on real per capita income tell the same story of a significant upward displacement in the income trajectory of the country. Per capita GDP was $1,408 in 1966, $1,578 in 1970, $1,696 in 1974 and $2,144 in 1978.

The oil boom transformed the financial situation of the government. By virtue of government's command over profits and royalties from the oil industry, government revenues more than trebled from $495 million in 1973 to $1,387 million in 1974 and rose, thereafter, to $3,126 million in 1978. As a consequence, whereas in 1973 there was a budget deficit of $111 million, a budgetary surplus of $428 million was recorded in 1974. Sizeable surpluses were realized for the rest of the period under review.

The rate of inflation was uneven during the period 1966 to 1978. The annual rate of inflation averaged 3 per cent between 1966 and 1970, 11 per cent between 1971 and 1974, and 8 per cent between 1975 and 1978.

FINANCIAL GROWTH IN RELATION TO REAL SECTOR GROWTH

Financial growth measured by changes in the real value of total financial assets was considerably rapid, moreso after 1974 than before. Real financial assets expanded from $2,268 million in 1966 to $5,361 million in 1974 and $10,379 million in 1978 (Table 2.1, Column 1). These reflect average annual growth rates of 10 per cent between 1966 and 1970; 8 per cent between 1971 and 1974; and 12 per cent between 1975 and 1978. There was, in fact, a financial 'deepening' of the economy. The ratio of real financial assets to real GDP rose from 1.62 in 1966 to 2.20 in 1970, 2.97 in 1974 and 4.26 in 1978 (Table 2.1, Column 3).

TABLE 2.1: INDICATORS OF FINANCIAL GROWTH 1966 – 1978

Year	Total Financial Assets (TTSm)	Real Money Stock (Sm)	TFA/GDP	MS/TFA	MS/GDP	FLR	FIC
1966	2268	130	1.62	.057	.093	.013	.25
1967	2498	137	1.75	.055	.096	.013	.27
1968	2595	138	1.76	.053	.094	.010	.28
1969	3233	134	2.03	.041	.093	.008	.28
1970	3583	147	2.20	.041	.102	.013	.30
1971	3956	159	2.37	.040	.117	.012	.30
1972	4334	179	2.47	.041	.121	.017	.31
1973	4652	144	2.59	.031	.098	.023	.30
1974	5361	163	2.97	.031	.090	.090	.32
1975	6579	203	3.41	.031	.103	.031	.36
1976	7378	255	3.51	.035	.121	.038	.38
1977	9114	300	3.97	.033	.130	.041	.38
1978	10379	359	4.26	.035	.149	.054	.38

Source: Flow of Funds for Trinidad and Tobago Central Statistical Office Financial Statistics Reports No. 2(1977) and No. 4 (1981).

The financial deepening phenomenon was, in part, the consequence of transactions between the financial institutions themselves. The financial layering ratio i.e., the ratio of intrafinancial sector assets to total financial assets rose substantially from .013 in 1966 and 1970 to .028 in 1974 and .054 in 1978 (Table 2.1, Column 6). The behaviour of this ratio is evidence of significant growth in intrafinancial sector transactions, especially after 1974. Another indication of the increasing importance of transactions among financial institutions in raising the financial layering ratio is the relatively slow movement of the financial intermediation coefficient, i.e. the ratio of the assets of the financial system to total financial assets, from .25 in 1966 to .32 in 1974 and .38 in 1978 (Table 2.1, Column 7). The latter coefficient shows only a modest increase in the degree of financial intermediation in the economy.

The income velocity of money, though fluctuating slightly from year to year, fell decidedly after 1974. The income velocity averaged 10.4 between 1966 and 1970, 9.5 between 1971 and 1974, and 8.1 between 1975 and 1978 (Table 2.1, Column 5). The ratio of money stock (defined as currency outside the banking system plus commercial bank demand deposits) to total financial assets also declined over the period. The behaviour of both ratios is consistent with the pattern one would expect in a situation of rising incomes. At higher levels of income, sensitivity to relative pecuniary returns on financial assets increases and liquidity preference weakens. There is likely to be some substitution away from monetary instruments. Corporate enterprises may also economise on the use of money balances. Inflation effects on the income velocity of money are theoretically ambiguous. Inflation impairs the quality of money services, thereby reducing the demand for real money balances [Klein, 7]. However, if behaviour is risk averse, inflation uncertainty would increase the demand for liquid assets, including money [Cagan and Lipsey, 2]. Whether the income velocity of money rises or falls with the rate of inflation then depends on which influence predominates. Quality deterioration in money balances also reduces the ratio of monetary assets to total financial assets, even if there is no absolute shift towards non-monetary financial assets. Furthermore, if rates of return on non-monetary financial assets rise relative to the implicit yield on money, one would also expect that the increased demand for liquidity would be satisfied more by non-monetary financial assets. In Trinidad and Tobago, traded corporate stocks are the main inflation-indexed financial asset. However, high per unit transactions costs for small traders and the limited flow of new stocks reduce the usefulness of corporate stocks as liquidity hedges. It is unlikely, therefore, that changes in relative rates of return significantly explain the falling share of money balances in total financial assets.

INSTITUTIONAL CHANGE

Until 1974, there was a tendency for commercial banks and non bank financial intermediaries to account for an increasing share of total financial assets. The percentage share of commercial banks increased from 10.8 per cent in 1966 to 14.8 per cent in 1972, and that of non-bank financial intermediaries from 10.6 per cent to 23 per cent (Table 2.2). The percentages shares of Central Bank and the Household and Unincorporated Enterprises sector (HIE) remained roughly stable around 3.5 per cent and 2.3 per cent respectively. The relative

growth of the financial sector seems to have been at the expense of the corporate sectors (local and foreign) and the rest of the world sector whose share in total assets diminished from 11.6 per cent to 7.4 per cent in the former case and from 28 per cent to 26 per cent in the latter case. After 1974, there was a distinct reversal of the relative growth of the private banking sector. The percentage share of commercial banks in total assets declined to 11 per cent in 1978, and that of the non-banks fell to 9.6 per cent. The private banking system did not alone experience this fall in relative quantitative status. The shares of the corporate sectors and the rest of the world sector diminished, while the HIE sector failed to maintain its position, decreasing quite rapidly to 16 per cent in 1978. The big factor at work was the oil surplus. The expansion of foreign exchange earnings and government budgetary surpluses tremendously boosted the assets of both the central bank and the government sector. As a consequence, the share of the former increased from 3.7 per cent in 1972 to 16.8 per cent in 1978, and that of the latter from 9.8 per cent to 25.2 per cent.

TABLE 2.2: PERCENTAGE STRUCTURE OF OWNERSHIP OF FINANCIAL ASSETS 1966 – 1978

SECTORS AND INSTITUTIONS	1966	1968	1970	1972	1974	1976	1978
Central Banks	3.2	4.7	3.8	3.7	9.7	16.3	16.8
Commercial Banks	10.8	11.2	12.2	14.8	12.3	12.1	11.2
Non-Bank Financial Institutions	10.6	12.1	13.6	13.0	10.4	9.8	9.6
Government	12.5	11.7	12.9	9.8	14.8	21.5	25.2
Local Corporate)			4.3	4.6	3.3	2.8	3.0
Foreign Corporate)	11.6	11.1	3.5	2.8	6.9	2.3	2.4
Households and Unincorporated Enterprises	22.8	22.7	23.6	23.8	20.4	19.1	16.5
Government Non-financial Institutions	n.a.	n.a.	2.5	1.5	2.6	3.0	2.0
Rest of World	28.4	26.4	23.5	26.0	19.6	13.1	13.4
TOTAL	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

Source: Flow of Funds for Trinidad and Tobago, Central Statistical Office Financial Statistics, Report No. 2 [1977] and *No. 4 [1981].*

The vastly improved fiscal situation of the government also explains the major changes which took place in the ownership structures of financial liabilities between 1973 and 1978 (Table 2.3). Central bank liabilities in the form of government owned deposit balances increased from $13 million in 1973 to

$1.3 billion in 1974 and by 1978 amounted to about $3.5 billion. Concurrently, government financial liabilities little more than doubled between 1973 and 1978. In 1973, these liabilities totalled $619 million, rising thereafter to $646 million in 1974 and $1.5 billion in 1978. Corresponding to these changes in the liabilities of the central bank and the government, these percentage shares of central bank liabilities in total financial liabilities in the economy increased from 4 per cent in 1972 to 9.5 per cent in 1974 and 15.8 per cent in 1978, while the shares of the government sector declined from 10.6 per cent to 7.4 per cent in 1974 and 5.4 per cent in 1978.

TABLE 2.3: PERCENTAGE STRUCTURE OF OWNERSHIP OF FINANCIAL LIABILITIES 1966 – 1978

SECTORS AND INSTITUTIONS	1966	1968	1970	1972	1974	1976	1978
Central Bank	3.0	4.4	3.7	4.0	9.5	15.7	15.8
Commercial Banks and Non-Bank Financial Instns.	22.9	23.6	27.0	28.5	25.5	23.0	21.3
Government	10.4	12.0	11.1	10.6	7.4	4.4	5.4
Local Corporate	10.4	9.5	7.6	8.1	7.0	6.3	7.5
Foreign Corporate	19.6	16.2	14.5	17.8	12.9	8.7	7.8
Households and Unincorporated Enterprises	9.9	10.8	12.1	13.1	9.0	9.2	9.4
Government and Non-Financial Institutions	10.6	10.6	13.3	11.1	10.5	12.4	13.2
Rest of World	13.2	12.9	10.7	6.8	18.2	20.3	19.6
TOTAL	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

Source: Flow of Funds for Trinidad and Tobago, Central Statistical Office Financial Statistics, Report No. 2 [1977] and *No. 4 [1981].*

THE MIX OF FINANCIAL INSTRUMENTS

Because there are significant differences among financial institutions and among wealth holders of varying status with respect to the preferences for particular financial instruments, it is to be expected that major changes in the institutional fabric of the financial sector and in levels of income and wealth will lead to significant alteration in the mix of financial instruments within the economy. This expectation is fully satisfied by the Trinidad and Tobago experience. The share of monetary instruments in total financial assets declined from 8.4 per cent in 1966 to 6.1 per cent in 1972 and still further to 4.2 per cent in 1978 (Table 2.4). Currency and demand deposits each declined relative to other instruments. Savings deposits also declined relatively from an average of 8 per

cent between 1966 and 1972 to 4 per cent in 1978. In contrast, private time deposit balances and central bank deposits both rose substantially over the period 1966 to 1978. The increase in the time deposit share from 3.6 per cent to 6.7 per cent was, more or less, a continuation of the secular upward trend for this instrument. However, the rise in the central bank deposit share from 1.3 per cent in 1972 to 16.3 per cent in 1974 and 1978 is largely attributable to government oil-derived budgetary surpluses.

TABLE 2.4: PERCENTAGE SHARES OF VARIOUS FINANCIAL INSTRUMENTS IN TOTAL FINANCIAL ASSETS 1966 – 1978

INSTRUMENTS	1966	1968	1970	1972	1974	1976	1978
Currency	3.0	2.8	2.3	2.6	1.7	1.5	1.5
Demand Deposits	5.4	4.3	3.5	3.5	2.5	2.7	2.6
Savings Deposits	8.7	7.8	7.3	8.5	5.1	5.0	4.2
Time Deposits	3.6	4.2	6.3	7.1	8.0	6.4	6.7
Central Bank Deposits	0.7	2.5	1.7	1.3	9.4	15.6	16.3
Shares and Securities	7.2	7.3	7.2	7.1	5.1	5.0	4.9
Loans and Advances	18.0	18.1	20.4	24.2	14.9	13.9	16.0
Government Securities and Deposits	5.3	7.9	8.1	8.2	5.1	3.2	2.4
Government Grants and Mortgages	9.3	6.8	8.8	7.2	8.0	7.8	9.7
Trade Debts	6.9	5.4	6.3	6.7	4.4	3.1	2.9
Commercial Bills	0.3	0.3	0.3	0.3	0.3	0.2	0.2
Actuarial Reserves and Trust Funds	7.8	8.6	9.3	9.2	8.2	7.1	5.5
Other Local Instruments	5.4	6.2	4.6	4.9	4.7	5.1	4.5
Foreign Instruments	18.4	17.7	13.9	9.2	22.6	23.4	22.6

Source: Flow of Funds for Trinidad and Tobago, Central Statistical Office Financial Statistics, Report No. 2 [1977] and *No. 4 [1981]*.

The percentage shares of other major instruments such as loans and advances, shares and securities, actuarial services and trade debts, which had either remained stable or tended to increase between 1966 and 1973, all declined during the oil boom. For example, shares and securities constituted 7 per cent of total financial assets between 1966 and 1972, but only 5 per cent between 1974 and 1978. Loans and advances, having increased from 18 per cent in 1966 to 24 per cent in 1972, declined to an average of 15 per cent between 1974 and 1978.

SECTORAL SOURCES OF FINANCIAL SURPLUSES AND DEFICITS

Certain sectors are typically surplus sectors and some others are typically deficit sectors. Usually, in the former category, one finds the household sector and, for developing countries, the ROW sector also. Corporate borrowers and government are, generally, in the deficit category. The courses of events in Trinidad and Tobago have altered this basic pattern somewhat.

The ROW sector was the major source of financial surplus until 1972, contributing 50 per cent of financial surpluses in 1966 and 64 per cent in 1972. However, its share declined to 7 per cent in 1974, and became substantially negative (-22 per cent) thereafter. The fundamental reason for this trend is the huge balance of payments surpluses and the counterpart rapid accumulation of official international reserves. Net international reserve assets increased from $83 million in 1973 to $1,901 million in 1975 and $4,421 million in 1978. These reserve changes transformed Trinidad and Tobago from a net debtor to a net creditor nation. The HIE sector is second in importance as a source of financial surpluses. The HIE share was 42 per cent in 1966 and as much as 56 per cent in 1974 after which it declined to 25 per cent in 1978. After 1973, the government sector emerged as the main surplus sector. Its share escalated from 3 per cent in 1972 to 36 per cent in 1974 and by 1978 amounted to 70 per cent. The other change of note is the rapid decline of the foreign corporate sector as a contributor to financial deficits from 1974 onwards. The share of this sector's deficits had ranged from 48 per cent to 50 per cent between 1966 and 1972.

TABLE 2.5: PERCENTAGE SECTORAL CONTRIBUTION TO ECONOMY-WIDE FINANCIAL SURPLUS
1966 – 1978

SECTOR	1966	1968	1970	1972	1974	1976	1978
Central Bank	0.6	1.5	0.6	0.3	0.8	2.3	4.0
Financial Institutions	-4.7	-1.1	-4.3	-2.5	-13.4	-3.8	-2.0
Government	7.2	1.1	6.8	2.9	36.0	61.9	70.5
Local Corporate	-18.9	-19.1	-12.3	-11.8	-18.2	-12.7	-16.1
Foreign Corporate	-47.6	-44.2	-41.8	-50.3	-29.5	-23.2	-19.6
Households and Unincorporated Enterprises	42.2	46.2	43.6	35.5	56.0	35.8	25.4
Government Non-Financial Institutions	-28.8	-34.5	-41.5	-32.4	-38.9	-34.1	-40.2
Rest of World	50.0	52.4	48.9	64.1	7.2	-26.1	-22.2

Source: Flow of Funds for Trinidad and Tobago, Central Statistical Office Financial Statistics, Report No. 2 [1977] and *No. 4 [1981].*

Two sets of official policies resulted in a fall of its share to only 20 per cent in 1978. First, beginning in 1970, the government successfully urged foreign owned firms to, at least, partly divest ownership to nationals of Trinidad and Tobago. Second, the central bank restricted commercial bank lending to foreign corporate enterprises.

THE FINANCIAL ACTIVITIES OF THE HIE SECTOR

The HIE sector deals with a wide variety of enterprises in respect of its financial asset portfolio. It is clear, however, that a few types of institutional arrangements predominate. Commercial banks are the single largest issuer of financial liabilities to the HIE sector. Commercial banks' share of the total financial assets of the latter sector amounted to 38 per cent in 1966; 45 per cent in 1972; and 42 per cent in 1978 (Table 2.6). Next in order of importance are insurance companies which represented 24 per cent, 20 per cent, and 14 per cent of HIE financial assets in 1966, 1972 and 1978 respectively. Comparing the respective shares of the life insurance companies and the commercial banks, it is evident that there is a basic tendency of the insurance companies' share to diminish as the economy grew and for that of the banks to increase. Also, the trend in the banks' share reversed after 1973.

TABLE 2.6: PERCENTAGE INSTITUTIONAL STRUCTURE OF FINANCIAL ASSETS OF HOUSEHOLDS AND UNINCORPORATED ENTERPRISES
1966 – 1978

INSTITUTIONS	1966	1968	1970	1972	1974	1976	1978
Central Bank	6.2	6.3	5.6	6.0	4.9	5.3	5.0
Commercial Banks	37.8	39.2	40.3	45.0	42.2	42.2	42.0
Insurance Companies	24.3	24.1	23.5	19.7	18.0	15.8	13.8
Pension Funds	4.8	6.0	8.4	9.7	10.3	11.0	9.2
Building Societies	2.4	2.3	1.6	1.5	1.6	2.5	4.2
Public Financial Institutions	2.1	1.3	2.3	2.4	7.4	8.3	9.2
Local Corporate	14.7	13.4	10.7	7.9	5.4	5.4	6.4
Other	7.7	7.4	7.6	7.8	10.0	9.5	10.2
ALL	100	100	100	100	100	100	100

Note: "Other" includes credit unions, trust companies, finance houses, central and local government, and foreign corporate sector.;

Source: Flow of Funds for Trinidad and Tobago Central Statistical Office Financial Statistics, Report No. 2 [1977] and *No. 4 [1981].*

The importance of pension funds and public financial institutions in the financial asset portfolio of the HIE sector has tended to increase over time.

The share of pension funds rose from 5 per cent in 1966 to 11 per cent in 1977, declining somewhat to 9 per cent in 1978. The share of public financial institutions increased from 2 per cent in 1969 to 9 per cent in 1978. The relative standing of building societies diminished, though there were signs of revival by 1978 when their share recovered to 4 per cent.

One change of qualitative, if not system wide quantitative significance is the emergence of finance companies as serious competitors for the financial surpluses of the HIE sector. Whereas in 1970, finance houses accounted for only $5.3 million or 0.6 per cent of the HIE financial assets, by 1978 their share was $101 million or 2.3 per cent. The significance of this development derives from the danger which the asset operations of finance companies pose to deposit safety as well as from the close ownership connection between some finance companies and corporate enterprises in the production and distribution sectors. Several finance companies operate close to the low legal reserve requirement of 3 per cent of deposit liabilities, unlike the banks, all of which hold reserve assets substantially greater than their legally required minimum of 14 per cent.[1] Finance companies also have much higher ratios of risk assets (loans plus investments) to total assets and much lower ratios of capital (shareholders' equity) to risk assets. Furthermore, a significant proportion of the earning asset portfolio of some finance companies is concentrated either directly on closely interrelated groups of companies or in transactions linked with those companies. There is also concentration in particular commodity markets, especially motor vehicle trade or residential home construction and furnishing. Finance companies consequently do not carefully manage risks through asset portfolio diversification.

The final institutional aspects of note in the asset portfolio of the HIE sector is the continuous decline of the local corporate sector's share from 15 per cent in 1966 to 6 per cent in 1978.

Changes in the mix of financial instruments correspond to the institutional changes documented in the preceding paragraphs. Particularly noteworthy is the growth in time deposits as a percentage of HIE financial assets from 9 per cent in 1966 to 22 per cent in 1974 and 21 per cent in 1978 (Table 2.7). Also of significance is the decline in corporate shares from 20 per cent in 1966 to 9 per cent in 1978. The third feature of note is the high share of actuarial and trust funds which ranged between 24 and 33 per cent during the entire period.

The continuing dominance of commercial banks and other issuers of deposit instruments in the financial asset portfolio of the HIE sector occurred in the face of rapidly rising incomes and falling real rates of interest on deposits. Some data has already been presented on the growth of real incomes. With respect to deposit rates of interest, the weighted average real rate of interest on commercial bank deposits moved from +2.5 per cent in 1970 to a mean of -9.3 per cent between 1972 and 1978 (Table 2.8). The movement of commercial bank rates is not atypical of interest rates on other types of deposits. The rigidity of the financial asset portfolio in this respect might be explained in terms of the limited supply of alternative financial instruments especially of corporate securities the monetary values of which rise pari passu with inflation.

TABLE 2.7: PERCENTAGE SHARES OF VARIOUS FINANCIAL INSTRUMENTS IN FINANCIAL ASSETS OF HOUSEHOLDS AND UNINCORPORATED ENTERPRISES 1966 – 1978

INSTRUMENTS	1966	1968	1970	1972	1974	1976	1978
Currency	5.7	6.3	5.6	6.0	4.9	5.3	5.0
Demand Deposits	7.3	6.5	4.8	6.1	4.7	5.4	5.6
Savings Deposits	26.9	24.4	23.2	24.9	19.5	22.1	21.7
Time Deposits	9.3	11.5	15.6	17.2	21.8	19.5	21.5
Shares	20.3	17.4	14.1	11.5	8.5	7.7	9.5
Actuarial and Trust Funds	24.3	28.0	31.1	29.5	33.0	32.4	28.2
Current Balances	3.2	3.2	2.9	2.2	3.3	3.4	5.6
Trade Credits and Balances Due	2.2	2.1	2.2	2.3	4.0	3.9	2.6
Other	0.8	0.6	0.5	0.3	0.3	0.3	0.3
ALL	**100**	**100**	**100**	**100**	**100**	**100**	**100**

Note: "Other" comprises loans, debentures and government securities.

Source: *Flow of Funds for Trinidad and Tobago Central Statistical Office Financial Statistics, Report No. 2 [1977]* and *No. 4 [1981]*.

TABLE 2.8: INFLATION-ADJUSTED INTEREST RATES 1970 – 1978

Year	Commercial Bank Average Loan Rate	Commercial Bank Average Deposit Rate
1970	6.1	2.5
1971	5.1	1.4
1972	-1.0	-5.7
1973	-5.8	-9.6
1974	-11.2	-16.0
1975	-6.9	-12.8
1976	-1.7	-7.9
1977	-2.4	-7.4
1978	-0.3	-5.5

Note: Inflation adjusted interest rate defined as nominal rate of interest minus actual percentage change in retail price index.

it also indicates rather strong liquidity preference by households in Trinidad and Tobago.

The relative growth of pension funds and public financial institutions does not reflect HIE financial asset choice. On the contrary, it is a consequence of compulsory transfers from rising labour incomes into pension and other actuarial-type funds.

Turning now to the debt transactions of the HIE sector, two main features can be pinpointed. First, commercial banks become increasingly dominant as a supplier of debt finance to this sector (Table 2.9). The bank's share of HIE financial liabilities rose from 30 per cent in 1966 to 45 per cent in 1972, and 50 per cent in 1978. Insurance companies become less significant comparatively, their share falling from 22 per cent in 1966 to 9 per cent in 1978. Commercial banks affected this change in their credit position relative to the insurance companies by moving into the mortgage market aggressively, displacing insurance companies as the principal lenders in that market. Mortgage loan balances of commercial banks and their affiliated trust companies rose from less than 10 per cent of life insurance companies' mortgages in 1970 to 78 per cent in 1978. They were able to succeed partly because their inflows of loanable funds were more responsive to the rapid growth in incomes. Second, the debt

TABLE 2.9: PERCENTAGE INSTITUTIONAL STRUCTURE OF FINANCIAL LIABILITIES OF HOUSEHOLDS AND UNINCORPORATED ENTERPRISES 1966 – 1978

INSTITUTIONS	1966	1968	1970	1972	1974	1976	1978
Commercial Banks	29.9	32.3	38.6	46.1	45.0	51.2	50.1
Insurance Companies	22.1	22.3	18.9	14.8	15.8	11.7	9.0
Building Societies	4.8	4.4	6.5	5.3	5.1	5.8	6.5
Public Financial Institutions	13.6	11.3	9.3	8.5	10.0	10.0	11.4
Credit Unions	11.4	10.4	6.8	4.5	5.1	4.7	4.8
Finance Houses	0.0	0.3	3.0	3.0	2.2	3.3	3.7
Local Corporate	7.9	7.7	5.8	5.0	4.2	3.8	4.0
Other	10.3	11.3	11.1	12.8	12.5	9.5	10.5
ALL	**100**	**100**	**100**	**100**	**100**	**100**	**100**

Note: "Other" includes pension funds, foreign corporate sector, government nonfinancial enterprises, central and local government, and trust companies.

Source: *Flow of Funds for Trinidad and Tobago Central Statistical Office Financial Statistics, Report No. 2 [1977]* and *No. 4 [1981]*.

of the HIE sector more than trebled from $784 million in 1974 to $2,551 million in 1978. The two major sources of expansion were commercial bank loans and mortgage loans.

This phenomenal debt expansion may be explained in terms of the growth in credit demand promoted by rising income expectations among credit applicants,[2] commodity price inflation which altered the time preference of consumption (nondurables and durables) in favour of the present, and in terms of negative real loan rates of interest (Table 2.8) which may have encouraged debt and discouraged savings. Whatever the precise strength of these explanations, debt expansion at a rate thrice as fast as the growth in per capita incomes brings into question loan capital safety. Although the extreme inequality of personal incomes [Harewood and Henry, 6] implies that debt servicing capacities of debt recipients would rise faster than national per capita incomes, it is difficult to imagine such drastic improvement in debt servicing capacity. Insufficient attention also seems to have been paid to a pertinent central characteristic of primary producing economies, namely the cyclical pattern of incomes. Due weight seems not to have been given to probable downswings in future incomes in the measurement of debt servicing capacity.[3]

FINANCIAL TRANSACTIONS OF THE LOCAL CORPORATE SECTOR

Commercial banks remained the major source of credit to the local corporate sector, accounting for 23 per cent of the sector's financial liabilities in 1966 and 31 per cent in 1978 (Table 2.10). Bank financing is overwhelmingly by loans and advances, even moreso, at the end of the period than at the beginning. While in 1966, commercial bills comprised 23 per cent and loans and advances 74 per cent of commercial bank credit to the local corporate sector; in 1978 the respective proportions had changed to 6 per cent and 92 per cent.

The second major holder of local corporate sector liabilities is the ROW sector which has tended to hold anywhere between 19 and 24 per cent of the local corporate sector's financial liabilities between 1966 and 1974, but has since experienced a decline to about 16 per cent. The ROW sector's financial accommodation is mainly trade debt. In contrast to the gradual decline in ROW's share, the foreign corporate sector has experienced a swift decline from 11 per cent in 1966 to 4 per cent in 1978. Together, these two trends indicate a reduction in local corporate reliance on external funding.

The HIE sector is an important holder of local corporate financial liabilities. However its relative importance has sharply decreased. Its percentage share was 34 per cent in 1966, 23 per cent in 1972, and 14 per cent in 1978. Not only was there a reduction in the HIE sector's share, the nature of financing also changed somewhat. Holdings of corporate shares fell slightly from 82 per cent in 1970 to 77 per cent in 1978, while trade debts increased from 5 per cent to 9 per cent.

Finance companies and pension funds deserve some analytical attention as sources of corporate finance, despite their relatively small shares in the financial liabilities of the local corporate sector. Finance companies until 1970 were zero or negligible sources of funds to the sector. However, by 1970, their share was 4 per cent and in 1978 was as much as 9 per cent. Pension funds contributed

TABLE 2.10: PERCENTAGE INSTITUTIONAL STRUCTURE OF THE FINANCIAL LIABILITIES OF THE LOCAL CORPORATE SECTOR
1966 – 1978

INSTITUTIONS	1966	1968	1970	1972	1974	1976	1978
Commercial Banks	23.5	25.2	12.1	20.5	30.3	29.5	30.9
Trust Companies	0.0	0.0	0.0	3.3	2.8	2.5	2.9
Insurance Companies	3.8	2.7	4.3	6.6	6.9	6.5	5.4
Pension Funds	2.4	3.1	1.4	3.0	2.3	5.1	4.5
Finance Companies	0.0	0.0	4.5	4.5	2.7	4.9	8.9
Mortgage Financial Institutions	0.0	0.0	0.0	0.1	1.0	3.3	3.6
Government Financial Institutions	2.4	3.2	2.7	3.3	5.1	4.3	3.9
Central and Local Government	1.4	1.5	1.2	1.9	2.1	4.4	4.2
Households and Unincorporated Enterprises	34.0	32.0	33.1	22.9	15.7	16.3	14.1
Foreign Corporate	11.4	12.0	13.7	12.1	8.0	4.0	3.9
Rest of World	19.4	18.7	24.2	18.6	20.4	16.7	15.6
TOTAL	**100**	**100**	**100**	**100**	**100**	**100**	**100**

Source: Flow of Funds for Trinidad and Tobago Central Statistical Office Financial Statistics, Report No. 2 [1977] and *No. 4 [1981]*.

2 per cent in 1966 and 4 per cent in 1978. Finance companies have provided credit almost exclusively (98 per cent in 1978) in the form of loans and advances. Pension funds have provided varying but substantial proportions in the form of both shares and securities (range of 49 per cent to 60 per cent between 1970 and 1978) and advances and loans (range of 37 per cent to 49 per cent).

The analytical interest in these two sources of company finance derives partly from the shifting balance between shares and securities on the one hand and advances and loans on the other hand in local corporate financial liabilities. Loans and advances have increased substantially as a financial instrument from 25 per cent in 1966 to 51 per cent in 1978, whereas shares and securities have decreased also substantially from 36 per cent to 19 per cent in the same period (Table 2.11). A number of factors on both the supply and demand side seem to have contributed to these trends.[4] There is strong reluctance to divest family control (in the case of family-owned business) or foreign control (in the case of multinational enterprise).[5] Public share ownership also implies a degree of public financial disclosure unwelcomed by many companies. Substantial issuing

costs are an additional deterrent to public sale of equity. On the demand side, investor ignorance and strong risk aversion, and strong liquidity preference in the face of limited opportunities[6] for relatively inexpensive, rapid conversion from corporate stock to currency reinforce corporate financing preferences.

TABLE 2.11: PERCENTAGE SHARES OF VARIOUS INSTRUMENTS IN THE FINANCIAL LIABILITIES OF LOCAL CORPORATE SECTOR 1966 – 1978

INSTRUMENTS	1966	1968	1970	1972	1974	1976	1978
Commercial Bills	1.7	2.5	2.8	2.6	3.4	3.2	1.9
Shares and Securities	36.3	32.9	33.9	29.0	20.5	22.1	18.7
Advances and Loans	24.9	24.9	17.5	29.3	39.7	43.4	50.6
Current Balances	9.8	13.4	10.5	7.4	6.3	5.4	4.2
Trade Debts	21.1	20.3	27.4	26.3	24.1	19.4	18.9
Balances Due	4.8	4.5	6.7	3.6	4.1	2.7	2.0
Taxes and Levies	1.3	1.5	1.2	1.7	1.8	3.7	3.5
TOTAL	**100**	**100**	**100**	**100**	**100**	**100**	**100**

Source: Flow of Funds for Trinidad and Tobago Central Statistical Office Financial Statistics, Report No. 2 [1977] and No. 4 [1981].

The operations of finance companies contribute importantly to the shift towards loan finance and may well be a major dynamic in the further increased use of the loan instrument as an alternative to stock issue. Compared to their 4 per cent share in corporate financial liabilities in 1970, finance companies accounted for 25 per cent of corporate loan liabilities. In 1978, the picture was slightly different: a 1.7 per cent share in loan liabilities being associated with 9 per cent share in total corporate financial liabilities.

Share issue to institutions like pension funds and insurance companies constitute an alternative to issues to the HIE sector. Indeed, the share of the latter sector in corporate shares and securities has varied inversely with the proportions accounted for by the former two types of institutions. The HIE proportion has declined from 80 per cent in 1970 to 58 per cent in 1978. In contrast, the insurance companies' proportion has increased from 4 per cent to 16 per cent, and that of pension funds from 2 per cent to 10 per cent in the corresponding years.

CONCLUSION

The period 1966-1978 was one of continuous and marked changes in the financial operations of the economy of Trinidad and Tobago. Many of these changes are not only contemporaneous with the continuous growth of incomes and general prices, and the displacement of the income trajectory of the

economy as a consequence of the much higher oil revenue surpluses accruing to the country after 1973 but seem to be largely due to income and price changes. Some possible connections between the real sector changes and the financial changes have been suggested.

A critical issue to emerge from this survey concerns the debt activities of the household sector and the credit operations of finance companies. Debt expansion has been too rapid. There are also strong indications of unsatisfactory financial management of finance companies. Both of these problems can possibly endanger the financial system.

Another issue concerns the corporate sector's increasing reliance on debt finance. Finance companies feature importantly in this regard as well, but the main features are more likely to have been corporate reluctance to issue equity capital, the household sector's preference for liquidity and commercial bank liabilities, and the rapid growth of financial resources in the private banking system. These obstacles limit the potential efficacy of official attempts to develop the capital market by widening the range and improving the efficiency of capital market institutions. There are, no doubt, others. The treatment here is neither exhaustive nor definitive.

In terms of explanation of financial change as well as in terms of analysing the consequences of those changes, there is much to be done. This essay serves to define a starting point for other more detailed studies.

NOTES

[1] *The Financial Institutions (NonBank) Act No. 52* of 1979 which allowed the central bank to set reserve requirements liabilities did not come into force until 1981.

[2] Assuming adaptive expectations, expected income will accelerate in the later stages of the upswing and persist for some time after a downswing has started.

[3] The downswing has now begun with almost synchronous declines in world prices for crude petroleum and production decreases in Trinidad and Tobago.

[4] See Drake [3] for a useful review of the literature.

[5] The main stimulus to capital market activity in the 1970s was the stock sales of foreign firms divesting to nationals.

[6] As recent as December, 1981, there were only eight registered stockbrokers and no secondary market for corporate securities.

REFERENCES

[1] BROTHERS, Dwight S. and Leopoldo M. SOLIS, *Mexican Financial Development,* University of Texas Press, Austin, Texas, 1966.

[2] CAGAN, Phillip and E. Robert LIPSEY, *The Financial Effects of Inflation,* Ballinger Publishing Company, Cambridge, Massachusetts, 1978.

[3] DRAKE, P.J., "Securities Markets in Less Developed Countries", *Journal of Development Studies,* Vol. 13, No. 2, 1977.

[4] GOLDSMITH, Raymond, *Financial Structure and Development,* Yale University Press, New Haven, 1969.

[5] GURLEY, John G., "Financial Structures in Developing Economies" in David Krivine (ed.), *Fiscal and Monetary Problems in Developing States,* Praeger Publishers, New York, 1967.

[6] HAREWOOD, Jack and Ralph HENRY, "Inequality in a Post-Colonial Society: Trinidad and Tobago 1956-1981", University of the West Indies, Department of Economics, Mimeo. September 1982.

[7] KLEIN, Benjamin, "The Demand for Quality Adjusted Cash Balances: Price Uncertainty in the U.S. Money Demand Function", *Journal of Political Economy,* 85, 1977.

[8] ODLE, Maurice A., *The Significance of Non-Bank Financial Intermediaries in the Caribbean,* Institute of Social and Economic Research, University of the West Indies, Kingston, Jamaica, 1972.

STRUCTURE AND PERFORMANCE OF COMMERCIAL BANKING IN TRINIDAD AND TOBAGO: 1965-1982[1]

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INTRODUCTION

Commercial banks are the pivot of the Trinidad and Tobago financial system. Apart from being the largest established formal financial 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 countervailing 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 important to study its operations. This essay describes and analyses the major aspects of commercial banking in the 1965-1982 period. 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 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 20, Mc Clean 11], Jamaica [Callender 3], 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 1910, the number had increased to three, increasing further to eight in 1950. A spurt occurred in 1954 when the total number of bank offices increased to 18, and expanded hereafter to 46 in 1964.[2] 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 3.1). 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 14, 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.

TABLE 3.1: SPREAD OF COMMERCIAL BANK FACILITIES 1900-1964

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 IV, Central Bank of Trinidad and Tobago (1974)

No information is currently available on commercial bank assets and liabilities before 1946, when total assets (= total liabilities) amounted to $67 million. (Table 3.2). Deposits comprised 89 per cent of total liabilities, with demand deposits, savings deposits and time deposits separately comprising 47 per cent, 40 per cent, and 2 per cent of total liabilities. On the asset side, balances held in banks overseas were the largest single asset, comprising 61 per cent of total assets in 1946. Next in order of quantitative share were loans and overdrafts (14 per cent), vault cash (9 per cent), and foreign money market investments (7 per cent). 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 of savings mobilization, 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 an average annual rate of 8 per cent from $67 million at the end of

1946 to $267 million at the end of 1964. The average annual rate of growth was somewhat faster between 1950 and 1960 (10 per cent) and slightly slower (7 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 million at the end of 1946 to approximately $248 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 and money market investments together constituted 56 per cent of total bank assets in 1950 and 41 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 growth rates for loans recorded in Panel A of Table 3.2. The rapid average annual expansion reflects largely the low base from which the loan series starts in 1946.

A significant shift in commercial bank asset portfolios occurred between 1960 and 1964. At the end of 1964, foreign assets were of minor quantitative significance in the asset portfolio, accounting for only 14 per cent of total assets compared with 41 per cent in 1960. In contrast, the share of loans and advances increased from 41 per cent to 45 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 18-year period. The main change was the increase in time deposits from 2 per cent of total liabilities in 1946 to 12 per cent through most of the next 18 years.

Altogether, at the end of 1964, several features of the commercial banking industry had been considerably altered, while others remained the same. The unchanged features were the 100 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.

TABLE 3.2: GROWTH AND STRUCTURE OF COMMERCIAL BANK ASSETS AND LIABILITIES: 1946-1964

PANEL A: GROWTH OF ASSETS AND LIABILITIES

	$ million				Annual Average Growth Rate		
Item	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 Deposits	31.6	36.5	82.5	103.2	6.8	8.5	5.8
Savings Deposits	26.8	25.8	85.7	114.8	8.4	12.7	7.6
Time Deposits	1.6	9.1	24.4	30.0	17.0	10.4	5.3
Foreign Balances	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 investments	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	1964	1950	1960	1964
Liabilities				
Total Deposits	89	91	94	93
Demand Deposits	47	47	40	39
Savings Deposits	40	33	42	43
Time Deposits	2	12	12	11
Assets				
Foreign Balances	61	53	40	14
Loans	14	24	41	45
Foreign money market investments	7	3	1	
Vault Cash	9	8	6	7

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

GROWTH AND STRUCTURE OF COMMERCIAL BANKING INDUSTRY 1965-1982

SPREAD OF BANKING SERVICES

The commercial banking industry grew greatly 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 as shown in Table 3.3. 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 decreased correspondingly from 20,700 in 1964 to 11,714 and 10,077 in 1982. Most of the growth in bank branches occurred in urban areas. Whereas in 1966, the urban bank offices totalled 40 and rural offices were 20, by the end of 1981 the former had increased to 77 and the latter to 37. However, the significance of urban-rural distinctions is 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.

TABLE 3.3: 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	15.9	2.7	44.8
1981	109	4.9	1.3	17.8	2.8	66.4
1982	112	6.7	1.6	20.1	3.0	53.3

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* and Republic of Trinidad and Tobago *Review of the Economy,* various years. Deflator for deposits is retail price index (1970=100); deflator for GDP is the implicit GDP deflator (1970=100).

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 per cent total loans) at December 31, 1967 to $237 million (35 per cent) in 1974, and $1.8 billion (37 per cent) 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 per cent of bank assets) in 1970 to $407 million (5 per cent of the bank assets) in 1982. Similar conclusions can be made about the access to other bank services. Foreign exchange facilities were utilized on an increasing scale commensurate with the rapid growth of foreign travel by residents of the country. Likewise, customer payments services e.g., standing order arrangements, were extended 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 (See Table 3.3). In average annual growth rate terms, the percentage growth rate was 22 per cent 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 per cent. Deposit growth was considerably slower in real terms. The retail price index increased at an average rate of 10 per cent per year between 1965 and 1982, and 14 per cent 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.

Growth was not uniform for the three major components of bank deposits, i.e., demand, savings and time deposits. Demand deposits expanded at almost 3 per cent yearly from $109.1 million in 1965 to $138 million in 1973, and then at 37 per cent per year to $1.7 billion in 1982. Time deposits increased at 27.7 per cent per annum from $37.5 million in 1965 to $337.7 million in 1973, and then at 29.2 per cent per annum to $2.6 billion in 1982. Savings deposits grew at 10.3 per cent per year from $121 million in 1965 to $292.1 million in 1973 and, subsequently, at 29.4 per cent yearly to $2.3 billion in 1982. Thus, time deposits grew much faster overall (26.5 per cent) 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 per cent *vs* 16.6 per cent).

As a consequence of these differences in growth rates, the structure of deposits changed substantially. Whereas in 1965, saving deposits comprised 45 per cent of total deposits, demand deposits 41 per cent and time deposits 14 per cent, by the end of 1973, the respective proportions were 38 per cent, 18 per cent and 44 per cent. During the next eight years, the share of time deposits increased slightly to 39 per cent in 1982, and demand deposits increased substantially (26 per cent in 1982) at the expense of savings deposits which fell further still to 34 per cent at the end of 1982. At a later stage, an

attempt will be made to 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 38 per cent in 1977 to 44 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 at a geometric mean annual rate of 4 per cent between 1965 and 1982.[2] As a consequence, real GDP doubled over the entire period (Table 3.3). 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 which more than doubled between 1965 and 1982 (Table 3.3).

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 3.4. The mean value of the weighted average rate was 4.8 per cent and its coefficient of variation was .20. The corresponding statistics for the effective nominal rate of interest are 4.2 per cent 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 3.4. 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 vary 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 depositors incur

$R^2 = 0.6021$ F = 9.07 D.W. = 1.99 RHO (1) = 0.808

$$\ln TSD^H = \underset{(-4.31)}{-12.909} + \underset{(6.08)}{2.479} \ln Y^e - \underset{(-0.55)}{2.403} r_D + \underset{(0.78)}{0.842} \dot{P}^e$$

$R^2 = 0.8315$ F = 27.33 D.W. = 2.11 RHO (1) = 0.775 RHO (2) = -0.258

Business Demand

$$\ln DD^B = \underset{(0.88)}{3.875} + \underset{(0.09)}{0.058} \ln Y^e - \underset{(-3.56)}{13.126} r_D + \underset{(1.57)}{1.718} \dot{P}^e$$

$R^2 = 0.3840$ F = 4.32 D.W. = 2.13 RHO (1) = 1.49 RHO (2) = 0.71

$$\ln TSD^B = \underset{(0.76)}{5.258} - \underset{(-0.39)}{0.350} \ln Y^e + \underset{(1.17)}{4.636} r_D - \underset{(-1.92)}{2.23} \dot{p}^e$$

$R^2 = 0.0863$ F = 1.50 D.W. = 2.43 RHO (1) = 1.89 RHO (2) = -0.91

All the equations have been purged of serial correlation by the Cochrane-Orcutt method. The results are relatively good for the household demand equations. The model has fair 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 the 5 per cent level or better. For the time and savings deposits equation, only the income variable is statistically significant. Because the household sector owns as much as 65 per cent of total bank deposits, the econometric results 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 seems to have a modest influence on household demand for bank deposits. The estimated interest rate elasticity of demand deposits is -0.508 which signifies that a 10 per cent change in the deposit rate of interest will induce a 5 per cent switch away from demand deposits. The interest rate regression coefficient in the time and savings deposit equation is statistically insignificant, as are the inflation coefficients in both equations. The absence of a statistically significant interest rate coefficient is somewhat puzzling in view of the strong result derived for the demand deposit equation. One would have expected the interest rate effect to be of equal magnitude but opposite in sign (i.e., positive) to the demand deposit result.

The statistical results for the business demand equations are poor. The models have little or no overall explanatory power and the regression coefficients are, in most cases, unstable. For the demand deposit equation, the computed interest rate elasticity is -0.618 which indicates considerable sensitivity on the part of business firms. Nothing can be said about the time and savings deposit relationship.

OWNERSHIP STRUCTURE OF DEPOSITS

Private individuals and households are the major holders of bank deposits, accounting for 65 per cent of total deposit liabilities between 1970 and 982.

Second in importance are business firms which held 12 per cent to 14 per cent of bank deposits during the same period. The share of government and its non-financial agencies increased from 3.4 per cent in 1970 to 5.2 per cent in 1984 and further to 8.9 per cent 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 6 per cent of total bank deposits. This component of deposits became 7.6 per cent in 1975, stabilising at that level for the remainder of the period. Its stability is another indication of the competitive strength of the commercial banks in maintaining their deposit position among individual, corporate and government depositors. A deterioration in the banks' ability to attract deposits from those categories of depositors would have been 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 government-owned financial institutions has fluctuated considerably. It was 1.6 per cent in 1970; 2.1 per cent in 1975; 4.0 per cent in 1980; and 2.3 per cent in 1982.

The predominance of individuals among depositors is greatest for savings deposits. Their share of savings deposits rose from 87 per cent in 1965 to 96 per cent in 1982, while the share of demand deposits which was only 22 per cent in 1965 increased to 27 per cent in 1982. The share of time deposits lay between those two extremes – 66 per cent in 1985 and 63 per cent in 1982. Firms in primary activities other than finance accounted for 44 per cent of demand deposits and 11 per cent of time deposits in 1965. By the end of 1982, the respective proportions were 28 per cent and 12 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 3.6). 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 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. The econometric equation reported earlier yielded inconclusive results on the question of interest rates substitution effects in that although demand deposits were shown to be sensitive, no relationship could be detected for time deposits. Income growth exerts a strong positive influence on both types of deposits but the response elasticity is significantly stronger for time and savings deposits. The tentative conclusion, therefore, is that income growth was the main influence on structure of bank deposits. 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.

TABLE 3.6: DEPOSIT PREFERENCES, 1965-1982

PANEL A: INDIVIDUALS AND HOUSEHOLDS	1965	1970	1973	1975	1980	1982
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
PANEL B: BUSINESS						
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.*

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 3.7). The geometric mean growth rate was 22 per cent for nominal values and 11 per cent for real values. Similarly, assets grew more rapidly between 1974 and 1982 than between 1965 and 1973 (28 per cent per annum *vs* 16 per cent 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 3.7 that cash assets, which had not increased much as a proportion of bank assets between 1965 and 1973, started to rise considerably in 1974, amounting to 19.6 per cent 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 utilize 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 5 per cent of total deposit liabilities. This was revised on several occasions subsequently, e.g., 7 per cent in February 1973, and stood at 9 per cent in 1982. There is an additional marginal reserve requirement which raised effective cash reserve requirements to 13.6 per cent at December 31, 1981 and 16.1 per cent at December 31, 1982. Since 1967, commercial banks have also been required to hold secondary reserve deposits at the central bank. At the end of the period these were 5 per cent of total deposit liabilities.

The relative importance of government securities in commercial banks' asset portfolios had declined since 1965, despite a growth in the absolute fi-

TABLE 3.7: COMMERCIAL BANK ASSET PORTFOLIOS, 1965-1982

Item	1965	1970	1973	1974	1980	1982
Total Assets ($mn)	273	491	912	1178	5216	8553
Total Assets (Real $mn)	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 Government 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	53.3	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 include deposits at Central Bank from 1970 onwards. Data source is Central Bank of Trinidad and Tobago, *Statistical Digest.*

nancing 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 in 1982. Nonetheless, the percentage share fell from 11 per cent in 1970 to 3 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 3.8). 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, 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 [6] estimated demand for Treasury Bills equations for sub-periods June 1974-September 1976; October 1976-April 1978; and May 1978-December 1980 using monthly data.

TABLE 3.8: 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

Note: ^{r}GS is average rate of return on Trinidad and Tobago government securities, ^{r}L is average rate of return on loans.

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

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), Ramkissoon [15] 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 significant 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 3.8 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 3.7 separates real estate loans which have grown in importance from 1 per cent of total assets in 1970 to 5 per cent in 1982, and other loans and advances which varied between 53 per cent and 70 per cent of total assets during the 17 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 4 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 *vs* $176.4 million). This dominance further increased so that at the end of 1980, the commercial bank group had mortgage assets 30 per cent larger than the holdings of the life insurance companies and thrift institutions. Within the space of 17 years, the commercial banks had moved from being a relatively insignificant element in the supply of real estate mortgage finance to a point where they control over 50 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 25 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 Morris, 13] identify 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, Y^e, (a profit expectation variable) the nominal loan rate of interest (^rL); the expected rate of inflation, (P^e) (to capture the price

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).

$$
\begin{aligned}
(1)\quad \ln C = 24.17 &+ \underset{(10.67)}{4.32 \ln Y^e} \\
&- 8.80\, Y^e - 18.26\, {}^{r}L \\
&\underset{(-2.27)}{} \quad \underset{(-3.57)}{} \\
&+ 2.032\, P^e - 0.553\, P/P^2 \\
&\underset{(3.16)}{} \quad \underset{(-1.99)}{}
\end{aligned}
$$

$$R^2 = .9855 \quad F = 163.59 \quad D.W. = 1.89 \quad c.v. = 1.49\%$$

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, 9] 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 90 per cent of foreign assets until 1978 when foreign securities rose to 20 per cent. The percentages shares of foreign assets presented in Table 3.7 are based on central bank data which exclude foreign securities. The estimates are, therefore, biased downwards, a fact of modest significance in commercial banks' asset portfolios between 1970 and 1982, than previously. They declined from 13 per cent of total bank assets in 1965 to 3 per cent in 1970, and then averaged only 0.4 per cent between 1971 and 1976. A slow recovery took place during the rest of the decade (1 per cent in 1977 and 1978; 2 per cent 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 invest-

ment 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 devalued by 13.8 per cent. Contrary to the traditional automatic link between the Trinidad and Tobago dollar and the pound sterling, there was hesitancy on the part of the Trinidad and Tobago monetary authorities to devalue in tandem. A failure to devalue sympathetically would have meant exchange rate appreciation *vis-a-vis* the pound sterling, and, therefore, exchange rate losses on sterling denominated assets. This sudden, new possibility seems to have prompted a reduction in foreign assets, which at the time, were held almost entirely in the United Kingdom. In 1971 and, subsequently, exchange rates become more variable and exchange risks more generalised as a result of the unexpected United States abandonment of the gold exchange standard and the floating of the major exchange rates, including those of the United Kingdom and United States (Trinidad and Tobago's main trading partners). Thus, once more, there was a situation leading to anticipated exchange rate losses on external assets and, therefore, to disinvestment of those assets. In this period, however, each currency component of the foreign asset portfolio (and not merely the pound sterling denominated component) was exposed to foreign exchange risk. These risks can be minimised by careful foreign asset portfolio management if the institutions have sufficient expertise in foreign exchange markets. The latter condition is not satisfied by the Trinidad and Tobago banks. It is, therefore, likely that the greater exchange rate risks engendered by the Smithsonian period dissuaded the holding of foreign assets above transactions balance requirements.

Another reason is the *Exchange Control Act of 1970* which prohibited the banks from holding foreign assets in excess of transactions 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 3.9. 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 3.9: COMPARATIVE TREASURY BILLS RATES
T&T, UK, U.S.

Period Average	T.TBR	U.K.TBR	U.S.TBR	U.K. minus TT	U.S. 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.*

received by producing sectors such as agriculture (4 per cent); construction (3 per cent); and transportation (4 per cent). This pattern changed significantly during the next 17 years, particularly after 1970. The main changes are the persistent decline in the distribution sector's share from 25 per cent in 1970 to 10 per cent in 1982, the decline in the manufacturing share from 21 per cent to 11 per cent in the same years, and the continued rapid growth of the shares of the personal sector (28 per cent in 1970 and 34 per cent in 1982), and real estate mortgages (2.5 per cent in 1970 and 7.7 per cent 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 per cent and 8.6 per cent), while that of agriculture stagnated at roughtly 2.5 per cent between 1970 and 1980, before declining to 1.2 per cent in 1982.

The 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.

TABLE 3.10: SECTORAL COMPOSITION OF BANK LOANS AND ADVANCES, 1965-1982

Sectors	1965	1970	1973	1974	1980	1982
Government	19.5	2.8	13.0	9.6	5.7	10.3
Manufacturing	14.0	21.3	18.1	18.3	14.3	10.9
Mining and Refining	0.3	3.1	2.3	2.8	1.8	1.2
Agriculture	3.9	2.3	2.5	2.7	2.6	1.2
Construction	3.1	4.1	2.9	2.9	9.7	8.6
Transport	4.3	2.4	1.9	2.1	3.9	4.1
Distribution	23.2	24.9	16.8	15.5	13.3	10.1
Finance	3.2	2.9	2.0	2.8	2.3	2.2
Hotels & Entertainment	1.1	2.1	2.0	1.8	1.1	0.7
Real Estate	n.a.	2.5	4.3	4.9	5.2	7.7
Professional	6.1	3.3	2.2	2.2	5.6	2.0
Personal	17.3	27.7	29.6	33.7	32.9	34.5
Other	4.0	0.6	2.4	0.7	1.6	6.5
Total	100.0	100.0	100.0	100.0	100.0	100.0

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 the price of inputs and the more uncertain the production technology, the greater the risk of production failures and operating losses, and, consequently, 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 that 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 per cent for instalment credit; 14.53 per cent for mortgage credit; 16.78 per cent for personal credit; and 15.70 per cent 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 either 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 rates 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, 7] provide some insight into financing patterns and the significance of bank credit. The data pertained to 1981 and 1982. It was established that for 75 per cent of the sample of 60 respondents, external funds were not less than 50 per cent of total funding of business activity. Ten per cent of the firms had external funding ratios of 51 to 70 per cent and a further 12 per cent had external funding ratios of 71 per cent to 90 per cent. External funding ratios varied between sectors. None of the firms in the petroleum sector had external funding ratios greater than 60 per cent; a third of those in the food, beverages and tobacco industry had ratios in excess of 60 per cent, as did 40 per cent of assembly industry enterprises, 80 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 47 per cent of respondents, bank finance accounted for less than 50 per cent of total financing, a further 9 per cent had ratios between 51 and 80 per cent, and 2 per cent had ratios of 81 to 100 per cent.

From the distributions of external financing ratios and bank credit ratios, it may be inferred that about 68 per cent of respondents had bank credit amounting to not more than 50 per cent of total external funding. For 16 per cent of the respondents, the ratio lay between 51 and 80 per cent, and for 17 per cent, the ratio was greater than 80 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 2] 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 regardless 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 3.11. It can be seen that there are wide differences in the ratio of bank credit to sector economic activity. The mining sector has the

TABLE 3.11: COMMERCIAL BANK CREDIT AS PER CENT OF GDP AT FACTOR COST AND PRIVATE CONSUMPTION EXPENDITURE

Year	Agric.	Mining	Food Bev. Tobacco	Textile Clothing Footwear	Wood & Metal & Clay Products	Chemical Products	Distrib. Hotels Rest	Construction	Private Consumption
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	31.0	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 includes Quarrying, while credit for Mining includes Quarrying and GDP for Mining excludes non-petroleum activities.

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 35 per cent except in 1975 and 1976 when it was 23 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 per cent to 13.8 per cent, but then increased rapidly to 24 per cent 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 25 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.[3] 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 reviews, see Sealey and Lindley 16; and Clark 5]. 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 averages 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. Thus, the efficiency with which they perform these intermediary functions has pervasive effects. Furthermore, the capital value safety and interest earnings of the savings of many individuals rest heavily on the efficiency of bank performance. In addition, the collapse of banks 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 1965 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 (see Table 3.12). 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 deteriorated after 1973.

Changes in the structure of operating costs documented in Table 3.12 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 bearing 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 per cent of total assets). By 1973, they had risen to $75.7 million (8.3 per cent), increasing further yet to $777.3 million (9.7 per cent 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.

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 on either a pre-tax or post-tax basis. Table 3.13 presents both sets of 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 1970s. The pre-tax

TABLE 3.12: OPERATING COSTS AND REVENUES OF COMMERCIAL BANKS

Item	1965	1970	1972	1973	1974	1975	1980	1982
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
Per Cent of Total Assets								
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
Per Cent Structure of Costs								
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
Per Cent of Structure of Revenues								
Loan Revenue	54.3	67.8	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.

profits of some banks were as high as 71 per cent 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 per cent to 59 per cent of shareholders capital. For the same banks, post-tax profits were between 29 per cent and 42 per cent of shareholders capital.

TABLE 3.13: 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	29	8	28	34
1982	44	57	13	59	59	42	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 specific calendar year. Accounting years are not uniform.

RISK AND CAPITAL ADEQUACY

"Capital risk" means 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.

Capital adequacy is defined in relation to capital 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 [13, 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 [8] 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. 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 contimuun.

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 U.S. bank examination system. Sinkey [18] observes that the purposes of bank exami-

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

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

FIDC Adjusted Capital Ratio (ACR):

$$ACR = \left(K + R + N - L - 0.5D \right) / A$$

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 per cent probability loss estimate to doubtful loans.

FIDC Net Capital Ratio (NCR)

$$NCR = \left(K + R + N - L - D - S \right) / A$$

where

S is substandard loans.

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

Probability Weighted Capital Ratio (WCR)

$$WCR = \left(K + R + N - \gamma_L L + \gamma_D D + \gamma_S S \right) / A$$

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 U.S. 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 U.S., 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 prior 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; and (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:

$$Z_i = a_{i1} X_1 + a_{i2} X_2 + \ldots + a_{in} Xn$$

where Z_i are the scores; the a_{ii} 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.

Sinkey'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; and 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 [10] 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 [Maizel 12] 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; and (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 through losses (where net earning assets are defined as total assets *minus* cash and deposits at the monetary authorities, settlement balances with other depository enterprises, fixed assets and acceptances), both the estimates of money losses and capital should be related to net earning assets, although, as Maisel [12] 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 whenever 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 3.14). However, this 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 of individuals to save, thus increasing the interest-elasticity of deposit demand 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 and mix 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 down-turns quickly depress market values of bank collateral and lock the banks 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, bank lending has been slow to adjust to the less rapid growth of its lending base i.e. deposits. These trends raise three possibilities. First, it is possible that

TABLE 3.14: RISK AND CAPITAL ADEQUACY INDICATORS: COMMERCIAL BANKS 1974-1982

	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982
Risk Assets % Total Assets											
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	-
Liquid Assets % Total Assets											
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	-
Capital % Risk Assets											
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.

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 [17] makes clear.

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

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

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.

The demand for deposits function is:

$$D = D(r_D, Y, P^e) \qquad (2)$$

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

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

$$C = (D)^{\alpha} \qquad (3)$$

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 with respect to r_L equal to zero yields

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

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

since $\frac{\partial C}{\partial D} = \gamma \alpha D^{\alpha-1}$ and $c = \frac{C}{D} = \gamma D^{\alpha-1}$ (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:

$$r_D^* = \frac{\epsilon}{1+\epsilon}(r_L - \alpha c) \qquad (5)$$

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.

This model, although simple, helps to bring out two important points. One is the dependence of deposit rates on the cost efficiency of the banks. Reductions in cost efficiency depress deposit rates of interest. It was shown earlier that the operational efficiency of the banks deteriorated. In addition to a rise in interest costs as a *per cent* of total assets (closely correlated with deposits), non-interest costs, especially labour costs, also increased. Thus, it can be concluded that one

factor restraining deposit rates of interest was a loss in operating efficiency among the banks.

The second point of significance is that the deposit rate varies directly with the interest elasticity of deposit demands. If deposits are interest-elastic, the banks will pay higher rates of interest than if they are not. Econometric analyses of the relationship between interest rates and deposit demand have not so far yielded statistically robust estimates of the elasticities.[4]

It will be necessary to construct a proper empirical model of commercial bank costs and earnings before any quantitative statements can be made about the actual role of operating costs and interest rate elasticities in interest rate determination in Trinidad and Tobago. That exercise is being attempted elsewhere.

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 expenditures which combined to boost loan demand. Third, also stimulating 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 much larger proportions than previously. The sectoral shifts in loans seem 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 less provisions have become 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 likely 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.[5]

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. Perhaps, 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.

The analysis of commercial banking in Trinidad and Tobago in this essay does not pretend to exhaust the topic. There are many facets still to be fully understood and quantified. Among these are the roles of transactions costs and risks within the decision framework of both the banks and their customers, issues of economies of scale and scope and the allied question of an optimal banking structure, and bank pricing behaviour. Presumably these research topics will be taken up in the near future.

NOTES

[1]The assistance of James Croal at Simon Fraser University with some of the econometric work is gratefully acknowledged. My colleague, Eric St. Cyr provided useful comments.

[2]GDP is not a totally satisfactory index of national income in situations of massive improvement in the terms of trade. To the extent that it understates the growth in real incomes, one overestimates the magnitude of deposit response to income growth.

[3]The identification of bank inputs and outputs is by no means trouble-free. Some analysts treat deposits as output on the grounds that they directly generate bank income.

[4]The results reported in this essay are inconclusive. In Essay 10, Bourne failed to obtain statistically significant estimates of the interest elasticity of real money balances. In other as yet unpublished work, he obtained elasticity estimates of -0.42 for real narrow money (i.e., currency plus demand deposits) for the 1965 to 1982 period.

[5]Numerous newspaper reports indicate that bank profitability decreased in 1984 and 1985.

REFERENCES

[1] BOURNE, Compton, "Commercial Bank Interest Rates in Trinidad and Tobago, 1969-1976". Central Statistical Office Research Papers, No. 10, 1979.

[2] ———— , "Notes on Financial Changes in Trinidad and Tobago: 1966-1978". *Social and Economic Studies,* 31, 4, 1982.

[3] CALLENDER, Charles Victor, "The Development of the Capital Market Institutions of Jamaica", *Social and Economic Studies,* 14, 3, Supplement 1965.

[4] CENTRAL BANK OF TRINIDAD AND TOBAGO, *History of Banking: Trinidad and Tobago, 1776-1972,* Port of Spain, 1973.

[5] CLARK, Jeffrey A., "Estimation of Economies of Scale in Banking Using a Generalised Functional Form", *Journal of Money, Credit and Banking,* 16, 1, 1984.

[6] FARRELL, Terrence W. and Baball BALIRAM, "The Market for Treasury Bills in Trinidad and Tobago". Research Department, Central Bank of Trinidad and Tobago. Mimeo, May 1981.

[7] 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.

[8] GARDNER, Edward P.M., *Capital Adequacy and Banking Supervision,* University of Wales Press, Bangor, 1981.

[9] GOLDBERGER, A.S., *Econometric Theory,* John Wiley and Sons, Inc., New York, 1964.

[10] KOROBOW, Leon, David P. STUHR and Daniel MARTIN, "A Probablistic Approach To Early Warning of Changes in Bank Financial Conditions" in Edward I. Altman and Arnold Sametz (eds.), *Financial Crises,* John Wiley and Sons Inc., New York, 1977.

[11] MC CLEAN, A.W.A., *Money and Banking in the East Caribbean Currency Area,* Institute of Social and Economic Research, University of the West Indies, Jamaica, 1975.

[12] MAISEL, Sherman (ed.), *Risk and Capital Adequacy in Commercial Banks,* University of Chicago Press, Chicago, 1981.

[13] MELITZ, Jacques, and Pardue MORRIS, "The Demand and Supply of Commercial Bank Loans", *Journal of Money, Credit and Banking,* 5, 1973.

[14] PORTER, Richard C., "The Promotion of the Banking Habit and Economic Development", *Journal of Development Studies,* 3, 1966.

[15] RAMKISSOON, Ronald, "Commercial Bank Asset Portfolio Behaviour in Trinidad and Tobago", M.Sc. (Economics) Thesis, University of the West Indies, 1982.

[16] SEALEY, C.W. and James T. LINDLEY, "Inputs, Outputs and a Theory of Production and Cost at Depository Financial Institutions", *Journal of Finance,* 32, 4, 1977.

[17] SPELLMAN, Lewis J., *The Depository Firm and Industry,* Academic Press, New York, 1981.

[18] SINKEY, Joseph F., "Problem and Failed Banks, Bank Examination and Early Warning Systems: A Summary in Altman and Sametz (eds.), *Financial Crises,* John Wiley and Sons Inc., New York, 1977.

[19] STIGLITZ, Joseph and Andrew WEISS, "Credit Rationing in Markets with Imperfect Information", *American Economic Review,* 71, 3, 1981.

[20] WORRELL, Delisle and Ronald PRESCOD, "Development of the Financial Sector in Barbados", *Central Bank of Barbados Economic Review,* 10, 2, 1983.

ECONOMIC ASPECTS OF THE TRINIDAD & TOBAGO STOCK MARKET[1]

iv

Compton Bourne

INTRODUCTION

Stock markets are potentially important influences on the rate of economic development. In less developed countries, commercial banks typically dominate the financial sector. Their conservative credit policies, especially the strong preference for short term lending, militate against long term, risky investment projects. The large contractual repayment flows imbedded in bank finance constrain prospective investors to low risk projects with short pay back periods. Equity finance, because it has no fixed repayment obligations, is more compatible with risk-taking. Furthermore, "equity finance acts as the fulcrum against which debt finance is leveraged . . ." [Long and Veneroso, 10]. In the absence of stock markets, the flow of equity capital tends to be narrowly circumscribed. The main barrier is the illiquidity of corporate securities relative to the pronounced liquidity preference of financial asset holders. Long and Veneroso [10] observe that "in countries where there is no stock market equities more closely resemble real assets than financial assets". By increasing the liquidity of corporate equity, stock markets reduce the influence of risk-aversion on the supply of equity finance.

In identifying these potentially important roles of stock markets, one does not intend to imply that stock markets can totally substitute for the commercial banks or that the development of these markets is an alternative to policies for improving the mobilisational and allocative efficiency of the main financial institutions. On the contrary, stock market development is regarded as complementary to the growth and improvement of the formal financial sector.

The establishment of an institutional framework does not of itself ensure the healthy development of stock markets nor the steady growth of equity finance. The breadth, depth and efficiency of the market are critica. Porter [13] identifies "three atrributes of narrow, as opposed to broad securities markets. One, the absolute number of buyers and sellers is few, and, hence, the maximum average frequency of transactions is low; two, position takers are lacking; and three, there is not a wide spectrum of owners and ownership motive". "Depth" refers to the extent to which transactions of modest volume cause extreme price fluctuations simply because the size of the market is small. Narrow and shallow stock markets are likely to exhibit several behavioural characteristics damaging to the development role of capital markets. The more important include excessive stock price volatility, stock price manipulation and market inefficiency in the sense that some investors have a systematic tendency to gain from stock price movements.

This essay analyses the Trinidad and Tobago stock market with a view to assessing its performance and potential.[2] Attention is limited to corporate securities. It also discusses the size and structural characteristics of the market for corporate equity and analyses price volatility, risk-return profiles and market efficiency.

the number of shareholders had decreased by almost 50 per cent for two corporate enterprises.

Divestment soon after primary acquisition occurs mainly among small asset holders. The data from Williams [14] show that the percentage contraction of shareholders tends to be greater among recipients of small allotments (95 per cent *vis-a-vis* 56 per cent).

Other evidence indicates that stock ownership is highly concentrated. Flow of Funds data reveal that the household sector is a major holder of corporate shares accounting for 57 per cent of the amount existing in 1978. This feature combined with the tendency of small asset holders to divest implies a highly skewed distribution of corporate equity among households. Thirty-four per cent of corporate shares were held by financial institutions in their capacity as trustees for pension funds and other asset holders but also on their own behalf making them the second largest holders of shares in 1978. O'Brien [12] produced data for 1980, which confirms the concentration of corporate equity. Of total stock issues by commercial banks at the end of 1980, the parent companies retained 41 per cent, other companies 11 per cent, and individuals 39 per cent. For manufacturing enterprises the corresponding percentage distribution was 66 per cent, 19 per cent, and 15 per cent, while for commercial enterprises it was 59 per cent, 16 per cent, and 22 per cent. Notably, only 8 to 9 per cent of individual shareholders owned less than $1000 each. Hospedales [12] notes that institutional holders are currently predominant. Since there are few financial institutions, the major share of financial institutions in corporate stock further reinforces asset concentration. More direct evidence is provided in Table 4.2, which details the number of shareholders for 30 of the 32 firms listed on the Stock Exchange on June 30, 1984. It is evident that most firms have fewer than 3,000 shareholders. Indeed, only commercial bank equity is owned by a relatively large number of asset holders.

The fundamental reasons for the limited size of the stock market and the skewed distribution of stocks across asset holders require careful study before any definite statements can be made. Nonetheless, there is cause for thinking that powerful constraints exist on both the demand side and the supply side.[4] Low personal incomes and relative financial unsophistication result in a strong aversion to corporate equity and an equally strong preference for bank deposits and other quasi-monetary assets. Risk aversion prevails over expected rates of return. To illustrate, local corporate equity comprised only 5 per cent of the total financial asset holdings of the household and unincorporated enterprise sector in 1978. However, one should not exaggerate the force of these inhibitors or ignore their gradual relaxation over time. The fact that the few new issues which are actually made are heavily oversubscribed implies that demand is expanding. Furthermore, the fiscal treatment of personal incomes favours stock market investment as opposed to investment in monetary instruments. Dividend income is exempt from personal income taxation as are capital gains derived from stocks held for longer than one year. In contrast, interest income is taxable unless it accrues from accounts in savings banks or credit unions and does not exceed $3,000.

On the supply side, corporate financing preferences also retard the development of the stock market. There is a distinct preference for commercial bank

TABLE 4.2: SHAREHOLDERS FOR LISTED STOCKS
(June 30, 1984)

Stocks (Company Name)	Number of Shareholders	Stocks	Number of Shareholders
Bank of Commerce	14,463	West Indian Tobacco Co.	5,105
Bank of Nova Scotia	10,409	Ready Mix	1,127
National Commercial Bank	23,595	F.W. Woolworth	1,224
Republic Bank	16,422	Stephens & Ross	3,238
Royal Bank of Trinidad & Tobago	14,874	Agostini	1,475
Workers Bank	14,370	Bata	246
Cooperative Bank	2,241	Cannings	219
United Bank	1,200	Carib Development	759
Geddes Grant	1,098	National Brewing Co.	960
McEnearney Alston	3,342	Trinidad Publishing Co.	409
Neal and Massy	6,477	Valpark	355
Angostura	2,133	L.J. Williams	681
Berger Paints	1,069		
Metal Box	2,058		
Lever Bros.	2,978		

Source: J.Hospedales, "Some Comments on the Stock Market of Trinidad and Tobago", Central Bank of Trinidad and Tobago, *Quarterly Economic Bulletin* 9, 4, December 1984.

credit. In 1978, commercial bank credit comprised 28 per cent of total corporate financial liabilities and corporate shares only 19 per cent. A survey study of financing practices in 69 enterprises conducted by the central bank in 1984 [Farrell *et al,* 5] yields the preliminary result that only 3 per cent of external funds is derived from equity capital. The strong tendency against equity financing has at its root great reluctance to dilute family ownership and control. It is also explained by the desire to minimise the public availability of information about company operations, finance, and profitability. Disclosure requirements are less stringent for private limited liability companies than for public limited liability companies and for companies listed on the Stock Exchange. Share prospectuses also require quite detailed historical and current information about financial structure, management organization, and resource use. Drake [3] identifies as an additional reason "the small size and limited investment horizons of many local businesses" in less developed countries. Another supply side constraint is the ready availability of relatively cheap commercial bank credit to established firms. Commercial bank loan rates of interest are low and are frequently negative in real terms. Partly on tradition with respect to credit criteria and partly because of interlocking directorates, many enterprises are 'guaranteed' a ready supply of bank credit.

As a consequence of the pattern of corporate financing, new stock issues are made infrequently. There were only seven new issues between 1970 and 1980, and only four since 1981. Bonus issues account for most of the growth in shares. On the basis of O'Brien's [12] data, it is estimated that bonus issues comprised between 86 per cent and 100 per cent of annual stock issues between 1976 and 1980. This characteristic emphasises the absence of depth in the stock market.

Transactions costs are probably an important constraint on stock market development. No information is readily available on issue costs, but these are likely to be substantial. For secondary transactions, which must be conducted through brokers, the cost is 1.65 per cent of the value of transactions. This can turn out to be quite considerable in absolute terms and may well discourage share acquisition in terms of low rates of return.

STOCK PRICE VOLATILITY

It has been argued, for example, by Porter [13] that stock markets which lack breadth and depth will also exhibit considerable price volatility. Small movements in demand and supply in any one segment of the market will tend to generate substantial price movements in the market as a whole. Exaggerated price changes by conferring large capital losses can damage investor confidence and, thereby, retard market growth. An attempt was made to measure stock price variability, utilising weekly and monthly data for individual stocks. Mid-market quotations are the price variable. The 16 stocks examined affect 88 per cent of shareholders. Table 4.3 presents frequency distributions of the number of stocks for the coefficient of variation of stock prices. With weekly data for the 1981 to 1984 period, only two out of 16 stocks have coefficients of variation less than 10 per cent. Ten have coefficients of variation between 30 per cent and 49 per cent, and two are slightly above 50 per cent. Stock price variability, while somewhat less pronounced for monthly data, is, nonetheless, considerable. Six out of 13 stocks have coefficients of variation between 30 per cent

TABLE 4.3: FREQUENCY DISTRIBUTIONS OF COEFFICIENTS OF VARIATION OF STOCK PRICES 1981–1984

Coefficients of Variation (%)	Number of Firms	
	Monthly Data	Weekly Data
0- 9.9	0	0
10-19.9	1	2
20-29.9	5	2
30-39.9	3	7
40-49.9	3	3
50-100	0	2
100+	1	0
ALL	**13**	**16**

and 50 per cent, and one has a coefficient of variation equal to 100. It is further illuminating to consider the percentage changes in stock prices. For the weekly data, while mean percentage changes are less than unity (frequently negative), the standard deviations are small.

RISK-RETURN RELATIONSHIP

It is useful to examine the empirical relationship between risks and returns. Knowledge of the risk-return trade off provides some insight into the quality of investor decisions and into their attitudes towards risk. Strong investor demand for low return high risk stocks would imply either poor decision making on their part, or risk-loving attributes.

The risk-return configuration for corporate equity in Trinidad and Tobago is quite heterogeneous. Table 4.4 details mean values and standard deviations for 13 stocks based on monthly data for 1978-1984. The first two columns pertain to stock price levels. The degree of heterogeneity is striking. The next two sets of columns deal with returns rather than price levels. The rate of return on a stock is the sum of the dividend rate and the percentage capital gain or loss. Some monthly information on dividend rates are supplied by a stockbroking firm, but these data should be treated cautiously since they seem to be interpolations of reported quarterly dividend payments. When only the percentage change in stock prices are considered, six of the stocks have negative mean

TABLE 4.4 MEANS AND STANDARD DEVIATIONS OF STOCK PRICES PERCENT CHANGE IN STOCK PRICES, AND RETURNS: MONTHLY DATA (1978–1984)

Stock	Stock Prices		Percentage Change in Price		Returns	
(Firm)	Mean	S.D.	Mean	S.D.	Mean	S.D.
1	3.14	3.32	0.05	0.36	7.31	2.11
2	3.15	1.06	-0.01	0.13	4.15	1.87
3	5.80	2.61	.008	0.10	4.98	1.10
4	2.71	0.80	-0.012	0.09	5.09	2.62
5	8.62	3.00	-0.004	0.11	4.87	1.62
6	6.79	1.93	0.003	0.08	3.95	1.07
7	9.20	2.26	-0.001	0.06	4.53	1.34
8	10.65	4.27	0.009	0.07	5.47	1.36
9	3.06	1.38	0.001	0.09	3.60	1.24
10	5.99	2.71	0.01	0.09	6.41	1.26
11	4.20	1.18	-0.01	0.06	4.65	2.10
12	3.94	1.10	-0.01	0.07	4.80	2.32
13	4.75	0.90	0.003	0.08	5.69	0.90

returns. The other seven have small positive mean returns with slightly higher standard deviations. Dividend payments stabilise rates of return in addition to raising expected values. Mean returns are shown in Table 4.4 to be much larger and the standard deviations relatively smaller for the rate of return variable than for the capital gains (losses) variable.

Mean values of the monthly stock prices and the rate of return variable were regressed on the corresponding standard deviations to obtain estimates of the average trade off between returns and risk. The estimated equations presented below reveal a low trade-off. The mean values are in the order of 2.5 to 2.9 standard deviations. In each case the estimates are statistically significant at the 1 per cent level.

$$\text{Mean Stock Price} = \underset{(9.6)}{2.49}\ \text{S.D. Stock Price}\quad R^2 = 0.32 \qquad (1)$$

$$\text{Mean Rate of Return} = \underset{(9.7)}{2.86}\ \text{S.D. Rate of Return}\quad R^2 = 2.98 \qquad (2)$$

EFFECTS OF DIVIDENDS ON STOCK PRICES

Granted the weight of dividends in total returns, it is worthwhile to explicitly examine the influence of the dividend rate on bid prices (BID). Annual data for 1971 to 1982 were pooled for seven manufacturing firms and for three banks for two separate sets of regressions. For manufacturing firms, the explanatory variables are dividends per share (YIELD) and Price-Earnings Ratio (PER). The former measures the dividend payout rate and the latter reflects the influence of company profitability. The explanatory variables for commercial bank stock prices are dividends divided by paid-up share capital (DIVR) and the post tax profits divided by paid-up share capital (PROF). The results are set out in equation form below.

Manufacturing Firms

$$\underset{\quad(2.05)}{\text{BID} = 0.220\ \text{YIELD}} + \underset{(5.08}{0.261\ \text{PER}} + \underset{(5.62)}{5.745\ \text{D5}} + \underset{(2.37)}{2.438\ \text{D7}} \qquad (3)$$

$$R^2 = 0.5097 \quad F = 16.86 \quad \text{RHO} = 0.344$$

Banks

$$\underset{\quad(4.8)}{\text{BID} = 0.170\ \text{DIVR}} + \underset{(0.90}{0.044\ \text{PROF}} \qquad (4)$$

$$R^2 = 0.5052 \quad F = 14.78 \quad \text{RHO} = 0.437$$

The results for both explanatory variables are statistically significant at the 5 per cent level for manufacturing firms. The cross-section dummies for two firms were also statistically significant. For commercial banks only the dividend rate is statistically significant. These results show that investors in corporate securities are influenced by dividend considerations and (in the case of manufacturing equity) by profit performance.

STOCK MARKET EFFICIENCY

"Efficiency" has a special meaning in the context of capital markets. Fama [4] states that a market in which prices always "fully reflect" available information is called "efficient". This notion of "efficiency" is linked to the concept of "fair game". With a fair game, expected gains and losses are zero. If markets are efficient, no single investor has an intrinsic advantage to profit persistently. Securities prices at any point in time will fully reflect all available information.

The efficient market hypothesis has been tested by random walk models. The random walk hypothesis posits independence of successive changes in stock prices or returns, and the identical distribution of those changes. Granger [7] has argued that the random walk hypothesis is better tested in log random walk (LRW):

$$\ln P_t = \ln P_{t-1} + e_t + z(i) \qquad (5)$$

or in capital return random form (CRW):

$$C_{t,i} = \frac{Pt - Pt-1}{P_t} = r(i) + n_{t,i} \qquad (6)$$

where P is stock prices, t is time; z(i) is a constant mean of P over i time units; r is the normal expected value of C over i time units; and e and n are error terms. The models imply that lagged values are not a basis for estimating mean values of log price changes or capital returns.

Granger prefers the Capital Return Random Walk model because of its "intuitive appeal", its property of a systematic link between the variability of errors and price levels, and because the presence of the "normal expected return" is easier to explain from the general market philosophy than is the constant, Z.

The models were tested with weekly data for the November 1981 to December 1984 period. The regression models employed are:

$$\ln P_t = a + bP_{t-1} + e_t \qquad (7)$$

and

$$C_t = cC_{t-1} + n_t \qquad (8)$$

The results are presented in Tables 4.5 and 4.6. In the LRW model all the coefficients of the lagged stock price are statistically significant at the 5 per cent level. As can be seen, the values of b are close to unity for each stock. The LRW tests, thus, indicate that stock prices are serially dependent. The CRW results contained in Table 4.6 are not conclusive. Six of the 16 stocks exhibit serial dependence. For the others, the coefficients of the lagged percentage price change are not significantly different from zero at the 5 per cent level. On the whole, the LRW and the CRW tests lead to the conclusion that the Trinidad and Tobago market for corporate equity is not efficient.

Random walk tests are "weak form" tests in that the information set comprises historical prices only. "Semi-strong form" tests would require analysis

TABLE 4.5: REGRESSION RESULTS: LOG RANDOM WALK

Stock	Constant	One Period Lagged Dependent	R^2	DW
1	0.018	0.974	.953	2.06
2	-0.014	1.0064	.990	1.93
3	-0.008	1.006	.987	1.64
4	0.083	0.951	.934	1.99
5	-0.020	1.012	.989	1.79
6	0.084	0.959	.926	2.26
7	0.026	0.981	.967	1.89
8	0.040	0.974	.950	2.10
9	-0.014	1.004	.987	1.18
10	0.018	0.985	.979	2.20
11	-0.019	1.007	.991	1.55
12	-0.014	1.005	.993	1.56
13	-0.000	0.998	.987	1.74
14	0.003	0.995	.982	2.04
15	0.001	0.997	.984	1.47
16	0.045	0.967	.978	2.23

of stock price response to announcements on corporate financial performance and policies. "Strong form" tests involve the study of differential access to stock market information. The 'semi-strong' and 'strong' form tests could not be employed with the data available. In any case, if the efficiency hypothesis is rejected by weak form tests, it is unlikely to pass the semi-strong or strong form tests.

An alternative weak form test is the runs test. A run is defined as a sequence of stock price changes of like signs, i.e. positive, negative or zero. The test compares the actual number of runs with the number expected from a randomly distributed series of price changes. Denoting the total number of stock price changes by N, the number of price changes of each sign by n_i (where i = 1 for positive changes, = 2 for negative changes, and = 3 for ne change), one can define the expected number of runs by:

$$Re = [N(N+1) - \sum_{i=1}^{3} ni^2]/N$$

with standard deviation:

$$S.D. = \left(\frac{\sum_{i=1}^{3} ni^2 [\sum_{i=1}^{3} ni^2 + N(N+1)] - 2N \sum_{i=1}^{3} n_i^3 - N^3}{N^2 (N-1)} \right)^{1/2}$$

TABLE 4.6: REGRESSION RESULTS:
CAPITAL RETURN RANDOM WALK

Firm	One Period Lagged Dependent	R^2	DW
1	-0.045	0.002	1.99
2	0.078	-0.023	1.99
3	0.191*	0.030	2.01
4	-0.008	-0.002	1.99
5	0.154*	-0.008	2.02
6	-0.153*	0.023	2.01
7	0.053	-0.003	2.00
8	-0.059	0.001	2.00
9	0.424*	0.158	2.01
10	-0.102	0.009	1.98
11	0.251*	0.042	1.95
12	0.245*	0.038	2.05
13	0.136	0.010	1.99
14	-0.016	-0.008	2.00
15	0.266*	0.068	1.90
16	-0.086	-0.003	1.94

Note: * denotes statistical significance at the 5 per cent level.

The expected number of runs is calculated on assumption that successive price changes are independent and that sample proportions are good estimates of population proportions.

The runs test is conducted on the standardised normal variable.

$$K = (Ra - Re \pm \tfrac{1}{2}) / S.D.$$

Where Ra is the actual number of runs and ½ is the discontinuity adjustment factor (greater than 0 where Ra > Re, and less than 0 when Ra < Re). For a large N, K is approximately normal with zero mean and unit variance.

The results of the runs tests are presented in Table 4.7. In no case did the expected number of runs exceed the actual number of runs. The K statistic is significantly different from zero in all instances. Moreover, the percentage difference between the actual and expected number of runs is never less than 50 per cent. The runs test, therefore, provides strong evidence that stock price changes are not serially independent in the Trinidad and Tobago stock market, thereby reinforcing the findings of the random walk analyses. On the basis of these empirical results, one must conclude that "efficiency" or "fairness" is not evident in the Trinidad and Tobago stock market.[5]

Some commentators have pointed to several market imperfections which are likely to contribute to pricing inefficiency. An imperfection stressed by

Parris is the phenomenon of interlocking directorates.[6] As a consequence of this phenomenon, information flows are imperfect and the possibility of collusion becomes more real. Another market imperfection is that of insider trading. This danger was recognised at the inception of the Stock Exchange.

TABLE 4.7: ACTUAL AND EXPECTED NUMBER OF RUNS WEEKLY DATA 1981–1984

Stock	Ra	Re	K
1	93	155	-18.10
2	78	161	-28.85
3	77	161	-29.77
4	95	155	-17.08
5	86	158	-22.86
6	57	108	-35.27
7	90	152	-18.77
8	102	153	-13.56
9	92	156	-19.03
10	89	157	-21.07
11	98	154	-15.52
12	89	157	-20.83
13	84	159	-24.03
14	77	161	-29.52

EFFECTS OF INFLATION ON STOCK PRICES AND RETURNS

Several studies of stock price behaviour in the U.S.A. and Europe have investigated the influence of inflation on stock prices. The starting point for such studies is Irving Fisher's hypothesis that in an efficient stock market the expected real rate of return on common stocks and the expected inflation rate vary independently. As a corollary, it can be posited that nominal rates of return vary systematically with the expected inflation rate. The absence of a systematic relationship between stock price changes and the expected rate of inflation may, thus, be taken as indirect evidence that the stock market is not efficient.

The model employed in this study is:

$$R_t = a + bI_t + e_t$$

where

R_t is the nominal rate of return (defined either by the one period percentage change in stock prices or by the dividend rate plus the one period change in stock prices); I is the contemporaneous rate of inflation as a proxy for the expected rate of inflation (and is measured by the one period percentage change in the consumer price index), and e is a stochastic disturbance. Monthly data were utilised for 13 firms over the 1978 to 1984 period.

The results conclusively show that the contemporaneous rate of inflation has no effect on monthly changes in stock prices or on the rate of return properly defined. Only for one stock is the coefficient of the inflation variable significantly different from zero at the 5 per cent significance level.

CONCLUSIONS

This study of the Trinidad and Tobago stock market with emphasis on its behaviour subsequent to the establishment of a stock exchange in 1981 points to several weaknesses still prevailing in the capital markets of the country. The stock market is narrow and thin if these characteristics are measured by the volume of transactions, the number of market participants and the degree of price volatility. Moreover, the market is not efficient in the sense of offering equal prospect of gain to all market participants. Although this study has not analysed the reasons for the non-random behaviour of stock prices and for the absence of inflation effects on stock prices and rates of return, it may be that interlocking directorates, insider trading and collusion generate non-uniform flows of information to market participants. In such situations, the stock market will not be efficient.

In April 1983, the then Governor of the Central Bank of Trinidad and Tobago was reported as saying:

> Today we have a stock exchange which we feel is well established along very sound lines and one which is expected to strengthen the existing machinery in which trading takes place through the introduction of measures relating to the protection of investors' valuation of shares.

The analyses in this essay lead to a less sanguine conclusion.

NOTES

[1]This essay is a revised version of a paper presented at the 17th Annual Conference of the Regional Programme of Monetary Studies in Nassau, November 1985. The comments of participants have been very helpful.

[2]For a critical review of studies of securities markets in less developed countries, see P.J. Drake, "Securities Markets in Less Developed Countries", *Journal of Development Studies* 13, 2, 1977, pp. 73-91. Other useful accounts can be found in Edward A. Arowolo, "The Development of Capital Markets in Africa with Particular Reference to Kenya and Nigeria", *International Monetary Fund Staff Paper*, 18, 1971.

[3]Eric St. Cyr sharpened my appreciation of this point.

[4]Drake (1977) is sceptical about the strengths of demand side constraints other than investors' lack of confidence.

[5]Two recent studies of the Kuwaiti and Hong Kong stock markets by Gandhi *et. al.* [6] and Wong and Kwong [15] conclude similarly. A quite exhaustive study by Cooper [2] of stock prices in 36 stock markets including 12 less developed countries failed to detect serial independence whether one employed serial correlation analysis, runs tests, or spectral analysis. A serial correlation study of Jamaican daily stock prices for 39 stocks for the July 1969 to December 1972 period was conducted by the National Savings Committee (National Savings Committee, 1975). The results reveal a high degree of serial dependence in all the stock price data.

[6]There is certainly considerable evidence of overlapping directors. In 1984, 22 of 31 listed companies had interlocking directors.

REFERENCES

[1] AROWOLO, Edward A., "The Development of Capital Markets in Africa, with particular reference to Kenya and Nigeria", *International Monetary Fund Staff Paper,* 18, 1971.

[2] COOPER, J.C.B., "World Stock Markets: Some Random Walk Tests", *Applied Economics,* 14, 5, 1982.

[3] DRAKE, P.J., "Securities Markets in Less Developed Countries", *Journal of Development Studies,* 13, 2, 1977.

[4] FAMA, Eugene, "Efficient Capital Markets: A Review of Theory and Empirical Work", *Journal of Finance* 25, 2, 1970.

[5] FARRELL, Terrence W., Annette NAJJAR, and Hazel MARCELLE, "Corporate Finnncing and Use of Bank Credit in Trinidad and Tobago", Unpublished, Central Bank of Trinidad and Tobago, June 1985.

[6] GANDHI, Devinder K., Anthony SAUNDERS and Richard S. WOODWARD, "The Capital Markets: A Case Study of the Kuwaiti Stock Market", *Applied Economics,* 12, 2, 1980.

[7] GRANGER, Clive W.J., "A Survey of Empirical Studies of Capital Markets", pp. 3-36 in Edwin J. Elton and Martin J. Gruber (eds.), International Capital Markets (Amsterdam: North-Holland Publishing Co., 1977.

[8] GULTEKIN, N. Buleo, "Stock Market Returns and Inflation: Evidence From Other Countries", *Journal of Finance,* 38, 1, March 1983.

[9] HOSPEDALES, Jerry, "Some Comments on the Stock Market of Trinidad and Tobago", Central Bank of Trinidad and Tobago, *Quarterly Economic Bulletin,* 9, 4, December 1984.

[10] LONG, Millard and Frank VENEROSO, "Economic Benefits of Securities Markets", First International Conference on the Financial Development of Latin America and the Caribbean, La Guaira, Venezuela, February 1979.

[11] NATIONAL SAVINGS COMMITTEE, "The Jamaica Stock Market, 1970-1972", *Working Paper No. 13*, Jamaica.

[12] O'BRIEN, Hamid, "The Development of the Securities Market in Trinidad and Tobago", Unpublished M.Sc. thesis, University of the West Indies, 1982.

[13] PORTER, R.C., "Narrow Security Markets and Monetary Policy: Lessons From Pakistan", *Economic Development and Cultural Change*, 14, 1965.

[14] WILLIAMS, Eric, Speech at Formal Opening of Tunapuna Branch of National Insurance Board, May 1977.

[15] WONG, K.A. and K.S. KWONG, "The Behaviour of Hong Kong Stock Prices", *Applied Economics*, 16, 1984.

POTENTIALS AND PITFALLS OF RAPID FINANCIAL INNOVATION IN LESS DEVELOPED COUNTRIES: THE CASE OF TRINIDAD AND TOBAGO FINANCE COMPANIES

V

Compton Bourne

INTRODUCTION

Less developed countries (LDCs) typically have narrow financial structures. Impressed by the extensively documented association between financial development and economic development,[1] many of them have consciously sought to foster and encourage the development of their financial sectors. Their efforts have centred mainly on one aspect of financial development, that is, the expansion of the range of financial instruments and financial institutions.[2] Often, the emphasis is on the creation of government owned financial institutions directed towards specialised, long term credit markets.[3]

New financial instruments and institutions are the predominant form of financial innovation in less developed countries. Innovations in financial production techniques stemming from technical advances, e.g. electronic information systems, although widespread in European and U.S. financial systems, are rare in the banking systems of developing countries. For innovations centred around new instruments and institutions, the essence of the innovations is the introduction of new financial products and changes in the production organization of the financial services industry.

Financial innovations improve the efficiency of financial intermediation to the extent that they increase the acceptability of financial instruments, lower the costs of financial transactions, and expand the flow of financial services. In contrast, financial innovations impair the financial system and vitiate its developmental role if they weaken public confidence in financial institutions and raise the costs of financial transactions. Thus, financial innovation has the potential for being either beneficial or harmful. When there is rapid financial innovation, there is a strong possibility of considerable risk to the financial system in the absence of an effective supervisory and regulatory framework.

This essay analyses finance companies as a recent institutional innovation in Trinidad and Tobago in order to clarify some of the potentials and pitfalls of unstructured financial innovation within the context of narrow economic and financial structures.[4] This case is particularly useful since Trinidad and Tobago, unlike many less developed countries, is well endowed with highly trained human resources, has a reasonably efficient communication system, and is closely integrated with the financial systems of Euro-America. These attributes or organizational and infrastructural strength can be expected to enhance the gains and minimise the losses from financial innovation. The existence of serious problems in this rather more favourable environment would suggest grave limitations to unstructured financial innovation in many less developed countries.

The essay will first establish the narrowness of the economic and financial structure as a backdrop to the documentation of the growth of finance companies. Next, the emergence and operations of finance companies are analyzed

within the context of financial innovation theory. In those sections, the beneficial aspects of financial innovation are stressed. Later, sections of the essay assess asset portfolio quality and the danger of financial ruin or bankruptcy as particular manifestations of some pitfalls of unstructured financial innovation. Some implications with respect to regulatory supervision and the lender of last resort function are discussed in the final section.

NARROWNESS OF THE ECONOMIC AND FINANCIAL STRUCTURES

Trinidad and Tobago is a middle income oil exporting developing economy with gross domestic product in 1980 prices of U.S.$2,786 million or $2,611 per capita. Between 1970 and 1980, the annual growth rate of real GDP averaged 4.8 per cent. The production structure is quite narrow. The four largest sectors in a ten-sector classification of constant price gross domestic product accounted for 63 per cent of gross domestic product in 1970 and 60 per cent in 1980. The narrowness persisted, despite substantial shifts in the shares of specific sectors. In 1970, the four largest sectors were Mining (21 per cent), Distribution (19 per cent), Transportation and Communication (14 per cent), and Manufacturing (9 per cent). In 1980, Transportation and Communication emerged as the largest sector (20 per cent), followed by Distribution (16 per cent), Mining (13 per cent), and Financial Services (11 per cent).

The financial structure is also narrow, despite the tremendous growth in the financial system between 1970 and 1982. Over that period, the current price value of total financial assets in the financial system increased from TT $1,087 million to TT $19,314 million, with most of the growth taking place after 1973 (the year of the first oil shock).[5] In 1970, six expatriate banks which comprised the commercial banking industry held 41 per cent of total assets within the financial system. Non-bank financial intermediaries (numbering no more than 30) accounted for a further 46 per cent, and the central bank for 13 per cent. By the end of 1982, the commercial banking industry, which then consisted of eight banks (of which two were indigenous) held 44 per cent of total assets within the financial sector. The central bank's share accelerated to 41 per cent, mainly as a result of foreign exchange accruals from balance of payments surpluses. The number of non-bank financial intermediaries increased to 48. Nonetheless, their share of total assets declined to 15 per cent.[6] Evidently, a few types of institutions predominate in the financial system of Trinidad and Tobago. A narrow range of financial instruments is also predominant. Bank loans and deposits are the main financial instruments, with corporate securities and government securities being relatively insignificant.[7]

GROWTH OF FINANCE COMPANIES

Generically, finance companies are non-bank financial intermediaries. They incur deposit liabilities which they transform into earning assets. Unlike commercial banks, they do not provide chequing facilities. They tend to be relatively specialised lenders, typically not providing the extensive range of non-credit services offered by commercial banks, but also performing some functions not usually performed by commercial banks. Thus, for instance, finance companies offer lease/rental services; commercial banks do not. Finance companies do not perform foreign exchange payment functions, trustee functions, nor con-

tractual payment functions on behalf of customers; commercial banks do. In Trinidad and Tobago, finance companies are limited liability companies (private and public).[8]

Finance companies are a relatively new type of financial intermediary in Trinidad and Tobago. At the end of 1983, there were 14 companies in operation, most of which were established during the second half of the 1970s. Measured in terms of their share of total financial assets, finance companies are not of major quantitative significance. However, the nature of their credit activities and their fragility gives them a qualitative importance far greater than their relative asset size.

Finance companies, having made their appearance in Trinidad and Tobago towards the end of the 1960s, grew moderately between 1970 and 1974. Total assets increased from TT $17 million to TT $22 million (Table 5.1, Column 1). This growth depended initially on loans from other financial institutions. Deposit liabilities averaged only 45 per cent of total liabilities between 1970 and 1973. Net balances due to local banks and other financial institutions comprised the remainder.

The industry expanded rapidly after 1974. Total assets increased at an average annual rate of 40 per cent from TT $72 million in 1975 to TT $1,058 million in 1978 (Table 1, Column 1). Deposit mobilization was particularly successful. Deposit liabilities increased by a multiple of 18 within the 14-year period, amounting to TT $980 million at the end of 1983 (Table 5.1 Column 2).

TABLE 5.1: TOTAL ASSETS AND DEPOSIT LIABILITIES OF FINANCE COMPANIES : 1970–1983
(TT $m)

End of Period	Total Assets at Current Prices	Total Deposits at Current Prices
1970	17	8
1971	17	7
1972	26	11
1973	26	13
1974	22	21
1975	72	54
1976	100	83
1977	143	118
1978	249	191
1979	285	226
1980	413	321
1981	576	512
1982	905	801
1983	1058	980

Source: Central Bank of Trinidad and Tobago, *Annual Reports.*

As a consequence of this rapid deposit growth, finance companies ceased to rely on other financial institutions for loanable funds. Instead, their liabilities were almost exclusively deposit liabilities. There was a counterpart growth in credit extended by finance companies.

DEPOSIT MOBILIZATION

The household sector is the largest source of deposit balances. Their share of deposit liabilities averaged 73 per cent between 1970 and 1974, and then having fallen to an average of 49 per cent during the next two years, recovered to average 61 per cent between 1977 and 1983. The next main deposit source is the corporate sector whose percentage share has been much less stable than that of the household sector. In 1970, the corporate sector accounted for 35 per cent of the deposit liabilities of finance companies. The share decreased to an average of 23 per cent between 1971 and 1974. It then rose sharply in 1975, averaging 44 per cent between 1976 and 1978. Subsequently, there was a sharp reduction in the percentage share of the corporate sector to 22 per cent in 1979, 27 per cent in 1980, and 12 per cent in 1983. The public sector having held as much as 12 per cent of the deposit liabilities in 1979 became a negligible deposit source thereafter. Other private financial institutions supplied an average 7 per cent of deposits. A miscellany of other depositors provided a further 10 per cent between 1980 and 1983.

Success in deposit mobilization was not due to any innovation in the form of new savings instruments. Finance companies offered time deposit instruments, but this type of savings asset had been introduced by the commercial banks during the mid-1960s. The growth of deposit liabilities is explained more in terms of the unprecedented massive growth in national income which raised personal wealth and increased interest income consciousness. Finance companies engaged in vigorous interest rate competition against the commercial banks and the other non-bank financial intermediaries. *The Financial Institutions (Non-Banking) Act* which governs the operations of finance companies prohibits them from accepting deposits with maturity less than one year. Therefore, the relevant interest rate comparison is between their one-year deposit rate of interest and the commercial bank one-year time deposit rate of interest. These details are contained in Table 5.2. By comparison of Columns (1) and (2), it is readily seen that finance companies offered rates of interest that were considerably above those on commercial bank deposits. In 1979, the interest rate differential was approximately 1.6 index points; by the end of 1983, it had widened to almost 3 index points.

The relative importance of finance companies in the private financial system increased as a consequence of their deposit growth. In 1973, finance companies accounted for less than 2 per cent of deposit liabilities and 5 per cent of credit in the private financial system. By the end of 1983, their shares had risen to 11 per cent and 13 per cent respectively (Table 5.3, Columns (1) and (3). Moreover, finance companies became the major force in the non-bank financial intermediaries sub-sector. Their share of deposit liabilities among non-bank financial intermediaries increased from 27 per cent in 1975 to 47 per cent in 1982, and their share of credit from 28 per cent to 48 per cent (Table 5.3,

TABLE 5.2: NOMINAL DEPOSIT RATES OF INTEREST: COMMERCIAL BANKS AND FINANCE COMPANIES

End of Period	Commercial Bank 1-Year Time Deposit Rate (%)			Finance Companies 1-Year Time Deposit Rate (%)		
	Min.	Max.	Median	Min.	Max.	Median
1979	5.0	9.0	7.88	5.00	10.50	9.50
1980	7.0	9.25	7.88	7.00	15.00	10.50
1981	7.5	10.00	8.25	9.00	15.00	10.50
1982	8.0	10.00	8.50	9.00	16.00	12.75
1983	8.0	10.00	9.25	10.00	16.00	13.88

Source: Central Bank of Trinidad and Tobago, *Annual Reports.*

Columns 2 and 4). The increased relative size of finance companies guaranteed that their deposit and credit transactions would have, at least, a modest influence on those kinds of transactions within the financial sector as a whole and particularly within the non-banking sub-sector. As discussed later, the growth of finance companies also caused quality changes within the financial services industry.

TABLE 5.3: RELATIVE DEPOSIT AND CREDIT SIZE OF FINANCE COMPANIES: 1973–1983

End of Period	Deposit Share (%) Among		Credit Share (%) Among	
	Priv. Fin. Insts.	Non-Banks	Priv. Fin. Instns.	Non-Banks
1973	1.6	-	5.1	-
1974	1.9	-	4.1	-
1975	3.8	27.4	5.4	28.2
1976	4.4	33.1	6.5	33.9
1977	5.0	34.3	7.4	38.2
1978	6.2	35.6	9.6	44.3
1979	5.6	36.6	9.0	40.5
1980	6.9	36.5	9.7	40.6
1981	8.6	41.9	10.5	40.7
1982	10.0	47.2	12.3	48.4
1983	10.7	44.5	12.7	46.0

Source: Computed on basis of data in Central Bank of Trinidad and Tobago Annual Report, and Republic of Trinidad and Tobago, *Review of the Economy* (annual).

FINANCE COMPANIES IN THE CONTEXT OF INNOVATION THEORY

Financial innovation may be defined as the introduction of a new financial product or a new technique of production in the financial services industry. This definition is Schumpeterian. Dealing with the case of commodity production, Schumpeter [16, p. 66] defines innovative activity in terms of the introduction of a new good, or a new method of production, the opening of a new market, the control of a new source of production inputs, and the adoption of a new organisational form or structure.

Examples of product innovation within the financial services industry are the introduction of negotiable certificates of deposits and financial futures. In the context of developing economies, term lending and rental/lease activities qualify as innovations because they are services not previously offered by traditional formal financial institutions. Examples of production technique innovation are computerized banking and automatic teller machines.

Financial innovations in developing countries tend to be imitative and adaptive. Innovatons are transferred, sometimes after modification, from developed countries usually with considerable time lags. Whether imitative or genuinely creative, financial product innovation extends the range and may improve the quality of financial services available to transactors in less developed countries. Innovations in financial production technique may improve the efficiency of production by lowering unit costs of production.

The stimuli to financial innovation are quite varied. Fundamentally, however, innovations are caused by economic incentives. Kane [9] identifies regulatory constraints as the stimuli for technological innovation in the U.S. banking industry. Financial firms innovate to minimise costs imposed by regulatory constraints. Silber [17] advances the more general hypothesis that financial innovations in the form of new instruments or practices are intended to lessen financial constraints imposed on firms. Constraints may be internal, e.g. insufficient retained earnings relative to desired investment outlays, or external, e.g. credit ceilings and legal reserve requirements. Within Silber's theoretical framework, "the stimulus to innovation can be interpreted as an increase in the costs of adhering to existing constraints" [18, p. 90]. Financial innovation may also be stimulated by identifiable profit opportunities resulting from commodity gaps in the financial services industry. In other words, financial firms may innovate in response to unfulfilled demands for some kinds of financial services.

Two types of stimuli can be identified in the case of Trinidad and Tobago finance companies. One is the profit opportunity associated with unfulfilled demands for consumer loans and long term credit. These credit instruments are perceived by the large commercial banks which predominate in formal credit markets as riskier, though higher yielding, than short term self-liquidating loans, especially to the commercial sector. Theoretically, large oligopolistic banks may be expected to trade off higher expected profits against less uncertainty. That is, "a significant portion of potential profits latent in a firm's position of market power is taken in the form of avoiding uncertainty. . ." [Edwards and Heggestaad, 5]. This theoretical proposition seems valid for Trinidad and Tobago until a few years after the emergence of finance companies. The risk avoidance

behaviour of the banks resulted in specific financial services gaps which finance companies were created to fill. As evidenced in the next section of this essay, their credit activities were concentrated in the long term end of the market and in consumer credit.

The commercial banks did not remain passive. Bank portfolio behaviour altered to include significant lending to previously neglected areas. Personal loans increased from average 32 per cent of total loans between 1970 and 1974 to average 43 per cent between 1975 and 1978. Mortgage loans which were only 1 per cent of total bank assets in 1971 averaged almost 3 per cent between 1973 and 1979 and were as much as 5 per cent in 1983. This change in lending behaviour was prompted by the competitive challenge and the demonstration of profitability presented by the innovative behaviour of the finance companies. Another reason was the unprecedented build-up in excess liquidity between 1974 and 1977.[9] The growth in surplus credit capacity pressured bank profitability and forced a liberalisation of credit standards.

Towards the end of the 1970s, the commercial bank's response had extended to their own establishment of finance companies independently or in partnership with other firms in the financial and non-financial sectors.[10]

The second kind of stimuli to finance companies *qua* financial innovation may best be described under the rubric of "captive finance subsidiary". Roberts and Viscione [15] define a captive finance subsidiary as "a wholly-owned subsidiary, established most frequently by manufacturing or retailing firms, to provide wholesale financing for dealers and distributors of the parent firm's products and/or to purchase instalment receivables created by retail sales of the parent's products". In Trinidad and Tobago, finance companies have been established not only by manufacturing enterprises, but also by enterprises whose primary activities are in the commerce and construction sectors. Another point of difference is that ownership is frequently shares among several enterprises. A profile of ownership is provided in Table 5.4

Captive finance companies have been established in Trinidad and Tobago to perform one or more well defined functions: to mobilise funds for the parent or affiliated companies; to finance the credit sale transactions of the parent or affiliated companies; and to shift credit risks from the parent or affiliates to the finance company, thereby insulating the former and improving their credit standing.[11] With the first and second of these functions, the financial soundness of the finance company is dependent on the financial health of the parent or affiliates. With the third function, bankruptcy of the finance company does not imperil the parent but the affiliate.

In terms of innovation theory, the importance of those functions is that they constitute a means of relaxing financial constraints imposed on the parent or affiliate. With respect to the first function, loan capital (in the form of rechannelled deposits) is obtained without the financial scrutiny usually associated with arms length financial transactions between a financial intermediary and its credit customer. By utilising the device of captive finance companies, enterprises are able to obtain greater external funding than may be warranted by their financial performance and than would be provided by independent financial intermediaries. The second function ensures that liquidity constraints

TABLE 5.4: OWNERSHIP PROFILE OF FINANCE COMPANIES IN 1982

Finance Company	Total Asset $m	Primary Activities of Major Shareholders
A	19.2	Commercial Banking
B	49.2	Commercial Banking, Commercial Manufacturing
C	205.6	Manufacturing, Commerce, Commercial Banking
D	198.7	Commercial Banking
E		Commercial Banking
F	164.7	Commerce, Construction, Insurance
G	9.1	Manufacturing, Commerce
H	12.1*	Life and General Insurance
I	292.9**	Commerce, Printing
J		Manufacturing, Commerce, Real Estate, Tourism
K		Manufacturing, Commerce
L	41.4	Construction

Notes: *June 1981
**April 1983

on the ability of the parent or affiliate to grant trade credit do not hinder the growth of sales. The captive finance company provides the supply of credit complementary to commodity sales. The third function, by reducing asset risks for the parent (or affiliate), enhances its ability to obtain loan and equity capital.

Two potentially beneficial aspects of the operations of finance companies can be enumerated at this stage. One pertains to the broadening of the financial structure in terms of longer maturities, the incorporation of previously excluded financial transactors into the formal financial sector, and the introduction of a new array of non-financial services. Insofar as these activities improve the efficiency of financial intermediation, finance companies as financial innovators may be beneficial. The other potentially beneficial aspect stems from the relaxation of the external finance constraint on the investment and production performance of non-financial corporations. Relaxation of these constraints may, in

some situations, improve the quantity and the quality of aggregate investment and thereby contribute to economic growth. As demonstrated by Gurley and Shaw [8], Spellman [21], and others, financial intermediation may achieve a more efficient global (i.e. economy wide) allocation of capital to the extent that it reallocates investible resources from enterprises with surplus capital but low rate of return investment opportunities to those enterprises characterised by capital deficiency and high economic rates of return.

ASSET PORTFOLIO COMPOSITION AND QUALITY

Accrual of the potential benefits identified in the previous section depends critically upon the quality of finance companies' asset-portfolios. Poor quality assets imply inefficient financial intermediation and vitiate their ability to either offer an improved menu of financial services or to relieve external financial constraints on non-financial enterprises.

LIQUIDITY AND CREDIT

On an industry basis, practically all financial resources mobilised by finance companies are transformed into private sector credit. In 1982 and 1983, private sector credit averaged 96 per cent of their total assets. Liquid assets, the only other component, were a negligible proportion.

Because consolidated industry statistics conceal a great deal of inter-firm differences, it is useful to examine firm-level liquidity data. These are presented in Table 5.5. It can be seen that several firms maintain extraordinary low ratios of liquid assets to total assets. Almost all of their resources are tied up in credit to customers. The firms in precarious liquidity situations tend to be those not associated with commercial banks.

Another revealing way of analysing the asset structure of finance companies is in relation to solvency requirements. Statutorily, finance companies are required to observe certain norms with respect to their assets and liabilities. Until March 1983, they were required by a law enacted in 1979 to maintain liquid assets no less than 3 per cent of total deposit liabilities. Subsequently, the minimum requirement was raised to 5 per cent. This legal stipulation is intended to ensure adequate liquidity for meeting normal currency demands of depositors. In actuality, some finance companies breached the requirement while others operated with liquidity considerably in excess of the legal requirement. Table 5.5 shows the data for selected firms. Because liquid assets provide an important line of defence against deposit runs, the extremely low liquid ratios exhibited in Trinidad and Tobago connotes financial fragility among several finance companies.

This fragility is underscored by low capitalization. If capital is adequate, it can be drawn upon to supplement liquid assets in situations of abnormal deposit withdrawals. In terms of the statutory regulations, the minimum capital requirement is that paid up capital and reserve funds be not less than 5 per cent of total deposit liabilities. Several of the finance companies operate very close to this statutory minimum, as can be seen from Table 5.5. Similar to the liquidity situation, finance companies affiliated to commercial banks are those which maintain conservative ratios of capital to deposits. Other indicators of capital

adequacy tell much the same story. For instance, the ratio of gross capital to risk assets is about 6 per cent to 7 per cent for non-affiliates of commercial banks and 20 per cent to 27 per cent for bank affiliates.

TABLE 5.5: LIQUIDITY AND CAPITAL ADEQUACY RATIOS: SELECTED YEARS

Firm and Years	Liquidity as % of: Total Assets	Deposits	Capital & Reserves as % of: Deposits	Risk Assets
A				
1981	17	20	14	20
1982	26	33	17	27
B				
1981	29	34	17	5
1982	36	4	23	8
C				
1981	3	3	8	5
1982	3	3	8	6
1983	4	5	9	8
1984	6	7	9	9
D				
1981	10	10	6	5
1982	22	24	8	3
1983	16	18	8	8
1984	9	10	8	8
E				
1981	1	1	5	4
1982	5	5	5	5
F				
1981	2	3	5	8
1982	2	3	5	6
G				
1982	4	4	9	9
1983	8	9	6	6
H				
1981	12	16	16	8

Note: Reporting dates are not uniform for each company.

Source: Published Financial Statements of Finance Companies.

Several empirical U.S. studies, e.g. Korobow, Stuhr and Martin [11], Sinkey [19] have confirmed the importance of liquidity and capital adequacy for the viability of financial intermediaries, particularly their ability to withstand deposit runs and asset portfolio losses. Postponing temporarily the matter of asset losses, the facts of minimal liquidity ratios and capital adequacy ratios in a context of a primarily long term asset portfolio prompt considerable misgivings about the quality of financial management.

RISK ASSETS

The main category of earning assets is loans and advances. These comprise between 75 per cent and 83 per cent of earning assets for the major finance companies in 1982. Previously, the proportion was close to 100 per cent. The remaining earning assets are physical capital and equipment leased to customers and equity investment in other companies.

A breakdown of loan accounts receivable is provided on a consolidated industry for 1981 and 1983. This information presented in Table 5.6 helps to identify the major sectoral categories of debtors. The largest recipients of credit are the construction sector, the personal sector, distributive trades, and the transportation, storage and communication sectors combined. Credit to the manufacturing sector comprises 10 per cent. Agriculture hardly has any significance, accounting for less than 2 per cent of total loans. Credit to the business sector as a whole averaged 75 per cent of total loans between 1981 and 1983.

The data in Table 5.6 excludes real estate mortgages. Data from the national Flow of Funds accounts published by the official Central Statistical Office revealed that mortgage loans to the corporate sector were roughly equal in value to loans to the personal sector until 1975 when the ratio shifted to 1:2. However, if the latter proportions persisted beyond 1978 (the last year of the

TABLE 5.6: SECTORAL PERCENTAGE COMPOSITION OF ACCOUNTS RECEIVABLES AT DECEMBER 31

Sector	1981	1982	1983
Mining and Quarrying	5	3	3
Manufacturing	11	10	11
Distributive Trades	18	15	17
Transportation, Storage and Communication	16	19	15
Agriculture	1	2	1
Construction	27	30	26
Personal	17	17	22
Other	5	4	6
All	**100**	**100**	**100**

Source: Central Bank of Trinidad and Tobago, *Quarterly Economic Bulletin* 9, 3, September, 1984.

Flow of Funds data), the corporate sector's share of all forms of credit would have to be revised only slightly since real estate mortgage loans constituted 9 per cent of total private sector credit in 1981 and slighltly less than 2 per cent in 1982 and 1983.

The configuration of risk assets contains incipient dangers to the solvency of some finance companies. Solvency problems arise when net worth tends towards zero. Because finance companies are heavily leveraged, slight reductions in capital values of earning assets will have pronounced effects on net worth. There are strong indications that credit operations engender substantial capital risk. Incipient solvency problems are, therefore, not to be taken lightly.

One indication is the concentration of assets in cyclically sensitive sectors such as the construction sector and the household sector. Their repayment capacity is seriously eroded during economic downswings. Furthermore, realisable value of collateral tends to decline. Because as much as 48 per cent of the earning asset portfolio is allocated to the personal and construction sectors, the overall asset portfolio is structurally weak. Some of these difficulties have been revealed by the experience of Southern Finance Company which suspended credit operations in 1983. The management of the company attributed its loan delinquency problems to the loss of employment by household debtors and to the depression in the construction industry.

Another indication is some finance companies' acute concentration on a few activities and enterprises. In 1981, finance companies associated with manufacturing and distribution conglomerates allocated between 30 per cent and 90 per cent of their loan funds to affiliates. This behavioural pattern is linked with the practice of portfolios undiversified either with respect to number of transactors or range of transactions. For example, in 1983 one finance company devoted all its equity investment to one (related) firm and lent 40 per cent of its credit portfolio to the construction industry. Another finance company's credit to group debtors comprised 29 per cent of its risk assets in 1982 and 1983, and 31 per cent in 1984.

The collapse of International Trust Ltd. (ITL) (a large finance company) in 1983 and subsequent testimony at the judicial liquidation proceedings reveal starkly financial mismanagement associated with some finance companies. The Chairman of ITL conceded in testimony that he was, himself, a substantial owner of equity in four major corporate credit recipients. Furthermore, these credit customers had little realisable collateral. ITL experienced serious loan delinquency. In 1982, doubtful and bad debts were 32 per cent of total loan balances.[12]

The excessive concentration of credit portfolios is partly the outcome of the "captive finance" nature of several finance companies. The portfolio weaknesses associated with "captive finance" are, thus, properly treated as a cost of this particular kind of financial innovation.

The problems identified do not apply to all finance companies. Those finance companies affiliated with commercial banks or with long established and financially strong manufacturing and commercial enterprises have tended to manage their risk assets prudently. They also have access to the financial resources of their affiliates.

It can be argued that finance companies pursued high risk-high return policies. Profitability measured by post-tax income as a percent of shareholder equity ranged between 20 per cent and 40 per cent for the leading companies during the 1980 to 1982 period. Such a view has to be tempered, however, by the observation that commercial banks experienced equally high profitability.

The material presented in this section of the study leads to the conclusion that credit operations of finance companies contain several important pitfalls. For most of its operational life, the finance company industry has been unregulated. The basic law governing their liability and asset portfolio operations, i.e. the *Financial Institutions (Non-Banking) Act* was not legislated until 1979, almost 10 years subsequent to the establishment of the industry. By the time the law was enacted, many finance companies were already mismanaged. In this respect, it can be argued that the portfolio weaknesses analysed are evidence of some pitfalls of unregulated financial innovation.

LENDER OF LAST RESORT AND REGULATORY IMPLICATIONS

Two finance companies have had their operations suspended. Two others had recourse to central bank credit in 1984. These developments have grave implications for the financial system. The publicised difficulties of the "problem" finance companies have weakened depositor confidence. On several occasions, depositors have sued for repayment of matured deposits. Deposits at finance companies declined by 8 per cent between September 1983 and September 1984, in comparison with slow growth for other non-bank financial institutions. It was contended earlier that not all finance companies are weak and endangered. Thus, not all depositors need fear, if only the information were available. However, because depositors are not generally well informed about the financial situation of finance companies, the risk of contagion is real. It is this risk which provides the case for lender of last resort activities.

Solow [20] maintains that "a confidence worthy and confidence inspiring monetary-financial system is a public good" [p. 241]. The function of the lender of last resort is to prevent "the monetary-financial system from being forced into undesirable deflationary pressure by epidemic loss of confidence in its soundness" [p. 247]. It can do so by "visibly providing ample credit to keep the weaker links ... (of the system) ..... from giving way" [p. 238]. The Central Bank of Trinidad and Tobago certainly acted to avert an epidemic crisis of confidence. In April, 1984 it established a $50 million liquidity support facility. Credit resources were also made available from reserve accounts and from the Bank's own reserves. Within the six months cumulative assistance amounted to $57 million.

These lender of last resort facilities are subject to a few limitations. One such limitation is the tendency of lender of last resort facilities to create problems of moral hazard. By "moral hazard" is meant the consequential increase in the probability of the event being insured against. In other words, financial institutions, encouraged by the existence of a lender of last resort, may assume greater portfolio risks. Limits and conditions of access must, therefore, be attached to credit from the facility.

Another important consideration is the need to couple lender of last resort functions with effective regulation and supervision. Although, the *Financial*

Institutions (Non-Bank) Act does set legal norms for observance by finance companies, these have been evaded by several firms. Without effective supervision, portfolio weaknesses will be undetected. Demands on the lender of last resort funds may prove excessive. The lender of last resort may then find itself in the morally indefensible position of encouraging over-exposure at public expense. Effective supervision in the context of Trinidad and Tobago requires not only well-functioning financial and economic information systems, but most important, a system of company law that permits legal sanctions against management to supplement the traditional central banking powers of suspension of business.

CONCLUSIONS

This study of finance companies in Trinidad and Tobago analysed their growth and operations within the framework of the theory of financial innovation. It was shown that as financial innovators, finance companies can confer several important benefits in the financial sector of developing countries. In these countries, where the private financial sector is dominated by commercial banks, typically of expatriate origin, portfolio policies and interest rate policies tend to be very conservative. Credit policies are biased towards short term, self-liquidating commercial loans, and deposit rates of interest are low. The banks trade off greater rates of return for lower risks. As a consequence, there is a void for long term credit and for credit to emergent sectors and enterprises. Finance companies, directly and indirectly, contribute towards filling that void. Their own credit flows as well as the competitive pressure exerted on the commercial banks have resulted in a lengthening of the maturity structure of credit and in expanded access by potential borrowers, previously excluded from the formal financial market.

Several dangers are associated with finance companies. Largely because of the close ownership affiliation with enterprises whose primary activities are in other fields, some asset portfolios are excessively concentrated and have tended not to take sufficient cognisance of sound loan practices. Furthermore, capital adequacy ratios and liquidity ratios are dangerously low.

The asset portfolio weaknesses arose in the absence of effective regulation and supervision of finance companies. With a properly functioning lender of last resort and regulatory agency, the potential benefits of the finance company industry can be maximised and the dangers reduced to manageable proportions.

NOTES

[1]Influential references are Gurley [7]; Goldsmith [6]; and Patrick [14]; Caribbean Studies include Odle [13]; Worrell and Prescod [23]; and Bourne [2].

[2]New types of financial institutions include specialised long term credit institutions and capital market institutions such as stock exchanges and unit trusts. The range of new instruments encompasses time deposits, negotiable certificate of deposits, corporate stocks, and government equity.

[3]The spread and operations of government owned development banks and other specialised financial institutions has been extensively studied. See, for example, Bourne [1]; Kane [10]; Diamond [4]; Von Pischke [22]; and Bourne and Graham [3].

[4]Finance companies have not attracted much academic attention. A good recent study is Nayar's [12] work on India.

[5]At official parities, U.S. $1.00 was worth T.T. $2.00 in 1970 and T.T. $2.40 in 1980.

[6]In 1982, there were 22 life insurance companies, six trust companies, five thrift institutions, two development banks, 10 finance companies, and three mortgage finance companies.

[7]In 1978, bank loans and advances comprised 16 per cent of financial assets, deposits 30 per cent, corporate shares and securities 5 per cent, and government securities 2 per cent. Foreign instruments held by the central bank and by private investors comprised 23 per cent.

[8]In other countries, this form of corporate organization may be the exception. In India, most finance companies are partnerships [Nayar, p. 7].

[9]Commercial banks were statutorily required to hold liquid assets, defined as vault cash, special deposits with the central bank. Treasury Bills, and short term government securities, equivalent to not less than 14 per cent of total deposit liabilities. Between 1974 and 1977, actual liquidity varied between 38 per cent and 30 per cent.

[10]In 1982, commercial banks owned substantial equity in two of the largest finance companies, and totally owned another large finance company.

[11]These functions have been identified in the case of U.S. captive finance companies by G.S. Roberts and J.A. Viscione. "Captive Finance Subsidiaries and the M-Form Hypothesis", *The Bell Journal of Economics,* 12, 1, 1981.

[12]In 1983, Southern Finance Company, another much smaller company reported doubtful and bad debts equivalent to 57 per cent of total loan balances.

REFERENCES

[1] BOURNE, Compton, "Issues of Public Financial Enterprises in Jamaica: The Case of the Jamaica Development Bank", *Social and Economic Studies* 30, 1, March, 1981.

[2] ————, "Notes on Financial Changes in Trinidad and Tobago: 1966-78", *Social and Economic Studies* 31, 4 December, 1982.

[3] BOURNE, Compton and Douglas H. GRAHAM, "Problems with Specialized Agricultural Lenders", pp. 36-48 in Dale W. Adams *et al* (eds.), *Undermining Rural Development with Cheap Credit,* Westview Press, Boulder, Colorado, 1984.

[4] DIAMOND, William, *Development Banks,* Johns Hopkins Press, Baltimore, 1957.

[5] EDWARDS, Franklin R. and Arnold A. HEGGESTAAD, "Uncertainty, Market Structure and Performance: The Galbraith-Caves Hypothesis and Managerial Motives in Banking". *Quarterly Journal of Economics,* 88, 1973.

[6] GOLDSMITH, Raymond W., *Financial Structure and Development,* Yale University Press, New Haven, 1969.

[7] GURLEY, John G., "Financial Aspects of Economic Development", *American Economic Review,* 45, 1955.

[8] GURLEY, John G. and Edward S. SHAW, *Money in a Theory of Finance,* Brookings Institution, Washington, D.C., 1960.

[9] KANE, Edward J., "Policy Implications of Structural Changes in Financial Markets", *American Economic Review,* 73, 2, 1983.

[10] KANE, Joseph A., *Development Banking,* Lexington Books, Massachusetts, 1975.

[11] KOROBOW, Leon, David STUHR, and Daniel MARTIN, "A Probabilistic Approach to Early Warning Changes in Bank Financial Conditions", in Edward I. Altman and Arnold W. Sametz (eds.), *Financial Crises: Institutions and Markets in a Fragile Environment* , John Wiley and Sons, New York, 1977.

[12] NAYAR, C.P.S., "Finance Corporations: An Informal Financial Intermediary in India", *Savings and Development*, 6, 1, 1982.

[13] ODLE, Maurice, *The Significance of Non-Bank Financial Intermediaries in the Caribbean*, Institute of Social and Economic Research, University of the West Indies, Jamaica, 1972.

[14] PATRICK, Hugh T., "Financial Development and Economic Growth in Underdeveloped Countries", *Economic Development and Cultural Change*, 14, 2, 1966.

[15] ROBERTS, G.S. and J.A. VISCIONE, "Captive Finance Subsidiaries and the M-Form Hypothesis", *The Bell Journal of Economics*, 12, 1, 1981.

[16] SCHUMPETER, Joseph A., *The Theory of Economic Development*, Harvard University Press, Cambridge, Massachusetts, 1934.

[17] SILBER, William, "Towards a Theory of Financial Innovation" in his *Financial Innovation*, Health and Co., Lexington: D.C., 1975.

[18] ——— , "The Process of Financial Innovation", *American Economic Review*, 73, 2, 1983.

[19] SINKEY, Joseph E., "Problem and Failed Banks, Bank Examination and Early Warning Systems: A Survey", in Edward I. Altman and Arnold W. Sametz (eds.), *Financial Crises: Institutions and Markets in a Fragile Environment*, John Wiley and Sons, New York, 1977.

[20] SOLOW, Robert M., "On the Lender of Last Resort", in Charles P. Kindleberger and Jean Pierre Laffargue (eds.), *Financial Crises: Theory, History and Policy*, Cambridge University Press, New York, 1982.

[21] SPELLMAN, Lewis J., "Economic Growth and Financial Intermediation", in Ronald I. McKinnon (ed.), *Money and Finance in Economic Growth and Development*, Marcel Dekker, Inc., New York, 1976.

[22] VON PISCHKE, J.D., "The Political Economy of Specialized Farm Credit Institutions in Low Income Countries", *World Bank Staff Working Paper*, No. 446, April 1981.

[23] WORRELL, DeLisle and Ronald PRESCOD, "The Development of the Financial Sector in Barbados 1946-1982", *Central Bank of Barbados Economic Review*, 10, 2, 1983.

DETERMINANTS OF THE MONEY STOCK IN TRINIDAD AND TOBAGO (1969-1984) AND THE PROBLEM OF CONTROL*

vi

Ramesh Ramsaran

INTRODUCTION

The continuing debate between the post-Keynesians and the monetarists in recent years had led to increasingly greater interest in the determination of the money supply process, and the nature of the relationship between money and such magnitudes like prices, income and employment. To some extent, this situation is the result of a growing recognition on the part of policy makers of the inadequacy of conventional Keynesian-based approaches and policies in controlling or predicting economic behaviour. The increasing number of empirical work in the field[1] has no doubt also had an effect by challenging long held views and intuitive relationships. To be sure, the main points of differences between the two schools are subject to a great deal of controversy. There are certain points, however, which stand out. Perhaps the most distinguishing feature of the monetarists' position is the emphasis placed on controlling the growth of monetary aggregates rather than interest rates or money market conditions which tend to be favoured by the post-Keynesians. Money is not unimportant in the latter's analysis, though its role and importance are perceived differently. This focus on money has naturally led to fundamental questions about the real ability of the monetary authorities to control the money stock. While in some analyses the latter is treated as an exogenous variable (i.e. under the control of the monetary authorities), others proceed on the assumption that the money supply at any point in time, (be it in a closed or open economy), is the result of the portfolio decisions of the monetary authority (the central bank), the commercial banks and the public. Observers who share this latter view feel that the best approach to the study of the money supply process is through a general portfolio model based explicitly on the interdependence of the various sectors.[2] While recognising the importance of such an approach, the inadequacy of data, lack of computational facilities and the time constraint, the first and second in particular, often militate seriously against this type of exercise.

In this essay our objective is a limited one. Our main intention here is to explore (with the aid of certain simple models) some of the more immediate factors affecting the determination of the money stock in Trinidad and Tobago in recent years, and to examine in a tentative way the behavioural implications for controlling or forecasting the money stock by the monetary authorities. In the final part of the essay we examine the use and relevance of some of the more conventional instruments of monetary control in Trinidad and Tobago within the framework of a cash-base model.

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MONEY SUPPLY THEORY

Textbook presentations of the money supply in a situation where the liabilities of both the monetary authority and the commercial banks are used as money tend to centre around the so-called 'money or deposit multiplier'. Under a fractional reserve system (i.e. a system where bank reserves are less than 100 per cent) the reserves of the banking system can supply a 'multiple' of deposits. If (r) represents the minimum ratio of reserves to deposits, the maximum amount of deposits (D) that could be created would be equal to the reciprocal of the reserve requirement (r) times the amount of reserves. If the system were operating at its minimum reserve ratio a unit increment in its holding of reserves would be associated with an increase in its deposits amounting to $\frac{1}{r}$.[3] This latter formulation is based on a common ratio for all deposits. However, where different types of deposits have different reserve requirements, this situation can easily be accommodated within the conventional multiplier.

The theory outlined above is based on a number of simple assumptions, two of which need to be mentioned here. One is that the banks operate on the basis of a constant reserve ratio i.e. banks do not hold excess reserves. A second major assumption is that there is no 'cash drain' i.e. the public holds a fixed quantity of cash irrespective of the increase or decrease in the volume of deposits. This latter assumption tends to be relaxed in a slightly more sophisticated version of this theory which assumes that the public maintains a fixed proportion between money held in currency and money held in bank deposits. If (c) represents this fixed proportion, the public will increase its holdings of currency by (c x D) for any increase in total bank deposits (D). In this version, the multiplier is given as $\frac{1}{r+c}$ where (r) is the bank's cash ratio and (c) is the public's currency ratio.

Simplistic and mechanical as this deposit multiplier theory may appear, it has been widely used in models seeking to determine the factors affecting the total money stock. One of the more modern versions employs the concept of base or high-powered money which is generally defined as any asset which can be used as money or as a base for creating money. The formulation proceeds as follows.[4]

Given

M = money supply

H = high-powered or base money

R = bank reserves (notes and coin in till plus deposits with the central bank)

C = currency held by the non-bank public

D = bank deposits

Then

$$M = C+D \qquad (1)$$

$$H = C+R \qquad (2)$$

The behavioural equations are:

$C = cM$ (where c is the ratio of currency held by the non-bank public to total money) (3)

and $R = rD$ (where r is the reserve ratio). (4)

Since $H = cM+rD$ and $D = M(1-c)$

H can be written as $H = cM+r(1-c)M$

Dividing through by M yields

$\frac{H}{M} = c+r(1-c)$ which can be written as

$$M = \frac{H}{c+r(1-c)} \quad (5)$$

or $$M = \frac{1}{c+r(1-c)} H$$

or $$M = mH \text{ where } m = \frac{1}{c-r(1-c)}$$

The multiplier used by Friedman and Schwartz (F&S)[5] is essentially a reformulation of this multiplier equation in a form which allows us to measure the impact of the 'proximate determinants' on the money supply process. Using the foregoing definitions of M, H, R, C, and D we can write:

$$M = D + C \quad (6)$$

$$H = C + R \quad (7)$$

$$\frac{M}{H} = \frac{D+C}{C+R} \quad (8)$$

Dividing numerator and denominator in (8) by C and then multiplying by $\frac{D}{R}$ we obtain

$$M = \frac{\frac{D}{R}\left(1+\frac{D}{C}\right)}{\frac{D}{R}+\frac{D}{C}} H \quad (9)$$

If we use 'r' for the deposit ratio ($\frac{D}{R}$), and 'c' for the deposit currency ratio ($\frac{D}{C}$) we can write (9) as

$$M = \frac{\frac{1}{r}\left(1+\frac{1}{c}\right)}{\frac{1}{r}+\frac{1}{c}} \cdot H \quad (10)$$

$$= \frac{1+r}{r+c} H \quad (11)$$

$$= mH \quad (12)$$

where $m = \frac{1+r}{r+c}$

Equation (12) is similar to Equation (5)[6] though as pointed out earlier, the former was conceived not only to provide a link between base money and the money supply, but to derive an idea of the impact of each of the proximate determinants on the money supply. Essentially, however, both provide a very mechanistic interpretation of the money supply process.

The formulations given above do not exhaust the variety of the money base models which has been developed to explain the money supply process. One approach favoured by Brunner and Meltzer[7] (B&M) takes the form of a linear equation[8] in which the factors underlying the monetary behaviour of banks and the public are specified and explicitly built into the money supply function. Specifications are made with respect to both the narrow and broad definitions of money. In Equations (13) and (14), M^2 represents a concept of money which includes time deposits while M^1 excludes it.

$$M^2 = m_o + m^2 (B+L) - m^2 a_1 C_o + m^2 a_2 T_o - m^2 V^d{}_o (i) \qquad (13)$$

$$M^1 = n_o + m^1 (B+L) - m^1 a_1 C_o - \left[1-m^1 a_2\right] T_o - m^1 V^d{}_o (i) \qquad (14)$$

The symbols m_o and n_o are constants, while m^2 and m^1 are the respective money multipliers structured to show the influence of various factors (e.g. monetary base, reserve requirements, currency "spillover" rates, etc.) on the money stock. The narrow money multiplier (m^1) is presumed to be smaller than (m^2) "because time deposits generated in the multiplier process are excluded from the monetary stock". The term (B+L) is referred to as the 'extended monetary base' where B is the monetary base (i.e. the amount of money issued by the government sector) and L is the cumulated sum of changes in required reserves attributable to changes in requirement ratios and the distribution of existing demand deposits between classes of banks with different requirement ratios. C and T represent the respective demand functions for currency and time deposits by the public. These are assumed to depend on monetary wealth (i.e. money stock plus time deposits), non-monetary wealth and pertinent costs and yield entities. The expression $V^d{}_o$ (i) introduces the dependence of the money stock on interest rates (i) operating *via* the banks' desired cash asset position.

There is some discussion in the literature as to whether a single equation provides an adequate framework of study. A common contention is that a complete market description requires both a demand and supply function.[9] Others argue that the single supply equation is neither a supply function nor a demand function, but rather is an equilibrium statement. The basis for this contention is that it often includes nothing about the willingness of banks to supply deposits or the willingness of the monetary authorities to supply currency or reserves. Against this, it is argued that even if the single equation approach is not a genuine supply function it does focus on some of the main variables affecting the money supply process, very often within an implicit theoretical framework.[10] The Friedman-Schwartz approach, for example, views high-powered money as "a pool" into which banks dip to meet reserve requirements and to obtain desired excess reserves. The public also draws on this pool

for currency. Banks and the public, thus, compete for use of the limited amount of a high-powered money provided by monetary authorities. By definition (H - R+C) the entire pool is always claimed.

The moving force of this money supply process involves the response of banks to a discrepancy between desired and actual excess reserves. Monetary actions increasing the quantity of 'H' cause the actual level of excess reserves to be greater than the desired level, given existing financial conditions. Banks acquire earning assets by increasing their deposits and reducing their actual excess reserves to desired levels. This process is partially offset by the higher levels of currency and reserves needed to maintain the desired ratios due to the increase in deposits. Changes in the money stock also result from changes in either of the ratios with no change in the quantity of high-powered money. This process is further complicated by the fact that the ratios are interrelated.[11] Some of the same types of reasoning can be said to underlie the Brunner-Meltzer approach outlined above, where surplus excess reserves is also seen to play a crucial role. One of the major differences between the two approaches, however, is that while the B&M multipliers are empirical relationships estimated by statistical procedures, the F&S multiplier is definitional.[12]

DETERMINANTS OF THE MONEY SUPPLY

As already indicated, one of the major issues of contention between monetarists and non-monetarists relates to the extent to which the monetary authorities can directly control the nominal money stock, and, hence, on the extent to which the latter can be treated as an instrument variable in formulating objectives and policies. On the basis of certain explicit premises, one can arrive at certain judgements which may be useful for particular purposes. The question, however, is essentially an empirical one. In the following section we try to get some indication of the main determinants of money supply change in Trinidad and Tobago in recent years and at the same time provide some insights into the behaviour of the determinants themselves. First, however, we attempt to put the importance of the determinants' behaviour in some kind of policy perspective.

The simplicity of the monetary base model makes it attractive as a framework for both controlling and forecasting the money supply. This can be readily seen from the equation form of the model which can be written as

$$M = mH \qquad (15)$$

where M = money stock,
m = the multiplier,
and H = base or high-powered money.

Clearly, if 'm' were constant, the money stock could be controlled through manipulation of base or high-powered money, assuming that the latter were under the control of the central bank. In this connection, it is necessary to point out that the multiplier as defined above is neither unique nor constant. Depending on how one defines deposits we can get a series of multipliers. Constancy would depend on the behaviour of the currency and reserves ratios. In some situations the ratios may be relatively stable in the short run, allowing the authorities to assume a high degree of stability in the figures. But one cannot take this for granted, particularly if the multiplier can change in response to

factors beyond the control of the central bank. The public not only determines the ratio of their current holdings to deposits, but this ratio, itself, may be subject to wide fluctuations even in the short run. As far as the commercial banks are concerned the central bank may be able to determine the legal reserve ratio, but the actual ratio that the banks observe rests heavily on the policies of the banks themselves. The simple deposit multiplier outlined very early in the essay assumes that the banks are always 'loaned-up' i.e. they quickly translate any gain in reserves into earning assets. In practice, banks may choose to keep reserves beyond their legal requirements for a variety of reasons, even while observing a profit maximising constraint. The level of the excess reserves may be subject to great fluctuations, and this would, undoubtedly, affect the value of the multiplier.

With respect to the use of the monetary base model for forecasting purposes, this not only rests on the ability of the authorities to forecast the value of the multiplier with a high degree of accuracy, but on two assumptions which are the subject of a great deal of controversy. One, which we have previously mentioned, is that the base is under the control of the authorities, and the other is that there is a 'tight' relationship between base, bank reserves and the money supply. With respect to the first, the view is sometimes taken that since the liabilities of the central bank account for a significant proportion if not all of the base, either as money used by the public or as a basis for the creation of deposits, the central bank should have no difficulty in controlling the level of the base. Another approach, however, is to treat the base as an endogenous variable that responds to income changes, rather than as one directly or entirely under the control of the central bank. This latter position can be more easily appreciated if the base is analysed from both a 'use' and a 'source' perspective. If we assume that the base is confined to the central bank's monetary liabilities, then the elements on the asset's side of the bank's balance sheet can be taken as the moving force in changes in the base. As we shall see later, not all these elements are under the control of the central bank.

The official publications of most countries tend to carry a table showing some of the broad factors affecting changes in the money supply over given periods of time. The table (which is highly favoured by such institutions like the World Bank and the IMF) is a simple balance sheet presentation without pretensions to any particular theoretical framework. In this section, we shall try to get a more precise idea of the contributions of certain factors to money supply change in Trinidad and Tobago over the 1969-84 period. The approach used is that of Friedman and Schwartz, but we shall also demonstrate the possibilities of a modified monetary base model in explaining and predicting changes in the supply of money.

The Friedman-Schwartz multiplier given in Equation (9) as

$$M = \frac{\frac{D}{R}\left(1 + \frac{D}{C}\right)}{\frac{D}{R} + \frac{D}{C}} \cdot H$$

can easily be manipulated to enable us to measure each factor's proportional contribution to monetary growth.[15] Based on quarterly data, the respective

contributions of the determinants to changes in the money supply in Trinidad and Tobago over the 1969-84 period are given in Table 6.1. This exercise was carried out with respect to both the narrow and broad definitions of money. The former (M_1) consisted of currency in circulation plus private (bank) demand deposits, while the latter (M_2) was defined as M_1 plus bank savings and time deposits. An examination of Table 6.1 shows that generally high-powered money (H) has had a positive and highly significant effect on the expansion of the money supply, whether it is the narrow or broad version. Changes in the banks' deposit-reserve ratio 'b' have produced both contractionary and expansionary effects over the period. The contribution of the public deposit-currency ratio 'p' to the growth of both money stocks has, generally, been smaller than that of the reserve ratio, while the interaction effects of 'b' and 'p' have tended to be less significant than those of either ratios.[16] the decline in the nominal narrow money stock in 1984 corresponded with a fall in high-powered money in that year. One could perhaps get a clearer picture of the effects of the various determinants on the expansion of the money supply by taking a longer term view. For instance, if we look at the period 1969-79, it would appear that while both high-powered money (H) and the public's deposit-currency ratio (P) had a positive effect on the growth of both versions of the money stock, the banks' deposit-reserve ratio (b) had a negative impact.

The above findings with respect to the three determinants H, b, and p bear out the points made earlier with respect to the difficulties that are likely to arise in controlling or predicting the money stock within a monetary base framework. High-powered money tends to be affected by a number of factors, some internal and some external. In the former category, one can put central bank credit to the government and commercial banks.[17] In the latter, of course, is the whole gamut of influences that affect the external assets of the monetary authority. Besides the current account items, government and private sector capital transactions also affect movement in foreign reserves and ultimately the cash base. Thus, while it may be possible for the central bank (with the collaboration of the government) to exercise some degree of control on the internal factors, the bank acts more or less in a passive capacity with respect to balance of payments transactions. In the developed countries domestic assets (particularly government securities) held by the central bank tend to heavily outweigh the other items on the assets (source) side of its balance sheet, and this may explain the position sometimes taken to view high-powered money as an endogenous variable easily manipulable by the authorities in response to movements in other variables. Where foreign assets are the dominant item (as is the case in most developing countries), this clearly reduces the capacity of the authorities for controlling the money stock. Although the central bank may have the authority and the instruments for controlling or offsetting an undesirable level of liquidity brought on by external factors, technical and political considerations could exert a deep influence on the outcome of such efforts. As we shall see later, the absence of a well-knit money and capital market considerably limits the use of some of the major tools of monetary control.

TABLE 6.1: PERCENTAGE CONTRIBUTION OF 'PROXIMATE DETERMINANTS' TO MONEY SUPPLY, 1969-1984

Period	Narrow Money (M_1)					Broad Money (M_2)					% Change in M_1	% Change in M_2
	H	b	p	b/p Inter-action	Sum of Effects	H	b	p	b/p Inter-action	Sum of Effects		
1969/70	80.7	8.3	13.5	0.2	102.7	49.3	17.3	32.8	1.4	100.8	12.8	21.6
1970/71	108.4	-15.8	1.8	0.0	94.4	92.2	-6.2	12.5	-0.1	98.4	17.2	21.4
1971/72	134.9	-31.7	2.3	0.0	105.5	126.9	-28.2	3.2	0.2	102.1	21.8	22.8
1972/73	59.0	21.9	11.9	1.0	93.7	38.9	26.8	29.9	1.5	97.1	11.2	18.0
1973/74	179.2	-87.5	17.4	-6.1	103.0	158.4	-43.7	15.6	-2.8	127.5	19.4	21.9
1974/75	175.2	-76.6	5.3	4.2	108.1	222.8	-131.1	2.4	4.9	99.0	45.3	34.0
1975/76	121.9	-22.3	0.8	-0.8	99.6	162.9	-62.7	-0.2	0.0	100.0	49.0	34.8
1976/77	-17.9	224.9	0.0	-106.5	100.5	-19.2	122.6	-1.9	-1.1	100.0	27.2	25.1
1977/78	64.5	33.9	0.9	0.4	99.7	76.4	26.0	-2.7	-0.8	99.4	35.5	29.0
1978/79	87.7	119.6	-3.1	-127.6	76.6	84.4	-5.7	-9.7	-3.8	65.2	26.1	27.2
1969/79	104.3	-9.6	15.6	-2.8	107.5	106.2	-13.5	8.5	-2.6	98.6	906.5	868.5
1979/80	120.4	-23.1	-0.8	-0.2	96.3	141.2	-27.1	-0.9	-0.2	113.0	24.7	21.5
1980/81	153.3	-71.4	-9.5	1.3	73.7	244.8	-129.2	-15.1	2.1	98.4	14.9	9.0
1981/82	122.8	-9.6	1.9	0.0	115.1	121.6	-9.5	1.9	0.0	114.0	31.6	32.0
1982/83	64.3	10.3	1.6	-1.2	75.0	50.9	61.8	-3.6	-0.6	108.5	12.3	15.8
1983/84	66.0	8.7	-0.4	-0.8	73.5	-54.7	103.7	29.7	3.4	82.1	-6.0	7.6

Note: The data used for each year were based on an end of quarter average. The Central Bank's *Statistical Digest* (various issues) was the main source.

The question of government's attitude towards the control of money is intimately related to the dilemma of attaining a number of different objectives at the same time within certain constraints. The trade-off in any situation is not a simple exercise. The weight attached to the different objectives, however, would tend to differ from one context to the other. While questions such as liquidity and inflation, for example, are not unimportant in a developing context, the need to create jobs, provide social services and develop the physical infrastructure may assume overriding importance. In such circumstances, monetary policy tends to be relegated to a subsidiary role leaving the budget itself to cope with domestic price conditions and the social and economic consequences that flow therefrom. Food subsidies, larger pensions, rapidly increasing wages and salaries etc., become an integral part of the anti-inflation armoury. The dilemma here is that some of these very measures tend to feed the inflationary process by inducing expansions in the money stock.

In order to gain some insight into the relative effects of certain chosen variables on high-powered money (H) over the 1969-84 period, we undertook a regression exercise using annual data. The results are shown in Equations (16) to (19). The figures in parentheses under each coefficient are standard errors.

The coefficients of determination ($\bar{R}^2$) have been adjusted, while serial correlation in the error term has been corrected. Equation (16) shows the relationship between high-powered money (H) and the current account balance (CAB). The coefficient associated with the CAB variable has a positive sign and is significant. The current account balance explains about 50 per cent of the movements in high-powered money. When we use the overall balance of payments (BOP) as the regressor (Equation (17)) the associated coefficient retains the positive sign, but the standard error is high. The $\bar{R}^2$ drops to almost zero. In Equation (18), in addition to the current account balance (CAB), we include three other independent variables representing movements in commercial banks net foreign assets (CNFA), net private capital transactions in the balance of payments (NPCT), and net government capital transactions (NGCT) in the balance of payments. These variables together 'explain' 75 per cent of the changes in 'H'. With the exception of net private capital transactions (NPCT), the coefficients of all the other variables are insignificant. Only the commercial banks net foreign assets variable is associated with a negative sign. When we add 'Net Central Bank Credit to Government (NCBG) to the other explanatory variables included in Equation (18), the result is an improved fit (see Equation (19). The $\bar{R}^2$ increases from 75 per cent to 89 per cent, but the D.W. statistic indicates a serial correlation problem. In this equation, the coefficients of all the variables with the exception of net government capital transactions (NGCT) are significant. As far as the direction of influence is concerned, central bank credit to the government, private capital inflows and the current account balance have all had a positive effect on 'H'.

$$H = \underset{(48.980)}{123.834} + \underset{(0.056)}{0.235\ CAB} \qquad (16)$$

$\bar{R}^2 = 0.52$

D.W. = 1.98

F = 17.496

$$H = \underset{(71.840)}{118.600} + \underset{(0.068)}{0.070\ BOP} \qquad (17)$$

$\bar{R}^2 = 0.00$

D.W. = 2.04

F = 1.06

$$H = \underset{(76.533)}{-111.862} + \underset{(0.072)}{0.068\ CAB} \underset{(1.384)}{-1.621\ (NFA)} + \underset{(0.233)}{0.748\ NPCT} + \underset{(0.210)}{0.096\ NGCT} \qquad (18)$$

$\bar{R}^2 = 0.75$

D.W. = 2.02

F = 12.52

$$H = \underset{(53.885)}{-34.636} + \underset{(0.053)}{0.160\ CAB} \underset{(0.909)}{- 1.087\ CNFA} + \underset{(0.164)}{0.516\ NPCT} \underset{(0.142)}{-0.044\ NGCT} \qquad (19)$$

$$+ \underset{(0.032)}{0.128\ NCBG}$$

$\bar{R}^2 = 0.89$

D.W. = 1.32

F = 26.40

From the foregoing discussions, it would appear then that the balance of payments variables have generally had a positive impact on the expansion of high-powered money. The impact of the private capital account has been particularly significant. By using the current account balance as an aggregate variable, however, we have tended to conceal the effects of individual items. The trade balance, for example, which is a crucial factor in the country's external account had tended to be partially offset or exacerbated by the outflows of investment income, as can be seen from the following figures:

	1969	1973	1975	1977	1978	1979	1980	1981	1982	1983	1984
Trade Balance ($m)	+35	-143	+954	+1,191	+794	+360	+1,434	+1,217	-1,360	-730	462
Net Investment Income ($m)	- 137	-171	- 589	- 1,056	- 885	- 588	-722	-316	-186	-372	-780
Net Private Capital Inflow ($m)	+127	+62	+409	+344	+433	+861	+378	+748	+900	+53	-173
Overall Surplus (+) Deficit (-) ($m)	- 6	- 31	+956	+1,060	+758	+879	+1,472	+1,343	-647	-2,162	-2,149

If we were to take the trade account as an individual variable and set off investment income outflows against private capital inflows, the relative impact of the latter on the base would obviously diminish.

When all items are taken into account the country had an overall surplus in its balance of payments in every year between 1974 and 1981. In the five years prior to 1974, there were four deficits. Deficits were also experienced in 1982, 1983 and 1984. The favourable performance during most of the 1970s was largely due to developments in the oil sector, the earnings from which have been used to finance the fiscal deficits in the non-oil sector. The monetisation of foreign exchange in recent years has been the key element in the expansion of the monetary base and ultimately, as we have seen, the money supply. Figures relating to the domestic budget deficits and the balance of payments deficits of the private sector for recent years have been estimated by the central bank as follows:

	1978	1979	1980	1981	1982	1983	1984
Net Domestic Budget Deficit ($m)	1,085	1,893	2,204	2,230	4,620	4,002	3,069
Balance of Payments Deficits of the Private Sector ($m)	1,421	1,521	2,713	3,021	3,888	4,250	2,554

The net impact on bank reserves depends critically on the extent of foreign leakage.

As indicated earlier, if the multiplier were always the same, the main influence of money change would originate entirely in changes in base money. In fact, text book presentation of the money supply process, as already pointed out, often assumes it to be constant. Policy decisions also often have to be made on the assumption that in the short term the ratios that comprise the multiplier tend to remain fairly stable. A common (if naive) approach often used in predicting money supply is to first derive the average of the multiplier over some past period, and on the basis of this, manipulate the base to attain some money stock target. A major problem here, of course, is that the process of changing the base itself can induce countervailing changes in the multiplier as both the banks and the public react to the new situation by adjusting their portfolio composition. We may point out here that with respect to forecasting the money stock, the assumption of constancy is not so much the issue as the ability to predict the multiplier with some degree of accuracy. In the following section we propose to examine, in some detail, the behaviour of the multiplier over a period of time and then try to gauge the impact of the respective ratios on money stock.

Bourne[18] has made a useful distinction between the *ex-post* multiplier and the *ex-ante* multiplier while pointing out that the two might not be the same empirically. The *ex-post* multiplier is derived by dividing the money stock at any point in time by the monetary base (high-powered money) at the same point in time. The *ex-ante* multiplier is calculated from the banks' and public's asset ratios at any given point in time. In Table 6.2 we present the average *ex-post* multiplier (both with respect to the broad and narrow money stock) alongside three versions of the *ex-ante* multiplier over the 1969-84 period. The symbols are the same as before. The annual figures appearing in the table, it should be noted, represent end of quarter averages. An examination of the coefficients shown in Table 6.2 indicates that the multiplier has certainly not been constant, but, in fact, has shown a tendency to fluctuate from one point to another. The narrow *ex-post* multiplier, Col. (1)a, averaged 1.36 for the period, but the annual average coefficients ranged between 0.95 and 1.74. The average for the broad *ex-post* multiplier was 4.29 with lower and upper limits of 2.97 and 5.78 respectively. The value of the coefficient of variation for the latter group was 0.23 and this exceeded that of the first group by only a small margin of 0.01. With respect to the *ex-ante* multiplier, a few points are worth noting. Firstly, it is noticeable that the Friedman-Schwartz coefficients tend to approximate the values of the *ex-post* multiplier.[19] The Friedman-Schwartz average multiplier for the period was the same as the *ex-post* value while the broad version was less by 0.03. The coefficient of variation of the narrow version for both groups of multipliers was 0.22, while for the broad version the difference was only 0.01. The more conventionally defined multiplier shown in Column (2) yielded lower values than those of the *ex-post* multipliers. The coefficient of variation (particularly that relating to the narrow version) is smaller than that of the *ex-post* multiplier. The multiplier given in Column (3) incorporates Bourne's suggestion[20] that the leakage through the banking system can best be caught by incorporating the bank's foreign assets in their reserves.[21] The notation (r^1) represents this particular concept. The values obtained through this approach are even less than those yielded by the conventional formula used in Column (2), making this a relatively poor forecasting instrument.

Variations in the money multiplier stem from two sources; (a) changes in the public currency ratio; and (b) changes in the banks' reserve ratio. The currency ratio can be calculated in terms of currency held by the public to total money (currency in circulation plus bank deposits), or in relation to deposits. We have used the latter method in this essay. The symbols used have the same meaning as before:

C = currency held by the public

D_1 = demand deposits (adjusted)

D_2 = D_1 plus time and savings deposits

R = reserves of the commercial banks (cash in till plus reserves with the Central Bank)

FA = banks' foreign assets

TABLE 6.2: AVERAGE VALUES[1] OF MULTIPLIER, 1969-1984

Year	(1) Ex Post $\frac{M}{H}$ Narrow (a)	(1) Ex Post $\frac{M}{H}$ Broad (b)	(2) $\frac{1}{c+r(1-c)}$ Narrow (a)	(2) $\frac{1}{c+r(1-c)}$ Broad (b)	(3) $\frac{1}{c+r(1-c)}$ Narrow (a)	(3) $\frac{1}{c+r(1-c)}$ Broad (b)	(4) Friedman-Schwartz $\frac{1+c}{r+c}$ Narrow (a)	(4) Friedman-Schwartz $\frac{1+c}{r+c}$ Broad (b)
1969	1.69	4.91	1.37	4.55	1.28	4.04	1.70	4.91
1970	1.74	5.44	1.42	5.13	1.33	4.66	1.74	5.44
1971	1.71	5.52	1.42	5.32	1.32	4.82	1.71	5.52
1972	1.62	5.28	1.37	5.02	1.33	4.72	1.62	5.28
1973	1.67	5.78	1.42	5.46	1.39	5.32	1.67	5.77
1974	1.54	5.47	1.38	5.36	1.34	5.13	1.54	5.47
1975	1.12	3.68	1.10	3.66	1.09	3.59	1.12	3.68
1976	1.00	2.97	1.01	2.94	0.99	2.90	1.01	2.97
1977	1.35	3.92	1.29	3.89	1.25	3.90	1.34	3.89
1978	1.49	4.14	1.40	4.06	1.36	3.82	1.49	4.14
1979	1.53	4.27	1.39	4.04	1.31	3.73	1.48	4.25
1980	1.38	3.90	1.31	3.57	1.23	3.12	1.38	3.70
1981	1.02	3.30	1.03	3.33	0.96	3.33	1.02	3.34
1982	0.95	3.08	0.96	3.12	1.14	3.03	0.95	3.12
1983	0.98	3.18	0.99	3.12	0.96	3.03	0.98	3.17
1984	0.96	3.56	0.98	3.33	0.94	3.33	0.97	3.45
Average for Period	1.36	4.29	1.22	4.12	1.20	3.73	1.36	4.26
SD	0.30	0.98	0.19	0.89	0.16	1.04	0.30	0.99
CV	0.22	0.23	0.16	0.22	0.13	0.28	0.22	0.23

1. Based on end of quarter data.

SD = standard deviation

CV = coefficient of variation

Source: Computed from data published in the Central Bank's *Statistical Digest* (various issues).

The ratios are shown in Table 6.3. An examination of the coefficients of variations (CVs) indicates that all ratios experienced a fairly high degree of variability. The CV for the ratio of currency to demand deposits was 0.20 as compared to 0.18 for the ratio which has total deposits in the denominator.[22] The CVs relating to the banks reserve ratios were even higher. The conventional ratios R/D_1 and R/D_2 had CVs of 0.42 and 0.44 respectively. The less conventional reserve ratios which include foreign assets in the numerator had slightly lower CVs.

An examination of Table 6.3 shows that the narrow currency ratio tended to decline from the early 1970s towards the end of the decade. It has tended to increase in the early years of the 1980s. There has also been a similar trend in the broad currency ratio, though the variation has been much smaller. The variation in these ratios is mainly a behavioural phenomenon, reflecting the public's response to movements in certain factors and changing circumstances. As Bourne has shown, given the limitations on data, it is not an easy matter to get a quantitative idea of the effects of various factors on the currency ratio, even over very short periods. We can, however, speculate on the direction in which certain factors are likely to affect the public's holdings of currency in relation to bank deposits or other financial assets. One factor that is likely to have a downward effect on the currency ratio is the availability of alternative forms of holding money and the rate of return associated with these various assets. A major influence here would be the growth and spread of banking facilities. In Trinidad and Tobago, the increase in the number of bank offices in the post-war period has, no doubt, played a significant role in the development of banking habits and in encouraging the use of bank money. The number of bank offices grew from eight in 1950 (79,480 persons per office) to 72 in 1968 (12,220 persons per office).[23] In 1984, there were 114 branch offices in existence, giving a rough ratio of one office for every 10,250 persons. The growth of income is also likely to affect the currency ratio, though some observers contend that the direction of the effect would depend on whether this growth is associated with an increase or decrease in the equality of the distribution of income.[24] Since it is believed that higher income groups tend to hold a smaller proportion of their money balances in the form of currency, an increase in inequality would tend to have a downward effect on the ratio and *vice versa*. The data we have on the distribution of income in Trinidad and Tobago (particularly for recent years) are far from satisfactory in terms of providing very clear trends. The available evidence, however, indicates that the distribution is highly skewed.[25] Another factor that, undoubtedly, has an influence on the public's holdings of currency is the movements taking place in the general price level. One of the most noticeable features of economic life in Trinidad and Tobago in recent years has been the steady and upward movement in prices at a rate that must exert a certain degree of influence on economic behaviour.[26]

The effects of inflation are not all in the same direction. One of the more well known features of the inflationary process is a shift from monetary to real assets. This would tend to put a downward pressure on the currency ratio. There are other phenomena associated with inflation, however, which may have

TABLE 6.3: AVERAGE VALUES[1] OF CURRENCY AND RESERVE RATIOS,[2] 1969-1984

Period	$\frac{C}{D_1}$	$\frac{C}{D^2}$	$\frac{R}{D_1}$	$\frac{R}{D^2}$	$\frac{R+FA}{D_1}$	$\frac{R+FA}{D^2}$
1969	0.59	0.15	0.35	0.08	0.47	0.12
1970	0.56	0.13	0.33	0.08	0.43	0.10
1971	0.55	0.12	0.36	0.08	0.46	0.10
1972	0.54	0.12	0.42	0.09	0.48	0.10
1973	0.51	0.11	0.39	0.08	0.42	0.08
1974	0.45	0.09	0.53	0.11	0.56	0.04
1975	0.39	0.09	0.86	0.20	0.87	0.21
1976	0.34	0.09	1.00	0.27	1.01	0.28
1977	0.34	0.09	0.66	0.18	0.69	0.18
1978	0.34	0.10	0.57	0.16	0.61	0.18
1979	0.35	0.10	0.57	0.16	0.64	0.19
1980	0.34	0.11	0.63	0.19	0.72	0.22
1981	0.47	0.11	0.96	0.22	1.08	0.25
1982	0.46	0.10	1.08	0.25	1.17	0.27
1983	0.50	0.11	1.02	0.22	1.08	0.26
1984	0.53	0.10	1.05	0.20	1.13	0.23
Average for Period	0.45	0.11	0.67	0.16	0.74	0.18
SD	0.09	0.02	0.28	0.07	0.27	0.08
CV	0.20	0.18	0.42	0.44	0.36	0.43

[1]based on quarterly data

[2]based on till cash plus balances with the Central Bank

CV = Coefficient of Variation.

Source: Computed from data published in the central bank's *Statistical Digest* (various issues).

an opposite effect. One of these stems from the attempt to evade personal income tax. And, according to Khazzoom, "By swelling the monetary value of a given real income, inflation has the effect of increasing the real burden of personal income tax. This may induce people to evade the tax. Since it is easier to conceal transactions financed in currency rather than deposits, people may be induced to rely more heavily on currency for payments if they want to evade the heavier tax burden".[27] The growth of the underground economy and the need to escape tax detection may also result in more and more transactions being conducted in cash.

It is clear from the above discussion that the spectrum of factors which affect the currency ratio is a very broad one. Though the quality of the data with respect to some of the influences we have been able to identify theoreti-

cally is far from satisfactory, we shall, nevertheless, attempt to get some indication of their quantitative impact on the currency ratio. In this type of exercise a variety of functional forms can be utilised. For instance, in a study done some years ago on the currency ratio in the United States, Cagan used a double logarithmic function with three explanatory variables specified as follows:[28]

$$\text{Log } C/M = f(\log X_1, \log X_2, \log X_3)$$

where C/M = currency ratio

X_1 = expected net interest paid on deposits

X_2 = expected real per capita income

X_3 = the percentage of personal income taxed.

Cagan admitted that while the logarithmic form of the function may not give the best possible fit, it was used because it permits elasticities to be measured easily. Bourne on the other hand used a straight forward linear functional form to analyse the same phenomenon in his study of the Jamaican monetary system.[29] Since the latter author's approach seems adequate for our purpose here, we shall use a similar specification.

Based on *a priori* considerations, we regressed (using annual data for the period 1969-84) both the narrow currency ratio, NCR (i.e. the ratio of currency in circulation to demand deposits) and the broad ratio, BCR (i.e. the ratio of currency in circulation to total deposits) on certain selected variables for which data were available. The ratio used for each year was derived from average end of quarter proportions. Interest rates (IR) were represented by the average rates payable on three months fixed deposits, income (PC) by per capita GDP and the rate of inflation (IF) by movements in the retail price index. The number of bank offices (BO) was used to gauge the effects of the availability of banking facilities to the public. The figures in parenthesis under the coefficients in the equations are standard errors. From our earlier discussions we would expect all the signs of the estimated coefficients of the explanatory variables to be negative. The interest rate variable in Equation (20) not only does not have the expected sign, but the magnitude of the standard error raises doubts about the significance of this variable. The per capita income variable in Equation (21) is associated with a negative sign, and though the coefficient is significant it is extremely small, as it is in Equations (23) to (29). The inclusion of the number of bank offices variable in Equation (23) increases the $\bar{R}^2$ to 76 per cent, but the variable has the 'wrong' sign. In Equation (24) the inclusion of the inflation rate as an independent variable does not enhance the explanatory power of the equation. The sign also is not the expected one. A salient feature of Equations (25 to (29) which have the broad currency ratio as the dependent variable is that the four explanatory variables we have used tend to explain a smaller proportion of the variation in the broad ratio than they do in the narrow ratio. The interest rate variable continues to be associated with a positive sign. Except in Equation (28), the sign of the per capita income coefficient has changed to positive in the equations attempting to explain variations in the broad currency ratio. In terms of fit, Equation (29) seems to be the best of the lot with interest rate, per capita income, the growth in the number of bank

offices and the inflation rate explaining 59 per cent of the variation in the broad ratio. In this equation, the coefficients of both bank offices and the inflation rate have the expected signs, but their respective standard errors are high, as is that of the per capita income variable. The D.W. statistic also indicates a serial correlation problem.

$$\underset{(0.007)}{NCR = 0.389 +} \quad \underset{(0.007)}{0.007\ IR} \qquad (20)$$

$$\bar{R}^2 = 0.72$$

$$D.W. = 2.22$$

$$F = 11.91$$

$$\underset{(0.192)}{NCR = 0.727 -} \quad \underset{(0.00001)}{0.00003\ PC} \qquad (21)$$

$$\bar{R}^2 = 0.72$$

$$D.W. = 2.16$$

$$F = 11.90$$

$$\underset{(0.216)}{NCR = 0.457 +} \quad \underset{(0.0006)}{0.006\ IR} - \underset{(0.00002)}{0.000005\ PC} \qquad (22)$$

$$\bar{R}^2 = 0.68$$

$$D.W. = 2.36$$

$$F = 8.09$$

$$\underset{(0.540)}{NCR = -1.83 +} \quad \underset{(0.008)}{0.010\ IR} - \underset{(0.00002)}{0.00001\ PC} + \underset{(0.005)}{0.015\ BO} \qquad (23)$$

$$\bar{R}^2 = 0.76$$

$$D.W. = 1.88$$

$$F = 9.21$$

$$NCR = -1.246 + \underset{(0.575)}{} \quad \underset{(0.009)}{0.009\ IR} - \underset{(0.00002)}{0.00001\ PC} \qquad (24)$$

$$+ \underset{(0.006)}{0.016\ BO} + \underset{(0.003)}{0.001\ IF}$$

$$\bar{R}^2 = 0.73$$

$$D.W. = 1.95$$

$$F = 6.80$$

$$BCR = 0.102 + \underset{(0.018)}{} \quad \underset{(0.002)}{0.001\ IR} \qquad (25)$$

$$\bar{R}^2 = 0.44$$

$$D.W. = 1.52$$

$$F = 4.43$$

$$BCR = 0.089 + \underset{(0.027)}{} \quad \underset{(0.000002)}{0.000002\ PC} \qquad (26)$$

$$\bar{R}^2 = 0.47$$

$$D.W. = 1.54$$

$$F = 4.87$$

$$BCR = 0.084 + \underset{(0.031)}{} \quad \underset{(0.002)}{0.001\ IR} + \underset{(0.000002)}{0.000001\ PC} \qquad (27)$$

$$\bar{R}^2 = 0.43$$

$$D.W. = 1.52$$

$$F = 3.45$$

$$BCR = -0.140 + \underset{(0.147)}{} \quad \underset{(0.002)}{0.001\ IR} - \underset{(0.000004)}{0.000003\ PC} + \underset{(0.002)}{0.003\ BO} \qquad (28)$$

$$\bar{R}^2 = 0.46$$

$$D.W. = 2.06$$

$$F = 3.237$$

$$BCR = 0.175 + \underset{(0.002)}{0.005\ IR} + \underset{(0.000002)}{0.000001\ PC} - \underset{(0.001)}{0.001\ BO} - \underset{(0.006)}{0.002\ IF} \quad (29)$$

$$\bar{R}^2 = 0.59$$

$$D.W. = 1.44$$

$$F = 6.41$$

As far as the reserve ratios are concerned, there are two sets of factors which influence their movements. One is legal and the other is behavioural (i.e. the behaviour of the banks towards excess reserves). Changes in legal requirements in Trinidad and Tobago until 1980 were quite infrequent. The minimum reserve ratio of 5 per cent (of total deposits) set in 1966 did not change until February, 1973 when it was increased to 7 per cent. This latter figure was changed again in November 1974 to 9 per cent where it remained until 1980. Since February 1980, the effective required ratio has increased steadily as a result of the regulation that banks should maintain an additional reserve requirement of 15 per cent of the increase in deposit liabilities taking December 26, 1979 as base (see Table 6.4). In addition to legal reserves the banks have (since 1967) been required to hold (on a voluntary basis) secondary reserves (amounting to not less than 5 per cent of deposit liabilities) as a cushion to assist them in maintaining their liquid position and in meeting their reserve requirements. Secondary reserves can take the form of Treasury Bills, Special Deposits[30] with the central bank and government securities having up to one year maturity.

An examination of Table 6.4 (which shows the liquidity position of the commercial banking system in recent years), reveals that while the actual reserve position (Col. 2) of the banks taken together deviated little from the required position (Col. 1), actual liquidity (Col. 4) was until early 1983 generally far in excess of required liquidity (Col. 3). One of the key factors in this situation was the item 'Special Deposits' which tended to play an accommodating role in the absence of an insufficient amount of government securities to absorb available bank funds. Since there are no minimum or maximum limits governing the holding of Special Deposits, the banks have been able to use this item freely to suit their operational needs, particularly in view of the fact that required legal deposits and government securities have tended to satisfy almost 100 per cent of liquidity requirements. Since the end of 1982 Special Deposits, as a proportion of total deposit liabilities, have declined steadily.

The bank's attitude towards excess reserves (actual minus required) is conditioned by a number of factors. One of the most important of these arises from the need to hold contingency funds to deal with unusual developments in respect of clearing balances, currency withdrawals, speculative reserves, etc. If we assume banks to be profit maximising institutions, there will be a desire on their part to minimise the holding of non-income earning (or relatively low-income), earning assets. Very often, however, banks operate on positions that

are not in accordance with their desired portfolio structure.[31] There can be many reasons for this. One is the insufficiency of favoured investment outlets within existing legal constraints. Another is the well known problem of the inability of borrowers to meet the lending criteria used by the banks. In this connection, policies can vary widely depending on how the institutions perceive the risk situation and reconcile this to the loss of earnings resulting from their holdings of excess reserves or liquid assets.

Many of the factors that affect the behaviour of the banks' reserve ratio are not easily quantifiable. As an explanatory exercise, however, we decided (on the basis of average annual data) to regress the ratio of actual reserves to the total deposits (R) on certain variables which we feel exert some influence on the portfolio behaviour of the banks. The explanatory variables chosen were the Prime Rate (PR), the Discount Rate (DR), the Treasury Bill Rate (TR) and the Loans/Deposit ratio (LD). The positive sign before the Prime Rate coefficient in Equations (31) and (32) supports a prior reasoning which leads us to expect a direct relationship between the PR variable and variations in the reserve ratio. To the extent that the PR represents the cost of funds to borrowers, an increase would have the effect of curtailing public borrowing while a decrease would have the opposite effect. Such decisions on the part of the public, of course, have corresponding repercussions on the reserve position of the banks. Since lending rates tend to move in the same direction as changes in the discount rate, we should also expect a direct relationship between the latter and the reserve ratio. The negative sign associated with the DR variable does not, however, support this view. The Treasury Bill is an attractive liquid asset for commercial banks since it not only pays interest, but can be used as collateral for borrowing from the central bank. In this context, we can expect movements in the Treasury Bill rate to exert a certain amount of influence on the volume of cash holdings. The negative sign associated with the TR variable meets our expectation. The associated coefficients are not, however, significant. The inverse relationship between the loans/deposit ratio and the reserve ratio seems to follow logically from the portfolio structure of the banks. An expansion of bank lending inevitably exerts a downward influence on cash holdings, while a contraction of loans would tend to have a reverse effect.

As can be seen in Equation (30), the Treasury Bill rate alone explains 60 per cent of the variation in the reserve ratio. When we include the Prime Rate and the Discount Rate variables, the $\bar{R}^2$ increases by only 1 per cent. The addition of the Loans-Deposit ratio to the other three explanatory variables tends to decrease the coefficient of determination (Equation (32)). Together the four variables explain 55 per cent of the variation in the reserve ratio. This result, however, has to be seen against the fairly high standard error associated with the DR coefficient, and to a lesser extent with those of the DL and TR variables.

TABLE 6.4: LIQUIDITY POSITION OF COMMERCIAL BANKS, 1976–1984

(% OF TOTAL DEPOSIT LIABILITIES[1])

End of Period	Legal Reserve Position[2]		Liquidity Position				
					(of which)		
	Required	Actual[3]	Required	Actual	Deposits	Special Deposits	Treasury Bills
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
1976 IV Qr.	9.0	9.0	14.0	31.1	(9.0)	(17.6)	(4.4)
1977 1 Qr	9.0	9.1	14.0	26.0	(9.1)	(13.1)	(3.7)
2 "	9.0	9.1	14.0	20.0	(9.0)	(9.7)	(3.2)
3 "	9.0	9.1	14.0	19.9	(9.1)	(7.1)	(3.8)
4 "	9.0	9.0	14.0	23.1	(9.0)	(10.0)	(4.2)
1978 1 Qr	9.0	9.1	14.0	24.0	(9.1)	(10.4)	(4.5)[4]
2 "	9.0	9.0	14.0	24.8	(9.0)	(11.5)	(4.3)
3 "	9.0	9.2	14.0	19.2	(9.2)	(6.3)	(3.7)
4 "	9.0	9.2	14.0	17.6	(9.2)	(4.4)	(4.0)
1979 1 Qr	9.0	9.2	14.0	20.8	(9.2)	(7.9)	(3.7)
2 "	9.0	9.5	14.0	18.6	(9.5)	(5.6)	(3.5)
3 "	9.0	9.2	14.0	18.8	(9.2)	(6.3)	(3.3)
4 "	9.0	9.0	14.0	24.3	(9.0)	(12.2)	(3.1)

Notes:

[1] Average balance over reserve period adjusted for *inter-* and *intra-*bank cheques.

[2] The legal reserve requirement is computed on the basis of average deposit liabilities in the four preceding consecutive weeks ending with the last Wednesday. Each reserve period lasts one week. The legal reserve requirement has been 9% since November, 1974. From February 6, 1980, banks have been required to maintain an additional reserve requirement of 15% of the increase in deposit liabilities taking December 26, 1979 as base.

1980							
1 Qr	9.7	9.8	14.7	24.1	(9.8)	(11.8)	(2.5)
2 "	10.4	10.5	15.4	21.6	(10.5)	(8.8)	(2.3)
3 "	10.4	10.5	15.4	19.1	(10.4)	(6.0)	(2.7)
4 "	11.0	11.3	16.0	22.9	(11.3)	(8.6)	(3.0)
1981							
1 Qr	11.8	11.9	16.8	22.0	(11.8)	(7.5)	(2.7)
2 "	12.8	12.8	17.8	25.0	(12.8)	(9.6)	(2.6)
3 "	12.8	14.1	17.8	23.9	(14.1)	(7.2)	(2.6)
4 "	13.6	13.9	18.6	22.0	(13.9)	(6.2)	(1.9)
1982							
1 Qr	14.3	15.0	19.3	23.0	(15.0)	(6.8)	(1.8)
2 "	15.4	15.2	20.4	27.2	(15.2)	(10.1)	(1.9)
3 "	15.6	16.1	20.6	25.7	(16.1)	(7.8)	(1.8)
4 "	16.1	16.5	21.1	28.6	(16.5)	(10.4)	(1.7)
1983							
1 Qr	16.5	16.7	21.5	25.0	(16.7)	(6.8)	(1.5)
2 "	16.6	16.2	21.6	22.9	(16.2)	(5.2)	(1.5)
3 "	16.6	16.8	21.6	22.8	(16.8)	(3.2)	(2.8)
4 "	16.9	16.9	21.9	24.1	(16.9)	(3.4)	(3.8)
1984							
1 Qr	17.1	16.8	22.1	23.7	(16.8)	(2.9)	(4.0)
2 "	17.3	17.2	22.3	22.5	(17.2)	(1.7)	(3.6)
3 "	17.3	17.3	22.3	22.6	(17.3)	(1.1)	(4.2)
4 "	17.0	16.9	22.0	21.6	(16.9)	(0.7)	(4.0)

[3]Average balance over reserve period.

[4]The required liquidity position comprises legal reserve requirement plus secondary reserves of 5%. The latter must be held in Treasury Bills, Special Deposits, and Government Securities of up to one year's maturity.

Source: Central bank, *Annual Reports*, various issues.

$$R = \underset{(0.053)}{0.223} - \underset{(0.012)}{0.012\ TR} \qquad (30)$$

$$\bar{R}^2 = 0.60$$

$$D.W. = 1.90$$

$$F = 7.40$$

$$R = \underset{(0.168)}{0.110} + \underset{(0.008)}{0.015\ PR} - \underset{(0.024)}{0.003\ DR} - \underset{(0.013)}{0.019\ TR} \qquad (31)$$

$$\bar{R}^2 = 0.61$$

$$D.W. = 1.82$$

$$F = 5.05$$

$$R = \underset{(0.183)}{0.122} + \underset{(0.009)}{0.016\ PR} - \underset{(0.027)}{0.001\ DR} \qquad (32)$$

$$- \underset{(0.015)}{0.018\ TR} - \underset{(0.002)}{0.001\ DL}$$

$$\bar{R}^2 = 0.55$$

$$D.W. = 1.83$$

$$F = 3.72$$

MODIFIED VERSIONS OF THE CASH-BASE MODEL

There are a number of criticisms which can be levelled against the cash-base model. From a forecasting point of view, perhaps, the most important of these is the mechanistic and static nature of the simple version of the monetary-base equation. Oyejide has suggested that this shortcoming can be overcome to some extent by incorporating the role of expectations in the analysis.[32] By assuming that the relevant monetary variable which is desired is a theoretical magnitude that is not directly observable and then relating the desired to the observed values *via* an appropriate partial adjustment process, he modifies a generalised cash-base model (Equation (33)) to make the money stock (M_t) at any given period dependent on high-powered money (H_t) in that period and money in the previous period (M_{t-1}) (Equation (34)), and then explores the implications of a situation where the money stock in the present period (M_t) is dependent on high-powered money in the present period (H_t) and reserves (R_{t-1}) and currency (C_{t-1}) respectively in the past period (Equation (35)).

$$M_t = m_o + m_1 H_t \qquad (33)$$

m_o = constant

m_1 = multiplier

$$M_t = k_o + k_1 H_t + k_2 M_{t-1} \quad (34)$$

k_o = constant

k_1 and k_2 = multipliers

$$M_t = Z_o + Z_1 H_t + Z_2 R_{t-1} + Z_3 C_{t-1} \quad (35)$$

Z_o = constant

Z_1, Z_2 and Z_3 = multipliers.

Using quarterly data (for the period 1969-84) we have estimated these equations for Trinidad and Tobago using both the narrow (M_n) and broad money (M_b) concepts. The results are presented in Tables 6.5 and 6.6. For each equation we have an alternative form in which we have included three dummy variables (DV_1, DV_2 and DV_3) representing the second, third and fourth quarters respectively in order to remove the influence of seasonal variations. The equations have been corrected for serial correlation. An examination of the equations in model 1 in Tables 6.5 and 6.6, shows that high-powered money explains about 99 per cent of the variation in M_n. The inclusion of the dummies leaves the $\bar{R}^2$ unchanged, but the value of the multiplier falls. The standard error (S.E.) of the multiplier (the coefficient of H) is significant, but those of the dummies are not. Model 2 which includes lagged money as an explanatory variable seems to have slightly greater explanatory powers than Model 1, if we are to judge from the value of $\bar{R}^2$ which increases by 0.002. The inclusion of the dummies does not appear to affect the $\bar{R}^2$, but, as before, the value of the multiplier falls. The coefficients of both high-powered money and lagged money are significant. In Model 3 the money stock is regressed on high-powered money, reserves lagged one year and currency in circulation also lagged one year. In this specification, the $\bar{R}^2$ is slightly lower than in Model 2. The coefficients of lagged reserves have a negative sign, but the associated standard errors are high. In Equation (33c) to 35(d) the focus is on the broad money supply with the specifications the same as previously. The salient feature of these equations is that the coefficients of variation tend to be slightly higher than in the equations using the narrow money supply as the dependent variable. The explanatory variables are all significant.

TABLE 6.5

REGRESSIONS WITH NARROW MONEY (M_n) AS THE DEPENDENT VARIABLE

MODEL I

$$M_n = \underset{(995.514)}{1286.642} + \underset{(0.086)}{0.389\,H} \quad (33a)$$

$\bar{R}^2 = 0.986$

D.W. = 1.971

$$M_n = \underset{(1292.485)}{1450.285} + \underset{(0.098)}{0.351\,H} + \underset{(19.281)}{25.707\,DV_1} + \underset{(23.528)}{13.209\,DV_2} \quad (33b)$$

$$+ \underset{(19.256)}{12.025\,DV_3}$$

$$\bar{R}^2 = 0.986$$

$$D.W. = 1.971$$

MODEL II

$$M_n = \underset{(73.817)}{114.320} + \underset{(0.082)}{0.432\,H} + \underset{(0.102)}{0.522\,M_{n-1}} \quad (34a)$$

$$\bar{R}^2 = 0.988$$

$$D.W. = 2.063$$

$$M_n = \underset{(76.301)}{91.924} + \underset{(0.088)}{0.416\,H} + \underset{(0.111)}{0.538\,M_{n-1}} + \underset{(24.326)}{38.115\,DV_1} \quad (34b)$$

$$+ \underset{(23.634)}{15.222\,DV_2} + \underset{(24.188)}{26.820\,DV_3}$$

$$\bar{R}^2 = 0.988$$

$$D.W. = 2.068$$

$$M_n = \underset{(193.443)}{255.217} + \underset{(0.085)}{0.446\,H} - \underset{(0.155)}{0.053\,R_{-1}} + \underset{(0.619)}{1.358\,C_{-1}} \quad (35a)$$

$$\bar{R}^2 = 0.987$$

$$D.W. = 1.978$$

$$M_n = \underset{(186.147}{211.187} + \underset{(0.094)}{0.393\,H} - \underset{(0.155)}{0.033\,R_{-1}} + \underset{(0.611)}{1.528\,C_{-1}} \quad (35b)$$

$$+ \underset{(20.814)}{39.780\,DV_1} + \underset{(23.977)}{27.444\,DV_2} + \underset{(21.567)}{28.605\,DV_3}$$

$$\bar{R}^2 = 0.987$$

$$D.W. = 1.980$$

TABLE 6.6

REGRESSIONS WITH BROAD MONEY (M_b)
AS THE DEPENDENT VARIABLE

MODEL I

$$M_b = \underset{(28,242.717)}{14,652.278} + \underset{(0.257)}{0.946\ H} \qquad (33c)$$

$$\bar{R}^2 = 0.990$$

D.W. = 2.059

$$M_b = \underset{(27,576.681)}{13,997.707} + \underset{(0.269)}{1.035\ H} + \underset{(60.484)}{142.508\ DV_1} + \underset{(60.100)}{155.163\ DV_2} + \underset{(59.699)}{98.315\ DV_3} \qquad (33d)$$

$$\bar{R}^2 = 0.991$$

D.W. = 2.066

MODEL II

$$M_b = \underset{(34.865)}{72.742} + \underset{(0.162)}{0.314\ H} + \underset{(0.053)}{0.927\ M_{b-1}} \qquad (34c)$$

$$\bar{R}^2 = 0.991$$

D.W. = 2.022

$$M_b = \underset{(69.046)}{-46.383} + \underset{(0.168)}{0.350\ H} + \underset{(0.055)}{0.914\ M_{b-1}} + \underset{(112.937)}{266.876\ D_1} + \underset{(78.380)}{85.079\ D_2} + \underset{(109.532)}{145.212\ D_3} \qquad (34d)$$

$$\bar{R}^2 = 0.991$$

D.W. = 2.022

MODEL III

$$M_b = \underset{(88.818)}{118.988} + \underset{(0.241)}{1.544\ H} - \underset{(0.408)}{1.615\ R_{-1}} + \underset{(1.140)}{8.843\ C_{-1}} \qquad (35c)$$

$$\bar{R}^2 = 0.990$$

D.W. = 1.905

$$M_b = \underset{(103.124)}{-5.195} + \underset{(0.265)}{1.515}\,H - \underset{(0.410)}{1.533}\,R_{-1} + \underset{(1.117)}{8.703}\,C_{-1} \qquad (35d)$$

$$+ \underset{(67.554)}{192.518}\,DV_1 + \underset{(75.052)}{251.111}\,DV_2 + \underset{(69.698)}{118.595}\,DV_3$$

$$\bar{R}^2 = 0.992$$

$$D.W. = 1.990$$

It is widely regarded that one of the major tests of a good model is its ability to predict. In Table 6.7 we show the percentage deviation of the predicted values from the actual values for each of the equations in the period 1980 (Qtr. I) to 1984 (Qtr. IV). It may be difficult to pick the best of the equation by a casual examination of these deviations. In this connection, a useful statistic which is often used to supplement the $\bar{R}^2$ as a measure of goodness of fit is the standard error of regression (SER) which is essentially the standard deviation of the residuals. The smaller the SER, the better the fit. Table 6.8 shows the SER associated with each of the equations. Among the group with narrow money as the dependent variable equations 34(a) and 34(b) appear to be the best of the lot. In the equation explaining broad money equation 35(d) has the lowest standard error.

THE RELEVANCE OF TRADITIONAL CONTROL TECHNIQUES

Earlier in the discussion we saw the money stock (M) as the product of the money multiplier (m) and high-powered or base-money (H). It is clear from this equation that changes in the money supply can come about as a result of changes in either 'm' or 'H' or both. The multiplier, of course, is derived from the currency and reserve ratios, and is therefore affected by the behaviour of the public and the banks. Assuming 'H' to be fixed, a reduction in the currency or reserve ratio would have the effect of increasing the value of the multiplier while an increase in these ratios would have the opposite effect. The main influences on high-powered money, as we saw earlier, have been movements in the balance of payments and central bank's net credit to government. Advances by the central bank to the commercial banks can also affect the supply of base money. As we shall see later, this latter factor has been of negligible importance in Trinidad and Tobago in recent years in view of the liquidity position of the banking system and the tendency of the banks to borrow from each other to correct liquidity positions. As channels through which the central bank can influence 'H', it is debatable whether we can regard the autonomous items of the balance of payments and central bank credit to government as policy instruments which can be actively used by the central bank for affecting the money stock.[33] Both are a reflection of certain primary factors (or objectives) to which the Bank responds more or less passively. Borrowing by government from the central bank is dictated by fiscal needs, while changes in foreign assets are largely determined by broad economic considerations and performance.

The scope for control, therefore, narrows down to policies and instruments which affect the multiplier, and in cases where the central bank provides

TABLE 6.7: PERCENTAGE DEVIATION OF PREDICTED MONEY FROM ACTUAL MONEY, 1980-1984

End of Period (Qtr.)	NARROW MONEY						BROAD MONEY					
	Eq. (33a)	Eq. (33b)	Eq. (34a)	Eq. (34b)	Eq. (35a)	Eq. (35b)	Eq. (33c)	Eq. (33d)	Eq. (34c)	Eq. (34d)	Eq. (35c)	Eq. (35d)
1980												
1 Qtr	12.2	12.8	8.0	9.6	10.3	11.3	3.2	5.5	5.2	6.0	7.8	8.0
2 "	6.3	4.3	7.9	5.9	9.7	7.5	3.7	1.5	2.8	-1.6	0.9	3.6
3 "	-0.8	-0.5	1.3	1.5	1.9	2.1	0.3	-0.6	-1.6	-1.2	-1.6	1.4
4 "	-25.8	-25.4	-22.2	-22.3	-23.7	-23.1	-10.2	-9.3	-8.3	-7.6	-8.1	-9.9
1981												
1 Qtr	-8.2	6.6	-9.0	-6.2	-11.7	-9.6	-4.0	-1.5	-6.2	0.1	-3.1	-1.5
2 "	9.9	8.8	11.4	10.2	9.3	7.7	2.8	0.2	2.6	1.0	0.8	-2.3
3 "	-1.0	-0.6	2.3	-2.1	-0.9	-0.9	2.5	1.4	0.4	-0.5	-0.1	1.7
4 "	6.6	6.7	5.0	4.9	6.0	6.2	3.7	4.7	2.0	2.1	1.9	2.8
1982												
1 Qtr	-2.5	-1.9	-3.3	-2.2	-4.3	-3.0	4.7	6.6	4.3	5.4	6.2	2.4
2 "	1.3	0.6	-2.0	-2.8	-0.5	-1.4	3.7	1.4	6.7	2.9	5.0	-1.5
3 "	3.8	4.3	-1.3	-0.7	0.8	0.4	2.5	1.6	0.8	-1.1	0.2	2.0
4 "	11.1	11.6	8.5	8.6	8.9	9.7	4.0	4.2	4.3	4.4	4.0	-0.8
1983												
1 Qtr	-2.1	-2.5	-6.2	-5.9	-3.4	-3.7	-10.9	-8.9	-15.9	-9.1	-14.4	-8.9
2 "	-0.1	-1.4	-1.3	-2.3	-1.0	-2.8	10.2	9.0	1.5	6.9	1.2	1.2
3 "	-3.1	-2.6	-1.6	-1.2	-1.9	-1.4	6.5	6.0	3.2	0.3	2.6	1.4
4 "	-1.4	-1.0	-1.2	-1.1	-3.7	-3.4	0.5	0.9	0.0	-0.3	0.0	-4.3
1984												
1 Qtr	0.8	1.0	-1.0	-0.1	-1.4	-1.1	-9.9	-8.1	-14.3	-12.3	-12.4	-9.5
2 "	-1.1	-2.4	-0.6	-1.9	1.6	0.3	9.5	8.2	3.9	8.0	3.6	8.8
3 "	-3.2	-2.7	-3.3	-2.8	-4.3	-4.2	4.1	3.6	2.6	-0.8	2.1	0.8
4 "	2.0	1.5	2.1	1.4	2.9	1.8	0.5	-0.6	-1.1	-0.7	-1.8	2.9

TABLE 6.8: STANDARD ERRORS OF REGRESSION FOR CASH BASE MODELS

Equation No.	Standard Error of Regression
Narrow Money	
33 (a)	88.862
33 (b)	89.570
34 (a)	85.111
34 (b)	85.455
35 (a)	88.862
35 (b)	87.913
Broad Money	
33 (c)	249.627
33 (d)	238.663
34 (c)	245.266
34 (d)	239.129
35 (c)	251.140
35 (d)	232.615

accommodation to the commercial banks, manipulating the terms of such accommodation. The traditional instruments can, therefore, be divided into two groups:[34] those operating on the demand side (i.e. those aimed at affecting the behaviour of the public and the banks) and those operating on the supply side (i.e. those whose objectives are to change the level of reserve money). Certain techniques operate through both channels.

OPEN MARKET OPERATIONS

Open market operations have evolved to become the most potent instrument for affecting the cash reserves of commercial banks in the advanced market economy countries. It is a flexible tool and can be used continually to bring about even small changes in the cash position of banks in an upward or downward direction. Though central banks in developing countries are generally empowered to undertake open market operations, conditions generally do not favour the use of this instrument as a means of monetary control. In most cases the securities market is in a very incipient stage of development. A necessary prerequisite for successful open market operations is the existence of an active and broad securities market – broad in the sense of having a large number of buyers and sellers and a wide range of securities. This requirement relates directly to the frequency and scope of operation that may be necessary to affect the cash-deposit ratio of the banks without severely disturbing the prices of securities or the interest rates.

Open market operations has so far not been used for influencing the banking system in Trinidad and Tobago. The main reason appears to be the unsatisfactory state of the securities market.[35] Attempts are being made to foster a local money and capital market, though one could hardly, at this stage, describe it as sufficiently active or broad. Government debt policy has so far played the most important part in the growth (or if one likes the deepending) of this market. Treasury Bills outstanding increased from $57 million at the end of 1969 to $101 mn at the end of 1975, and to $281 million at the end of 1984. Of this latter figure commercial banks were holding over 80 per cent. Outstanding short, medium and long term bonds, taken together, grew from $146 million at the end of 1969 to $815 million at the end of 1984. Of this latter figure, commercial banks' holdings amounted to about 20 per cent. Other major holders included the National Insurance Board and life insurance companies. In addition to government securities, the growth of the capital market has been helped by the increasing appearance of share issues made by companies which have decided to go public. The number of shares sold in the secondary market increased from 10.1 million in 1979 to 89.4 million in 1984. In 1983 this number declined to 71.9 million, and in 1984 to 50.1 million. New issues which totalled $19.7 million in 1980 dropped to $6.3 million in 1982, increased the following year to $21.0 million, but fell again in 1984 to $7.4 million.

The absence of sufficient private instruments has placed a heavy burden on government securities in meeting a number of different functions, and this places further restrictions on the scope for open market operations. Under existing legislation, commercial banks and other financial institutions have certain obligations to meet with respect to liquidity or local assets requirements. In order to provide eligible assets, government has often had to issue securities even when its fiscal position did not warrant this. From the government's point of view there are cost implications in servicing an unnecessary debt, but this does not concern us here. To the extent that financial institutions have barely enough securities to meet their legal requirements, there exists a pressure to hold such instruments to maturity regardless of the rate of return. While in such circumstances attempts by the central bank to sell securities (i.e. reduce the reserves of the banks) may encounter little difficulty, buying securities to encourage an expansion in the money supply may meet with a limited response. A great deal would depend on the portfolio position of the banks at the particular point in time.

There is a final point worth making with respect to the use of open-market operations as an instrument of monetary control in a thin market. In developing countries it is often difficult to separate monetary and fiscal policy from long term development policy. In these countries, public borrowing is not only a means for absorbing liquidity from the system, but is an integral part of the whole savings-investment process. In this connection, if government's borrowing ability is not to be impaired, the need to avoid actions and policies which could discourage the orderly growth of the local capital market would appear to be an essential consideration.

RESERVE REQUIREMENTS

The original purpose of compelling commercial banks to keep a certain proportion of their deposits in reserves was to protect depositors i.e. to ensure that the banks were in a position to meet currency withdrawals of their clients. It was subsequently found that changing the reserve/deposit ratio constituted a direct and powerful tool for affecting the money supply. This is accomplished in two ways. A decrease in the ratio, for example, releases a certain amount of reserves which can be used to increase deposits. Such a decision, of course, would also have the effect of increasing the multiplier, thus enhancing the impact on the money stock for any increase in the reserve base. An increase in the reserve ratio would tend to work the other way.

Though changes in reserve requirements have certain obvious attractions as a tool of monetary control, it is not a frequently used instrument either in developed or developing countries. One of the major arguments against it is that it is both blunt and relatively inflexible compared to open market operations. Another argument is that it is difficult to bring about small changes in the reserve base by changing the ratio. Questions have also been raised about its efficacy in a situation where banks tend to keep excess reserves or are accustomed to seeing large fluctuations in their reserve ratios. Too frequent use of this instrument may lead to a situation where banks are able to anticipate the directions and quantum of change in the ratio and thus make the necessary adjustments required to reduce or blunt the desired impact on their operations. There are, of course, other considerations arising from the use of reserve requirements which the authorities cannot afford to ignore. Generally, reserve requirements are applied only to commercial banks, and this obviously puts them at a disadvantage *vis-a-vis* other financial institutions who escape any costs involved in portfolio adjustments when the ratio is increased. Largely because of these considerations, some legislations specify the limits within which the ratio can change and even the frequency of change within given periods.

As indicated earlier, in the period between 1966 and 1980 the cash ratio was rarely used in Trinidad and Tobago as an instrument of monetary control. The minimum reserve ratio of 5 per cent (of total deposits) set in 1966 did not change until February, 1973 when it was increased to 7 per cent. The latter figure was next changed in November, 1974 to 9 per cent where it remained until 1980. With effect from February 6, 1980 a decision was taken to have the banks maintain an additional reserve requirement of 15 per cent of the increase in deposit liabilities taking December 26, 1979 as base. This has resulted in an increase in the effective cash reserve requirement for the banking system as a whole (see Table 6.4). In 1984 the requirement averaged about 17 per cent. The banks, as indicated earlier, are also required to observe a liquidity ratio which now comprises the legal reserve and a secondary reserve of 5 per cent made up to Treasury Bills, Special Deposits and government securities of up to one year's maturity. It is worth pointing out that with the exception of the legal cash ratio, the respective eligible assets are not specified, either in terms of relative proportions or in relation to deposit liabilities. The present specification is extremely flexible in that it permits the liquidity requirements beyond the legal cash reserve to be met with any one asset or any combination of eligible

assets. In this situation, Special Deposits could be run down to zero if the holding of government securities measures up to the required liquidity requirements. Under existing arrangements, the central bank could not manipulate the reserve assets individually if it wanted to provide a back up to the cash ratio without using the overall liquidity lever.

BANK OR RE-DISCOUNT RATE

The use of this technique of monetary management derives from the traditional function of the central bank as lender of last resort to the commercial banks. Changes in the discount rate affect credit conditions in two ways. The first is the cost effect. An increase in the bank rate is intended to increase the cost of borrowing and, ultimately, to discourage an expansion in credit. A decrease is used to attain the opposite effect. The second channel operates through the so-called 'announcement effect'. Even when changes in the discount rate have no direct impact on the cost of funds, there may still be an effect on the plans of borrowers and lenders, which may be altered in line with the desired intentions of the authorities.

In the developed countries changes in the Bank Rate tend to be followed by changes in other market rates. One reason for this stems from the fact that an unsatisfactory response from the banks can elicit other stronger measures which the central bank is in a position to use. A second explanation derives from the fact that since the commercial banks in these countries operate on very thin margins they tend to turn regularly to the central bank as a source of funds.

It is often argued that in a situation where commercial banks do not borrow from or discount at the central bank on a regular basis, the use of the discount mechanism will have a limited application. Even where this is the case, however, the banks may feel themselves morally obliged to support the policies of the central bank by changing their rates in the required direction. Between the end of 1966 and 1973 the Central Bank of Trinidad and Tobago changed its discount rate seven times. Between 1974 and November 1983 it remained unchanged at 6.00 per cent. In November 1983 the bank rate was increased to 7.50 per cent where it has remained since. In most instances the commercial banks have reacted by adjusting their prime rates, even though their dependence on central bank resources is limited. Whether these changes had any impact on the volume of lending, it is difficult to gauge. Until the early 1970s the Bank apparently changed the discount rate mainly for announcement purposes and this is evident to some extent in the following statement:

> While the effectiveness of the local discount rate as a regulator has been questioned in the past on the grounds that it is not an effective price of funds to the commercial banks who do little borrowing from the Central Bank, it has been accepted as a reflection of the Central Bank's assessment of monetary and financial needs of the economy.[36]

CEILINGS ON BANK CREDIT AND SELECTIVE CREDIT CONTROLS

According to Aghevli "ceilings on aggregate bank credit affect total liquidity directly, as opposed to affecting the product of the money multiplier or reserve

money individually. Since ceilings may force banks to hold excess reserves they could impinge directly on the multiplier".[37] Selective credit controls, on the other hand, are concerned with the distribution of bank loans to the various sectors (or among various purposes), formulated against the objective of governmental policy.

Section 42 of the *Trinidad and Tobago Central Bank Act* empowers the Bank (with the approval of the Minister of Finance) to "impose control in respect of the volume terms and conditions upon which credit may be made available to all or any sectors of the economy, when in its judgement the imposition of such controls is necessary to restrict or prevent an undue expansion of credit". Such controls can be extended both to banks and non-bank financial institutions. Until quite recently, the Bank relied mainly on the prescription of guidelines with respect to the minimum downpayment and maximum repayment period for instalment credit related to the purchase of motor cars and certain household durables. Moral suasion was apparently used to encourage the flow of funds to priority sectors. This approach may have had some impact on the banks, but in recent years it had become clear that the allocation of resources favoured by the banks was not in accord with the wishes of the authorities. On the 5th November, 1979, the central bank gave an explicit directive to the effect that "the amount of credit that each commercial bank should extend to individuals for non-business purposes should not exceed twenty-five per cent of the increase over the total amount of credit extended by such a bank as at 30th September, 1979". The effect of this regulation on the operations of the commercial banks in the period immediately following its institution is difficult to assess. In its 1979 annual report, the central bank noted that in the last quarter of 1979 the value of business loans outstanding actually fell and although the value of non-business loans increased by a relatively small amount it nonetheless exceeded the net increase in total loans and advances outstanding. The Bank advanced two possible explanations for this situation. One stemmed from the possibility that commitments for non-business loans had already been made by banks before the issue of the guidelines on November 5th. The other was based on the argument that the scope of adjustment was complicated by the unpredictably high repayment of outstanding loans and advances by a few large business clients of the banks.[38]

The aim of selective credit regulation is to change the preference function of the banks which are explicitly asked to restrict the volume of consumer loans and to expand their credit for productive purposes. Given the lack of specificity with respect to the latter aspect, the banks are still left with a wide range of areas over which to distribute their credit. Alternatively, of course, they can accumulate reserves, if prospective borrowers in the productive sectors do not meet the required credit-worthiness standards. The net cost of funds would, no doubt, tend to influence the extent to which the latter option is pursued. There is another important point worth noting here. Since consumer lending is associated with a relatively high rate of return, lending institutions not covered in the directive will thus be placed in a more favourable position *vis-a-vis* the commercial banks. The activities of the non-bank institutions could well frustrate the intentions of the authorities to the extent that a reduction of total consumer spending is desired.

CONTROL OF INTEREST RATES

By controlling interest rates paid on deposits or charged on loans, the authorities can influence the behaviour of both the banks and the public, and ultimately the value of the multiplier. Though the *Central Bank Act* was amended in 1978 to allow the Bank (through the country's president) to fix interest rates, this authority has so far not been used. The bank's approach to the issue of interest rates is far from clear. One of the main factors behind the interest rate amendment is reported to have been concern with the cost of credit. Loans rates not only continue to be high, but there appears to be a widening spread between these rates and the real rate of return to depositors.

MORAL SUASION

Moral suasion is not a control device in the sense of having a *de jure* identity. It generally refers to use of appeals and consultations by the central bank as a means of influencing the commercial banks to adjust their behaviour or policies in some desired way. Though the technique relies on voluntary cooperation, it is often the most effective in situations where the use of some of the more traditional tools may be highly circumscribed.

Moral suasion is often used in reference to a wide range of bank variables (e.g. lending rates, interest rates paid on deposits, allocation and terms of credit, etc.) and therefore affect both reserve money and the multiplier. As indicated earlier, the Trinidad and Tobago Central Bank has relied on moral suasion as one of the major means of influencing bank behaviour. It would appear from recent developments that it has not proved as effective as the authorities would like, and this is manifested, to some extent, in the decision in 1978 to amend the *Central Bank Act* to permit the Bank to set interest rates and the more recent decision to lay down specific selective control guidelines. Nevertheless, in view of the limited scope for the use of the other techniques described, moral suasion remains one of the more practical means of affecting banks' conduct.

CONCLUSION

Naive presentations of the money supply process in the literature convey the view that central banks have complete control over the money stock. This is done by taking certain behavioural variables as stable or constant and by implicitly or explicitly assuming a closed economy framework. The process, as we have seen, is much more complex than this. It is worth repeating here that the control of the money supply does not rest on having an unchanging multiplier. The ability to predict movements in its components is crucial to the exercise. In an open economy, perhaps, the more important question surrounds the ability of the central bank to control base money. Different types of issues present themselves here depending on the nature of the economy and the institutional characteristics. Some economists, for example, argue that in a fixed exchange rate situation capital movements responding to interest rate changes tend to offset the latter's impact on the money stock. This view assumes that capital flows are highly sensitive to international interest rates differentials. In developing countries the relevance of the traditional institutional set-up raises questions of the technical ability of the authorities to exercise influence over the level of liquidity prevailing in the economy at any point in time. In

these economies, however, where fiscal policy tends to be dominated by developmental objectives rather than liquidity considerations, government's revenue/expenditure activities tend to have a crucial effect on the money supply. The availability of foreign exchange enhances the spending power of the government, but it is the rate at which the foreign exchange is monetized that largely determines the rate of growth of base money.

As indicated in the essay, the extraordinary expansion in the money supply in Trinidad and Tobago in recent years has come about largely as a result of the financing of fiscal deficits in the non-oil sector by foreign exchange earned in the oil sector. The consequences of this type of situation are quite different from one where expenditure is financed by the printing of money without the backing of foreign assets. Whereas in the latter case the increased demand for goods and services pressing against limited domestic supplies tends to result in a rapid increase in domestic prices, (at least in the short run), in the former the pressure can be eased by allowing greater accessibility to imports. In order to encourage greater local production or to conserve foreign exchange, however, the authorities may find it necessary to restrict imports directly or indirectly, and to the extent that domestic suppliers cannot provide an adequate response to the demand situation inflationary tendencies are reinforced. Measures intended to alleviate the problem may serve only to compound it by inducing further increases in the money supply. We should add that while an open policy on imports may have a contractionary effect on the monetary base, it does not necessarily resolve the inflation problem. A great deal would depend on the prices of foreign goods, be they intermediate or final products. The reported decline in the inflation rate in 1985 may have been the result of not only the contraction of the domestic economy, but the fall in inflation rates in major trading countries.

NOTES

[1]Two important studies in this respect which have influenced other investigations are M. Friedman and A.J. Schwartz, *A Monetary History of the United States, 1867-1960* Princeton University Press, Princeton, 1963; and Phillip Cagan, *Determinants and Effects of Changes in the Stock of Money, 1875-1960,* Colombia University Press, New York, 1965.

[2]See, for example, A. Oyejide, "Critique of the Money Multiplier Approach to Money Supply Determination: A Theoretical Extension and Some Empirical Tests," *N.E.S. & S.S.* Vol. 16, No. 2, July, 1974.

[3]For an excellent presentation of this theory see A.D. Bain, *The Control of the Money Supply,* Penguin Books Ltd., Harmondsworth, 1978, pp. 32-50.

[4]See Victor Argy, "The Impact of Monetary Policy on Expenditure, with Particular Reference to the United Kingdom", IMF *Staff Papers,* Vol. 16, 1969.

[5]M. Friedman and A. Schwartz, *A Monetary History of the United States, 1867-1960, op. cit.*

[6]It would be observed that F&S use the reciprocal of the conventional currency and reserve ratios. It is also worth noting that while some writers define the currency ratio in relation to deposits (demand or total), others prefer total money in the denominator. In the context of the multiplier analysis the distinction does not appear to hold any significance.

[7]See Karl Brunner and H. Meltzer, "Some Further Investigations of Demand and Supply Functions for Money", *The Journal of Finance,* May, 1964.

[8]Brunner and Meltzer have also experimented with a non-linear hypothesis in which the money stock and interest rate emerge from the inter-action of the public's asset supply to banks and the banks' portfolio adjustment. See, "Some Further Investigations. . .", *op. cit.*

[9]See, for example, J.J. Horton, Jr., "Is there a Money Supply Function?" *Quarterly Review of Economics and Business,* Vol. 9, Summer, 1969.

[10]L.E. Gramley and S.B. Chase, Jr., "Time Deposits in Monetary Analysis", *Federal Reserve Bulletin,* Vol. 51, No. 10, October, 1965.

[11]See, L.C. Anderson, "Three Approaches to Money Stock Determination", *Review*, Federal Reserve Bank of St. Louis, August, 1968.

[12]*Ibid.*

[13]*Ibid.*

[14]See, A. Oyejide, *op. cit.*

[15]If $b = \frac{D}{R}$, and $p = \frac{D}{C}$

Equation (9) can be written as

$$(1)\quad M = H \cdot \frac{b(1+p)}{(b+p)}$$

Taking log. of (1) and differentiating with respect to time yields:

$$(2)\quad \log M = \log H + \log b + \log (1+p) - \log (b+p)$$

$$(3)\quad \frac{1}{M}\frac{dM}{dt} = \frac{1}{H}\frac{dH}{dt} + \frac{p}{b(b+p)}\frac{db}{dt} + \frac{(b-1)}{(1+p)(b+p)}\frac{dp}{dt}$$

Equation (3) shows changes in the money stock can be split into changes in H, b and p. The last term in Equation (2) shows that the interaction between 'b' and 'p' also has an effect.

Over discrete periods of time the effect of each determinant can be approximated by holding two determinants constant at their initial values while allowing the third to take on its observed rate of change.

The total change in log M between two time points t_o and t_1 is

$$\Delta \log M = \log M_1 - \log M_o$$

$$\text{Effect of } \Delta H = \Delta \log M\ (b = b_o,\ p = p_o)$$

$$= \log H_1 - \log H_o$$

$$\text{Effect of } \Delta b = \Delta \log M\ (H = H_o,\ p = p_o)$$

$$= \log b_1 - \log b_o$$

$$- \log (b_1 + p_o) + \log (b_o + p_o)$$

$$\text{Effect of } \Delta p = \Delta \log M\ (H = H_o,\ b = b_o)$$

$$= \log (1 + p_1) - \log (1 + p_o)$$

$$- 1 \log (b_o + p_1) + \log b_o + p_o)$$

$$\text{Inter-action of b and p} = - \log (b_1 + p_1) + \log (b_1 + p_o) +$$

$$\log (b_o + p_1) - \log (b_o + p_o)$$

[16]The sum of effects should be equal to 100. This may not be so, however, if, for example, there are problems in the data.

[17]The term 'central bank credit to government' as used in this essay covers direct advances as well as resources made available through the purchase of securities.

[18]C. Bourne, "The Determination of Jamaican Money Stock: 1961-1971", *Social and Economic Studies,* December, 1976.

[19]*Ibid.*

[20]*Ibid.*

[21]Bourne rationalizes this procedure by assuming that the banks' reserve holdings and investment in foreign assets affect the value of the multiplier in the same manner, in the sense that they both represent investible funds which are not loaned out to resident economic enterprises, and thereby do not result in equivalent-valued deposit creation.

[22]With respect to the currency ratio, Bourne found a much more stable situation in Jamaica. The coefficient of variation for the narrow ratio was 0.07 as compared to 0.16 for the broad ratio. The CVs for the reserve ratios were high (0.26 with demand deposits in the denominator and 0.19 when total deposits was taken), but relatively smaller than the coefficients for Trinidad.

[23]Central Bank of Trinidad and Tobago, *A History of Banking and Currency in Trinidad and Tobago, 1974,* p. 15.

[24]See, for example, J.O. Khazzoom, *The Currency Ratio in Developing Countries,* Praeger, New York, 1966, p. 36.

[25]The share of the lowest 50% of households dropped from 19.2% in 1957/58 to 15.5% in 1971/72 but increased to 19% in 1975/76. The share of the top 19% increased from 33.3% in 1957/58 to 37.8% in 1971/72 but is estimated to have decreased to 31.4% in 1975/76. See Winston Dookeran, "The Distribution of Income in Trinidad and Tobago (1957-76)", Unpublished paper, Department of Economics, UWI, St. Augustine.

[26]Between 1969 and 1972 retail prices (as reflected in the Retail Price Index) increased on average by 4.4% per annum. Between 1973 and 1984, however, the comparable figure was 14.6%.

[27]Khazzoom, *op. cit.*

[28]Phillip Cagan, "The Demand for Currency Relative to the Total Money Supply", *Occasional Paper No. 62,* National Bureau of Economic Research Inc., 1958.

[29]Bourne, *op. cit.*

[30]Interest is payable on these deposits.

[31]The term 'surplus reserves' is used by some writers to describe the difference between 'desired reserves' and 'actual reserves'.

[32]Oyejide, "A Critique of the Money Multiplier Approach to Money Supply Determination", *op. cit.*

[33]See B.B. Aghevli, *et al.*, "Monetary Policy in Selected Asian countries", *IMF Staff Papers*, December, 1979.

[34]*Ibid.*

[35]See, E. Bobb, (Governor of the Central Bank of Trinidad and Tobago), "Some Aspects of Monetary Policy in Trinidad and Tobago", Central Bank's *Quarterly Economic Bulletin*, Vol. III, No. IV, December, 1978.

[36]Central Bank, 1966 *Annual Report*, p. 10.

[37]Aghevli, *et al.*, *op. cit.*

[38]See the 1979 Central Bank *Annual Report*, p. 25.

THE DEMAND FOR MONEY IN TRINIDAD AND TOBAGO – EXPERIMENTS WITH DATA FOR THE 1970-84 PERIOD*

V11

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INTRODUCTION

The demand for money function has a long history. Much of the controversy raging today, however, dates back to the 1950s with the revival of the quantity theory of money and the propositions that sprung from it. Until the early 1970s the econometric studies done on the developed countries (particularly the U.S. and the U.K.) had concluded that the demand for money was a stable function of a few key variables relating to income, prices and interest rates. The conclusion of temporal stability was, to a large extent, accepted on the basis of the ability of the particular specifications to predict the demand for money with a high degree of accuracy rather than on the basis of rigorous statistical tests. The tendency of the accepted function to overpredict money demand since the early 1970s has brought into question the whole issue of stability; and since this stability is crucial to the conduct of monetary policy, the search for an explanation for the apparent downward shift in money demand has been frantic.[1] While some see the explanation in a parametric movement (i.e. a parallel movement of the function), others suspect the omission of crucial variables from the equations, particularly in the context of regulatory and other changes.[2]

Because of differences in structure and environment, there are likely to be significant differences in the value of coefficient relating to different countries. Given the problems with data, studies done on developing countries have tended to be more uncertain in their conclusions. A different 'fit' in a recent period may simply reflect improvements in the quality of the data, rather than fundamental changes in the underlying conditions. Also, published data relating to particular variables may not accurately reflect supply/demand conditions or actual developments, and, therefore, could be quite misleading. In interpreting the econometric results in this essay these difficulties need to be kept in mind.

Our purpose is not so much to investigate stability or instability in the money demand function as to explore possible specifications which could best explain the demand for money in Trinidad and Tobago in the period between 1970 and 1984. The essay is divided into four sections. In the first we outline the main theoretical perspectives bearing on the demand for money function. We shall not examine the whole range of theoretical and empirical literature since that has been done elsewhere.[3] Next we discuss recent trends in supply (demand) for money in Trinidad and Tobago and then we outline some of the econometric problems involved in estimating a money demand function. Finally, we discuss the empirical results of the study.

*The comments of the participants of the 17th Annual Conference of the Regional Programme of Monetary Studies held in Nassau (November, 1985) are gratefully acknowledged).

THEORETICAL PERSPECTIVES

Early versions of the quantity theory assumed that money and velocity were independent of each other. In other words, changes in the quantity of money were not offset by movements in velocity which was assumed to be fairly stable – at least in the short term. Following Keynes, modern Keynesians take the position that a change in the money supply may or may not affect income (the real sector), and if it does, it would be indirectly through some transmission mechanism such as the rate of interest. A rise in the money supply may be offset by a fall in velocity (a rise in money demand), thus leaving nominal income unchanged. On the basis of a presumed stability in money demand in the short term, monetarists argue that if the money market is in equilibrium, a rise in the money supply must generate an increase in the level of income to remove the excess supply of money.

In the Classical system, money was assumed to be held only for transaction purposes, or as a medium of exchange. In the Fisherian version of the quantity theory, the emphasis was placed on the transaction velocity or the need to hold money. The Cambridge or cash balance version was framed in terms of what determines the amount of money people wish to hold. The Cambridge School argued that money is held with a view to making payments now and in the future. Viser states, "money is seen to have a utility value for its holders, providing security and convenience. The demand for money, therefore, is influenced not only by the volume of payments or the level of income, but by an assessment of the utility of holding cash balances weighed against the utility of buying consumption goods and the utility of the yield of other assets".[4] Keynes broke the new ground by arguing that money could be held in idle balances for speculative purposes. He divided money demand in terms of three motives. Transactions demand, precautionary demand and speculative demand.[5] The transactions demand encompassed both an income motive and a business motive. For Keynes, the major influence on the transactions demand for money were the level of income and certain institutional and mechanistic factors. Although he thought that the rate of interest might be another influence, this was considered to be of only minor influence.

The rate of interest had more relevance to the speculative demand for money, which arose from uncertainty about the future level of the rate of interest. Keynes' analysis provided two alternative ways of holding financial assets: money (whose value was fixed, given the assumption of a stable price level) and long term bonds (whose value would vary with changes in the rate of interest). He argued that in certain circumstances, money would be held in preference to an interest yielding asset if it were expected that the return from money would exceed that from the asset.

Keynes' money demand analysis was considered to be defective in several respects, and there were subsequent attempts by a number of people such as W.J. Baumol and J. Tobin, to correct these. Major weaknesses include:

(i) the splitting up of the demand for money function due to the independence of the three motives, even if this were only for analytical purposes;

(ii) the non-diversified portfolio result of the speculative motive; and

(iii) the stipulation of long term bonds as the only alternative to holding money.

Baumol[6] and Tobin[7] tried to integrate the money demand function by establishing a link between the rate of interest and the transactions demand for money. Tobin has also contributed to an understanding of money demand by using the theory of risk avoiding behaviour to provide a basis for liquidity preference. According to Tobin, "this theory does not depend on inelasticity of expectations of future interest rate, but can proceed from the assumption that the expected value of capital gain or loss from holding interest bearing asset is always zero".[8]

Modern quantity theorists put less emphasis on motives and concentrate more on the determinants affecting money demand. The demand for money is treated in the same way as the demand for a durable good. It is argued that just as durable goods provide a flow of services from which wealth holders derive utility, so too money provides utility to the holder. Friedman[9] felt that the demand for money (like the demand for any asset) was dependent on three main factors: (a) the wealth constraint (defined to include both human and non-human wealth); (b) the yield on money in relation to the yield on other assets; and (c) asset holders' taste and preferences. Even though he felt that the wealth variable was the appropriate budget constraint, difficulties of measurement led him to use the concept of permanent income (computed as an exponentially weighted average of current and past levels of income).

In both Keynesian and monetarist theories, the demand for money is viewed in terms of the demand for real balances.[10] Despite the positions taken by the two schools outlined above, it is often contended that the differences between Keynesians and monetarists are more empirical than theoretical. Keynesians tend to take the position that the income elasticity of the demand for money will be above one, while the monetarists assume unitary elasticity. The extreme Keynesian version (reflected in the liquidity trap) was assumed to be minus infinity. With respect to interest rates, Keynesians generally assume a higher interest elasticity (around -1.0) than monetarists (around -0.1). In other words, Keynesians assume greater substitutability between money and financial assets.

RECENT TRENDS IN THE STOCK OF MONEY IN TRINIDAD AND TOBAGO

Between 1970 and 1980 the narrow money supply, M_1 (currency in active circulation plus adjusted demand deposits) grew at an average annual rate of 27.3 per cent in nominal terms. (See Table 7.1). In 1981 it declined by 8.2 per cent, but increased in 1982 and 1983 by 31.5 per cent and 12.3 per cent respectively. In 1984 it declined again by 5.9 per cent. Between 1980 and 1973 the ratio of the currency component in M_1 averaged around 35 per cent, but apparently declined in the following years, averaging about 27 per cent between 1974 and 1980. Since 1981 the ratio started to increase again and in the period between 1981 and 1984, it averaged about 33 per cent. During the 1970s and early 1980s, it would appear that the factors leading to a downward effect on the currency ratio have tended to outweight the factors having the opposite effect. Included in the former category would be the growth in the use of credit cards, an increasing tendency to use chequing accounts and the offer of higher interest rates by financial institutions. There have also, as indicated before, been influences which may have served to increase the currency ratio. In the U.S., the increase in this ratio in recent years is suspected to be directly related to the growth of the underground economy. In order to escape the tax authorities, there is a tendency to conduct transactions on a cash basis. In Trinidad and Tobago where a substantial subterranean economy is believed to exist, one would have expected an upward effect on the currency ratio. This tendency should have been reinforced by the higher effective tax rates resulting from the relatively high rates of inflation in recent years. The fact that tax collection has been lax has, no doubt, been a mitigating influence, and the increase in currency holdings has, therefore, been smaller than otherwise might have been the case.

The growth of broad money (M1 + adjusted bank savings and time deposits) has followed roughly the pattern of M1. Between 1970 and 1980, M2 experienced an annual growth rate of 25.5 per cent in nominal terms. In 1981 this rate fell to 9 per cent, but increased by 32 per cent in 1982 and then fell to 12 per cent and 7.7 per cent in 1983 and 1984 respectively. Currency in circulation as a proportion of broad money also seems to have fallen in the period between 1974 and 1980.

With respect to the income velocity of money, the M1 version fluctuated between 7 and 15 between 1970 and 1984. On the other hand, the range of fluctuation for the M2 version was much smaller, the limits being 2.5 and 4.1. In the case of the latter, the trend seems to be a declining one since 1981. From the evidence, it would appear that M2 velocity tends to be more stable than the M1 version.

TABLE 7.1: MONEY SUPPLY[1] DATA, INCOME VELOCITY AND THE INFLATION RATE, 1970–1984

Year	(1) Currency in Active Circulation ($m)	(2) Demand Deposits (Adj.) ($m)	(3) Narrow Money Sypply M_1 ($m)	(4) % Change over previous Year	(5) (1) as a % of (3)	(6) Broad Money Supply M_2 ($m)	(7) % Change over previous Year	(8) (1) as a % of (6)	(9) M_1 Velocity	(10) M_2 Velocity	(11) Inflation Rate %
1970	54.1	97.3	151.4	12.7	35.7	472.8	21.6	11.4	10.8	3.4	3.3
1971	63.0	114.6	177.6	17.3	35.5	574.1	21.4	11.0	10.1	3.1	4.2
1972	76.3	140.0	216.3	21.8	35.3	704.9	22.8	10.8	9.4	2.9	6.1
1973	81.6	158.9	240.5	11.2	33.9	831.8	18.0	9.8	10.7	3.1	16.4
1974	88.9	198.3	287.2	19.4	30.9	1,014.3	21.9	8.8	14.6	4.1	23.9
1975	117.0	300.3	417.3	45.3	28.0	1,359.7	34.0	8.6	12.9	4.0	19.2
1976	158.3	463.6	621.9	49.0	25.5	1,833.7	34.9	8.6	10.0	3.4	8.1
1977	202.4	588.1	791.0	27.2	25.6	2,294.6	25.1	8.8	9.6	3.5	11.8
1978	268.4	803.2	1,071.6	35.5	25.0	2,960.9	29.0	9.1	7.6	2.8	10.2
1979	353.2	998.6	1,351.8	26.1	26.1	3,765.6	27.2	9.4	8.0	3.5	14.7
1980	431.7	1,254.6	1,686.3	24.7	25.6	4,574.7	21.5	9.4	9.4	3.5	17.5
1981	492.6	1,055.2	1,547.8	-8.2	31.8	4,988.9	9.0	9.9	11.6	3.6	14.4
1982	636.2	1,398.9	2,035.1	31.5	31.3	6,582.5	31.9	9.7	9.5	2.9	11.4
1983	764.5	1,520.6	2,285.1	12.3	33.4	7,374.1	12.0	10.4	8.4	2.6	16.7
1984	743.9	1,405.5	2,149.4	-5.9	34.6	7,944.3	7.7	9.4	9.4	2.5	13.3

Note: [1]The annual figures represent an average of end of quarter balances.

Sources: Central Bank, *Monthly Statistical Digest,* various issues; Ministry of Finance, *Annual Review of the Economy*, various issues, CSO, *Annual Statistical Digest,* various issues.

ECONOMETRIC ISSUES

An early difficulty encountered by the researcher in the specification of a money demand function is the so-called identification problem. Since the demand for money is an unobservable concept, in practice, researchers tend to use the supply of money as a proxy. If supply is taken to be equal to demand, this is equivalent to saying that the money market is always in equilibrium. This methodology is likely to be more valid for the narrow money supply which tends to be demand determined rather than the broader definition. It can be plausibly argued that the existence of monetary equilibrium does not guarantee the identification of the money demand function.

Another problem in specification revolves around the form of the function and the variables to be included in the function. A typical demand for money function often takes the form of Equation (1).

$$M_{dt} = bY_t + c1R_t \qquad (1)$$

where

M_{dt} = demand for money in the current period

Y_t = the level of nominal income in the current period

$1R_t$ = the rate of interest in the current period

t = time period

Other variables, such as the price level, are sometimes added. In most studies, rather than include the price level as an explicit variable, the demand function is specified in real terms, such as Equation (2).

$$\frac{M_d}{P} = a + b\frac{Y}{P} + c1R \qquad (2)$$

where 'P' is the price level and other letters carry the same meaning as before. $\frac{M_d}{P}$ is referred to as real cash balances, and define the purchasing value of a given stock of money. The rate of interest '1R' is measured in nominal terms and, therefore, incorporate inflationary expectations. In this approach, the implicit assumption is that the price elasticity of the demand for money is unity. Some of the empirical studies do not bother to test this assumption, but rather accept it on the basis of the results obtained, i.e. if one finds a stable demand function for real money, this is taken as "an indication that the price level does not influence this demand for real balances and that the elasticity of the demand for nominal balances is indeed one".[11] Since in practice the price elasticity of the demand for money may not be unity, some approaches include the price level as an explicit independent variable.[12]

In Equation (1) the level of income and the rate of interest are assumed to be exogenous. This assumption is necessary in order to meet the requirements of conventional estimation methods. Equation (1) also assumes that the adjustment of money holdings to their equilibrium level occurs within the time period used in the study. If it is a quarter, adjustments take place within the quarter. If it is a year, adjustments take place within a year.

In order to allow for lags in the adjustment process, a two equation model is sometimes used as in Equations (3) and (4):[13]

$$M^*_{dt} = a + bY_t + c1R_t \quad (3)$$

where M* is the desired stock of money

$$M_{dt} - M_{dt-1} = k\,(M^*_{dt} - M_{dt-1}) \quad (4)$$

with $0 < K < 1$

Equation (3) assumes that only a proportion (k) of the discrepancy between desired money holdings (M^*_{dt}) and actual money holdings in the previous time period is eliminated during the observation period. This partial adjustment model with 'k' as the speed of adjustment enables the derivation of a single equation by substituting Equation (3) in Equation (4):

$$M_{dt} - M_{dt-1} = k\,[a + bY_t + c1R_t - M_{dt-1}] \quad (5)$$

$$M_{dt} = ka + kbY_t + kc1R_t + (1 - k)\,M_{dt-1} \quad (6)$$

The functional forms used above are largely additive in nature. In practice the multiplicative form is more common since this enables the elasticity of the money demand with respect to particular independent variables to be obtained. In multiplicative form Equation (1) becomes

$$M_{dt} = a.\,Y_t^b\,.\,1R_t^c \quad (7)$$

which is linear in logarithms and can be written as

$$\text{Log}\,M_{dt} = a + b\log Y_t + c\,\text{long}\,1R_t \quad (8)$$

where 'b' and 'c' are elasticities.

The partial adjustment model can also be transformed into logarithmic form:

$$\log M_{dt} = ka + kb\ \log Y_t + K\log 1R_t + (1\text{-}k)\ \log M_{dt-1}. \quad (9)$$

The coefficients 'b' and 'c' are the short run or impact elasticities. Due to the lagged dependent variable (M_{dt-1}) the long run elasticities are kb/1-k and kc/1-k respectively.

In empirical work there is a great deal of controversy surrounding the variables to be used in the money demand function. Generally, as indicated earlier, the two most important variables are a scale variable which gives some indication of the volume of transactions in the economy, and an opportunity cost variable measuring the return (expected or actual) on holding money relative to alternative assets, real or financial. Income is expected to be positively related to the demand for money, while the opportunity cost variable is expected to be negatively related. With respect to the income constraint, there is some dispute whether the concept used should relate to measured or absolute income or non-human wealth. Wealth itself is a difficult concept to measure and data are not easily available. While some studies use current income, others employ the permanent income concept which is a function of current and past actual income levels. Permanent income itself is not directly observable and

tends to be calculated as a weighted average of current and past levels of income. As far as the opportunity cost variable is concerned, there are a number of alternatives. Some studies use various short term rates (such as savings deposit rates, three months fixed deposit rate, bank discount rates) which assume a close substitutability between money and other short term financial assets.[14] Others use a long term rate. Keynes himself thought the long term rate was the more appropriate. As far as the money stock is concerned, studies have been carried out using both narrow and broad definitions. The narrow definition comprising demand deposits and currency in circulation is primarily a transaction demand. The broader definition takes account of the possibility that money might be demanded as an asset. It should be pointed out that while it is recognised that the motives for holding money may differ between firms and households, in the literature the specifications tend to be of an aggregate nature. This is often dictated by the unavailability of certain types of data.

DATA AND RESULTS

In this section we use a series of linear models to examine the relationship between the demand for money in Trinidad and Tobago and certain selected variables. We experimented with both the narrow and broad money supply, and with various interest rates.

The Variables

- M 1 = narrow money supply (demand) = currency in active circulation plus demand deposits (adjusted)
- M 2 = M 1 + bank savings and time deposits (adjusted)
- Y 2 = Permanent Income (a 3-year moving average of nominal GDP)
- IR_1 = Interest rate on savings deposits
- IR_2 = interest rate on 3-months fixed deposits
- IR_3 = average yield on 1-20 year government bonds
- IR_4 = weighted average rates on deposits
- P = the price level (Retail Price Index)
- EF = expected rate of inflation (the rate of change of the price level in the previous year)

DATA AND MODEL

The data used relate to the period 1970-84. The exercise has been carried out using annual data. GDP is not available on a quarterly or monthly basis. M1 and M2 have been annualised by taking an average of end of quarter balances. Where we have used 'real' data, these are simply the nominal figures deflated by the retail price index. The interest rates figures are the commercial bank rates ruling at the end of the period.

The basic model estimated is of the form shown in Equation (10).

$$M = a + bY + c1R + u \qquad (10)$$

where 'u' is an error term.

Method

- Ordinary Least Squares

Symbols

SEE = standard error of estimates (in parentheses below each coefficient)

D.W. = Durbin Watson Statistic

(-1) = lagged one year

$\bar{R}^2$ = coefficient of determination (adjusted)

EMPIRICAL RESULTS

In Table 7.2 we present the results based on nominal M1 as the dependent variable. Equations (11) to (17) are based on aggregate data, while Equations (18) to (22) use money demand and GDP in per capita terms. In all the equations in Table 7.2, the current income variable is significant. Income alone explains 96 per cent of the variation in the demand for M1 (Equation 11). When the price level is added as a second independent variable (Equation 12), the $\bar{R}^2$ remains the same, but the D.W. statistic improves slightly. The price level variable has the desired sign, but the associated coefficient is not significant. When the interest rate on savings deposits is added as a third explanatory variable (Equation 13) the $\bar{R}^2$ remains unaffected and the D.W. statistic continues to indicate a serial correlation problem. The coefficient of the IR_1 variable has the expected sign, but is not significant. In Equation (14) we use the interest rate on three-month fixed deposits (IR_2) in place of the savings deposits rate (IR_1), but this added nothing to the equation. In fact the sign is 'wrong'. In Equation (15) we experimented with a long term interest rate using the average yield on one to 20 year government bonds. The coefficient has the expected sign, but is not significant. The same statement can be made with respect to the weighted interest rate on deposits (IR_4) used in Equation (16). In Equation (17) we experimented with two interest rates; a short rate (the rate on three-month fixed deposits) and a long rate (the average yield on one to 20 year government bonds). Both interest rate variables are insignificant. The coefficient of the shorter rate also has the wrong sign. As indicated earlier, there is considerable controversy in the literature with respect to the interest rate variable used, i.e. whether it should be a short term rate or a long term rate. This, of course, stems directly from the issue of substitutability between various financial assets and money. The Equations (18) to (22) based on M1 and GDP expressed in per capita terms are similar in characteristics to the aggregate equation. The $\bar{R}^2$ is around 0.96, but there is evidence of serial correlation in the error term. The coefficients of the income variable are significant, but the interest variables are either insignificant or have the 'wrong' sign, or both. The price level variable continues to show the expected sign, but the associated SEE are a bit on the high side.

TABLE 7.2: RESULTS USING AGGREGATE NOMINAL M1

Equation Number	Intercept	Y_1	P	IR_1	IR_2	IR_3	IR_4	$\bar{R}^2$	F Value	D.W. Statistic
11	- 30.75	0.11						0.96	345	1.6
		(0.01)								
12	-147.75	0.07	1.70					0.96	190	1.9
		(0.02)	(1.14)							
13	- 79.66	0.07	1.66	-16.10				0.96	116	1.6
		(0.03)	(1.20)	(94.71)						
14	-183.93	0.07	1.74		6.69			0.96	117	1.7
		(0.03)	(1.21)		(30.41)					
15	367.47	0.07	1.78			- 70.54		0.96	117	1.7
		(0.03)	(1.24)			(243.24)				
16	25.85	0.08	1.69				-41.72	0.96	121	1.6
		(0.03)	(1.17)				(63.21)			
17	530.97	0.07	1.88		11.24	-101.30		0.96	81	1.7
		(0.03)	(1.31)		(34.06)	(266.58)				

RESULTS BASED ON M_2 and GDP IN PER CAPITA TERMS

18	-30.63	0.11 (0.01)					0.96	308	1.5
19	-104.66	0.08 (0.03)	1.27 (0.92)				0.96	166	1.6
20	468.69	0.08 (0.03)	1.39 (1.00)		-78.93 (207.71)		0.96	103	1.6
21	58.66	0.08 (0.02)	1.31 (0.94)			-40.46 (54.68)	0.96	107	1.6
22	610.83	0.08 (0.03)	1.46 (1.07)	9.21 (29.71)	-105.06 (232.00)		0.96	71	1.6

TABLE 7.3: RESULTS USING NOMINAL M_1 WITH ALL VARIABLES IN LOG. FORM

Equation Number	Intercept	Y_1	P	IR_1	IR_2	IR_3	IR_4	$\bar{R}^2$	F Value	D.W. Statistic
23	-1.24	1.06						0.97	477	1.2
		(0.05)								
24	-1.19	1.10					-0.29	0.98	234	1.0
		(0.06)					(0.29)			
25	-2.80	0.80	0.42					0.97	235	1.1
		(0.30)	(0.48)							
26	-2.79	0.79	0.44					0.97	144	1.0
		(0.31)	(0.51)							
27	0.55	0.68	0.81		-2.15			0.97	166	1.0
		(0.30)	(0.55)		(1.67)					
28	-2.64	0.73	0.62			-0.40		0.97	169	0.9
		(0.30)	(0.48)			(0.29)				
29	1.16	0.67	0.84		0.09	-2.56		0.97	115	1.1
		(0.32)	(6.58)		(0.21)	(1.97)				

RESULTS BASED ON PER CAPITA M_1 AND PER CAPITA GDP WITH ALL VARIABLES IN LOG. FORM

30	-1.21	1.11 (0.07)					-0.28 (0.29)	0.97	209	1.0
31	-2.69	0.77 (0.30)	0.43 (0.44)					0.97	209	1.1
32	0.77	0.66 (0.31)	0.82 (0.52)			-2.18 (1.65)		0.97	149	1.0
33	-2.49	0.70 (0.30)	0.64 (0.45)				0.41 (0.29)	0.97	151	0.9
34	1.34	0.65 (0.32)	0.85 (0.54)	0.04 (0.10)	-2.57 (1.95)			0.97	103	1.1

Table 7.3 gives the results when all variables, dependent and independent are used in logarithmic form. Equations (23) to (29) are based on aggregate data, while Equations (30) to (34) were estimated with M1 and GDP in per capita terms. As indicated earlier, the coefficients of explanatory variables reflect their elasticities with respect to M1. In all the equations in this table, the $\overline{R}^2$ is over 96 per cent, but there appears to be a serious serial correlation problem in the error term. In Equations (23) to (29) the income elasticity of the demand for money is seen to vary between 0.67 and 1.10 depending on the particular specification. In Equations (23) and (24) which do not have the price level as an explanatory variable, the income elasticity is greater than one. In the per capita equations without the price level variable, the income variable also has an elasticity greater than one. The evidence from this table indicates that the price level elasticity (with respect to M 1) tends to be less than one. The savings deposit rate in Equation (26) has an elasticity of 0.04 with the expected sign, but the SEE is rather high. The weighted deposit rate used in Equation (24) has an elasticity of -0.29, but here, too, the value of the SEE is equivalent to the value of the coefficient. The three month deposit rate used in Equation (27) has an elasticity of -2.15, but is below acceptable levels as far as significance is concerned. The long term rate is associated with an elasticity of -0.4, but here too, the standard error raises some doubt about its significance. In Equation (29) where we use both a short rate (IR_2) and a long rate (IR_3) the former came out with the wrong sign. The latter had the expected sign, but was not significant. As far as the per capita equations are concerned, the results are not vastly dissimilar from the aggregate equations. The interest rate variable continues to perform badly as far as significance is concerned. It should be noted that when we drop the opportunity cost variable (Equations (25) and (31)), there is little effect on the equations.

In Table 7.4 we present the results when M 1 and GDP are used in real terms. Here, there is a significant drop in the value of the $\overline{R}^2$ as compared to that in the previous two tables. In the aggregate Equations (35) to (39), it is 83 per cent. When Equation (35) is compared to Equations (36) to (39), it is clear that the inclusion of an opportunity cost variable adds nothing to the explanatory power of the equations. Nor does it help in correcting the serial correlation problem associated with Equation (35). In none of the equations in this table is the interest rate variable significant. It is worth noting that in the per capita Equations (40) to (43), the value of the $\overline{R}^2$ drops even further while the serial correlation problem persists.

In Table 7.5 we see the results when the variables of the equations containing real M1 and real GDP are converted into logarithms. In these equations, there is a small increase in the value of the $\overline{R}^2$ compared to those associated with the equations in Table 7.3, but the serial correlation problem continues to be serious. The income elasticity in both the aggregate and per capita equations is a little above one. The interest rate variable has elasticities of 0.15 and 0.16 (with the correct signs) in Equations (45) and (46) respectively, but the SEE in both cases is high. As was the case in the earlier equations, the interest rate variable does not seem to have any significant effect in the equations where they are used.

TABLE 7.4: RESULTS USING REAL M1

Equation Number	Intercept	Y	IR_1	IR_2	IR_3	IR_4	$\bar{R}^2$	F Value	D.W. Statistic
35	- 31.81	0.11 (0.01)					0.83	64	1.2
36	- 40.54	0.11 (0.02)		2.36 (10.16)			0.83	30	1.2
37	- 6.54	0.12 (0.02)				-7.78 (18.11)	0.83	30	1.2
38	-109.55	0.11 (0.02)			11.45 (45.57)		0.83	30	1.2
39	- 93.66	0.11 (0.02)		1.49 (12.02)	8.30 (53.95)		0.83	18	1.2
		RESULTS BASED ON PER CAPITA M1 AND PER CAPITA GDP							
40	- 29.89	0.11 (0.20)					0.78	47	1.2
41	- 14.38	0.12 (0.02)				-4.98 (15.46)	0.78	22	1.1
42	-119.02	0.11 (0.02)			13.33 (36.93)		0.78	22	1.1
43	-102.72	0.11 (0.03)		1.49 (10.68)	10.11 (44.91)		0.78		1.2

TABLE 7.5: RESULTS USING REAL M1 WITH ALL VARIABLES IN LOG. FORM

Equation Number	Intercept	Y	IR_1	IR_2	IR_3	IR_4	R^2	F Value	D.W. Statistic
44	-1.43	1.12					0.85	76	1.1
		(0.13)							
45	-1.23	1.09	-0.15				0.85	35	1.1
		(0.17)	(0.48)						
46	-1.50	1.18				-0.16	0.86	36	1.0
		(0.16)				(0.28)			
47	-1.49	1.11			0.12		0.85	35	1.1
		(0.21)			(1.16)				
48	-1.44	1.11		0.02	0.06		0.85	21	1.2
		(0.22)		(0.21)	(1.42)				
		RESULTS BASED ON PER CAPITA M1 AND PER CAPITA GDP							
49	-1.43	1.13					0.81	54	1.1
		(0.15)							
50	-1.49	1.17			-0.11		0.81	25	1.0
		(0.19)			(0.27)				
51	-1.55	1.08			0.31		0.81	25	1.1
		(0.23)			(1.08)				
52	-1.52	1.08		0.02	0.26		0.81	15	1.1
		(0.24)		(0.21)	(1.35)				

In Tables 7.6, 7.7, 7.8 and 7.9 experiments were carried out with broad money (M2) as the dependent variable. In Equation (53), income alone explains 96 per cent of the variation in M2, but the D.W. statistic points to a possible specification problem. When the price level variable is included as an explicit variable (Equation (54)) the $\bar{R}^2$ increases to 99 per cent and the D.W. statistic also improves. The price level variable is significant in all the equations in Table 7.6. In most cases, the interest rate variable comes out with the 'wrong' sign, and in all cases the SEE raises serious doubts about their significance.

Table 7.8 shows the results when the nominal figures are transformed into logarithmic form. Generally, the value of the $\bar{R}^2$ tends to be quite high in these equations, but the value of the D.W. statistic indicates problems in the error term. In both the aggregate and per capita equations, the income elasticity with respect to M2 varies widely. In the former case, the range is 0.32 and 1.05, while in the latter's, it is 0.30 and 1.02. It would appear here that the inclusion of additional explanatory variables to income tend to have a downward effect on the income elasticity of M2. The price level variable has the expected sign and is significant in all the equations in Table 7.8 In Equation (69), where income, the price level and the interest rate on savings deposits are used as explanatory variables, the interest rate is associated with an elasticity of 0.11 with the expected sign, but the standard error is high. We have the same problem with the long term rate used in Equation (72), though in this case the elasticity is higher (-1.58). The three-month fixed deposit rate used in Equation (70) has the wrong sign. When both a short rate (IR_2) and a long rate (IR_3) are used (Equation (75)), the three-month fixed deposit rate continues to show the 'wrong' sign, while the elasticity of the long term rate increases, maintaining the expected sign in the process. The interest rate variable in the per capita equations tend to display the same kind of characteristics as in the aggregate equations.

Table 7.7 shows the results when M2 and GDP are used in real terms. In these equations the $\bar{R}^2$ tends to be lower than in the equations where the nominal figures are used. The serial correlation problem apparent from the value of the D.W. statistic raises doubts about the specifications both in the aggregate and per capita forms. The income coefficients continue to be significant (with the right sign) but all the interest rate variables have come up with the 'wrong' signs and large SEE.

In Table 7.9 we present the results of the experiments based on the logarithm of the equations containing M2 and GDP in real terms. In Equation (90) the income variable alone explains 87 per cent of the variation in M2. The addition of the three-month fixed deposit rate adds nothing to the equation (Equation (91)). In fact, the value of the D.W. statistic falls. The addition of the long term rate (IR_3) in Equation (90) improves both the $\bar{R}^2$ and the D.W. statistic. While the coefficient in this equation is significant, it does not have the expected sign. The sign remains unchanged, even when we add a short term rate (IR_2) as an explanatory variable (Equation (94)). The $\bar{R}^2$ associated with the per capita equations appear to be lower than those of the aggregate respect to the income elasticity the figure varies between 1.04 and 2.14 in the equations. Overall, the former does not seem to offer an improved fit. With

TABLE 7.6: RESULTS USING NOMINAL M_2

Equation Number	Intercept	Y_1	P	IR_1	IR_2	IR_3	IR_4	$\bar{R}^2$	F Value	D.W. Statistic
53	- 253.82	0.36 (0.02)						0.96	287	0.8
54	-1175.79	0.08 (0.05)	1.34 (0.23)					0.99	541	1.5
55	-1953.21	0.07 (0.05)	13.81 (2.29)	184.30 (184.30)				0.99	361	1.8
56	-1393.10	0.06 (0.05)	13.64 (2.34)		40.00 (59.70)			0.99	344	1.6
57	-1625.75	0.07 (0.05)	13.33 (2.42)			61.63 (474.08)		0.99	331	1.5
58	- 301.32	0.36 (0.04)					11.47 (242.67)	0.96	132	0.9
59	-1256.87	0.07 (0.05)	13.40 (2.35)				19.50 (130.00)	0.99	332	1.5
60	-1008.49	0.07 (0.06)	13.72 (2.56)		42.45 (67.38)	-54.50 (545.00)			235	

RESULTS BASED ON PER CAPITA M_2 and PER CAPITA GDP

61	- 222.41	0.36 (0.02)					0.95	264	0.9
62	- 843.33	0.08 (0.05)	10.71 (1.71)				0.99	538	1.6
63	- 928.54	0.08 (0.05)	10.70 (1.87)		25.03 (391.00)		0.99	329	1.6
64	- 324.75	0.35 (0.04)				25.03 (202.50)	0.95	122	0.9
65	- 819.76	0.08 (0.05)	10.71 (1.79)			-5.84 (97.33)	0.99	329	1.6
66	- 423.38	0.07 (0.05)	10.96 (1.97)	32.74 (54.57)	-81.16 (427.16)		0.99	232	1.8

1.02. The various interest rates are associated with different elasticities. With the exception of the long term rate used in Equations (92) and (94), the standard errors are generally too large to take the values seriously. The sign in most cases is not what we would expect.

RESPECIFIED EQUATIONS

Given the unsatisfactory nature of the fit of most of the equations in Tables 7.2 to 7.9, we decided to experiment with some new specifications. The results are presented in Tables 7.10 and 7.11. In Table 7.10 the dependent variable is M1, while in Table 7.2, it is M2. All the equations in these tables were estimated with the variables in logarithmic form. The coefficients can, therefore, be regarded as elasticities. Given the unsatisfactory performance of the interest rate variables we decided to retain only one of them – the weighted rate on deposits (IR_4). In Equation (100), the income, interest rate and price level variables together explain 98 per cent of the variation in narrow money. The D.W. statistic, however, is unsatisfactory. In Equation (101), we dropped the price level variable and introduced the expected rate of inflation variable, which in this equation has a negative effect on the demand for money. The $\bar{R}^2$ did not change, but the D.W. statistic improved. In Equation (102) we introduced a fourth explanatory variable, *viz.*, M1 lagged one year. These four variables explain 99 per cent of the variation in M1. The D.W. statistic has an acceptable value. With the exception of the expected rate of inflation variable all the other coefficients are significant. They also have the expected signs. The income elasticity is 0.46 as compared to 0.48 for the interest rate, -0.05 for the expected inflation rate and 0.64 for lagged money demand. In Equation (103), we substituted the price level variable for the expected rate of inflation, and while the fit is good, the price level variable not only does not have the expected sign, but is also insignificant. In Equation (104) where we used both 'P' and 'ER' the fit is good, but 'P' continues to have the 'wrong' sign with a high standard error. In Equation (105) we dropped the interest rate variable, and even though the overall fit is good, all the coefficients appear to be statistically insignificant.

In Equations (106) to (109) money demand and GDP are used in real terms. While the $\bar{R}^2$ in these equations is over 90 per cent, it is below the values associated with the nominal equations. In Equation (107) we added a new variable (the ratio of the current price level to the price level in the previous year), but this variable was of no significance in the particular specification which included income, the interest rate and lagged money as the other explanatory variables.

In Equation (110) to (116), instead of using current income we used a permanent income concept which we computed as a three year moving average of current income. Equation (113) appears to be the best of these equations in terms of fit. Permanent income, the interest rate variable and lagged money are all significant with what appears to be the correct sign. The coefficient of the expected rate of inflation has a negative sign, but the value of the SEE raises doubt about its significance.

The equations in Table 7.11 have M2 as the dependent variable. Since the equations were estimated using the logarithms of the variables, the coefficients,

TABLE 7.7: RESULTS USING REAL M_2 AND REAL GDP

Equation Number	Intercept	Y	IR_1	IR_2	IR_3	IR_4	$\bar{R}^2$	F Statistic	D.W. Statistic
81	- 25.42	0.33					0.83	64	0.9
		(0.04)							
82	- 122.83	0.30		26.35			0.84	32	1.1
		(0.05)		(28.48)					
83	- 184.28	0.30				48.93	0.84	32	1.1
		(0.05)				(40.93)			
84	-1701.34	0.23			246.89		0.88	44	1.3
		(0.06)			(111.52)				
85	-1695.74	0.23		0.52	245.78		0.88	27	1.3
		(0.06)		(29.42)	(132.09)				
		RESULTS BASED ON PER CAPITA M_2 AND PER CAPITA GDP							
86	**5.06**	**0.32**					**0.78**	**46**	**0.9**
		(0.05)							
87	- 132.86	0.28				44.33	0.80	24	1.1
		(0.06)				(41.75)			
88	-1331.82	0.22			200.00		0.85	33	1.3
		(0.06)			(87.02)				
89	-1316.84	0.22		1.37	197.04		0.84	20	1.3
		(0.06)		(25.19)	(105.89)				

TABLE 7.8: RESULTS USING NOMINAL M_2 WITH ALL VARIABLES IN LOG. FORM

Equation Number	Intercept	Y_1	P	IR_1	IR_2	IR_3	IR_4	$\bar{R}^2$	F Statistic	D.W. Statistic
67	-0.68	1.05						0.98	635	1.0
		(0.04)								
68	-1.46	0.42	1.00					0.99	587	1.2
		(0.19)	(0.30)							
69	-1.32	0.40	1.02	-0.11				0.99	350	1.2
		(0.21)	(0.33)	(0.31)						
70	-1.46	0.42	1.00		0.002			0.99	346	1.2
		(0.20)	(0.32)		(0.09)					
71										
72	1.00	0.33	1.29			-1.58		0.99	420	1.2
		(0.19)	(0.34)			(1.04)				
73	-0.68	1.05					0.03	0.98	293	1.0
		(0.06)					(0.26)			
74	-1.36	0.38	1.12				-0.24	0.99	396	1.1
		(0.19)	(0.31)				(0.19)			
75	1.73	0.32	1.33		0.10	-2.07		0.99	308	1.4
		(0.19)	(0.35)		(0.12)	(1.20)				

RESULTS BASED ON PER CAPITA M_2 AND PER CAPITA GDP WITH ALL VARIABLES IN LOG. FORM

76	-0.57	1.02					0.82	59	0.9
		(0.13)							
77	-1.18	0.39	0.97				0.99	525	1.2
		(0.19)	(0.28)						
78	1.36	0.31	1.26		-1.60		0.99	397	1.2
		(0.19)	(0.32)		(0.99)				
79	-1.06	0.35	1.10			0.24	0.99	373	1.1
		(0.19)	(0.29)			(0.18)			
80	2.01	0.30	1.29	0.01	-2.05		0.99	288	1.4
		(0.19)	(0.32)	(0.01)	(1.16)				

TABLE 7.9: RESULTS USING REAL M_2 AND REAL GDP WITH ALL VARIABLES IN LOG FORM

Equation Number	Intercept	Y	IR_1	IR_2	IR_3	IR_4	$\bar{R}^2$	F Statistic	D.W. Statistic
90	-0.66	1.04 (0.11)					0.87	87	1.0
91	-2.73	2.14 (0.28)		0.34 (0.32)			0.87	41	0.8
92	-5.03	1.54 (0.31)			5.12 (1.72)		0.92	69	1.2
93	-2.59	2.03 (0.30)				0.71 (0.51)	0.88	44	0.9
94	-5.20	1.53 (0.33)		0.09 (0.31)	5.42 (2.10)		0.92	42	1.2
		RESULTS BASED ON REAL PER CAPITA M2 AND REAL PER CAPITA GDP							
95	-0.57	1.02 (0.13)					0.82	59	0.9
96	-0.49	0.97 (0.16)				0.15 (0.23)	0.83	28	1.1
97	-1.08	0.81 (0.18)			1.36 (0.85)		0.85	34	1.2
98	-1.05	0.81 (0.19)		0.01 (0.17)	1.31 (1.06)		0.85	21	1.2

TABLE 7.10: RE-SPECIFIED LOG-LINEAR MODELS WITH M1 AS THE DEPENDENT VARIABLE

Equation Number	Intercept	Y_1	IR_4	P	ER	$M1_{-1}$	$\frac{P}{P_{-1}}$	$\bar{R}^2$	F	D.W. Statistic
99	-1.19	1.10	-0.29					0.98	239	1.0
		(0.06)	(0.29)							
100	-1.14	0.73	-0.41	0.62				0.98	169	0.9
		(0.30)	(0.29)	(0.48)						
101	-1.26	1.17	-0.29		-0.19			0.98	216	1.3
		(0.06)	(0.25)		(0.08)					
102	-0.28	0.46	-0.48		-0.05	0.64		0.99	381	2.1
		(0.19)	(0.17)		(0.07)	(0.16)				
103	-0.12	0.43	-0.48	-0.18		0.75		0.99	373	2.3
		(0.18)	(0.17)	(0.33)		(0.16)				
104	1.23	0.69	-0.53	-0.09	-0.11	0.52		0.99	298	2.3
		(0.32)	(0.18)	(0.33)	(0.11)	(0.27)				
105	-0.69	0.56		-0.37	-0.01	0.68		0.99	212	1.9
		(0.41)		(0.44)	(0.13)	(0.35)				

REAL MONEY BALANCE $\left(\frac{M1}{P}\right)$ AS THE DEPENDENT VARIABLE

		$\frac{Y_1}{P}$			$\frac{M1}{P_{-1}}$				
106	-1.32	0.74	-0.21		1.38		0.96	86	1.3
		(0.39)	(0.35)		(0.32)				
107	-1.81	0.98	-0.09		1.24	-1.36	0.96	65	1.2
		(0.45)	(0.37)		(0.35)	(1.3)			
108	-2.00	0.62	-0.49	-0.05	0.67		0.95	75	2.3
		(0.29)	(0.15)	(0.07)	(0.17)				
109	-2.07	0.64		-0.06	0.52		0.92	53	1.7
		(0.40)		(0.11)	(0.22)				

NOMINAL M1 WITH PERMANENT INCOME (Y_2) AS THE INCOME VARIABLE

		Y_2				$M1_{-1}$				
110	-1.47	1.15	-0.11					0.98	265	1.1
		(0.06)	(0.27)							
111	-1.38	0.90	-0.22	0.40				0.98	170	0.9
		(0.36)	(0.31)	(0.57)						
112	-1.56	1.22	-0.11		-0.19			0.98	256	1.7
		(0.06)	(0.22)		(0.08)					
113	-0.46	0.52	-0.39		-0.06	0.60		0.98	388	2.2
		(0.21)	(0.18)		(0.07)	(0.17)				
114	-0.26	0.56	-0.36	-0.35		0.75		0.99	398	2.6
		(0.22)	(0.18)	(0.36)		(0.15)				
		$\frac{Y_2}{P}$								
115	-2.07	1.00	-0.02			1.26		0.96	98	1.6
		(0.43)	(0.35)			(0.31)				
116	-2.86	1.35	0.19			-1.07	-1.69	0.97	81	1.8
		(0.47)	(0.37)			(0.33)	(1.21)			

TABLE 7.11: RE-SPECIFIED LOG-LINEAR MODELS WITH M2 AS THE DEPENDENT VARIABLE

Equation Number	Intercept	Y_1	IR_4	P	ER	$M2_{-1}$	$\frac{P}{P_{-1}}$	$\bar{R}^2$	F Statistic	D.W. Statistic
117	-0.68	1.05	-0.03					0.98	293	1.0
		(0.06)	(0.26)							
118	-0.59	0.38	-0.24	1.12				0.99	396	1.1
		(0.19)	(0.19)	(0.31)						
119	-0.73	1.10	-0.03		-0.14			0.98	232	1.1
		(0.06)	(0.23)		(0.08)					
120	-0.14	0.27	-0.21		-0.03	0.77		0.99	1377	2.5
		(0.10)	(0.09)		(0.03)	(0.09)				
121	0.03	0.23	-0.21	-0.02		0.81		0.99	1225	2.5
		(0.10)	(0.09)	(0.24)		(0.13)				
122	-0.18	0.30	-0.24	0.07	-0.33	0.71		0.99	962	2.6
		(0.14)	(0.10)	(0.29)	(0.05)	(0.20)				
123	0.11	0.23		-0.18	0.01	0.86		0.99	626	2.2
		(0.17)		(0.32)	(0.04)	(0.23)				
		$\frac{Y_1}{P}$				$\frac{M2}{P_{-1}}$				
124	-1.12	0.27	0.05			1.77		0.97	136	1.3
		(0.31)	(0.28)			(0.28)				
125	-1.50	0.45	0.05			1.69	-1.65	0.97	136	1.3
		(0.30)	(0.26)			(0.26)	(0.88)			

126	-0.23	0.26			0.002	0.75		0.98	186	2.1
		(0.16)			(0.04)	(0.11)				
127	-1.53	0.44	-0.03		-0.16	1.76		0.98	126	1.1
		(0.30)	(0.25)		(0.09)	(0.25)				

NOMINAL M2 WITH PERMANENT INCOME (Y_2) AS THE INCOME VARIABLE

		Y_2				$M2_{-1}$				
128	-0.95	1.10	0.13					0.98	456	1.2
		(0.05)	(0.20)							
129	-0.74	0.54	-0.12	0.89				0.99	451	1.0
		(0.22)	(0.19)	(0.34)						
130	-1.02	1.15	0.13		-0.15					
		(0.04)	(0.17)		(0.06)					
131	-0.21	0.40	-0.13		-0.05	0.66		0.99	1974	2.9
		(0.10)	(0.08)		(0.03)	(0.09)				
132	-0.08	0.33	-0.14	-0.12		0.78		0.99	451	1.0
		(0.11)	(0.09)	(0.22)						
		$\frac{Y_2}{P}$								
133	-1.43	0.42	0.05			1.68		0.97	140	1.3
		(0.39)	(0.30)			(0.31)				
134	-2.00	0.67	0.20			1.56	-1.76	0.98	138	1.3
		(0.36)	(0.27)			(0.28)	(0.85)			

as indicated earlier, can be regarded as elasticities. An examination of Equations (117 to (123) clearly indicates that M2 lagged one period is a significant variable in the specification of broad money demand. As far as the elasticities are concerned, the income elasticity with respect to broad money tends to vary, depending on the specification. For instance, in Equation (119) it is slightly over one, while in Equation (123), it is 0.23. The interest elasticity in these equations tend to be less than one. On the basis of the evidence provided by the table, it is difficult to make any conclusive statement with respect to the price level elasticity. The coefficient of broad money lagged one period tends to be less than one in the nominal equations. The equations using broad money and GDP in real terms (Equations (124) to (127)) are associated with high $\bar{R}^2$, but with the exception of Equation (126), the D.W. statistic points to a problem in the error term. In the equations containing permanent income as an explanatory variable, the income coefficients continue to be significant, while the associated $\bar{R}^2$ remains high. The value of the D.W. statistic in Equations (128) to (132), however, raises some doubts about the specifications of these equations. In Equations (133) and (134) broad money demand, permanent income and lagged money are used in real terms. In these equations the SEE of income raises some doubts about the significance of this variable. The interest rate variable is unacceptable in terms of sign and statistical tests. Lagged money appears to be significant, as does the price level ratio, though the sign in both cases is not the expected one.

FORECASTING CAPABILITY OF EQUATIONS

A commonly used criterion in assessing a model is its ability to predict. In this connection the standard error of estimate (or the root mean square error) tends to provide a good test for the particular equation. The smaller the residuals of a regression model, the smaller the forecasting errors are likely to be. On the basis of the R^2 and the D.W. statistic, we selected what we considered to be the 'best' of the equations and compared their respective SEE. (See Table 7.12). Among the equations with M1 as the dependent variable, Equation (104) has the lowest standard error. Among those with M2 as the dependent variable, Equation (122) stands out. It should be noted that the equations with real money balance as the dependent variable (Equation (108) and (126)), the associated SEE tends to be high.

SUMMARY AND CONCLUSIONS

The essay has examined a series of linear models with the aim of deriving specifications which could explain movements in the demand for both narrow and broad money in Trinidad and Tobago in recent years. From the experiments we have carried out, it would appear that there are several equations which meet the overall goodness of fit tests. With respect to individual variables, income

TABLE 7.12: EQUATIONS WITH M1 AS THE DEPENDENT VARIABLE

Equation No.	SEE
(104)	5.46
(102)	7.77
(103)	8.16
(105)	10.80
(108)	25.42
Equations with M2 as the Dependent Variables	
(122)	4.32
(120)	4.34
(121)	4.42
(123)	5.46
(126)	13.90

(be it nominal, real or permanent) appears to be the most significant of the explanatory variables. The lagged-money variable also appears to be a crucial influence. We have used a number of interest rate variables, but none gives a satisfactory performance.[15] Even though the sign comes out 'right' in a number of cases, the standard error is generally too high for comfort. We have shown that it is possible to drop the interest rate variable without doing any damage to the equations. On the basis of the results obtained, however, it would be foolhardy to conclude that the interest rate variable is not important to the money demand specification. In most studies done on the demand for money in developed countries and even in some developing countries, the demand for money was shown to be sensitive to movements in interest rates. Our own suspicions are that the rates published by the Central Bank of Trinidad and Tobago which tend to show little movements over time, may not be the actual rates faced by the public in the market place. One series which might have provided better results, but on which we were unfortunately not able to gather the necessary data, were the rates offered by the non-bank financial institutions which have tended to be used more aggressively than those offered by the commercial banks. With respect to the price level variable and expected inflation rate variable, these can, and often do exert an influence on the demand for money. With respect to the assumption of unit price elasticity in the real money balance equation, there is some doubt about this.

As far as the issue of stability is concerned, it is difficult to make a conclusive statement on the basis of the limited exercise carried out. One approach in the literature is to look at the goodness of fit (standard errors, D.W. statistic,

R^2, etc.), and on the basis of this make a conclusion on stability. This conclusion is also often subject to an additional requirement, and that is the ability of the equation to predict outside the sample period. Recent experience has shown that an equation that might be a good predictor in a particular period may not do so well in another. The fact that the predictive ability of an equation is under challenge does not, of course, mean that the demand for money is unstable. It may simply mean something is wrong with the equation.

NOTES

[1]For a survey of recent reformulations of the demand for money function, see, J.P. Judd and J.L. Scadding, "The Search for a Stable Money Demand Function: A Survey of the Post-1973 Literature," *Journal of Economic Literature*, September, 1982.

[2]See R.W. Hafer and S.E. Hein, "The Shift in Money Demand: What Really Happened?" Federal Reserve Bank of St. Louis, *Review*, February, 1982.

[3]See, for example, D.E.W. Laidler, *The Demand for Money*, Intertext Books, London, 1969.

[4]See H. Viser, *The Quantity of Money*, Martin Robertson & Co., London, 1974, p. 63.

[5]See J.M. Keynes, *The General Theory of Employment, Interest and Money*, MacMillan and Co., London, 1964, pp. 169-172.

[6]See W.J. Baumol, "The Transactions Demand for Cash: An Inventory Theoretic Approach," *Quarterly Journal of Economics*, November, 1952.

[7]See J. Tobin, "The Interest Elasticity of Transactions Demand for Cash," *Review of Economics and Statistics*, August, 1956.

[8]See J. Tobin, "Liquidity Preference as a Behaviour towards Risk," *The Review of Economic Studies*, February, 1958.

[9]See Milton Friedman, "The Quantity Theory of Money – A Restatement," in M. Friedman, (ed.) *Studies in the Quantity Theory of Money*, The University of Chicago Press, Chicago, 1956.

[10]The money demand equation is assumed to have the mathematical property of being homogeneous of degree one in prices.

[11]See Viser, *op. cit.*, p. 63.

[12]For an example where the price level variable is used as an explicit explanatory variable, see A.W.A. McClean, "Some Evidence on the Demand for Money, in a Small Open Economy – Barbados," in *Social and Economic Studies*, September, 1982.

[13]See Graham Haache, "The Demand for Money in The United Kingdom: Experience since 1971," *Bank of England Quarterly Bulletin*, September, 1974. See also G. Dennis, *Monetary Economics*, Longman, London, 1981, p. 159.

[14]In this connection one researcher has suggested that the yield on non-bank intermediary liabilities is the most significant interest rate variable in affecting the demand for money. See Tong Hun Lee, "Alternative Interest Rates and the Demand for Money: The Empirical Evidence," *American Economic Review*, December, 1967.

[15]cf. Compton Bourne, "Dynamic Utility – Maximising Models of the Demand for Money in Caribbean Economics (with an application to Jamaica)," *Social and Economic Studies*, September 1974. See also Michael Howard, "The Demand for Money in the Trade Oriented Economy of Barbados, 1953-1977", CSO, *Research Papers*, No. 11, 1981.

AN APPLICATION OF THE POLAK MODEL TO THE TRINIDAD AND TOBAGO ECONOMY: A NOTE

Ramesh Ramsaran

INTRODUCTION

The view that the balance of payments is primarily a monetary phenomenon has been receiving increasing attention in recent years. In this view, the position is normally taken that (in developing countries particularly) there is a close relationship between such variables like exports, imports, foreign reserves, domestic credit creation and the money supply. The exact form of the relationship can vary widely depending on behavioural assumptions and theoretical convictions. One of the earliest monetary frameworks used in analysing the link between the balance of payments and domestic money supply/demand aggregate was the so-called Polak Model which, despite its simplicity and limitations, can still provide some useful insights into the workings of an open economy. Our aim in this work is to examine the usefulness of the Polak Model in the context of the recent experience of the Trinidad and Tobago economy.

THE POLAK MODEL[1]

Polak develops his model around a combination of monetarist and Keynesian relationships with the aim of examining the effects of changes in domestic credit creation, exports and capital movements (the exogenous variables) on imports, international reserves, the money supply and income. The relationships are shown in Equations (1) to (10). Equation (1) is an identity and shows income in the current year as equal to the product of the money supply in the current year and the income velocity. Equation (2) may be interpreted in one of two ways: (a) if the income velocity of money is constant, the income of the next period will equal the current period's income plus the increase in the quantity of money; or (b) if the income velocity of money is constant, the quantity of money will increase from one income period to the next by the same amount as income. Equation (3) splits the quantity of money into its source constituents, *viz.*, net foreign assets and net domestic assets. Equation (4) is the balance of payments equation and shows the change of reserves as being equal to Exports *minus* Imports *plus* capital movements.

By combining Equations (3) and (4), we derive Equation (5) which gives an explanation of the change in money, and thereby of the change in income, in terms of three variables considered autonomous and of imports. Equation (6) combines the three autonomous terms into one term. Equation (6') follows from Equations (5) and (6) and 'makes it possible to proceed in the explanation of imports and of income without first determining exports, capital movements, and credit creation separately'.[2] Equation (7) expresses imports as a function of current income. Equation (8) is derived from (7), (6), (5) and (2). Equation (9) is derived from dividing (8) by (1+m) and eliminating the terms with Y in the right hand side of (8) by iteration. Equation (10) gives the corresponding import equation.

The Equations

$$Y(t) = MO(t)V \tag{1}$$

$$Y(t) = Y(t-1) + \Delta MO(t) \tag{2}$$

$$\Delta MO(t) = \Delta R(t) + \Delta D(t) \tag{3}$$

$$\Delta R(t) = X(t) - M(t) + C(t) \tag{4}$$

$$\Delta MO(t) = X(t) + C(t) + \Delta D(t) - M(t) \tag{5}$$

$$Q(t) = X(t) + C(t) + \Delta D(t) \tag{6}$$

$$Q(t) = \Delta MO(t) + M(t) \tag{6'}$$

$$M(t) = mY(t) \tag{7}$$

$$(1 + m)\ Y(t) = Q(t) + Y(t-1) \tag{8}$$

$$Y(t) = \frac{Q(t)}{1+m} + \frac{Q(t-1)}{(1+m)^2} + \frac{Q(t-2)}{(1+m)^3} \cdots \tag{9}$$

$$M(t) = \frac{mQ(t)}{1+m} + \frac{mQ(t-1)}{(1+m)^2} + \frac{mQ(t-2)}{(1+m)^3} \tag{10}$$

Variables

Y = national income (money value)

t = current period

MO = the quantity of money

R = foreign assets (net)

DA = domestic assets

ΔR = change in reserves

X = exports

M = imports

C(t) = capital movements

Q(t) = $X(t) + C(t) + \Delta DA(t)$

m = constant average and marginal propensity to import

V = income velocity of circulation

Δ = change

Equations (9) and (10) express Y and M in terms of the autonomous determinants of the system. Equations (6') and (10) show that the term Q is used not only to explain imports, but itself contains imports in addition to the change in money. Polak and Boissonneault argue that there is no reason to be concerned about this as "the addition of M (t) to Δ MO (t) in (6') does not make imports an explanatory factor in the fluctuations of imports. The addition is necessary in order to obtain the autonomous expansion of money, which is not fully shown by the actual increase in money. Imports have undone part of the effects of the autonomous increase in money; to get a proper measure of the autonomous expansionary factors, the money that was taken out by imports has to be added back to the observed increase in money".[3]

Equations (9) and (10) show income and imports in the current year as being a time lagged function of the aggregate of the autonomous variables (*viz.* exports, capital inflows and domestic credit creation). In both equations, the influence of past values of Q gets less and less. After about four years it becomes insignificant.

ASSUMPTIONS (EXPLICIT AND IMPLICIT)

(a) a stable income velocity or a stable relationship between money supply and income;

(b) a stable relationship between imports and income, i.e. a stable propensity to import (constant average and marginal propensity to import);

(c) the exogenous variables of the model are domestic credit creation, exports, and capital inflows to the non-banking sectors from abroad;

(d) it is also assumed that saving (including tax revenue) does not vary with the level of income and that the only significant leakage during a process of expansion is into imports; and

(e) it is also assumed that a change in any one of the autonomous variables will have the same effect as a change in any other as far as income generation is concerned. All three can, therefore, be combined as one aggregate for the purpose of income analysis.

For computational purposes, Polak has provided us with a simpler set of formulae using combination of 'm' (the propensity to import) and 'v' (the income velocity of money). These are shown in Table 8.1. The term 't' refers to the calendar year.

APPLICATION TO TRINIDAD AND TOBAGO

The relevant balance of payments and monetary data for Trinidad and Tobago are presented in Table 8.3. Table 8.2 shows the respective income and import coefficients. Based on these coefficients, Tables 8.4 and 8.5 show computed income and imports in relation to actual income and imports for the period 1978-82. In both cases the deviations tend to be fairly large, with the deviations with respect to income being smaller than those of imports. This, of course, raises serious doubts about the predictive ability of the model, even if exports, capital inflows and domestic credit creation can be estimated with some degree of accuracy.

TABLE 8.1: FORMULAE FOR INCOME AND IMPORT COEFFICIENTS

Autonomous Determinants	Income Coefficients	Import (no lag) Coefficients
Q (t)	$\frac{1}{m^2v}(mv - (1 - r^v)$	$\frac{1}{mv}$ [mv - (1 -rv)]
Q (t-1)	$\frac{1}{m^2v}(1 - r^v)^2$	$\frac{1}{mv}$ $(1 - r^v)^2$.
Q (t - 2)	$\frac{1}{m^2v}$ $r^v (1 - r^v)^2$	$\frac{1}{mv}$. $r^v (1 - r^v)^2$
Q (t - 3)	$\frac{1}{m^2v}$ $r^2v (1 - r^v)^2$	$\frac{1}{mv}$. $r^2v (1 - r^v)^2$

$$r = \frac{1}{1 + m}$$

TABLE 8.2: INCOME AND IMPORT COEFFICIENTS

Autonomous Determinants	Income		Imports	
	1 (a)	1 (b)	2 (a)	2 (b)
Q (t)	1.6681	1.1343	0.8056	0.5477
Q (t-1)	0.3962	0.6874	0.1913	0.3319
Q (t-2)	0.0064	0.1828	0.0031	0.0883
Q (t-3)	0.0001	0.0487	0.0000	0.0235
	2.0708	2.0532	1.0000	0.9914

Columns (1a) and (2a) show the coefficients when the narrow money supply (currency in circulation plus demand deposits) is used in computing the income velocity of circulation. Columns 1(b) and 2(b) show the coefficients when the broad money supply (the narrow money stock plus bank savings and time deposits) is used.

CONCLUDING COMMENTS

It is claimed that one of the advantages of the model is that one does not need national income data to derive the product of 'mv'. In other words one need not know 'm' and 'v' separately. This follows from the definition $mv = M.\frac{Y}{MO} = \frac{M}{MO,}$ which is the ratio of imports to money. This is of immense value where national income data are absent or contain a large margin of error.

The assumption of stability in the import coefficient and in the income velocity of money may not hold in all cases. A glance back at Table 8.2 will show that in Trinidad and Tobago the import coefficient has tended to vary as does the income velocity of money. It should be pointed out that even though the income velocity of money based on the broad money supply appears to be more stable than that based on the narrow money stock, the deviations of computed income and imports from the actual values were large in both cases. The data show that the average import propensity and the marginal import propensity need not be the same.

There is some question, too, whether domestic credit creation can be treated as an exogenous variable. It has been observed that credit creation "may in fact be systematically influenced by factors determining the demand for money or by some of the events whose monetary effects are being examined".[4]

TABLE 8.3: SELECTED ECONOMIC DATA

(TT$m)

	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	Average 1970-82
1. Exports[1] (X)	714	768	835	1,142	2,587	3,321	4,002	4,634	4,066	5,363	8,213	8,096	7,346	-
2. Imports[1] (M)	826	991	1,110	1,174	1,975	2,559	3,310	4,044	3,878	5,340	7,111	7,127	8,935	-
3. Δ M	85	165	119	64	801	584	751	734	-166	1,462	1,771	16	1,808	-
4. = (1)-(2)	-112	-223	-275	-32	612	762	692	590	188	23	1,102	969	-1,589	-
5. Net Capital Inflow[2] (C)	166	254	199	120	68	345	-342	676	700	995	542	519	1,132	
6. Change in Reserves (Δ R) = (4 + 5)	54	31	-76	88	680	1,107	550	1,266	888	1,018	1,644	1,488	-457	-
7. GDP[3] (Y)	1,631	1,796	2,073	2,579	4,201	5,392	6,213	7,641	8,729	11,407	15,877	18,129	19,034	-
8. Change in GDP (ΔY)	70	165	277	506	1,622	1,191	821	1,428	1,088	2,678	4,470	2,252	905	-
9. $\frac{M}{Y}$ = m	.5064	.5518	.5354	.4552	.4701	.4746	.5327	.5292	.4443	.4681	.4479	.3931	.4694	0.4829
10. $\frac{\Delta M}{\Delta Y}$	1.21	1.00	0.43	0.13	0.49	0.49	0.91	0.51	-0.15	0.54	0.40	0.00	2.00	-
11. MO	151	178	216	241	287	417	622	791	1,071	1,352	1,563	1,548	2,035	-
12. ΔMO														
13. = Y ÷ MO = v	10.8013	10.0899	9.5972	10.7012	14.6376	12.9304	9.9887	9.6599	8.1503	8.4371	10.1580	11.7112	9.3533	10.4782
14. BMO[5]	473	574	705	832	1,014	1,360	1,834	2,295	2,961	3,766	4,451	4,989	6,099	-
15. ΔBMO	85	101	131	127	182	346	474	461	666	805	685	538	1,110	-
16. = Y ÷ BMO = v	.34482	3.0819	2.9404	3.0997	4.1430	3.9647	3.3877	3.3294	2.9480	3.0289	3.5671	3.6338	3.1208	3.3610
17. Domestic Assets (15-6)	31	70	207	39	-498	-761	-76	-805	-222	213	-959	-950	1,567	-
18. = 1+5+17 = Q	911	1,092	1,241	1,301	2,157	2,905	3,784	5,095	4,732	6,594	8,898	8,634	7,999	-

TABLE 8.4: COMPUTED IMPORTS

	Narrow Money 'v'					Broad Money 'v'				
	1978	1979	1980	1981	1982	1978	1979	1980	1981	1982
M_c	4,731.8	6,593.6	8,897.6	8,633.6	7,998.6	4,691.4	6,537.5	8,822.3	8,560.6	7,931.0
Q (t)	3,811.9	5,311.8	7,167.8	6,955.1	6,443.6	2,591.7	3,611.9	4,874.0	4,729.4	4,381.5
Q (t-1)	905.2	1,261.4	1,702.2	1,651.7	1,530.2	1,570.7	2,188.5	2,953.0	2,866.9	2,655.3
Q (t-2)	14.7	20.4	27.6	26.8	24.8	417.8	582.2	785.6	762.3	706.2
Q (t-3)	0.0	0.0	0.0	0.0	0.0	111.2	154.9	209.1	202.9	188.0
M (actual imports)	3,878.0	5,340.0	7,111.0	7,127.0	8,835.0	3,878.0	5,340.0	7,111.0	7,127.0	8,935
M_c	4,732.0	6,594.0	8,898.0	8,634.0	7,999.0	4,691.0	6,537.0	8,822	8,561.0	7,931.0
$M_c - M$	+854	+1,254	+1,787	+1,507	-936	+813	+1,197	+1,711	+1,434	-1,004
% difference	22.0	23.5	25.1	21.1	-10.5	21.0	22.4	24.1	20.1	-11.2

TABLE 8.5: COMPUTED INCOME

	Narrow Money					Broad Money				
	1978	1979	1980	1981	1982	1978	1979	1980	1981	1982
Y_c	9,798.5	13,654.6	18,452.6	17,879.0	16,563.9	9,715.8	13,538.8	18,269.3	17,711.8	16,423.5
Q (t)	7,893.4	10,999.4	14,842.7	14,402.4	13,343.1	5,367.4	7,479.4	10,092.7	9,793.3	9,073. 0
Q (t-1)	1,874.7	2,612.4	3,525.2	3,420.6	3,169.0	3,532.8	4,532.7	6,116.5	5,935.0	5,498.5
Q (t-2)	30.2	42.1	56.8	55.1	51.0	865.2	1,205.6	1,626.9	1,578.6	1,462.5
Q (t-3)	0.5	0.7	0.9	0.9	0.8	230.4	121.1	433.2	404.9	389.5
Y (Actual Income)	8,729	11,407	15,877	18,034	19,034	8,729	11,407	15,877	18,129	19,034
Y_c (Computed)	9,798	13,655	18,426	17,879	16,564	9,716	13,539	18,269	17,712	16,423
$Y_c - Y$	1,069	2,248	1,549	-250	-2,470	987	2,132	2,392	-417	2,611
% difference	12.2	19.7	9.7	- 1.4	-13.0	11.3	18.7	15.1	-2.3	13.7

NOTES

[1]The model is derived in two articles: J.J. Polak "Monetary Analysis of Income Formation and Payments Problems," and J.J. Polak and L. Boissonneault, "Monetary Analysis of Income and Imports and its Statistical Application." Both have been published in the IMF, *The Monetary Approach to the Balance of Payments*, Washington, D.C., 1977.

[2]Polak and Boissonneault, *op. cit.*, p. 68.

[3]*Ibid.*

[4]See the introductory survey by R.R. Rhomberg and R. Heller in IMF, *The Monetary Approach to the Balance of Payments*, p. 4.

IX DETERMINANTS OF AGGREGATE SAVINGS IN POST-WAR TRINIDAD AND TOBAGO*

(An Exploratory Study)

Ramesh Ramsaran

INTRODUCTION

The role of savings as an important source of finance for capital formation occupies a very prominent place in the development literature. It is generally felt that if poor countries are to achieve higher rates of growth, it is essential for them to save and invest a higher proportion of their national incomes. In fact, one distinguished writer has observed that the "central problem in the theory of economic growth is to understand the process by which a community is converted from being a five per cent to a twelve per cent saver with all the changes in attitudes, in institutions and in techniques which accompany this conversion".[1] The implementation of policies designed to raise the level of savings in an economy requires at least a notional identification of the factors which influence savings behaviour. Of course, the importance of these factors in a savings function would tend to vary from one context to another. In other words, while it is possible to focus on certain factors or variables, based on observation or *a priori* reasoning, it is difficult to generalize a savings function applicable to all countries, or even to the same country over time. A further difficulty in specifying a savings equation for empirical testing arises from the fact that considerations which may exert an important influence on the behaviour of the different sectors (government, corporations and households) which contribute to aggregate savings may not be readily quantifiable in a form that can be used in a specification. The purpose of this paper is to examine, through the use of simple econometric models, the relationship between savings and certain selected variables in the Trinidad and Tobago economy in the post-war period. The method of estimation used throughout is the Ordinary Least Squares (OLS).

The paper is divided into four sections. In the first section, we undertake a brief review of the various theories of savings, which have either inspired or grown out of the empirical work undertaken in the post-war period. In the second, we examine the trends in savings and investment ratios and the sources of finance for capital formation in the economy. In the third section, we explore the importance of various savings functions for the economy as a whole, and where data permit, for individual sectors. And in the fourth, we examine the impact of exports on aggregate savings, and explore the relationship between foreign capital and domestic savings and growth.

*The author is indebted to Mr. Eric Adams for assistance with the computation and to W. Joefield-Napier for comments on a first draft of the paper.

THEORIES OF SAVINGS

Attempts to focus on the main factors which influence the level of savings in an economy have resulted in a number of different theories. The variables to which attention has been drawn fall into two broad categories: (a) characteristics of the saver (e.g. income, assets, occupation, age, etc.), and (b) characteristics of his environment (e.g. prices, interest rates, etc.).[2]

The classical economists (while not completely ignoring the role of income) placed heavy emphasis on the rate of interest. They saw interest as the payment (or reward) for abstaining from consumption, or payment for the use of funds. For them, the rate of interest was the factor which brought the supply and demand for savings into equilibrium. An important assumption of the classical position was that aggregate expenditure on consumption was, *ceteris paribus,* negatively sensitive to changes in the rate of interest i.e. any increase in the rate of interest would result in a significant drop in consumption. Keynes disagreed with this position. In the *General Theory,* he asserted that "the total effect of changes in the rate of interest on the readiness to spend on present consumption is complex and uncertain, being dependent on conflicting tendencies, since some of the subjective motives towards saving will be more easily satisfied if the rate of interest rises, whilst others will be weakened".[3] He argued that the rate of interest is not a return to saving or waiting as such. It is the reward for parting with liquidity – a measure of the unwillingness of those who possess money to part with their liquid control over it. "The rate of interest", he said, is not the 'price' which brings into equilibrium the demand for resources to invest with the readiness to abstain from present consumption. It is the 'price' which equilibrates the desire to hold wealth in the form of cash with the available quantity of cash. . . ."[4]

Keynes felt the rate of interest was not important in decisions of people in allocating their income between consumption and saving. To him, the critical determinant was the level of income. Psychological factors summed up in his 'propensity to consume' (and 'propensity to save') concepts help to influence the individual in deciding how much of his income he will consume now and how much he will reserve in some form of command over future consumption. Keynes listed eight main motives which lead individuals to refrain from spending out of their incomes. These are: precaution, foresight, calculation, improvement, independence, enterprise, pride and avarice. There can be a corresponding list on the consumption side e.g., enjoyment, short-sightedness, ostentation, etc. The strength of all these motives, he concedes, "will vary enormously according to habits formed by race, education, communities, religion and current morals, according to present hopes and past experience, according to the scale and technique of capital equipment, and according to the prevailing distribution of wealth and the established standards of life".[5]

He lists some further motives which might influence the savings behaviour of governments and business corporations. These are: (a) the motive of enterprise – to secure resources to carry out further capital investment without incurring debt or raising further capital on the market; (b) liquidity – to secure liquid resources to meet emergencies, difficulties and depressions; (c) the motive

of improvement – to secure a gradually increasing income to protect the management from criticisms of inefficiency; and (d) financial prudence – making provisions to discharge debt and write off the cost of assets ahead of the actual rate of wastage and obsolescence.

Based on *a priori* reasoning, Keynes was led to believe that as real income rises, a greater proportion of income will be saved. An implicit assumption here is that the average propensity to consume declines as income increases. Whether or not a greater proportion is saved as income rises, he argued "we take it as a fundamental psychological rule of any modern community that, when its real income is increased, it will not increase its consumption by an equal absolute amount, so that a greater amount must be saved, unless a large and unusual change is occurring at the same time in other factors".[7] By stipulating "a falling average propensity to consume (APC), Keynes was assuming either a non-linear consumption function, for which the marginal propensity to consume (MPC) also declines with income, or a linear consumption function (constant MPC) which has a positive intercept and is therefore referred to as being non-proportional.[8]

Keynes' *General Theory* inspired a number of empirical work designed to test his hypotheses. Some of these studies produced results which appeared to be in conflict with *a priori* observation. An early post-war study undertaken by Kuznets[9] on the U.S. economy showed that even though income had risen, there was a fairly stable consumption-income ratio (APC) in the long run. The APC and MPC reported, were almost identical, thus suggesting a proportional long run consumption function. On the other hand, the evidence for the short run indicated that the APC was not constant.[10]

A widely accepted argument advanced to explain the behaviour of the short and long term average propensities is that over time an upward shift of the consumption function takes place. Duesenberry has tried to explain this phenomenon using the concept of relative rather than absolute income.[11] The relative income hypothesis views consumption (or saving) as a function not only of the consumers' current income, but of previous income and of the consumption standards of others. Duesenberry argues that consumers, having become accustomed to a particular consumption standard, tend to resist any decline in this standard as income falls. Consumption may decline but less slowly than income. In such a situation, the average propensity to save will fall. In the event that there are subsequent increases in income, consumers will attempt to restore the previous relationship between saving and consumption leading to a rise in the saving-income ratio and a fall in the consumption-income ratio. The consumption function proposed by Duesenberry took the form shown in Equation (1)

$$\frac{s_t}{y_t} = a\frac{y_t}{y_o} + b \qquad (1)$$

where s and y represent saving and income respectively; the subscript 't' refers to the current period and 'o' to the previous peak. Equation (1) could also

be re-written as Equation (2) where c_t represents consumption and the other variables are as defined previously.

$$c_t = b_o\, y_t - b_1 \left(\frac{y^2_t}{y_o}\right) \qquad (2)$$

Another post-Keynesian theory advanced to explain the relationship between income, consumption and saving is what is known as the permanent income hypothesis (PIH) associated with the name of Milton Friedman.[12] Friedman does not accept the proposition that people adjust their consumption to their current income. He divides current (or measured) income into two components: permanent and transitory. Permanent income is the perpetual (or lifetime) income stream an individual expects to derive from his human and non-human wealth over a reasonable period of time. Transitory income is the difference between measured (actual) income and permanent income. It represents unanticipated or unforeseen additions or subtractions to permanent income. Friedman's main contention is that permanent consumption is proportional to permanent income. The average propensity to consume permanent income is constant. Savings will tend to vary with movements in transitory income. Friedman sees these relationships as plausible explanations for the short run variation in the savings (or consumption) ratio and the stability in the secular function observed in practice.

The life cycle hypothesis (LCH) developed by Modigliani and Brumberg[13] also rejects the Keynesian position that current income is the major determinant of individual or aggregate savings. Like the permanent income hypothesis, the LCH is based on maximising utility behaviour. Current consumption of the individual is postulated to be a function of his total resources (defined as the sum of his current and discounted future earnings over his lifetime and his current net worth), and the rate of return on capital with parameters depending on age. The shape of the utility function depends on the kinds of assumption we make with respect to life time consumption patterns (consumption at different points in the life cycle) and expectations with respect to the receiving or leaving of legacies. According to Levacic, the difference between the LCH and PIH is one of emphasis in that the LCH is concerned explicitly with the role of asset accumulation and the effect of age on household consumption. The LCH is similar to the PIH in that it assumes that any change in total resources, due to any of the three components, will cause a proportional change in planned consumption in all future periods".[14]

The theories reviewed above were formulated largely in the context of the experience of the developed countries (DCs). The analyses generally assumed a closed economy framework. In more recent years, the need to understand the savings function in developing countries (LDCs) has led some researchers to examine the quantitative relationship between savings and certain variables which have proved useful in explaining savings (and consumption) behaviour in the DCs.[15] No new theories have grown out of these studies, but some analysts have found it necessary to take explicit account of the 'openness' feature. One writer, for instance, thanks that exports are an important variable in explaining variations in domestic savings in LDCs.[16] Some others contend that the inflow

of foreign capital can adversely affect the local savings effort, and, ultimately, the growth rate of the economy.[17]

In this paper the hypotheses selected for testing tend to be influenced by the availability and limitations of the data at our disposal. Before undertaking this exercise, however, it would be instructive to present a brief survey of the components of total savings, and of movements in the investment and savings ratios in Trinidad and Tobago in the post-war period. This would provide a useful background to the econometric results presented in later sections.

TRENDS IN SAVINGS AND INVESTMENT RATIOS

Since savings data tend to be computed as a residual in national income statistics, the reliability of such statistics would depend on the degree of care that goes into national income computation.[18] Countries which place a high priority on the accuracy of their national income data employ all three methods *viz.*, the income, output or value added and the expenditure approaches in deriving their estimates. In Trinidad and Tobago, the last year for which we have published aggregate income and savings data for the major sectors of the economy is 1962. In more recent years, attention has been concentrated on the output and expenditure approaches which do not provide the full range of information necessary for examining aggregate savings and consumption behaviour. For instance, data relating to disposable income and the functional distribution of income are not readily available. Figures pertaining to capital replacement (depreciation) are also completely absent. The flow-of-funds studies put out by the Central Statistical Office (CSO) do give some idea of how funds are borrowed and lent, and provide some limited information on the extent of saving and investment undertaken by the various sectors within economy.[19] The inadequate coverage of the exercise, however, coupled with certain methodological shortcomings in the compilation of data, require one to be very careful in drawing conclusions from the positions presented. It should also be pointed out that the GNP figures used in this study after 1962 are based on adjustments made by the author (on the basis of published and unpublished data) to the official GDP estimates.

In the following section we undertake an examination of the broad trends in savings and investment in the early post-war period. Using a combination of published data and residual estimates, this exercise is later extended to cover the period up to 1979.

In Table 9.1a and 9.1b, we show the main source from which capital formation was financed between 1952 and 1962. As can be seen from these tables the contribution of capital consumption allowances fluctuated between 28 per cent and 45 per cent over the period. There was no clear trend, as was the case with the other sources. It can be observed also that local corporate savings tended to provide the smallest share of total finance, the contribution varying between 2.7 per cent and 8.2 per cent. However, personal savings (i.e. the savings of households and unincorporated enterprises) played a significant part in the growth of the economy in this period. In absolute terms, personal savings increased from $24 million in 1952 to $61 million in 1962, or by 154 per cent. With the exception of four years (1957-1960) when there was a relatively heavy inflow of foreign capital, the contribution from this source to total

TABLE 9.1 (a): SOURCES OF FINANCE FOR CAPITAL FORMATION

Year	(1) Capital Consumption Allowances $m	(2) Local Corporate Savings $m	(3) Personal Savings $m	(4) Govern-ment Savings $m	(5) Foreign Borrowing by Gov't. $m	(6) Net Capital Inflow[2] $m	(7) Total (1) to (6) $m	(8) Net Investment $m	(9) Net National Savings as a % of (8)	(10) Net Capital Inflows as as a % of (8)
1952	29.3	3.4	23.6	11.0	-	27.2	94.5	65.2	58.3	41.7
1953	38.5	5.1	31.1	7.5	-	3.7	85.9	47.4	92.3	7.7
1954	37.3	5.6	34.5	5.7	20.0	-11.4	91.7	54.4	84.2	15.8
1955	43.8	3.5	25.7	7.8	-	34.7	115.5	71.7	51.6	48.4
1956	53.8	9.1	25.5	10.5	-	26.6	125.5	71.7	62.9	37.1
1957	48.6	14.2	29.1	26.3	-	54.3	172.5	123.9	56.2	43.8
1958	63.3	16.8	32.0	37.9	-	56.2	206.2	142.9	60.7	39.3
1959	72.4	13.2	28.2	35.3	-	99.7	249.3	176.9	43.6	56.4
1960	93.1	6.8	43.9	37.3	-	101.2	285.9	192.8	47.5	52.5
1961	98.5		67.3	11.8	-	71.9	256.3	157.8	54.4	45.6
1962	112.7	9.3	60.9	16.4	14.0	84.9	298.2	185.5	46.7	53.3

Notes: 1. Savings of households and un-incorporated enterprises.

2. Includes re-investment by foreign-owned enterprises. The figures are 'net' of certain outflows related to the operations of the Government, the banking and insurance sector and the monetary authorities.

3. Includes Government borrowing.

4. Net National Saving is the sum of (2), (3) and (4).

Source: *The National Income of Trinidad and Tobago, 1952-62.* CSO.

TABLE 9.1 (b): SOURCES OF FINANCE FOR CAPITAL FORMATION
(Percentages)

Year	Capital Consumption Allowances	Local Corporate Savings	Personal Savings	Government Savings	Foreign Borrowing By Gov't.	Net Capital Inflow	Total
1952	31.0	3.6	25.0	11.6	-	28.8	100.0
1953	44.8	5.9	36.2	8.7	-	4.4	100.0
1954	40.7	6.1	37.6	6.2	21.8	-12.4	100.0
1955	37.9	3.0	22.2	6.8	-	30.1	100.0
1956	42.9	7.2	20.3	8.4	-	21.2	100.0
1957	28.2	8.2	16.9	15.2	-	31.5	100.0
1958	30.7	8.1	15.5	18.4	-	27.3	100.0
1959	29.0	5.3	11.5	14.2	-	40.0	100.0
1960	32.6	3.6	15.4	13.0	-	35.4	100.0
1961	38.4	2.7	26.3	4.6	-	28.0	100.0
1962	37.8	3.1	20.4	5.5	4.7	28.5	100.0

Source: Table 9.1(a).

capital formation was of the order of 20 per cent or more. Government savings varied widely from year to year as can be seen in Table 9.1a. The contribution to total investment finance averaged around 10 per cent for the period. Net capital inflow (which included the reinvested profits of foreign-owned enterprises) provided an important complement to domestic savings in the 1950s. It is important to point out that the term 'net' is used here in a limited sense. The outflow of investment income is not taken into account. Columns (9) and (10) in Table 9.1a show the respective contributions by local finance and foreign investment in the economy. Foreign inflows on average accounted for 40 per cent of net investment over the period.

Table 9.2 shows savings of the various sectors as a percent of GNP (at current market prices). Here, it can be observed that over the 1952-62 period the proportion of local corporate savings varied between 1.0 per cent and 2.5 per cent as compared to an average of 6 per cent for personal savings. Government savings ranged between 1.3 per cent and 5.6 per cent. Capital consumption allowances were generally over 8 per cent. Net national savings (i.e. local corporate savings + Personal savings + government savings) varied between 7.8 per cent and 12.8 per cent.[20]

As indicated earlier, data on aggregate private savings associated with national income statistics have not been published since 1962. In an effort to gain some idea of developments in more recent years, we turned to the flow of funds studies to which reference was made earlier. Some of the data used in these reports, it should be noted, were gained from budgetary surveys and the use of samples. The data pertaining to the local corporate sector, for instance, are based on a sample of the largest firms and no attempt was made to "blow-up" data. In order to get an indication of savings taking place in the household sector we calculated the net change in assets at the end of each year, i.e., the difference between change in assets and change in liabilities. The results which are shown in Column (1) of Table 9.3 indicate that personal expenditure was generally less than personal income. In other words, the household sector was a net supplier of funds in the economic system – a continuation of the trend we observed in the 1950s. Turning our attention to the local corporate sector, the figures indicate that this sector was generally a net user of funds. The negative sign is not a reflection of net operating position, but points to the fact that the sector was investing (spending) more than it saved. Government savings is never easy to define. Certain categories of spending which we normally class as current expenditure have effects associated with capital spending. A case in point is the well known example of salaries paid to teachers. This issue, however, is one that does not concern us here. The figures shown in Columns (4) and (5) of Table 9.3 indicate that government savings continued the trend of fluctuating from year to year until 1973. After that it increased dramatically to 1981 both in volume terms and as a percentage of GNP.

Since aggregate savings data for recent years are not available, as indicated earlier, we have had to make some estimates based on the residual approach. We experimented with three concepts: (a) Gross Domestic Savings (GDS) which we defined as Gross Domestic Product *minus* government and private consumption expenditure; (b) Gross National Savings (GNS_1) which was equal to

TABLE 9.2: SAVINGS AS A % OF GNP[1]

Year	(1) Capital Consumption Allowances %	(2) Local Corporate Savings %	(3) Personal Savings %	(4) Govern-ment Savings %	(5) Net Capital Inflow %	(6) All Sources %	(7) Net National Savings[2]	(8) Gross National Savings (1)+(7)
1952	8.5	1.0	6.9	3.2	7.9	27.5	11.1	19.6
1953	10.3	1.4	8.3	2.0	1.0	23.0	11.7	22.0
1954	9.1	1.4	8.4	1.4	-2.8	17.5	11.2	20.3
1955	9.3	0.7	5.4	1.7	7.4	24.5	7.8	17.1
1956	10.3	1.7	4.9	2.0	5.1	24.0	8.6	18.9
1957	8.3	2.4	4.9	4.5	9.2	29.3	11.8	20.1
1958	9.3	2.5	4.7	5.6	8.3	30.4	12.8	22.1
1959	9.9	1.8	4.0	4.8	13.7	34.2	10.6	20.5
1960	11.2	1.2	5.3	4.5	12.2	34.4	11.0	22.2
1961	11.5	0.8	7.6	1.3	8.1	29.3	9.7	21.2
1962	11.9	1.0	6.4	1.7	8.9	29.9	9.1	21.0

Notes: 1. At current market prices.

2. Cols. (2) + (3) + (4)

Source: Computed from data published in *The National Income of Trinidad and Tobago*, CSO. 1952-62.

TABLE 9.3: SELECTED SAVINGS DATA AS A % OF GNP, 1967-1979

Year	(1) Personal Savings ($m)	(2) (1) as a % of GNP	(3) Local Corporate Savings ($m)	(4) Government Current Surplus ($m)	(5) (4) as a % of GNP
196/	4.3	0.3	-4.9	23.5	1.7
1968	44.1	2.9	4.3	48.6	3.2
1969	64.4	4.2	-12.3	68.5	4.5
1970	19.1	1.2	0.3	53.7	3.4
1971	143.9	7.8	-6.1	14.2	0.8
1972	-25.0	-1.2	-59.5	4.7	0.2
1973	209.2	8.2	-124.8	46.0	1.8
1974	249.4	6.8	-13.4	628.0	17.1
1975	257.7	5.0	-78.5	961.0	18.8
1976	311.0	5.1	-167.7	1,226.0	20.0
1977	n.a.	n.a.	n.a.	1,679.0	22.9
1978	n.a.	n.a.	n.a.	1,418.0	16.7
1979	n.a.	n.a.	n.a.	1,455.0	14.9
1980	n.a.	n.a.	n.a.	3,127.0	21.0
1981	n.a.	n.a.	n.a.	3,325.0	18.9
1982	n.a.	n.a.	n.a.	931.0	4.8
1983	n.a.	n.a.	n.a.	196.0	1.0

Notes: n.a. not available.

Sources: *Flow of Funds for Trinidad and Tobago,* CSO, 1966-74, and 1967-76; Central Bank, *Annual Report,* various issues.

GDS *minus* the sum of net investment income and net transfer payments in the balance of payments account; and (c) a second estimate of Gross National Savings (GNS_2) which we defined as Gross Capital Formation *minus* net movements in the capital account (non-monetary sector) of the balance of payments.

The ratios of each of these concepts to GNP are shown in columns (3), (4) and (5) of Table 9.4. Column (2) shows the proportion of gross domestic capital formation (GDCF) to GNP. These latter ratios have fluctuated between 16 per cent and 35 per cent over the 1952-79 period. Since 1970, the figures have consistently exceeded 20 per cent. Capital formation, of course, is financed both by domestic savings and foreign resources. The 'gross' indicates that provision for capital replacement (depreciation) are included in the figures. Foreign savings includes not only new inflows from abroad, but the reinvestment of profits by foreign-owned enterprises. As defined, all three concepts are expected to give us

TABLE 9.4: GROSS DOMESTIC CAPITAL FORMATION (GDCF) AND THREE CONCEPTS OF SAVINGS AS A % OF GNP, 1952-1979

(1) Year	(2) GDCF as a % of GNP	(3) Gross Domestic Savings as a % of GNP	(4) Gross National Savings (GNS) as a % of GNP[1]	(5) GNS as a % of GNP[2]
1952	27.6	25.9	19.6	17.4
1953	22.9	30.6	21.8	15.6
1954	22.5	27.1	20.3	7.7
1955	24.5	24.5	17.2	17.1
1956	24.1	32.1	18.5	14.8
1957	29.4	38.7	19.7	12.2
1958	30.6	35.9	22.8	20.2
1959	34.2	36.8	22.2	19.2
1960	34.5	33.2	21.6	26.1
1961	28.8	34.3	20.1	22.7
1962	31.4	33.4	20.5	23.1
1963	26.3	27.4	15.9	13.0
1964	25.6	27.9	16.8	18.8
1965	30.5	23.1	16.0	18.2
1966	23.6	25.2	17.3	19.4
1967	16.8	15.1	6.0	13.4
1968	17.5	18.6	10.0	13.3
1969	17.7	12.7	3.9	9.1
1970	26.4	16.7	12.7	16.0
1971	34.6	20.0	16.4	21.1
1972	31.2	15.5	8.7	21.4
1973	24.5	20.9	13.5	19.7
1974	23.3	35.3	18.7	19.4
1975	22.6	34.9	22.5	15.6
1976	26.7	35.3	22.5	25.2
1977	28.0	33.9	18.5	19.3
1978	31.9	35.2	24.4	23.7
1979	31.1	45.5	37.5	21.9

Notes: 1. GDCF – Gross Domestic Capital Formation

Source: Computed from publications of the Central Statistical Office, the Central Bank and the International Monetary Fund.

different ratios. Gross Domestic Savings (GDS) include both national and foreign savings. Gross National Savings (GNS_1) by taking account of investment income outflows tries to capture the net effect of foreign inflows. GNS_2 uses a different method to arrive at national savings. It is interesting to note that our GNS_1 ratios relating to the 1952-62 period are almost identical to the ratios shown in Column (8) of Table 9.2 which indicate that this approach may have provided the overall framework in deriving the total savings of the economy in that period.

THE DETERMINANTS OF SAVINGS

The best known model concerning the determinants of current savings is based on the current income hypothesis which states that current saving is a linear function of current income. This can be written as:

$$S = a + by \qquad (3)$$

where 'S' is saving, 'y' is current income, and 'a' and 'b' are parameters or constants. In this equation, 'b' is the marginal propensity to save and is assumed to remain the same irrespective of the level of income.[21] A number of variations can be made to this simple specification outlined above. For instance, other independent variables can be added. Time can be introduced as an indication of the historical shift in the relation between income and saving. Past income can be used as an additional variable, perhaps in the form of income of the preceding year or the ratio of the previous year's income to the current year's. Current income, itself, can take a number of forms. It can be used in an absolute sense or as the ratio of saving to income, as an aggregate or per head of the population or spending unit. As with most other variables, it may be convenient to use the logarithm form of income. Any of these transformations, of course, may be based on real rather than current values.[22]

In the section that follows, we apply the above model to the Trinidad and Tobago data. Since our estimates of savings are not strictly comparable with the published data for the 1952-62 period, we have tried to keep the computations based on published data and our own estimates separately. This is indicated where necessary by the period on which the particular equations are based.

Using current values of data pertaining to the 1952-62 period, Equation (4) shows the relationship between Net National Savings (NNS) and Gross National Product (GNP). The fit in this specification is quite good if we are to judge by the standard error of the GNP coefficient and the coefficient of determination, $\bar{R}^2$. GNP explains 82 per cent of the variation in NNS. Equation (5) is based on the same data expressed in per capita terms. Here, we see per capita income also provides a good explanation of changes in per capita savings. The $\bar{R}^2$, however, is smaller in this latter formulation. Equation (6) shows the results when the per capita data are expressed in real terms. The standard error of per capita income remains significant, but the value of the coefficient of determination falls considerably. Real per capita income explains only 56 per cent of the movements in real per capita savings as compared to 70 per cent in Equation (5) where the nominal figures were used. Equations (7) and (8) show the results of the regressions when we use the logarithm of the savings and income variables both in aggregate and per capita forms. As before, the coefficient of both GNP

and PGNP are highly significant. The $\bar{R}^2$ remains high. It is worth pointing out that the coefficient of determination tends to be lower in the functions where we have used the variables (both dependent and independent) in per capita form.

$$NNS = 5.18 + 0.096\ GNP \quad (1952\text{-}62) \qquad (4)$$
$$(9.08)\quad (0.04)$$

D.W. = 1.30
F = 46.96
R^2 = 0.82

$$PNS = 6.56 + 0.096\ PGNP \quad (1952\text{-}62) \qquad (5)$$
$$(15.76)\quad (0.02)$$

D.W. = 1.33
F = 24.44
R^2 = 0.70

$$RNNS = 6.89 + 0.94\ RNP \quad (1952\text{-}62) \qquad (6)$$
$$(18.85)\ (0.03)$$

D.W. = 1.34
F = 11.48
R^2 = 0.56

$$\log NNS = -0.83 + 0.95 \log GNP \quad (1952\text{-}62) \qquad (7)$$
$$(0.38)\quad (0.14)$$

D.W. = 1.38
F = 46.64
R^2 = 0.82

$$\log NNS = -0.80 + 0.94 \log PGNP \quad (1952\text{-}62) \qquad (8)$$
$$(0.56)\quad (0.12)$$

D.W. = 1.39
F = 23.62
R^2 = 0.69

The savings estimates from our three definitions were each regressed on GNP for three periods, 1952-62, 1963-79 and 1952-79. The results are shown in Equations (9) to (17). The $\bar{R}^2$ in all the equations is very high, indicating that GNP explains a significant part of the variation in all the different estimates of savings in the periods we have considered. The standard errors show that the GNP coefficients are statistically significant in all of the estimated equations. The value of the D.W. Statistic in some cases (particularly in Equations 11 and 14), however, indicates a problem in the error term. The negative intercept in all the equations indicate a marginal propensity to save that is higher than the average.

In contemplating additional factors which might exert some influence on the level of savings, two which readily come to mind are changes in the level of

Equation No.	Period	Dependent Variable	Intercept	Coefficients of Independent Variable	D. W. Statistic	$\bar{R}^2$	F Statistic
(9)	1952-62	GDS	-38.65 (19.01)	+0.39 GNP (0.03)	1.32	0.95	177.84
(10)	1963-79	GDS	-368.35 (86.97)	+0.43 GNP (0.19)	1.29	0.97	470.61
(11)	1952-78	GDS	-177.76 (55.32)	+0.40 GNP (0.02)	0.88	0.96	167.54
(12)	1952-62	GNS_1	-8.41 (9.20)	+0.22 GNP (0.01)	1.21	0.96	238.76
(13)	1963-79	GNS_1	-337.92 (122.16)	+0.31 GNP (0.03)	1.18	0.89	127.61
(14)	1952-79	GNS_1	-169.01 (68.56)	+0.29 GNP (0.02)	1.00	0.89	208.05
(15)	1952-62	GNS_2	-72.58 (20.85)	+0.31 (0.03)	1.95	0.91	92.33
(16)	1963-79	GNS_2	-101.24 (46.03)	+0.23 GNP (0.01)	2.99	0.96	480.18
(17)	1952-79	GNS_2	-53.83 (25.13)	+0.22 GNP (0.007)	2.63	0.97	928.27

Equation No.	Period	Dependent Variable	Intercept	Coefficients of Independent Variable	D. W. Statistic	$\bar{R}^2$	F Statistic
			NOMINAL				
(18)	1952-62	PGDS	-77.60 (33.62)	+ 0.43 PGNP (0.04)	1.37	0.91	104.17
(19)	1963-79	PGDS	-364.46 (80.75)	+0.43 PGNP (0.02)	1.28	0.97	448.54
(20)	1952-79	PGDS	-183.27 (52.68)	+0.40 PGNP (0.02)	0.85	0.95	562.84
			DEFLATED				
(21)	1952-62	PGDS	-101.65 (41.17)	+0.48 PGNP (0.06)	1.40	0.86	61.60
(22)	1963-79	PGDS	-323.88 (60.00)	+0.55 (0.04)	0.96	0.89	135.27
(23)	1952-79	PGDS	-113.95 (43.96)	+0.41 PGNP (0.04)	0.46	0.78	99.74
			THE SAVINGS RATIO (USING GDS) ON PGNP				
(24)	1952-62	$\frac{GDS}{GNP}$	+20.28 (4.81)	+0.015 PGNP (0.006)	1.37	0.34	6.32
(25)	1963-79	$\frac{GDS}{GNP}$	+16.41 (2.20)	+0.003 PGNP (0.000)	1.02	0.65	30.55
(26)	1952-79	$\frac{GDS}{GNP}$	+24.88 (2.04)	+0.002 PGNP (0.0006)	0.47	0.15	6.009

prices and population growth. Rather than introduce these factors as explicit variables, we felt it more convenient to use the per capita variants i.e., we simply divided the aggregate data by the total population, and for the real values we deflated the results by the consumer price index. Equations (18) to (20) show the relationship between Per Capita Gross Domestic Savings (PGDS) and Per Capita GNP (PGNP). Equations (21) to (23) are based on the deflated data. There are two points to note about this latter set of equations. The first, to which attention was drawn earlier, is that the $\bar{R}^2$ tends to be lower than those associated with the equations based on nominal figures; and the second, is that marginal propensity to save (MPS) is higher in the equations in which real variables were used than in those computed with current values. In Equations (24) to (26) we have as the dependent variable the ratio of Gross Domestic Savings (GDS) to GNP and per capita GNP as the explanatory variable. Our estimates show that in the period 1963-79 per capita income explained 65 per cent of the variation in the savings ratio (Equation 25) as compared to 34 per cent in the 1952-62 period (Equation 24). When we take the entire period (i.e., 1952-79), the $\bar{R}^2$ not only falls to 15 per cent (Equation 26), but the value of the D.W. Statistic indicates that the incidence of autocorrelation is higher than is the case in Equations (24) and (25). It should be noted that in the equations where we have used the savings ratio as the dependent variable the intercept tends to be positive. Equations (27) to (35) give the regression results when GNS_1 is used as the dependent variable. Again, here we see that the $\bar{R}^2$ associated with the deflated data tend to be lower than those relating to the equations using nominal figures. When GNS_1 is used as a ratio of GNP, the explanatory power of per capita GNP falls considerably.

SAVINGS FUNCTIONS OF THE HOUSEHOLD SECTOR

Total savings, as indicated earlier, has three components: (a) household savings; (b) government savings; and (c) corporate savings. Personal savings data available for the period 1952-62 include savings of unincorporated business enterprises. Since the factors or motives influencing savings in each of these sectors tend to be different, we thought it a useful exercise to examine (as far as the data would allow) possible functions at a more disaggregated level.

Equation (36) shows the result when personal savings (PS) is regressed on personal disposable income (PDI). The data relate to the 1952-62 period and are in current values. Personal disposable income explains 62 per cent of the variation in personal savings. In Equation (37) the figures used to calculate Equation (36) are deflated by the total population making the dependent variable per capita savings (PPS) and the independent per capita disposable income (PCD). Though the income coefficient (the marginal propensity to save) falls slightly, it remains significant. The sign also remains positive as before. The $\bar{R}^2$, however, drops from 62 per cent to 38 per cent. When the per capita data are deflated by the price index, further changes in the parameters take place as can be seen in Equation (38). In this equation both the MPS and the R^2 fall further.

In Equation (39) we have as the dependent variable the ratio of personal savings to personal disposable income. The explanatory variable is per capita GNP. This equation provides a very poor fit to the data. Not only is the R^2

Equation No.	Period	Dependent Variable	Intercept	Coefficients of Independent Variable	D. W. Statistic	$\bar{R}^2$	F Statistic
			NOMINAL				
(27)	1952-62	$PGNS_1$	-16.53 (16.05)	+0.22 PGNP (0.02)	1.23	0.92	128.76
(28)	1963-79	$PGNS_1$	-327.76 (112.41)	+0.32 PGNP (0.02)	1.17	0.88	122.78
(29)	1952-79	$PGNS_1$	-171.71 (63.96)	+0.29 PGNP (0.02)	0.99	0.88	196.51
			DEFLATED				
(30)	1952-62	$PGNS_1$	-23.99 (19.32)	+0.24 PGNP (0.03)	1.22	0.87	70.58
(31)	1963-79	$PGNS_1$	-250.81 (66.009)	+0.39 PGNP (0.05)	1.10	0.77	55.93
(32)	1952-79	$PGNS_1$	-94.18 (39.43)	+0.28 PGNP (0.04)	0.70	0.68	59.28
			THE SAVINGS RATIO (USING GNS_1) ON PGNP				
(33)	1952-62	$\frac{GNS_1}{GNP}$	+18.21 (2.14)	+0.003 PGNP (0.003)	1.31	0.00	1.09
(34)	1963-79	$\frac{GNS_1}{GNP}$	+8.73 (1.95)	+0.002 PGNP (0.50)	1.47	0.60	25.44
(35)	1952-79	$\frac{GNS_1}{GNP}$	+15.0 (1.53)	+0.14 PGNP (0.0005)	0.73	0.20	7.98

low, but the income coefficient is not significant. In addition, the negative sign of the explanatory variable does not seem to accord with *a priori* reasoning. When per capita GNP is replaced by per capita disposable income (PCD) in Equation (40), the $\bar{R}^2$ improves slightly but remains low. The standard error changes sufficiently to make the PCD coefficient significant, but the sign remains negative.

$$PS = \underset{(8.87)}{1.24} + \underset{(0.02)}{0.08}\ PDI \qquad (1952\text{-}62) \qquad (36)$$

D.W. = 1.0481
F. = 17.5259
$\bar{R}^2$ = 0.62

$$PPS = \underset{(15.30)}{6.87} + \underset{(0.03)}{0.07}\ PCD \qquad (1952\text{-}62) \qquad (37)$$

D.W. = 1.0307
F. = 7.1005
$\bar{R}^2$ = 0.38

$$RPS = \underset{(18.60)}{10.64} + \underset{(0.04)}{0.06}\ RPDI \qquad (1952\text{-}62) \qquad (38)$$

D.W. = 1.01
F. = 2.54
$\bar{R}^2$ = 0.13

$$\frac{PS}{PDI} = \underset{(3.11)}{14.79} - \underset{(0.387)}{0.009}\ PGNP \qquad (1952\text{-}62) \qquad (39)$$

D.W. = 2.5930
F. = 5.7468
$\bar{R}^2$ = 0.32

$$\frac{PS}{PDI} = \underset{(3.13)}{15.29} - \underset{(0.005)}{0.014}\ PCD \qquad (1952\text{-}62) \qquad (40)$$

D.W. = 2.5439
F = 6.4564
$\bar{R}^2$ = 0.36

It was pointed out earlier that the empirical work done on some of the developed countries indicate that there is a fair amount of stability in the average propensity to consume, even over fairly long periods. Milton Friedman, as stated before, tried to explain this phenomenon by arguing that people do not adjust their consumption to current income but to long run earnings – a notion he sought to operationalize through the concept of permanent income. Actual income of individuals can be said to comprise permanent income and transitory income – the latter being a random element which has no immediate effect on consumption. These concepts are not easy to measure. In practice, a

number of devices are employed to arrive at variables approximating these two income concepts. One of the simplest, from a computational point of view, is the use of the moving average to calculate permanent income. Transitory income is defined as the difference between actual income and permanent income.

Equation (41) gives the results when personal savings (PS) is regressed on permanent income (PI_3) and transitory income (TI). Permanent income is defined here as a three year moving average of personal disposable income while transitory income is taken to be the difference between PI and actual income. The data used refer to the period 1951-62 (12 years), but the use of a three year moving average eliminates two years, leaving us with 10 data points. Both the PI and TI coefficients have positive signs. From the size of the TI coefficients, it would appear that the marginal propensity to save out of transitory income is higher than that for permanent income, but one has to view such a conclusion against the high standard error of the TI coefficient. Equation (42) shows the results when the regression is done on the basis of per capita data. PPI is per capita permanent income and PTI is per capita transitory income. The numerical subscripts in Equations (41) to (43) refer to the number of years used for computing the moving average. The sign of the coefficients remains positive in Equation (42), but the $\bar{R}^2$ drops considerably. The standard error of the TI coefficient in this equation is higher than the coefficient itself. In order to explore, further, the impact of permanent and transitory income on savings behaviour, we used a two-year moving average of personal disposable income as a surrogate variable for permanent income. Transitory income, of course, is defined as before.

$$PS = \underset{(10.76)}{7.61} + \underset{(0.02)}{0.06}\ PI_3 + \underset{(0.43)}{0.46}\ TI_3 \quad (1951\text{-}62) \qquad (41)$$

D.W. = 1.26
F = 5.12
$\bar{R}^2$ = 0.52

$$PPS = \underset{(18.66)}{16.48} + \underset{(0.03)}{0.05}\ PPI_3 + \underset{(0.42)}{0.32}\ PTI_3 \quad (1951\text{-}62) \qquad (42)$$

D.W. = 1.23
F = 1.90
$\bar{R}^2$ = 0.24

$$PS = \underset{(9.10)}{4.53} + \underset{(0.02)}{0.09}\ PI_2 - \underset{(0.38)}{0.37}\ TI_2 \quad (1951\text{-}62) \qquad (43)$$

D.W. = 0.84
F = 9.87
$\bar{R}^2$ = 0.67

The results shown in Equation (43) depict a different picture from that reflected in Equations (41) and (42). The $\bar{R}^2$ is higher, but the coefficient of the TI variable assumes a negative sign. As in the other equations, the coefficient

associated with the transitory income variable is not significant. In conclusion, it is fair to say that the above findings do not enable us to make any clear statements about the effect of permanent and transitory income on personal savings. The time span considered was, undoubtedly, too short, and the definitions of the two concepts of income used may, themselves, have been inadequate.

Some observers contend that the functional distribution of income has an important effect on the level of savings taking place in an economy. More specifically it is argued that recipients of non-wage income have a higher propensity to save than recipients of labour income. The hypothesis was tested with the data we have for the 1952-62 period. The specification used in Equations (44) to (46) is similar to that of Williamson.[23] The dependent variable personal savings (PS) is regressed on 'Direct Taxes on Households less Transfers' (DT), 'Wages and Salaries Income' (WS), and 'Non Labour Income' (NLI). An examination of Equations (44) and (45) brings out a number of points. The first is that the $\bar{R}^2$ in the aggregate equation is higher than that of the per capita equation. The coefficients of the DT variable are not only not significant, but the positive sign does not seem to accord with *a priori* expectations. It is difficult to conceive of a situation where an increase in taxes would lead to an increase in personal savings. In both Equations (44) and (45) the wage coefficient is higher than that of the non-wage income. In addition, the sign of the latter variable is negative while that of the former is positive. The coefficients of the wage and non-wage income in both equations are significant. In sum, it is fair to say that the data we have used here do not support the hypothesis that a distribution of income in favour of the non-wage sector is a necessary prerequisite for increasing personal savings.[24]

$$\underset{(12.23)}{PS = -23.85} + \underset{(1.12)}{1.60\ DT} + \underset{(0.21)}{0.68\ WS} - \underset{(0.23)}{0.63\ NLI} \quad (1952\text{-}62) \qquad (44)$$

$$D.W. = 1.19$$
$$\bar{R}^2 = 0.80$$
$$F = 14.65$$

$$\underset{(23.28)}{PS = -48.40} + \underset{(0.98)}{1.19\ DT} + \underset{(0.23)}{0.73\ WS} - \underset{(0.24)}{0.62\ NLI} \quad (1952\text{-}62) \qquad (45)$$

$$D.W. = 1.04$$
$$\bar{R}^2 = 0.64$$
$$F = 7.18$$

In Equation (46), the independent variables are personal income in the present period (PSI_t), the consumer price index (CPI), and personal income in the previous year (PSI_{t-1}). The negative sign before the CPI coefficient would seem to indicate an inverse relationship between price increases and personal savings. Given the high standard error associated with this coefficient, however, one has to be careful in drawing conclusions. The coefficient of income in the previous year (PSI_{t-1}) is higher than that of income in the present period, but its standard error indicates that it is not significant.

Aggregate

$$PS = \underset{(15.67)}{2.42} + \underset{(0.03)}{0.047}\, PSI_t - \underset{(2.09)}{0.94}\, CPI + \underset{(0.33)}{0.46}\, PSI_{t-1} \quad (1953\text{-}62) \qquad (46)$$

$$D.W. = 1.23$$
$$\bar{R}^2 = 0.61$$
$$F = 5.35$$

The effect of demographic factors on the level of savings has long been a subject of speculation. A commonly held view is that a high birth rate is likely to have a negative impact on the savings ratio. This conclusion is based on the reasoning that a high birth rate produces populations with a high dependency ratio, i.e., populations with a high concentration in the younger age groups. In this regard Leff notes, "children constitute a heavy charge for expenditure which, in the standard national income accounting framework, is put under the heading of consumption. Because they contribute to consumption but not to production, a high ratio of dependents to the working age population might be expected to impose a constraint on society's potential for saving."[25] People in the very high age groups are also often seen as putting a strain on society's resources without making a concomitant contribution to production.

In order to test this hypothesis on the basis of data for Trinidad and Tobago, we tried a number of specifications similar to those of Leff.[26] In Equation (47) the dependent variable is the ratio of net national savings to GNP i.e. $\frac{NNS}{GNP}$, and the independent variables are per capita GNP (PGNP), the rate of growth of per capita GNP (RGI), the proportion of population 14 years and under (P_1) and the proportion of population 65 years and over (P_2). The proportion of the population 14 years and under over the last three decades has averaged around 40 per cent as compared to 3 to 4 per cent for the population 65 years and over. The data used are all in logarithmic form. Taken together, the four independent variables explain 20 per cent of the variation in the aggregate savings ratio. The P_1 and P_2 coefficients have negative signs, but the standard error associated with the former variable indicates that it is not statistically significant.

$$\log \frac{NNS}{GNP} = \underset{(10.25)}{16.47} + \underset{(0.73)}{0.97}\, \log PGNP + \underset{(0.10)}{0.06}\, \log RGI \quad (1952\text{-}62) \qquad (47)$$

$$\underset{(7.64)}{-11.97}\, \log P_1 - \underset{(0.35)}{0.77}\, \log P_2$$

$$D.W. = 1.64$$
$$\bar{R}^2 = 0.20$$
$$F = 1.63$$

In Equation (48), the dependent variable $(\frac{PS}{PDI})$ is the ratio of personal savings to personal disposable income. The independent variables are the same as in Equation (47). In this equation the $\bar{R}^2$ is higher but the coefficient of

P_2 has a positive sign. If we combine P_1 and P_2 into one variable (P_3) the sign of the latter's coefficient is negative, but the $\bar{R}^2$ falls to 36 per cent (see Equation (49)).

$$\log \frac{PS}{PDI} = \underset{(13.23)}{20.70} + \underset{(0.94)}{0.75}\ PGNP - \underset{(0.13)}{0.15}\ RGI \quad (1952\text{-}62) \qquad (48)$$

$$\underset{(9.87)}{-12.79}\ \log P_1 + \underset{(0.51)}{0.76}\ \log P_2$$

D.W. = 1.62

$\bar{R}^2$ = 0.50

F = 3.43

(P_3), the sign of the latter's coefficient is negative, but the $\bar{R}^2$ falls to 36% (see equation (49)).

$$\log \frac{PS}{PDI} = \underset{(14.62)}{25.79} + \underset{(1.05)}{0.99}\ \log PGNP - \underset{(0.15)}{0.19}\ \log\ RGI \quad (1952\text{-}62) \qquad (49)$$

$$\underset{(10.82)}{-16.98}\ \log P_3$$

D.W. = 1.44

$\bar{R}^2$ = 0.36

F = 2.81

In Equations (50) and (51), the dependent variable is per capita personal savings (PPS). The $\bar{R}^2$ associated with Equation (50) is over 60 per cent, but the coefficient of P_2 has a positive sign. Equation (51) uses the combined variable, P_3. The sign of P_3 is negative, but the standard error of its coefficient is high. The $\bar{R}^2$ falls to 49 per cent. Equation (52) shows the relationship between the national savings ratio and per capita GNP (PGNP), the proportion of the population 14 years and under (P_1) and the proportion of the population 65 years and over (P_2) in a more recent period (1963-79). Together, these three variables explained 98 per cent of the variation in the savings ratio during the period. Both the coefficients of P_1 and P_2 have negative signs, but in both cases the standard errors exceed the values of the coefficients. In Equation (53) we include a fourth independent variable, the rate of growth of per capita income (RGI). In this specification the $\bar{R}^2$ increases to 99 per cent and the standard errors of the coefficients of both P_1 and P_2 fall considerably.

$$\log PPS = 18.24 + 1.68 \log PGNP - 0.16 \log RGI \quad (1952\text{-}62) \qquad (50)$$
$$-12.42 \log P_1 + 0.81 \log P_2$$
$$(9.94) \qquad (0.46)$$

D.W. = 1.57
$\bar{R}^2$ = 0.62
F = 4.97

$$\log PPS = 23.68 + 1.93 \log PGNP - 0.21 \log RGI \quad (1952\text{-}62) \qquad (51)$$
$$(15.01) \quad (1.08) \qquad (0.15)$$
$$- 16.90 \log P_3$$
$$(11.11)$$

D.W. = 1.52
$\bar{R}^2$ = 0.49
F = 4.17

$$\log \frac{GNS_1}{GNP} = 3.31 + 0.83 \log PGNP - 1.12 \log P_1 \quad (1963\text{-}79) \qquad (52)$$
$$(1.00) \quad (0.46) \qquad (4.99)$$
$$- 5.43 \log P_2$$
$$(6.58)$$

$\bar{R}^2$ = 0.98
D.W. = 1.9

$$\log \frac{GNS_1}{GNP} = 3.83 + 1.10 \log PGNP + 3.17 \log RGI \quad (1963\text{-}79) \qquad (53)$$
$$(0.09) \quad (0.51) \qquad (0.26)$$
$$- 0.008 \log P_1 - 11.52 \log P_2$$
$$(0.05) \qquad (0.08)$$

D.W. = 1.97
$\bar{R}^2$ = 0.99

FACTORS AFFECTING THE GROWTH OF TOTAL BANK DEPOSITS

As already noted, we do not have data on total household savings and household disposable income for recent years. Some components of personal savings are however available, and it is possible to gain some insights by examining these in relation to certain variables which are commonly thought to influence their behaviour.

A glance at Table 9.5 shows that savings in financial institutions account for a substantial part of household financial assets. As a savings medium commercial banks are not only the most important group of financial institutions, but their importance has been growing in recent years. In 1966, savings held by the commercial banks amounted to 53.1 per cent of total personal deposits in financial institutions. In 1968, the comparable figure was 50.3 per cent, but by

1976 it had increased to over 80 per cent. In order to get some idea of the factors bearing on this rapid expansion of bank deposit liabilities, we regressed total bank deposits (TBD) on variables such as per capita GNP (PGNP), the nominal interest rate (INT), the real interest rate (RI) and the total number of bank offices (BO). There are other factors (such as advertising, the spread of the banking habit and the growth of confidence in the banking system, innovative savings schemes, etc.) which may have played a role in attracting people towards financial institutions, but which are not easily quantifiable, and, therefore, we have not been able to treat them explicitly in the regressions.

TABLE 9.5: FINANCIAL ASSETS PORTFOLIO OF HOUSEHOLDS AND UN-INCORPORATED ENTERPRISES, 1966 and 1976

Assets	1966		1976	
	Value $m	%	Value $m	%
Currency	29.7	5.7	158.2	5.3
Savings[1] in Financial Institutions	375.6	72.6	1,409.2	47.7
Other Investments in Financial Institutions[2]	11.7	2.3	1,100.7	37.3
Shares in Corporate Sector	79.1	15.3	128.4	4.3
Trade Debtors in Corporate Sector	8.7	1.7	98.4	3.3
Other Balances in Corporate Sector	12.6	2.4	63.4	2.1
Total	517.4	100.0	2,458.3	100.0

Notes: 1. Demand, savings and time deposits
2. Includes actuarial reserves of insurance companies and pension funds.

Source: *Flow of Funds for Trinidad and Tobago 1966-1974*, CSO, and *1967-1976*.

Equation (54) shows that in the 1968-79 period per capita income explained 96 per cent of the variation in total bank deposits. The D.W. statistic, however, suggests a strong case of serial correlation in the error term. When we use nominal interest rates as the independent variable (Equation 55), the fit is very poor.[27] The $\bar{R}^2$ drops to zero, and although the sign of the interest coefficient is positive, the coefficient itself is not significant. Equation (55) suggests that factors other than nominal interest rates by themselves have been the more

Equation No.	Period	Dependent Variable	Intercept	Independent Variables	D.W. Statistics	$\bar{R}^2$
(54)	1968-79	TBD	-275.29 (107.85)	+0.39PGNP (0.02)	0.71	0.96
(55)	1968-79	TBD	895.86 (1896.2)	+73.3 INT (388.5)	0.12	0.00
(56)	1968-79	TBD	955.2 (340.8)	-63.15(RI) (42.32)	0.33	0.10
(57)	1968-79	RD	+54.58 (87.49)	-17.68 RI (10.86)	0.34	0.13
(58)	1968-79	RD	-293.45 (105.82)	+0.44 RPNG (0.05)	0.75	0.88
(59)	1968-79	TBD	-207.7 (1147.6)	102.3INT + 0.41 PGNP -7.26 BO (77.3) (0.05) (15.5)	0.36	0.96
(60)	1968-79	TBD	-7937.8 (1842.1	+104.0 BO (20.77)	0.36	0.68
(61)	1968-79	TBD	-7824.0 (2148.9)	-3.67 RI + 102.5 BO (30.04) (24.9)	0.39	0.65
(62)	1968-79	RD	-827.3 (367.13)	-9.89 RI + 0.44 RPNG + 6.73 BO (4.54) (0.41) (6.16)	0.58	0.93
(63)	1968-79	TDI	609.65 (1158.81)	+ 44.99 INT (237.41)	0.11	0.79

(64)	1968-79	TDI	643.25 (207.34)	- 39.36 RI (25.75)	0.36	0.84
(65)	1968-79	TDI	-4967.92 (1076.21)	+ 65.72 BO (12.16)	0.41	0.95
(66)	1968-79	TDI	-108.82 (58.25)	+ 0.24 PGNP (0.01)	0.75	0.98
(67)	1968-79	TDI	-368.02 (638.83)	+335 BO + 0.23 PGNP (8.21)	0.74	0.98
(68)	1968-79	TDI	-246.33 (376.42)	+14.84 RI + 1.55 BO + 0.26 PGNP (3.49) (4.84) (0.02)	2.0	0.99

Note: TBD = Total Bank Deposits (average of the end of quarter figures)
RD = Real Deposits
PGNP = Per Capita GNP
RI = Real Rate of Interest
RPNG = Real Per Capita Income
TDI = Total Bank Deposits held by Individuals
INT = Nominal Interest Rates (average of the end of quarter weighted rates)
BO = Total No. of Bank Offices

important influence on the growth of bank deposits. It is often suggested that to the extent that people do not suffer from the money illusion, the more important explanatory variable should be the real interest rate.[28] This latter variable is not easy to measure in practice for two main reasons. Firstly, as Fry has pointed out, even where nominal rates are available, these tend to be poor proxies for nominal yields actually facing savers and potential savers.[29] And secondly, expected inflation is not directly observable. In our case, assuming that the inflation rate in the previous period provided a good guide for the expected inflation rate in the present period, we derived the real interest rate by subtracting the former from the current nominal interest rate. Generally, the real interest rate for the period under consideration (i.e., 1968-79) was negative. It is not surprising, therefore, that the coefficient of the RI variable (Equation 56) is negative. Judging from the S.E. of the RI coefficient and the $\bar{R}^2$, the fit is extremely poor. It is worth pointing out that in a situation where savings are increasing in the context of a negative real rate of return, it does not necessarily mean that savers are suffering from money illusion. It is possible, that even while people may be aware that the real return on their savings is negative, there may be stronger personal factors in operation, such as the need to save for a 'rainy day' or to provide for the education of one's children, or to purchase a house or some other long needed item. The demonstration of the saving habit is often important in securing further credit, and this may also be an incentive to save.

Equation (57) shows that even when real deposits (RD), is used as the dependent variable, the fit does not improve significantly. Real deposits and real per capita income, however, have a strong association (Equation 58). Equation (59) shows the results when total bank deposits is regressed on nominal interest rates, per capita GNP (PGNP) and the total number of bank offices. The $\bar{R}^2$ is high, over 95 per cent, but only the per capita income coefficient is significant. The income and interest rate coefficients have positive signs, but that of bank offices is negative. The value of the D.W. statistic suggests serial correlation in the error term. When total bank deposits is regressed on the number of bank offices variable alone the expected sign appears (See Equation 60). When the real interest rate is added as a second variable (Equation 61) the BO coefficient remains significant with a positive sign. It should be noted that the addition of the RI variable does not increase the value of the $\bar{R}^2$. Equation (62) shows the regression results when real deposits is regressed on the real interest rate, real per capita income (RPNG) and total bank offices. All three independent variables have positive signs, but the coefficient of the BO variable is not significant. The $\bar{R}^2$ is 93, but here again the value of the D.W. statistic suggests serial correlation in the error term.

In Equations (54) to (62), total bank deposits (TBD) was used as the dependent variable. In Equations (63) to (68), this variable was replaced by total bank deposits held by individuals (TDI).[30] The picture depicted by this latter set of equations is virtually the same as that depicted by the previous set of equations. Equation (63) shows that although the $\bar{R}^2$ is high and the nominal interest rate coefficient has a positive sign, its standard error is extremely high. The coefficient of the real interest rate variable has a negative sign, but the coefficient itself is not significant. Equations (65) and (66) show that while the

total number of bank offices and per capita income explain a fair amount of the variations in savings, the income variable is the more important. Equation (68) shows that the real interest rate, the total number of bank offices and per capita GNP explain almost all the variation in nominal bank deposits held by individuals. The problem of serial correlation in the error term so readily apparent in the other equations is absent here.

The above analysis raises a considerable degree of uncertainty about relationship between the rate of interest and savings in the Trinidad and Tobago economy in recent years. In studies done on other parts of the world the relationship is not as certain and incontrovertible as is often made out to be. For example, Shaw and McKinnon claim that the high interest rates prevailing in South Korea and Taiwan were largely responsible for the high savings rates and financial accumulations taking place in these countries during the 1960s.[31] Hagen contends that in the light of all the evidence available it is possible that the growth of income may have been the crucial factor.[32] In considering interest rates manipulation as an active policy instrument, there is clearly a broad range of considerations that has to be taken into account. One is the sensitivity of financial accumulation to interest rates changes themselves. Is there a link at all? If there is, what is the nature of the link? On the other side, interest rates represent the cost of funds to borrowers, and to the extent that they influence the level of investment there is a link with the growth rate of the economy. It is not always easy to reconcile the objective of giving savers a fair return on their deposits with that of keeping lending rates within acceptable levels. Very often the former is sacrificed, but not always to the benefit of the latter. Savers, particularly in a situation where there is a lack of investment sophistication and the absence of a wide range of investment outlets, generally tend to be in a weak position. In a buoyant money and capital market low savings interest rates do not necessarily result in low lending rates. In the absence of official intervention, financial intermediaries determine the spread between the two sets of rates, and to the extent that this spread is significantly determined by profit criteria rather than by the needs of the economy, financial intermediation loses an essential part of its value in promoting the growth process.

GOVERNMENT SAVING

From the data used earlier, it can be observed that government savings vary widely from year to year. Since 1974, however, there has been a significant increase in the annual current surplus as a result of developments in the oil sector. The figure increased from $46.0 million (1.8 per cent of GNP) in 1973, to $628 million (17.1 per cent of GNP) in 1974, and to an estimated $2,854 million (16 per cent of GNP) in 1981.

In an effort to identify the main determinants of government savings in the post-war period, we examined the impact of several different variables. In Equations (69) to (72), the explanatory variable is aggregate GNP. It appears from Equation (69) that GNP was not a significant variable in explaining variations in government savings (GS) in the period between 1952 and 1962. Equations (70) and (71) show, however, that when the 1973-79 period is taken into account, the GNP coefficient becomes significant, and the $\bar{R}^2$ increases to 90 per cent. When the regression is carried out on the basis of per capita data,

Equation No.	Period	Dependent Variable	Intercept	Independent Variable	$\bar{R}^2$	D.W. Statistic	F Statistic
			Aggregate				
(69)	1952-62	GS	-0.10 (11.17)	+0.03 GNP (0.02)	0.18	0.88	3.20
(70)	1963-79	GS	-231.66 (70.87)	+0.20 GNP (0.02)	0.90	1.05	146.6
(71)	1952-79	GS	-149.94 (38.93)	+0.18 GNP (0.01)	0.90	0.88	259.63
(72)	1952-72	GS	11.67 (8.52)	+0.01 GNP (0.01)	0.05	0.77	2.16
			Per Capita				
(73)	1952-62	GS	-5.70 (18.42)	+0.04 GNP (0.02)	0.14	0.88	2.73
(74)	1963-79	GS	-243.93 (66.39)	+0.20 GNP (0.02)	0.89	1.06	144.22
(75)	1952-79	GS	-172.34 (36.64)	+0.19 GNP (0.01)	0.91	0.91	258.36
(76)	1952-72	GS	16.62 (11.41)	+0.008 GNP (0.009)	0.00	0.76	0.67

			Aggregate				
(77)	1952-62	GS	-6.99 (11.55)	+0.24 CR (0.10)	0.30	0.86	5.42
(78)	1963-79	GS	-66.64 (56.51)	+0.46 CR (0.03)	0.91	0.92	171.08
(79)	1952-72	GS	-46.92 (30.12)	+0.45 CR (0.02)	0.93	0.90	356.42
(80)	1952-72	GS	11.45 (7.99)	+0.06 CR (0.04)	0.07	0.76	2.61
			Per Capita				
(81)	1952-62	GS	-22.18 (19.28)	+0.34 CR (0.14)	0.33	0.83	5.94
(82)	1963-79	GS	-73.49 (51.24)	+0.47 CR (0.03)	0.91	0.91	172.66
(83)	1952-79	GS	-55.06 (27.40)	+0.46 CR (0.02)	0.93	0.89	356.05
(84)	1952-72	GS	15.70 (10.50)	+0.049 CR (0.05)	0.00	0.74	0.99

(Equations 73 to 76) one finds a similar situation. In Equation (77) to (84), current revenue (CR) is substituted for GNP as the regressor. In the period 1952-72 this variable 'explained' only 7 per cent of the variation in government savings (Equation 80). Again, when the number of data points are extended to take account of the tremendous growth in government income in the post-1973 period the fit, as can be seen in Equations (78) and (79), improves significantly. When the data are used in per capita terms, current revenue explained none of the variation in government savings between 1952-72, but over 90 per cent in the longer period *viz.*, 1952-79. It should be noted that despite the high values of the $\bar{R}^2$ in some cases, Equations (69) to (84) are all affected by a serial correlation problem.

As a final exercise, we decided to regress government savings on government revenue from Taxation (T), using both variables as proportions of GNP. As can be seen in Equation (85), the tax/GNP variable $(\frac{T}{GNP})$ was of little significance in the 1952-73 period. Even when we included per capita GNP as an additional explanatory variable, the $\bar{R}^2$ increased to only 5 per cent (See Equation 87). Here again, once we extend data series to include the 1973-79 period (Equations 86 and 88) there is a tendency for the standard errors relating to the coefficients of the explanatory variables to fall and the $\bar{R}^2$ to increase. The problem of serial correlation, however, remains evident. The impact of developments in the post-1973 period on a variety of statistics has been sufficiently powerful to exert a determinate influence on series covering the longer time span, and which, until 1973 may have been pointing in a different direction.

$$\frac{GS}{GNP} = \underset{(3.52)}{-0.22} + \underset{(0.24)}{0.18}\,\frac{T}{GNP} \qquad (1952\text{-}73) \qquad (85)$$

$$\bar{R}^2 = 0.00$$
$$D.W. = 0.68$$
$$F = 0.57$$

$$\frac{GS}{GNP} = \underset{(1.17)}{-8.24} + \underset{(0.05)}{0.73}\,\frac{T}{GNP} \qquad (1952\text{-}79) \qquad (86)$$

$$\bar{R}^2 = 0.86$$
$$D.W. = 0.72$$
$$F = 169.7$$

$$\frac{GS}{GNP} = \underset{(3.41)}{-0.86} - \underset{(0.001)}{0.001}\,PGNP + \underset{(0.24)}{0.31}\,\frac{T}{GNP} \qquad (1952\text{-}73) \qquad (87)$$

$$\bar{R}^2 = 0.05$$
$$D.W. = 0.74$$
$$F = 1.62$$

$$\frac{GS}{GNP} = \underset{(1.95)}{-11.44} - \underset{(0.0006)}{0.001}\,PGNP + \underset{(0.16)}{1.05}\,\frac{T}{GNP} \qquad (1952\text{-}79) \qquad (88)$$

$$\bar{R}^2 = 0.88$$
$$D.W. = 0.81$$
$$F = 96.56$$

CORPORATE SAVINGS

In any discussion on savings, some attention needs to be paid to the role of the corporate sector. The propensity to save (both on average and at the margin) of the various sectors is important to general policy formulation, and in particular to tax and redistribution policy. The data we have are too scanty and limited in scope to permit us to explore in any meaningful way any of the major determinants of corporate savings.

EXPORTS AND SAVINGS

One of the major assumptions underlying the "two-gap analysis" associated with the name of H.B. Chenery and others is that the *ex-ante* savings gap and the *ex-ante* foreign exchange gap are generated independently of each other.[33] This assumption has been severely criticised in the literature. Maizels, for instance, contends that variations in exports could produce corresponding effects on domestic savings.[34] This could happen because (a) the propensity to save is higher in the export sector than elsewhere; or (b) because government savings rely heavily on taxes on foreign trade; or (c) because over time a sustained growth in exports could result in a rise in the marginal savings propensities in other sectors also. To test the hypothesis between exports and savings, Maizels fitted annual data for 12 countries to Equations (89) and (90). The data generally covered the period from the early 1950s to the early 1960s and were in constant price values. With two exceptions, Equation (89) yielded a marginal propensity to save of 0.20 or more for the other countries. Using exports (X) and the remainder of gross domestic product (Q-X) as the independent variables there was an improvement in the goodness of fit for seven of the countries in the sample. In a later study based on a sample of 28 countries (20 less developed and 8 more developed), Lee also found a strong positive relationship between exports and savings, thus giving further support to the Maizel hypothesis.[35]

$$S_t = a + bQ_t \qquad (89)$$

$$S_t = a + bX_t + c\,(Q_t - X_t) \qquad (90)$$

where

S = gross domestic savings

Q = gross domestic product

X = merchandise exports

In order to test the hypothesis with respect to Trinidad and Tobago, Maizel's two equations were fitted to data covering the 1952-79 period. The respective time series on which Equations (91) to (102) are based were deflated by the consumer price index in order to get real values. The three concepts of savings were used as dependent variables, and the time series were split into two parts in order to isolate the impact of the oil revenue increases in the post-1973 period. The independent variables were gross domestic product at market prices (Y), exports of goods and services (X) and non-export (Y-X) GDP, (Z). It can

Equation No.	Period	Dependent Variables	Constant	Independent Variables	$\bar{R}^2$	D.W. Statistic
(91)	1952-73	GDS	-95.60 (35.40)	+0.36Y (0.03)	0.973	0.38
(92)	1952-73	GDS	-40.72 (39.30)	+0.12Z + 0.73X (0.09) (0.15)	0.978	0.47
(93)	1952-79	GDS	98.17 (29.73)	+0.10Y (0.03)	0.974	0.77
(94)	1952-79	FDS	114.93 (30.30)	0.27 - 0.45X (0.10) (0.34)	0.978	0.70
(95)	1952-73	GNS_1	-60.95 (35.28)	0.23Y (0.03)	0.939	0.72
(96)	1952-73	GNS_1	-22.29 (41.48)	0.06Z + 0.49X (0.10) (0.16)	0.945	0.83
(97)	1952-79	GNS_1	92.91 (24.31)	0.03Y (0.03)	0.959	1.6
(98)	1952-79	GNS_1	109.64 (23.89)	0.20Z - 0.52X (0.08) (0.27)	0.967	1.6
(99)	1952-73	GNS_2	-39.62 (20.72)	+0.20Y (0.02)	0.974	1.5
(100)	1952-73	GNS_2	-43.79 (25.60)	0.22Z + 0.17X (0.65) (0.10)	0.974	1.6
(101)	1952-79	GNS_2	- 9.55 (32.56)	+ 0.16Y (0.04)	0.944	1.0
(102)	1952-79	GNS_2	9.93 (32.87)	0.362 - 0.48X (0.11) (0.37)	0.952	1.4

be noticed in Equations (92) and (94) that the inclusion of exports as an explicit variable results in a slight improvement of the $\bar{R}^2$. While, however, the export coefficient has a positive sign and is significant in the shorter period (i.e. 1952-73), it is associated with a negative sign when we include post-1973 data in the series. The standard errot, however, indicates that in the latter period, the export coefficient is not significant. The equations with GNS_1 as the dependent variable display certain distinct features which are worth noting. Equation (96) which is based on the shorter period shows that when exports are included as a separate variable, there is a slight increase in the $\bar{R}^2$. The export coefficient is also positive and significant. Here again, however, when we include the post-1973 data, the sign of the coefficient becomes negative and insignificant (See Equation 98). Equations (99) and (100) which have GNS_2 as the dependent variable and are based on 1952-73 data, show that when exports are treated as a separate variable there is no improvement in the $\bar{R}^2$. Equation (102) shows the export coefficient to be negative and insignificant when post-1973 data are taken into account.

Exports are very important in the economy of Trinidad and Tobago. In recent years, exports have averaged around 50 per cent of GDP. In this context, developments in the external sector are bound to exert a very deep influence on major aggregates in the economic system. In the above exercise we have tried to ascertain the impact on various concepts of savings over particular time periods, by using GDP, exports and non-export GDP as explanatory variables. The splitting of GDP in this fashion resulted in no significant change in the $\bar{R}^2$. In fact, such slight increases that took place may be the result of the inclusion of the additional variable. Generally, the results shown in Equations (91) to (102) do not permit us to make any precise statement with respect to the relationship between exports and savings.

FOREIGN CAPITAL, NATIONAL SAVINGS AND ECONOMIC GROWTH

The role of foreign capital in economic development is a very controversial one. A popular theme in the early post-war literature was that external assistance was essential if poor countries were to break out of the low-savings, low-investment, low-income vicious circle. Foreign savings tended to be seen as not just an addition to domestic savings, but as a critical means of finance for securing imports essential to the growth process. The experience of the last two or three decades has brought this view under increasingly greater scrutiny, and in some cases even under outright attack. Some economists argue that foreign assistance not only does not encourage growth, but in fact may deter it. One of the basic assumptions of many foreign aid models is that foreign resources will supplement rather than replace domestic efforts. Griffin and Enos argue that foreign and domestic savings are substitutable resources. In practice, they contend, foreign savings often tend to supplant rather than supplement or increase domestic savings.[36] To provide some support for their thesis they produced two regression Equations (103) and (104). Equation (103) was based on 1962-64 data for 15 African and Asian countries, while Equation (104) was computed on the basis of figures pertaining to the 1957-64 period.

$$Y = 4.8 + 0.18 \underset{Y}{A} \qquad R^2 = 0.33 \qquad (103)$$
$$(0.26)$$

$$Y = 42.97 - 6.78 \underset{Y}{A} \qquad R^2 = 0.13 \qquad (104)$$
$$(n.a.)$$

where

Y = average rate of growth of GNP

$\underset{Y}{A}$ = ratio of foreign aid to GNP

Both equations show a very low correlation between the amount of aid received and the rate of growth of GNP. In fact, the coefficient of the independent variable in Equation (104) is negative. It should be noted that for both equations, the authors had some reservations about the quality of the data used in the computation. In another paper however, Griffin used a different specification and a more broadly based sample to arrive at the same conclusion.[37]

$$\underset{Y}{S} = 11.2 - 0.73 \underset{Y}{A} \qquad (105)$$
$$(0.11) \qquad R^2 = 0.54$$

$\underset{Y}{S}$ = gross domestic savings as a % of GNP

$\underset{Y}{A}$ = foreign savings as a % of GNP

Equation (105) was computed from 1962-64 data relating to 32 underdeveloped countries. Saving was calculated as a residual and the net inflow of foreign capital was assumed to be equal to the deficit on current account of the balance of payments. Equation (105) shows foreign resources to be negatively related to the savings ratio.

Despite the admittedly poor quality of the data used, Griffin's conclusion has found support in a number of other studies. Using data for the period 1940-60 for Brazil, Leff estimated Equation (106) which shows an inverse relationship between foreign investment (NFCI) and domestic savings (DS_t).[38]

$$DS_t = 1.78 + 0.1545\ Y_{t-1} - 0.1560\ NFCI_t \qquad (106)$$
$$(4.72)\ (0.02) \qquad (0.33)$$
$$R^2 = 0.8391$$
$$D.W. = 2.0620$$

DS_t = Annual Domestic Savings

Y_{t-1} = National Income in the Previous Year

$NFCI_t$ = Current Volume of Net Foreign Capital Inflow

Equation No.	Intercept	Savings	Aid	Foreign Private Investment	Other Foreign Flows	Corrected $\bar{R}^2$	F Statistic
(107) Growth =	1.5 (2.5)	+0.20 (6.0)	+0.39 (5.8)	+0.17 (2.5)	+0.19 (2.1)	0.37	13.5
(108) Growth =	4.4 (8.7)	+0.7 (1.7)	....	....	....	0.02	3.9
(109) Growth =	4.9 (20.0)	....	0.20 (3.1)	....	....	0.08	9.6
(110) Growth =	2.0 (3.3)	+0.18 (5.5)	+0.39			0.28	17.6

Note: growth = annual rate of increase in GDP;
saving = gross domestic savings;
aid = net transfers received by governments plus official long term borrowing;

foreign private investment = private long term borrowing plus net private direct investment;

other foreign inflows = net private transfers and short term borrowing, other capital (net), and errors and omissions in the balance of payments. All independent variable as percentages of GDP.

$$RGN = \underset{(10.35)}{4.73} + \underset{(0.41)}{0.36}\ GNS_2 + \underset{(0.52)}{0.22}\ PCF \quad (1952\text{-}79) \qquad (111)$$

$$- \underset{(1.12)}{0.21}\ GB - \underset{(0.206)}{5.32}\ OCI$$

$$\bar{R}^2 = 0.17$$

$$D.W. = 1.1$$

$$F = 2.36$$

Using cross country regression analysis, Papanek chose to examine the effects of savings and foreign inflows on growth for 85 countries (34 for the 1950s and 51 for the 1960s).[39] An implicit assumption in Leff's equation is that the impact of inflows on savings can be measured by regressing one on the other. Papanek took the approach that foreign inflows and savings are independent variables in explaining growth. He also broke down foreign inflows into three major components: aid, foreign private investment and other foreign inflows. His regression results are presented in Equations (107) to (110). According to Equation (107) savings and foreign inflows explain over a third of growth. Aid had a much greater impact than any of the other variables including savings. The latter alone as an independent variable explained only 2 per cent of the variation in growth.

Using data covering the period 1952-79, we tested the relationship between capital inflows and economic growth in Trinidad and Tobago. Capital can be disaggregated into several forms. In Equation (111) the rate of growth of GNP (RGN) is dependent on Gross National Savings (GNS_2), private investment (PCF), net government borrowing and transfers (GB) and other capital inflows (OCI). All the independent variables are expressed as proportions of GNP. The fit to the data is very poor. Taken together, these variables explain only 17 per cent of the variation in the rate of growth of GNP in the 1952-79 period. The coefficients of domestic savings and private investment have positive signs but they are both insignificant. The sign before the coefficients of net government borrowing and other capital inflows indicate a negative impact on the rate of growth of GNP, but the standard error of the government borrowing coefficient raises doubt about the significance of this variable.

In Equations (112) to (114), the rate of growth of GNP (RGN) is regressed on the ratio of net capital movements (in the non-monetary sector of the balance of payments) to GNP (RNM). These Equations as (115) to (117) are differentiated by the time period they cover. In the latter group, the dependent variable is the rate of growth in per capita GNP (RGI). In all six equations, the RNM variable is negatively related to the rate of growth of both total and per capita income. The $\bar{R}^2$ is extremely low in all cases.

In order to gauge the effects of foreign flows on national savings, we use a specification similar to that of Leff.[40] In Equations (118) to (120), Gross National Savings is regressed on GNP in the previous year (GNP_{t-1}) and net capital movements in the non-monetary sector of the balance of payments (NCM). The coefficients of the latter are all negative, while those of income are positive. The coefficients of determination are all over 90 per cent.

Equation No.	(1) Period	Dependent Variable	Intercept	Coefficient of Independent Variable	D.W. Statistic	$\bar{R}^2$	F Statistic
(112)	1952-62	RGN	11.08 (3.15)	-0.015 RNM (0.287)	2.1318	0.00	0.0026
(113)	1963-79	RGN	22.61 (6.80)	-0.98 RNM (0.82)	0.8891	0.02	1.4224
(114)	1952-79	RGN	19.77 (4.43)	-0.72 RNM (0.47)	0.8436	0.05	2.3506
(115)	1952-62	RGI	7.91 (3.41)	-0.0064 RNM (0.31)	2.0758	0.00	0.0004
(116)	1963-79	RGI	20.53 (6.89)	-0.96 RNM (0.84)	0.8113	0.04	1.2964
(117)	1952-79	RGI	17.81 (4.54)	-0.765 RNM (0.48)	0.79765	0.05	1.2964

Note: RGN = Rate of Growth of GNP
RGI = Rate of Growth of per Capita GNP
RNM = Ratio of Net Capital Movements (in the Non-Monetary Sector of the balance of payments) to GNP.

Equation	Period	Dependent Variable	Intercept	Independent Variables	$\bar{R}^2$	D.W.	F Statistic
(118)	1952-62	GNS_2	-50.19	+0.37 GNP - 0.58 NCM	0.93	1.08	50.09
			(20.54)	(0.04) $^{t-1}$(0.30)			
(119)	1963-62	GNS_2	-126.46	+0.33 GNP - 0.55 NCM	0.98	2.13	490.23
			(33.72)	(0.02) $^{t-1}$(0.19)			
(120)	1952-79	GNS_2	-66.82	+0.31 GNP - 0.47 NCM	0.98	2.13	751.66
			(20.03)	(0.18) $^{t-1}$(0.17)			

Bearing in mind the defects of our data, our results indicate that foreign inflows may have had a negative impact on both domestic savings and the rate of growth of income in Trinidad and Tobago. Savings, investment and the growth of income are, of course, all interrelated. Developments in any one of these areas tend to affect the other two. As indicated, earlier, a basic assumption of some of the models formulated in the 1950s and 1960s was that foreign inflows, by making possible a higher level of imports and investment would lead to accelerated development. The experience of recent years has led some critics to the view that foreign capital can retard development. The argument takes several forms. A widely held one relates to the subsequent outflows which an injection of private foreign capital generates over time. It is argued that while, initially, an inflow of foreign resources may supplement domestic savings, in the long term the outflow of investment income exerts a debilitating effect on the growth capacity of the economy. Some of the results from our earlier regression exercises may be explained, to some extent, by the picture depicted in Table 9.6. Here, it can be observed that while there was an estimated net inflow of TT$4.5 billion worth of private investment capital in Trinidad and Tobago in the period between 1952 and 1979, there was a net outflow of TT$5.3 billion in the form of investment income in the same period.

TABLE 9.6: TRINIDAD AND TOBAGO: NET FLOW OF FOREIGN PRIVATE CAPITAL, 1962-79

($m)

Period	(1) Net Inflow of Private Capital	(2) Net Outflow of Investment Income	(3) (2) - (1)
1952-62	695	-920	-225
1963-79	3,790	-4,368*	-578
Total (1952-79)	**4,485**	**-5,288**	**-803**

*This figure includes only direct investment income, and, therefore, may understate the full extent of the outflows.

Sources: *The National Income of Trinidad and Tobago, 1952-62; The Balance of Payments of Trinidad and Tobago,* various issues; *Annual Digest of Statistics,* various issues; Ministry of Finance, *Review of the Economy,* various issues, CSO., Trinidad and Tobago.

Some observers contend that foreign capital can adversely affect development through its influence on attitudes towards saving. Griffin and Enos, for example, contend that foreign resources can reduce the level of savings in an economy.[41] This will happen if, in response to foreign inflows, government reduces taxation, makes less effort to collect taxes, or operates a tax system that is not sufficiently elastic in changing conditions, while at the same time maintaining high levels of public expenditure. The situation is exacerbated if the

composition of expenditure changes in favour of public consumption. Private savings can also be affected if capital inflows result in an easing of local credit conditions which, in turn, affect the incentive to save. It is also argued that capital imports "may reduce domestic savings by stimulating the consumption of importables and exportables. The increased availability of imported goods which foreign capital facilitates may lead to an increase in their consumption. Perhaps even more likely, the increased availability of foreign exchange which accompanies capital imports may induce the government to adopt or maintain inappropriate exchanges rates or other trade policies."[42]

These views have not gone unchallenged. Papanek, for instance, concedes that some part of foreign inflows may go towards increasing consumption. He, however, challenges the conclusion that a close statistical association between foreign inflows and low growth or savings rates necessarily means that one causes the other. Statistical results have to be viewed against the particular savings functions specified. He argues that there are "plausible savings functions which could result in one dollar of foreign inflows producing either a positive or negative effect on saving and anything from no increase in investment to more than one dollar of additional investment."[43] Grinols and Bhagwati link the thesis that foreign capital reduces domestic savings to the notion of 'dependence', and formulate a Harrod-Domar type model to examine whether in reducing domestic savings an influx of foreign capital postpones or renders infeasible the reaching of self-reliance.[44] They argue that whether a capital inflow creates dependence will depend on the assumed parameters of the model as well as the targeted level of the savings rate and the time by which it must be achieved. They state "contrary to the radical notions, an aid programme may achieve a targeted increase in the savings rate earlier than in the absence of aid, or may make an infeasible target a feasible one."[45] In a simulated exercise, the authors found some support for the view that domestic savings and self-reliance could be affected by foreign inflows, but also found that the latter had a positive impact on investment and income. They concluded that "no overall judgement on whether foreign aid has been beneficial or not to recipient countries can be reached without adding several other relevant dimensions of a social welfare function."[46]

CONCLUSIONS

The variety of functions one can use in the search for a savings function is almost limitless. The choice of variables is often dictated by available data. In this study we have tested some of the more conventional hypotheses with a view to ascertaining their relevance to the Trinidad and Tobago situation. In some instances, the evidence appeared to be conclusive; in others not so. In both cases, one has to view the results against the quality of the data we have used.

This latter concern cannot be stressed too much. The usefulness of quantitative work to policy making, or for prediction purposes, rests heavily on the quality of the statistics on which they are based. The range of data also helps to determine the scope of the search for relevant formulations.

Given the importance of saving in the development process, there is need for continuous and systematic study of this aspect of economic behaviour. To this end, official efforts to provide basic data need to be intensified.

NOTES

[1]W. Arthur Lewis, *Theory of Economic Growth*, Harper & Row, New York, 1970, pp. 224-25.

[2]See Raymond W. Goldsmith, *et al., A Study of Saving in the United States*, Vol. III, Greenwood Press, New York, pp. 388-389.

[3]J.M. Keynes, *The General Theory of Employment Interest and Money*, MacMillan & Co., Ltd., London, 1964, p. 97.

[4]*Op. cit.*, p. 167.

[5]*Op. cit.*, p. 109.

[6]*Op. cit.*, p. 97.

[7]*Ibid.*, p. 97.

[8]See R. Levacic, *Macro-economics*, The MacMillan Press Ltd., London, 1976, p. 61.

[9]Simon Kuznets, *Uses of National Income in Peace and War*, NBER, New York, 1942, p. 31.

[10]See G. Ackley, *Macro-economic Theory*, The MacMillan Co., New York, 1961, Chap. XI.

[11]See J.S. Duesenberry, *Income, Saving and the Theory of Consumer Behaviour*, Harvard University Press, Cambridge, 1949.

[12]See Milton Friedman, *A Theory of the Consumption Function*, Princeton University Press, Princeton, N.J., 1957.

[13]For a discussion and test of this theory, see A. Ando and F. Modigliani, "The Life Cycle Hypothesis of Saving: Aggregate Implications and Tests", *American Economic Review*, March, 1963.

[14]R. Levacic, *op. cit.*, p. 79.

[15]See, for example, H.S. Houthakker, "On Some Determinants of Saving in Developed and Under-developed Countries" in E.A.G. Robinson (ed.) *Problems in Economic Development*, MacMillan, New York, 1966.

See also J.G. Williamson, "Personal Saving in Developing Nations: An Inter-temporal Cross Section from Asia", *Economic Record*, June 1968.

[16]See Alfred Maizels, *Exports and Economic Growth of Developing Countries,* University Press, Cambridge, 1968, pp. 51-52.

[17]See, for example, K. Griffin and J.L. Enos, "Foreign Assistance: Objectives and Consequences", *Economic Development and Cultural Change,* April, 1970.

[18]Our concept of savings used in this paper derives largely from the Keynesian aggregate accounting identities. Some analysts regard expenditure on certain consumer durables as a form of saving. We have not paid any attention to this issue in the paper.

[19]CSO, *Flow of Funds for Trinidad and Tobago, 1966-74,* (1977) and *Flow of Funds for Trinidad and Tobago 1969-78,* (1978).

[20]What I am calling 'Net National Savings' is commonly referred to in national accounting jargon as 'Net Domestic Savings'.

[21]If we wish to view saving as a constant proportion of income, we can write the function S = by. Defining the concept of supernumerary income as (Y-a) some investigators have preferred to work with the function S = b (Y-a) according to which saving is a constant proportion of supernumerary income (Y-a) and can also be written with the savings ratio as the dependent variable, viz $\frac{S}{Y} = a\text{-}b$. Implicit in this latter is a hyperbolic savings ratio. See Goldsmith *et al., op. cit.* $\frac{}{y}$

[22]*Op. cit.,* p. 389.

[23]J.G. Williamson, "Personal Saving in Developing Nations: An Inter-temporal Cross-Section from Asia", the *Economic Record,* June, 1968.

[24]In a recent exercise based on data for Guyana and Jamaica, Bourne found that the absolute magnitudes of the marginal propensities to consume labour and property income were not much different in Guyana (.99 vs .83), but differed widely in Jamaica (1.00 vs .59). He observed, however, that the tests for the statistical significance of these absolute differences were not conclusive. With the double-log functional forms the differences were statistically significant, but were not with the linear forms. See C. Bourne, "The Propensities to Consume Labour and Property Incomes in the Commonwealth Caribbean", (Mimeo.), Department of Economics, St. Augustine, December, 1984.

[25]N.H. Leff, "Dependency Rates and Savings Rates", *American Economic Review,* December, 1969.

[26]*Op. cit.*

[27]Average of end of quarter weighted interest rates published by the central bank.

[28]We defined the real interest rate as the current nominal rate less the rate of inflation in the previous period.

[29]See, M.J. Fry, "Savings, Investment, Growth and the Cost of Financial Repression", *World Development,* Vol. 8, 1980.

[30]At the end of 1979 individuals were holding 60 per cent of total deposits in Commercial Banks.

[31]See E.S. Shaw, *Financial Deepening in Economic Development,* Oxford University Press, London, 1973; and R.I. McKinnon, *Money and Capital in Economic Development,* The Brookings Institution, Washington, D.C., 1973.

[32]See E.E. Hagen, *The Economics of Development,* Richard D. Irwin Inc., Homewood, Ill. 1973, pp.345-46.

[33]See, for example, H.B. Chenery and A.M. Strout, "Foreign Assistance and Economic Development", *The American Economic Review,* September, 1966.

[34]Maizels, *op. cit.,* pp. 51-52.

[35]See Joong-Koon Lee, "Exports and the Propensity to Save in LDC's", *Economic Journal,* June, 1971.

[36]K.B. Griffen and J.L. Enos, "Foreign Assistance: Objectives and Consequences", *Economic Development and Cultural Change,* April, 1970

[37]Keith Griffen, "Foreign Capital, Domestic Savings and Economic Development", *Bulletin of Oxford University Institute of Economics and Statistics,* May, 1970.

[38]N.H. Leff, "Marginal Savings Rates in the Devleopment Process: The Brazilian Experience", *Economic Journal,* September, 1968.

[39]G.F. Papanek, "Aid, Foreign Private Investment, Savings and Growth in Less Developed Countries", *Journal of Political Economy,* January/February, 1973.

[40]N.H. Leff, *op. cit.*

[41]K. Griffen and J.L. Enos, *op. cit.*

[42]*Op. cit.*

[43]G.F. Papanek, *op. cit.*

[44]J.N. Bhagwati and E. Grinols, "Foreign Capital, Dependence, Destabilisation and Feasibility of Transition to Socialism", *Journal of Development Economics,* June, 1975.

[45]*Op. cit.*

[46]*Op. cit.*

X FINANCIAL DEEPENING, DOMESTIC RESOURCE MOBILIZATION AND ECONOMIC GROWTH:* 1953-1981

Compton Bourne

INTRODUCTION:

In the second essay, Bourne described the major changes in the financial structure of Trinidad and Tobago between 1966 and 1978. Emphasis was placed on financial change as a consequence of economic growth. In this essay, the focus is reversed. At issue is the influence of financial deepening on economic growth. Concern about the recent growth performance of the economy has awakened policy interest in the financial sector as a facilitator of economic growth. The structural adjustment policy memorandum adopted by Caribbean Community Heads of Government in Nassau in 1984 states:

> Structural adjustment programmes should also aim at increasing in the medium term the rate of domestic investment and the nationally financed portion of such investment [p. 29].

The financial sector is envisaged to play a critical role:

> Diversification of the mix of financial institutions and instruments assists in the savings mobilization and efficient resource allocation effort . . . . . Interest rate policy should aim at providing a real return to savers and hence increase the level of national savings [p. 166].

This essay analyses the relationship between the process of financial deepening and economic growth for the 1953 to 1981 period which included an initial lengthy phase of slow economic growth and a later brief one of rapid growth.[1]

The essay has several substantive sections. The first section reviews the main trends in economic growth and aggregate savings and investment behaviour. The second describes and analyses the process of financial deepening. The third section analyses the relationship between financial deepening and the savings-investment process and economic growth. The main conclusions are presented in the final section. The approach throughout is macroanalytical. No attempt is made to provide institutional details.

TIME SERIES PROFILE OF GROWTH AND RESOURCE MOBILIZATION

Figure 10.1 shows that the economy grew quite rapidly in real terms between 1953 and 1961. Real gross domestic product, which increased by as much as 14 per cent and 20 per cent in two years, expanded at an annual average rate of 9 per cent from $588 million in 1953 to $1.2 billion in 1961. (Table 10.1

*It is a pleasure to acknowledge the valuable assistance of James Croal at Simon Fraser University with the econometric section of this essay.

provides the details.) The growth rate of real GDP then decreased substantially until 1975. On no occasion during the 1962 to 1974 period did the annual percentage increase in real GDP exceed 6 per cent. The annual average for the period was approximately 3 per cent. The growth of real GDP accelerated greatly in some subsequent years, amounting to 10 per cent in 1975, 1977, and 1979. In some years, however, growth rates were much slower. Overall, the annual growth rate of real gross domestic product averaged 4 per cent between 1975 and 1981.[2]

This generally modest growth performance during the petroleum boom was concealed by high rates of domestic price inflation and by the export price gains which Trinidad and Tobago, as a net oil exporting country, derived from higher international energy prices. Whereas current value GDP expanded at an annual rate of 12 per cent between 1962 and 1974, the annual average growth rate for the 1975 to 1981 period was 19 per cent.

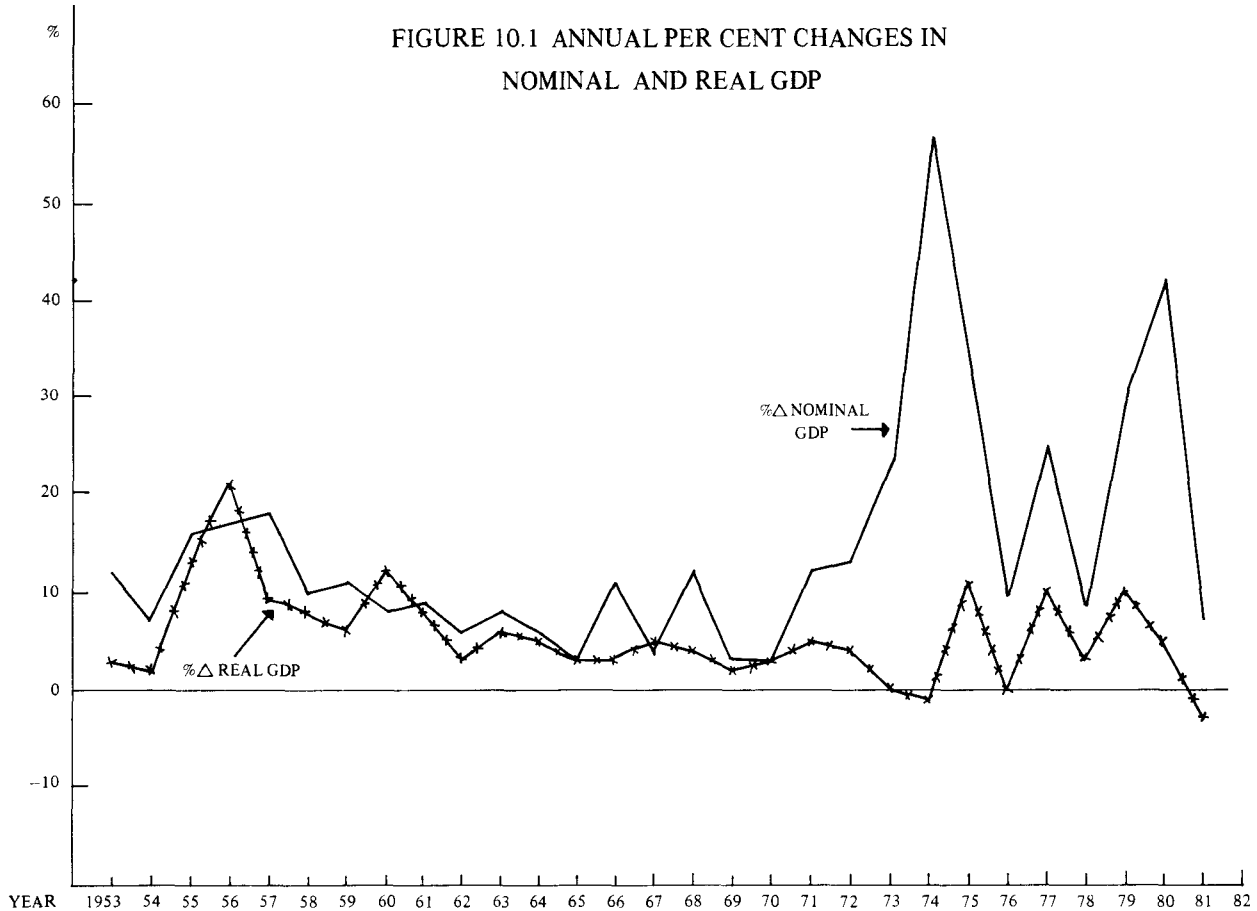
Trinidad and Tobago's economic growth seems to have a highly cyclical character. Inspection of Figure 10.1 reveals alternating periods of increasing and decreasing annual rates of growth. Growth rates are evidently not stable. Moreover, the degree of instability increased after 1974. For the 1953 to 1973 period, the coefficient of variation (a summary measure of stability) was 0.78. In the 1974 to 1981 period it increased to 1.31.

The trends in the growth rates of real GDP correspond to those of the domestic savings rate until 1974. Domestic savings averaged 25 per cent of gross domestic product between 1953 and 1956 before rising to an average of 31 per cent for the next six years. (Table 10.1 and Figure 10.2 contains the details.) The domestic savings rate then fell considerably for most of the 1963 to 1973 period. During that period, domestic savings varied between 20 per cent and 26 per cent of gross domestic product with a mean value of 23 per cent. In comparison, the annual growth rate of real gross domestic product was distinctly slower in the 1963 to 1973 period than in the 1953 to 1962 period. The correspondence between the domestic savings rate and GDP growth is less close after 1973. The savings ratio rose to 44 per cent in 1974 and averaged 41 per cent for the next eight years. In contrast, the annual growth rate of real GDP was so unstable that the period average growth rate was a modest 4 per cent.

The sharp upward displacement of the domestic savings rate in 1974 is attributable to government savings out of burgeoning oil revenues. Government revenues more than trebled from $494 million in 1973 to $1.8 billion in 1975 and $7 billion in 1981. The overall budgetary situation changed from a deficit of $112 million in 1973 to fiscal surpluses of $959 million in 1975 and $3.4 billion in 1981.[3]

The high domestic savings ratios are indicative of considerable success in domestic resource mobilization. However, they suggest a larger contribution to economic growth than is the case. For the 1953 to 1981 period with the exception of 1960 and 1970 to 1973, there was a net outflow of capital. The mean investment ratio was 10 per cent smaller than the domestic savings ratio in the 1953 to 1973 period (Table 10.1 and Figure 10.2). The leakage of domestic savings trebled in the 1974 to 1981 period, the mean investment ratio being 32 per cent smaller than the domestic savings ratio.[4]

FIGURE 10.1 ANNUAL PER CENT CHANGES IN NOMINAL AND REAL GDP



The rise in the negative ratio of foreign savings to GDP (i.e. the difference between the investment ratio and the domestic savings ratio) is not unambiguous evidence of policy weakness. Because the economy's capacity to efficiently absorb large surpluses is very limited it may have been sensible to temporarily accumulate foreign investment balances. Such investments permit positive rates of return on "idle balances" pending their repatriation for domestic investment at a later stage. An important conduit for these investments was the central bank whose holdings of foreign government securities increased from $271 million in 1974 to $4.5 billion in 1981. Granted the high rates of interest prevailing in the U.S.A. and in the U.K., the rate of return on foreign portfolio investments was not inconsiderable in the 1974 to 1981 period, even when allowance is made for exchange rate losses. For example in 1981, interest income on foreign securities held by the central bank was 18 per cent of the capital value of those investments.

Economic growth depends not only on the level of investment. Investment efficiency is also critical. Some guidance to trends in investment efficiency is provided by the incremental capital-output ratio (ICOR). The measurement of ICORs presents several well-known difficulties, including variability in capacity utilization, the correct identification of the income change in the presence of unknown and probably variable gestation lags, and the accurate estimation of capital replacement expenditures. Assuming one-year, two-year, and three-year gestation lags, and treating all investment as net capital formation,[5] three proxies for the ICOR were calculated to provide some insight into the question of investment efficiency. For the 1953-73 sub-period, mean ICORs are 5.30, 5.09 and 4.51, on assumption of one, two and three year gestation lags respectively. There was no tendency for the ICORs to fall in the second sub-period. Instead, they rose greatly, averaging 21.7 for one-year lags and 12.5 for three-year lags.

Several reasons possibly account for this deteriorating trend in investment quality. Output response lags may have become much longer. Certainly, the massive investments in heavy industry (iron and steel, and natural gas) entailed longer lags. It also appears that efficiency declined as a result of an evident deterioration in work practice and because of production bottlenecks in public utilities, especially electricity and the ports. Whatever the reasons, it is clear that the economic growth contribution of domestic resource mobilization was vitiated by a pronounced deterioration in the quality of investment after 1974. Furthermore, ICORs become more variable. For instance, the coefficients of variation for three-year gestation lag ICORs were 0.61 in 1953-1978, and 1.656 in the 1974-1981 period.

FINANCIAL DEEPENING

Financial deepening is a multi-dimensional concept. It refers to the increasing weight of financial transactions in an economy as well as to an expansion in the array of financial institutions and instruments. The most widely used indicators are the ratio of real values of financial assets to real income or wealth, the maturity structure of financial instruments, real interest rates, and the ratio of real credit to real income. These indicators are employed in this essay.

TABLE 10.1: INCOME, SAVINGS AND INVESTMENT

Year	Real GDP $m	Domestic Savings Ratio	Investment Ratio
1953	588	.26	.19
1955	681	.22	.22
1957	897	.31	.23
1959	1029	.31	.29
1961	1243	.31	.26
1963	1352	.23	.24
1965	1465	.21	.26
1967	1594	.25	.20
1969	1684	.24	.19
1971	1819	.22	.29
1973	1907	.26	.23
1975	2007	.42	.20
1977	2218	.41	.29
1979	2512	.38	.32
1981	2546	.40	.42

Notes: Domestic savings estimated as gross capital formation minus foreign savings. Investment is real gross capital formation; gross domestic product is at market prices. The deflator is the implicit GDP deflator (1970 = 100).

Source: International Monetary Fund, *Financial Statistics Yearbook* and Trinidad and Tobago Central Statistical Office, *Annual Statistical Digest.*

Financial asset accumulation is a major form of domestic savings. Despite a considerable widening of the range of financial instruments and institutions especially since 1970, monetary assets (defined broadly as currency plus deposits in financial institutions) still predominate in the financial asset portfolios of the private non-financial sector.[6] Flow of funds data reveal that broad money comprised 52 per cent of total financial assets of Trinidad and Tobago households in 1976, actuarial and trust funds accounting for an additional 32 per cent. An analytical emphasis on monetary variables is, therefore, warranted.

There seems to be some correspondence between the trends in some financial deepening indicators and economic growth. Table 10.2 and Figure 10.3 show that real broad money balances declined from 34 per cent of GDP in 1953 to 23 per cent in 1965, averaged 23 per cent for the next three years, and then rose steeply to 81 per cent in 1981. On the basis of this monetary velocity indicator, it can be inferred that Trinidad and Tobago experienced financial shallowing between 1957 and 1967, but that there was considerable financial deepening between 1968 and 1981, particularly after 1974.

TABLE 10.2: FINANCIAL DEEPENING INDICATORS

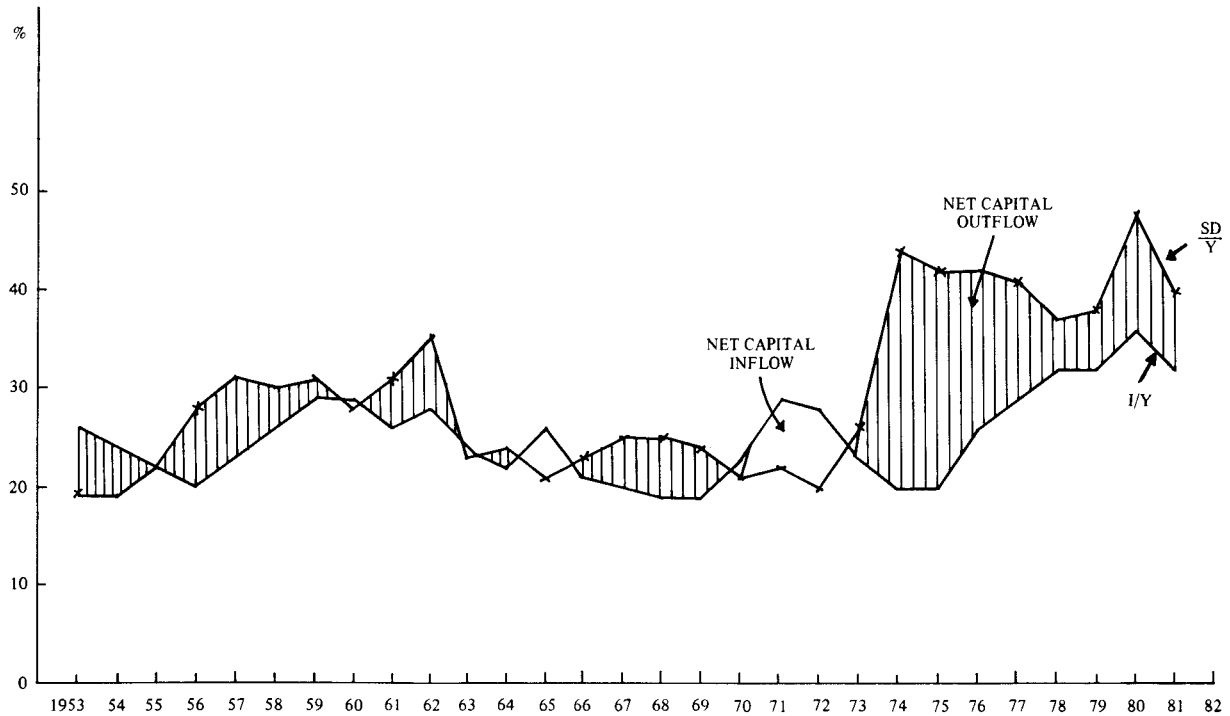
Year	M3/Y	M1/Y	Govt. Credit Total Credit	Personal Credit Comm. Bank Credit	Total Credit GDP
1953	.34	.51	. .	n.a.	.09
1955	.33	.47	.068	n.a.	.09
1957	.29	.53	-1.23	n.a.	.06
1959	.27	.46	-0.83	n.a.	.08
1961	.25	.47	0.27	n.a.	.08
1963	.25	.44	0.31	n.a.	.09
1965	.23	.44	0.21	.19	.12
1967	.23	.40	0.18	.26	.13
1969	.26	.33	0.15	.29	.16
1971	.36	.27	0.26	.31	.19
1973	.35	.26	0.30	.31	.24
1975	.41	.28	-7.62	.42	.24
1977	.50	.29	2.75	.45	.35
1979	.57	.28	4.68	.36	.38
1981	.81	.28	3.68	.34	.42

Note: M3 is broad money defined as currency plus deposits in financial institutions. M1 is narrow money defined as currency plus demand deposits. Y is GDP.

Source: Central Bank of Trinidad and Tobago, *Quarterly Statistical Digest* and International Monetary Fund, *International Financial Statistics Yearbook.*

The financial deepening literature and other mainstream monetary writings identify two major influences on the growth of demand for real monetary assets. These are the level of real incomes and the real rate of interest on monetary assets. The time pattern of income growth has already been described. The trends in nominal and real interest rates will now be described. Table 10.3 shows that weighted average nominal interest rates on commercial bank deposits (r_D) varied between 3.5 per cent and 6.6 per cent during the 1965 to 1981 period. The real rate of interest in Fisherine terms is defined as the nominal rate of interest adjusted for expected inflation, i.e. $i_D = r_D - \dot{P}^e$ where i_D is the real deposit rate of interest and $\dot{P}^e$ is the expected inflation rate. The expected inflation rate is estimated by the first order autoregressive model $\dot{P}^e_t = a + b\,\dot{P}_{t-1}$ where P is the actual rate of inflation. Table 10.3 shows the resulting real deposit rate of the 1965 to 1981 period. Real deposit rates of interest were positive but low between 1965 and 1977. Thereafter they became negative. The movements in the real deposit rates of interest reflected movements in the expected

FIGURE 10:2 SAVINGS AND INVESTMENT RATIOS 1953–1981



rate of inflation mainly. Figure 10.4 further illustrates the trends in interest rates. According to Shaw [13, p.8] real interest rates are perhaps the least ambiguous indicator of financial deepening or shallowing. On this basis, some doubt must be entertained about the extent of financial deepening between 1974 and 1981.

The quantitative influence of income and interest rates on real demand for monetary assets was econometrically investigated with annual data for the 1965 to 1981 period. Estimation was by ordinary least squares with correction for first and second order autoregression wherever this seemed warranted. The nominal interest rate and the expected rate of inflation were treated separately in order to obtain greater insight into the complementary policies of interest rate liberalization and price level stability. The following is the regression result:

$$\ln M^D = \underset{(-9.1)}{-14.68} + \underset{(12.0)}{2.79} \ln Y + \underset{(0.5)}{1.71} r_D + \underset{(2.0)}{1.01} \dot{P}^e \qquad (1)$$

$\bar{R}^2 = 0.985$ F = 348.0 DW = 2.37 RHO(1) = 0.04 (2) = -0.54

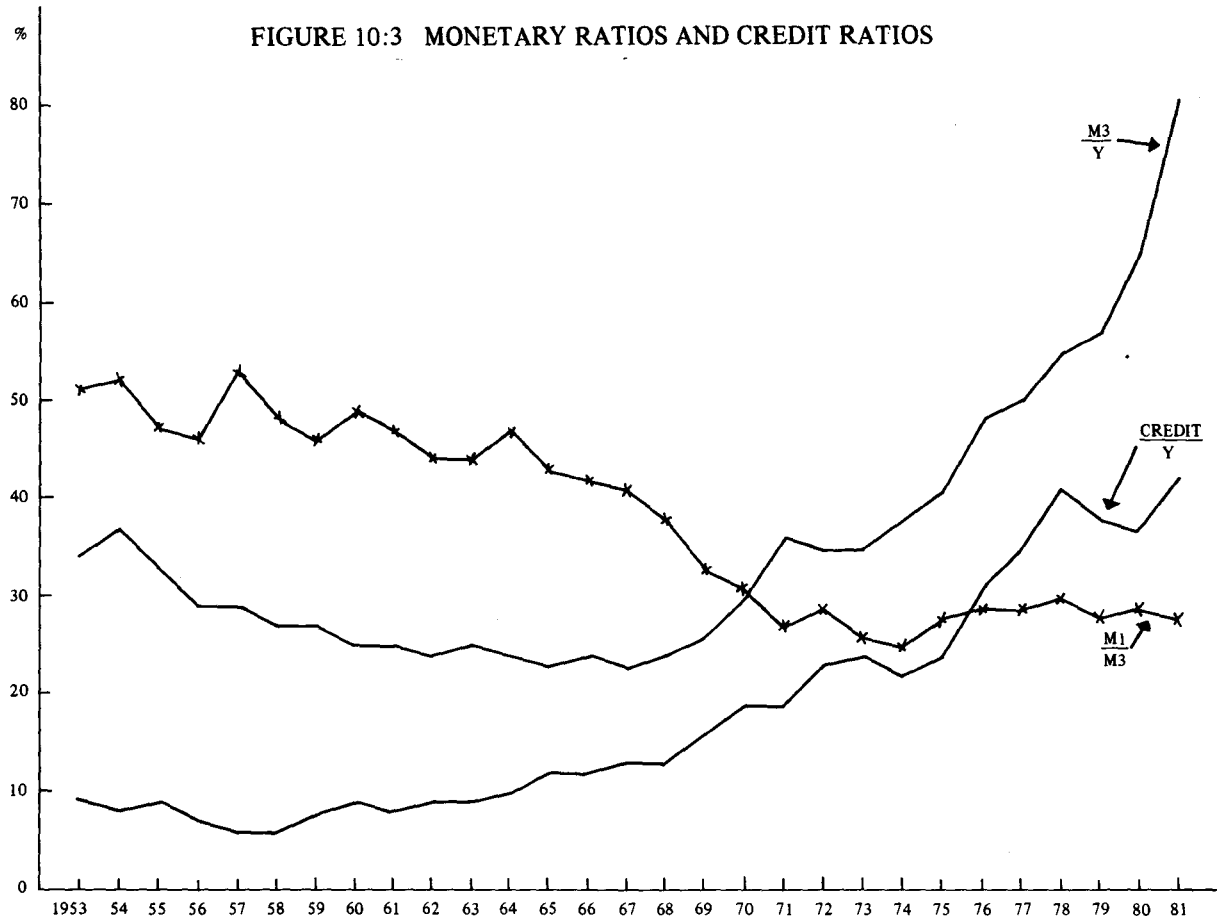
TABLE 10.3: COMMERCIAL BANKS WEIGHTED RATES OF INTEREST

Year	r_D(%)	i_D(%)	r_L(%)	i_L(%)
1965	3.6	1.1	7.0	4.5
1966	3.9	1.5	7.4	5.0
1967	3.8	2.0	7.7	1.8
1968	4.4	2.1	8.2	5.9
1969	4.6	3.6	8.2	7.2
1970	5.0	2.8	8.6	6.4
1971	4.9	2.7	8.4	6.2
1972	3.6	1.6	8.2	6.2
1973	5.2	-8.1	10.3	-3.0
1974	6.0	-8.4	10.7	-3.7
1975	4.2	-11.6	10.1	-5.7
1976	3.8	-11.0	9.8	-5.0
1977	4.3	-8.9	9.1	-4.1
1978	4.7	-9.6	9.9	-4.4
1979	5.7	-7.8	10.7	-2.5
1980	5.9	-8.5	11.7	-2.7
1981	6.6	-8.3	12.2	-2.7

Notes: r_D is the quoted nominal deposit rate of interest and r_L is the quoted nominal loan rate of interest. i_D and i_L are their real, i.e. inflation adjusted counterparts. Inflation rates are measured by the Implicit Deflator for GDP.

Source: Central Bank of Trinidad and Tobago, *Quarterly Statistical Digest* and Central Statistical Office, *Annual Statistical Digest.*

FIGURE 10:3 MONETARY RATIOS AND CREDIT RATIOS



The regression coefficients of real GDP (Y) and the expected rate of inflation are statistically significant at the 1 per cent and 5 per cent levels respectively. The nominal interest variable is not statistically significant. It can be seen from the direct estimate of the income elasticity of real money demand that demand responds strongly to changes in real incomes. In contrast, the response to inflation is weak (the elasticity being 0.09). Thus, it can be concluded that the growth in financial savings was dominated by income growth.

Interest rate policy was inconsistent with monetary equilibrium in the post-1974 period. Huge balance of payments surpluses boosted domestic money supply at an average annual rate of 28 per cent, despite quasi-neutralization behaviour by the government which switched from being a net debtor to being a net creditor of the monetary system.[7] This rate of money expansion was not warranted by the rate of increase of real gross domestic product which averaged 4 per cent. The faster expansion of nominal money supply would have needed to be accompanied by substantially higher positive real rates of interest to ensure monetary equilibrium rather than by the negative real interest rates which prevailed.

FINANCIAL DEEPENING, SAVINGS, INVESTMENT AND GROWTH

McKinnon (1973, 1974) has outlined a theory of the link between financial deepening and the savings-investment process. The crux of his theoretical scheme is the "complementarity hypothesis". By this hypothesis, McKinnon maintains that there is a positive relationship between accumulation of real money balances and real investment under regimes of self-financed investment [McKinnon 11, pp. 57-61]. Savings take the form of financial asset accumulation prior to the act of investment. Monetary assets are, thus, the "conduit" for investment. As McKinnon shows, the complementary hypothesis leads to a behavioural specification of the domestic savings rate in which the growth rate of income and the real deposit rate of interest are explanatory variables. With the addition of a Harrod-Domar balanced growth equation, one has a simple formal link between financial deepening and economic growth.

Matters are not so straightforward if more realistic assumptions are made about the functioning of the economy. The household sector and the corporate sector are the main holders of monetary assets.[8] The former are surplus units for which deposits constitute savings at the micro level. The latter are mainly deficit units whose deposit balances are more in the nature of working capital than investment funds. Self-financial investment linked to monetary accumulation is, therefore, atypical of the Trinidad and Tobago economy. Because of these behavioural characteristics, Shaw's [13] debt-intermediation approach provides a potentially more illuminating framework for analysing the link between financial deepening and the savings investment process.

Within the debt-intermediation framework, financial intermediaries are juxtapositioned between micro-savers and investors. The economic sequence is from surplus units (micro-savings) to financial intermediaries (monetary assets) to investment (aggregate savings in the national accounts sense). The strength of the link between financial asset accumulation and aggregate savings and investment depends critically upon the extent to which financial intermediaries transform their liabilities into credit for physical capital accumulation. If the

coefficient of transformation is large, i.e. close to unity, then one would expect a strong relationship between the determinants of the demand for real money balances and the domestic savings and investment ratios. In other words, econometric estimation of savings and investment functions such as:

$$\frac{SD}{Y} = f_1(\dot{Y}, \dot{r}_D) \qquad (2)$$

$$\frac{I}{Y} = f_2(\dot{Y}, \dot{r}_D) \qquad (3)$$

should yield statistically significant positive coefficients.[9]

If the coefficient of transformation is small, there will be a weak statistical relationship between the arguments of the demand for money function and the savings and investment ratios. Furthermore, the coefficient on the interest rate variable may be negative. This can happen if credit flows from financial intermediaries are not allocated to investment expenditures, but are allocated instead to consumption and working capital. In such situations, monetary accumulation is competitive with capital accumulation.[10]

Before examining the econometric evidence, it is useful to consider the behaviour of two financial series which are related to the magnitude of the transformation coefficient. The first is the ratio of narrow money balances, i.e. currency plus demand deposits, to the broad money stock. This variable is a measure of liquidity preference. The higher is the ratio, the smaller is the scope for term transformation by financial institutions. Correspondingly, the lesser is the scope for their financing of investment. Liquidity preference declined in Trinidad and Tobago until 1974. The ratio of narrow money to broad money decreased from 0.51 to 0.25 in 1974 (Table 10.2 and Figure 10.3). Thereafter, the ratio remained practically stable at about 0.29. Theoretically, liquidity preference is expected to vary inversely with the level of income and the real rate of interest on deposits. At first glance, these predictions do not seem valid for Trinidad and Tobago. To probe the relationships, the ratio of narrow money to broad money were regressed on real GDP, nominal interest rates, and the expected rate of inflation for the 1965 to 1981 period. Ordinary least squares regression yielded the following result:

$$\ln\left(\frac{M1}{M3}\right) = \underset{(0.6)}{1.426} + \underset{(0.4)}{0.144} \ln Y - \underset{(-3.1)}{0.255} \ln r_D + \underset{(0.4)}{0.206}\, \dot{P}^e \qquad (4)$$

$$\bar{R}^2 = 0.8843 \quad F = 22.4 \quad D.W. = 2.68 \quad RHO(1) = 0.006 \quad RHO(2) = 0.35$$

Despite the reasonably high explanatory power of the regression model, only the interest rate variable is statistically significant at the 5 per cent significance level. The estimated interest rate elasticity of -0.25 is modest and has the anticipated sign, that is the nominal deposit rate of interest induces a change in the composition of the demand for broad monetary assets in favour of time and savings deposits. When one recalls that aggregate demand for money is not significantly related to the deposit rate of interest, one has to conclude that the

primary role of interest rate changes has been to reduce liquidity preference.

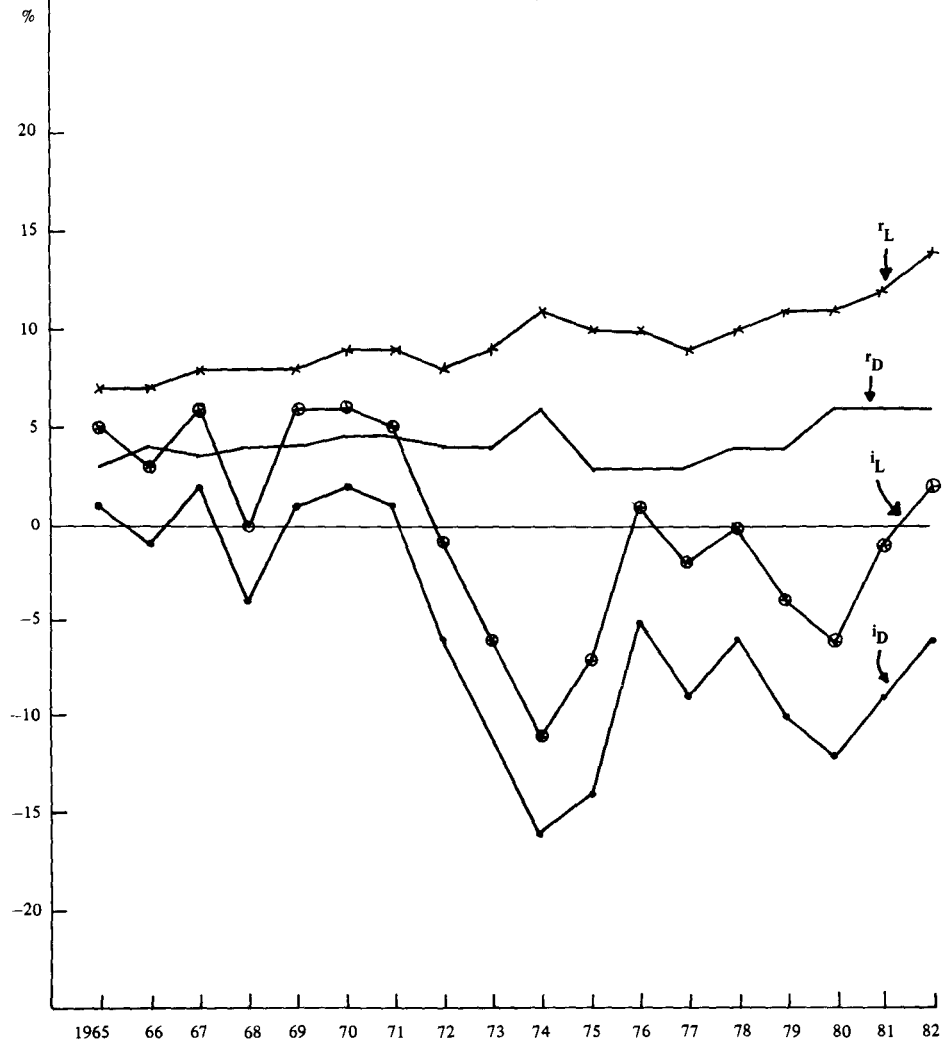
The second financial series related to the transformation coefficient is the share of real credit allocated to government consumption and personal consumption. Monetary sector credit to the government sector was a relatively small proportion of total monetary sector credit around the middle of the 1950s. From 1957 to 1960, the government sector was a net creditor to the monetary sector. During the 1960s and the first three years of the 1970s, government sector debt, while competitive with private debts, was not a particularly large proportion of total monetary sector credit as the data in Table 10.2 show. The proportion averaged 25 per cent within a range of 16 per cent to 31 per cent. After 1973, the government sector became a major net depressant of credit in the monetary sector, reducing net credit by as much as $4.8 billion in 1981.

A sizeable proportion of monetary sector credit to the private sector was allocated to consumption. The share of personal loans in total bank lending increased from an arithmetic mean of 26 per cent between 1965 and 1974 to a mean value of 40 per cent during the next seven years (Table 10.2). This shift towards personal sector credit implies that the transformation coefficient decreased significantly from the mid-1970s. Nonetheless, the fact that the private production sector obtain the bulk of credit throughout the entire 1953 to 1981 period leaves open for verification the possibility that monetary accumulation was consistent with increases in aggregate savings and investments.

It is also of interest to establish the pattern of growth of credit relative to some income or economic activity variable such as gross domestic product. It provides a crude indicator of the extent to which the country's economic transactions were supported by credit. Some details are provided in Table 10.2 and Figure 10.4. It is evident that the ratio of real credit to real GDP increased steadily for most of the 1960 to 1981 period. Real credit rose from 9 per cent of GDP in 1960 to 20 per cent in 1970 and doubled again by 1981. The increase was especially steep in 1976 when the proportion moved from 24 per cent to 31 per cent. The continued growth in the ratio of credit to GDP between 1974 and 1981 is remarkable in the light of the sharp decline in monetary sector net credit to the government, noted previously. It is mainly a reflection of the rapid expansion of credit to the private sector. This fast increase in private sector debt was not unrelated to the incentive effects of negative real rates of interest on bank loans.[11] Table 10.3 presents data on loan rates of interest which show that they were negative in real terms from 1973 onwards. In effect, there was an implicit subsidy from commercial banks to their loan customers. Bourne in Essay Three argues that this subsidy was financed by commercial bank depositors. This much can be gleaned from the large negative real rates of interest on deposits relative to the real loan rate. In effect, depositors experienced implicit resource transfers from themselves to the commercial banks' equity owners, bank credit customers, and the government (*via* corporate income tax).

To quantify the relationship between savings and investment behaviour on the one hand and financial deepening on the other hand, savings and investment functions were estimated by ordinary least squares. The savings and investment functions include the ratio of foreign savings to real GDP as an additional

FIGURE 10.4 NOMINAL AND REAL INTEREST RATES ON BANK LOANS AND DEPOSITS



determinant to incorporate the negative association of foreign savings with domestic savings and the influence of capital exports on domestic investment.[12] Also, the ratio of real private sector credit to real GDP is included in the investment function as a separate explanatory variable to allow for credit rationing effects on investment. The investment ratio is expected to vary directly with the credit to GDP ratio.[13]

The regression results are as follows:

$$\frac{SD}{Y} = \underset{(3.6)}{0.202} - \underset{(-0.6)}{0.083}\,\dot{Y} - \underset{(-6.1)}{0.731}\,\frac{SF}{Y} + \underset{(0.2)}{0.187}\,r_D + \underset{(2.5)}{0.706}\,\dot{P}^e \qquad (5)$$

$$\bar{R}^2 = 0.743 \quad F = 12.58 \quad D.W. = 1.68 \quad RHO\,(1) = 0.80$$

$$\frac{I}{Y} = \underset{(3.9)}{0.154} - \underset{(-0.5)}{0.067}\,\dot{Y} - \underset{(-0.1)}{0.074}\,r_D - \underset{(-1.2)}{0.228}\,\dot{P}^e \qquad (6)$$

$$+ \underset{(1.5)}{0.168}\,\frac{SF}{Y} + \underset{(5.3)}{0.558}\,\frac{CR}{Y}$$

$$\bar{R}^2 = 0.824 \quad F = 15.98 \quad D.W. = 1.98 \quad RHO\,(1) = 0.18 \quad RHO\,(2) = 0.70$$

With respect to the domestic savings ratio function, the coefficients for the foreign savings ratio is statistically significant at the 1 per cent level and is correctly signed. The inflation rate also has a statistically significant coefficient (at the 5 per cent level). Inflationary expectations seem to induce a higher rate of domestic savings but the computed elasticity (0.19) is small. The growth rate of real GDP and the nominal rate of interest on deposits are not statistically significant. There is no clear evidence about the presence or absence of serial correlation.

For the investment ratio equation, only the credit ratio is statistically significant and correctly signed. Serial correlation is not a problem. The computed elasticity at the point of means is 0.54 which is indicative of a fairly sizeable positive response of domestic investment to this indicator of financial deepening. It is noticeable that the coefficients of the investment function are quite different from those of the savings function. It thus appears that these two functions are independent of each other. The actual relationships imply a mechanism whereby income growth drives monetary accumulation which then propels investment through the credit activities of financial intermediaries.

There is another possible channel through which financial deepening may influence economic growth. The efficiency of physical capital and labour in the production process improves with the supply of working capital. Thus, aggregate output varies directly, although not necessarily continuously, with the stock of working capital. In Trinidad and Tobago, like many other less developed countries, corporate enterprises extensively utilize bank credit for working capital. Their demand matches the loan maturity preferences of banks which make primarily short and medium term loans. Monetary accumulation can, therefore, influence the rate of growth of aggregate output by facilitating the supply of working capital. Extending the logic one step further, a theoretical relationship can be posited between the financial deepening variables and the

rate growth of real gross domestic product. This proposition was tested by ordinary least squares regression reported below:[14]

$$\dot{Y} = \underset{(2.8)}{0.260} - \underset{(1.9)}{2.729}\ \dot{Y}^e - \underset{(-1.8)}{2.006}\ r_D + \underset{(1.4)}{0.233}\ \dot{P}^e \qquad (7)$$

$$\bar{R}^2 = 0.166 \quad F = 2.06 \quad D.W. = 1.98$$

$$\dot{Y} = \underset{(3.2)}{0.305} - \underset{(-2.4)}{3.717}\ \dot{Y}^e - \underset{(-2.3)}{2.587}\ r_D - \underset{(-0.03)}{0.007}\ \dot{P}^e + \underset{(1.5)}{0.223}\ CR_Y \qquad (7a)$$

$$\bar{R}^2 = 0.236 \quad F = 2.24 \quad D.W. = 2.34$$

In Equation (7), the actual growth rate of real GDP is regressed on the expected growth rate of real GDP, the nominal rate of interest on deposits, and the expected rate of inflation. Equation (7a) adds the ratio of credit to GDP as an explanatory variable. In both equations the expected growth rate of real GDP and the nominal rate of interest are statistically significant at the 5 per cent significance level. The coefficients of the expected inflation variable and the credit ratio variable are not statistically different from zero at the 5 per cent level. If the less stringent 10 per cent significance level is used, the inflation rate coefficient becomes statistically significant in Equation (7) but not in Equation (7a) where the credit ratio variable is added. The latter is statistically significant at the 10 per cent significance level. There appears to be some collinearity between the inflation and credit ratio variables.

The sensitivity of the GDP growth rate to the financial deepening variables is indicated by the computed elasticities based on Equation (7a). The elasticity at the point of means for the interest rate is -1.39 and that for the credit ratio is 3.06. They indicate that the growth rate of real GDP responded strongly but negatively to changes in interest rates. The response to changes in the credit ratio was positive and much stronger.

CONCLUSION

The main conclusions from the review of trends in financial deepening, resource mobilization and economic growth can be readily stated. The process of real economic growth during the 1953-73 period was accompanied by considerable financial deepening measured in terms of the income velocity of broad money, the ratio of credit to GDP, and liquidity preference. Nominal and real interest rates were stable at low levels. There was a distinct tendency for domestic savings and investment ratios to rise, but for the efficiency of investment to deteriorate. The financial process shallowed somewhat after 1973, despite continued increases in the money-GDP ratio and the credit-GDP ratio. Consumption credit increased as a proportion of total bank credit, and real interest rates became substantially negative. Synchronously, domestic savings tended to leak abroad to a greater degree than previously.

Financially, deepening appears to have exerted a strong positive influence on investment and economic growth. A link was established between the generally depressed rates of interest and the ratio of narrow money balances to the total money stock, and between the growth rate of real GDP and the rate of

interest. Interest rates had a mild effect on liquidity preference, but tended to depress the savings ratio. On the other hand, income growth resulted in substantial monetary accumulation which was transformed into credit. Credit expansion positively influenced the investment ratio and the economic growth rate.

In a sense, finance has been a passive element in the growth process. The banking system certainly did not induce an inflow of funds by manipulation of deposit rates, nor can it be argued that loan rates were used as an incentive to bank customers. It seems more to be the case that income growth generated deposit growth which expanded loan capacity. Granted profit maximizing behaviour, the supply of credit expanded with positive effects on output and future incomes.

NOTES

[1]The seminal explorations of this theme are by McKinnon [11, 12] and Shaw [13], but later important theoretical and empirical contributions have been made by Fry [5], Galbis [7, 8], Mathieson [10] and Vogel and Buser [14].

[2]The apparent paradox of weak output performance in the period of foreign exahange abundance is explainable in terms of factor price distortions, investment inefficiencies, and reduced productivity in the non-petroleum sectors engendered by the oil windfalls. For an early warning of this outcome, see Bourne and Persaud [1].

[3]Fiscal surpluses decreased abruptly in later years, amounting to $1.1 billion in 1982 and $315 million in 1982.

[4]This experience of net capital export may be atypical of Commonwealth Caribbean countries. In Jamaica, foreign savings supplemented domestic savings to a great extent. For an analysis of the Jamaican experience, see Bourne [3].

[5]This overestimates the ICOR.

[6]Fifteen finance companies and two banks have been established since 1970. A stock exchange has also been established with corporate equity becoming more readily available and marketable.

[7]The term "quasi-neutralization" is used to make the point that although budgetary surpluses moderated the expansionary effects of the balance of payments, the government did not deliberately manipulate its net asset position at the central bank in pursuit of that objective. In the usual connotation, "neutralization" means the conscious adoption of debt policy to offset balance of payments effects on the money supply.

[8]At the end of 1981, the household sector held 63 per cent and business firms 11 per cent of commercial bank deposits.

[9]The savings ratio function is derived by combining a balanced growth equation $Y = \frac{SD}{Y} \cdot \frac{I}{V}$ with a savings function $\frac{SD}{Y} + \frac{DM}{Y}$ and a money demand function $M^D = F(Y, i_D)$. The investment function follows from the usual national income identity.

[10]McKinnon [11, pp. 61-62] identifies another reason for this dominant "competing asset" effect, *viz.* when the real rate of interest tends towards "the best marginal and intra-marginal returns to be earned on self-financed investments".

[11]For supporting econometric evidence, see Bourne's Essay Three in this volume.

[12]Dacey [4] and Leff and Sato [9] provide recent evidence on these relationships for several LDCs.

[13]In LDCs, it is reasonable to assume that credit for working capital is complementary to credit for fixed investment so that the coefficient of the total credit variable will be positively signed.

[14]Fry [5] estimated a similar equation for a sample of seven LDCs.

REFERENCES

[1] BOURNE, Compton and H. Wilberne PERSAUD, "Financial Implications of the Energy Crisis For Dependent Underdeveloped Countries", in Norberto A. QUEZADA and Reyna T. CHRISTIAN (eds.) *Consulta del caribe sobre energia y agricultura,* Dominican Republic, Instituto Superior de Agricultura, 1980.

[2] BOURNE, Compton, "Notes on Financial Changes in Trinidad and Tobago: 1966-1978". *Social and Economic Studies,* 31, 4, 1982.

[3] _____ , "Financial Deepening, Domestic Resource Mobilization and Economic Growth: Jamaica 1955-1982", Department of Economics, University of the West Indies, St. Augustine, May 1985.

[4] DACEY, Douglas C., "Foreign Aid, Government Consumption, Savings and Growth in Less Developed Countries", *Economic Journal,* 85, 1975.

[5] FRY, Maxwell J., "Money and Capital or Financial Deepening in Economic Development?" *Journal of Money, Credit and Banking,* 10, 1978.

[6] _____ , "Models of Financially Repressed Developing Economies", *World Development,* 10, 1982.

[7] GALBIS, Vincente, "Financial Intermediation and Economic Growth in Less Developed Countries: A Theoretical Approach", *Journal of Development Studies,* 13, 1977.

[8] _____, "Money, Investment and Growth in Latin America, 1961-1973", *Economic Development and Cultural Change*, 27, 1979.

[9] LEFF, Nathaniel and Kazuo SATO, "Macroeconomic Adjustment in Developing Countries: Instability, Short run Growth, and External Dependency", *Review of Economics and Statistics*, 62, 1980.

[10] MATHIESON, Donald J., "Financial Reform and Stabilization Policy in a Developing Economy", *Journal of Development Economics*, 7, 1980.

[11] McKINNON, Ronald I., "Money and Capital in Economic Development", Brookings Institution, Washington D.C., 1973.

[12] _____, "Money, Growth and the Propensity to Save: An Iconoclastic View", in George HORWICH and Paul A. SAMUELSON (eds.), *Trade Stability and Macroeconomics*, Academic Press, New York, 1974.

[13] SHAW, Edward S., *Financial Deepening in Economic Development*, Oxford University Press, New York, 1973.

[14] VOGEL, Robert C. and A. Stephen BUSER, "Inflation Financial Repression and Capital Formation in Latin America", in Ronald J. McKINNON (ed.), *Money and Finance in Economic Growth and Development*, Marcell Dekker, Inc., New York, 1976.

GROWTH AND PATTERN OF GOVERNMENT EXPENDITURE IN TRINIDAD AND TOBAGO

XI

Ramesh Ramsaran

INTRODUCTION

The factors which affect the size and distribution of public spending are several and varied. Their relative influence, of course, varies from one context to another, depending on social, political and economic circumstances. The growth and structure of the population, the level and pattern of employment, the level and distribution of income, the tax structure, the level of tax rates, the adequacy (both in terms of quantity and quality) of social services provided by private organizations and ideological orientation are some of the general factors that affect the level of public outlays. There are certain basic functions (e.g. public service administration, maintenance of law and order, defence, justice, the regulation of private activity, etc.) which are common to most governments. Involvement beyond this may be motivated by economic philosophy, political ideology, the failure of market forces to operate in the desired way, or by public dissatisfaction with the rate of growth or the quality of development. This latter factor has had a crucial bearing on the level of government intervention in poor countries, in forms ranging from control of certain essential services and the development of the basic infrastructure, to participation or ownership in productive enterprises which may be important in the fulfilment of national objectives. In many cases, the level and scope of government involvement reflects a pragmatic response to certain endemic social and economic conditions rather than a purely ideological motivation.

However conscious government may be of the importance of their role in bringing about social change, because of certain constraints, the actual level of public spending may be below the desired level. Revenue is one of the most important of these constraints. It is often contended that in certain circumstances the size of government expenditure determines the level of revenue. In an ultimate sense, however, it is revenue which places a limit on public spending. Since finance is only one factor in capital formation, the removal of the revenue constraint may not be sufficient in itself to accelerate development at the desirable pace. The presence of bottlenecks of various kinds can complicate the process of change. The ready availability of funds itself, too, may affect attitudes and policies in a way that can retard development or at least increase its costs. In a situation where government spending comes to be informed essentially by vote-catching considerations, or where not enough attention is paid to efficiency in the use of public funds, the wastage can be considerable. One can have a situation where huge sums are spent on undertakings which normally should cost only a fraction of the expenditure actually incurred in their execution. The effect of this is that the size of public spending, in itself, may not be a true indication of real accomplishment.

The approach to the study of public expenditure tends to take two main forms. The first (which is the more common of the two) uses the cross-section technique which seeks to compare certain public finance aggregates or variables in one country with their counterparts in other countries within a given sample.[1] The criteria for choosing the members of the sample group can vary widely, depending on the objective of the exercise. The other approach used is, essentially, a time series analysis in which movements in the interested variables (defined in a given context) are examined over time with a view to ascertaining trends and seeking explanations for the changes observed.[2] Both approaches have their variants and the two can be combined to do comparative studies over time. In this essay we use the time series approach in examining the growth and pattern of public expenditure in Trinidad and Tobago in recent years. The analysis is confined to the central government outlays, and for the most part covers the period between 1963 and 1984.[3] As we shall indicate later, the government is involved in a number of commercial enterprises either as full owners or part owners, and its involvement in the economy is, therefore, much greater than the level of central government outlays would suggest. It is not our intention in this essay, however, to be directly concerned with the operations of these enterprises.

This essay has seven main sections. The first and second, provide some background data on the country in order to put the analysis that follows in perspective, while at the same time offering some explanations for the growth of public spending. The third is devoted to an examination of the trends in expenditure and revenue aggregates over the last two decades. The fourth discusses the composition of current and capital expenditure by using different classification schemes in an effort to gauge the significance of government spending activities in the economy. In the fifth we provide a general overview of the role played by public savings and borrowing in the finance of government capital expenditure. (A discussion on the trends in the public debt is reserved for another essay.) The sixth section takes a critical look at some of the current issues arising from the pattern of public spending and in the final section we conclude with some broad observations on public policy.

THE POLITICAL, ECONOMIC AND SOCIAL BACKGROUND

By any definition Trinidad and Tobago is a small country. Together, both islands have a land area of 1,980 square miles and a population of 1.176 million.[4] The population is a young one. In 1985, 55 per cent of the population was estimated to be less than 24 years of age. Of this, 34 per cent was in the less than 15 age group, 10 per cent in the 15-19 group and 11 per cent in the 20-24 bracket. Only 6 per cent of the population was estimated to be over 65 years. If we assume that persons in the under 15 and over 65 years categories comprise the dependent population (i.e. people not earning income), the ratio to overall population in 1985 would have been around 40 per cent. If the dependent population were to be expressed as a proportion of the 15-64 age group the ratio would rise to 67 per cent. The average population growth rate during the 1953-73 period was in the region of 2.2 per cent. Since 1970 it has averaged around 1.4 per cent. Overall, national income (in current and real terms) has increased at a faster rate than population growth. This is reflected in the move-

ments in per capita GDP (at current factor cost) which increased from about T.T.$569 (U.S.$332) in 1953 to T.T.$2,445 (U.S.$1,225) in 1973 and to an estimated T.T.$17,000 (U.S.$7,080) in 1984. (See Table 11.3). In real terms per capita GNP is estimated to have increased by 1.6 per cent over the 1960-76 period as compared to 5.2 per cent over the 1973-82 period.[5] Between 1982 and 1985, real GDP is estimated to have dropped by 20 per cent, while real per capita income declined by about 23 per cent. The exceptional growth in per capita income in recent years has to be seen against a situation where the distribution of income is highly skewed. In 1975-76 (the most recent period for which we have data) the lowest 30 per cent of households received 6.2 per cent of total income, while the lowest 50 per cent received 19 per cent as compared to over 30 per cent for the top 10 per cent of households.[6] There is no reason to believe that the situation has improved significantly since.[7]

Although the buoyancy of the economy in recent years has resulted in fairly high levels of employment, the problem of creating enough job opportunities to keep pace with the growth of the labour force remains an important area of concern. Between 1970 and 1980 the unemployment rate is estimated to have dropped from 12.5 per cent to 8.8 per cent. The major factor in the favourable growth rates experienced by the economy in recent years has, undoubtedly, been the high levels of government spending which has been made possible by the revenues derived from the oil sector. With the decline in oil revenues and the slow down in growth in the mid-1980s, the unemployment problem has tended to become worse. At the end of June, 1983 the ratio had increased to around 11.1 per cent and by mid-1985 to 15.3 per cent. A large proportion of the jobs generated during the boom years were of a temporary nature, and this, undoubtedly, had the effect of removing some of the pressures to create a framework for a higher level of permanent employment. In mid-1974, for instance, there were about 43,000 people employed in the construction sector (including electricity, gas and water). This represented about 12 per cent of the employed labour force. By late 1982, persons with jobs in this sector numbered 100,000 or 26 per cent of the employed labour force. By 1985, the figure had fallen to around 67,000 (17 per cent of the employed labour force). Of the roughly 392,000 persons employed in 1985, the sectoral distribution was as follows: 11.7 per cent (25.5 per cent in 1970) was in agriculture (including forestry and fishing); 14.8 per cent (20.8 per cent in 1970) was in mining, quarrying, refining and manufacturing; 17.1 per cent (12.0 per cent in 1970) was in construction (including electricity, gas and water); 7.4 per cent (6.8 per cent in 1970) was in transport and communication; 17 per cent (13.6 per cent in 1970) was in commerce; and 32 per cent (21.3 per cent in 1970) was in other services including government.

Another prominent feature of the Trinidad and Tobago economy is the high degree of openness in terms of the dependence on foreign trade. Over the period 1980-84, for instance, exports (of goods and services) averaged about 40 per cent of GDP and imports about the same. Trade is highly concentrated in oil which tends to account for over 80 per cent of domestic exports. Between 1980 and 1984 the contribution of the petroleum sector to GDP (at current factor cost) averaged about 30 per cent. Despite attempts to diversify the economy,

petroleum remains the most important determinant of the level of economic activity. The importance of agriculture in the economy continues to decline, while the manufacturing sector has so far failed to obtain a significant place in the economic structure either as a net earner of foreign exchange or as a creator of employment opportunities. The largely assembly type operations which have been encouraged, offer limited scope for local value added or job creation, given their orientation and the capital intensive nature of their production techniques. The estimated contributions of the various sectors to GDP (at current factor cost) in 1984 were as follows: Oil, 24.9 per cent (26.0 per cent in 1966), Agriculture, 2.9 per cent (5.3 per cent in 1966), Manufacturing, 6.7 per cent (5.8 per cent in 1966), Construction and Quarrying, 12.2 per cent (4.2 per cent in 1966), Transport, Storage and Communication, 10.4 per cent (15.2 per cent in 1966), Distribution, 9.8 per cent (16.7 per cent in 1966), Finance, Real Estate and Insurance, 9.1 per cent (8.0 per cent in 1966), Electricity and Water, 2.2 per cent (2.0 per cent in 1966), Government, 14.2 per cent (8.5 per cent in 1966) and other services 7.3 per cent (8.3 per cent in 1966).

With respect to political arrangements the present legal framework is provided by the Trinidad and Tobago Republican Constitution which became effective on August 1, 1976 and which provides for the appointment of a President and for the establishment of a Parliament comprising a Senate of 31 nominated members and a House of Representatives of 36 elected members. The system is based on single member constituencies and universal adult suffrage which was introduced as far back as 1946. Since 1956, power has been in the hands of the People's National Movement (PNM) which currently holds 26 of the 36 seats in the House of Representatives. Failure of a strong opposition party to emerge as a possible alternative government has removed a great deal of pressures for sensitivity to the public mood, which would have been extant in a situation where organizations of equal or near equal strength are vying for power.

FACTORS AFFECTING PUBLIC SECTOR GROWTH

Though a great deal has been written about the role of government and its evolution over time, there is still no satisfactory theory of government expenditure. In most short term growth models the tendency is either to assume the government sector away, or treat it as an exogenous variable determined by factors outside the model. Because government does not respond as the market predicts, it is difficult to analyze government behaviour in the same way as one does the investor's or consumer's. Value judgements weigh heavily in government decision-making and the resource allocation to which these give rise may not always correspond with what might be considered the most efficient. Observers, however, have long speculated on the factors influencing the relative growth of the Government sector over time. Rostow, for example, roots his explanation in his stages of growth theory.[8] He argues that because of infrastructural needs in the early stages of growth, government accounts for the larger share of total investment. As growth proceeds towards the middle and mature stages, public investment tends to complement private investment. Government involvement at all times is rationalized on the basis of market failures. As the economy matures he sees a shift from infrastructural expenditures to

expenditures on social services. Musgrave also shares the view that in the early stages of development the share of public capital formation in total investment is likely to be high because of the need for basic infrastructure and because "the facilities for private capital accumulation are limited at the early stages of development, as is entrepreneurial talent."[9] Towards the middle stages of economic development the share of public investment in total capital formation is likely to fall, but may rise again at a later stage when private goods which demand complementary public investment come to the fore.[10] Adolf Wager, the 19th Century German economist, explained the rising ratio of government expenditure to GNP he observed taking place in many states in both political and economic terms. The complexity of economic relationships and the need for government regulation offered one set of expectations. Another arose from the high income elasticity of demand for certain social and welfare services. As income rose public expenditure tended to rise more than in proportion.[11] Peacock and Wiseman in their detailed study of public expenditure in the United Kingdom based their analysis on political perceptions arising from the relationship between government and the taxpaying public; "it is fundamental to our thesis that decisions about public expenditure are taken politically, and so can be influenced through the ballot box or by whatever media citizens use to bring pressure to bear upon the government."[12]

Where the role of government or public expenditure is concerned, generalization is a difficult matter. Both are influenced by the philosophical underpinning of the government and certain objective factors. These are, in turn, influenced by the stage or level of development and the rate of growth of the economy. The traditional fiscal functions of allocation, distribution and stabilization tend to be viewed quite differently in a development context. A government which feels that the market system left to itself is not likely to promote the kind of society and economy it envisages, is likely to be more strongly interventionist than one which is not. A weak private sector can often lead a government to assume a larger role in the economy than it might want to, if this is required to bring about the kind of transformation envisaged. As for objective factors, a government, for example, that does not have good relations with its neighbours may be inclined to spend a larger proportion of its budget on the military than one that does. Higher levels of taxation, however distasteful, is easily rationalized on the basis of the external threat to the national integrity. Resources available to governments, however, are not unlimited, and they too have to make choices, be it in a democratic or non-democratic setting. In the former, of course, trying to meet the expectations of the electorate will be a crucial factor. All governments face the possibility that the achievements of their policies may fall below what they set out to accomplish. Unforeseen developments can be partly responsible. It may also be the result of bad or inadequate planning, absence of proper machinery for implementation, inadequate systems for ensuring efficient expenditure or accountability. While such inadequacies are often blamed on the pitfalls of the bureaucracy, they are more likely to be reflections of a weak political will, unable to function in the context of conflicting or varied objectives.

The present government of Trinidad and Tobago which has held the reins of power since 1956 has pledged itself to the encouragement of a mixed

economy in which both the state and the private sector share in the ownership of the means of production. Foreign enterprise has a role to play, but in keeping with a policy to bring the economic decision process under national control, there are certain areas from which it is excluded or its participation limited. Over time the government has become increasingly involved in the production sector of economy. Besides owning the major public utilities, the government in 1984 participated in some 66 commercial enterprises ranging over a very wide field. Of this number, 34 were wholly-owned, 14 majority owned, one was a joint venture, and in 17 others it had a minority interest. The *Draft Development Plan 1983-86* noted that "taken as a whole, the sector (state enterprise) reveals no common financial, economic or strategic organising principle and the companies display no common factor or group of factors which may have determined their status."[13] The plan went on to note that the State Enterprises sector is a substantial claimant on government resources. In 1982-83 for example, gross requests of the sector totalled $2.9 billion.[14] This was the equivalent of 21 per cent of the combined revenue for 1982 and 1983. Given the nature of the companies, the Draft Plan made reference to serious flaws in the administrative framework, particularly from the point of view of planning. It also called for a greater incremental role for the private sector in manufacturing companies and admonished the government against the taking over of lame duck enterprises.[15]

The government's significant intrusion into a sector that is usually thought of as being in the private domain has been motivated by several factors. In some cases where an existing enterprise was taken over, the aim was to save jobs and/or to bring under national control an undertaking that was regarded as being in the 'commanding heights' of the economy. In certain cases, the investment involved was either too large for the local private sector, or the latter was not interested in what they saw as a losing proposition. The significant increases in government revenues starting in 1974 introduced a new factor. The enhanced financial position enabled the government to initiate a number of heavy industries based on the country's natural resources. This was seen as part of the economic diversification programme aimed at reducing the dependence on oil. In certain of these projects government saw the need to have foreign partners. Despite the accumulation of foreign reserves, government resorted to foreign borrowing (including commercial loans and export credits) to help carry through its investment programme. Since the resource-based industries tend to be heavily capital intensive, the number of jobs created has not been significant. One of the major criticisms levelled against the strategy to promote heavy industries has been the small number of jobs created in relation to the investment that has been put out.

Another effect of the oil windfall was that government was able to grant substantial wage and salary increases in the public sector without paying too much attention to productivity. Both money and real incomes increased from 1974. This could be afforded because the revenue constraints were not relevant, at least in the period between 1974 and 1981. There was no question of worrying over tolerable limits of taxation. In fact, the government was able to reduce taxation, increase subsidies and pensions in order to offset some of the effects of inflation. Employment also expanded, the number of posts in the public

establishment increasing from 36,288 in 1973 to 49,595 in 1978. Given the inequities in the distribution of income and wealth the budget was viewed as a major redistributional device.

The growth of employment and incomes in the public sector was also experienced in the private sector. One of the salient features of the 1970s and early 1980s was the tendency for earnings to grow faster than productivity. In the context of the buoyancy of the oil sector this development and the implications for the competitiveness of the economy were largely ignored. The trends in productivity were not simply a reflection of work attitude or ethic, but also stemmed from the lack of proper managerial systems and organizational structures in the economy at large. One consequence of a fall in productivity is that more resources have to be put out to accomplish a given level of production. In the context of the slow down of the economy, and the retrenchment taking place there are signs that productivity is increasing.

During the 1960s and the early 1970s the public utilities found themselves in a dilemma. Their rates were generally low and because their service was poor, they found themselves unable to modernise or expand their operations by raising their tariffs. In most cases they could not even cover their cost of current operations, resulting in the central government having to provide financial assistance. Because of the low rates and prevailing inefficiencies they found it difficult to raise funds externally as well. In this context, the government, in the light of its enhanced revenue position, was compelled to inject substantial resources into the utilities in order to break the circle. The growth of the population, and the industrialization drive which was already putting pressure on the existing infrastructure, made this inevitable.

Against the above background we will now examine revenue and expenditure in Trinidad and Tobago in the period under review.

THE GROWTH OF REVENUE AND EXPENDITURE[16]

Table 11.1 gives an indication of the growth (in nominal terms) of revenue and expenditure in Trinidad and Tobago in the period between 1953 and 1985. Current revenue (Consolidated Fund as shown in Column 1) grew from $185 million in 1963 to an estimated $6,668 million in 1982 – a thirty-six-fold increase in this 19 year period. Since 1970 Government has been operating what has been called an Unemployment Levy Fund which is kept separate from the Consolidated Fund.[17] Receipts into this Fund are shown in Column (2) of the table. Column (3) includes Columns (1) and (2) as well as interest from the Funds for Long Term Projects to which resources have been appropriated since 1974. The expenditure figures in Columns (5) and (6) relate to all three Funds, i.e., the Consolidated Fund, the Unemployment Levy Fund and the Long Term Projects Fund. It should be pointed out that the current expenditure figures shown in Column (5a) exclude loans and grants to Statutory Authorities and capital repayments and Sinking Fund contributions. Column (5b) excludes the latter but include loans and grants to Statutory Authorities. Current expenditure (Column 5b) increased from $166 million in 1963 to an estimated $6,047 million in 1982 – a thirty-six-fold increase. Total expenditure (Column 6b) on the other hand increased by more than $9 billion (a more than forty-fold change) over the period.

TABLE 11.1: GROWTH OF REVENUE AND EXPENDITURE IN TRINIDAD AND TOBAGO, 1953-1985

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Year	(1) Narrow Current Revenue[1]	(2) Unemployment Levy	(3) Broad Current Revenue[2]	(4) Total Revenue[3]	(5) Current Expenditure[4] (a)	(5) Current Expenditure[4] (b)	(6) Total Expenditure[5] (a)	(6) Total Expenditure[5] (b)	(c)[6]	(d)[7]
1953	67.0	-	67.0	68.1	54.1	57.2	68.9	70.4		
1963	185.4	-	185.4	203.2	157.8	165.8	221.9	228.5		
1964	202.9	-	202.9	204.9	174.5	186.2	238.7	247.1		
1965	206.2	-	206.2	238.3	182.9	189.9	242.2	250.7		
1966	214.4	-	214.2	234.9	186.3	200.3	260.6	266.5		
1967	226.8	-	226.8	260.3	199.0	213.3	261.4	271.0		
1968	268.0	-	268.0	284.7	217.2	228.1	289.9	304.8		
1969	303.7	-	303.7	315.3	232.8	248.9	308.9	325.7		
1970	313.2	9.6	322.8	327.4	257.4	274.0	371.7	390.1		(6.4)
1971	341.9	11.8	353.7	363.8	325.0	341.7	445.7	465.1		(6.4)
1972	398.3	12.3	410.6	415.3	388.9	411.7	518.8	539.7		(5.1)
1973	476.0	14.6	494.1	495.0	480.1	502.4	606.8	631.3		(7.2)
1974	1,217.2	77.9	1,306.9	1,387.7	545.1	679.8	959.2	1,038.3	(125.2)	(11.8)
1975	1,680.2	104.9	1,816.1	1,847.4	730.4	856.6	1,201.1	1,251.9	(54.8)	(17.8)
1976	2,125.0	119.7	2,306.6	2,302.9	967.1	1,095.1	1,870.6	1,984.5	(393.0)	(51.0)
1977	2,749.1	174.0	2,985.5	2,991.4	1,140.9	1,318.2	2,263.1	2,299.1	(602.9)	(68.8)
1978	2,769.8	176.8	3,124.0	3,126.5	1,458.1	1,655.8	2,892.5	2,934.2	(797.5)	(81.9)
1979	3,643.5	230.0	4,059.2	4,059.3	2,229.6	2,596.7	4,190.9	4,237.9	(1,508.8)	(247.8)
1980	5,771.4	416.3	6,472.0	6,496.0	2,222.3	3,152.8	5,466.3	5,190.5	(2,204.7)	(231.4)
1981[8]	6,617.6	201.0	7,032.7	7,064.8	3,135.9	3,586.4	6,675.0	6,753.3	(2,933.1)	(285.6)
1982	6,668.0	156.8	7,117.8	7,117.8	5,301.1	6,047.2	9,473.4	9,573.5	(3,225.0)	(542.9)
1983	6,304.1	134.8	6,563.5	6,563.5	5,113.0	6,248.5	8,790.5	9,091.6	(2,324.2)	(219.7)
1984	6,394.1	154.3	6,555.6	6,558.9	5,255.0	6,284.3	8,287.3	8,498.9	(1,882.7)	(173.3)
1985[re]	6,221.5	120.0	6,358.2	6,358.2	5,215.1	6,247.2	7,740.1	8,002.4	(1,315.1)	(135.0)

A close examination of Table 11.1 would show that there has been spectacular increases in all the aggregates since 1974. For example, in the 10 year period between 1963 and 1973, current revenue (all Funds) increased by $309 million at an average rate of 10.4 per cent. Between 1973 and 1982 the corresponding increase was $6,624 million at an average rate of 34.4 per cent. Current and total expenditure figures grew in a similar fashion. A comparison in average growth rates of revenue and expenditure for sub-periods within the series from 1953 is given in Table 11.2 which highlights the correlation in growth rates between the two aggregates in a more striking manner. It can be observed in the table that even in real terms growth in the 1973-82 period was considerably higher than in the previous 10 years. In real terms, current revenue in the former period grew at a rate more than three times that of the latter period.

Notes:

1. Consolidated Fund only.
2. Includes revenue from Unemployment Levy (Col. 2) and interest on Fund for Long Term Development. The 1984 and 1985 figures include the National Health Surcharge of $63.9m in 1984, $107m in 1985.
3. Column (3) plus capital receipts and grants. The figures exclude loan receipts.
4. Combined accounts of Consolidated Fund, the Unemployment Fund and Funds for Long Term Development. Figures in Column 5(a) exclude Loans and Grants to Statutory Authorities. Figures in Column 5(b) include the latter expenditure. While both columns include interest payments on the public debt, capital repayments are excluded.
5. Expenditures from all three Funds i.e. the Consolidated Fund plus the Unemployment Fund plus the Fund for Long Term Development. Column 6(a) exclude capital repayments (including payments into Sinking Funds) which are included in Column 6(b). Both columns include loans grants to Statutory Authorities, as well as expenditures relating to the acquisition of assets.
6. This column shows actual expenditure from the Funds for Long Term Development.
7. Actual expenditure from Unemployment Fund.
8. Recurrent receipts for 1981, 1982 and 1983 exclude repayment of loans, which was included in the figures for previous years. This item is now included in Capital Receipts.

re – revised estimates.

Sources: Central Bank, *Annual Report*, various issues; Auditor General, *Annual Report*, various issues; Ministry of Finance, *Estimates* of Revenue and Expenditure, various issues; Ministry of Finance, *Review of the Economy* and *Review of Fiscal Measures*, various issues; CSO, *Financial Statistics*, various issues.

The data in Tables 11.1 and 11.2 indicate that the government fiscal position has undergone a dramatic change since 1982. Between 1982 and 1985 real current revenue is estimated to have declined at an average rate of 14 per cent. Current expenditure fell less slowly, averaging a rate of decline of just under 10 per cent.

It is recognised that it is difficult to draw meaningful conclusions by merely looking at the growth rates (whether in absolute or percentage terms) of revenue and expenditure in themselves. To grasp the real significance of movements in the two aggregates, it is necessary to view them against changes in other magnitudes, particularly against such variables like prices, national income and population growth. A glance at Table 11.3 shows that between 1963 to 1973 the proportion of recurrent revenue to GDP (at current factor cost) fluctuated

between 15.6 and 20.2 per cent. The corresponding ratio for 1953 seems to suggest that the proportion prevailing during the 1950s may not have been much different. Since 1974, the ratio has risen markedly to over 30 per cent. In fact, the figure reached 41 per cent in 1980, but has declined gradually since. Receipts from the Unemployment Levy during the 1970s amounted (on average) to between 1 per cent and 3 per cent of GDP.[18] Revenue from the sale of stamps under the National Insurance Scheme (which is administered by a statutory board) has averaged around 1 per cent of GDP.[19] Together revenue from the

TABLE 11.2: AVERAGE GROWTH RATES[1] OF PUBLIC FINANCE AGGREGATE FOR SELECTED PERIODS
(Percentages)

Periods	Current Revenue[2]	Total Revenue[3]	Current Expenditure[4]	Total Expenditure[5]
		Nominal		
1953-1963	10.7	11.5	11.3	12.7
1963-1973	10.4	9.3	11.7	10.7
1973-1982	34.4	34.4	31.8	35.2
1953-1982	17.4	17.4	17.4	18.5
1963-1982	21.1	20.6	20.8	21.7
1982-1983	-7.8	-7.8	3.3	-5.0
1983-1984	-0.1	-0.1	0.6	-6.6
1984-1985[p]	-3.0	-3.1	-0.6	-5.9
		Real[6]		
1963-1973	5.1	4.2	6.5	5.5
1973-1982	15.9	17.8	15.5	18.5
1963-1982	11.0	10.4	10.7	11.5
1982-1983	-20.0	-20.0	-10.3	-17.6
1983-1984	-11.9	-11.4	-11.2	-17.5
1984-1985[p]	-10.0	-10.4	-7.7	-12.6

1. Geometric average.
2. Column 3 of Table 11.1.
3. Column 4 of Table 11.1.
4. Column 5(b) of Table 11.1
5. Column 6(b) of Table 11.1
6. Current figures adjusted to 1973 prices.

p. Provisional

Source: Calculated from Table 11.1.

Unemployment Levy and the National Insurance Scheme tend to lift the current revenue/GDP ratio by about 2 to 3 per cent. (It should be pointed out that while the ratios in Column (4) of Table 11.3 reflect receipts from the Unemployment Levy, revenue from the National Insurance Scheme is not taken into account.) The significant increase in the revenue/GDP revenue ratio since 1974 can largely be attributed to the windfall revenue accruing to Government in this period as a result largely of the several increases in international oil prices since 1973. Changes in the tax system with respect to oil companies, has also been a contributory factor, as has the expansion of domestic crude oil production.

TABLE 11.3: GROWTH OF REVENUE AND EXPENDITURE[1] IN RELATION TO GDP, 1953-1985

(1) Year	GDP at Current Factor Cost $m	Per Capita GDP[2] $	Current Revenue[3] as a % of GDP	Current Expenditure[4] as a % of GDP	Total Expenditure[5] as a % of GDP
1953	386	569	17.3	14.8	18.2
1963	1,038	1,123	17.8	16.0	22.0
1964	1,149	1,208	17.7	16.2	21.5
1965	1,188	1,220	17.3	16.0	21.1
1966	1,246	1,255	17.2	16.0	21.4
1967	1,337	1,324	17.0	15.9	20.3
1968	1,522	1,491	17.6	15.0	20.0
1969	1,561	1,523	20.0	16.0	20.9
1970	1,657	1,609	15.6	16.5	23.5
1971	1,748	1,691	20.2	19.6	26.6
1972	2,073	1,984	19.8	19.9	26.0
1973	2,579	2,445	19.1	19.5	24.5
1974	4,201	3,937	31.1	16.2	24.7
1975	5,392	4,988	33.7	15.9	23.2
1976	6,213	5,659	37.1	17.6	31.9
1977	7,641	6,822	39.1	17.2	30.1
1978	8,182	7,241	38.2	20.2	35.8
1979	10,871	9,453	37.3	23.9	39.0
1980	15,877	15,035	40.8	19.9	37.2
1981	18,129	16,300	38,8	19.8	37.2
1982	20,153	17,850	35.3	30.0	47.5
1983	19,838	17,265	33.1	31.5	45.8
1984[p]	19,733	17,026	33.2	31.8	43.1
1985[e]	19,038	16,189	33.4	32.8	42.0

Notes:

1. All Funds
2. Figures until 1979 are based on mid-year population estimates published in the IMF *Financial Statistics* and CSO, *Annual Statistical Digest,* various issues. Thereafter the population estimates published in the *Review of the Economy* (various issues) are used.
3. Column 3 of Table 11.1
4. Column 5(b) of Table 11.1.
5. Column 6(b) of Table 11.1

p. Provisional.

e. Estimate.

Source: Table 11.1; IMF *Financial Statistics,* various issues; CSO, *Annual Digest of Statistics,* various issues; Central Bank *Annual Reports,* various issues; Ministry of Finance, *Review of the Economy,* various issues.

When we examine the trends in expenditure in Table 11.3, it can be seen that recurrent expenditure as a per cent of GDP showed no clear trend during the period 1963 to 1975. The ratio fluctuated between 15 per cent and 20 per cent. Between 1976 and 1981 it averaged around 20 per cent. Since then it seems to have climbed to over 30 per cent. Total expenditure as a proportion of GDP appeared to have increased slightly from the early 1950s, but during most of the 1960s remained at a little above 20 per cent. Between 1970 and 1975 the ratio averaged around 25 per cent as compared to 35 per cent between 1976 and 1981. Since then it has averaged 45 per cent. It is appropriate to point out at this juncture that while there are certain limitations attached to the use of the expenditure/GDP ratio in examining the growth of public expenditure, the measure does provide a good indication of the growth of public spending in relation to the growth of the economy. It should be borne in mind, however, that not all public expenditure represent purchases of final goods and services produced in the economy, as we shall see later.

The trend in the expenditure/GDP ratio is a good indicator of the expenditure elasticity, that is, the responsiveness of expenditure to changes in GDP. A rising ratio reflects on elasticity coefficient greater than unity, while a falling ratio indicates a coefficient less than one. A constant ratio is associated with a ratio equal to one. Fluctuations in the expenditure/GDP ratio reflects changes in the elasticity coefficients from one period to another. A glance at Table 11.4 shows that generally the expenditure elasticity (both with respect to current and capital spending) has been greater than one, reflecting its tendency to rise faster than national income. In the period between 1982 and 1985, while GDP in current dollars fell by 5.5 per cent, total expenditure declined by over 16 per cent.

To put the preceding discussion in perspective we compre Trinidad and Tobago's tax revenue/GNP and expenditure/GNP ratios with those of certain

selected countries (See Table 11.5).[20] As can be seen, the ratios vary widely from country to country. At this point it may be noted that for various reasons public spending has generally tended to grow at a faster pace than national income, resulting in an increasing ratio over time for most countries both in the developed and developing world. Observers have for long speculated on the reasons for the rising share of GNP taken by the public sector. Writing in the 19th Century, the German economist Adolf Wagner explained the 'expanding scale of state activity' in terms of both political and economic factors. While it is not clear whether Wagner was concerned with the growth of the absolute size of the public sector or its relative growth (i.e. the growth in the ratio of public expenditure to GNP), modern researchers have tended to formulate Wagner's hypothesis (or 'law' as some people prefer to call it) in terms of the latter interpretation.[21] The tendency for public expenditure to rise at a faster rate than GNP is attributed to both economic and non-economic factors. As one of the measurable economic variables, per capita income has been widely used in exercises designed to explain differences in the expenditure/GNP ratio among

TABLE 11.4: EXPENDITURE ELASTICITIES[1]

Periods	Current Expenditure[2]	Capital Expenditure[3]	Total Expenditure[4]
1953-63	1.12	2.25	1.33
1963-73	1.37	0.58	1.19
1973-83	1.76	3.85	2.11
1974-83	2.26	2.42	2.20
1953-83	2.21	4.72	2.67
1983-85	0.005	0.77	2.97

Notes:
1. All Funds
2. Column 5(b) of Table 11.1.
3. Development Programme plus Expenditure from Funds for Long Term Projects.
4. Column 6(b) of Table 11.1.

Sources: Tables 11.1 and 11.3.

countries and/or changes in the ratio over time. Using a sample[22] of high income countries and low income countries, Musgrave found a positive relationship between the current expenditure/GNP ratio and per capita income for the group as a whole.[23] This finding at first sight appeared to be in full support of the rising-share hypothesis. However, when the sample was disaggregated into two groups (one including countries above U.S.$600 and the other countries below U.S.$300) it was found that the linear relationship did not exist for the lower income group, and, consequently, he concluded that the 'good fit' for the group as a whole merely reflected a difference in the average levels at the two ends of the scale.

TABLE 11.5: TAX REVENUE AND EXPENDITURE AS A % OF GNP (AT MARKET PRICES) FOR SELECTED COUNTRIES, 1980

Countries	Tax Revenue[1] as a % of GNP	Current Expenditure as a % of GNP	Total Expenditure[2] as a % of GNP	1980 Per Capita GNP[3] US$
Barbados	27	24	33	3,270
Brazil[4]	19	18	19	2,160
Canada	17	23	23	10,180
Costa Rica	25	32	38	1,390
Guatemala	9	8	13	1,080
Guyana	31	32	55	690
India	11	13	15	230
Indonesia	24	14	26	450
Jamaica	23	28	37	1,090
Japan	11	15	19	9,020
Malawi	18	19	37	190
Mexico	20	16	24	1,980
Nigeria[5]	22	15	25	870
Norway	41	40	42	12,830
Sweden	35	42	45	13,730
Tanzania[4]	16	24	37	270
Trinidad and Tobago[6]	35	21	39	5,444
United States	19	21	22	11,590
United Kingdom	34	41	43	8,520
Venezuela	22	18	22	3,910
Zambia	24	33	38	580

Notes:
1. Including social security contributions.
2. Figures have not been adjusted to reflect lending-repayment balances.
3. At market prices.
4. 1979.
5. 1977.
6. Figures calculated on GNP at factor cost.

Sources: IMF, *Government Finance Statistics Yearbook, 1982;* World Bank *Atlas,* various issues; UN, *Yearbook of Statistics,* various issues.

In a subsequent work when Musgrave used tax revenue as a proxy for expenditure, he obtained essentially the same results, that is, no significant relationship for the low income countries, and a negative one for the high income members of the sample.[24] In an effort to test the relationship between the expenditure/GDP ratio and per capita income for Trinidad and Tobago, we undertook a similar exercise to Musgrave's (except this one is a time series analysis), using data for the periods 1963-83 and 1973-83. Our results showed a positive relationship between government current expenditure/GDP ratio and per capita GDP (See Equations (1) and (3) of Appendix 11.1). The inclusion of the foreign trade ratio has the effect of increasing the R^2, but the coefficient of this variable turns out to be negative (See Equations (2) and (4) of Appendix 11.1). On the other hand it is interesting to note that both per capita income and the foreign trade ratio have positive relationships with the total expenditure/GDP ratio (See Equations (5) to (8) of Appendix 11.1). In fact a much larger part of the movements in the latter is explained by these two variables than is the case with the current expenditure/GDP ratio. This would seem to suggest a close relationship between capital expenditure, per capita income and foreign trade.

Martin and Lewis[25] argue that any attempt to attribute the rising share of current basic expenditures in GNP as a function of rising per capita GNP in the rich countries of Europe and North America is a fallacy of *post hoc propter hoc.*[26] The main reason why these countries now spend relatively more on their public services is not because they are richer, but because they have a different conception of the duties of the state. The political, social and economic objectives of the state in developing countries may explain why the correlation may be even less in these countries than in the developed nations. The factors bearing on the expansion of public activities in poor countries tend to differ in nature. In the former group, one observer attributes the rising share of public expenditure in GNP as the probable result of "higher incomes and, consequently, larger revenue against the background of rising living standards, the welfare state pattern of social services and increased expectation of such services".[27] This observation is not altogether irrelevant to poor countries, particularly as development proceeds; but the more important determinant in the rising share of public expenditure in the early stages of development relates to the need for public investment in infrastructure and certain basic social services, without which increasing the output of the economy may not be practicable. The 'lumpiness' of many categories of overhead investment, and the time lapse before their effects start showing up in the level of production, explains the high marginal capital-output ratios that characterize many developing countries. Also because of social conditions, decisions very often tend to be based not on efficiency considerations, but on the need to act as a mitigating force in combating undesirable social trends. This can be seen particularly with respect to employment. Even in situations where governments can carry out their functions with a reduced work force, (and perhaps even more effectively), they often persist in maintaining an overcrowded bureaucracy as a means of providing jobs rather than of increasing production. The security associated with employment in the public service may be one reason explaining the low productivity in the

TABLE 11.6: NOMINAL AND DEFLATED (1973 PRICES) PER CAPITA REVENUE AND EXPENDITURE, 1963-1985
($TT)

Year	Per Capita Current Revenue[1]		Per Capita Current Expenditure[2]		Per Capita Total Expenditure[3]	
	Nominal	Deflated	Nominal	Deflated	Nominal	Deflated
	(a)	(b)	(a)	(b)	(a)	(b)
1963	201	324	180	290	247	398
1964	213	340	196	313	260	415
1965	212	333	195	306	257	403
1966	216	325	202	304	268	404
1967	225	332	211	312	268	396
1968	262	357	223	304	298	407
1969	296	394	243	324	318	423
1970	313	406	266	345	379	492
1971	342	429	330	414	450	565
1972	397	456	394	452	517	594
1973	468	468	476	476	598	598
1974	1,224	1,002	637	612	973	797
1975	1,680	1,176	792	555	1,158	811
1976	2,189	1,410	1,000	644	1,813	1,167
1977	2,670	1,538	1,179	679	2,056	1,184
1978	2,765	1,445	1,465	766	2,596	1,357
1979	3,530	1,609	1,388	633	3,685	1,680

government sector, and the greater resources which are needed to provide a given level of output.

1980	6,129	2,374	2,986	1,156	5,597	2,168
1981	6,325	2,142	3,225	1,093	6,073	2,056
1982	6,305	1,917	5,356	1,629	8,480	2,578
1983	5,713	1,507	5,439	1,435	7,913	2,088
1984	5,657	1,318	5,421	1,263	7,333	1,708
1985[p]	5,406	1,170	5,312	1,150	6,804	1,472

Notes: 1. Column 3 of Table 11.1.
2. Column 5(b) of Table 11.1.
3. Column 6(b) of Table 11.1.

p. Provisional

Source: Table 11.1; CSO *Quarterly Economic Report,* various issues; CSO, *Annual Statistical Digest,* various issues; IMF, *Financial Statistics,* various issues.

In the foregoing section we discussed the growth of public expenditure in relation to the growth of GDP, and explored some of the influences that affect this relationship. As pointed out earlier, the absolute growth of public spending also has to be seen against the trends in population growth and the price level

TABLE 11.7: FUNCTIONAL CLASSIFICATION OF GOVERNMENT'S CURRENT EXPENDITURE,[1] 1962–1984

	1962		1969		1979		1982		1984[P]	
	$m	%	$m	%	$m	%	$m	%	$m	%
1. General Services	**34.7**	**23.0**	**67.5**	**27.1**	**485.7**	**23.7**	**1,233.8**	**25.8**	**1,154.9**	**21.7**
a. State Services	32.6	1.7	1.7	0.7	12.0	0.6	28.5	0.6	32.3	0.6
b. Fiscal Services	9.9	6.6	20.8	8.4	140.0	6.8	461.1	9.6	201.3	3.8
c. Foreign Services	0.5	0.3	5.7	2.3	27.7	1.4	35.1	0.7	37.3	0.7
d. Economic Regulation	1.2	0.8	2.2	0.9	19.4	0.9	51.9	1.1	58.2	1.1
e. Other General Services	7.2	4.8	15.3	6.1	107.3	5.2	200.1	4.2	349.4	6.6
f. Defence	1.3	0.8	4.9	2.0	33.6	1.6	66.0	1.4	76.5	1.4
g. Justice and Police	12.0	8.0	16.9	6.7	145.7	7.1	391.1	8.2	399.4	7.5
2. Community Services	**10.0**	**7.2**	**14.5**	**5.8**	**120.3**	**5.9**	**221.6**	**4.6**	**375.6**	**7.1**
a. Roads	9.2	6.1	8.6	3.4	75.2	3.7	140.6	2.7	287.2	5.4
b. Other Community Services	1.6	1.1	5.9	2.4	45.1	2.2	81.0	1.7	88.4	1.7
3. Social Services	**52.1**	**34.7**	**96.0**	**38.6**	**738.0**	**36.1**	**2,241.1**	**46.8**	**2,288.1**	**43.1**
a. Education	21.8	14.7	44.5	17.9	325.1	15.9	909.0	19.0	1,018.8	19.2
b. Health	18.6	12.4	28.8	11.6	200.2	9.8	508.5	10.6	565.6	10.6
c. Superannuation Benefits and Social Welfare Services	9.4	6.2	21.9	8.7	188.5	9.2	768.2	16.0	654.5	12.3
d. Housing	1.1	0.7	0.4	0.2	20.8	1.0	24.1	0.6	8.8	0.2
e. Other Social Services	1.1	0.7	0.4	0.2	3.4	0.2	31.3	0.6	40.5	0.8
4. Economic Services	**21.3**	**14.1**	**28.4**	**11.4**	**371.1**	**18.1**	**454.3**	**9.5**	**530.4**	**10.0**
a. Agriculture	7.6	5.0	10.2	4.1	111.5	5.4	199.1	4.1	235.2	4.4
b. Fuel and Power[2]	-	-	0.4	0.2	4.0	0.2	9.3	0.2	11.4	0.2
c. Transport, Storage, & Comm.	13.2	8.8	13.8	5.5	40.0	1.9	161.7	3.4	185.9	3.6
d. Other Economic Services	0.5	0.3	0.4	1.5	215.6	10.6	84.2	1.8	97.9	1.8

5. Un-allocated Expenditure	**31.7**	**21.0**	**42.5**	**17.1**	**330.4**	**16.2**	**636.8**	**13.3**	**962.9**	**18.1**
a. Public Debt Charges[3]	5.5	3.6	19.6	7.9	142.3	7.0	181.3	3.8	338.1	6.4
b. Local Authorities	13.8	9.2	21.9	8.8	179.3	8.8	334.0	7.0	479.5	9.0
c. Other Expenditure	12.4	8.2	1.9	0.4	8.8	0.4	121.5	2.5	145.4	2.7
Total Recurrent Expenditure[4]	**150.6**	**100.0**	**248.9**	**100.0**	**2,045.4**	**100.0**	**4,787.6**	**100.0**	**5,311.9**	**100.0**

Notes:

1. Consolidated Fund only.
2. These services are administered by public corporations, and the amount given here does not reflect the total expenditure on providing fuel and power to the community. The same could be said about housing.
3. Interest only.
4. These totals may not agree with the totals in Table 11.1 not only because they exclude the other Funds, but they may include sums excluded from the Appropriation Acts.

p. Provisional.

Sources: *Estimates of Expenditure,* various issues; *Review of Fiscal Measures,* various issues; Central Bank, *Annual Report,* various issues.

in order to gauge its significance. When viewed against the growth of population and prices, the trends in public expenditure since 1963 can be examined in Table 11.6. Mid-year population estimates and the retail price index have been used as deflationary indicators.[28] The deflated series are the nominal figures expressed in 1973 prices.[29] An examination of Table 11.6 shows that in both nominal and real terms per capita revenue and per capita expenditure have increased over time. Between 1963 and 1983 per capita nominal current expenditure increased from $180 to $5,439. At 1973 prices, however, this latter figure was worth only $1,435. Between 1963 and 1983 per capita total expenditure increased from $247 to an estimated $7,913 – or by more than 3,100 per cent. In real terms, however, the increase was only in the region of 500 per cent. It is clear from these figures that, despite the relatively high rate of inflation in recent years, real per capita public spending has tended to increase. The decline in the per capita figures in recent years reflects the trends in the aggregate data.

COMPOSITION OF CURRENT EXPENDITURE

So far we have been looking at trends in total current expenditure. Clearly the composition of this expenditure over time is equally important, if not more so, in trying to gauge government's priorities and objectives within the framework of its overall responsibilities. Table 11.7 provides a breakdown of government's current expenditure for selected periods between 1962 and 1984. 'General Services' including defence and justice tend to take over 20 per cent of current expenditure. Though the absolute expenditure of this category has increased since 1962, as a proportion of the total it has fluctuated between 20 per cent and 30 per cent in recent years. As a per cent of GDP, expenditure on 'general services' amounts to about 5 per cent (See Table 11.8). Expenditure on 'social services' (particularly education and health) not only account for the largest share of total current outlays, but has been experiencing the fastest rate of growth among the categories shown in Table 11.7. The proportion for this item increased from 34.7 per cent in 1962 to over 40 per cent in recent years. As a percentage of GDP, social expenditure increased from 5.2 per cent in 1962 to 6.8 per cent in 1979 and to an estimated 12 per cent in 1984. The bulk of the funds has been channelled into education and health. The share of 'economic services' in the total has fluctuated between 10 per cent and 20 per cent. Agriculture and transport (including storage and communication) are the two largest items in the category. Agriculture's share in total current expenditure has amounted to between 4 per cent and 6 per cent in recent years. As a per cent of GDP agricultural expenditure has generally amounted to around 1 per cent. The share of transport, storage and communications in current expenditure has shown a tendency to fall moving from 8.8 per cent in 1962 to 3.4 per cent in 1982. The estimated figure for 1984 shows a small increase.

TABLE 11.8: FUNCTIONAL CATEGORIES OF CURRENT EXPENDITURE AS A % OF GDP, 1962-1984

Categories	1962	1969	1970	1982	1984[p]
General Services	3.4	4.3	4.5	6.1	5.8
Community Services	1.1	0.9	1.1	1.1	1.9
Social Services	5.2	6.2	6.8	11.1	11.6
(Education)	(2.2)	(2.9)	(3.0)	(4.5)	(5.2)
(Health)	(1.9)	(1.8)	(1.8)	(2.5)	(2.9)
Economic Services	2.1	1.8	3.4	2.2	2.7
(Agriculture)	(0.8)	(0.6)	(1.0)	(1.0)	(1.2)

Note: p. Provisional.

Sources: Tables 11.7 and 11.3.

In discussing public spending, it is useful to make a distinction between transfer expenditures and expenditures on goods and services. The former, which includes items like pensions, subsidies, debt interest, unemployment benefits, social assistance etc., refers to payments which governments make in an intermediary capacity and as such do not represent claims by the government on the nation's goods and services. Transfer payments are, essentially, mechanisms for redistribution of resources in the community. In the case of public outlays on goods and services, these expenditures involve government in competition for the community's resources. Expenditure on goods and services can further be divided into current outlays and capital investment. Each of these categories of expenditure is affected by different factors, and it would, therefore, be instructive to examine the trends which have emerged in their composition within the framework of the overall growth that has taken place.

Tables 11.9 and 11.10 show the growth of current expenditure and its distribution by economic function between 1953 and 1985. The share of wages and salaries in total current expenditure increased from $57 million (34 per cent) in 1963 to $243 million (51 per cent) in 1973. Between 1973 and 1982 there was an absolute increase of more than 12 times, but the share in the total fluctuated between 40 per cent and 52 per cent. The high figure for 1982 reflects retroactive payments made in that year. Since 1983 the proportion has averaged around 40 per cent. The trend in wages and salaries payments was a reflection of both increasing wages and salaries and on expanding government labour force.[30] In absolute terms interest payments on the public debt have increased steadily over the years, reaching an estimated $179 million in 1981, as compared to $35 million in 1973. The figure dropped slightly in 1982, but has increased steadily since reaching an estimated $323 million in 1985. Between 1973 and 1985 total interest payments amounted to $1.675 million. Of this, $1,139 million or 68 per cent pertained to the external debt. As a proportion of total current expenditure interest payments since 1975 have generally been less than 5 per cent per year. Expenditure on 'other goods and services' has fluctuated from year to year. The share of this item dropped from 44 per cent in 1963 to 15 per cent in 1973. It rose to 22 per cent in 1975, but in 1982 fell to about

6 per cent. Since then it has averaged about 10 per cent. Total subsidies increased from $19.3 million in 1973 to $1,159 million in 1983. Because certain subsidies were reduced or eliminated in 1984 and 1985, the figure dropped considerably in these years averaging about $661 million per annum. Transfer payments also rose consistently in this period averaging around $2 billion dollars in 1984 and 1985 as compared to $86 million in 1973. As a proportion of total current expenditure transfers and subsidies taken together have averaged 43 per cent since 1980, as compared to 27 per cent in 1973.

In our 'transfers and subsidies' category, we have included subventions given to the public utilities and other local bodies to help offset their operating deficits. We have not, however, included the gasolene subsidy which does not pass through the government accounts.[31] An important factor affecting the growth of this item stems from the government's attempt to mitigate increases in the cost of living. Food subsidies increased from $30.5 million (18.8 per cent) of total transfers and subsidies and 2.3 per cent of recurrent revenue) in 1974 to $291.4 million (12.1 per cent of total transfers and subsidies and 4.1 per cent of recurrent revenue) in 1982. Since 1983 a number of steps have been taken to reduce government subsidy payments in the context of the poor prospects facing the oil sector and their consequent impact on public revenue. As a result of these measures food subsidies declined from $291 million in 1982 to $231 million in 1983, to $72 million in 1984 and to an estimated $39 million in 1985. The cement subsidy increased from $8.8 million in 1977 to $89.4 million in 1982, but is estimated to have declined to $4.4 million in 1983, and eliminated completely since. Gasolene prices also increased in 1983 and 1984 in an effort to reduce the subsidy on this item. One of the largest components in the 'transfers and subsidies' category is loans and grants to the public utilities. The figure increased from $22 million (21 per cent of transfers and subsidies) in 1973 to $1,135 million (39 per cent of transfers and subsidies) in 1983.[32] Recent increases in certain utility rates may have had the effect of reducing the need for government's assistance to the utilities. A great deal, however, would depend on the steps taken by their respective managements to streamline operations and increase productivity. The figures for 1984 and 1985 indicate only a 10 per cent drop (in nominal terms) from the figure for 1983.

When we look at the growth of expenditure on goods and services and transfer payments in relation to the growth of GDP an interesting picture emerges. Transfers and subsidies as a percentage of GDP increased from 2.7 per cent in 1963 to 4.2 per cent in 1973. The proportion has grown almost steadily since reaching 8.8 per cent in 1981, and 12 per cent in 1982. Since then it has averaged around 14 per cent. This latter figure is, no doubt, partly the result of the decline in GDP in recent years. Between 1973 and 1981 interest payments as a percentage of GDP fluctuated between 0.6 per cent and 1.3 per cent. Since 1983 it has averaged about 1.3 per cent. Wages and salaries as a proportion of GDP has also shown a tendency to fluctuate, the range for the period 1973 to 1981 being 10.4 per cent and 7.1 per cent. Since 1982 the figure has averaged 13.7 per cent. The proportion relating to expenditure on other goods and services has averaged 3.3 per cent since 1983, as compared to 2.1 per cent in the previous three years, and 3.3 per cent between 1973 and 1974 (See Table 11.11).

TABLE 11.9: ECONOMIC CLASSIFICATION OF GOVERNMENT CURRENT EXPENDITURE,[1] 1953-1985

$m

Categories	1953	1963	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985[p]
Wages and Salaries[2]	18.1	56.9	243.0	351.1	383.1	498.9	663.5	782.6	1,131.4	1,291.3	1,435.2	3,111.6	2,504.9	2,626.9	2,616.7
Other Goods and Services	28.5	73.5	119.6	115.3	185.7	204.0	200.9	251.7	403.5	396.1	378.9	363.4	634.2	700.4	628.5
Interest	1.7	7.3	34.6	51.2	46.8	43.2	42.6	80.3	125.7	125.0	179.4	160.7	197.1	265.5	323.4
Subsidies[3]	8.9	28.1	19.3	68.6	63.4	149.7	184.6	249.0	502.6	656.6	819.7	1,083.1	1,159.4	641.7	680.2
Transfers[4]	a	a	85.9	93.6	167.6	199.3	226.6	292.2	433.5	683.8	773.5	1,328.4	1,752.9	2,049.8	1,998.4
Total	57.2	165.8	502.4	679.8	856.6	1,095.1	1,318.2	1,655.8	2,596.7	3,152.8	3,586.5	6,047.2	6,248.5	6,284.3	6,247.2

Notes:
1. All Funds.
2. Includes Personal Emoluments, Wages and Overtime, NIS Contributions and the Unemployment Fund Expenditures.
3. Includes Food and Cement subsidies and subsidies to WASA, PTSC, Port Authority, T&TEC, and TELCO, but does not include agricultural and petroleum subsidies.
4. Includes pensions and gratuities, Social Assistance, Old Age Pensions, Food Stamps and transfers to local authorities and other bodies.

a. Included in 'subsidies'.

p. Provisional.

Sources: Ministry of Finance, *Review of the Economy,* various issues; CSO, *Financial Statistics,* various issues.

TABLE 11.10: ECONOMIC CLASSIFICATION OF GOVERNMENT CURRENT EXPENDITURE, 1953 to 1985

(Percentages)

Categories	1953	1963	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985[p]
Wages and Salaries	31.6	34.3	50.8	51.6	44.7	45.6	50.4	47.3	43.6	41.0	40.0	51.4	40.1	41.8	41.9
Other Goods and Services	49.9	44.4	14.5	17.0	21.7	18.6	15.2	15.2	15.6	12.6	10.6	6.0	10.1	11.1	10.1
Interest	3.0	4.4	7.7	7.5	5.5	3.9	3.2	4.8	4.8	4.0	5.0	2.6	3.1	4.2	5.2
Transfer and subsidies[1]	15.0	16.9	27.0	23.9	28.1	31.9	31.2	32.7	36.0	42.4	44.4	40.0	46.7	42.9	42.8
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Notes: 1. Figures include loans and grants to Statutory Authorities.

p. Provisional.

Source: Table 11.9.

TABLE 11.11: ECONOMIC CLASSES OF GOVERNMENT CURRENT EXPENDITURE[1] AS A % OF GDP[2], 1953-1983

Categories	1953	1963	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984[p]	1985[p]
Wages and Salaries	4.7	5.5	9.4	8.3	7.1	8.0	8.7	10.4	10.4	8.1	7.9	15.4	12.6	13.3	13.7
Other Goods and Services	7.4	7.1	4.6	2.7	3.4	3.3	2.6	3.1	3.7	2.5	2.1	1.8	3.2	3.5	3.3
Interest	0.4	0.7	1.3	1.2	0.9	0.7	0.6	0.9	1.2	0.8	1.0	0.8	1.0	1.3	1.7
Transfers and Subsidies[1]	2.3	2.7	4.2	4.0	4.5	5.6	5.3	6.6	8.6	8.5	8.8	12.0	14.7	13.6	14.1
Total Current Expenditure	14.8	16.0	19.5	16.2	15.9	17.6	17.2	20.2	23.6	19.9	19.8	30.0	31.5	31.8	32.8

Notes: p. Provisional.

1. The figures include loans and grants to Statutory Authorities.
2. At current factor cost.

Source: *Review of Fiscal Measures,* various issues; Table 11.3.

TABLE 11.12: COMPOSITION OF NON-RECURRENT EXPENDITURE, 1953-1985

$mn

Year	(1) Capital Repayment and Sinking Fund Contributions	(2) Funds for Long Term Projects[1] Appropriations (a)	(2) Actual Expenditure (b)	(3) Loans and Grants to Statutory Bodies	(4) Development Programme	(5) Sum of (1) to (4)[2]	(6)[2] (1) + (2) + (4)	(7) Current Surplus (+)[3] Deficit (-)	(8) (7) as a % of (6)
1953	1.5	-	-	3.1	11.7[4]	16.3	13.2	9.8	-74.2
1963	6.5	-	-	8.0	56.1	70.6	62.6	20.0	-31.9
1964	8.4	-		11.7	52.5	72.6	60.9	16.7	27.4
1965	8.5	-	-	7.0	52.3	67.8	60.8	16.3	26.8
1966	5.9	-	-	14.0	60.3	80.2	66.2	13.9	21.0
1967	9.6	-	-	14.3	48.1	72.0	57.7	13.5	23.4
1968	14.9	-	-	10.9	61.8	87.6	76.7	39.9	52.0
1969	16.8	-	-	16.1	60.0	92.9	76.8	54.8	71.3
1970	18.4	-	-	16.6	98.0	133.0	116.4	48.8	41.9
1971	19.5	-	-	16.7	103.5	139.7	123.0	12.0	9.8
1972	20.1	-	-	22.2	123.6	165.9	143.7	-1.1	-0.8
1973	24.5	-	-	22.3	104.4	151.2	128.9	-8.3	-6.4
1974	79.1	400.7	(125.2)	54.3	154.2	412.8	358.5	627.1	174.9
1975	50.8	501.7	(54.8)	75.4	289.7	470.7	395.3	959.5	242.7
1976	113.9	517.7	(393.0)	94.4	382.5	983.8	889.4	1,211.5	136.2

1977	36.0	1,556.2	(602.9)	133.5	343.6	1,116.0	982.5	1,667.3	169.7
1978	41.7	1,013.4	(797.5)	156.1	439.2	1,434.5	1,278.4	1,468.2	114.8
1979	47.0	1,370.4	(1,508.0)	320.0	85.5	1,961.3	1,641.3	1,462.5	89.1
1980	444.2	2,143.0	(2,204.7)	486.3	108.8	3,244.0	2,757.7	3,319.2	120.4
1981	78.3	2,981.7	(2,933.1)	450.5	155.4	3,617.3	3,166.8	3,446.3	108.8
1982	100.1	2,671.0	(3,225.0)	746.1	195.3	4,266.5	3,520.4	1,070.6	30.4
1983	301.1	1,171.0	(2,324.2)	1,135.5	213.5	3,974.3	2,838.8	315.0	11.0
1984	211.6	1,897.0	(1,882.7)	1,029.3	120.3	3,243.9	2,214.6	271.3	12.2
1985[re]	262.3	1,550,5	(1,315.1)	1,032.1	176.5	2,786.0	1,753.9	111.0	6.3

Notes:

1. Column 2 (b) shows actual expenditure from these Funds in the respective years.
2. Actual expenditure.
3. Column (3) less column 5 (b) of Table 11.1.
4. All capital expenditures.

re. revised estimates.

Sources: *Review of Fiscal Measures,* various issues; *Estimates of Expenditure,* various issues, Central Bank, *Annual Report,* various issues; Table 11.1.

NON-CURRENT EXPENDITURE

In the previous section we examined certain trends in government current spending and some of the factors bearing on these trends. Though it is customary, it makes a distinction between current outlays and capital expenditure; this does not mean that the former is wasteful and the latter useful. Indeed, it is often difficult to decide what is current expenditure and what is capital expenditure. Funds spent on training and education, for example, will be included in the current category, but, technically, this is investment in human capital, which eventually would have an effect on the productive capacity of the economy. In this essay we accept the government's dichotomy and try to discern trends and policies as they are reflected in the pattern of allocation of public resources.

A glance at Table 11.12 shows that we divided non-Current Expenditure into four categories. The first comprises capital repayment and sinking fund contributions which have grown concomitantly with the growth of the public debt which we shall discuss in a later chapter. The total increased from $6.5 million (2.8 per cent of total expenditure) in 1963 to an estimated $301.1 million (3.1 per cent of total expenditure) in 1982. The second category covers funds made available (in the form of grants and loans) to the statutory authorities such as the Public Transport Service Corporation, Water and Sewerage Authority, the Port Authority, etc. We should point out here that while this item is often treated as part of the current account in the Official Estimates, and even in the *Review of Fiscal Measures* that accompanies the presentation of the annual budget, it does also include expenditure of a capital nature.[33] A glance at Table 11.12 shows that between 1963 and 1973 loans and grants to statutory bodies increased from $8.0 million (3.5 per cent of total expenditure) to $22.3 million (3.5 per cent of total expenditure) in 1973. By 1982 the figure has grown to $746.1 million (7.8 per cent of total expenditure). Since 1983 the figure had averaged $1,066 million dollars per year. The 1984 figure amounted to 12.1 per cent of total expenditure and 5.2 per cent of GDP. There may be two main reasons responsible for the growth in this item. One is the expansion taking place in the capacity of these utilities in response to the growing demand for their services. The other has been, until quite recently, the inability of almost all of them to cover operational costs, far less to finance expansion of plant capacity from internal sources. This latter situation to a large extent has been the result of keeping user rates below economic costs.

The other two categories in the table showing non-current expenditure relate to resources placed in funds for long term projects and money expended under the various development programmes. There are no basic differences in the objectives to which expenditures under these items are aimed. There are, however, a few points worth noting. The figures under the Development Programme column refer to outlays actually incurred in the various fiscal years. On the other hand, actual expenditure from the 'Funds for Long Term Projects' in any particular year may be more or less than the total appropriations in that year. The totals of actual expenditure from these funds are shown in brackets under Column (2 b). As can be seen in Table 11.12 the practice of setting up funds for particular undertakings started as a matter of policy in 1974, though

it should be pointed out that before this date, *ad hoc* provisions were made for certain projects. At the beginning of 1982 there were 47 funds in existence. At the end of 1983 these had been consolidated into 18. In the period between 1974 and 1985 total current revenue amounted to $55.7 billion. Of this, $17.8 billion (32 per cent) were appropriated to long term funds. Actual expenditure from these funds up to the end of 1985 amounted to around $17.4 billion. In other words, appropriations to the Long Term Funds have almost completely been spent. It is worth noting that total expenditure from these Funds over the 1974-85 period was almost five times the expenditure ($3.5 billion) under the Development Programme over the period 1963-85. Taken together, expenditure from the Long Term Funds and under the Development Programme amounted to an estimated 18.6 per cent of total expenditure in 1985, as compared to Development Programme spending of 16.5 per cent in 1973 and 24.5 per cent in 1963.

Tables 11.13 and 11.14 give an indication of the main areas where government development efforts have been concentrated in recent years. Since the Special Funds have been administered separately from the Development Programme, we have attempted to provide two sets of breakdown: one relating to the Development Programme between 1969 and 1974; and the other to appropriations to Special Funds between 1974 and 1984.[34] Of the total Development Programme funds expended on capital projects in the 1969/74 period, 4.7 per cent was spent on 'general services', 27.1 per cent on 'economic services', 39.3 per cent on 'special services', 21.1 per cent on 'infrastructure' development and 7.8 per cent on purchasing equity in private companies. Among the economic sectors, agriculture and fisheries received the largest share – 14.5 per cent of total expenditure. In the social services category, education's share was 15.8 per cent as compared to 21.4 per cent for 'housing and other'. Health received one of the smallest shares in the overall total – 2.1 per cent. In the area of infrastructure about 15 per cent of total capital expenditure in the period went into transport, roads and communication.

When funds which have been set up since 1974 are placed in functional categories, there appears to be shift of emphasis, at least in relative terms, among the various sectors. Of the total appropriation of $14.3 billion made between 1974 and 1983, 30.2 per cent was made to the 'economic' sectors, 22.4 per cent to the 'social' sectors, 38.7 per cent to 'infrastructure', and 8.7 per cent to 'other sectors'. In the economic group, agriculture's share was 2.5 per cent compared to petroleum's 17.8 per cent, manufacturing's 0.6 per cent and commerce and finance's 9.4 per cent. In the 'social' category, education and health received 9 per cent compared to 12.0 per cent for housing. With respect to the appropriations made for the development of the infrastructure, 18 per cent went into transportation (air, land and sea) development, 2.7 per cent into communication, 1.8 per cent into electricity and 19.4 per cent in water and sewerage and other infrastructural development.

A glance at Table 11.15 shows that the government sector's contribution to capital formation varies widely from year to year. In absolute terms the contribution has increased over time, but the percentage share has shown a tendency to fluctuate. Between 1970 and 1975 the ratio declined from 12.4 per

TABLE 11.13: CENTRAL GOVERNMENT DEVELOPMENT PROGRAMME EXPENDITURE BY SECTORS, 1969-1974

Sectors	1969	1970	1971	1972	1973	1974	Total over 1969-1974 $mn	Total over 1969-1974 % of Total
1. **General Services**	**3.2**	**4.9**	**5.0**	**5.7**	**7.2**	**4.6**	**30.6**	**4.7**
2. **Economic Services**	**21.7**	**25.1**	**24.8**	**26.4**	**31.4**	**44.8**	**174.4**	**27.1**
Agriculture & Fisheries	14.4	11.2	12.2	13.4	18.2	23.2	92.6	14.4
Industry & Tourism	2.9	11.5	5.2	6.0	3.1	2.6	31.3	4.9
Other	4.4	2.4	7.4	7.0	10.1	19.0	50.5	7.8
3. **Social Services**	**19.1**	**32.5**	**48.2**	**42.7**	**46.3**	**64.0**	**252.8**	**39.3**
Education	5.1	8.0	14.2	19.0	15.1	40.3	101.7	15.8
Health	0.8	1.1	0.9	3.3	3.3	4.0	13.4	2.1
Housing and	6.6	12.4	18.4	11.0	10.0	14.0	137.7	21.4
Other	13.2	23.4	33.1	20.4	27.9	19.7		
4. **Infrastructure**	**16.0**	**18.0**	**25.5**	**25.9**	**19.5**	**30.8**	**136.1**	**21.1**
Transport & Communication	1.3	3.5	5.7	5.6	4.6	1.2	21.9	3.4
Water & Sewerage	5.8	4.7	5.8	8.6	7.6	10.2	42.7	6.6
Highways & Others	8.9	10.2	14.0	11.7	7.3	19.4	71.5	11.1
5. **Purchase of Equity in Public Companies**	-	**17.1**	-	**22.9**	-	**10.0**	**50.0**	**7.8**
6. **Total**	**60.0**	**98.0**	**103.5**	**123.6**	**104.4**	**154.2**	**643.9**	**100.0**
7. (6) as a % of GDP (at current factor cost)	3.8	5.9	5.9	6.0	4.0	3.7		

Sources: Official *Estimates* of Expenditure; OAS, *Short Term Economic Reports Vol. VI,* Trinidad and Tobago, 1979.

TABLE 11.14: ANNUAL APPROPRIATIONS TO SPECIAL FUNDS BY SECTORS, 1974 to 1983

T.T.$m

Sectors	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1974-83 Total $mn	1974-83 Total %	1984	1985[re]
1. Economic Sectors	**380.0**	**305.0**	**171.8**	**98.0**	**114.0**	**240.0**	**670.0**	**865.0**	**1,205.0**	**273.6**	**4,322.4**	**30.2**		
Agriculture	23.0	35.0	23.8	37.7	-	-	80.0	30.0	100.0	13.5	343.0	2.4		
Petroleum	356.0	268.0	148.0	60.3	64.0	-	300.0	400.0	705.0	252.4	2,553.7	17.8		
Manufacturing	-	-	-	-	40.0	-	10.0	35.0	-	-	85.0	0.6		
Commerce & Finance	1.0	2.0	-	-	10.0	240.0	280.0	400.0	400.0	7.7	1,340.7	8.4		
2. Social Sectors	**2.7**	**1.1**	**129.7**	**363.5**	**494.4**	**317.7**	**357.1**	**764.7**	**375.0**	**401.1**	**3,207.0**	**22.4**		
Education	2.7	1.1	124.5	71.8	38.0	236.6	145.0	346.0	32.0	19.5	1,017.2	7.1		
Health	-	-	-	19.4	-	20.0	40.0	75.0	18.0	75.5	247.9	1.7		
Housing	-	-	2.6	131,7	450.0	48.1	150.0	315.0	285.0	306.1	1,688.5	11.8		
Others	-	-	2.6	140.6	6.4	13.0	22.1	28.7	40.0	-	253.4	1.8		
3. Infrastructure	**12.0**	**193.6**	**211.4**	**1,000.5**	**360.0**	**662.7**	**860.9**	**960.0**	**813.0**	**478.3**	**5,552.4**	**38.7**		
Transportation	12.0	3.0	104.5	450.9	226.4	260.0	538.9	524.0	450.0	-	2,569.7	17.9		
Communication	-	-	5.1	140.3	-	22.1	50.0	90.0	80.0	-	387.5	2.7		
Electricity	-	-	23.7	35.7	-	40.0	40.0	18.0	95.0	-	252.4	1.8		
Water and Sewerage	-	-	25.5	324.0	106.0	110.0	130.0	63.0	45.0	-	803.5	5.6		
Other	-	190.6	52.6	49.6	27.6	230.6	102.0	265.0	143.0	478.3	1,539.3	10.7		
4. Others	**6.0**	**2.0**	**4.7**	**94.2**	**45.0**	**150.0**	**255.0**	**392.0**	**278.0**	**18.0**	**1,245.0**	**8.7**		
5. Total	**400.7**	**501.7**	**517.6**	**1,556.2**	**1,013.4**	**1,370.4**	**2,143.0**	**2,981.7**	**2,671.0**	**1,171.0**	**14,326.8**	**100.0**	**1,897.0**	**1,550.5**
6. (5) as a % of GDP[1]	9.5	9.3	8.3	20.4	12.4	12.6	13.5	16.4	13.2	5.9			9.6	8.1

Notes: re revised estimates

1. at factor cost

Source: *Review of Fiscal Measures*, various issues.

TABLE 11.15: GOVERNMENT'S CONTRIBUTION TO GROSS DOMESTIC EXPENDITURE, 1953-1981

	Consumption Expenditure			Gross Capital Formation				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Year	Total $mn	Gov't. $mn	(2) as a % of (1)	Total $mn	Gov't. $mn	(5) as a % of (4)	Oil as a % of (4)	Manufacturing as a % of (4)
1953	293.2	49.9	17.0	85.9	13.6	15.8	37.5	n.a.
1959	578.0	81.6	14.1	249.3	41.8	16.8	41.1	n.a.
1960	642.9	87.8	13.6	285.9	47.0	16.4	35.6	n.a.
1970	1,346.5	240.9	17.9	420.8	52.1	12.4	37.3	10.0
1971	1,421.5	289.5	20.4	639.3	71.1	11.1	49.6	6.4
1972	1,751.3	328.9	18.8	647.3	65.0	10.0	41.8	7.0
1973	1,949.3	380.3	19.5	620.8	57.2	9.2	40.4	11.4
1974	2,219.5	516.7	23.3	856.2	87.0	10.2	40.1	15.4
1975	3,224.6	708.1	21.9	1,150.6	93.2	8.1	49.2	8.0
1976	3,602.9	800.7	22.2	1,614.4	384.4	23.8	32.5	10.4
1977	4,584.6	1,030.3	22.5	2,219.8	n.a.	n.a.	n.a.	n.a.
1978	5,278.4	1,243.5	23.6	2,712.9	n.a.	n.a.	n.a.	n.a.
1979	6,774.1	1,680.8	24.8	3,456.6	n.a.	n.a.	n.a.	n.a.
1980	8,060.9	2,036.1	25.3	5,492.3	n.a.	n.a.	n.a.	n.a.
1981	9,922.9	2,781.7	28.0	5,215.8	n.a.	n.a.	n.a.	n.a.

Notes: n.a. not available.

Sources: *Annual Report* of the Central Bank, 1978 and 1979; CSO, *The National Income of Trinidad and Tobago, 1952-62;* IMF, *Financial Statistics,* various issues; *The Imperatives of Adjustment* (Draft Development Plan, 1983-86) Appendix VIII.

cent in the former year to 8.1 per cent in the latter. In 1976 it increased significantly, reaching 24 per cent in 1976, and one suspects it has since risen further as a result of government's high level of investment activities. The trends shown in Table 11.14 point to a situation where government's current and capital expenditure (excluding transfer payments) taken together may now be well in excess of 25 per cent to 30 per cent of Gross Domestic Expenditure as compared to about 16 per cent in 1953.

THE FINANCING OF CAPITAL EXPENDITURE

Column (2 a) of Table 11.16 shows the current annual surplus or deficit in the 1963-85 period when 'loans and grants to statutory authorities' are not included in current expenditure. Column (2 b) shows the position when the latter item is included. Column (3 a) shows the overall surplus (or deficit) when capital repayment and contributions to sinking-funds are excluded from the expenditure figures. Column (3 b) gives the balance when the latter item is included in total spending. Taking the figures in Column (2 b) as the appropriate current balances, it can be seen that between 1963 and 1985 there were deficits only in 1972 and 1973. Between 1974 and 1982 the surpluses assumed significant proportions as a result of the abnormal increases in oil revenues. From a current deficit of $8.3 million in 1973, there was a surplus of $627 million in 1974. This increased to $3,446 million in 1981. In 1982 the figure fell to $1,071 million and in 1983 to an estimated $315 million. In 1984 and 1985 the surplus fell further.

The saving on current account has tended to finance a significant part of capital spending (including loan repayments and loans and grants to statutory authorities) in recent years. (See Table 11.16). In 1980 current savings amounted to 21 per cent of GDP and in 1981, 19 per cent. Since 1982, however, it has averaged 2.2 per cent. An examination of Column (3 b) of the Table shows that between 1963 and 1973 there was an overall deficit in every year. Between 1974 and 1981 the pattern was reversed, and there was an overall surplus in every year, except 1979. In 1982, however, a deficit of $2,455 million was incurred and in 1983 this had increased to $2,528 million. The overall deficit fell in 1984 and 1985, but still averaged $1.8 billion (9.2 per cent of GDP). Whenever total revenue was in excess of total expenditure an increase in cash balances took place. A glance at Table 11.17 (Column 4) shows that cash balances increased in every year between 1974 and 1981. Between 1982 and 1985 there was a total drop in cash balances of almost $5.5 billion. The figures in Columns (2) and (3) show that even in years when there was a surplus, government still resorted to borrowing, both internally and externally.

SOME PROBLEMS AND ISSUES

Since 1981 there has been a dramatic change in Trinidad and Tobago's balance of payments position, and this can be readily seen in Table 11.18. Between 1974 and 1981 there was a current account deficit in only one year, *viz*, 1979. The current account surplus of $751 million in 1981, however, was followed by a deficit of $1,786 million in 1982, $2,117 million in 1983, $1,386 million in 1984, and an estimated $491 million in 1985. With respect to the overall performance, the country experienced a surplus in every year between 1974 and 1981. In 1982, however, there was a deficit of $647 million followed by three successive deficits totalling $4.9 billion. The external assets of the central bank increased from $120 million at the end of 1973 to $7,876 million at the end of 1981. This fiture had declined to $2 billion at the end of August, 1985. After experiencing a real growth rate averaging 5.5 per cent in real GDP between 1973 and 1982, the economy has declined since 1983 at an average rate of almost 7 per cent.

TABLE 11.16: CURRENT AND OVERALL BUDGETARY SURPLUS (+) OR DEFICIT (-), 1963-1985
($m)

(1) Year	(2) Current Surplus (+) Deficit (-)		(3) Overall Surplus (+) Deficit (-)		(4) As a % of GDP	
	(a)	(b)	(a)	(b)	2(b)	3(b)
1953	+ 12.9	+ 9.8	- 0.8	- 2.3	2.5	(0.6)
1963	+ 27.6	+ 20.0	- 18.7	- 25.3	1.9	(2.4)
1964	+ 28.4	+ 16.7	-- 33.8	- 42.2	1.5	(3.7)
1965	+ 23.3	+ 16.3	- 3.9	- 12.4	1.4	(1.0)
1966	+ 28.1	+ 13.9	- 25.7	- 31.6	0.8	(2.5)
1967	+ 27.8	+ 13.5	-- 1.1	- 10.7	1.0	(0.8)
1968	+ 50.8	+ 39.9	- 5.2	- 20.1	2.6	(1.3)
1969	+ 70.9	+ 54.8	+ 6.4	- 10.4	3.5	(0.7)
1970	+ 65.4	+ 48.8	- 44.3	- 62.7	2.9	(3.8)
1971	+ 28.7	+ 12.0	- 81.9	- 101.3	0.7	(5.8)
1972	+ 21.7	- 1.1	- 103.5	- 124.4	(0.0)	(6.0)
1973	+ 14.0	- 8.3	- 111.8	- 136.3	(0.3)	(5.3)
1974	+ 761.8	+ 627.1	+ 428.5	+ 268.6	14.9	6.4
1975	+1,085.7	+ 959.5	+ 646.3	+ 595.5	17.8	11.0
1976	+1,335.5	+1,211.5	+ 432.0	+ 318.1	19.4	5.1
1977	+1,844.6	+1,667.3	+ 728.3	+ 692.3	21.8	9.1
1978	+1,665.9	+1,468.2	+ 234.0	+ 192.3	17.9	2.4

1979	+1,829.6	+1,462.5	- 131.6	- 178.6	13.4	(1.6)
1980	+4,249.7	+3,319.2	+1,029.7	+ 585.5	20.9	3.7
1981	+3,896.8	+3,446.3	+ 389.8	+ 311.5	19.0	1.7
1982	+1,817.0	+1,070.9	- 2,355.3	-2,455.4	5.3	(12.2)
1983	+1,450.5	+ 315.0	- 2,227.0	-2,528.1	1.6	(12.7)
1984	+1,300.6	+ 271.3	- 1,728.4	-1,940.0	1.4	(9.8)
1985[p]	+1,143.1	+ 111.0	- 1,381.9	-1,644.2	0.6	(8.6)

Notes: 2 (a) = Col. (3) of Table 11.1 minus Col. 5 (a).
2 (b) = Col. (3) of Table 11.1 minus Col. 5 (b).
3 (a) = Col. (4) of Table 11.1 minus Col. 6 (a).
3 (b) = Col. (4) of Table 11.1 minus Col. 6 (b)
p. Provisional.

Sources: Tables 11.1 and 11.3.

TABLE 11.17: MOVEMENTS IN ANNUAL CASH BALANCES'
1973-1983

(1)	(2)	(3)		(4)
Year	Overall Budget Surplus (+) Deficit (-)	Loans (Net) Internal (a)	External (b)	Change in Cash Balance Increase (-) Decrease (+)
1973	- 111.8	31.0	55.5	+ 25.3
1974	428.5	33.5	-15.7	- 446.3
1975	646.3	13.4	-20.2	- 639.5
1976	432.3	49.7	-80.3	- 401.7
1977	728.3	62.8	360.2	-1, 151.3
1978	234.0	27.5	257.0	- 518.5
1979	- 131.6	26.7	129.9	- 25.0
1980	1,029.7	14.9	161.9	- 1,206.1
1981	389.9	-12.4	25.9	- 403.4
1982	-2,355.3	113.7	265.2	1,976.4
1983	-2,227.0	255.8	228.1	1,743.1
1984	-1,728.4	51.7	457.5	1,219.2
1985p	-1,381.9	411.4[2]	392.7	578.5

Notes: *p.* Provisional.

1. includes an amount of $171.1 million with respect to the financing of the purchase of the Texaco refinery and other related assets under a leasing arrangement.
2. includes a special issue of $218 million in Treasury Bills.

Source: Ministry of Finance, *Review of the Economy*, various issues; Table XI.

As we saw earlier, the significant increase in revenue which the government has enjoyed since 1974 as a result of developments in the oil sector has had an equally significant effect on the growth of public spending. Government expenditure has been the moving force in the economy since 1974. One can, therefore, expect any adverse developments in the oil sector to have repercussions on public expenditure policies. The windfall of recent years has enabled the government not only to undertake certain capital projects requiring large sums of money, but has also encouraged a considerable expansion in current spending in the form of subsidies on a wide range of goods and services, increased wages and salaries, greater employment, increased pensions, etc. With the current glut in world oil supplies and the contraction of the domestic economy, great concern is being expressed about the impact of these developments on the local economy. This concern arises not only from the fact that the level of government spending is the major determinant of the level of economic activity, but to some extent from the uncertainty surrounding some of the energy-based

TABLE 11.18: TRINIDAD AND TOBAGO: BALANCE OF PAYMENTS AND GROWTH PERFORMANCE 1973-1985

T.T.$m

(1) Year	(2) Current Surplus Deficit (-)	(3) Overall Surplus Deficit (-)	(4) External Assets of Central Bank[1]	(5) Real Growth Rate of GDP[3]
1973	- 50.7	- 28.1	120.4	5.1
1974	576.0	602.6	807.3	4.7
1975	716.0	973.0	1,768.4	4.1
1976	618.7	563.3	2,432.1	8.4
1977	515.6	1,072.1	3,550.9	7.8
1978	86.5	776.7	4,312.0	7.9
1979	- 87.0	879.1	5,089.6	6.2
1980	944.8	1,472.4	6,548.2	5.3
1981	751.3	1,342.8	7,876.4	2.4
1982	-1,785.8	- 646.7	7,186.5	3.4
1983	-2,116.7	-2,162.5	4,838.3	-3.9
1984	-1,386.0	-2,148.9	3,054.5	-10.8
1985[e]	- 491.0	- 630.7	2,000.9[2]	-6.2

Notes: e. Estimate.
1. Year-end position.
2. End of August position.
3. GDP at factor cost in 1970 prices.

Sources: Ministry of Finance, *Review of the Economy*, various issues; Central Bank, *Annual Report*, various issues; CSO, *The Balance of Payments of Trinidad and Tobago*, various issues.

projects at Point Lisas on which so much hope has been pinned. It is also well known that certain types of expenditure once they have been introduced, become a permanent part of the recurrent budget, and are not easy to reduce or eliminate without incurring serious social consequences. As far back as 1978, some of the current difficulties were foreseen by the then Prime Minister and Minister of Finance, Dr. Eric Williams, and a Committee was appointed "to review the pattern of Government expenditure with particular reference to its distribution between productive (investment) and non-productive (welfare) expenditure in view of:

(a) The increasing percentage of total expenditure to total revenue;

(b) Continued requests for reduction in income and corporation taxes;

(c) Government's subsidy programme;

(d) The fact that oil is a wasting asset; and

(e) Government's planned industrialisation programme".[35]

Having looked at the evidence the Committee recommended that:

(a) no new welfare programmes should be instituted, nor should Government approve improvements in the real value of existing welfare programmes;

(b) Government should be cautious in expanding permanent employment in the public service;

(c) there should be an immediate moratorium on further tax reductions; and

(d) Government should commission a comprehensive review of the tax system and the structure of utility tariffs in order to ascertain the scope for additional taxation and higher user charges, as a precondition to any decision for rapid expansion in welfare and other recurrent expenditure.

These recommendations have had a deep influence on government's policy since. By failing, however, to look adequately at the cause and effect factors in the situations to which it drew attention or to identify in detail the influences affecting the main trends which formed the object of its policy recommendations, or to examine the efficiency of public expenditure, *the Report* showed some serious shortcomings. While the fiscal consequences of certain courses were discerned, the underlying social and political factors were hardly touched. It is well known, for example, that inefficiency in the government sector exerts some effect (in some cases a significant effect) on the cost of living of the general population. The Port is a case in point. Since extra charges incurred by importers tend to be passed on to domestic consumers, an increase in the efficiency of the Port may reduce the need for government subsidy in order to help keep down the cost of living. It is also generally well known that one reason why many of the utilities have been unable to increase their rates or tariffs to desired levels stems directly from the unsatisfactory services provided by them. Public resistance to periodic rate increases could be substantially reduced and the gap between revenue and expenditure closed with the institution of measures designed to increase the quality of the service offered by the utilities. The subsidy borne by government with respect to gasolene is not unrelated to the existing inadequate public transport system in the country. Reduction or elimination of this subsidy may need to be tied to an intensive effort to improve transport facilities in a way that can lead directly or indirectly to greater economy in the use of gasolene, or the effect of such a policy may be a worsening of the inflationary trends in the economy. In short, while subsidies can, sometimes, be functional, very often they are simply a compensation for badly conceived policies or poor management and organizational deficiencies which could not be corrected by merely manipulating aggregate revenue and expendi-

ture figures. Also, if a subsidy programme is not well structured, the people it is intended to assist may not turn out to be the ultimate beneficiaries.

Another area that might have been examined in greater depth, and which needs to be urgently analyzed, is the implications of government industrialization programme for the fiscal operations of the country in the next five to ten years. Some of the projects involved are being financed to a substantial degree by debt finance. A basic premise of this approach is that the enterprises concerned would be able to perform sufficiently well in the international markets to help service the loans on which they are being set up. Failure to meet this expectation could have serious financial consequences for the government, particularly in a situation where the revenue from oil is declining. The procedures governing the approval of government projects and the spending of public funds also need to be investigated. In an inflationary situation delay is costly, and this is evidenced by the large differences in the cost of several major undertakings between conception and completion (in some cases the beginning of construction). The lack of proper supervision also explains the long construction periods associated with some projects. The shortages of materials is, to some extent, the result of failure to gauge properly the rate of expansion of certain sectors of the economy and to implement policies which could have anticipated the needs of a programme of rapid expansion. In short, the level of government expenditure not only affects the rate of economic progress, but to a considerable extent is conditioned by socio-political forces and bureaucratic processes which have to be explicitly recognised in any analysis dealing with public expenditure, and particularly with transfer items.

With respect to changes in the tax system, the Committee quite rightly felt that these should be underatken only after a comprehensive study had been done. The perspective suggested, however, seems to have been quite narrow, emanating as it seems mainly if not entirely, from a concern with tax yields in relation to government's welfare and subsidy programmes. In a situation where basic conditions are undergoing rapid change, the tax system clearly had to be examined in a much broader context, including such aspects as its effects on incentives and the relevance of the existing rates and structure in highly inflationary circumstances.[36] Failure to do this is not only likely to make the tax system a 'scapegoat' for deficiencies in other sensitive areas, but may lead to the institution of measures and changes which could increase the burden on residents and also affect productivity.

CONCLUSION

In 1973 Trinidad and Tobago, like most other Third World countries, was experiencing what the then Prime Minister and Minister of Finance referred to in his 1980 Budget Speech as "an increasing gap between our national aspirations and our capacity to achieve them." Beginning around the end of 1973 the financial capacity of the country was significantly enhanced by increases in international oil prices and the expansion of the domestic oil sector. While the revenues gained from the oil industry encouraged a rapid increase in current spending, a certain amount of savings was effected, and these have played a major part in the financing of capital formation in the economy, particularly

in the area of physical infrastructure and the utilities. It has also encouraged governmental involvement in a number of highly capital intensive industries based on the country's energy resources and intended to diversify the structure of production. The balance, however, between spending on infrastructure and expenditure on directly productive undertakings does not seem to have been properly thought out.

Given the role government spending has played in the expansion of the economy since 1974, and given the lack of any fundamental structural changes in the ecnomy, it is not surprising that a decline in public expenditure has had such immediate impact on the growth rate of the economy in recent years. All major economic variables have been affected including employment, investment and consumption. There is a tendency to describe the present state of economic affairs in the country as a 'recession' which in the industrial countries (from which the term is borrowed) refers to a temporary downturn in economic activity stemming from a fall off in demand and investment. This is not the same kind of phenomenon being experienced in Trinidad and Tobago. With the decline of public spending and foreign reserves (which in the boom years served to cover up weaknesses in the economy), the structural problems are beginning to reassert themselves. Despite the high levels of public spending since 1974, the economy remains extremely vulnerable to external developments. There has been no significant impact on the productive base (or exports) of the economy where diversification continues to remain an elusive goal. Oil continues to be the key sector, while agriculture (and particularly export agriculture) has declined concomitantly with the rapid growth of the food import bill which is now in the region of T.T.$1,000 million. The manufacturing sector is still largely oriented towards the internal and regional market. Given its dependence on external sources for raw materials, intermediate and capital goods, its survival hinges critically on the availability of foreign exchange to finance these imports. Since the viability of the new energy-based industries rests heavily on their ability to penetrate foreign markets, adverse developments in the latter will, no doubt, put further pressure on government's revenue and foreign exchange position.

After several development plans and a total expenditure of almost T.T.$56 billion in 12 years, progress towards the establishment of a more diversified economy, a dynamic agricultural sector and a framework that could sustain full employment remains far from satisfactory. This clearly indicates the need for critical appraisal of past and existing strategies. Despite the lack of information on the energy-based industries at Point Lisas, it appears that in the present international environment certain of these enterprises will be unable to fulfil the hopes on which they were conceived, and far from enhancing government's revenue or foreign reserve position as was originally intended, could adversely affect it in a very serious way. In the short term, the government would need, of course, to institute policies consistent with its changing revenue and foreign reserve position. These adjustment policies, as they are termed, are likely to result in a decline in real living standards, and would, therefore, have to meet certain equity criteria if they are to get public support. Very often short term policies tend to affect the attainment of long term goals, and in order to avoid

conflict, there would be the need for a clear articulation of a development strategy, rather than a simple statement of objectives.

Finally, we need to make a comment on two issues which have been occupying the public mind in recent times. One is the question of productivity. The other is the impact on the national economy of the devaluation of the T.T. dollar from T.T.$2.40 = US$1.00 to T.T.$3.60 = US$1.00 in December 1985. Both are of course, related. Productivity and production are closely tied. A decline in productivity means that more resources have to be used to produce a given level of goods and services. This is another way of saying the costs of production are increasing. The indications are that in recent years productivity has tended to fall in both the private and public sectors. Unfortunately, the tendency has been to excuse it, or to see the problem in very narrow terms. It is common to hear about 'workers' being paid too much for doing too little, and this had led to a view of adjustment in the economy being essentially a matter of effecting reductions in real wages and salaries. As we have indicated, productivity is a function of not only labour, but of technology, organization and management among other things. The issue is important, and if it is to be tackled in the correct way, it is necessary to take a broader perspective.

Devaluation was purportedly undertaken to restore a measure of competitiveness to the national economy and to encourage investment. These in turn are expected to have an impact on production, exports and job creation, thus generating greater public revenues and expenditure. Not explicitly mentioned is the direct impact on government revenue when foreign exchange earnings or reserves are converted to T.T. dollars. This was, perhaps, necessary to sustain the level of current spending in the light of the falling foreign currency revenues from oil. The T.T. dollar income from agricultural exports, particularly sugar, are also expected to have a favourable effect on the financial position of the companies concerned. The higher T.T. dollar prices for imports are expected to discourage imports and also allow local manufacturers to reassert their position in the domestic market, assuming that costs could be kept within limits. There are circumstances where the devaluation of the national currency could assist a country in overcoming a payments problem and in helping the adjustment process. In the best of situations, however, the effects of devaluation can be highly unpredictable. In the context of Trinidad and Tobago, the views on the benefits from the December 1985 decision are highly divided. On the one hand, it is argued that even though the government's T.T. dollar revenues may be increased, this would be partly offset by the income required to service the foreign debt. It is contended, too, that since the economy is so highly import oriented, the devaluation would lead to higher T.T. dollar costs and this would eventually be reflected in export prices. The industries with a higher ratio of foreign inputs to total final value would be more greatly affected. In the latter case, even production for the domestic market could decline, if costs rise to a level totally out of line with domestic incomes. In this situation, unemployment could increase. There is another factor which could affect the cost of production, and this arises from the effects of the devaluation on the cost of living. If wages and salaries rise sufficiently to offset the impact of the devaluation, competitiveness will not increase. In place of a prices and incomes policy, the government has opted for a two tier exchange rate, using the old rate of T.T.$2.40 per

US dollar for a range of foods, drugs, agricultural inputs and school books, while the new rate of T.T.$3.60 dollar will apply to all other transactions. Even with price control, maintaining the benefits of a two-tier system will be difficult in practice. Given the interdependence of various parts of the domestic economy, price effects tend to easily spread across the economy. Perhaps, the strongest argument underlying the skepticism over the effects of the devaluation relates to the structure of production. It is argued that if one were to exclude the major exports whose prices are quoted in foreign exchange, the range of exports that could take advantage of the devaluation is very narrow indeed. Even if quality and prices are right, there is the other factor of increasing protectionism in the major markets. There is also the possibility of competitors eventually taking the devaluation route, and this leading to a devaluation war, with disastrous consequences.

Devaluation is no substitute for a serious effort to increase productivity in the economy. In some ways it can discourage it. Embracing the objectives of a welfare state does not lessen the need for management of the economy. It increases it.

NOTES

[1]See, for example, Alison Martin and Arthur A.W. Lewis, "Patterns of Public Revenue and Expenditure", *The Manchester School*, Vol. 23, 1956.

[2]See, for example, A.T. Peacock and J. Wiseman, *The Growth of Public Expenditures in the United Kingdom*, University Press, Princeton, 1961. See, also M.A. Odle, *The Evolution of Public Expenditure (The Case of a structurally Dependent Economy: Guyana)*, Mona: ISER, 1976.

[3]Although there is a Local Government system in Trinidad and Tobago, the highly centralized nature of fiscal operations has left the Local Authorities almost powerless. The central government provides the bulk of the funds on which these bodies operate.

[4]Estimate for 1985. The provisional census non-institutional population for 1980 is 1.056 million.

[5]See the World Bank *Atlas*, various issues.

[6]See, Winston Dookeran, "The Distribution of Income in Trinidad and Tobago (1957-1976)," *The Review of Income and Wealth*, June, 1981.

[7]Some data from the 1980 population census seem to reinforce this view. The following table shows the distribution of the employed population according to income groups.

Income levels of the population of Trinidad – 1980

Income Group	Number	Percent
Less than $100	6,510	1.86
$100 - $499	66,560	19.06
$500 - $1,099	153,700	44.00
$1,100 - $1,899	55,140	15.79
$1,900 - $3,999	23,100	6.60
$4,000 +	13,750	3.94
Not stated	30,540	8.74

Source: The Imperatives of Adjustment, Draft Development Plan, 1983-86, 1983.

[8]For an elaboration see, W.W. Rostow, *Politics and the Stages of Growth*, Cambridge University Press, Cambridge, 1971.

[9]R.A. Musgrave, *Fiscal Systems*, Yale University Press, New Haven, 1969, p. 76.

[10]*Op. cit.*, p. 77.

[11] *Op. cit.*, pp. 73-75.

[12] Peacock and Wiseman, *op. cit.*, p. 26.

[13] *The Imperatives of Adjustment* (Draft Development Plan, 1983-86), p. 158.

[14] *Ibid.*

[15] *Ibid.*, p. 160.

[16] The data used in this essay (except where otherwise indicated) come from several sources. Among the major ones are: The Ministry of Finance, *The Review of Fiscal Measures* and *The Review of the Economy*, various issues; Central Bank, *Annual Report*, various issues; Ministry of Finance, *Estimates* of Revenue and Expenditure, various issues; CSO, *Financial Statistics*, various issues, and the Auditor General, *Annual Report*, various issues. It is necessary to point out (particularly with respect to revenue and expenditure figures) that there are often large and unexplainable differences between the data appearing in the various sources. It has not always been possible to reconcile the differences.

[17] The Unemployment Levy was imposed in 1970 (Act No. 16) to provide the government with additional funds to help relieve the unemployment situation which came into sharp focus following the disturbances in that year. The Levy is essentially a tax (5 per cent) on the chargeable income of individuals and companies beyond a certain amount. The original figure for individuals was $10,000.00, but since 1979 it has been increased to $20,000.00.

[18] In more recent years the ratio has dropped to less than 1 per cent.

[19] This scheme has been in operation since 1973. Receipts from the sale of stamps increased from $47.4 million in the financial year ending 30.4.73 to $87.8 million in the financial year ending 30.6.79. This latter figure was equivalent to less than 1 per cent of the country's 1979 GDP.

[20] We use GNP instead of GDP because data on the former were more easily available for most countries.

[21] See, for example, Richard Musgrave, *Fiscal Systems, op. cit.*, p. 74.

[22] The sample consisted of about 30 to 40 countries and data related to the middle 1950s.

[23] See, Musgrave, *op. cit.*, pp. 110-121.

[24] R.A. Musgrave and P.B. Musgrave, *Public Finance in Theory and Practice*, McGraw-Hill Inc., London, 1973, p. 124.

[25] A. Martin and A. Lewis, *op. cit.*

[26] Defined as expenditure on administration, economic, education and health services.

[27] D. Horowitz, "Government Expenditure in Countries of Accelerated Growth", in A.T. Peacock and G. Hauser, (eds.) *Government Finance and Economic Development* OECD, Paris, 1963.

[28] Mid-year estimates (up to 1979) published in CSO, *Annual Statistical Digest*, various issues and IMF, *International Financial Statistics*, various issues. From 1980 figures appearing in the *Review of the Economy*, various issues, are used.

[29]The index based in September, 1960, was spliced with that based in September, 1975 and the base shifted to 1973.

[30]For instance, in the period between 1976 and 1979 the numbers employed in the government services increased from 66,900 to 80,810. The figures exclude workers in the Development and Environmental Works Division (DEWD).

[31]This subsidy was introduced in 1974 and applies to local sales of certain petroleum products. The mechanics of the arrangements are as follows:

> The refineries sell gasolene destined for local consumption to the National Petroleum Marketing Company (NPM) at the international price. It is then sold by the NPM to domestic consumers at a controlled price. The Government then reimburses NPM and bills the cost of the subsidy to the oil producing companies. The latter, are however, permitted to offset the amount as a production cost in computing their tax liability. The Government, therefore, by foregoing the revenue which would have accrued, shares the cost of the subsidy with oil producing companies.
>
> Between 1974 and 1980 the subsidy is estimated to have amounted to $753.3 million. Of this, Government's share (cost to revenue) was $403.0 million.
>
> See Budget Speech 1979, p. 55 and
>
> Budget Speech 1980, p. 71.

[32]These figures exclude loans and grants to BWIA and Caroni Limited, which in 1983 amounted to about $250 million.

[33]To obtain total expenditure we would have to add Column (5b) of Table 11.1 (which includes 'loans and grants to statutory bodies') to Column (6) of Table 11.12. Alternatively we can add Column (5a) of Table 11.1 (which excludes 'loans and grants to statutory bodies') to Column (5) of Table 11.12.

[34]No official breakdown is given for the appropriations given in 1984 and 1985.

[35]The Committee's report was entitled *Report of the Committee to review Government Expenditure* (sometimes referred to as the Bobb Report after its Chairman, Dr. Euric Bobb).

[36]The need for such a study was recognised in the 1986 Budget Speech and a Committee was set up to review the incidence of direct and indirect taxation.

APPENDIX 11.1

GCE = Government Current Expenditure

TGE = Total Government Expenditure

PCI = Per Capita GDP at Current Factor Cost

GDP = Gross Domestic Product at Factor Cost

FT = Export plus Imports

$$CEP = \frac{GCE}{GDP}$$

$$TEP = \frac{TGE}{GDP}$$

$$FTR = \frac{FT}{GDP}$$

$$CEP = \underset{(0.0001252)}{15.214 + 0.0007046\ PCI} \qquad (1963\text{-}83) \qquad (1)$$

$$\bar{R}^2 = 62.50\%$$

D.W. = 1.31

$$CEP = \underset{(0.0001247)\quad(0.1192)}{23.7551 + 0.0007164\ PCI - 0.1346\ FTR} \qquad (1963\text{-}83) \qquad (2)$$

$$\bar{R}^2 = 64.98\%$$

D.W. = 1.57

$$CEP = \underset{(0.0002460)}{13.5721 + 0.0008350\ PCI} \qquad (1973\text{-}83) \qquad (3)$$

$$\bar{R}^2 = 56.15\%$$

D.W.= 1.54

$$CEP = \underset{(0.0002681)\quad(0.2165)}{30.5839 + 0.0007096\ PCI - 0.2397\ FTR} \qquad (1973\text{-}83) \qquad (4)$$

$$\bar{R}^2 = 61.98\%$$

D.W. = 2.0

$$TEP = \underset{(0.0001345)}{20.0690 + 0.001582\ PCI} \qquad (1963\text{-}83) \qquad (5)$$

$R^2 = 87.91\%$

D.W. = 1.83

TEP = 12.4151 + 0.001571 PCI + 0.01206 (1963-83) (6)
(0.0001354) (0.1294)

$R^2 = 88.47\%$

D.W. - 1.72

TEP = 20.2487 + 0.001564 PCI (1973-83) (7)
(0.0002620)

$R^2 = 79.84\%$

D.W. = 2.08

TEP = 14.8440 + 0.001604 PCI + 0.07615 FTR (1973-83) (8)
(0.0003048) (0.24622)

$R^2 = 80.08\%$

D.W. = 1.99

XII TAX STRUCTURE AND PERFORMANCE, 1963–1984

Ramesh Ramsaran

INTRODUCTION

Because of its importance in providing governments with the major part of the financial resources necessary to carry out their functions, the tax system in developing countries has always been, and will continue to be a critical area of study. Of course, the revenue function is only one aspect of a tax structure which is often designed to serve a wide range of other objectives. Given this situation, a tax system must be under constant review if it is to serve this variety of functions in a changing environment, while maintaining the characteristics of a 'good' tax system. Of particular importance in this respect, would be its responsiveness to government financial needs, where the state is the critical agent in bringing about social and economic change.

In recent years the growth of the Trinidad and Tobago's economy and the inflationary trend that has accompanied this growth have had a significant impact on the tax system and the pattern of revenue.[1] While in such circumstances the character of the tax system, as a whole, would have been affected both as a result of built-in features and discretionary changes, our attention in this essay will be focussed largely on its general revenue performance over the last two decades. The essay is divided essentially into three parts. Part One discusses the structure of the tax system in terms of revenue yields; Part Two examines its 'burden' and performance in the context of growth and accompanying inflationary trends. And in the final section we explore (using simple regression analysis) some of the main determinants of revenue growth.

THE STRUCTURE OF TAX SYSTEM

Since 1962, when political independence was achieved, both the direct and indirect tax systems in Trinidad and Tobago have undergone a number of changes in the context of the need for revenues to sustain administrative responsibilities and to stimulate growth and development within the framework of national objectives. The taxation of income was introduced in Trinidad and Tobago in 1917 as a temporary measure and became a permanent part of tax system in 1922.[2] It was not until 1958, however, was the pay as you earn (PAYE) system introduced. During the 1960s and 1970s, there were further changes with respect to the way income was computed, the formulation of additional taxes against specific objectives, allowances permitted, tax structure, etc. The indirect tax system has also been gradually converted into an instrument of economic policy, and, as such, changes are often made not only to affect the level of revenue, but to modify the behaviour of economic agents in particular directions.

Our aim is not to examine the broad effects of particular changes or developments, but to gauge their overall impact on revenue of particular groups of taxes.

Recurrent revenue increased from about $185 million in 1963 to $476 million in 1973 or by 157 per cent. Between 1973 and 1982 the absolute increase was in the region of $6.2 billion, or by 14 times. In 1983 recurrent revenue (in nominal terms) fell by 5.5 per cent, increased by 1.4 per cent in 1984, but is estimated to have declined again in 1985 by 2.7 per cent. In 1973

prices, recurrent revenue (Consolidated Fund) is estimated to have declined by some 33 per cent between 1982 and 1985. The above figures refer to the Consolidated Fund only.[3] Since 1970 Government has operated an Un-employment Levy which is a tax-like measure, but because of the specific purpose for which it was introduced, it tends to be accounted for separately.[4] Between 1970 and 1984 the yield from this measure (including interest) averaged $133 million per year. The estimated take in 1985 was $120 million which was the equivalent of almost 2 per cent of Consolidated Fund recurrent revenue. Between 1970 and 1984, total receipts (including interest from the levy) was in the region of $1,995 million. Since 1974 government has also adopted the practice of putting aside funds for special projects (Funds for Long Term Development), which may not necessarily be spent in the year of allocation. Interest accruing from these savings tends to be included in recurrent revenue. When all three funds are taken together recurrent revenue in 1985 was estimated to be about $6,358 million, as compared to $7,118 million in 1982, and $476 million in 1973. In nominal terms this represented a decline of 10.7 per cent between 1982 and 1985.

Tax revenues tend to account for about 80 per cent of recurrent revenue. The figure increased from $144 million in 1963 to $386 million in 1973 or by 168 per cent. In 1981 total tax revenue (including the Un-employment Fund) was $5,848 million or more than fourteen times that of the 1973 figure. The estimated figure for 1985 was $5,355 million – a decline of 8.5 per cent from 1981. This decline corresponded with a drop of more than one billion dollars in receipts from taxes on incomes and profits and a fall of $162 million in revenue from import duties in the four year period. In terms of the contribution of various taxes to total tax revenue, Table 12.2 provides a percentage breakdown. Unlike Table 12.1, these figures take the Un-employment Levy into account, which as we indicated earlier, has been operational since 1970. An examination of these figures shows that since 1973 there has been significant changes in the relative contribution of the various taxes to the total. In the 1950s and 1960s direct taxes on incomes and profits appear to have contributed between 40 per cent and 50 per cent of total tax revenue. Between 1974 and 1982 the proportion averaged 84 per cent. Since 1983 it has averaged 78 per cent.

An examination of Table 12.4. will show that the increase in the relative contribution of income tax to total tax revenue corresponds with the significant growth of the revenue derived from the oil sector. In 1954 the oil companies contributed about 54 per cent of total income and profit taxes. This increased to 67 per cent in 1958, but by 1973 had fallen to 29 per cent. In 1974 the percentage contribution rose to 79 per cent and in 1975 to 81 per cent. Between 1974 and 1981 the figure averaged about 75 per cent. Since 1982, it has averaged about 51 per cent. With the decline in international oil prices in 1985, and particularly in early 1986, the contribution of the oil sector to total revenues could fall even more drastically.

It should be pointed out that besides being a significant contributor to income and profit taxes, the petroleum sector also contributes in other forms to government's revenue. A breakdown of the total contribution in recent years is provided in Table 12.3 It can be seen there, that while the petroleum revenues

TABLE 12.1: SOURCES OF RECURRENT REVENUE, 1953 to 1985

($m)

Sources	1953	1963	1973	1979	1980	1981	1982	1983	1984	1985[re]
Tax										
a. Import Duties	15.0	38.7	68.0	293.7	426.5	463.7	539.6	551.5	459.6	301.7
b. Excise	6.1	14.9	37.0	36.9	39.0	41.3	44.0	52.0	108.3	130.6
c. Taxes on Incomes and Profits	26.9	70.2	202.0	2,488.2	4,244.4	4,892.7	4,828.4	4,234.6	4,362.1[a]	3,904.6[a]
d. Estates & Succession Duties	-	1.7	1.4	8.5	6.0	6.4	8.0	4.4	2.0	2.3
e. Land & Building Taxes	☆	1.8	4.8	5.7	8.1	8.6	9.5	9.8	12.3	21.5
f. (Road) Motor & Other Vehicles Licences, Fees, Duties	☆	7.0	23.3	65.3	84.8	117.0	127.6	186.3	147.3	149.9
g. Purchase Taxes	—	5.1	36.7	82.1	105.1	116.0	145.2	212.3	324.8	312.9
h. Betting & Entertainment Duties	☆	(a)	2.8	13.1	14.0	15.0	19.0	20.2	20.4	24.2
i. Other Licences, Duties and Taxes	10.5	4.4	10.0	27.1	35.5	42.6	56.8	74.3	79.6	386.9
1. Total Tax Revenue	**58.5**	**143.8**	**386.0**	**3,021.1**	**4,963.4**	**5,703.3**	**5,778.1**	**5,345.4**	**5,516.4**	**5,234.6**
Royalties	7.4	21.4	49.9	416.8	546.2	605.6	536.7	445.5	425.7	449.2
Other Non-Tax Revenue	2.2	20.2	40.1	205.6	261.8	308.7	353.2	513.1	452.0	537.7
2. Total Non-Tax Revenue	**9.6**	**41.6**	**90.0**	**622.4**	**808.0**	**914.3**	**889.9**	**958.6**	**877.7**	**986.9**
3. Consolidated Fund Revenue[1] = 1+2	**68.1**	**185.4**	**476.0**	**3,643.5**	**5,771.4**	**6,617.6**	**6,668.0**	**6,304.0**	**6,394.1**	**6,221.5**
4. Total Recurrent Revenue (All Funds)	**68.1**	**185.4**	**476.0**	**4,059.3**	**6,496.0**	**7,064.8**	**7,117.8**	**6,563.5**	**6,555.6**	**6,358.2**

Notes: 1. Figures prior to 1981 include repayment of past lending which is now included under capital receipts.

a. Figures include National Health Surcharge ($64 million in 1984 and $107 million in 1985).

re. Revised estimates.

☆ included in (i)

Sources: *Estimates* of Revenue, various issues; Central Bank, *Annual Report*, various issues; Review of *Fiscal Measures*, various issues.

TABLE 12.2: CONTRIBUTION OF VARIOUS TYPES OF TAXES TO TOTAL TAX REVENUE[1], 1953-1985

Year	Tax on Incomes on Profits	Tax on Property	Tax on Goods and Services	Tax on International Trade	Other Taxes	Total
1953	46.0	(a)	10.4	25.6	18.0	100.0
1963	48.8	2.4	18.8	27.1	2.9	100.0
1973	54.1	1.6	24.1	17.0	3.2	100.0
1974	82.8	0.7	8.8	6.9	0.7	100.0
1975	84.5	0.5	7.5	6.9	0.7	100.0
1976	82.7	0.5	7.8	8.4	0.5	100.0
1977	81.5	0.4	6.3	11.4	0.5	100.0
1978	81.2	0.6	7.2	10.3	0.6	100.0
1979	83.5	0.4	6.4	9.1	0.6	100.0
1980	86.5	0.3	4.7	8.0	4.8	100.0
1981	86.2	0.3	5.1	7.9	0.5	100.0
1982	83.9	0.3	6.0	9.2	0.6	100.0
1983	79.6	0.2	8.9	10.3	1.0	100.0
1984	79.6	0.2	10.9	8.5	0.8	100.0
1985[p]	75.2	0.4	11.9	11.5	1.0	100.0

Notes:

1. including the Un-employment Levy.
2. included in 'other taxes'

p. Provisional.

Sources: Ministry of Finance, *Review of the Economy*, various issues; CSO, *Financial Statistics*, various issues.

accounted for 19 per cent of recurrent revenue in 1972, by 1975 this had climbed to about 69 per cent. The proportion has fluctuated since, but by 1982 it is estimated to have fallen to about 46 per cent. All indications are that it has declined further since, corresponding with the contraction of the sector.

With respect to the contribution of the other sectors to income tax revenue, there have been some interesting developments in recent years. A glance at Table 12.3 will show that in 1954 non-oil companies paid about $8 million (29 per cent of the total) to government in the form of income and profit taxes.[5] By 1973 the figure had increased to $48 million (or 24 per cent of the total). Despite further absolute increases in 1974 and 1975, the percentage contribution declined to 7 per cent and 6 per cent respectively. Since then the proportion has fluctuated from year to year. In 1984 it was estimated to be around 12 per cent. In 1954 individuals contributed $4.4 million (16.6 per cent

of the total) to income tax revenue. In 1958 (when the pay as you earn system was introduced) the figure was $6.9 million (12.6 per cent of the total) as compared to $11.4 million for the non-oil companies. By 1973, the absolute contribution had risen to $90 million (44 per cent of the total) as compared to $48 million for the non-oil companies. In 1974 when developments in the oil sector began to be reflected in government's revenue position, individuals' contributions to income tax accounted for about 13 per cent of total income tax and profit revenues as compared to 7 per cent for the non-oil companies. In 1982 the proportion for individuals had risen to 32 per cent (as compared to 10.5 per cent for non-oil companies), and in 1983 to about 38 per cent (as compared to 14 per cent for the non-oil companies). The contribution by individuals for 1984 was estimated to be about 35 per cent, while that of the non-oil companies was around 12 per cent. Between 1974 and 1981 the contribution of individuals to total income and profit taxes averaged 14 per cent, but for the period 1982-85 this proportion had increased to 34 per cent, reflecting the significant drop in oil companies profits in more recent years. The trends with respect to the revenue contributed by individuals and the tax payments by the non-oil companies reflect not only the growth in personal incomes, the progressivity of the personal income tax, but the existence of a range of devices (e.g. tax holidays) which affect the contributions by companies.

As far as the other taxes are concerned an examination of Table 12.1 shows that the contribution of property taxes (estate and succession duties plus land and building taxes) rose from $3.5 million in 1963 to $6.2 million in 1973 and to $14.3 million in 1984. As a proportion of total taxes, this category's percentage contribution fell from 2.4 per cent in 1963 to 0.2 per cent in 1984. (See Table 12.2.).[6] Until 1984, it would appear that there was a conscious policy not to increase property taxes, despite the increase in property values.[7] Taxes on goods and services increased from about $27 million (19 per cent of total taxes) in 1963 to an estimated $617 million (11 per cent of total taxes) in 1984. The excise tax component increased from about $15 million to $108 million over the period, while the purchase tax contribution grew from $5 million to $325 million over the same time span. Like purchase taxes, the revenue from motor vehicles taxes, duties etc., has also shown a remarkable growth, increasing from about $7 million in 1963 to $147 million in 1984. This latter performance reflects the tremendous growth in the car population in recent years. In 1973, for instance, the total number of new cars registered amounted to 9,739. Between 1974 and 1984 there was a total registration of 145,133, giving an average per year of 13,194.

Trinidad and Tobago has a highly open economy and it is, therefore, not surprising that the country derives a fairly high proportion of its revenue from import duties.[8] Over the years, the government has tended to exempt from, or subject to special duties, certain forms of essential imports while levying higher rates on non-essentials. This policy has had several aims among which are: (a) encouraging domestic production; (b) reducing the cost of living; and (c) saving foreign exchange. The growth of income in recent years, however, and the inability of domestic production to satisfy domestic demand have led to a rapid increase in both essential and non-essential imports. Corresponding with this

TABLE 12.3: COMPOSITION OF OIL REVENUES, 1972-1984

Year	(1) Corporation Tax	(2) Through-Put Tax	(3) With-holding Tax	(4) Royalties	(5) Oil Import	(6) Un-employ-ment Levy [1]	(7) Excise Duties	(8) Total (1) to (7)	(9) (8) as a % of Total Recurrent Revenue	(10) Buoyancy Coeffi-cient of (8)
1972	45.9	-	-	27.4	1.2	4.7	-	79.2	19.1	-
1973	57.6	-	1.9	49.7	1.6	5.1	-	115.9	23.5	1.90
1974	618.7	37.8	2.3	158.0	1.9	69.3	10.1	898.1	68.7	10.72
1975	930.0	28.1	8.8	184.7	2.7	88.8	10.9	1,254.8	69.1	1.40
1976	1,051.5	42.8	12.1	225.4	2.5	100.8	12.7	1,447.8	62.9	1.00
1977	1,310.3	36.3	7.8	263.1	3.2	135.6	14.2	1,770.5	59.3	0.97
1978	1,270.2	30.8	14.6	272.8	4.2	127.3	13.6	1,733.5	55.5	-0.30
1979	1,721.6	28.3	16.2	416.1	5.5	167.7	15.7	2,371.1	58.4	1.12
1980	3,221.9	-	18.4	545.0	6.1	327.4	17.7	4,136.5	63.9	1.62
1981	3,549.2	-	18.4	603.9	6.8	56.5	18.2	4,253.0	60.5	0.20
1982	2,704.3	-	6.8	535.3	7.5	-	20.3	3,274.2	46.0	-1.71
1983	1,979.2	-	1.8	444.1	15.5	-	20.8	2,461.4	37.5	15.86
1984[p]	2,170.1	-	3.7	442.9	16.2	-	63.6	2,696.5	41.1	-18.17

Notes:

1. include interest on balances

p. Provisional

Sources: Official *Estimates,* various issues; Central Bank, *Annual Report,* various issues; Ministry of Finance, *Review of the Economy,* various issues.

TABLE 12.4: CONTRIBUTORS TO INCOME TAX REVENUE,[1] 1954-1984
($m)

	Petroleum Companies[2]		Other Companies		Individuals		Withholding and others[3]		Total Taxes on Incomes & Profits	
	$m	% of Total	$m	% of Total	$m	% of Total	$m	% of Total	$m	% of Total
1954	14.4	54.3	7.7	29.1	4.4	16.6	-	-	26.5	100.0
1958	36.5	66.6	11.4	20.8	6.9	12.6	-	-	54.8	100.0
1963	49.9	71.1	(a)	(a)	20.3	28.9	-	-	70.2	100.0
1969	64.8	51.4	24.5	19.4	30.7	24.4	6.0 (4.0)	4.8	126.0	100.0
1973	57.6	28.5	48.2	23.9	89.5	44.3	6.7 (1.9)	3.3	202.0	100.0
1974	656.5	79.2	58.2	7.0	106.6	12.8	7.0 (2.2)	1.0	828.3	100.0
1975	958.9	81.1	66.9	5.6	141.5	12.0	15.0 (8.8)	1.3	1,182.3	100.0
1976	1,094.3	79.4	58.9	4.3	202.7	14.7	22.5 (12.1)	1.6	1,378.4	100.0
1977	1,346.6	73.3	231.3	12.6	240.8	13.1	19.0 (7.8)	1.0	1,837.7	100.0
1978	1,303.0	71.0	216.3	11.8	276.0	15.0	37.6 (14.6)	2.2	1,832.9	100.0
1979	1,749.9	70.5	248.3	10.0	453.2	18.3	29.8 (16.2)	1.2	2,481.2	100.0
1980	3,221.9	75.9	315.0	7.4	657.2	15.5	50.4	1.2	4,244.5	100.0

							(18.4)			
1981	3,549.2	72.6	422.5	8.6	861.2	17.6	59.8 (18.4)	1.2	4,892.7	100.0
1982	2,704.3	56.0	505.0	10.5	1,520.9	31.5	97.7[4] (6.8)	2.0	4,828.4	100.0
1983	1,979.2	46.7	589.0	13.9	1,604.9	37.9	61.5 (1.8)	1.5	4,234.6	100.0
1984[P]	2,170.1	49.7	515.2	11.8	1,517.5	34.8	159.3 (3.7)	3.7	4,362.1	100.0

Notes:

1. Totals from 1973 exclude the Unemployment Levy which has been in existence since 1970. The contributions (including interest) since 1973 have been as follows:

	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984
Oil Sector: $m	5.1	69.3	88.8	100.8	135.6	127.3	167.7	327.4	56.5	156.8	134.8	154.3
Non-Oil Sector: $m	9.5	8.6	13.2	20.2	40.4	47.5	61.7	88.9	144.5			

The figures for 1982-84 reflect contributions from both sectors.

2. Includes only Corporation and Throughput Taxes. To get the total contribution by the oil sector to government's revenue we would have to add the figures in this column to the figures relating to Withholding and Import Taxes, Royalties, Unemployment Levy and Excise Duties, as is done in Table 12.4.
3. Figures in brackets indicate the extent of the oil contribution.
4. Reflects contributions of both oil and non-oil companies.
5. Included in the figures under 'Petroleum Companies'.

P. Provisional.

n.a. not available.

Sources: *Estimates* of Revenue; *Annual Reports* of Central Bank, various issues; Ministry of Finance, *Review of the Economy*, various issues; *Review of Fiscal Measures*, various issues.

trend, there has been a rapid growth in revenues from import duties, even though as a proportion of total tax income the proportion has not shown any marked upward trend. In absolute terms, the contribution from import duties increased from $15 million (26 per cent of total tax income) in 1953 to $68 million (17 per cent of the total) in 1973. In 1983 the dollar contribution had risen to $552 million (or 10 per cent of total tax revenue). In 1984 the revenue from this source fell to $460 million, and in 1985 it is estimated to have fallen further. This, undoubtedly, reflects government's restrictions on imports in order to deal with a declining foreign reserves position. In this connection, a tax on the sale of airline tickets was imposed in 1983 in order to discourage foreign travel. This was followed in 1985 by a levy of 10 per cent on sales of foreign exchange for vacation and business travel and for emigration purposes. As indicated earlier, this latter measure was dropped in December, 1985 when the T.T. dollar was devalued.

THE PERFORMANCE AND 'BURDEN' OF THE TAX SYSTEMS

It is often difficult to separate a discussion on tax performance from issues relating to the tax 'burden'. In fact the two concepts reflect two different perspectives on the same data. A tax system which may be viewed as 'good' in terms of its revenue function may also be seen as an extremely burdensome one by tax-payers. A useful point at which a discussion on tax effort and tax burden can begin is an examination of tax revenue in relation to GDP (at factor cost).[9] In this respect, there are three main concepts which can be employed: (a) the ratio of tax revenue to GDP in a given period; (b) the marginal ratio which is the change in tax revenue divided by the change in GDP from one period to another;[10] and (c) tax elasticity or tax buoyancy, which is the percentage change in tax revenue in a particular period divided by the percentage change in GDP over the same period.[11] Alternatively, it can be seen as the marginal ratio multiplied by the ratio of base year income to base year tax revenue. It should be pointed out here that an important consideration in interpreting these statistics relates to the reliability of the data. While tax data (actual collections) tend to be fairly accurate, estimates of GDP often contain a large element of error. It should be noted, too, that tax collections in any one year may include previous year taxes that were not paid.

All three concepts, though related, give a different insight into a tax system. The average ratio shows the proportion of the national income that is 'compulsorily' diverted from the private sector to the government for public purposes. The marginal ratio tells what proportion of the change in income that is taken by taxes. The elasticity or buoyancy coefficient gives an indication of the responsiveness of the tax system to changes in income.[12] Column (3) of Table 12.5 shows tax revenues as a percentage of GDP between 1953 and 1985. Between 1963 and 1968 the ratio averaged about 14 per cent as compared to 16.1 per cent in the 1969/73 period. In 1974 this ratio rose to 26 per cent and in 1977 to over 30 per cent. Between 1977 and 1981 it averaged 31.6 per cent. Between 1982 and 1985 the ratio fell slightly, averaging 28.4 per cent. As Column (5) of the table shows, revenues from the taxation of incomes and profits have been the most important factor in the significant increase in the ratio since 1974. A further analysis as shown in Column (6) indicates that oil

revenues have been the most important element in recent trends. Oil revenues as a proportion of GDP rose from about 5 per cent in 1973 to an average of over 20 per cent between 1974 and 1981. Since 1982 the oil revenue ratio has dropped significantly, the figure for 1984 being estimated at 14 per cent. Some observers take the position that in view of the abnormal developments in the oil sector in recent years, a better indication of the performance of the tax system can be gained by looking at the ratio of non-oil tax revenues to non-oil GDP.[13] These ratios for the period since 1972 are presented in Column (4). The level increased from about 15 per cent in 1974 to an average of 19.5 per cent in the 1977-81 period. The proportion has declined slightly since 1981, the figure for 1984 being around 17 per cent.

As a matter of information Columns (5) to (10) of the table show the ratio of the various categories of taxes to GDP. As far as taxes from profits are concerned, the more relevant denominator would have been the share of profits in national income. In the same way, personal income would be the standard against which personal tax revenues should be analysed. But data on the functional distribution of income are not available. The figures in Column (7) (1973-84) show the contribution of the non-oil companies as a proportion of GDP. Between 1972 and 1984 this ratio fluctuated between 1.1 per cent and 3.0 per cent, average for the period being about 2.1 per cent. The proportion of personal income tax to GDP, which amounted to about 1 per cent in 1954 rose to 3.4 per cent in 1973. Between 1974 and 1981 it averaged around 3.6 per cent. Between 1982 and 1985, the average increased to 7.7 per cent. Given the progressive structure of the personal income tax, these ratios should have risen faster, but, no doubt, they would have been affected by the greater rebates, changes in structure and higher tax-exempt allowances granted between 1974 and 1981. The slowing down of the growth of GDP in the 1983-85 period may also have influenced the higher ratios in these two years. The proportion of indirect taxes (essentially import duties, excise and purchase taxes) to GDP which averaged about 5.5 per cent between 1963 and 1970 rose to over 6 per cent in 1971 and 1972 respectively. Since then the ratio has fluctuated between 3.4 per cent and 5.5 per cent.

With respect to the marginal tax rates, Table 12.6 gives an approximate idea for selected periods. The ratios in this table are simply the result of the absolute change in tax revenue divided by the absolute change in GDP over certain selected points in time and, therefore, do not give a completely accurate measure of the marginal rates. By definition, these ratios are affected not only by the changes in tax take from one period to another, but by fluctuations in GDP. Column (2) of the table shows the marginal ratio with respect to all taxes, and indicate, as we said earlier, the proportion of changes in income taken by taxes. The overall tax revenue depends not only on the base, but on the rate structure. The corporation tax is a proportional tax which means that the marginal and average rates are equal.[14] The personal income tax has a progressive tax structure, but the yields are often affected by changes in the bands, allowances, rebates, etc. The existing structure is based largely on changes introduced in the 1977 budget, which were designed to bring relief mainly to income earners in lower and lower-middle income brackets. As Figure 12.1 shows, the changes in bands undertaken then have served to increase the progressivity of the

TABLE 12.5: SELECTED TAX AGGREGATES AS A % OF GDP (AT CURRENT FACTOR COST), 1953–1985

(1) Year	(2) Total Recurrent Revenue[1] as a % of GDP	(3) Tax Revenue[1] as a % of GDP	(4) Non-Oil Tax Revenue[1] as a % of Non-oil GDP	(5) Tax on Incomes and Profits as a % of GDP	(6) Oil Revenues[1] as a % of GDP	(7) Non-Oil[2] Coys Income[3] Tax as a % of GDP	(8) Personal Income[3] Tax as a % of GDP	(9) Un-employment Levy[4] as a % of GDP	(10) Indirect Taxes[5] as a % of GDP
1953	17.3	13.5	n.a.	7.0	3.5[a]	1.9[a]	1.1[a]	-	5.5
1963	17.8	13.9	n.a.	6.7	n.a.	4.8	1.9	-	5.6
1964	17.7	14.1	n.a.	6.9	n.a.	5.0	1.9	-	5.6
1965	17.3	13.6	n.a.	6.3	n.a.	4.3	2.0	-	5.7
1966	17.1	13.2	n.a.	6.2	n.a.	3.8	2.2	-	5.5
1967	17.0	12.9	n.a.	6.5	n.a.	3.8	2.1	-	4.9
1968	17.6	13.1	n.a.	6.5	n.a.	4.4	1.9	-	5.2
1969	19.4	15.2	n.a.	8.1	n.a.	5.7	2.0	-	5.6
1970	19.6	15.5	n.a.	8.0	n.a.	4.6	2.4	0.6	5.9
1971	20.4	16.3	n.a.	8.3	n.a.	4.0	3.0	0.7	6.3
1972	20.0	16.5	17.6	8.3	3.8	1.7	3.3	0.6	6.4
1973	19.1	15.5	17.9	8.4	4.5	1.9	3.4	0.6	5.5
1974	31.1	26.1	15.1	21.6	21.4	1.1	3.5	1.8	3.4
1975	33.7	28.2	16.5	23.9	23.2	1.2	2.6	1.9	3.4
1976	37.1	29.1	18.2	24.0	23.3	1.6	3.3	2.2	4.0
1977	39.1	32.2	20.7	26.2	23.2	3.0	3.1	2.3	4.0
1978	38.2	30.0	19.1	24.4	21.1	2.6	3.4	2.2	4.3
1979	37.3	29.7	19.0	24.8	21.8	2.3	4.2	2.1	3.8

1980	40.8	33.7	19.5	29.1	26.0	2.0	4.1	2.6	3.6
1981	38.8	32.3	19.0	27.8	23.5	2.3	4.7	1.1	3.4
1982	35.3	29.3	15.9	24.6	16.2	2.5	7.5	0.6	3.6
1983	33.1	27.6	17.5	22.0	12.4	3.0	8.1	0.6	4.1
1984	33.2	28.7	17.4	22.8	13.7	2.6	7.7	0.7	4.5
1985[p]	33.4	28.1	n.a.	21.1	n.a.	n.a.	7.4	0.6	3.9

Notes:

1. Including the Unemployment Levy.
2. The ratios for the period 1963-71 refer to both oil and non-oil companies.
3. Excluding the Unemployment Levy.
4. Both oil and non-oil sector.
5. Essentially import duties, excise and purchase taxes.

a. 1954.

Sources: Calculated from data published in the following official publications: CSO, *Financial Statistics,* various issues; Ministry of Finance, *Review of the Economy,* various issues and Annual *Estimates,* various issues; CSO, *Annual Digest of Statistics,* various issues; Central Bank, *Annual Report,* various issues.

personal income tax structure.[15] A glance at Table 12.6 will show that the marginal rate for all taxes in the period 1973-83 was around 29 per cent, as compared to about 18 per cent in the 1968-73 period. The ratios shown for profits and income taxes cannot be properly assessed, since the relevant aggregates against which yields from these measures should be gauged are profits and personal income respectively. Data series for these income categories, however, are not available.

A major weakness in the use of the marginal tax ratio as an indicator of tax effort is that it does not take account of the average tax rate in the base period. In this respect, the elasticity or buoyancy coefficient is a superior measure. As indicated earlier, this ratio can be defined as the marginal tax ratio multiplied by the income/tax ratio in the base period, or the marginal tax ratio divided by the average tax ratio in the base period.[16] In Table 12.7 we present the buoyancy coefficients, with respect to major categories of taxes. The total tax revenue buoyancy between 1963 and 1973 was 1.2 per cent as compared to 1.88 per cent for the 1973-83 period. This would indicate that in these periods tax revenue grew faster than income. The coefficients for income tax (including the Un-employment Levy) was 1.41 between 1963 and 1973, while it was 2.8 per cent for the 1973-83 period. With respect to personal income tax (excluding the Un-employment Levy) it was 2.36 per cent in the former period and 2.51 per cent in the latter. The data available for the non-oil companies in the 1973-83 period indicate that the coefficient was of the order of 1.63 per cent as compared to 4.83 per cent for the oil companies. In both periods the coefficient relating to taxes on property was less than one. With respect to taxes on goods and services it was almost two in the 1963-73 period, but dropped to less than one in the 1973-83 period. In the latter period the coefficient relating to taxes on international trade was greater than one, as compared to 0.5 per cent in the earlier period.

The issue of the tax burden and its effects on the economy is a very controversial one. As indicated earlier, the average tax/income ratio is not only used as an index of tax effort, but as an indicator of tax burden. One reason for this is that while tax revenues can be regarded as payments to the government for the provision of public goods and services, because these payments may not be linked to specific procurement, people tend to find it difficult to associate the benefits of public expenditure (which are general in nature) with taxes paid. It is also based on a perception that government expenditure (or at least a high proportion of it) is 'wasteful', and the economy may be better off if the resources (purchasing power) are left in private hands. As an easy calculable proportion, and in the absence of objective criteria in measuring tax effort or burden, the ratio is often used both to make comparisons over time and internationally. A common exercise among economists is to judge the adequacy of tax effort in a particular country by comparing the tax ratios of countries perceived to be in a similar income bracket.[17] Such exercises, of course, are fraught with difficulties, and one has to be very careful in drawing conclusions from them. Not only do problems associated with the reliability of per capita income data tend to be assumed away, but the difficulties associated with making inter-country comparisons by converting income data to a common currency tend to be ignored. Also, countries with the same per capita income

FIGURE 12.1
THE PERSONAL INCOME TAX STRUCTURE, 1976 AND 1983

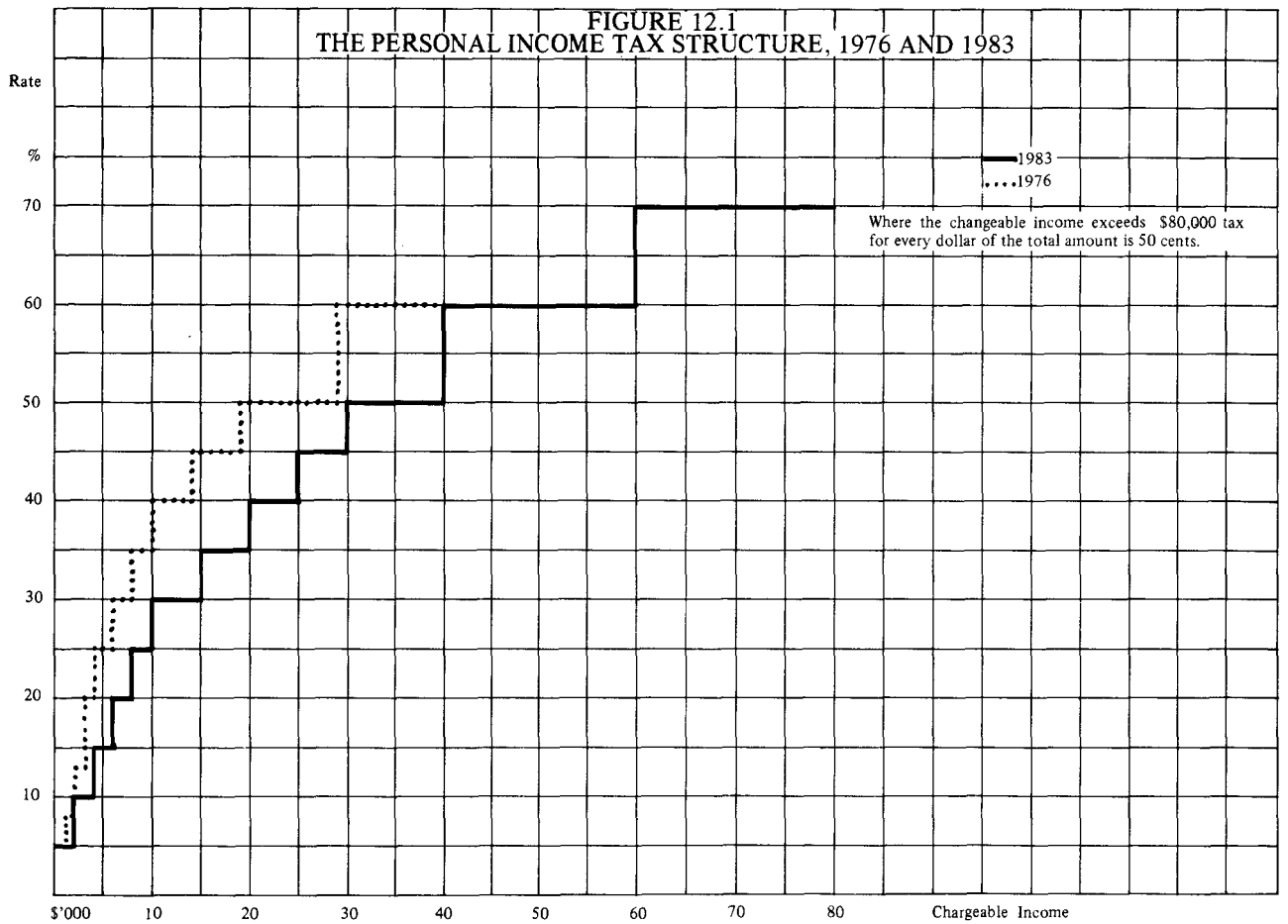

TABLE 12.6: MARGINAL TAX RATES[1], 1963-1985
(Percentages)

(1) Periods	(2) Total Taxes	(3) Income and Profits Tax	(4) Oil Coys; All Taxes	(5) Non-oil Coys.: Income Tax	(6) Personal Income Tax
1963-68	12.5	6.5	3.9[a]	n.a.	1.8
1968-73	17.8	9.8	3.7[a]	2.2[b]	5.8
1973-78	29.9	25.9	23.3	2.4	2.7
1978-83	29.1	22.8	7.0	3.6	12.9
1983-85	14.4	41.8	n.a.	9.2	24.5
1973-83	29.4	24.1	13.6	3.1	8.8

1. Absolute change in tax revenue divided by absolute change in GDP (at current factor cost).

a. all companies

b. 1969-73

n.a. not available.

Sources: Calculated from data in the following publications: Ministry of Finance, *Review of the Economy,* various issues; Central Bank, *Annual Report,* various issues; CSO, *Financial Statistics,* various issues; CSO, *Annual Digest of Statistics,* various issues.

may differ in essential respects, e.g. with respect to the distribution of income. It is also forgotten that such exercises are partial in that one can hardly discuss the level of taxation outside a framework of data on tax incidence and benefits (related to government expenditure in particular countries), or without reference to the efficiency of government spending.

In Trinidad and Tobago, a lively debate has raged in recent years with respect to the level of taxation, and its impact on the economy. Some hold that existing tax levels on companies serve to discourage enterprise and investment, while the personal income tax structure acts as a disincentive to personal effort and savings.[18] Others hold that "the tax burden in the non-oil sector in Trinidad and Tobago is not onerous when judged by international standards", and further argue that the case for "a downward adjustment in personal tax rates and in effective corporation taxes unrelated to new production and exports is not strong."[19] Both views, it should be noted, are largely intuitive and revolve around what is referred to in the theoretical literature as the income and substitution effects.[20] Those who argue for changes in the personal income tax rates imply that the marginal rates are so high that individuals prefer not to work (that is they substitute leisure for work), or resort to activities which yield

income which could be hidden from the tax authorities. Such a situation, of course, would affect savings, growth and employment and indirectly an expansion in the tax base. Those who argue against change seem to base their views on the perception that the marginal rates are not at a level where the substitution effect is dominating the income effect (that is the rates are not at a point which discourages the individual from working harder to maintain a given standard of living).

As we saw earlier, personal income tax revenue grew at an annual rate of about 34 per cent between 1973 and 1983 as compared to about 28 per cent for the non-oil companies. This growth in personal income tax revenue which has taken place against increases in allowances and rebates, as well as changes in structure, reflects an interrelationship between three basic factors: (a) the rate of inflation in the economy; (b) the rapid increase in personal incomes and the growth in employment; and (c) the progressivity of the personal income tax structure. In a situation where people are conscious of the effects of price increases on purchasing power, income growth tends to be significantly influenced by the rate of inflation. One implication of this growth is that existing tax payers move into higher tax brackets while new tax payers may be brought into the tax net. Unless allowances and tax bands are increased in line with taxation, tax payers will find themselves paying higher effective rates of taxation. In an effort to deal with this problem and at the same time redistribute the tax burden, the Trinidad and Tobago government has increased allowances from time to time, and made alterations to the structure, particularly in the lower and lower-middle brackets. These changes have had the effect of making the personal income tax structure even more progressive, as we saw earlier. It should be pointed out that there is no formal link between bands or rates and the inflation index. The discretionary changes by government appears to have only partly offset the effects of inflation. In addition, one has to bear in mind that inflation itself may have reduced the value of after-tax income.

The problems besetting the oil sector in more recent years may mean that the government is unlikely to institute further measures designed to reduce the tax burden in the non-oil sector. The slowing down in the growth of revenue and foreign exchange reserves in the context of stagnant or declining incomes means that not only would an increasing number of subsidies be reduced or eliminated, but that there would be increasing reliance on indirect taxes not only as a means of raising revenue, but to curb spending in certain directions. In this connection, a few observations need to be made. In the 1984 budget, reference was made to a 1983 report of the International Monetary Fund which revealed that "the effective rate of indirect taxes is low by international standards" and that "unlike the majority of countries, revenue from indirect taxation in Trinidad and Tobago is insufficient to cover subsidies and transfers." Earlier we made reference to the difficulties of looking at particular taxes, or group of taxes outside the overall tax system and of trying to compare the tax system of one country with that of another without taking into account the pattern of public expenditures and the efficiency of public spending. This simplistic approach in making international comparisons can often lead to policy prescriptions of the wrong kind. Why one should wish to compare the revenue from indirect taxes only with subsidies and transfers is not quite clear.

If the implication is that indirect taxes should increase in direct proportion to subsidies and transfers, then to the extent that the latter is the result of mismanagement, inefficiency or simply bad economic policies, the public would be made to pay for this. It has to be borne in mind, too, that revenue is only one function of a tax system, even though this purpose can be so overwhelming at times that it overrides every other consideration. Taxes have to be seen in relation to other social and economic objectives, e.g. the need to reduce inequity in the distribution of income by opting for, as far as possible, the ability to pay principle. Indirect taxes are, by nature, regressive and could have the effect of worsening the distribution of income in the society. It is recognised, of course, that some degree of progressivity could be built into an indirect tax system, but there are limits to this. Also, it is worth bearing in mind that indirect taxes have the tendency to increase the cost of living and this could exacerbate the wage-price spiral at a time when one may wish to reduce the strength of that relationship and increase the level of employment.

The need for revenue always has to be balanced against a variety of other considerations in a context where growth and development are important objectives, and where the stimulation of initiative and enterprise are seen to be important ingredients in this process. It is dangerous to base policies on intuitive position based on generalization, or insufficient evidence. This situation is, to some extent, the result of the unavailability of certain basic information such as the distribution of income in functional terms and over the general population. The tendency to examine the effects of the personal income tax in terms of the number of people filing returns and the proportions, in particular income categories, ignores important issues relating to evasion, the sharing of burden by the total population, the value of after-tax income, etc., and, therefore, cast serious doubts on conclusions drawn from such an exercise.

DETERMINANTS OF TAX REVENUE

As indicated earlier, we shall explore (using simple linear regression analysis) the impact of certain selected variables on the tax ratio. The variables used are defined below. This is followed by seven regression equations. The data used to obtain Equations (1) to (4) relate to the period 1963-83. Equations (5) to (7) which have the ratio of non-oil tax revenue to non-oil GDP as the dependent variable are based on data for the period 1973-83. The figures in brackets below the respective coefficients are standard errors.

Equation (1) shows that per capita income (PCI) 'explains' about 68 per cent of the movements in the tax ratio (T_1). The PCI coefficient has the expected sign and is significant, but the value of the D.W. statistic indicates a problem in the error term. In Equation (2) we add a foreign trade variable (FT) and this increases the R^2 to 70 per cent. The value of the D.W. statistic also improves. Though the value of the FT coefficient is larger than that of the PCI, the standard error of the former, however, casts some doubt on the significance of this variable. Equation (3) includes a third independent variable, namely the inflation rate which has the effect of increasing the R^2 to 77 per cent. The inflation rate coefficient is significant, but the D.W. statistic falls slightly. In Equation (4) the ratio of the oil sector's GDP contribution to total GDP is

included as a fourth independent variable. The coefficient is not only significant, but the inclusion of this variable raises the R^2 to 91 per cent and also improves the D.W. statistic.

TABLE 12.7: BUOYANCY COEFFICIENTS, 1953-1983

Periods	Total Tax Revenue[1]	Income Tax[2]				Unem-ployment Levy	Taxes on Property	Taxes on Goods & Services	Taxes on Inter-national Trade	Other Taxes	Total Recurrent Revenue
		Oil Coys	Other Coys.	Indi-viduals	Total						
1972-73	0.88	1.07(0.96)	1.36	1.25	1.07 (1.07)	0.77	0.96	6.86	-0.19	0.98	0.31
1973-74	2.75	16.41(16.50)	0.33	0.30	4.92(5.05)	6.89	0.40	-0.19	0.17	-0.60	2.61
1974-75	1.38	1.62(1.67)	0.55	1.15	1.51(1.47)	1.22	-0.36	0.65	1.35	1.37	1.36
1975-76	1.21	0.92(0.93)	-0.78	2.82	1.09(1.06)	0.93	2.31	1.53	2.91	-0.89	1.76
1976-77	1.58	1.00(1.05)	12.69	0.81	1.45(1.49)	1.97	-0.18	0.43	3.68	1.40	1.29
1977-78	0.00	-0.46(-0.50)	0.92	2.05	-0.003(-0.03)	0.23	8.3	2.12	-1.30	3.00	0.65
1978-79	0.96	1.04(1.04)	0.46	1.95	1.08(1.06)	0.92	-0.08	0.47	0.48	0.79	0.91
1979-80	1.42	1.83(1.85)	0.59	0.98	1.54(1.55)	1.76	-0.01	0.49	0.98	0.69	1.29
1980-81	0.66	0.71(0.11)	2.42	2.19	1.08(0.63)	-3.65	0.45	1.31	0.61	1.32	0.61
1981-82	0.17	-4.77(-4.82)	3.93	15.36	-0.27(-0.36)	-4.41	3.3	3.64	3.28	0.27	0.24
1982-83	0.46	-8.57(-8.57)	-10.63	-3.53	7.86(7.60)	-2.68	12.05	-24.74	-2.59	-8.19	4.97
1983-84	-6.7	-18.36(-18.36)	-23.90	10.31	-5.73(-6.48)	-32.2	-0.75	-49.93	22..99	8.64	0.27
1984-85	1.5	n.a. (n.a.)	n.a.	2.04	2.98(3.04)	4.90	-18.85	-0.87	-7.85	-10.14	0.86
1953-63	0.85	n.a.(n.a.)	n.a.	n.a.	0.94(0.94)	-	n.a.	n.a.	n.a.	n.a.	1.02
1963-73	1.20	n.a.(n.a.)	n.a.	2.36	1.27(1.41)	-	0.54	1.97	1.50	1.51	1.12
1973-83	1.88	4.83(4.51)	1.63	2.51	2.94(2.80)	1.03	0.17	0.58	1.12	0.27	1.82
1974-83	1.07	0.52(0.47)	2.39	3.74	1.09(1.00)	0.14	0.19	1.23	1.78	0.96	1.07
1953-83	1.82	2.90[a] -		1.49[a]	8.44[a] 3.05(3.14)	-	n.a.	n.a.	n.a.	n.a.	1.89

1. Includes Un-employment Levy a. 1954-83 n.a. not available.

2. Includes Withholding Taxes. The figures in brackets show the coefficients when the Un-employment Levy is included.

Sources: Calculated from data in the following publications: Ministry of Finance, *Review of the Economy*, various issues; Central Bank, *Annual Reports*, various issues; CSO, *Annual Statistical Digest*, various issues; CSO *Financial Statistics*, various issues.

Variables

T_1 = The ratio of total tax revenue to GDP at current factor cost

T_2 = The ratio of non-oil tax revenue to non-oil GDP at current factor cost

PCI = Per Capita GDP at current factor cost

FT = The ratio of merchandise exports plus imports to GDP at current factor cost

IR = The inflation rate as reflected in movements in the Retail Price Index

PS = The ratio of the oil sector's contribution to GDP to total GDP at current factor cost

Equations

$$T_1 = 15.0330 + \underset{(0.000193)}{0.001238}\ PCI \qquad (1963\text{-}83) \qquad (1)$$

R^2 = 68.36

D.W. = 0.34

$$T_1 = 8.2813 + \underset{(0.000192)}{0.001259}\ PCI + \underset{(0.086009)}{0.099456}\ FT \qquad (1963\text{-}83) \qquad (2)$$

R^2 = 70.55

D.W. = 0.69

$$T_1 = 12.3418 + \underset{(0.000246)}{0.000887}\ PCI + \underset{(0.090590)}{0.001439}\ FT + \underset{(0.2201)}{0.4753}\ IR \qquad (1963\text{-}83) \qquad (3)$$

R^2 = 76.89

D.W. = 0.65

$$T_1 = 0.4134 + \underset{(0.000160)}{0.001032}\ PCI + \underset{(0.058058)}{0.027080}\ FT - \underset{(0.171377)}{0.022305}\ IR + \underset{(0.089276)}{0.452756}\ PS \qquad (1963\text{-}83) \qquad (4)$$

R^2 = 91.44

D.W. = 1.05

$$T_2 = 16.32244 + 0.000279\ PCI \qquad (1973\text{-}83) \qquad (5)$$
$$(0.000087)$$

$$R^2 = 53.12$$
$$D.W. = 1.48$$

$$T_2 = 13.8194 + 0.000335\ PCI + 0.027862\ FT \qquad (1973\text{-}83) \qquad (6)$$
$$(0.000123) \qquad (0.041863)$$

$$R^2 = 55.58$$
$$D.W. = 1.25$$

$$T_2 = 17.8305 + 0.000313\ PCI + 0.021114\ FT \qquad (1973\text{-}83) \qquad (7)$$
$$(0.000104) \qquad (0.035306)$$

$$-0.226556\ IR$$
$$(0.10872)$$

$$R^2 = 72.59$$
$$D.W. = 1.92$$

Another effect to be noted is that the coefficient of the inflation variable becomes negative (which goes against our expectations) with a high standard error.

As already noted, Equations (5) to (7) have as the dependent variable the ratio of non-oil tax revenue to non-oil GDP (T_2). Because of the unavailability of certain data for the entire period, we have confined ourselves to the period 1973-83. Equation (5) shows that per capita GDP explains just over 50 per cent of the variation in T_2. The inclusion of the foreign trade variable (FT) in Equation (6) increases the R^2 slightly, but here again the standard error raises doubts about the significance of this variable. In Equation (7) the addition of the inflation rate variable (IR) increases the R^2 significantly to over 70 per cent, but the negative sign with which it is associated is not in accord with our expectations. In an inflationary situation with a progressive income tax structure, we tend to expect a fairly close and positive relationship between the inflation rate and the growth of income tax revenue.

In the foregoing section we have tended to focus on certain variables which reflect important features of the economy. Per capita income gives some indication of the level of development, while the foreign trade ratio represents the degree of openness of the economy. We have experimented with the inflation rate variable, even while recognising that it may be correlated with the growth of per capita nominal income. The oil sector, of course, exerts a significant influence on the whole economy. The interesting question at this point is, how well do the tax ratios, predicted by these independent variables compare with the actual tax ratios. Table 12.8 presents the relevant data. An examination of this data will show that the various equations (as is to be expected) give different predictions. There are occasions when the actual ratio was lower

than particular estimated ratios and vice versa. Generally, however, the actual tax effort (particularly for recent years) compares well with the predicted ratios of the various equations.

TABLE 12.8: ACTUAL TAX RATIOS COMPARED WITH PREDICTED RATIOS

	Actual Tax to GDP Ratio	Predicted Ratios			
		Eq. (1)	Eq. (2)	Eq. (3)	Eq. (4)
1963	13.9	16.4	15.6	15.2	15.9
1964	14.1	16.5	16.0	13.9	15.2
1965	13.6	16.5	16.2	14.3	14.2
1966	13.2	16.6	15.9	15.5	15.1
1967	12.9	16.7	15.9	14.6	15.6
1968	13.1	16.9	15.5	17.6	16.5
1969	15.2	16.9	16.4	15.0	14.8
1970	15.5	17.0	16.6	15.0	13.5
1971	16.3	17.1	17.1	15.6	13.2
1972	16.5	17.5	17.1	18.9	13.1
1973	15.5	18.0	22.7	21.7	18.0
1974	26.1	19.9	20.3	26.4	25.8
1975	28.2	21.2	21.5	24.9	29.2
1976	29.1	22.0	22.9	22.4	29.7
1977	32.2	23.5	23.6	24.1	26.8
1978	30.0	24.0	24.4	23.7	25.5
1979	29.7	26.7	27.1	27.8	28.7
1980	33.7	31.8	32.2	32.8	35.0
1981	32.3	33.9	33.4	32.7	33.4
1982	29.3	34.7	34.5	31.9	31.3
1983	27.6	35.6	34.8	35.4	29.1

CONCLUSION

There are grave difficulties in assessing the structure and performance of a tax system without taking into account a broad range of considerations. In this essay we have been content to examine certain trends in revenue, and the general effects of *ad hoc* changes to the tax system. The issues relating to equity and the impact of the tax system on incentives and investment need to be studied carefully and should not be dismissed in any cavalier fashion. The evidence indicates the need for a serious review of the tax structure against desired social and economic objectives, particularly in the light of the declining revenue contribution by the oil sector and the concern with the state of the non-oil activities and the levels of productivity in the economy.

NOTES

[1]Between 1973 and 1982, GDP (at current factor cost) grew by 26 per cent on average. At 1970 prices growth is estimated to have been around 5 per cent in the period. The year 1982 was followed by three consecutive years of negative growth, both in current and real terms. The official rate of inflation as reflected in the Retail Price index averaged about 14.6 per cent between 1973 and 1984.

[2]See A.N.R. Robinson's *The Mechanics of Independence,* The MIT Press, Massachusetts, 1971, p. 69.

[3]The figures also include receipts from the National Health Surcharge introduced in the 1984 Budget. The take from this measure in 1984 was $64 million and in 1985 an estimated $107 million. In the 1985 Budget the government also imposed a levy of 10 per cent on sales of foreign exchange for vacation and business travel and for emigration purposes. This levy yielded around $45 million in 1985. With the devaluation of the T.T. dollar in December 1985, the foreign exchange levy was removed.

[4]The Unemployment Levy was imposed in 1970 to provide the government with additional funds to be used in reducing the level of unemployment. Up to 1979 individuals paid 5 per cent of chargeable income beyond $10,000, but the figure has increased since to $35,000. Companies pay 5 per cent of their profits.

[5]It should be noted that the figures in this table exclude the Unemployment Levy contribution which are shown in note 1 of Table 12.3.

[6]It should be noted that the proportions in this table have been calculated on the basis of total taxes (including the Unemployment Levy).

[7]In the 1984 Budget Speech the Prime Minister and Minister of Finance announced that the land tax which was collected at a rate of 24 cents per acre or part thereof would be increased to $20 per acre or part thereof. He also announced a surcharge of 100 per cent on residential building tax assessments. These measures were not implemented, and in the 1985 Budget Speech a new set of proposals were adopted. These latter divided property into three categories: (a) up to 10 acres; (b) above 10 acres but less than 100 acres; and (c) above 100 acres. The tax relating to each category was $10 per acre for (a), $15 per acre for (b) and $20 per acre for (c). In each category the tax would be pro rated according to the size of the property.

[8]What is referred to as 'Taxes on International Trade' in Table 12.2 are largely import duties. Export duties are generally of little significance. In 1985 a stamp duty of 12 per cent was levied on bills of entry. Food and drugs were included. The yield from this measure in 1985 was estimated to be $251 million as compared to $302 million in 1985.

[9]Other measures of national income are often used. This particular concept is used here because of the easy availability of the data.

[10]Algebraically this can be written as $\frac{\Delta T}{\Delta Y}$, where Δ means change, T represents tax revenue and Y, GDP.

[11]Algebraically this can be written as $\frac{\Delta T}{T_b} \div \frac{\Delta Y}{Y_b}$ which can be re-written $\frac{\Delta T}{\Delta Y} \times \frac{Y_b}{T_b}$ or $\frac{\Delta T}{\Delta Y} \div \frac{T_b}{Y_b}$ where T_b and Y_b represent tax revenue and GDP in the base period respectively.

[12]In the literature a distinction is made between 'tax elasticity' and 'tax buoyancy'. The former is used when the basic responsiveness of a tax system (or of a particular tax) is being measured, that is yields resulting from discretionary changes in base and rates are not taken into account. The term buoyancy is used when total yields are being considered. In this essay we shall be concerned with the buoyancy of the tax system, but we shall use terms 'elasticity' and 'buoyancy' interchangeably.

[13]See, for example, Frank Rampersad, "Why Personal Income Tax should not be reduced: Comments on the Report of Productivity Group No. 3", *Personal Income Taxation,* Special Issue July 1982 of ASSET, (Journal of the Economics and Social Sciences Teachers Association).

[14]The corporation tax is 45 per cent of profits, while the Unemployment Levy is 5 per cent.

[15]From time to time there have also been increases in certain allowances, the introduction of new allowances, and modification of rebates to lower income groups.

[16]See note 11 above.

[17]See, for example, R. Chelliah *et al.* "Tax Ratios and Tax Effort in Developing Countries, 1969-71" in *IMF Staff Papers,* March, 1975. See also F. Rampersad, *op. cit.,* and Euric Bobb, "Some Observations on Personal Income Taxation in Trinidad and Tobago", in *ASSET, op. cit.*

[18]See Ministry of Finance, *Report of the Fiscal Review Committee,* September, 1981.

[19]See Frank Rampersad, *op cit.* See also E. Bobb, *op. cit.*

[20]For a good critical summary of both positions see Terrance Farrell's comments in the Special Issue of *ASSET,* cited earlier.

[21]See, E. Bobb, *op. cit.*

OBSERVATIONS ON THE PUBLIC DEBT

Ramesh Ramsaran

INTRODUCTION

In recent years, the inability of a number of developing countries to service their external debt and the consequences this could have for the international monetary and financial system has made the international debt situation a matter of major concern to the world community. The World Bank has estimated that at the end of 1983, 106 developing countries had an outstanding (including undisbursed) external debt of just over U.S.$634 billion.[1] Of this the Latin American and the Caribbean regions were holding U.S.$256.7 billion. Among the largest holders in this latter group were Argentina (U.S.$26.4 billion) Brazil (U.S$72.0 billion), Mexico U.S.$72.5 billion), Peru (U.S.$11.0 billion), Colombia (U.S.$10.8 billion) and Venezuela (U.S.$13.5 billion).[2] The fact that some of these countries have had to undertake further borrowing to service past loans has tended to increase their respective debt position since. At the end of 1984, the region's external debt had reached an estimated U.S.$360 billion, of which Brazil and Mexico were holding about half. It is worth pointing out here that one cannot gauge the implications of a given debt level to a particular country by looking at the outstanding amount in relation to that of other countries. Individual countries have different capacities for servicing debt. Jamaica, for example, has a smaller volume of debt than say Argentina, but the former may find its debt more difficult to bear, given its stage of development, the structure of the economy and its resource position.

The recent experience has shown that in the light of the growing protectionism in the international economy and the tendency for real interest rates to increase over time, developing countries need to be very careful in formulating their programme of borrowing. Rather than being an instrument of growth and development, borrowing could degenerate into a factor capable of stunting the whole development process. An increasing debt means that more and more resources (at least in absolute terms) have to be diverted towards its servicing. For an economy experiencing growth, this may not pose any problems. In a situation, however, where payments difficulties have emerged, debt servicing tends to encourage further borrowing. The longer the economy takes to recover, the more difficult the situation becomes. The adoption of short term measures to satisfy creditors can and often do delay that recovery by damaging the capacity of the economy to bounce back from difficult situations. Where debt servicing becomes the overriding concern, longer term development programmes may have to be abandoned. The decision by President Garcia of Peru to limit debt servicing to 10 per cent of export proceeds is tantamount to saying that the problem of underdevelopment must be addressed even while the debt is being serviced. In the present state of things, one recognises, of course, the implications for the international financial system, if all debtor countries were to follow this lead. In taking the shorter view, the whole purpose of using foreign savings, however, has to be kept in mind if the gains made are not to be wiped out. The drop in the standard of living which adjustment policies have, in some instances, produced may not be regained until 10 to 15 years hence.

Despite an accumulation of foreign reserves in the latter part of the 1970s and early 1980s, the government of Trinidad and Tobago increased both its local and foreign debt. To date, the government, apparently, has not had any problems servicing this debt. With the rapid decline in foreign reserves and the steep drop in oil prices in 1985 and early 1986, coupled with the devaluation of the T.T. dollar in December 1985, this situation could change. In the following pages we examine some general reasons for borrowing and the changing debt position of the Trinidad and Tobago government.

THE RATIONALE FOR BORROWING

Borrowing by governments is a normal and acceptable part of public finance operations, both in developed and developing countries. Public borrowing is undertaken for a number of reasons related to different aspects of government's functions. A change in the public debt may be incurred in the interest of stabilization objectives. Also, since government's receipts and outlays do not usually follow the same pattern over the fiscal years, borrowing may be necessary in order to meet temporary shortfalls in receipts. Unplanned deficits between receipts and payments are often financed by resort to borrowing in situations where raising revenue through further taxation is not feasible, increasing the public debt may be the only means through which a government can finance an expansion of its activities. In developing countries where the level of savings tend to be low and the expectations high, governments often have to pursue a higher rate of growth than is warranted by the level of domestic savings. In such circumstances where assistance, in the form of grants, is not forthcoming, and the further printing of money is not feasible, financing through borrowing is inevitable.

A common feature of most developing countries in the post-war period has been a rapid growth in public borrowing, both internally and externally. There is an important distinction between the internal debt and the external debt which should be pointed out here. With respect to the former public borrowing implies a transfer of current purchasing power from the private sector to the public sector. There is no direct addition to the country's resources. Repayment of the internal debt implies a reverse process. Borrowing from abroad adds to the purchasing power of the country and permits the importation of real resources. Repayment of foreign loans, ultimately, implies an outflow of goods and services. In view of these differences, it is clear that internal borrowing is not a complete substitute for foreign borrowing, and as such it is possible for a country to have a high level of domestic savings and still be in need of foreign funds in a situation where it has to purchase essential requirements from abroad.

THE GROWTH OF THE PUBLIC DEBT

The total public debt of Trinidad and Tobago increased from $392.6 million in 1970 to $3,412.9 million in 1985 or by almost 800 per cent at an average rate of 15.5 per cent per year.[3] There was growth in both the internal and external components. The former increased by almost five times over the period, as compared to almost 12 times for the latter. Up until 1976 the internal debt grew faster than the external, thus increasing its share of the total from 54.4 per cent in 1970 to 79 per cent in 1976. Since then, the internal category has tended to grow more slowly, amounting to only 38 per cent of the total in 1985. In order to see the growth in the absolute level of the public debt in

perspective, we have to examine changes in this magnitude in relation to movements in other variables which reflect the performance and expansion of the economy. A good one in this respect is the Gross Domestic Product. Column (5) of Table 13.1 shows the ratio of total debt to GDP. Between 1970 and 1973 the proportion averaged around 25 per cent. Despite the growth in the absolute level of outstanding debt thereafter, the ratio to GDP fluctuated between 9.4 per cent and 16.6 per cent between 1974 and 1981. The ratio has grown steadily since 1982 moving from 10.4 per cent in that year to an estimated 17.9 per cent in 1985. The recent increase has been the result of both an expansion of the debt and a steady decline in nominal GDP.

TABLE 13.1: GROWTH OF THE PUBLIC DEBT, 1970-1985
($m)

Year End	Total Debt Outstanding at End of Year (1) Internal	(2) External	(3) Total	(4) (1) as a % of (3)	(5) (3) as a % of GDP[1]
1970	213.6	179.0	392.6	54.4	23.7
1971	275.9	162.1	438.0	63.0	25.0
1972	333.9	199.2	533.1	62.6	25.7
1973	370.2	255.7	625.9	59.1	24.3
1974	372.1	256.6	628.7	59.2	15.0
1975	413.5	222.6	636.1	65.0	11.8
1976	484.7	128.9	613.6	79.0	9.9
1977	557.6	499.6	1,057.2	52.7	13.8
1978	599.1	756.5	1,355.6	44.2	16.6
1979	637.1	898.5	1,535.6	41.5	14.1
1980	661.8	1,047.9	1,709.7	38.7	10.8
1981	631.2	1,074.9	1,706.1	37.0	9.4
1982	756.4	1,338.1	2,095.0	36.1	10.4
1983	1,024.2	1,550.9	2,575.1	39.8	13.0
1984	1,089.8	2,013.0	3,102.8	35.1	15.7
1985[re]	1,299.0	2,113.9	3,412.9	38.1	17.9

[1] At current factor cost.

Sources: Central Bank, *Statistical Digest*, various issues;
Ministry of Finance, *Review of the Economy*, various issues.

As can be seen in Table 13.2, the maturity structure of the debt changed considerably between 1970 and 1985. With respect to the internal component the debt with a maturity of more than 10 years accounted for more than half of the total in 1970, but by 1984 this had fallen to 36.5 per cent. The debt with a maturity of up to 10 years accounted for 36.5 per cent in 1984 as compared to 14.2 per cent in 1970. The share of Treasury Bills in the total fell by about

6 percentage points accounting for 26 per cent in 1984. With respect to the external component, the entire debt had a maturity of more than 10 years in 1970. In 1984, this figure dropped to 12.7 per cent with some 87 per cent being in the medium term category, i.e. having a maturity of up to 10 years. This situation is explained by the greater reliance on commercial loans rather than official development assistance. It has been estimated that about 75 per cent of the outstanding disbursed external debt at the end of 1983 was due to private financial institutions. In 1984 loans totalling $340 million was raised in the Japanese market and a bond issue of $170 million in the U.K.

TABLE 13.2: MATURITY STRUCTURE OF THE NATIONAL DEBT,[1] 1970 and 1984

	1970		1984[p]	
Type of Debt	**$m**	**%**	**$m**	**%**
Internal	**234.4**	**100.0**	**1,095.9**	**100.0**
Treasury Bills	73.6	31.4	281.2	25.6
Short Term Bonds	0.3	0.1	15.0	1.4
Medium Term Bonds	33.2	14.2	399.6	36.5
Long Term Bonds	127.3	54.3	400.1	36.5
External	**158.2**	**100.0**	**1,988.6**	**100.0**
Short Term	-		-	-
Medium Term	-		1,736.3	87.3
Long Term	158.2	100.0	252.3	12.7
Total Debt	**392.6**		**3,084.5**	

[1]Debt outstanding at the end of the year.

p Provisional

Notes: (a) Short Term – Maturity of up to three years.

(i) Treasury Bills – maturity of up to 182 days.

(ii) Bonds – maturity of up to three years. In 1970 this category is included in Medium Term.

(b) Medium Term – maturity of up to 10 years.

(c) Long Term – maturity of more than 10 years.

Source: Central Bank, *Statistical Digest,* and *Annual Reports,* various issues.

A major part of government's foreign borrowing is related to its industrialization programme in the energy sector. All of the projects in this sector have been established or are proposed to be established on the basis of a signifi-

cant amount of foreign capital either in the form of debt and/or foreign equity participation. Table 13.3 which is taken from the 1980 Budget Speech shows the amount of debt incurred with respect to the resource-based industries in the 1974-78 period and the programme of borrowing that was projected for the 1980-83 period. Here, we can see that over 75 per cent of Tringen's capital was furnished by debt finance. With respect to the Iron and Steel Company (ISCOTT), (which is now wholly owned by the Government of Trinidad and Tobago, despite the initial intentions), the debt/equity ratio is about 40/60. The methanol plant was completed in 1984 at a cost of T.T.$430 million as was the urea plant at a cost of $425 million.[4] The aluminium project never got off the ground. The available energy resources have been a major inducement in the setting up of these highly capital intensive enterprises. The financial decision has, no doubt, been based on the premise that not only would they, eventually, be able to perform sufficiently well to justify the investment involved, but that they would attain a viability which could enable them to service the debt incurred in financing their construction. Failure to operate profitably or to earn foreign exchange would have serious implications for the government from a revenue and foreign reserves point of view, particularly in the context of the declining revenues from oil.

Commercial loans not only carry shorter repayment periods than those from official agencies, but are also associated with higher interest rates and shorter grace periods. Interest payments tend to account for a substantial part of total debt servicing. It is worth pointing out here that even though the nominal interest rate may fall, this could be offset by a decline in export prices resulting in an increase in the implicit average real rate of interest.[5] The exclusion of Trinidad and Tobago from access to World Bank funds is likely to increase dependence on commercial borrowing, assuming banks are prepared to lend in the existing circumstances.

TABLE 13.3: LONG TERM DEBTS FOR ENERGY-BASED INDUSTRIES ($m)

	1974-1978			1980-1983		
Industries	**Gov't. Equity**	**Debt**	**Other Equity**	**Gov't. Equity**	**Debt**	**Other Equity**
Tringen's	30.7	203.4	29.3	-	-	-
ISCOTT (Iron and Steel)	373.8	263.3	-	-	265.0	901.3
Methanol	-	-	-	115.0	173.0	-
Aluminium	-	-	-	333.4	839.8	-
Fertrin	55.0	161.8	52.3	29.0	293.0	27.8

Source: 1980 Budget Speech

In Table 13.4 we show the debt service payments for Trinidad and Tobago since 1970 and its relationship to certain key variables such as revenues, expendi-

TABLE 13.4: DEBT SERVICE PAYMENTS, 1970–1985

Year	Debt Servicing: Internal Interest (1)	Internal Capital Repayments[1] (2)	Internal (1) + (2) (3)	External Interest (4)	External Capital Repayments[1] (5)	External (4) + (5) (6)	(7) Total Debt Servicing[2] (3) + (6)	(8) (7) as a % of Total Expenditure	(9) (7) as a % of Current Revenue	(10) (7) as a % of GDP	(11) Debt Servicing Ratio[3]
	$mn	$mn	$mn	$mn	$mn	$mn	$mn				
1970	12.8	7.2	20.0	8.7	11.1	19.8	39.9	10.2	12.4	2.4	2.8
1971	15.0	8.1	23.1	8.5	11.1	19.6	43.0	9.2	12.1	2.4	2.8
1972	16.9	11.6	28.5	10.6	8.3	18.9	47.7	8.8	11.6	2.3	2.4
1973	21.6	14.1	35.7	13.0	10.4	23.4	59.4	9.4	12.0	2.3	2.2
1974	25.8	16.1	41.9	25.4	63.0	88.4	130.5	12.6	10.0	3.1	3.7
1975	27.1	19.7	46.8	19.7	31.1	50.8	97.8	7.8	5.4	1.8	1.8
1976	28.1	24.2	52.3	15.1	89.8	104.9	157.5	7.9	6.8	2.5	3.1
1977	32.6	18.7	51.3	10.0	15.2	25.2	78.6	3.4	2.6	1.0	0.7
1978	35.3	27.7	63.0	45.0	14.0	59.0	125.0	4.3	4.0	1.5	1.6
1979	38.4	32.2	70.6	87.3	14.8	102.1	173.7	4.1	4.3	1.6	2.1
1980	41.5	35.8	77.3	83.5	408.4	491.9	571.8	9.7	8.8	3.6	6.4
1981	44.7	34.1	78.8	134.7	44.2	178.9	258.6	3.8	3.7	1.4	2.5
1982	43.3	35.7	79.0	117.4	64.4	181.8	264.1	2.7	3.8	1.3	2.8
1983	39.3	29.4	68.7	157.8	271.7	429.5	502.9	5.5	7.7	2.5	6.8
1984	80.9	46.2	127.1	184.5	165.4	349.9	487.4	5.7	7.4	2.5	5.8
1985[re]	77.2	74.6	151.8	246.1	187.7	433.8	600.1	7.5	9.4	3.1	7.1

re – revised estimate

[1] includes Sinking Fund Contributions.

[2] figures include management and expenses of issue.

[3] service payments on the external debt expressed as a percentage of the exports of goods and non factor services.

Sources: Central Bank, *Statistical Digest*, various issues; Ministry of Finance, *Review of the Economy* and *Review of Fiscal Measures*, various issues.

tures, GDP and earnings from exports of goods and non-factor services. In 1970, debt service payments relating to the internal debt was $20 million which was roughly the same as that relating to the external debt. By 1985, however, the external service payments had grown to $434 million or by almost 22 times. In contrast, the service payments on the internal debt had grown roughly eight times. Total debt service payments increased from $40 million (10.2 per cent of total expenditure, 12.4 per cent of current revenue and 2.4 per cent of GDP) in 1970 to $600 million in 1985 (7.5 per cent of total expenditure, 9.4 per cent of current revenue and 3.1 per cent of GDP). This indicates that despite the growth in the absolute value of the public debt, the economy had grown at a sufficient rate to service the debt. As indicated earlier, when an economy ceases to grow the debt picture can change rapidly.

The service of the foreign debt requires foreign exchange, and for this reason a common approach in measuring a country's capacity to service its external debt is to look at the foreign service payments in relation to earnings from exports of goods and non-factor services. For Trinidad and Tobago, these ratios are shown in Column (11) of Table 13.4. Between 1970 and 1982, the figure fluctuated between 0.7 per cent and 6.4 per cent. Since 1983, it has averaged 6.6 per cent. By the standards of other countries this ratio though increasing does not appear to be high. But how good a guide to foreign borrowing is this device? The writers of the *Draft Development Plan 1983-86* posed 15 per cent of export earnings as the theoretical limit which the government should not surpass.[6] They saw this as the danger point, though no reason is advanced for choosing this particular figure.

The debt service ratio can be a very misleading guide where foreign borrowing is concerned. The ratio which tends to be widely used because of its simplicity and ease of calculation, is based on two figures – the foreign debt service payments in the numerator and export of goods and services in the denominator. Changes in any one of the two figures can affect the ratio. It means that a 10 per cent ratio this year could easily become 25 per cent the following year, if there is a certain drop in export earnings. The ratio, of course, tells us nothing about what is happening to other aggregates such as foreign exchange earnings, government revenue or imports. To get a good idea of the liquidity position of the economy, all these things have to be taken into account when one is projecting the level of foreign borrowing. The debt service ratio makes little sense in a situation where exports are highly concentrated and the level of earnings unstable.

CONCLUSION

It is clear from the above discussion that in considering the level of public debt there are a number of factors that has to be taken into account. There is no one figure that could apply to all countries or to the same country at all times. Since economic conditions vary widely, a level that might be small for one country might be too large for another. One factor that has a critical bearing on the level of the debt is the use to which the funds are put. Resources devoted to the expansion of the productive capacity of the country enhances the ability of the country to service its debt in future years. For this reason it is essential that the level of public borrowing be seen in a dynamic framework, or the country may deprive itself of the benefits of foreign funds when these are available. Borrowing, of course, to finance non-productive expenditues will put pressure on the servicing capacity of the country in future years. With respect to the use of the debt service ratio to gauge the extent of foreign borrowing, history offers no guide. Just as one country might find a particular figure useful while another finds the same figure totally irrelevant, in the same way a figure that looks small in one period might prove to be too large in another, if basic conditions in the national and international environment change. As an *ex-post* device the foreign debt service ratio can be used to compare what proportion of exports proceeds one country is using to service its external debt in relation to another one. Its use beyond this needs to be accompanied by a certain amount of caution.

As already noted, borrowing by governments in developing countries is strongly motivated by the need for funds to finance a desired rate of growth. In the case of Trinidad and Tobago, foreign debt grew during the 1970s and early 1980s side by side with a bulging foreign reserve position. At the end of 1973 the external debt outstanding amounted to 207 per cent of the central bank's external assets. By the end of 1981 this proportion had fallen to 15 per cent, but by the end of 1984 it had increased to 66 per cent. With the fall in foreign assets since, this proportion has no doubt increased further. As pointed out earlier, the expansion in public debt was only partly explainable by the desire for funds to meet financing requirements. Another reason advanced was the need to 'establish the country's credit-worthiness in the international capital markets.'[7] Whether this is a plausible reason for incurring debt has been the subject of some controversy. It is often argued that the premise on which this is based is quite illusory. While it is easy to attract lenders on the basis of a strong foreign reserve portion, it does not necessarily follow that the credit-worthiness established in such circumstances would necessarily prove to be of value in situations where the country is experiencing economic difficulties. Lenders tend to put great weight on the prospect for repayment and servicing ability in the context of existing debt, rather than on past economic conditions or performance.

Borrowing, properly thought out, can be a very useful fiscal instrument. However, when it is done to bolster inept domestic management policies, serious consequences can result. One of these consequences is loss of sovereignty over national decision-making in attempts to satisfy prospective creditors who may insist on certain kinds of policies being followed. To the extent that such policies are aimed at correcting deep seated structural problems they are often welcome. Very often however, the overriding objective becomes helping the country to service short and medium term debts to the jeopardy of long term development.

NOTES

[1]The World Bank, *Annual Report*, 1985, Washington, D.C. 1985.

[2]By 1985 this debt had increased further. Including the use of IMF credit, Argentina's external liabilities stood at US $50.8 billion, Brazil's at US $107.3 billion, Mexico's at US $99.0 billion, Peru's at US $13.4 billion, Colombia's at US $11.3 billion and Venezuela's at US $33.6 billion.

[3]This figure excludes loans and credits (external) guaranteed by the government on behalf of state enterprises. The actual contingent liability at August 1985 was TT $1,719.2 million. Of this, $942.3 million (55.8 per cent) were for ISCOTT, the National Energy Corporation and FERTRIN, while $536.8 million (31.2 per cent) were for the Telephone Company.

[4]See the 1985 Budget Speech.

[5]See U.N., *World Economic Survey*, 1985, p. 60.

[6]*The Imperatives of Adjustment* (Draft Development Plan 1983-96), p. 31.

[7]See the 1978 *Annual Report*, of the central bank, p. 23.

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