UNIVERSITY OF MANITOBA

THE IMPLICATIONS OF THE BANK OF CANADA'S CHANGE IN POLICY STRATEGY

A THESIS SUBMITTED TO THE FACULTY OF GRADUATE STUDIES IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE MASTER OF ARTS DEGREE

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WINNIPEG, MANITOBA

MAY, 1980

The Implications of the Bank of Canada's Change in Policy Strategy.

by

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A thesis submitted to the Faculty of Graduate Studies of the University of Manitoba in partial fulfillment of the requirements of the degree of

Master of Arts

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Preface

In an effort of this nature, one's debts to teachers, colleagues and the profession at large are beyond what can be acknowledged. In some small token, I would like to thank the donors of the more significant benefits without which this thesis would not have been completed in its present form. I would like to express my gratitude for intellectual and material benefits, the latter in the form of a Fellowship grant, received from the University of Manitoba and its Economics Department. In particular, I wish to thank Dr. Brian Scarfe for the initial instruction and aid he gave me prior to his departure for the University of Alberta; and Dr. Norman Cameron, whose comments, criticisms and encouragement formed an integral part of the completion of this thesis. I also wish to thank Dr. Clarence Barber and Dr. John McCallum who agreed to sit upon my Committee.

The sole responsibility for the analysis, conclusions, and any errors is my own.

INTRODUCTION

Monetary policy involves the manipulation of money and credit by the central Bank in order to effect certain macroeconomic results on the economy. The most important of these are: the level of income and employment, the general level of prices, and the foreign exchange value of the currency. Discretionary use of monetary policy allows the particular emphasis placed by the authorities on final policy objectives to determine appropriate monetary and credit conditions. A rules, or money supply target approach to policy, does not. It constrains the use of the money supply as a policy variable to a constant growth rate which approximates real economic growth. Stabilization policies which restrain or stimulate growth in income and employment, therefore, only occur as a result of actual growth in the money supply being above or below the targeted range. Interest rates will reflect the monetary conditions and so therefore will

the exchange rate insofar as the particular rate structure induces capital flows.

When in late 1975 the Bank of Canada expressed its policy stance in terms of a monetary growth target, it implied not only a conceptual shift but a change in emphasis on final policy objectives. The former discretionary framework had allowed exchange rate objectives to dominate the formulation of policy. The official intent of monetary policy in prior years was to stabilize the economy by prompting contra-cyclical changes in credit conditions. However, following the floating of the Canadian dollar and ensuing pressure on it to further appreciate, appropriate credit conditions were determined by endeavors of the authorities to keep the Canadian dollar within close parity to the United States dollar. Policy thereby incurred rapid rates of expansion in all definitions of the money supply. The counterpart to the expansiveness of Canadian monetary policy in the early seventies, in conjunction with other inflationary pressures which emerged internationally, was the increasing incidence of domestic inflation. In consequence, rising Canadian interest rates over 1973 and 1974 reflected the incorporation of an inflationary premium rather than decisive restraint on the part of the monetary authority. Within the inflationary environment

credit market conditions were unreliable indicators for policy direction and as the problems associated with price inflation became more apparent, the Bank of Canada opted for stable monetary expansion in order to secure contra-cyclical changes in credit conditions.

The adoption of a monetary target strategy implied that exchange rate priorities would no longer determine the direction of monetary policy in Canada. Interest rates would reflect domestic economic conditions and could be expected to move in a direction opposite to rates in the United States should there arise dissimilar levels of economic activity in the two countries. Monetary policy, therefore, would be entirely devoted to the domestic situation and independent of balance of payments considerations which had permeated previous policy.

This thesis attempts to evaluate the extent to which this, in fact, did occur. It, therefore, examines how policy reflected the particular weights placed on final objectives within the two alternative approaches to Canadian monetary policy subsequent to the floating of the dollar in 1970. It concludes that in the latter period exchange rate objectives were temporarily subordinated. Until 1978, policy was in strict accord with the intent of

the new strategy. Monetary targets were determined by the objective of controlling inflation and policy was directed to the achievement of targets. This required Canadian interest rates to move in opposite directions from rates in the United States from 1975 through 1977, with the result that the Canadian dollar initially appreciated and then depreciated in terms of the United States dollar. The extent of depreciation over 1977 ultimately resulted in import costs being the largest contributing factor to price inflation in Canada. The Bank therefore reinstated the exchange rate as a dominant objective of Canadian monetary policy and in so doing implied the limitations on Canada conducting an entirely independent monetary policy for long.

Chapter one describes the previous discretionary approach to policy: Section I, the conceptual framework; Sections II and III, the implementation of policy from 1970 to 1975; Section IV, the specific failure of that strategy. Chapter two summarizes selected theoretical literature on implementing a monetary target strategy. Chapter three examines the Bank of Canada's specific adaptation of a monetary target strategy: Section I, the technical underpinning; Sections II and III, the implementation and impact of policy from 1975 through 1978; Section IV, the consistency between policy intent

and performance.

Bank pronouncements in the Annual Reports and statistical data published in the Monthly Reviews essentially are the means used to analyse and interpret the intent, implementation and impact of policy in the two periods.

CHAPTER ONE

CREDIT MARKET CONDITIONS STRATEGY

The Bank of Canada's adoption in late 1975 of a monetary growth target signified, at least, an acknowledgement of some relationship between inflation and excessive monetary expansion and, at most, an indictment of the former credit market approach to policy implementation.

A credit market conditions approach to monetary policy presumes that changes in credit conditions influence the spending decisions of consumers and investors and thereby output, employment and prices. Furthermore, a differential between domestic and international credit conditions can be expected to affect capital flows and therefore exert upward or downward pressure on the exchange rate. The behavior of final policy targets therefore engenders discretionary action by the central Bank to impact upon domestic credit conditions. Methods in implementing policy may directly affect: the cash reserve positions of the chartered banks; the level and structure of interest rates; or the availability of credit. More control over the money supply is implied when policy relies on cash reserve management and more control over interest rates with use of the other methods. Appropriate credit conditions and

the methods in implementing such conditions are thereby determined by the central Bank's particular emphasis on final targets.

I. TARGETS OF POLICY

Final Targets: Financial Stability; Economic Stabilization; External Balance

The Bank of Canada's submission to the Porter Commission, in the mid sixties stated the final policy objectives of the Bank of Canada to be in accord with those of national economic policy, namely,

> "'...sustained economic growth at high levels of employment and efficiency, internal price stability, and the maintenance of a sound external position....'".[1]

That these did not always require the same direction and degree of policy was implicit in former Governor Louis Rasminsky's observation:

> "'...to the extent that there is difficulty in attaining all of these goals at the same time there is some difference of opinion as to the respective weight that should be attached to them.'"[2]

The Bank of Canada's apparent perception of final objectives and the respective weight designated them in policy formulation has been detailed in a study by Pierre Fortin of the 1962 - 1973 period.[3] Fortin's sources were the Bank's Annual Reports, monthly reviews and official statements. His conclusion concurred with a widely accepted view that - among the Bank's proximate final targets of financial stability, economic

stabilization and external balance - the external balance objective dominated the formulation of policy during the period in question.

Fortin suggested the Bank maintained stability and efficiency in financial markets consistent with other final objectives. The tendency was therefore to accommodate shifts in the excess demand for credit in order to stabilize interest rates at levels consistent with the internal and external situation. This fostered an accommodating approach to cash reserve management, rationalized defensive operations to avoid abrupt changes in credit market conditions of an inappropriate nature, and prescribed financing government borrowing requirements in a manner non-disruptive to the market.[4]

The Bank's economic stabilization objective was perceived to be the intertemporal maximization of employment prospects at minimum inflation and evolved from the Bank's aims regarding full employment and price stability.[5] These were not considered mutually exclusive goals but rather employment secured by inflationary policies was thought to be at the cost of future employment. There is no consistent agreement on a target figure for the full-employment unemployment rate and committment to a zero degree of inflation was

qualified subsequent to 1965 with the advent of inflation in the United States. From that time, the Bank began to stress the limitations of Canadian anti-inflationary policies and suggest:

> "'...objectives in this country should be to do as well as the United States and perhaps a little better.'"[6]

According to Fortin, the economic indicators used by the Bank to reflect the necessity of stabilization measures - in tighter or easier credit conditions - were measures of capacity utilization and of cost and price inflation. In addition, projections were made for the future impact on the economy of such factors as fiscal policy, exports, and foreign prices. However time lags between enactment and impact of policy in addition to the usual uncertainties regarding forecasts generally decreed that monetary policy for stabilization purposes be gradualist in its approach.[7]

The objective of external balance was defined under Governor Rasminsky as: a progressive reduction in the current account deficit of the Canadian balance of international payments; the maintenance of a stable exchange rate at an appropriate level; a level of foreign

exchange reserves which could absorb the short-run fluctuation in the flows of international receipts and payments; and the adequate financing of the current account deficit by net capital imports, with the inflow of short term capital playing only a modest role.[8] In Forton's view, however, with the current account position more a datum than a controllable variable and an official or self-imposed commitment to exchange rate parity - the Bank's objective in external balance was essentially to establish a relative structure of Canadian interest rates conducive to attracting a net inflow of capital sufficient to maintain the proper balance between demand and supply forces in the foreign exchange market. In addition there was a tendency to depart from the usual "gradualist" guideline in monetary policy if exchange rate conditions required it. [9]

Intermediate Targets: Cost and Availability Of Credit

The intermediate objectives of the Bank of Canada's credit market approach to policy were "appropriate credit conditions" - as reflected in cost and availability of credit. Credit conditions referred to:

> "'...the whole range of terms and conditions affecting borrowing and lending and the purchase and sale of financial assets: the level and structure of securities, prices

> and yields, institutional lending and deposit rates, and the various requirements (over and above the payment of a certain rate of interest) which lenders require of borrowers as a condition of making funds available...'"[10]

The indicators used by the Bank of Canada to reflect credit conditions were nominal interest rates and chartered bank liquidity - as indicated by either the Canadian Liquid Asset or Free Liquid Asset Ratios.[11]

Available policy instruments are those which impact on the total amount of chartered bank reserves - open market operations, shifts of government deposits, and foreign currency assets - and others which regulate the availability of credit - the variable secondary reserve ratio and moral suasion. Open market purchases of government securities by the Bank of Canada increase reserves and sales decrease reserves. Government deposits at the chartered banks are normally used to neutralize the impact of government spending but if not offset by the Bank of Canada can be used to increase or decrease chartered bank reserves. Changes in foreign exchange can impact on reserves to the extent they become government deposits. The secondary reserve ratio is used to release or impound bank liquidity and moral suasion, to direct credit to or from certain sectors. The Bank Rate is largely used to signal changes in rates that have already

taken place or the intent of policy. It is tied only very loosely to interest rates in setting the rate at which chartered banks or recognized money dealers can borrow from the central bank. Chartered bank borrowing is minimal and the dealers may borrow at 1/4 of 1% above the average treasury bill rate at the latest weekly tender, subject to a minimum rate of the Bank Rate minus 3/4 of 1% and a maximum of the Bank Rate plus 1/2 of 1%.

Instruments which do not impact on securities markets and thereby directly on interest rates are: transfers of government deposits, foreign currency swaps with the Exchange Fund Account, changes in the secondary reserve ratio and moral suasion.

Operative Dynamic

From his particular study, Pierre Fortin concluded the Bank of Canada's modus operandi during the sixties and early seventies to have evolved from an interest rate rule wherein: the interest rate level suitable to the current economic situation was actively established; the desired interest rate level was defended against any change in the market which would tend to push it off target; external considerations had the greatest weight in determining the desired interest rate

level.[12] Thomas Courchene's analysis of Canadian Monetary Policy over the 1970 - 1975 period essentially agreed with this view.[13] Courchene concluded that Bank policy, subsequent to the floating of the Canadian dollar in May 1970, was unduly expansionary in order to avert further exchange rate appreciation.

Operations by the Bank of Canada, from 1970 to 1975 would seem to indicate that monetary policy was directed to ensure interest rates conducive to external considerations while chartered bank liquidity was controlled for internal considerations. Bank operations were largely designated to the quick realignment of Canadian interest rates with those of the United States, in order to avert international capital movements with destabilizing effects on the exchange rate. This was reinforced in the chartered banking system by moral suasion in addition to induced liquidity, initially, and illiquidity subsequently. Both nominal interest rates and chartered bank liquidity thereby reflected credit conditions engendered by the objective of maintaining the Canadian dollar within close parity to that of the U.S.

II. MONETARY POLICY: POST FLOAT 1970 - 1974

In the years 1970 and 1971 the Bank's internal and external final targets both required expansionary monetary policy. Subsequently, the external target of maintaining the exchange rate necessitated expansionary policies whereas the internal situation prescribed restraint. The precise timing of change in the internal situation is open to controversy. The Bank noted it in 1973.

The unpegging of the Canadian dollar in June 1970 coincided with a strong recessionary period in Canada and the rest of the world. The dollar rapidly appreciated from the fixed parity of $.925 to the $.97 - $.99 range in U. S. dollars and there was obviously very real limits to which it could be allowed to further appreciate. Awareness of this and policy intentions were explicit in the Bank of Canada's 1970 Annual Report:

> "The exchange rate is a very important price in a country that trades with the outside world on the scale that Canada does: changes in it have important effects on the level and nature of economic activity in Canada, particularly on the position of industries that export and that compete with imports. It is not therefore possible to ignore it, even when it floats. Public financial management must continue to be concerned that the exchange rate broadly suitable to the development of Canada's international trade and compatible with the

> desired structure of our balance of payments, in particular the size of the balance on current accounts. It is therefore still necessary to seek a mix of fiscal and monetary policy which encourages levels of interest rates in Canada that are consistent with the exchange rates staying within the suitable range."14

As a consequence of recovery in domestic and international demand, real G.N.P. rose from 2.5% growth rate in 1970 to 5.8% in 1971, to 6% in 1972, to just under 7% in 1973. In 1974, a downturn in international demand not only preceded the economic slowdown in Canada, but was more severe.

There was strong upward pressure on the Canadian dollar during much of the 1970-1974 period. This was due to strong trade accounts in 1970 and 1971 as well as international currency imbalances resulting from the large deficit position of the United States balance of payments. Further pressure on the Canadian currency was exerted by the OPEC oil price increases of late 1973, in that Canada was initially perceived to be essentially self-sufficient in petroleum.

Policy Implementation

There are two ways in which a central bank can effect a particular exchange rate - by intervening in the

foreign exchange market and in directing monetary policy to ensure appropriate domestic interest rate levels relative to the rest of the world. Given an exchange rate commitment to near parity with the United States dollar, upward pressure on the Canadian dollar subsequent to its float in May 1970 decreed extensive purchases of foreign exchange and expansionary monetary policy. Coincident with the unpegging of the Canadian dollar, the Bank Rate was decreased to 7% and therefore indicated the intent of policy. It was further lowered in successive stages to 4 3/4% at the end of 1971 and remained at that level until the first quarter of 1973. There also ensued large acquisitions of foreign exchange. As the Governor of the Bank of Canada stated in the 1971 Annual Report:

> "It was the case in 1970 and to a lesser extent in 1971 that the surplus on current account implied the need for an offsetting net export of capital, or an increase in exchange reserves, or a rise in the level of the Canadian dollar in the exchange market. In the event, the accommodation to our changed external situation included all three elements. The value of the Canadian dollar rose and we added to our foreign reserves, but a large part of the adjustment was accomplished by a shift in our international capital movement....the adjustment in our international capital account was assisted by the relatively easy credit conditions encouraged by Bank of Canada policies."[16]

TABLE I

BANK OF CANADA Net Purchased from (+) or net sales to (-) investment dealers and banks (MILLIONS)

	Treasury Bonds[1] Bills	3 years	3-5	5-10	Over 10 years	Bankers' Acceptances[2]	Sub-total of bills and bonds and bankers' acceptances
1970	+ 246	- 17	- 43	- 9	+ 21		+198
1971	+ 653	+ 76	+100	- 17	+ 75		+887
1972	+ 337	+ 444	+ 61	- 1	+ 39		+880
1973	+129	+ 542	-133	- 43	+ 10		+504
1974	+421.5	+ 80.4	- 79.9	+ 7.3+	2.9	+103.1	+535.3

[1] Classified by years to maturity at time of transactions.

[2] Includes maturing bankers' acceptances

SOURCE: APPENDIX TABLE III: BANK OF CANADA ANNUAL REPORTS: 1970, 1971, 1972, 1973, 1974,

TABLE II

GOVERNMENT OF CANADA			Canadian Dollar Financing requirement met by:					
Net financing requirement		Reduction or increase (-) in Canadian dollar cash balances	Increase in holdings of Canadian Dollar securities outside Government accounts					
			Total	Banking System		General Public		
Excluding foreign exchange financing	Including foreign exchange financing			Bank of Canada	Chartered Banks	Canada Savings Bonds	Marketable securities	
342	1,907	- 85	1,992	183	1,510	714	-415	1970
1,479	2,162	- 823	2,985	572	721	2,519	-827	1971
1,309	1,430	- 127	1,557	586	- 192	1,195	- 32	1972
740	15	69	- 54	572	159	-384	-401	1973
1,550	1,826	-2,359	4,185	1,014	831	2,444	-104	1974

SOURCE: BANK OF CANADA REVIEW, May 1976, Table 2

In fact, in order to avert further exchange rate appreciation Bank policies maintained interest rates relative to U. S. rates which lowered the cost of credit appreciably and encouraged easy credit conditions during the entire period. Other than limiting the availability of liquid assets to chartered banks in the form of

Treasury Bills and Government securities, policy did not indicate restraint despite statements of such in 1973 and 1974. The Bank was a net purchaser of securities in the market in all years; the rate of net purchase increased some 400 percent in 1971. Financing operations undertaken for the government sourced the major proportion of debt with the chartered banks in 1970 and the general public in 1971 and 1972. The latter entirely represented holdings in Canada Savings Bonds. After a decline in 1973, C.S.B. holdings again represented the major source of funds in 1974. Chartered bank liquidity as reflected in the ratios of Canadian Liquid Assets and Free Liquid Assets rose in 1970 and 1971 and declined substantially thereafter.

In 1970, the Bank of Canada's stated policy to reserves was that of restraint in July, easement in August and restraint from mid November to the end of the year.[17] The chartered banks were allowed to fund the major portion of increased government financial requirements. The banks were a ready market for such securities in that the secondary reserve requirements has been raised in mid May and the quiescent state of the economy did not engender large private demands for credit. Marketable securities to the general public would have entailed higher interest rates than the Bank wished to incur.[18] In addition, moral suasion was exerted to

limit interest rates paid by the banks on large Canadian dollar deposits.[19]

In early February, 1971, the Bank resumed a stated accommodative approach to chartered bank reserves until the second quarter when interest rates in the United States moved upward. In August, U. S. policies caused a reversal in the upward trend there whereupon the Bank of Canada again stated an accommodative stance.[20] Reliance on chartered bank financing of Government requirements was largely replaced by a Canada Savings Bond issue to the general public. This enabled a sharp reduction in Treasury Bill issues beginning in November.[21] Restriction in the availability of liquid assets to chartered banks followed upon revival of economic activity and the resumption of strong private credit demands. The banks' requirements for liquid assets to support their increased acquisitions of less liquid assets thereby ensured a captive market for future Treasury Bill issues of low yields. Upward pressure on interest rates incurred by the reduction in chartered bank holdings of liquid assets was moderated by large purchases of securities by the Bank of Canada.[22] In addition, the secondary reserve ratio was lowered to 8.5% effective December 1971 and 8% effective January 1972.

The Bank of Canada continued actively in the market until well into the summer of 1972, in order to moderate rises in Canadian short term rates that exceeded U. S. levels. [23] The combination of low liquid asset ratios and strong credit demands had provoked the chartered banks to bid up rates paid on large short term deposits in order to satisfy credit demands. The Bank ultimately had to resort to control by moral suasion in the Winnipeg Agreement of June 12 which limited rates paid on these deposits. The Bank also increased its net holdings of foreign currency assets by $191 million. These largely reflected swap transactions with the Exchange Fund Account and were used in the management of chartered bank reserves.[24]

As interest rates in the United States turned upward in 1973, the Bank Rate in Canada was raised five times during the year to 7 1/4%. The stated intention of the Bank's management of chartered bank cash reserves was to moderate the upward movement of rates rather than stop it.[25] The Bank was active in the securities market throughout the year buying short and medium term issues. In addition, swap transactions with the Exchange Fund Account were again used to provide for the large increases in the amount of notes in circulation and in the required cash reserves of the chartered banks.[26]

In 1974, the Bank Rate was raised from 7 1/4% to 8 1/4% on April 15, to 8 3/4% on May 13 and 9 1/4% on July 24. It remained at that level until November 18 when it was reduced to 8 1/4%.[27] Canadian interest rates followed the lead in U. S. rates. The Bank purchased both short and medium term Government of Canada Bonds in order to moderate rapidly rising rates in March and early April and sold bonds in October and November to temper the excessive downward movement in rates.[28] The stated aim of cash management policy was "...to offer resistance to the strong credit demands and to moderate the rate of monetary growth."[29] Neither was accomplished.

III. IMPACT OF POLICY

Intermediate Targets

TABLE III

SELECTED CANADIAN AND UNITED STATES INTEREST RATES

YEAR/QUARTER (END OF PERIOD)	CANADA								UNITED STATES			
	BANK RATE	TREASURY BILL	90-DAY PAPER RATE	GOVERNMENT OF CANADA BOND YIELDS 3-5	10 YEAR+	CORPORATE BOND RATE	BANKS 90 DAY DEPOSITS	CHARTERED PRIME RATE	TREASURY BILL RATE	GOVT. BOND RATE 3-5	90 DAY PAPER RATE	CORPORATE BOND RATE
ANNUAL												
1970	6.00	4.40	5.58	5.42	6.99	8.83	5.80	7.50	4.96	5.93	6.12	7.75
1971	4.75	3.21	4.32	5.09	6.56	8.24	4.62	6.00	3.82	5.28	4.48	7.38
1972	4.75	3.65	5.15	6.00	7.12	8.15	5.13	6.00	5.25	6.12	5.65	7.25
1973	7.25	6.35	10.25	7.25	7.70	8.81	8.50	9.50	7.65	6.86	9.60	7.87
1974	8.75	7.12	10.25	6.96	8.77	10.72	9.75	11.00	7.34	7.19	9.60	9.24
QUARTERLY												
1970:1	8.00	7.00	7.89	7.32	7.93	9.24	7.50	8.50	6.45	7.01	8.73	8.01
2	7.00	5.94	7.31	7.07	8.09	9.24	7.00	8.50	6.83	7.88	8.74	8.67
3	6.50	5.39	6.68	7.12	7.88	9.19	6.50	8.00	5.98	7.08	7.48	8.35
4	6.00	4.40	5.58	5.42	6.99	8.83	5.80	7.50	4.96	5.93	6.12	7.75
1971:1	5.25	3.16	3.53	5.19	6.76	8.37	3.31	6.50	3.60	4.81	4.36	7.42
2	5.25	3.37	3.98	6.02	7.30	8.57	4.31	6.50	5.22	6.75	5.78	7.83
3	5.25	4.06	4.99	5.63	6.97	8.32	5.09	6.50	4.80	5.94	5.78	7.62
4	4.75	3.21	4.32	5.09	6.56	8.24	4.62	6.00	3.82	5.28	4.48	7.38
1972:1	4.75	3.57	5.51	6.29	7.24	8.24	5.67	6.00	3.94	5.96	4.48	7.36
2	4.75	3.50	5.16	6.68	7.45	8.34	5.17	6.00	4.24	5.84	5.00	7.37
3	4.75	3.62	5.01	6.56	7.46	8.46	5.25	6.00	4.76	6.13	5.26	7.37
4	4.75	3.65	5.15	6.00	7.12	8.15	5.13	6.00	5.25	6.12	5.65	7.25
1973:1	4.75	4.79	5.24	6.50	7.30	8.22	5.13	6.00	6.44	6.75	7.22	7.49
2	6.25	5.48	7.40	7.19	7.74	8.40	6.87	7.75	7.47	6.87	8.55	7.51
3	7.25	6.50	8.92	7.25	7.72	8.62	8.50	9.00	7.57	6.89	10.14	7.84
4	7.25	6.35	10.25	7.25	7.70	8.81	8.50	9.50	7.65	6.86	9.60	7.87
1974:1	7.25	6.51	9.20	7.59	8.19	9.26	8.50	9.50	8.59	7.61	9.60	8.22
2	8.75	8.75	11.70	9.22	9.46	10.45	9.75	11.00	8.11	8.28	12.13	8.80
3	9.25	8.94	11.04	8.89	9.67	10.99	9.75	11.50	6.98	8.18	10.93	9.52
4	8.75	7.12	10.25	6.96	8.77	10.72	9.75	11.00	7.34	7.19	9.60	9.24

SOURCE: Bank of Canada Reviews, February 1975, May 1976, Table 20.

Initially, Bank policy substantially reduced the cost of credit and actively encouraged its availability. From late 1971, however, liquid assets made available to the chartered banks were sharply curtailed. Policy therefore constrained liquid asset ratios and implied the intent of discouraging growth in chartered bank loans while maintaining the low cost of credit. As indicated in the above table, nominal short term interest rates

followed the direction of U. S. rates, generally at a slightly lower level. The differential widened in 1973. Long term rates remained higher than those of the United States with a larger spread in 1974. Despite large increases in credit demanded by all sectors and decreasing liquid asset ratios within the chartered banking system, there was no major sustained rise in interest rate levels until 1973. In 1973 and 1974, there was a move to restraint insofar as Bank policy further constrained chartered bank liquidity and allowed nominal rates to rise considerably.

TABLE IV

CREDIT EXPANSION BY SECTOR

	1970	1971	1972	1973	1974
	(Millions of Dollars)				
Funds Raised in Credit Markets					
By Domestic Private Sector	6,423	10,080	10,924	17,300	20,588
(Per Cent of GNP)	7.5	10.6	10.3	14.0	14.0
Loans to Persons	674	1,525	2,367	2,865	3,050
Mortgages	1,761	2,750	4,238	6,897	7,459
Non-financial Business Short-Term	778	2,282	1,899	3,898	5,849
Non-financial Business Long-Term	3,086	3,315	2,200	3,045	3,813
Short Term by Other Private Domestic	125	208	221	595	417
By Government Sector	3,346	4,759	4,454	2,916	7,866
Federal	1,952	3,012	1,520	-42	4,147
Federal Enterprises	-216	-274	249	393	16
Provincial	1,460	1,877	2,227	1,882	2,748
Municipal	240	144	458	683	975
By non-residents	3,028	2,250	875	1,953	1,621
Total	12,887	17,089	16,253	22,169	30,095
(Per Cent of GNP)	15.0	17.9	15.4	17.9	20.3
Funds Raised Abroad	1,666	2,657	2,816	2,091	3,646
Funds Raised in Canada	11,221	14,432	13,437	20,078	26,449
(Per Cent of GNP)	13.1	15.2	12.7	16.2	17.8

SOURCE: ECONOMIC REVIEW, APRIL, 1979

In spite of the move to restraint, financial requirements of all sectors in the economy continued to increase and furthermore, be satisfied. Total funds borrowed by non-financial business, consumers, mortgagors and governments rose from approximately $9.8 billion in 1970 to $14.8 billion in 1971, $15.4 billion in 1972, $20.2 billion in 1973 and to $28.5 billion in 1974. The credit demands of all sectors were largely accommodated in Canada. Funds obtained domestically represented well over eighty percent of total funds raised from 1970 to 1972 and rose to over ninety percent in 1973 and eighty-eight percent in 1974. This was reflected in extensive growth in all chartered bank assets despite declining liquid asset ratios.

TABLE V

SELECTED CHARTERED BANK ASSETS
(Growth rates are in annual terms)

Year/Quarter	Canadian Dollar Major Assets	Business Loans	Ordinary Personal Loans	Mortgages	Canadian Liquid Assets	Net Foreign Assets ($ Million)	Canadian Liquid Asset Ratio	Free Liquid Asset Ratio
	% Growth	% Growth	% Growth	% Growth	% Growth	Level	Level	Level
ANNUAL								
1970	8.4	2.8	10.5	10.0	20.8		28.4	14.5
1971	18.6	19.4	24.3	58.4	16.7		30.5	15.9
1972	18.5	24.6	20.0	51.4	1.3		26.7	13.4
1973	18.5	26.4	25.6	30.6	3.4		23.4	10.4
1974	20.2	21.5	21.1	32.0	15.6		21.5	8.9
1970:1	2.3	2.1	3.6	2.1	-0.8	-227	26.6	12.7
2	1.0	-1.3	2.0	8.8	31.8	94	28.4	14.6
3	13.6	12.4	15.7	11.3	20.4	-94	28.8	14.5
4	13.7	2.2	16.4	17.0	33.5	158	30.0	16.0
1971:1	16.7	11.2	19.3	19.1	31.9	146	30.9	16.3
2	17.2	6.5	21.1	63.6	19.9	266	31.1	16.2
3	20.2	22.0	25.6	56.0	10.7	281	30.5	15.7
4	20.5	33.2	24.0	48.5	6.4	307	29.5	15.5
1972:1	21.3	27.2	18.0	39.5	0.9	60	28.2	14.6
2	22.8	35.2	18.8	40.3	0.8	-434	26.9	33.4
3	11.6	12.4	25.6	42.8	-1.0	-476	26.1	12.8
4	14.5	16.0	22.4	40.7	4.3	-446	25.5	12.8
1973:1	18.1	21.2	26.4	33.7	1.5	-681	24.5	11.2
2	19.1	22.0	30.0	30.6	4.7	-974	23.7	10.6
3	17.9	23.6	18.0	30.1	4.4	-1,316	23.0	10.0
4	19.0	29.2	19.6	26.1	3.2	-1,279	22.2	9.8
1974:1	21.1	22.0	21.2	26.7	18.0	-1,626	22.1	9.1
2	19.9	23.6	22.8	30.4	4.9	-2,989	21.4	8.5
3	22.2	16.0	16.8	28.4	16.0	-2,473	21.1	8.5
4	17.7	18.0	17.6	25.2	24.7	-804	21.4	9.5

SOURCE: COURCHENE, Money Inflation and the Bank of Canada

The continued supply of credit reflected a decline, over the period, in desireable liquid asset ratios which was due in large part to more sophisticated liability management on the part of the banks. In addition Courchene has suggested the tolerable liquid asset ratio to be a chartered bank policy variable dependent on: the level and structure of interest rates; the composition of maturity structure of bank liabilities; composition of liquid assets and the composition of less liquid assets.[30] During the period, the maturity structure of bank liabilities was lengthened in that fixed term and notice deposits rose relative to demand deposits. Furthermore the growing incidence of mortgage loans and associated monthly payments rendered less liquid assets more liquid.

The continued demand for credit likely reflected the state of economic activity and the low real cost of credit. Although by late 1973 and 1974 the level of nominal interst rates was high, real rates were very low.

Final Targets

TABLE VI

SELECTED ECONOMIC INDICATORS

(Rates of change based on seasonally adjusted data, percentage rates unless otherwise indicated)

Years/ Quarters	M1	M2*	M3	GNP in current prices	GNP at constant prices	Unemployment rate	Consumer price index		Balance of Payments (millions of dollars)		Change in reserves US Millions	U.S. dollar in Canadian dollars
							All items	Excluding Food	Merchandise trade	Current account		
1970	2.3	5.5	5.2	7.4	2.5	5.7	3.3	3.8	3,052	1,106	1,572.7	1.0440
1971	12.8	14.4	16.6	9.1	5.8	6.2	2.9	3.5	2,563	442	891.4	1.0098
1972	14.0	17.6	16.8	11.2	6.0	6.2	4.8	3.7	1,857	-471	479.5	0.9905
1973	14.4	13.4	14.5	15.9	6.9	5.6	7.6	5.0	2,720	18	-281.7	1.0001
1974	9.7	20.0	17.9	17.0	2.8	5.4	10.9	8.9	1,519	-1,643	57.1	0.9780
1971 1	17.4	15.2	17.6	8.9	9.7	6.3	1.7	3.4	3,356	1,736	165.7	1.0084
2	19.1	14.4	20.3	14.5	8.0	6.4	2.2	3.3	2,572	668	7.1	1.0127
3	15.4	18.0	18.6	13.1	10.6	6.1	3.2	3.5	2,612	424	139.8	1.0157
4	17.9	15.3	17.0	10.5	3.7	6.1	4.2	3.7	1,712	-1,060	578.8	1.0024
1972 1	10.5	19.4	18.4	7.9	2.8	6.0	4.8	3.8	1,624	-624	178.0	1.0028
2	8.3	23.8	18.6	15.5	11.5	6.2	4.3	3.7	2,088	-100	469.3	0.9876
3	17.9	13.4	10.9	7.0	1.1	6.4	4.8	3.6	1,224	-988	3.4	0.9830
4	19.1	10.5	11.2	16.1	8.3	6.4	5.2	3.7	2,492	-172	-171.2	0.9886
1973 1	1.1	9.5	14.5	20.0	11.2	5.9	5.9	4.2	2,804	224	-82.3	0.9971
2	13.4	13.2	17.6	13.1	3.4	5.5	7.3	4.6	3,076	652	-107.2	0.9998
3	14.3	15.6	16.4	17.5	5.2	5.5	8.2	5.4	2,332	-388	-325.1	1.0038
4	5.8	24.1	14.3	22.0	7.3	5.5	9.0	6.0	2,668	-416	232.9	0.9997
1974 1	13.0	24.7	18.3	19.8	3.6	5.3	9.7	6.9	3,100	-36	333.5	0.9800
2	18.6	17.3	15.3	13.3	-2.3	5.2	10.7	8.4	2,164	-536	21.4	0.9653
3	-5.0	18.6	23.8	18.0	-	5.3	11.0	9.6	880	-2,008	-314.7	0.9805
4	3.7	16.7	26.0	4.8	-1.1	5.6	12.0	10.4	-68	-3,992	16.9	0.9861

SOURCE: Bank of Canada Review, May 1976, Table I

Policy stimulated the components of domestic demand and, in keeping the exchange rate from further appreciating, aided external demand. Growth in nominal GNE accellerated from a rate of approximately 7% in 1970 to over 10% in 1971, 11% in 1972, 17% in 1973 and 19% in 1974. This reflected high rates of consumer expenditure in all years following 1970 and in business fixed capital formation during 1973 and 1974. After registering a marked slowdown in 1971, external demand picked

up in 1972 and accelerated sharply over 1973 and 1974.

TABLE VII

CHANGES IN GROSS NATIONAL EXPENDITURE

Years	Personal expenditure on consumer goods and services	Government current expenditure on goods and services	Gross fixed capital formation				Value of physical change in inventories[1, 2]	Exports of goods and services	Imports of goods and services	Gross national expenditure at market prices
			Total	Government	Business[1]	Housing				
	(Per cent change from previous period)									
1970	6.0	16.8	4.5	3.9	9.8	-9	-1,362	12.8	2.0	7.4
1971	10.5	10.5	15.5	18.3	7.8	37.6	287	4.8	8.9	10.2
1972	11.9	10.5	10.8	5.7	8.4	20.8	152	10.8	14.7	11.4
1973	14.6	13.5	20.8	8.5	21.8	26.9	1,044	25.0	22.6	17.4
1974	17.0	20.7	23.0	26.9	23.9	18.8	1,863	26.9	32.5	19.4

SOURCE: ECONOMIC REVIEW, APRIL, 1979

TABLE VIII

STRUCTURAL CHANGES IN DEMAND

Years	Personal expenditure on consumer goods and services	Government current expenditure on goods and services	Gross fixed capital formation				Value of physical change in inventories[2]	Exports of goods and services	Imports of goods and services	Residual error of estimate	Gross national expenditure at market prices
			Total	Government	Business[1]	Housing					
1970	58.7	19.4	21.0	3.7	13.2	4.1	0.1	24.7	-23.6	-0.4	100.0
1971	58.9	19.4	22.0	4.0	12.9	5.1	0.4	23.5	-23.3	-0.9	100.0
1972	59.1	19.3	21.9	3.8	12.6	5.5	0.5	23.4	-24.0	-0.2	100.0
1973	57.7	18.6	22.5	3.5	13.1	6.0	1.3	24.9	-25.1	—	100.0
1974	56.5	18.9	23.2	3.7	13.6	5.9	2.3	26.4	-27.8	0.4	100.0

SOURCE: ECONOMIC REVIEW, April, 1979

The dollar was maintained well within a 2% band of the U. S. dollar during most of the period. The Canadian currency however depreciated considerably relative to other major currencies which were allowed to float from late 1972 to mid 1973.[31]

Following the major oil price increases in December 1973, substantial capital inflows contributed to a steady appreciation against most currencies. The Canadian dollar reached a fourteen year high in April of 1974 at $1.04 U. S. In the second and third quarters, capital inflows subsided and the increased deficit on current account - reflective of the much less pronounced economic decline in Canada relative to other major countries - engendered a steady fall in the exchange rate. This was tempered in the fourth quarter by a substantial rise in external borrowing. In 1974 therefore, fluctuation in the external value of the Canadian dollar was much greater than in previous years. This reflected a divergence in the performance of the Canadian economy relative to other major industrialized countries and a disadvantageous change in the Canadian terms of trade. Moreover, accelerating wage and price increases relative to the rest of the world implied the continuation of large current account deficits and future problems in external balance.

Distortions in financial markets were incurred in 1972. Reflecting the expansionary phase of economic activity and the low relative cost of credit, loan demand increased during a time of low relative liquidity in the chartered banking system. The C.L.A. and F.L.A. ratios had consistently declined from mid 1971 and the policy of

providing no new net issues of treasury bills was being continued. In addition, the financing of the cash deficit was accomplished by drawing down government deposits at the chartered banks. The banks consequently, vigorously bid for large term deposits in order to meet loan demands. This ultimately resulted in interest rates offered on term deposits being above the prime lending rate, and substantial erosion of the commercial paper market by the chartered banks. These distortions were arrested by the enactment of the Winnipeg Agreement in June, 1972 which limited the rates of interest offered on deposits of a $100,000.00 or more for terms up to 364 days to a maximum of 5-1/2%.[32]

Policy was accompanied by the increasing incidence of inflation and a decreasing unemployment rate. As indicated in Table VI, the rate of change in unemployment went from 5.7% in 1970, to 6.2% in 1971 and 1972, down to 5.6% in 1973 and 5.4% in 1974. The annual rate of change in the Consumers Price Index climbed from 2.9% in 1971 to 10.9% in 1974 . There was possibly, therefore, some short run trade-off exhibited between inflation and unemployment but it entailed high rates of price increases to secure an appreciable drop in the unemployment rate.

Chartered Bank Reserves and Money Supply

As indicated in Table VI, the corollary of Bank policy in maintaining interest rates conducive to near exchange rate parity with the United States was the expansion of all definitions of the money supply.

If deficit financing is accomplished in selling bonds to the non bank public - with no new creation of reserves - the effect is to generally tighten the money market and raise interest rates. If, however, the deficit is financed through a creation of additional reserves by the central bank, there will be no tightening of the money market. Government financial operations undertaken by the Bank of Canada during the 1970-1974 period substantially increased purchases of Canada Savings Bonds by the public and acquisitions of Government securities by the Bank of Canada and the chartered banks. The public's holdings of Government securities other than Canada Savings Bonds consistently declined. Purchases of securities by the Bank of Canada represented definite increases in chartered bank reserves and monetization of debt.

Chartered bank purchase of Government debt from the central Bank normally implies at least some temporary contraction in bank supply of credit insofar as these purchases result in less reserves. Sizeable purchases in

1970 and 1971 by the chartered banks were not accompanied by restriction in the supply of credit. Courchene contends the Bank of Canada - with the use of Government deposits - had an accommodative approach which ensured that chartered bank bond purchases not result in losses of cash reserves.[33] In the Annual Reports, the Bank frequently stated an accomodative stance to reserve management and relative to the average level of $812 million in the seven previous years Government deposits increased appreciably.[34] The level of Government deposits at the chartered banks rose from $1,257 million in 1970 to $2,239 million, $2,407 million, $2,361 million and $4,682 million in the subsequent four years. [35] They reflected not only proceeds from the C.S.B. campaigns but also outstanding foreign exchange swaps with the Exchange Fund. The latter almost doubled in 1971 and again in 1973.[36] The rising incidence of government deposits undoubtedly aided the banks in satisfying large demands for credit and moreover coincided with a period in which the banks were apparently content to allow liquid asset ratios to decline.

IV. FAILURE OF THE CREDIT MARKET CONDITIONS STRATEGY

The failure of the credit market conditions strategy, in implementing policy was in not enacting restraint on the Canadian economy when the stated intention of policy - after 1972 - was restraint. Credit market conditions, however, did not essentially reflect the direction of policy but rather were the result of policy with regard to the exchange rate objective.

Technical Underpinning of the Credit Market Conditions Strategy

The econometric model of the Canadian economy that the Bank of Canada uses to explain the major components of aggregate demand and supply and to assess the impact of fiscal and monetary policies is the RDX2.[37] The central variable is constant dollar business product which is defined as the sum of personal consumption, business investment, residential construction, government non-wage expenditure and net exports. Personal consumption is explained principally by a permanent income hypothesis, in addition to private sector wealth and government transfers to persons. The

factor cost governing decisions by entrepreneurs to produce more output are the expected costs of labour and physical capital. The cost of physical capital is comprised of the real (inflation adjusted) cost of financing acquisitions of capital, the corporate tax rate and the rate of depreciation allowable for tax purposes. Residential construction is linked to mortgage approvals which are regarded as being dependent on prevailing interest rates and on the size of the financial sector which in turn depends on the flow of new savings into financial institutions. Demand for Canadian export is explained by the level of activity in foreign economies and by the ratio between Canadian export prices and the prices of foreign produced equivalent goods. Import demand is explained by the level of spending in the various expenditure catagories as well as by the ratio of domestic prices to import prices and the level of capacity utilization in the domestic economy. The diverse nature of the major catagories of government expenditure doesn't permit a simple unified explanation. However, the difference between government expenditure and receipts is the financing requirement of the government sector which must be met by the issue of new government debt.

The financial sector is constructed around the balance sheets of the major financial institutions in the

economy. The liabilities of these institutions are explained as part of a portfolio model that reflects the public's preferred holdings - in terms of wealth, income and relative rates of return - of all major liquid financial assets. These liabilities, along with the public's holdings in currency, constitute the various definitions of the money supply.

Short term interest rates are determined in the model by a function that represents the response of the monetary authorities to economic development; where the authorities are conducting policy in terms of specified monetary targets the short term interest rate is determined as a consequence of actions taken by the central Bank to keep the money supply within the target range. The long term interest rates are based on a term structure relationship with Canadian short term rates and are also influenced by U.S. long term rates. The real supply price of capital is defined as the inflation adjusted rate of return necessary to induce financial investors to purchase the debt on equity associated with new investment.

International capital flows are influenced by the relative rates of return in Canada and the United States in addition to the wealth of borrowers and lenders in the

U.S. and Canada - of which the outstanding amount of borrowers' debts, principally Canadian, and the stock of lenders' assets, principally U.S., are the dominant elements. The exchange rate is regarded as the price that clears the balance of payment once all speculative capital flows have stabilized. The determinants in the exchange rate equation include the basic balance of payments, an expectations variable to reflect leads and lags and elements involved in portfolio choices (the difference between Canadian and U.S. short term interest rates, stocks of assets and liabilities, the wealth of Canadian and U.S. borrowers and lenders, and expectations about the future rate of exchange) underlining the implicit equation for short term capital flows.

The basic view of price formation in RDX2 is that prices are set by applying a mark up on the anticipated unit cost of labour and capital. In addition, import prices, level of capacity utilization and the magnitude of unintended inventory holdings also play a role in determining prices. Wages in the private sector are determined according to the theory that over the long run workers bargain for and obtain a real wage that rises with the trend rate of growth in productivity. In the short run: the impact of unanticipated inflation and/or slack labour market conditions may prevent the attainment of

real wage targets; an unexpected decrease in the rate of inflation or tight labour market conditions may result in negotiated wages that temporarily exceed the real wage target.

A graphical illustration of the model can be depicted by the Hicks Hansen ISLM income expenditure model in which interest rates are the perceived transmission mechanism of monetary policy on the economic system. The IS curve represents all points where aggregate demand for real goods equals total quantity produced. The LM curve represents all points at which the demand for money equals the supply. The balance of payments schedule of an economy is incorporated into the model with a BP curve which represents all points at which the current account surplus (or deficit) equals the net capital outflow (or inflow). Therefore, at the current exchange rate, the demand for foreign currency equals the supply.

The particular shapes of the curves are derived from the underlying assumptions determining them. Savings, investment and import functions essentially determine the IS curve while demand and supply for money functions determine the LM curve. The export and import functions (current account) together with the domestic investment demand for foreign currency and the foreign

investment demand for domestic currency (capital account) determine the BP curve. The IS curve is conceived to be flatter the smaller the propensity to import, the larger the propensity to consume, and the more responsive investment is to the interest rate. The LM curve is conceived to be flatter the more responsive the demand for money is to the interest rate, the smaller the propensity to import and the more interest responsive international capital flows, the flatter the BP curve. Points of simultaneous internal and external balance are achieved, under fixed exchange rate systems, when the money supply is allowed to respond to short term capital flows thereby moving the LM curve to the intersection of the BP and IS curves. With flexible exchange rates, the BP and IS curves move until their intersection occurs along the LM curve. The latter system implies the domestic currency appreciates or depreciates in terms of foreign currency according to supply and demand forces in the international market. [38]

The LM curve is depicted in Figure 1-1. The demand for real balances is in the southeast quadrant and the demand for speculative or transactions balances is in the northwest quadrant. The supply of real balances is in the southwest quadrant. The LM curve shifts outward causing a lower rate of interest to be associated with a given level of income if the supply of real balances is

increased or the demand for money at any given level ofinterest rate is reduced.

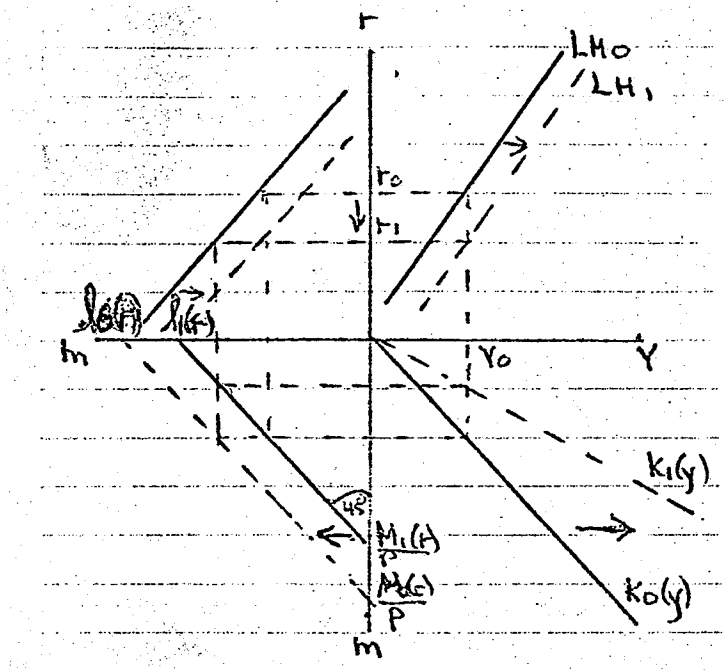


FIGURE 1-1

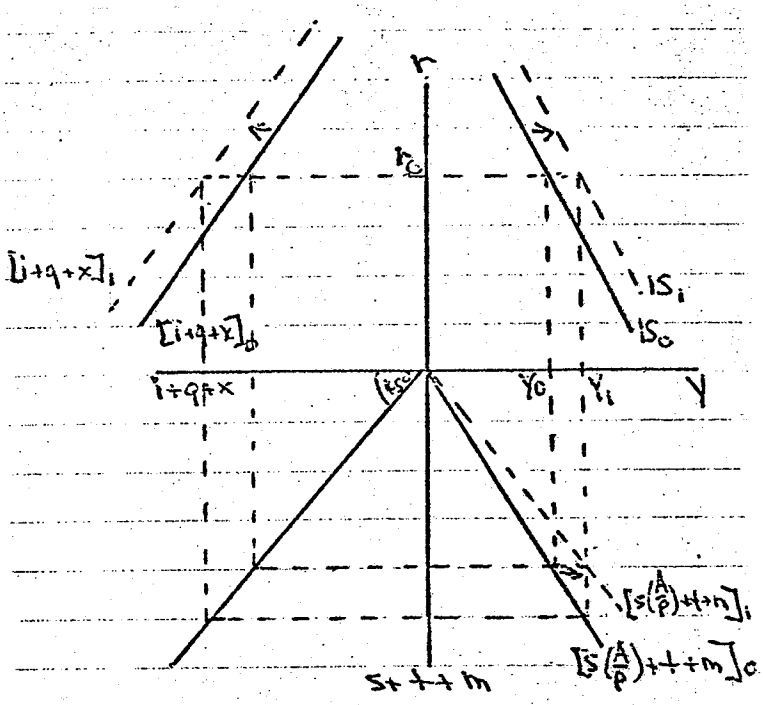


FIGURE 2-1

The IS curve is depicted in Figure 1-2. The savings, tax and import functions are depicted in the southeast quadrant and the investment, government expenditure and export functions in the northwest quadrant. The IS curve shifts outward causing a higher level of income to be associated with any given interest rate if, at any given income level, either savings, taxes or imports are reduced or, at any given interest rate, the level of investment, government expenditure or exports is increased.

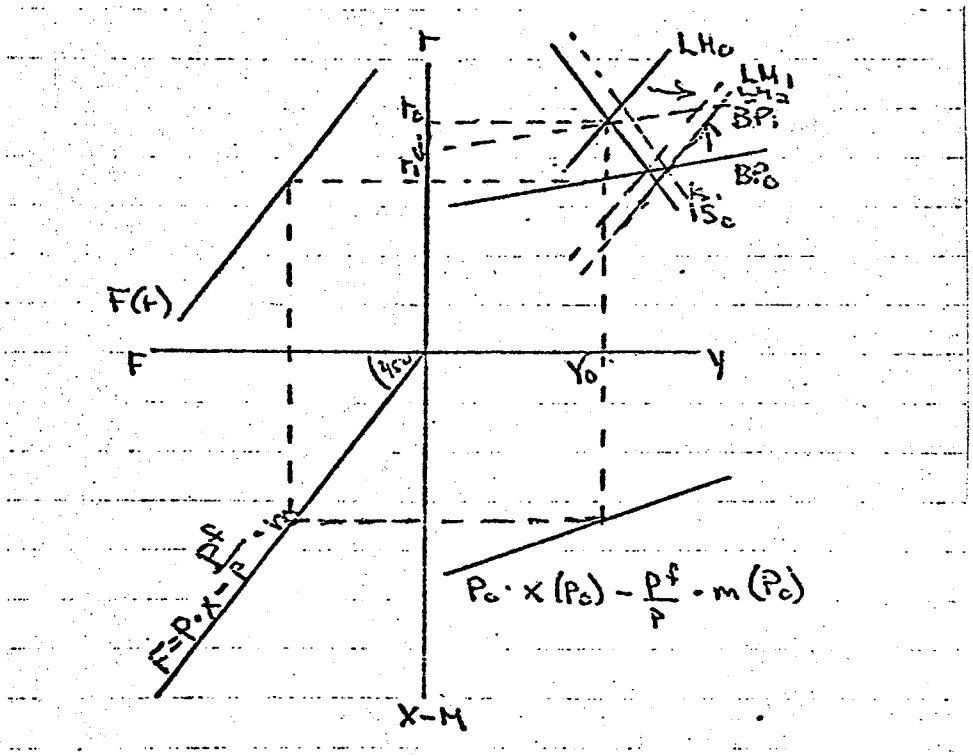


FIGURE 1-3

The BP curve is depicted in Figure 1-3. Net exports are in the southeast quadrant and net capital outflow in the northwest quadrant. The BP curve is determined at the points in interest

rate-national income which equate net capital outflow to net exports. If the IS and LM curves intersect above the BP curve, as in Figure 1-3, this implies a current account surplus and for simultaneous external and internal balance either the currency must appreciate (BP_0 moves to BP_1) or expansionary monetary policy must promote lower interest rates to induce less capital inflow or more net capital outflow (LM curve shifts from LM_0 to LM_1)

Effects of Expansionary Policy

The exposition in the previous sections of this chapter suggests that, following the 1970 appreciation of the Canadian dollar, further appreciation was averted by expansionary monetary policy. The official aim of such policy in 1970 and 1971 was expansion. As stated previously, the chartered banks were encouraged to fund the major portion of Government financial requirements in 1970 and the level of Government deposits at the banks rose considerably over the 1970 - 1971 period. Within the ISLM model, this implies - as there is no reason to suspect any structural shifts in demand for money at the time - that the substantial reductions in short term interest rates over the period 1970:4 to 1971:4, reflected a shifting of the LM curve (as in Figure 1-1) from an increased supply of real balances. This was accompanied

by a shifting IS curve that was likely a result of both effects depicted in Figure 1-2. The corollary of lower interest rates is - all other things remaining equal - a reduction in the level of savings at any given level of income (due to an increase in real net worth). Furthermore, the exogenous increase in exports of the early seventies likely shifted the i + g + x curve. Therefore, the IS and LM curves conceivably shifted outward as in Figure 1-3 thus preventing the current account surpluses of 1970 and 1971 together with the foreign demand for Canadian dollars from incurring a further appreciation of the domestic currency (BP curve rising). Consequently, GNE in constant 1971 dollars rose from $88,390 million in 1970, to $99,064 million in 1972. However, although the ISLM model implies that higher levels of income are associated with higher levels of short term interest rates, the level of the latter remained below that of 1970:4 until the second quarter of 1973, thereby suggesting a further shifting of the LM curve.

Canadian monetary expansion in the 1970 - 1974 period was accompanied by price rises and expectations that such rises would continue. During 1972 and early 1973, simultaneous peaks in the economic activity of most industrial countries led first to spiralling prices in

primary commodity exports and then led to marked increases in domestic prices. Sharp increases in international food prices from 1972 to 1974 and the late 1973 oil price rises injected further upward pressure on the price level. The effect of a rise in the domestic price level on the LM, IS and BP curves is to raise the equilibrium level of interest rates associated with a given income level. A rise in the price level reduces the supply of real balances causing a drop in the money market equilibrium (y) associated with any given (r). In the product market, a rise in the domestic price level, at a given income level, likely increases savings (as a result of a reduction in real net worth) and imports, while reducing exports. While it is theoretically possible for a domestic price increase to increase net exports, empirical studies suggest that this does not happen.[39] Therefore, as net exports are reduced the BP curve shifts upward, demanding a higher equilibrium level in interest rates with a given income level at the existing exchange rate. Expectations of further inflation tend to reinforce price effects on the IS curve in in raising the desired financing price of physical capital that people are willing to pay and receive. Interest rate rises in 1973 and 1974 thereby likely reflected the relative rise in the Canadian price level and expectations of further inflation.

The by-product of the Bank of Canada's particular use of a credit market conditions approach to implementing monetary policy in the 1970 - 1974 period was excessive monetary expansion. This was accompanied by inflation. The extent which this could have been averted ultimately relies on: whether inflation incurred during the period was a result of monetary expansion; the degree which further exchange rate appreciation would have provided insulation from the transmission of imported inflation. If, as Clarence Barber amongst others suggests, the inflation experienced in Canada from early 1972 to mid 1974 had primarily external sources - demand pull as world demand for raw materials increased and cost push from high world food prices [40] - some further exchange rate appreciation during the period could have moderated these effects. Regardless, relative price changes can translate into price level changes only so far as increases in the money supply underwrite the process. Conceivably, had monetary growth during the period borne a closer relationship to growth in GNP, a re-allocation of real resources would have been necessary with income spent on unavoidable price rises balanced by less income spent on other things. However, as Franco Modligliani has recently commented, there is no Macro policy which can maintain both stable levels of employement and prices in the face of an exogenous price shock. Under such circumstances the

maintenance of stable prices would require a fall in all domestic output prices. This could be accomplished only by creating sufficient slack to put downward pressure on wages and in view of the sluggishness of wage response to unemployment, the amount of slack would have to be substantial. There is no known way of returning to the initial equilibrium except after a painful period of both above equilibrium unemployment and inflation.[41]

The weakness of a credit market conditions approach to policy implementation is that - in time and casual connection with credit conditions - the final targets of employment and price stability are remote whereas an exchange rate target is not. Consequently, in the particular circumstances of 1970 - 1974, the effects on price stability of the conditions achieved by adherence to an exchange rate target became apparent only when they were almost impossible to reverse.

FOOTNOTES

1. Thomas J. Courchene, Money Inflation And The Bank of Canada (Montreal: C.D. Howe Research Institute, 1976), P.69.

2. Ibid, P.69.

3. Pierre Fortin, "A Study Of The Bank of Canada's Behavior 1962 - 1973", Doctoral Thesis, University of California (Mimeo) 1975.

4. Ibid, P. 121.

5. Ibid, P. 111.

6. Ibid, P. 111.

7. Ibid, P. 129.

8. Ibid, P. 81.

9. Ibid, P. 90 - 91.

10. Ibid, P. 115.

11. Canadian Liquid Asset Ratio: Ratio of Canadian liquid assets (i.e., Bank of Canada Notes and Deposits, day to day loans, Treasury Bills, Government of Canada direct and guaranteed bonds, and call and short loans to stockbrokers and investment dealers) to total major assets (i.e., Canadian liquid assets plus less liquid assets which are principally loans, mortgages, and non-Government of Canada securities).
Free Liquid Asset Ratio: Ratio of free liquid assets (i.e., total liquid assets less the amount required to satisfy the primary and secondary reserve requirements) to total major assets.

12. Fortin, Op. Cit., pp. 210- 212.

13. Courchene, Op. Cit.

14. Bank Of Canada, Annual Report, 1970, p. 9.

16. Bank Of Canada, Annual Report, 1971, p. 7.

17. Bank Of Canada, Annual Report, 1970, p. 50.

18. Ibid, p. 7.

19. Ibid, p. 50.

20. Bank Of Canada, Annual Report, 1971, p. 35.

21. Ibid, p. 38.

22. Ibid, p. 39.

23. Bank Of Canada, Annual Report, 1972, p. 26.

24. Ibid, p. 27.

25. Bank Of Canada, Annual Report, 1973, p. 31.

26. Ibid, p. 32.

27. Bank Of Canada, Annual Report, 1974, p. 31.

28. Ibid, p. 32.

29. Ibid, p. 31.

30. Courchene, Op. Cit., p. 87.

31. Courchene, Op. Cit., p. 212.

32. Bank of Canada, Annual Report, 1972, p. 16. This limit was raised to higher levels in 1973 as other short term rates rose.

33. Courchene, Op. Cit. p. 121.

34. R.M. Richardson and C.B. Loewen, "Has Ottawa Had a Policy Relapse" Loewen, Ondaaje, McCutcheon and Company Ltd. (Mimeo) October, 1976, p. 11.

35. Bank Of Canada, Monthly Review, January, 1976, p. 8.

36. R.M. Richardson and C.B. Loewen, "Has Ottawa Had a Policy Relapse" Loewen, Ondaaje, McCutcheon and Company Ltd. (Mimeo) July 1976, p. 14.

37. T. Maxwell, "A Primer on RDX2", Bank of Canada Monthly Review, January, 1978.

38. G. Copithorne, "Notes on the Hicks-Hansen-Mundell Model", University of Manitoba (Mimeo)
The above summary is derived essentially from these notes.

39. William H. Branson, Macroeconomic Theory and Policy (New York: Harper and Row Publishers Inc., 1972), p. 307.

40. Clarence L. Barber, "Recent Policy Documents", The Canadian Journal of Economics, February, 1976, p. 176.

41. Franco Modligliani, "The Monetarist Controversy or,Should We Forsake Stabilization Policies?" American Economic Review, March, 1977, p. 15.

CHAPTER TWO

MONEY SUPPLY STRATEGY

The adoption of a money supply strategy by the Bank of Canada followed a period of excessive monetary expansion and coincided with rapid inflation and interest rates at high nominal levels. Rather than reflecting any consistent position of restraint on the part of the monetary authority, these interest rate levels indicated the effects of inflation on prices individuals were willing to pay or exact for borrowed funds. The change in strategy also followed upon the emergence of a growing body of literature in support of a money supply strategy and the adaptation of such a strategy by the United States Federal Reserve.

A money supply strategy of policy replaces appropriate credit conditions, relative to final targets, with appropriate growth in the money supply. This can be achieved with either the money stock or interest rates as intermediate targets of policy. Theoretical rationales stem from two distinct sources - "Monetarist" and "Keynesian". Keynesian sources, in general, operate within the ISLM income expenditure model and look to stochastic properties within an economy as warranting either an interest rate or a money stock approach to policy. The Monetarists adhere to a money stock approach which constrains the money supply to a constant growth rate relevant to productive capacity. The implementation

of a money supply strategy, from whatever source, requires controlled interraction between the supply of money and the demand for money.

I. THEORETICAL SOURCES

Monetarist Conception

The principle dynamic of the monetarist model is the interaction between the supply of nominal balances - denominated in money terms - and the demand for real balances - in terms of a purchaseable volume of goods. Milton Friedman states the proximate determinants of the supply of nominal balances to be: the amount of high-powered money; the ratio of bank deposits to bank holdings of high-powered money; the ratio of the public's deposits to currency holdings.[1]. He ascribes the demand for real balances as a function of: total wealth, expected rates of return on money and other assets, and other variables determining the utility of the services of money relative to those of other assets.[2] The responsiveness of the demand for money to interest rates is considered very small and changes in demand for real balances are attributed to occur very gradually or as a result of prior supply shifts. Changes in supply are perceived to be substantial and independent of changes in demand. The price level is considered the equilibrating mechanism between the supply of nominal balances and demand for real balances.

The key proposition of the model, essentially, is

that changes in the supply of money dominate other short run influences on output and other long run influences on the price level. Monetarist analysis esentially does not accept the slope properties of the ISLM diagram to contain all the relevant information pertaining to the transmission of monetary influences.[3] The adjustment process is portrayed as one wherein a rise in the trend growth of money produces initial liquidity effects which may impact upon real variables in the short run. An increase in money prompts increased expenditure - investment spending as a result of lower interest rates and other spending due to holdings of real balances in excess of those desired. The effect of interest rates on aggregate demand is considered large and not limited to traditional fixed investments. Whether the change in spending impinges upon prices or output, depends on the initial state of the economy and the market process within it. If output can easily expand and the market is such that quantities adjust faster than prices, then output and employment increase. If the market process is one in which prices adjust faster than quantities, price rises precede quantity rises and temper ultimate output and employment increases. Where output can no longer expand, increased spending simply results in a rise in the general price level. The excess of nominal balances - and further economic effects - are eliminated, thereby, either by a

reduction in the real quantity of balances available through price rises or an increase in the real quantity desired by income rises.[4] Monetarist theories and empirical studies indicate a relatively quick but short lived response of output to a change in money growth, with a longer time period required for prices to respond quickly.[5]

The monetary authority, ultimately, is attributed to control only nominal quantitites. Any initial downward pressure on interest rates or decreases in the unemployment rate, incurred in the short run by an increase in the rate of monetary expansion, is postulated to be eliminated in the long run. Short run effects of rising income raise liquidity preference schedules, demand for loans and possibly prices. According to Friedman, these effects reverse any downward trend in interest rate levels in less than a year and tend to return them within a year or two to the level which otherwise would have occured.[6] Similarly, Friedman postulates that initial stimulation of employment is curtailed as workers realize price rises have eroded real wages. They, therefore, seek higher nominal wages in order to maintain real expected wage levels. The subsequent rise in real wages reverses output increases and the decline in unemployment. Furthermore, Friedman contends, that to the extent price

rises are expected to continue, inflationary premiums are incorporated into nominal interest and wage rates thereby resulting in higher levels of both than would have otherwise occured.

Underlying the view of the unemployment process is Friedman's criticism of the Phillips curve concept of an inflation-unemployment trade-off. He perceives that relationship only short run in nature whereas the long run process is one in which there is a natural rate of unemployment, consistent with real forces and with accurate perceptions; unemployment can be kept below that level only by an accelerating inflation or above it by accelerating deflation.[7] He expresses the short run process as one in which an unanticipated acceleration in demand leads firms to raise prices and employment. Firms are willing to pay higher wages as they perceive prices of their products to be higher and therefore the cost of real wages lower. The rise in nominal wages may be accepted by workers as a rise in real wages and therefore produce an increased supply of labour at the same time as an increase in demand. This situation is considered only temporary by Friedman; he posits that, as the higher rate of growth in aggregate nominal demands and of rises in prices continue, perceptions adjust to reality and ultimately reverse the initial effect.[8] The unanticipated fall in demand leads

firms to reduce prices, output, employment and nominal wages. Workers, failing to judge correctly the current and respective fall in prices, misinterpret the reduction in nominal wages as a cut in real wages and therefore reduce the supply of labour. The effective real wage rises to the point where the resulting decline in demand for labour matches the reduced supply. Implicit in Friedman's analysis is that there is no involuntary unemployment, as wages are in reality perfectly flexible. Evidence to the contrary is a statistical illusion resulting from failure to differentiate between price change and unexpected price change.[9]

Within the monetarist model, therefore, the level of nominal income at any point in time is determined in the money market. A rise in the supply of money as in Figure 2-1 increases nominal income from y_o to y_1 and positions the LM curve at LM_0 in Figure 2-2. If the economy can readily expand then the IS curve shifts from IS_0 to IS_1 and the price level remains constant as in Figure 2-2. If the economy cannot expand, the shift in the IS curve as in Figure 2-4 is absorbed by a rise in the price level rather than a rise in real output. The LM curve therefore shifts upward to LM_1 resulting in an associated higher nominal interest rate with income level Yo/Po.

Two major empirical studies dealing with the basic monetarist premise were conducted by Friedman with David Meiselman and Leonall Anderson with Jerry Jordan of the Federal Reserve Bank of St. Louis. The Friedman-Meiselman findings were such that for annual data between 1897 and 1958 and quarterly data for a shorter sub-period, the relation between

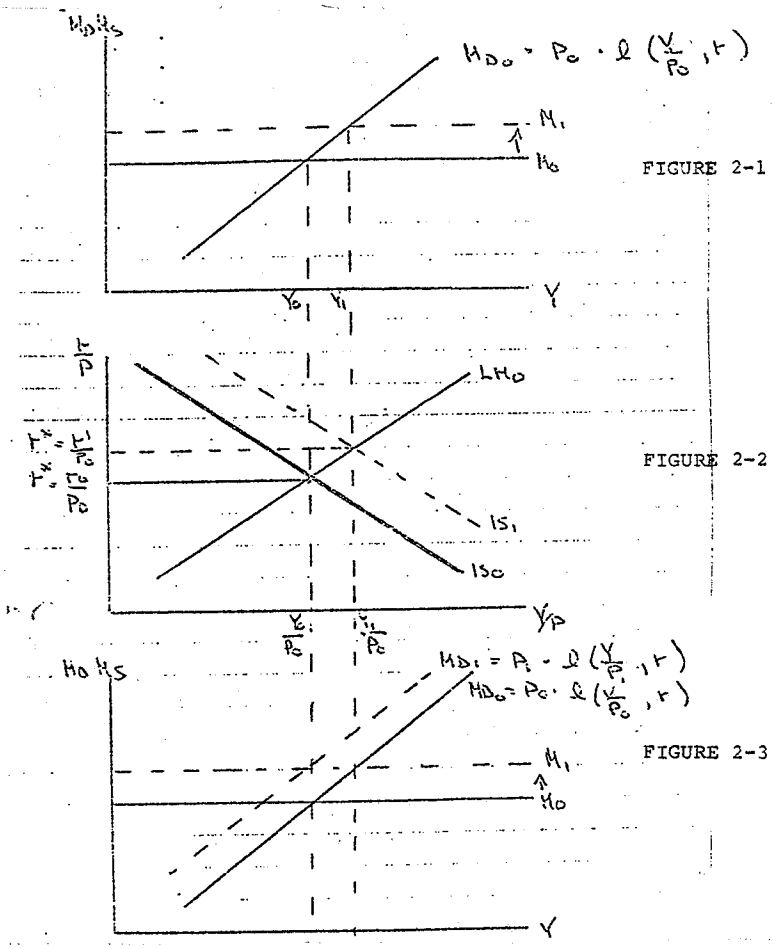


FIGURE 2-1

FIGURE 2-2

FIGURE 2-3

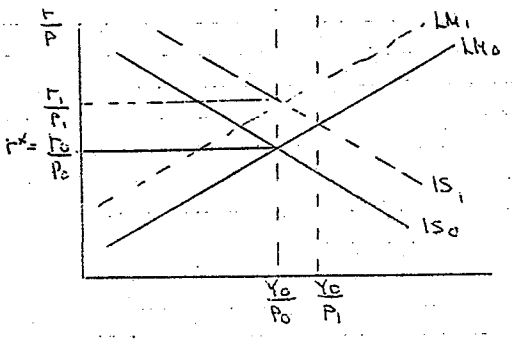


FIGURE 2-4

the money supply and consumption proved more stable than the relationship between investment and consumption (except for the years 1929 - 1934).[10] Anderson and Jordan dealt with the period between 1952 to 1968.[11] They estimated monetary and fiscal multipliers through reduced form equations by relating the change in income to current and four lagged values of the money supply (M_1) and fiscal impulses (high employment federal expenditure). Their results showed the contribution of money, both current and lagged, as extremely large whereas fiscal effects peaked in two quarters to only about one and then disappeared by the fourth quarter.[12] Richard G. Davis, of the Federal Reserve Bank of New York, compared the multipliers of the St. Louis equations with those in the M.I.T. econometric model of the U.S. economy. The fiscal multiplier of the M.I.T. model was considerably higher than that of the St. Louis model whereas the money multiplier in the St. Louis model was

far greater than that of M.I.T. Moreover the speed of the St. Louis money multiplier was such that a $1 billion once-and-for-all increase in the money supply in a given quarter would raise GNP by $1.6 billion that same quarter and $3.5 billion in the next quarter. The same money supply increase within the M.I.T. model had almost no effect on GNP in that quarter and very little one quarter later.[13]

The basic monetarist contentions are well summarized in a recent paper by Franco Modligliani as: a low sensitivity of the demand for money to interest rates; a large effect of interest rates on aggregate demand; a low value of the multiplier due to a high short run marginal propensity to save in response to transient income disturbances; a relationship between unemployment and inflation which can only be negative in the very short run. These contentions, as Modligliani suggests, engender the basic monetarist conclusions that: the economy is inherently stable; fiscal policy actions, like other demand shocks, have minor and transitory effects on money income; the obseved instability of the economy is most likely the result of unstable growth in money - due to misguided endeavours to stabilize income, or to the pursuit of balance of payments goals.[14] The monetarists argue, therefore, that the monetary authorities avoid

unstable growth in adopting publicly the policy of achieving a steady rate of growth in a specified monetary total."[15]

Modligliani states many of the monetarist contentions to have been substantiated. With regard to the interest elasticity of demand for money, post Keynesian theoretical developments point to a modest value of around one-half to one-third and empirical studies are largely consistent with this. In addition, both theoretical and empirical work have largely vindicated the monetarist contention that interest effects on demand are substantial and pervasive. Similarly, the dependence of consumption on long run income and wealth together with high marginal tax rates and leakages through imports leads to a rather low value of the multiplier.[16] It is generally conceded, therefore, that there are inherent mechanisms within the economy that are fairly effective in eventually limiting the effects of shocks.

An essential point of conflict however remains regarding the magnitude and duration of the interim response. Modligliani points out that although the first link in the offsetting mechanism (a rise in short term interest rates) responds promptly and strongly, most expenditures depend on long term rates and these generally

respond gradually. The demand response is also gradual. Finally, change in the real money supply through prices displays an even longer lag due to the sluggish response of wages to excess demand. Simulations performed on the M.P.S. econometric model of the United States economy support Modligliani's views. A 1% exogenous demand shock showed an impact effect on aggregate output of barely 1% and a peak at about 2% in one year. Thereafter, the wage price mechanism was increasingly effective, returning the real response to impact level in a year and fully offsetting the shock by the end of the third year. Money income reached a peak of over 2.5% by the middle of the second year and declined thereafter. While these results do not reflect a highly unstable economy, neither do they indicate an economy which completely withstands demand shocks. Modligliani concludes that opting for a constant rate of growth in the nominal money supply can result in a stable economy only in the absence of significant exogenous shocks.[17]

Stochastic Model

Richard G. Davis of the Federal Reserve Bank of New York states the choice between a money supply target or an interest rate target to be quite distinct from

Monetarism versus Keynesianism. Rather in a world of uncertainties, the point is to aim at the most efficient target for monetary policy.[18] Recent theoretical work by William Poole, within the ISLM framework, is relevant to such a view.[19] Poole's analysis poses two major contentions. First, a money stock strategy may be superior to an interest rate strategy, given certain values of structural parameters and random sources of disturbance within an economy. Which strategy is optimal, however, may vary over time if the structural and stochastic parameters change. Second, it is possible to define an optimal combination policy wherein the interest rate and money stock are maintained in relation to each other - the nature of the relationship depending on the values of the parameters - that is as good as or superior to either an interest rate or money stock policy no matter what the values of the parameters.[20] Poole's prescription, therefore, follows a discretionary rather than rules approach to policy.

Poole assumes that selection of a particular strategy should depend on which minimizes the expected loss from failure of a level of income to equal the desired level (and therefore of actual from forecast income levels). This he determines wil depend on the relative stability of the LM and IS curves (probable

sources of random distrubances) and their slopes (structural parameters). Poole finds a money supply target superior, the lower the interest sensitivity of the demand for money. In such instances, relatively large disturbances in the IS curve have small effects on income where small shifts in the LM curve have large effects. The corollary is that the larger the interest sensitivity of the demand for money, the smaller the effect on income of relatively large disturbances in the money sector and the greater the effect of small disturbances in the real sector. He further finds a money stock target minimizes the expected loss from failure of the level of income to equal that desired when random shocks occur in the IS curve; an interest rate target minimizes such loss when the shocks occur in the LM curve.

Stochastic disturbances, however, can be expected to occur in both the real and monetary sectors of the economy. Poole contends, therefore, that between values of structural parameters which would call for either a pure money stock or a pure interest rate policy, there is room for a combination policy which takes the expected sources of disturbances as criteria for the choice of policy. Unexpected disturbances from the real sector (IS curve) which lead via the demand for money function to high money growth should be matched by changes in interest

rates and therefore a money stock target. On the other hand, shifts in the demand for money (LM curve) should be met with the use of an interest rate target, thus preventing essentially financial disturbances from affecting real economic activity. The dynamic is depicted in the following diagrams. In Figure 2-5, with a stable LM function and an unstable IS function, setting the interest rate at r* results in an LM function at LM_2 and income anywhere between Y_1 and Y_3 whereas a money stock target implies an LM function of LM_1 and income between Y_2 and Y_3. The money stock target limits the effects on aggregate demand of shifts in the IS curve by allowing interest rates to rise or fall in an offsetting way. In Figure 2-6, with a stable IS function and an unstable LM function, setting the money stock leads to an LM function between LM_1 and LM_2 and income between Y_1 and Y_2 whereas setting the interest rate at r* leads to LM_3 at Y_2. An interest rate target is superior in this case as a money stock target allows the shift in the demand for money to be transmitted to interest rates and ultimately to aggregate demand.

The underlying adjustment dynamic of Poole's model, of a money supply target strategy, presupposes a relatively stable demand function for some definition of money having national income and interest rate levels as

explanatory variables. Any substantial deviation in the growth rate of nominal income from that expected leads to a change in interest rates providing the monetary aggregate can be induced by policy to grow at some chosen growth rate, and that changes in interest rates occur whenever the growth rate of the aggregate is not equal to the product of the nominal income growth rate and the income elasticity of the demand for money. Such interest rate change is in a direction to limit and perhaps reverse the original deviation in the growth of money income.[21]

Poole's combination policy implies the use at all times of some monetary aggregate as an indicator of policy. The success of the combination policy depends on the state of the knowledge of the parameters of the model and as Poole comments, on knowledge of more parameters than does a pure money stock or a pure interest rate policy.[22]

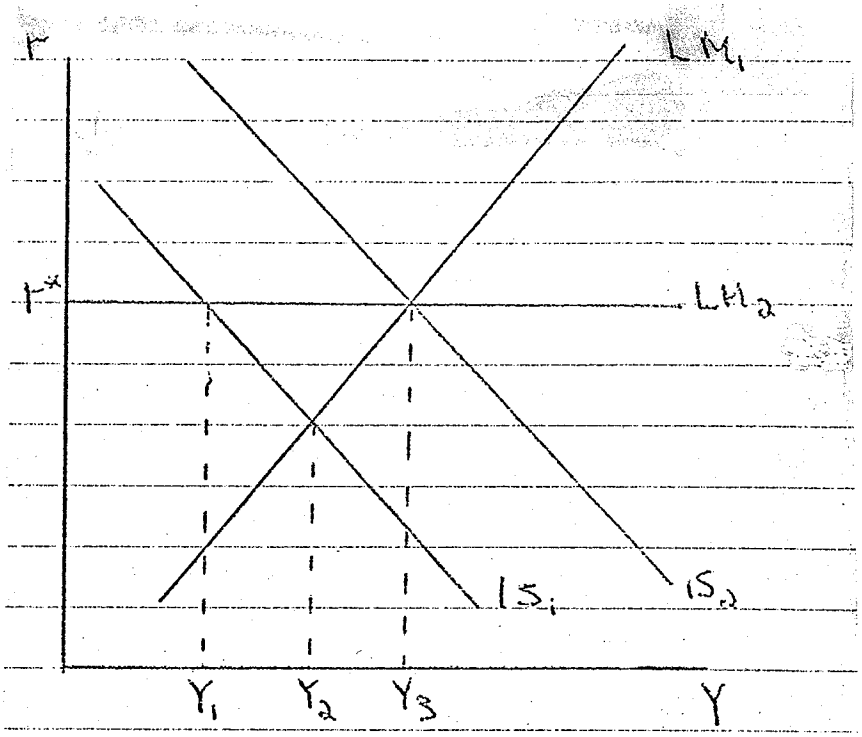


FIGURE 2-5

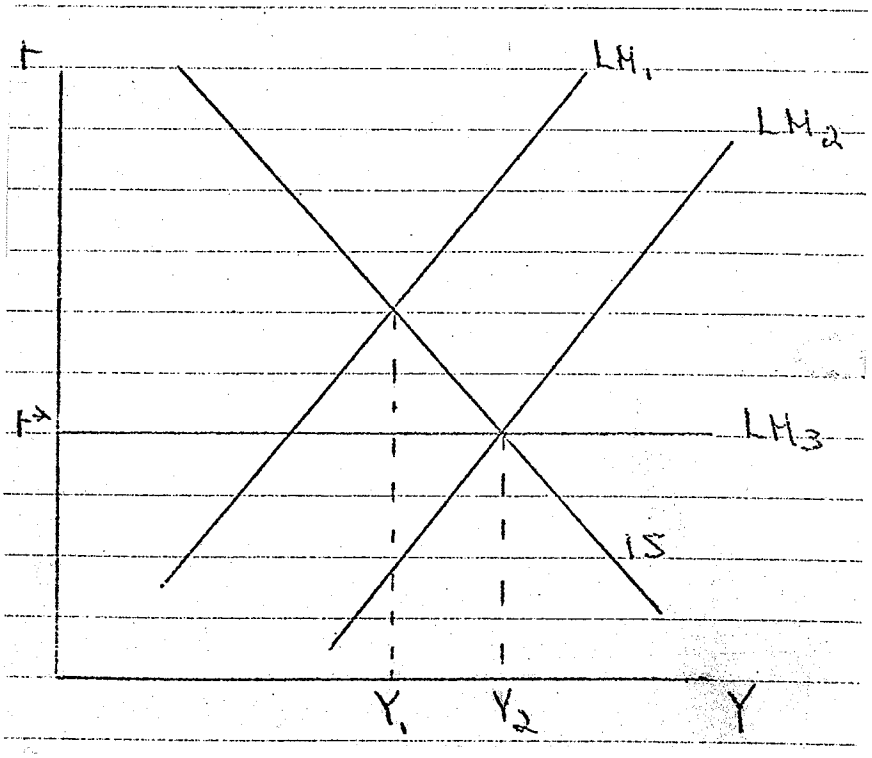


FIGURE 2-6

II. TECHNICAL COMPONENTS OF IMPLEMENTATION

Money Supply

The nominal money supply is comprised of:

> "...(i) the amount of high-powered money - ... determined through the balance of payments under an international commodity standard, by the monetary authorities under a fiduciary standard;
>
> (ii) the ratio of bank deposits to bank holdings of high-powered money - ... determined by the banking system subject to whatever requirements are imposed on them by law or the monetary authorities; and
>
> (iii) the ratio of the public's deposits to its currency holdings - ... determined by the public."[23]

Therefore, changes in three variables - the volume of high-powered money (i.e., the monetary base), the commercial banks' ratio of deposits to reserves and the public's ratio of currency to deposits - result in changes in the money supply. The monetary base is determined, essentially, by the monetary authority in conjunction with government financial requirements. The size of the money multiplier (i.e., ratio of total money to the monetary base) is then determined by the particular usage of the monetary base by the banks and the public. Assuming the other two determinants remain constant, the money supply increases with a rise in the monetary base or a fall in

either the banks' reserve-deposit ratio or the public's currency-deposit ratio.TABLE I

RESERVE-DEPOSIT RATIO (millions)

	RESERVES (B-603)	TOTAL DEPOSITS (B-651)	R/D	EXCLUDING GOVERNMENT DEPOSITS (B-651- B-652)	R/D	PERCENTAGE CHANGE IN MONETARY BASE (B-200)
1970	1703	29,888	5.69	28,631	5.94	10.6
1971	2070	35,611	5.81	33,372	6.20	11.4
1972	2448	40,728	6.01	38,321	6.38	17.2
1973	2937	48,565	6.04	42,204	6.35	13.4
1974	3439	58,797	5.84	54,115	6.35	14.8
1975	3953	66,873	5.91	63,210	6.25	14.3
1976	4410	76,773	5.74	73,670	5.98	12.8
1977	5075	86,670	5.72	83,937	6.05	13.3
1978	5757	103,144	5.58	96,678	5.95	12.6

Source: Bank of Canada Monthly Reviews

TABLE II

PUBLICS' CURRENCY-DEPOSIT RATIO (millions)

	CURR-ENCY (B-253)	DEMAND DEPOSITS (B-676+ B-677)	C/D DEPOSITS	TIME (B-654 + B-655)	C/D (1)+(2)	TOTAL	C/D
1970	3106	7082	44.85	21,065	14.74	28,147	11.03
1971	3506	8437	41.55	23,998	14.60	32,435	10.80
1972	4056	9722	41.71	27,593	14.69	37,315	10.86
1973	4620	11100	41.62	33,887	13.63	44,987	10.26
1974	5213	11570	45.05	40,999	12.71	52,569	9.91
1975	6079	14254	42.64	46,594	13.04	60,848	9.99
1976	6573	13374	49.14	58,136	11.30	71,510	9.19
1977	7268	15613	46.55	65,859	11.04	81.472	8.92
1978	8075	16840	47.95	77,467	10.42	94,307	8.56

SOURCE: Bank of Canada Monthly Reviews

The monetary base is comprised of the liabilities of the central bank and as such is a balance sheet quantity. Therefore, a change in magnitude of any Bank asset or liability account, unless offset, produces an equal change in the monetary base. Although the central bank cannot determine each item on its balance sheet, it does exert direct control over Government securities, foreign assets and Government deposits. Consequently, the effects of a reduction in uncontrollable items such as float (i.e., net balance of Government collections and payments in process of settlement) or deposits of other central banks can be offset by an equal increase in holdings of Government securities. Similarly, the effects on bank reserves (i.e., bank deposits at the central bank) of a decline in currency holdings by the public can be offset by a corresponding increase in Government deposits held at the Bank. The Bank, therefore, has sufficient instruments to maintain quite detailed control over the monetary base. In a study of the 1950 - 1969 period in the U.S., Jordan found growth in the monetary base largely determined by Federal Reserve holdings of Government securities.[24] Changes in the Treasury's gold holdings, potentially an important source of increase or decrease in the base, were largely offset by compensating holdings of Government securities.[25] Government of Canada securities comprise the largest category of assets in the

balance sheet of the Bank of Canada. They, thereby, represent the largest potential source of change in the base. As indicated in Table I the annual percentage change in the monetary base tended to rise over 1970 - 1974 and to fall in the subsequent period.

Non-official changes in the banks' reserve-deposit ratio occur because of variation in bank demand for cash and excess reserves or due to shifts in types of deposits. Demand and Government deposits require larger proportional reserves than do time deposits. Jordan found this ratio the least volatile compared to either the monetary base or the public's ratio of currency to demand deposits. It, however, did indicate a gradual downward trend and this Jordan attributed to a more rapid growth in time deposits relative to demand deposits. As indicated in Table I, a similar gradual downward trend exhibited in the Canadian reserve-deposit ratio, with the exception of the years 1971 and 1972. This trend reflects the 1967 Bank Act revisions and the consequent more rapid growth in time deposits in Canada as well. The 8% cash reserve requirement behind all Canadian dollar deposits was replaced with a 4% requirement for time deposits and 12% for demand deposits. This had the effect by early 1970, given the composition of deposits, of lowering the average required cash reserve ratio to 6.2% of Canadian

dollar deposits. The Bank Act also broadened the lending authority of chartered banks and removed the 6% ceilings on interest rates charged on bank loans, thereby enabling the banks to bid more aggressively for time deposits.[26] In addition, this downward trend after 1973 could reflect the effects of inflation on bank demand for cash and excess reserves.

Changes in the public's ratio of currency to deposit holdings result from changes in the level of income, wealth, substitutes for currency and uncertainties regarding general economic activity. As indicated in Table II, the public's currency-deposit ratio has gradually declined over the last decade in Canada - largely reflecting the ratio between currency holdings and time deposits. The ratio of currency to demand deposits has been quite volatile.

Control of the money stock can only be achieved if the central bank undertakes to use its instruments to offset actions which would cause monetary growth to deviate from the targeted rate. As Jordan suggests, the degree of accuracy is a function of the ability to determine the monetary base and to predict the net influence of the behavior of the public and the commercial banks as summarized by changes in the money supply multiplier.[27]

Money Demand

Following the publication of the General Theory, a body of theoretical literature emerged which attempted to either extend or elaborate Keynes' version of the demand for money. Keynes postulated transactions, precautionary, and speculative demands for money. The demand for transactions and precautionary balances were determined chiefly by the level of income - increasing as income increased. The speculative demand depended chiefly on the rate of interest - varying negatively with the latter. Keynes determined at any point in time there would be a "normal" interest rate level and any variance from this would engender speculative expectations that the current rate would rise or fall in order to return to the "normal" level. He postulated that rises in interest rates above the normal level would induce expectations that they would subsequently fall and therefore incur a movement into bonds in anticipation of capital gains. Likewise, a fall in rates below the normal level would incur a movement out of bonds into money to avoid capital losses. Keynes further posited that at some low level of interest rates, expectations of a rise would be unanimous and at this point the demand for money with respect to interest rates would be perfectly elastic. The model implied that the relationship between the speculative

demand for money and the rate of interest shifted as the perception of the "normal" level changed, therby making it unstable. Speculative demands were perceived to dominate transaction and precautionary demands.

The empirical issues raised by Keynesian or post-Keynesian theory include: the liquidity trap hypothesis; the dependency of the demand for money on the rate of interest; the relationship of the demand for money to total wealth.[28]

Milton Friedman offered an alternative analysis of the demand for money in treating money as an asset which yields a flow of services which become less valuable relative to the services of other assets as holdings increase.[29] In his framework the demand for money is a function of total wealth, the rates of return on other assets, and the utility attached to the services of money.

His total wealth variable comprises a concept of permanent income, as opposed to only current income, and the division of wealth between human and non-human forms. Rates of return on other assets include that on bonds, equity and expected changes in prices of other goods. Friedman perceives the demand for money to increase with an increase in wealth and decrease as the rates of return

on other assets rise or the expected rate of inflation rises. The empirical issues on the demand for money raised by Friedman include: whether the demand for money is a stable function of a few variables; whether the expected rate of change of prices ia an important influence on asset choices; which concept of wealth is appropriate.[30]

U.S. studies on the empirical properties of the demand for money function, using both income and wealth variables, have verified a negative relationship with various definitions of the interest rate. Assuming the demand for money proportional to income, Tobin, Bronfenbrenner, Mayer and Latane all concluded a distinct negative relationship with the interest rate.[31] In a study of the 1900-1958 period, Alan Meltzer used three alternative wealth variables - the level of income, the level of non-human wealth or the level of permanent income - as well as alternative definitions of money - excluding time deposits at commercial banks, including them, or including additionally deposits at mutual savings banks. Regardless of the wealth variable included in the function, Meltzer found a significant negative relationship between the demand for money, however defined, and the rate of interest on twenty year bonds. Although there was some variation, the computed value of

the interest elasticity of the demand for money was in general about -0.7. Using a similar function, David Laidler matched this result for the 1892 - 1960 period as well as finding a short term interest rate elasticity of -.15. In addition, Brunner and Meltzer and Teigin performed respective studies which explicitly took account of the identification problem between money supply and money demand and corroborated these elasticity findings for the short and long rate.[32] The only empirical study of the demand for money function which failed to find a relationship with the rate of interest was that undertaken by Milton Friedman of the 1869 - 1957 period. However, this was due to an error in setting up the empirical work and the findings were later refuted by Laidler.[33]

Studies of the U.S economy over the last sixty years, therefore, using fairly simple formulations of demand for money functions have yielded stable negative relationships with the rate of interest. Considering the 1892 - 1960 period, Laidler points out that the elasticity of the demand for money (M_2) with respect to the short term rate of interest varied roughly between -0.12 and -0.15 and with respect to the long rate between -0.2 and -0.6. The relevant elasticities for M_1 are -0.17 to -0.20 and -0.5 to -0.8.[34] The fact that most studies constructed their empirical equations on the assumption of

the demand for money being homogeneous of degree one in prices provided an indirect test of that assumption in that the regression results based on it fit well. Moreover, Meltzer ran a direct test and his estimates produced an elasticity of nominal money demand to prices approximately equal to one.[35]

Little evidence was produced to substantiate the liquidity trap hypothesis. Studies conducted by Bronfenbrenner and Mayer of the period 1914 - 1957 did not indicate any tendency for the elasticities of the interest rates they measured to be higher at low rates of interest. Studies undertaken by Laidler of the period 1892 - 1960 resulted in similar findings. Nor was there any evidence that the function was any less stable at low rates of interest.[36] Moreover, work involving the observation of shorter periods also produced similar evidence. In their respective studies, Teigin, Brunner and Meltzer and Laidler found little discrepancy between the interest elasticities of the demand for money in the 1930s, when interest rates were remarkably low, and later post-war periods.[37] Furthermore, these results were achieved using long and short rates of interest with narrow and broad money definitions as well as income, wealth and expected income variables. Kostas and Khouja found some evidence for the elasticity of a long interest

rate to be higher at lower levels. There is some suspicion, however, as these findings pertained to the late forties in the U.S., they represented a perfectly elastic supply of money function rather than a perfectly elastic demand for money function.[38]

With respect to the use of either income or wealth variables in the demand for money function, the evidence is in favour of a permanent income or wealth variable. Comparisons of the performance of functions with either wealth or income variables using identical evidence and statistical techniques, were carried out by Meltzer, Brunner and Meltzer, Laidler and Chow using U.S. data; the wealth variable (using different definitions) performed better.[39] However, as Laidler points out, implicit in these studies was the possibility that when measuring permanent income (as a weighted average of present and past levels of income) they were fitting a relationship between the demand for money and measured income where the public is slow to adjust its cash balances to an equilibrium level. Laidler determined that a study by Feigie largely resolved this question in favour of a permanent income variable.[40] Laidler also carried out tests on British data using measured and permanent income variables as alternatives and found permanent income provided systematically better results; C. Clarke's

work on Canadian data led to a similar conclusion.[41]

The U.S. evidence suggests a shifting relationship between the demand for money and the level of wealth (or income). Using the United States data, Laidler determined the elasticity of demand for money defined to include time deposits with respect to permanent income to have been 1.39 from 1900-1916, 1.28 from 1919-1940 and .65 for 1946-1965.[42] Similar results were achieved when non-human wealth was used as the independent variable or time deposits excluded from the definition of money. This tendency, Laidler suggests, may be caused by an improved accuracy in the data used to measure the variables, a slow change in the public's taste for money holding, or reflect the omission from demand for money functions of some variable that has changed slowly over time.[43]

The significance of the expected rate of inflation as a factor influencing the demand for money under conditions of hyperinflation and rapid inflation has been well established. Earlier studies of the mild inflations that characterized most advanced economies until the mid-sixties could not find a role for the expected inflation rate. Work done in the fifties by Friedman and Selden was unsuccessful in establishing any systematic influence of this variable on the demand for

money in the U.S. However, more recent studies by Shapiro and Goldfeld were able to establish one in post World War II data.[44]

A study performed by William R. White of the Bank of Canada, on the empirical properties of the demand for money function in Canada found only narrow money to have an unequivocal negative relationship with interest rates.[45] The period covered was 1959-1974. It was treated both in its entirety and as two periods - 1959.3 to 1968.11 and 1968.12 to 1974.3; the latter period followed structural revisions enacted by the 1967 Bank Act. The basic equation used M_{1A} (currency plus personal chequing accounts plus current accounts) as the dependent variable. Real domestic product (RDP), the gross national expenditure price deflator (PGNE) and the rate on non-chequable personal savings deposits at banks (RNCB) were used as the independent variables. Three variations were employed which either assumed - no constraints (Model A), long run homogeneity of prices (Model B), or M_{1A} as a function of nominal income (Model C). Comparison tests of narrow and broad definitions of money used Model B and representative dependent variables of M_{1A}, CA (current accounts), M_{2*} (M_{1A} plus personal savings deposits), and PHMS (the privately held money supply). The rate on 90 day finance paper (R90) was

the interest rate used with the narrow aggregates (M_{1A} and CA). The broad aggregates (M_{2*} and PHMS) were estimated with both R90 - reflecting the opportunity cost of holding cash - and RNCB (the rate on non-chequable personal savings deposits at banks) - as measuring the own rate on money holdings. The narrow aggregates showed a consistently negative relationship with interest rates whereas the relationship of the broader aggregates was mixed. A rise in the 90 day rate did induce a downward shift in the quantity of broad money demanded, however, a rise in RNCB exerted an even more powerful positive influence.

Chow stability tests were performed by White both on his basic equation and a variant using R90 (the rate on 90 day finance paper) instead of RNCB (the rate on non-chequable personal savings deposits at banks). The evidence showed neither specification of the M_{1A} equation to be formally stable everywhere. However, the R90 variant did perform relatively well in the most recent sub-periods. [46] As White states: "The nature of the problem...is that during much of the latter part of the estimation period the demand for money function appears to be shifting upward."[47]

With regard to income, White's results indicated a positive relationship with both broad and narrow definitions of money. However, the long run income elasticity of M_{1A}, M_{2*} and PHNS all showed a definite tendency to rise over the data period; this tendency was progressively evident as the definition of money broadened.[48]

A study performed by Norman Cameron, with Canadian data from the 1954-1975 period, also finds a shift in the demand for money function.[49] These results indicate both narrow and broad money demand to have shifted over the post-war period to the extent that for neither is the stability hypothesis supported at even the

1% level using Cusum tests. Cameron finds the type of structural change detected to be gradual for M_1 while abrupt and then gradual for M_2 subsequent to 1968.[50]

In his comprehensive survey of related theory and empirical studies of the properties of the demand for money function, David Laidler concludes:

> "...the importance of the rate of interest for the demand for money is now established beyond any reasonable doubt, while the evidence is only less clear that the interest elasticity never becomes infinite. Similarly, some form of wealth variable seems clearly preferable to income in the demand for money function, while there does not seem to be room for both variables to operate simultaneously...as to the price level, the demand for nominal balances does appear to be proportional to it."[51]

The unsettled issues pertaining to the demand for money function, according to Harry Johnson, include:

> "...(i)whether total wealth including human wealth is a better variable than non-human wealth; (ii) whether currency plus demand deposits is better or worse than currency plus demand deposits plus time deposits; and (iii) the debate on whether the long term rate of interest or the short rate is the relevant variable."[52]

Choice of a Monetary Target

White states that a viable aggregate must have a demand function with a reasonably stable relationship to income and be controllable by the monetary authority, in order to have predicted effects on the real economy.[53] Available aggregates are definitions of narrow money,

broad money, bank reserves and the monetary base. The distinction between narrow and broad money is essentially, liquidity and the most common definition of the narrow version is the public's holdings of currency and demand deposits denoted as M_1.

Richard Davis of the New York Federal Reserve Bank suggests that, as the point is to influence the economy at large and not the banking sector per se, measures of reserves and the monetary base are inappropriate targets, although useful in developing strategies to achieve goals in the other aggregates. He further comments that in normal times policymakers can set goals in terms of either narrow or broad money with reasonable safety. When distortions in rate spreads occur, however, marked acceleration or deceleration in time deposit growth make the broader definition of money overstate or understate the expansiveness of policy.[54] Meltzer of the Federal Reserve Bank of St. Louis made similar observations that, with the exception of times when changes in market rates relative to imposed ceiling rates caused large temporary changes in time deposits, growth rates of both narrow and broad money, in the U.S., have almost always been in the same direction with changes in both growth rates generally occurring at the same time.[55] Friedman has expressed a preference for the

U.S. broad definition of money M_2 (excluding large certificates of deposit) on the basis that its income velocity, essentially, has not shown any trend since the early 1960s whereas that of M_1 has continued to indicate an upward trend of uncertain dimensions.[56]

White points out that broad and narrow money move dissimilarly in Canada. He attributes the widening disparity in recent years to the increased bidding by banks for deposits, subsequent to the removal of statutory restrictions on loan rates in 1967[57] He further observes that in Canada the distinction between narrow and broad money is sometimes artificial in both liquidity and chequability. Chequable personal savings deposits exact higher transaction costs than personal chequing accounts thus possibly causing many holders of chequable savings deposits to regard them as non-chequable. Furthermore, although non-chequable personal savings deposits are in principle non-chequable, facilities are evolving for the automatic transfer of such funds to personal chequing accounts to cover overdrafts. In addition, penalties for early withdrawal of fixed term non-personal term and notice deposits are not always significant, thus possibly rendering them quasi-chequable. Therefore, there is a spectrum of deposits in Canada all having more or less liquidity.[58]

According to his criteria, a positive relationship with income and controllability by the monetary authority, White finds narrow money preferable to broad money. An underlying assumption of his criteria, however, is that controllability implies a systematic response by the aggregate to policy induced changes in short term interest rates.[59] As a rationale for the necessary link with short term interest rates, White states the monetary authority in Canada to have traditionally attempted to control short term interest rate levels (or more precisely their average over periods as long as a month) and are likely to continue to do so.[60] As noted in the previous Section, White's particular study found both narrow and broad definitions of money to have the appropriate positive relationship with income but only narrow money to show a consistent negative relationship with interest rates. White, therfore, concludes that in Canada the broad monetary aggregates cannot be properly controlled through the use of interest rates.[61] With regard to forecasting abilities, White also found the narrow definition superior.[62]

Thomas Courchene has consistently favoured the use of broad money over narrow money as an indicator or target of policy in Canada. His rationale is essentially

two-fold: broad money as denoted by M_2 is a better predictor of changes in the level of nominal income; M_2 is controlled easier within the current Canadian institutional framework. An underlying assumption of the latter judgment is that control should be exercised directly by chartered bank reserve management. His first conclusion appears to have derived from a study undertaken by Gillian Clinton using Canadian data from 1953-1973. Clinton's results showed M_2 to perform considerably better than M_1, both in explaining the variance in quarterly change in nominal GNE and in predicting the net impact of money on the latter.[63] Courchene's second conclusion is engendered by the particular Canadian institutional framework which requires banks to hold reserves against all Canadian liabilities. He posits that, within such a context, money based on a broader definition is easier to control than that based on a narrow definition. He further argues that control of M_1 implies the Bank of Canada forego control of the overall size of the chartered banking system as remaining bank liabilities settle at levels consistent with the desireable stock of demand deposits.[64]

The issue of superiority between broad or narrow definitions of money is an empirical one which remains unresolved. However, the evidence for Canada indicates

that only the narrow aggregates display a consistently negative relationship with short term interest rates.

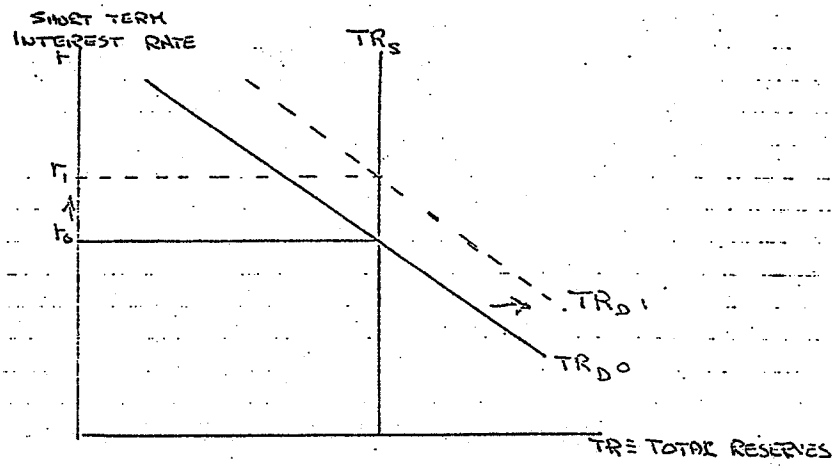
Achieving Monetary Objectives

Precise information about the movement of monetary aggregates -either narrow or broad - is not immediately available. This necessitates the use of short run operating targets over which the central bank has direct control and that have fairly predictable results on the chosen monetary aggregate. Alternative short run operating targets are the monetary base, bank reserves, or interest rates. Depending on the choice of the short run operating instrument, the growth rate desired for the monetary aggregate is translated into a relevant growth rate in either the monetary base or bank reserves, or an appropriate level of short term interest rates. The actual growth rate of the monetary aggregate is then used as an indicator of monetary policy. There are an infinite number of monthly or quarterly growth patterns that can average out to a targeted yearly rate. Shortfalls or overshoots in one period, therefore, may be compensated for in subsequent periods.

With the use of either the monetary base or some measure of bank reserves as short run operating targets,

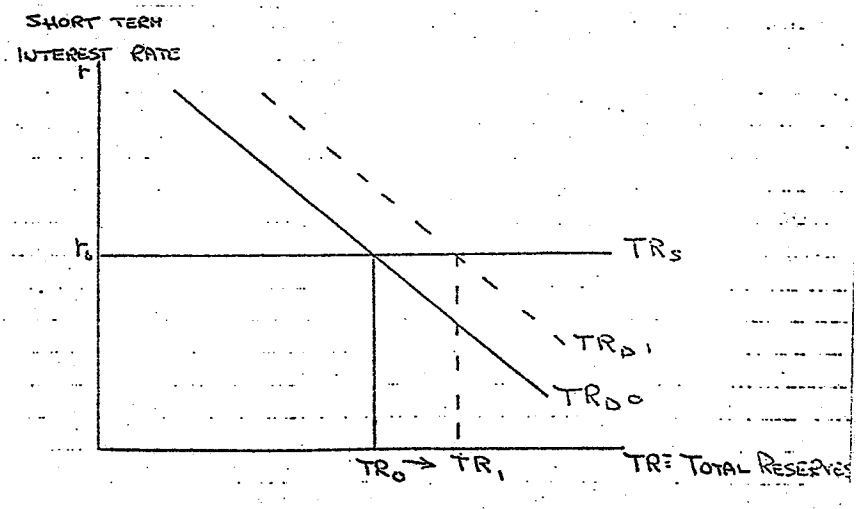
interest rate levels are demand determined. Such a case is portrayed in Figure 2-7 wherein the central bank supplies that level of total reserves (comprised of both required and excess reserves) estimated as consistent with the desired monetary growth rate. Short term interest rates are determined by the interaction of total reserves demanded (TR_d) with those supplied (TR_s). Using reserves as the short run operating mechanism, errors in achieving monetary goals can arise from both unforseen shifts in bank demand for excess reserves and movements in the average required reserve ratio. Such shifts result in changes in the level of deposits (and thereby in changes in the money supply) engendered by a given level of total reserves. In such cases, the use of interest rates as short run operating targets perform better.

FIGURE 2-7



The use of interest rates as short run operating instruments achieves monetary targets by sliding up or down the demand for money function. The amount of reserves supplied, therefore, at any particular interest rate, is demand determined. With such an approach to policy implementation, as indicated in Figure 2-8, the supply function TR_S becomes horizontal or perfectly elastic at r_0 and the amount of reserves are determined by the banks' demand for reserves at the particular interest rate. Errors in achieving money supply goals with interest rates as the short run target derive from random shifts in the demand for money or errors in projected income estimation. Both types of errors tend to be accomodated. In such cases, a short run reserve target is superior, in that, an increase in the demand for money isaccommodated only to the extent that the banks themselves are induced by rising interest rates to accommodate the increase in demand by increased borrowings or by drawing down excess reserves.[65]

FIGURE 2-8



The economic costs of failing to hit monetary targets in the short run are related to lag structures between money growth and the behaviour of the economy. If monetary influence is instantaneous then deviations for even very short periods could have marked impact. If, however, it operates with a distributed lag, the effect of impact at any point in time reflects a weighted average of past money supply growth rates and thereby, will be tempered by subsequent compensation. U.S. models of the St. Louis type suggest a one quarter deviation of M_1 growth from target, amounting to 4 percentage points or less, has essentially negligible effects on GNP; deviations from target lasting two quarters have only moderate effects while deviations amounting to 4 percentage points and lasting for as long as three quarters have more serious effects.[66] The larger scale structural models, such as the M.I.T. or M.P.S models, incorporate somewhat longer lags in the money-GNP relationship. These suggest that sizeable deviations from M_1 target growth rates lasting up to six months can occur with negligible effects - providing there is subsequent countervailing growth.[67] Pierre Duguay and Paul Jenkins of the Bank of Canada found similar Canadian evidence using both RDX2 and a reduced form model. M_1 was raised over two quarters to a peak deviation of 5 percent from control, maintained for two quarters and

subsequently reversed. A maximum effect of one percent on nominal GNP occured in quarter 6 with RDX2 and two percent in quarter 7 using the reduced form monetarist model. Due to a secondary cycle induced by exchange rate movements in RDX2 however, GNP did not stabilize around control values until seven years after the initial shock.[68]

The superiority of interest rates, the monetary base or bank reserves as short run operating targets is also an empirical issue that remains unresolved. In an article on implementing monetary aggregate objectives, Richard Davis computed a table of errors in forecasting incurred by using all three as alternative independent variables.[69] His results indicate the reserve and interest rate targets superior to the Federal Reserve Bank of St. Louis' money-reserve base multiplier method. All three methods do very poorly in forecasting monetary growth rates for individual months. However, as time horizons are lengthened, the results are considerably better but the errors are not negligible. White's Canadian study, which deals only with interest rates as the short run operating targets, similarly shows a high incidence in forecasting errors, which lessen somewhat as time horizons are expanded to 6 months.[70] Consequently, shortening the attempted time horizon of monetary control increases the technical problems of monetary management

and the likelihood of an unacceptable degree of money market instability.

Lengthening the period of control, however, increases probable deviations of aggregate demand and related variables from final policy objectives.[71] All economic evidence points to lags between a change in operating targets and the full impact of that change on the money supply. Most econometric work suggests the effects take approximately six to eight months to work themselves out.[72] This implies that a maintained increase in the supply of bank reserves or a once-and-for-all rise in the chosen interest rate target will not have its full effect on the level of the money supply for several months.[73]

FOOTNOTES

1. Milton Friedman, "A Theoretical Framework for Monetary Analysis", in: Milton Friedman's Monetary Framework, ed. by Robert J. Gordon (Chicago: The University of Chicago Press, 1974), pp. 38 - 39.

2. Ibid., pp. 11 - 13.

3. Karl Brunner, "Commentary on 'The State of the Monetarist Debate'", Federal Reserve Bank of St. Louis Review, September 1973, p. 12.

4. Ibid., p. 7.

5. Leonall C. Andersen, "The State of the Monetarist Debate", Federal Reserve Bank of St. Louis Review, September 1973, p. 14.

6. Milton Friedman, "The Role of Monetary Policy", in: Monetary Economics: Readings on Current Issues, ed. by William E. Gibson and George Kaufman (New York: McGraw-Hill Inc., 1971), p. 172.

7. Milton Friedman, "Nobel Lecture: Inflation and Unemployment", Journal of Political Economy, Vo. 85 No. 3, June 1977, pp. 451 - 472.

8. Ibid, pp. 456 - 457.

9. Modligliani, Op. Cit., p. 4.

10. Harry G. Johnson, Macreoconomics and Monetary Theory (Chicago: Aldine Publishing Company, 1972), pp. 130 - 131. Johnson's criticisms of the Friedman-Meiselman tests are as follows:

    (i) the money supply may be partially induced and therefore in such cases other influences may be picked up within the Friedman-Meiselman context as an influence on money;

    (ii) methodological, in that there is questionable reliability in a single education that relies on high correlation coefficients as a criterion for a model's predicted capacity;

    (iii) their identification of autonomous expenditure elements is as guilty of a priori specification as Keynesian

formulations and does not give unambiguous results.

11. Leonall C. Andersen and Jerry L. Jordan, "Monetary and Fiscal Actions: A Test of Their Relative Importance in Economic Stabilization", in: Monetary Economics, ed. by Gibson and Kaufman, pp. 114 - 131.

12. The Andersen-Jordan results were attacked on the basis that the autors used the wrong measure of monetary and fiscal actions. Modligliani states, however, that alternative measures do not change the qualitative results. His criticism is that income is subject to substantial shocks from many sources other than monetary and fiscal, so that these variables account for only a moderate proportion of variation in income (in the U.S. it has been of the order of one-half to two-thirds).

13. Richard G. Davis, "How Much Does Money Matter? A Look at Some Recent Evidence", in: Monetary Economics, ed. by Gibson and Kaufman, pp. 135 - 136. Davis comments that the money supply is an endogenous variable in the M.I.T. model and therefore has no explicity money multiplier. However, he states the arithmetic multiplier can be derived by dividing the GNP multiplier of non-borrower reserves by the money multiplier of non-borrowed reserves.

14. Modligliani, Op. Cit., p. 4.

15. Friedman, The Role of Monetary Policy, p. 178.

16. Modligliani, Op. Cit., p. 8.

17. Ibid., pp. 9 - 11.

18. Richard G. Davis, "Implementing Open Market Policy With Monetary Aggregate Objectives", Federal Reserve Bank of New York Monthly Review, July 1973, p. 171.

19. William Poole, "Optimal Choice of Monetary Policy Instruments in a Simple Stochastic Macro Model", The Quarterly Journal of Economics, Volume LXXXIV, 1970, pp. 197 - 215.

20. Ibid., p. 197.

21. William R. White, The Demand For Money in Canada and the Control of Monetary Aggregates: Evidence From the Monthly Data (Ottawa: Bank of Canada Publications, 1976) p. 7.

22. Poole, Op. Cit., p. 209.

23. Friedman, The Role of Monetary Policy, p. 11.

24. Jerry L. Jordan, "Elements of Money Stock Determination", in: Monetary Economics, ed. by Gibson and Kaufman, pp. 248 - 261.

25. Ibid., p. 251.

26. D.E. Bond and R. E. Shearer, The Economics of the Canadian Financial System: Theory, Policy and Institutions (Scarborough, Ontario: Prentice-Hall of Canada, Ltd., 1972) pp. 327 - 328.

27. Jordan, Op. Cit., p. 261.

28. Johnson, Op. Cit., pp. 120 - 123.

29. Friedman, The Role of Monetary Policy, p. 13.

30. Johnson, Op. Cit., pp. 122 - 123.

31. David E. W. Laidler, The Demand For Money: Theories and Evidence (New York: International Textbook Company, 1969), pp. 92 - 93.

32. Ibid., pp. 93 - 95.

33. Johnson, Op. Cit., p. 125.

34. Laidler, Op. Cit., p. 105.

35. Johnson, Op. Cit., p. 124.

36. Laidler, Op. Cit., p. 97.

37. Ibid., p. 98.

38. David E.W. Laidler, The Demand for Money: Theories and Evidence (New York: Dien-Donnelly Publishing Corp., 1977) 2nd ed., p. 132.

39. Laidler, Op. Cit., 1st ed., pp. 98-99.

40. Ibid., p. 102.

41. Laidler, Op. Cit., 2nd ed., p. 141.

42. Ibid., p. 149.

43. Laidler, Op. Cit., 1st ed., p. 107.

44. Laidler, Op. Cit., 2nd ed., p. 136.

45. White, Op. Cit., p. 45.

46. Ibid., pp. 31 - 312.

47. Ibid., p. 32.

48. Ibid., p. 43.

49. Norman Cameron, "Stability of the Demand for Money Under Casum Tests: An Application to Canada", University of Manitoba (Mimeo) 1976.

50. Ibid., p. 14.

51. Laidler, Op. Cit., 1st ed., p. 90.

52. Johnson, Op. Cit., p. 128.

53. White, Op. Cit., p. 33.

54. Davis, Implementing Open Market Policy With Monetary Aggregate Objectives, p. 173.

55. Allen H. Meltzer, "Controlling Money", Federal Reserve Bank of St. Louis Review, May 1969, p. 18.

56. Davis, Implementing Open Market Policy With Monetary Aggregate Objectives, p. 173.

57. White, Op. Cit., p. 36.

58. Ibid., pp. 35 - 36.

59. Ibid., p. 38.

60. Ibid., p. 35.

61. Ibid., p. 46.

62. Ibid., p. 44.

63. Courchene, Money, Inflation and The Bank of Canada pp. 102 - 103.

64. Ibid., pp. 104 - 105.

65. Davis, Implementing Open Market Policy With Monetary Aggregate Objectives, p. 178.

66. Ibid., p. 174.

67. Ibid., p. 175.

68. W.R. White, "Alternative Monetary Targets and Instruments in Canada: Criteria For Choice", Ottawa, Bank of Canada, (Mimeo) 1978, footnote 24.

69. Ibid., p. 179.

70. White, The Demand For Money in Canada, p. 109.

71. Davis, Implementing Open Market Policy With Monetary Aggregate Objectives, p. 182.

72. Ibid., p. 180 Davis points out that although estimation of lag structures is a very uncertain business, even lags of one half the 6 - 8 month range have significant implications.

73. Ibid., pp. 180 - 182.

CHAPTER THREE

BANK OF CANADA MONEY SUPPLY STRATEGY

The 1975 Annual Report of the Bank of Canada comprehensively outlined the shift in general orientation of Canadian monetary policy. The main objective of current policy was stated as the control of domestic price inflation; the underlying principle to be a rate of monetary expansion which more closely approximated sustainable real economic growth. Policy intentions were defined in terms of a range within which the Bank was currently attempting to keep the trend rate of increase in the money stock and this range gradually would be lowered over time.

As background to the changed focus of policy, the Report described the emerged divergence between Canadian and foreign price trends. It cited the 1972 - 1974 period of strong external demand for primary commodities as having added substantially to Canadian incomes and expectations of further increases. Such expectations were not dampened by the energy crisis of late 1973 as Canadians then regarded themselves as being largely insulated from that event. In consequence, the impact of the 1974 - 1975 recession was much less severe in Canada than in other countries; the decline in Canadian real GNP was approximately 1 1/2% compared with over 6 1/2% in the U.S. and 5 1/4% in Germany. The corollary to this situation was that by the end of 1975 the U.S. and Germany

were experiencing considerably improved balances in their international payments and rates of price increases in the 5% to 7% range whereas Canada showed a large increase in current account deficit and an inflation rate of close to 11%. Unlike the other countries, wage and salary increases continued to escalate in Canada through 1975 and, as the largest element in prices, resulted in higher Canadian prices. In addition, the relative strength of Canadian domestic demand maintained imports at high levels while demands for exports faltered. The relative buoyancy of the Canadian economy, thereby, was reflected in a distinctly less favourable evolution of domestic costs and balance of international payments.[1]

The Report suggested that under the circumstances more restraint should have been placed on Canadian aggregate demand through 1973 and 1974 and implied that the discretionary monetary policy prevalent during previous years had exerted destabilizing influences on the trend of expenditure growth.[2] Current policy, therefore, would rely on stable monetary growth in order to secure contra-cyclical changes in credit conditions in the short run and price stability in the long run. The measure of the money stock chosen as target and indicator of policy was the public holdings of currency and demand deposits (M_1) and the control instruments - short term

interest rates.

The stated basis for the selection of M_1 was the apparent systematic relationship of that aggregate with the trend of national expenditure and those short term interest rates most directly subject to central bank influence. It was observed that the Canadian public had tended over the long run since the beginning of the 1970's, to increase M_1 holdings by close to 1% for each 1% rise in the money value of GNE while responding in the short run to changes in short term interest rates. A rise in the latter, and thereby an increase in the opportunity cost of holding non-interest bearing balances, would prompt a downward adjustment in the average level of M_1 that the public would be willing to hold per dollar of GNE; a decline in short term rates would have the opposite effect. Similar relationships using a broader measure of the money stock were remarked to have become less clear subsequent to the institutional changes enacted by the 1967 Bank Act revision.[3]

The Bank's decision to use short term interest rates as the operating instruments of policy likely reflected the wish to minimize the impact of money supply control on interest rates and the exchange rate. A cash base target would require interest rates to respond freely

to any short run shifts in either the demand for or supply of money. The available casual and econometric evidence indicates a great deal of short run instability in demand for money functions and therefore considerable week to week and month to month changes in money growth rates. This would imply unacceptably large interest rate changes to clear money markets subject to cash base control and substantial exchange rate volatility as a consequence.

Control of a narrow measure of the money stock follows logically from the use of short term interest rates as operating instruments. As many components of broad money are interest bearing, the pace of growth responds to interest rate changes in much lesser degree than that of narrow money. Furthermore, growth of broad money reflects changes in interest rate differentials between deposit rates and other market rates. The latter includes rates which are not directly subject to central Bank control and the former reflects the desire of financial institutions to attract monies to source their loan portfolios.[4] Attempts of the Bank to control a broad rather than narrow aggregate, therefore, would likely require considerably wider movements in short term interest rates in order to achieve monetary targets with similar precision.

It is not clear that, technically, the relative precision with which alternative aggregates can be controlled should be a major criterion for choice between them.[5] However, it is likely that the ability of the authorities to hit monetary targets with reasonable accuracy over time would contribute to a general lessening of inflationary expectations. To the extent, therefore, that inflation is directly determined by inflationary expectations, then any given reduction in inflationary expectations will reduce inflation without the necessity of higher levels of excess capacity. Given the emphasis placed by the Bank on the role of inflationary expectations in Canada it is likely that precision in attaining monetary targets was considered desireable.

The initial projected increase for the money stock was specified, on an annual basis, as not less than 10% and below 15% measured from the average level of M_1 in the second quarter of 1975. A 5% annual increase in the trend rate of M_1 was judged sufficient to accomodate real growth in the Canadian economy under conditions of price stability but inadequate under circumstances of built in inflation. The 10% - 15% range was considered adequate for a continuing rate of growth in the nominal value of national income of roughly 13% to 14% at unchanged interest rates. The behavior of prices and

wages was perceived key to whether that magnitude of aggregate spending would result in satisfactory growth and employment. If wage and price increases continued at undiminished rates the level of spending thus generated would be reflected in actual growth of M_1 exceeding the upper limits of the target range. The Bank, therefore, would act to raise interest rates thereby restraining spending and output. To the extent rates of wage and price increases slackened, the level of spending would be less than anticipated and interest rates would be lowered, encouraging production and employment to grow more rapidly.[6]

The inception of a money supply strategy by the Bank of Canada gave a more passive role to all final policy objectives other than price stability. Credit conditions remained the intermediate targets of policy but these would be consistent with monetary objectives. Changes in the cost of credit for economic stabilization purposes would be enacted only when actual rates of money expansion were above or below the targeted range. Differentials reflecting diverse domestic and international credit conditions, therefore, could be expected to arise whenever warranted by Canadian monetary conditions. Interest rate and exchange rate volatility would be minimized to the extent the chosen methods of

implementation would accomplish this but the 1975 Annual Report cautioned

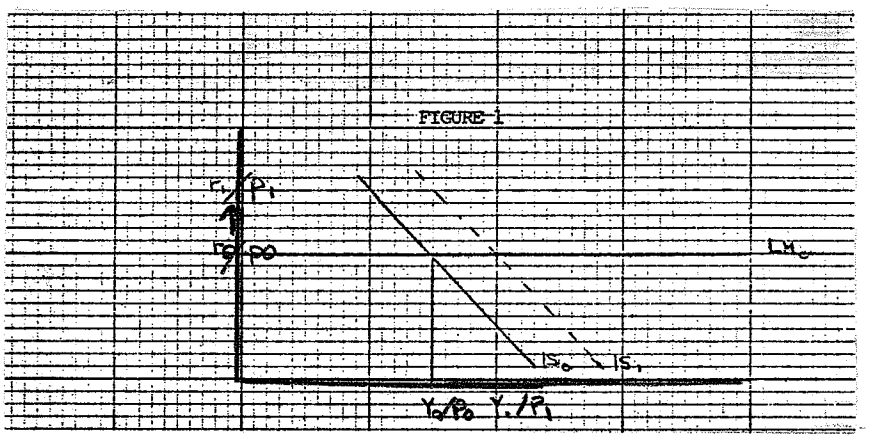
> "...the pursuit of a policy of stable monetary expansion requires that interest rates and the exchange rate be allowed scope for such movement as may be needed in either direction, not only over the course of business cycles, but also over shorter periods."[7]

I. Technical Underpinnings

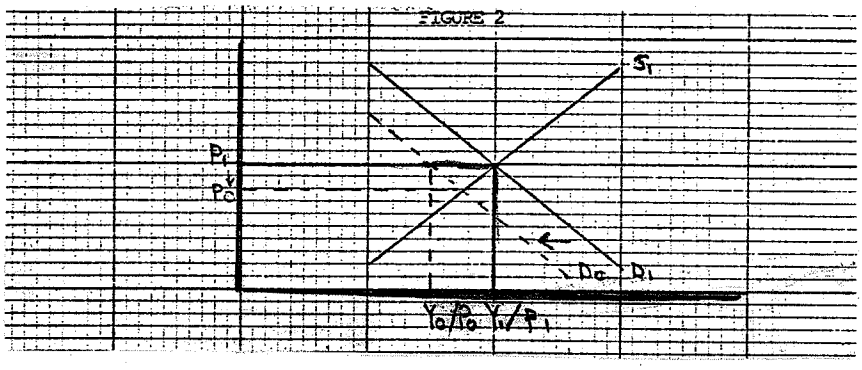
The current Canadian strategy in implementing policy maintains interest rates as the central transmission mechanism. Changes in the cost of credit are expected to influence the spending decisions of consumers and investors and, thereby, output, employment and prices. Such changes, a rise or fall in short term interest rates, will be determined by monetary expansion which exceeds or falls below the projected rate. The latter is based on accomodating a specific rate of change in nominal output consistent with a gradual slowing in the rate of price rises and long run real economic growth in the five percent range.[8] The behavior of prices therefore is key to the behavior of real output and employment.

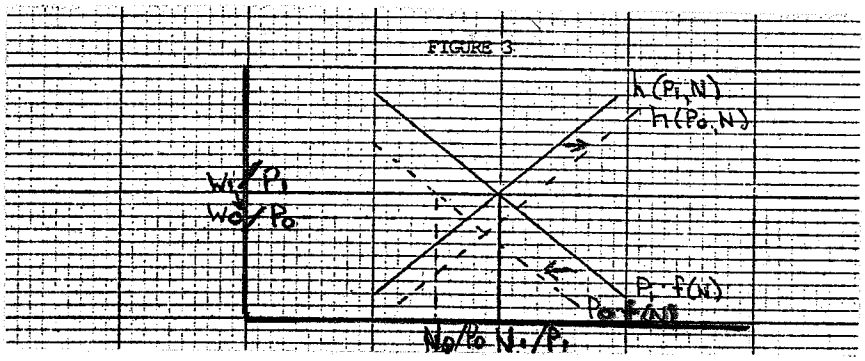
The Bank attempts to achieve monetary objectives in sliding up or down the demand for money function. Short term interest rates, therefore, are set to be consistent with a money forecast which is conditional on the current income forecast. At the specific interest rate setting, the money supply is demand determined. Unlike a cash base setting, any unexpected changes in either nominal income or demand for money at any given

income level do not automatically cause interest rate changes. Money supply figures, however, are available weekly in Canada and therefore quickly indicate to the authorities any difference between the actual rate of expansion and that expected. The source of the error and therefore the desired action is not apparent at least until the publication of the quarterly National Income Accounts, two months after the end of the specific quarter. However, preliminary evidence for both Canada and the U.S. suggests that monetary aggregates can deviate from desired growth paths for as long as two quarters or more with no major effects, providing that some countervailing movement is initiated in subsequent quarters.[9]



As illustrated in Figure 1, the Bank sets short term interest rates at r_o consistent with projected nominal income Y_o. If in fact this represents a lesser increase in real income and a greater pace in price inflation than expected, this would result in more excess capacity with a consequent downward pull on price increases. At interest rate r_o the money supply is perfectly elastic at LM_o and therefore, demand determined. Assuming a stable demand for money, any divergence in actual growth of M_1 holdings from the targeted range of expansion indicates that nominal income is growing faster or slower than forecast. If forecast Y_o accurately reflects the components of aggregate demand and supply in the economy, the demand for M_1 balances will be on target. If, however, nominal income is actually at Y_1 with lS_1, this will be reflected in the money supply figures growing more rapidly than projected. Price and output indicators will suggest whether the unanticipated rise in nominal income represents an accelerated pace in prices or real output. Should it be determined a result of price increases or growth in real output in excess of the long run sustainable range, the Bank will act to raise interest rates in order to shift spending and income back in the desired direction.





An increase in interest rates would tend to reduce domestic demand in discouraging consumer expenditure, residential construction and business investment in new capital goods. Furthermore, the rise in interest rates would induce more inflow of foreign capital which would tend to appreciate the exchange rate thereby reducing external demand for Canadian exports and encouraging substitution of imports for more expensive domestic goods. The economy's demand curve, therefore

conceivably, would shift left as in Figure 2 from D_1D_1 to D_0D_0. Equilibrium output demanded at the initial price level P_1 would be reduced to Y_0, creating excess capacity measured by $Y_1 - Y_0$ and placing downward pressure on the price level. The excess capacity and possible price decrease would tend to shift the demand for labour down toward $P_0.f(N)$, in Figure 3, fairly rapidly increasing unemployment by $N_1 - N_0$ and encouraging a downward shift in the labour supply curve (to the extent workers lowered wage demands). As the economy's supply curve responded and shifted down from S_1, equilibrium would obtain at a new level of output somewhere below Y_1 but above Y_o.

Should the money supply figures, however, indicate an increase (or decrease) that is not corroborated by income figures, this likely reflects a shift in the demand for money at any given income level. A monetary shift such as this should not be allowed to impact on aggregate demand. The Bank therefore would not raise (or lower) interest rates in deducing such a shift. Rather if the shift was thought to be permanent the target rate of monetary expansion should be raised (or lowered).

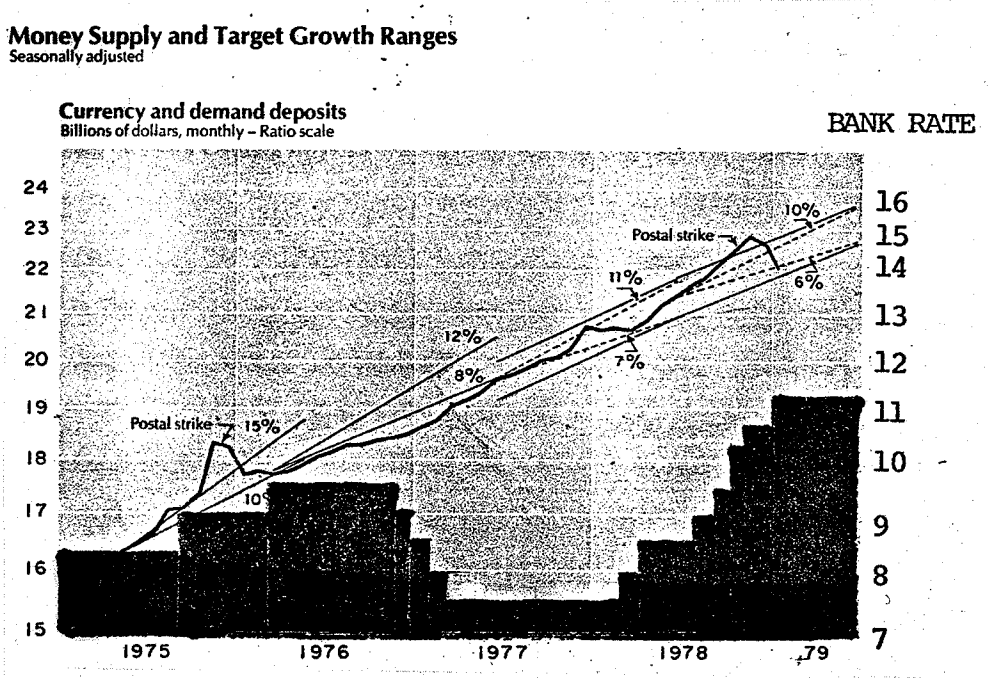
The underlying premise of the Bank of Canada's current method in implementing policy is a predictable

function for M_1 balances having explanatory variables of national income and interest rate levels. Unforeseen disturbances are expected more likely to occur in the real sector of the economy. Under such circumstances, Poole's stochastic analysis suggests the optimal policy strategy to be a money stock target. The latter would minimize the loss from any divergence in the actual level of income from that projected. As indicated in Figure 2-5 of Chapter 2, given a stable LM curve and an unstable IS curve, a money stock target would imply LM_1 and income between Y_2 and Y_3; an interest rate setting at r^x would result in LM_2 and income between Y_1 and Y_3.

The Bank, however, has found it preferable to use interest rates as the control instrument in order to minimize the risk of undesireable interest rate movements over the short run rather than set the cash base and avoid the dangers of a slightly slower policy response to unexpected income shocks.[10]

Moreover, the continued use of interest rates as the operating instrument enables policy to be quickly directed to exchange rate objectives should that become desireable. A money stock target would not.

II. Policy Implementation



SOURCE: Bank of Canada Annual Report 1978
Bank rate change superimposed on diagram.

The initial target range of between 10% to 15% annual increase in the narrowly defined money supply (M_1) was lowered: in August 1976, to between 8%-12%; in October 1977, to 7%-11%; and in late summer of 1978 to 6%-10%. Actual increases in M_1 holdings on an annual basis were: 10.7% measured from the average level in 1975-2 Q; 8.9% measured from the three months centred on March 1976; 8.5% measured from a June 1977 base; and just

over 9% measured from June 1978.[11] In general, movements in short term administered rates conformed to divergence of actual growth in the money supply from projected targets. In response to a rapid increase in M_1 holdings, policy was directed to ensure a rise in short term rates in late 1975 and early 1976. It was eased in late 1976 when it became apparent that M_1 balances were growing well below the current range. In early 1978, policy again was directed to ensure a rise in interest rates. At the time, money supply growth was well within the target range and the intent of policy was prompted by exchange rate considerations. Further rate rises through 1978 were consistent with both money supply and exchange rate objectives.

In implementing policy, the Bank of Canada relied heavily on open market operations. From late 1975 through the end of 1977, these operations were clearly determined by monetary objectives. The Bank was an active seller in the market until late 1976 and a net purchaser thereafter through 1977. During 1978, in line with the intent of defending the exchange rate, the Bank was a net purchaser of sizeable quantities of Treasury Bills; prices in these money market instruments thereby were established at levels consistent with increased yields. The Bank therefore promoted a rise in short term rates without

actively constraining growth in the money supply. Chartered bank liquidity, as reflected in the ratios of Canadian Liquid Assets and Free Liquid Assets, continued the declining trend apparent in recent years but at a lesser rate in 1977 and 1978; the excess cash reserve ratio increased in 1978, the first such increase in recent years.

TABLE I

BANK OF CANADA Net purchases from (+) or net sales to (-) investment dealers and banks (MILLIONS)

	Treasury bills	Bonds[1] 3 years and under	3 - 5 years	5 - 10 years	Over 10 years	Bankers' acceptances[2]	Sub-total of bills and bonds and bankers' acceptances
1975	+ 610.2	- 34.5	- 60.3	+ 34.4	-	- 97.5	+ 452.3
1976	+ 326.6	- 84.4	-385.9			+ 46.1	- 97.6
1977	+1598.0	+ 36.1	-127.6			- 75.2	+1431.3
1978	+2235.9	+ 35.5			-53.1	+ 8.0	+2226.3

[1] Classified by years to maturity at time of transactions.

[2] Includes maturing bankers' acceptances

SOURCE: APPENDIX TABLE III: BANK OF CANADA ANNUAL REPORTS: 1975, 1976, 1977, 1978

TABLE II

CHARTERED BANKS: EXCESS CASH RESERVES; CANADIAN LIQUID ASSETS; FREE LIQUID ASSETS

YEAR/ QUARTER (AVERAGE)		EXCESS CASH RESERVE RATIO	CANADIAN LIQUID ASSET RATIO	FREE LIQUID ASSET RATIO
ANNUAL				
1975		.059	19.6	8.6
1976		.044	18.3	7.7
1977		.042	17.2	7.1
1978		.049	16.5	6.5
1975	1	.055	20.9	9.4
	2	.057	19.7	8.7
	3	.064	19.0	8.1
	4	.060	18.9	8.2
1976	1	.048	18.6	7.6
	2	.054	18.6	8.1
	3	.032	18.2	7.6
	4	.041	17.9	7.4
1977	1	.034	17.6	7.3
	2	.029	17.3	7.2
	3	.043	16.8	6.9
	4	.061	17.1	7.1
1978	1	.043	16.9	6.7
	2	.034	16.7	6.8
	3	.049	16.3	6.5
	4	.069	16.1	6.2

SOURCE: TABLE 5 BANK OF CANADA MONTHLY REVIEWS SEPTEMBER, 1976; OCTOBER, 1977; SEPTEMBER, 1978;

APPENDIX TABLE II, BANK OF CANADA ANNUAL REPORTS, 1975, 1976, 1977, 1978

Financing operations undertaken for the Government lengthened the overall maturity structure of debt and sourced a growing proportion outside the banking system. Treasury Bills represented an increasingly significant portion of new debt issued.

TABLE III

GOVERNMENT OF CANADA		Canadian dollar financing requirement met by:						
Net financing requirement		Reduction or increase (-) in Canadian dollar cash balances	Increase in holdings of Canadian dollar securities outside Government accounts					
Excluding foreign exchange financing	Including foreign exchange financing		Total	Banking System		General Public		
				Bank of Canada	Chartered Banks	Canada Savings Bonds	Marketable securities	
5,674	4,967	1,024	3,943	841	-351	2,664	789	1975
4,12º	4,677	557	4,120	572	872	755	1,921	1976
7,164	6,178	-1,619	7,797	1,853	894	1,660	3,390	1977
11,759	6,238	-1,759	8,092	1,741	284	1,933	4,084	1978

SOURCE: Bank of Canada Review, Table 2, October, 1979

1975 and 1976

Open market operations over 1975 resulted in the Bank of Canada being a net purchaser of $452 million par value Government of Canada securities and Bankers Acceptances. Almost 90% of these purchases, however, occured in the first half of the year. From June on, the Bank was a substantial seller in the market of short term bonds. Although the target range of above 10% and below 15% was not specified until November, policy was already well aimed at restricting the growth of M_1 holdings to within that range. The Bank Rate was increased from 8 1/4% to 9% in early September. A sharp upward movement in

money market rates immediately following the September increase was moderated but the Bank quickly resumed a seller stance in the market early in the third quarter as downward pressure on rates emmerged when U.S. rates turned down. Bank purchases of Treasury Bills and Bankers Acceptances in December were related to offsetting the year-end seasonal increase in note circulation and in fact, in order to discourage any downward movement in short term rates, a lesser amount of Bankers Acceptances was purchased than during the previous year.[12]

In early 1976, to counter continued downward pressure on rates, the Bank tightened cash reserve management sharply and sold substantial amounts of short and medium term bonds. Beginning money supply figures were distorted by the interruption of mail service from late October until early December but following the release of the February M_1 figures, which indicated a 15% increase in annual terms the Bank raised the Bank Rate to 9 1/2%. In the following months, M_1 growth slowed to well below the lower limits of current range. With the exception of a short period subsequent to the March rate increase, the Bank remained a strong seller in the market until late June.[13]

In line with the intention of gradually slowing

monetary expansion the targeted range was lowered in August,to between 8% and 12% measured from the 3 months centered on March. The rate of growth in M_1 from the second quarter of 1975 to the new base was approximately 12%, in annual terms, which was about the centre of the previous target range.[14] It became apparent shortly after the new range was announced that M_1 growth remained well below the lower limits of the new range. The Bank of Canada lowered the Bank Rate to 9% in late November and to 8 1/2% in late December. The 10% to 15% target range had been expected to support a 13% - 14% increase in nominal income at unchanged interest rates. In fact, over 1976, a 15.6% increase in nominal income was underwritten by an 8% rise in narrow money with slightly higher interest rates. The 1976 Annual Report noted that the increasing shortfall of M_1 was somewhat more pronounced than could be attributed solely to the weakening economic situation and suggested the possibility of a shift in the public's demand for transactionary balances.[15]

Reflecting the trend of policy, the Bank of Canada was a net seller in the market of over $97 million of short and medium term securities during 1976. Within the chartered banking system, excess cash reserve ratios declined from a mean of .059 in 1975 to .044 in 1976 and

the mean Free Liquid Asset ratio declined from 8.6 to 7.7. In addition, the average level of government deposits at the banks decreased from $2954.5 million in 1975 to $2732.4 million in 1976.

In managing the public debt, the Bank engaged in financing operations during 1975 which raised just under $4 Billion from Canadian securities: roughly $600 million through the issue of Treasury Bills, $800 million through the sale of marketable bonds, and $2600 million through Canada Savings Bonds.[16] A similar amount was raised in 1976 but a considerably smaller proportion in CSBs; roughly $1600 million was sourced by Treasury Bill issues, $1800 million by marketable bonds and $755 million by CSB's.[17] Corresponding to the decreased emphasis on CSBs, more reliance was placed on marketable securities.

Security holdings by the general public in 1975 indicated the first such increase since 1969 and represented 20% of the monies raised. This trend was more pronounced in 1976 with such holdings providing over 46% of the total. Another notable development in 1976 was the increase in Treasury Bills held outside the banking system to $1,429 million from $559 million in 1975.[18] The banking system accounted for 12% of the total increase in securities holdings in 1975 and 35% in 1976; in 1975 this

represented only Bank of Canada acquisitions, as contrasted in 1976, to a 14% increase in Bank of Canada holdings and a 21% increase in those of the chartered banks. In addition, new bond issues in 1976 displayed a marked shift toward the longer end of the maturity structure. This was the first such lengthening in over ten years.[19]

As agent for the Exchange Fund Account, the Bank operated in the foreign exchange market as a net seller of some $707 million in foreign exchange in 1975 and a net buyer of $548 million in 1976. In both years, these essentially were routine smoothing operations and reflected downward pressure on the Canadian dollar over 1975 and upward pressure over 1976.[20]

1977

Holdings of M_1 balances continued to display weak growth in early 1977 and the Bank Rate, consequently, was further reduced to 8% on February 1. This reduction was accompanied by a decrease in the chartered banks' secondary reserve ratio from 5 1/2% to 5%. This provided more liquidity within the banking system and less necessity for the banks to fund loan expansion by growth in term deposits - thereby allowing the rates on such

deposits to decline. Growth of M_1 recovered modestly and temporarily to just below the lower limits of the range but fell back sharply in April. The Bank Rate was reduced further in early May to 7 1/2%, where it remained through the end of the year. Following the May decrease, M1 rebounded and was approximately within the middle of the target range by June. In October, the Bank announced a new target range of between 7% to 11%, measured from a June base. The growth of the money supply from the previous base was approximately 9%, in annual terms, placing the starting point for the new range at the midpoint of the previous range.[21]

The Bank of Canada was a net purchaser of some $1431 million of securities in open market operations over 1977. These largely represented acquisitions of Treasury Bills. Apart from January, when the Bank sold both short and medium term securities in order to temporarily resist further decreases in short term rates, bond transactions essentially represented switches of medium term for shorter term maturities. The mean excess cash reserve ratio at the chartered banks declined only marginally during 1977 to .042 and the ratio of Free Liquid Assets fell somewhat less than in the previous year to 7.1. The average level of government deposits at the banks increased substantially to $3133.9 million.

Through 1977, the Bank engaged in financing operations for the Government which raised close to $8 billion of new funds in Canadian markets: roughly $2,500 million through Treasury Bill issues, $3,900 million in Bond issues and over $1,600 million by Canada Savings Bond sales.[22] Trends established the previous year were continued in that: holdings of Treasury Bills outside the banking system continued to increase and accounted for more than one quarter of the total amount outstanding; the average term to maturity of outstanding marketable bonds was further lengthened; and although marginally lower than the previous year, the public continued to source a large proportion of Canadian debt with acquisitions of marketable securities.[23]

As agent for the Exchange Fund Account the Bank sold some $986 million in foreign exchange assets in an effort to moderate the downward trend in the exchange rate. In addition, a seven year U.S. dollar revolving stand-by credit facility was arranged by the Bank of Canada with the chartered banks, entitling the Government to borrow up to U.S. $1.5 billion. The facility was to enable the Exchange Fund Account to replenish its holdings of U.S. dollars if so required.[24]

1978

As stated in the 1978 Annual Report, a major objective of policy during the year was to moderate the downward movement of the exchange rate in the face of rising interest rates in the United States.[25] Policy, therefore, attempted to re-establish differentials between Canadian and U.S. rates. In response to a significantly narrowed Canadian U.S. differential and a sharp drop in value of the Canadian dollar over the first three months, the Bank Rate was increased to 8% on March 9 and to 8 1/2% on April 4, notwithstanding that money supply figures were well within the target range. Following the rate increases and a levelling of U.S. rates, the differential between Canadian and U.S. rates widened to approximately 125 - 150 basis points. This was lost, however, as U.S. rates resumed their upward trend in the second quarter. The Bank Rate was successively raised further to 9% on July 26, 9 1/2% on September 12, 10 1/4% on October 16, 10 3/4% on November 6, and followed the trend of rate movements in the United States. The movement in Canadian rates did comply with monetary objectives to the extent that money supply figures in the third quarter indicated a sharp increase and reflected heightened economic activity. Fourth quarter money supply figures were disorted due to a brief postal strike in October and a

large inflow of funds associated with redemptions of Canada Savings Bonds.[26]

In September a new monetary target range of between 6% to 10% measured from the June, 1978 base was announced. Actual growth of M_1 balances from June, 1977 to June, 1978 was 8.5%. The starting point for the new range, therefore, was just under the centre of the old range.[27]

Open market operations by the Bank of Canada over 1978 largely were confined to sizeable purchases of Treasury Bills. A notable exception to this, however, was the sale in October of over $50 million of long term bonds. This was the first such sale in recent years. The Bank was a net purchaser in the market of $2,226 million of Treasury Bills, bonds and Bankers Acceptances. Within the chartered banking system: the ratio of Free Liquid Assets continued to decline while the mean excess reserve ratio rose to .049 and the average level of Government deposits increased appreciably to $4870.6 million.[28]

The Bank engaged in financing operations for the Government which raised approximately $8 billion in Canadian markets; $2.8 billion through the issue of Treasury Bills; $3.4 billion through the sale of

marketable bonds and $1.9 billion through Canada Savings Bonds. The patterns of the two previous years were continued. The proportion of Treasury Bills held outside the banking system increased to 30% of the total outstanding and the average term to maturity of Canadian debt was further lengthened.[29] In addition, the proportion of debt sourced outside the banking system rose substantially and the percentage of that held in marketable securities was further increased.

Over 1978, the Bank also undertook a number of foreign currency borrowings for the Government . U.S. $1.5 billion was raised through two public offerings in U.S. capital markets and 1,500 million Deutsche Marks, in Germany, through a combined note offering and bank loan. In addition, two medium term stand-by credit facilities aggregating U.S. $5.5 billion were established. The revolving credit facility with Canadian chartered banks was increased to $2.5 billion and a U.S. $3 billion , eight year revolving credit facility, was arranged with a consortium of U.S. and other foreign banks. As of December 31, U.S. $1.4 billion on the facility with Canadian banks and U.S. $1.3 billion on the facility with the international banks had been drawn.[30]

As agent for the Exchange Fund Account, the Bank

intervened in the foreign exchange market as a net seller of $5,476 million foreign exchange assets. This reflected extreme downward pressure on the Canadian dollar during the year.

III. IMPACT OF POLICY

TABLE IV

SELECTED ECONOMIC INDICATORS

(Rates of change based on seasonally adjusted data, percentage rates unless otherwise indicated)

Years/ Quarters	M1	M2	M3	Chartered banks		GNP in current prices	GNP at constant prices	GNP price deflator	Consumer price index excluding food	Labour force		U.S.dollar in Canadian dollars
				Canadian liquid assets	Canadian dollar major assets					Total	Employed	
1975	13.8	15.0	14.7	5.6	15.9	12.1	1.2	10.8	10.1	3.5	1.7	1.0173
1976	8.0	12.6	18.4	9.1	16.7	15.6	5.4	9.7	9.4	2.3	2.1	0.9861
1977	8.3	14.0	15.8	8.7	15.7	9.5	2.4	7.0	7.9	2.9	1.8	1.0635
1978	10.1	10.7	13.7	10.0	14.7	10.0	3.4	6.4	6.4	3.7	3.4	1.1402
1975 I	24.3	17.5	13.7	1.5	17.1	8.7	0.3	8.7	8.9	2.2	-2.2	0.9884
II	17.0	15.2	7.2	-11.3	7.7	10.7	2.0	8.5	8.7	4.6	3.6	1.0217
III	16.2	12.5	16.1	-0.9	14.6	18.6	4.7	13.1	10.8	2.8	2.2	1.0307
IV	27.0	14.2	18.4	8.1	16.5	15.3	4.2	10.7	11.4	4.1	3.6	1.0108
1976 I	-4.8	7.1	18.4	11.4	19.0	21.8	12.6	8.1	8.8	2.1	3.4	0.9950
II	3.3	14.7	26.6	23.9	18.5	18.1	5.0	12.4	8.5	-0.1	-1.0	0.9789
III	7.6	14.4	14.8	7.8	16.6	3.3	-1.7	5.1	7.8	3.5	2.8	0.9776
IV	4.2	16.6	16.8	2.6	14.7	11.4	2.2	9.2	9.7	0.5	-0.6	0.9931
1977 I	8.7	16.2	16.2	10.4	18.1	8.4	3.6	4.7	7.2	4.7	2.9	1.0310
II	12.0	12.7	15.1	7.6	14.7	11.1	2.0	8.9	8.0	2.6	2.2	1.0525
III	10.0	9.5	12.5	7.8	13.6	8.4	1.9	6.2	6.1	3.6	2.5	1.0700
IV	11.2	10.3	13.1	13.8	13.5	10.4	5.8	4.5	8.3	3.3	2.3	1.1019
1978 I	5.8	8.9	9.7	5.6	11.1	8.8	2.2	6.3	5.4	3.8	3.9	1.1135
II	9.8	9.7	14.4	14.9	17.6	12.5	3.6	8.8	4.7	4.4	4.0	1.1269
III	14.4	12.1	16.2	11.8	18.5	10.1	4.6	5.2	6.6	4.0	4.4	1.1435
IV	14.7	19.4	25.2	6.2	18.6	8.7	3.0	5.5	8.3	1.9	2.9	1.1283

SOURCE: Bank of Canada Review, Table 1, October, 1979

INTEREST RATES

The rise in Canadian short term rates over 1975 and 1976, in general, coincided with a decline in U.S. rates. The spread between comparable Canadian and U.S. rates, consequently, widened to approximately 4 percentage points. As the downturn in Canadian rates in late 1976 was followed by an upturn in U.S. rates, however, the

differential was nearly eliminated by early 1978. Following a temporary levelling in U.S. interest rates and rises in Canadian short term rates during March and April of that year, the Canada-U.S. differential widened to approximately 1 1/2 percentage points. This was reversed by mid-year and despite further rate rises in Canada, the spread between Canadian and U.S. short term rates continued to narrow over the year.

TABLE V

SELECTED CANADIAN AND UNITED STATES INTEREST RATES

YEAR/QUARTER (END OF PERIOD)	CANADA									UNITED STATES		
	BANK RATE	TREASURY BILL RATE	GOVERNMENT OF CANADA BOND YIELDS 1-3	3-5	5-10	CORPORATE BOND RATE	90-DAY PAPER RATE	CHARTERED BANKS PRIME RATE	90 DAY DEPOSITS	TREASURY BILL RATE	90 DAY PAPER RATE	CORPORATE BOND RATE
ANNUAL												
1975	9.00	8.64	8.15	8.39	8.90	11.06	9.34	9.75	9.46	5.34	5.78	9.22
1976	8.50	8.14	7.10	7.57	7.89	9.83	8.16	9.25	8.20	4.40	4.75	8.24
1977	7.50	7.17	7.48	8.10	8.32	9.71	7.23	8.25	7.24	6.34	6.85	8.49
1978	10.75	10.46	10.09	9.92	9.81	10.34	10.78	11.50	10.40	9.70	10.99	9.40
QUARTERLY												
1975: 1	8.25	6.33	6.46	6.71	7.14	10.15	6.86	9.00	6.52	5.70	6.05	9.16
2	8.25	6.99	7.10	7.50	7.00	10.57	7.25	9.00	7.17	5.83	6.18	9.24
3	9.00	8.41	8.72	8.86	8.89	11.40	8.94	9.75	9.15	7.34	6.96	9.36
4	9.00	8.64	8.15	8.39	8.90	11.06	9.34	9.75	9.46	5.34	5.78	9.22
1976: 1	9.50	9.07	8.54	8.55	8.99	10.82	9.99	10.25	10.15	5.06	5.26	9.04
2	9.50	8.98	8.29	8.47	8.91	10.74	9.20	10.25	9.43	5.52	5.92	8.95
3	9.50	9.11	8.15	8.40	8.79	10.33	9.47	10.25	9.47	5.21	5.39	8.63
4	8.50	8.14	7.10	7.57	7.89	9.83	8.16	9.75	8.20	4.40	4.75	8.24
1977: 1	8.00	7.54	7.44	7.78	8.16	9.88	7.77	8.75	7.75	4.73	4.87	8.35
2	7.50	7.07	7.27	7.64	8.15	9.63	6.99	8.25	7.13	5.10	5.52	8.18
3	7.50	7.10	7.38	7.81	8.18	9.55	7.25	8.25	7.33	6.16	6.44	8.22
4	7.50	7.17	7.48	8.10	8.32	9.71	7.23	8.25	7.24	6.34	6.85	8.49
1978: 1	8.00	7.73	8.26	8.69	8.90	9.95	7.85	8.75	7.79	6.50	6.97	8.66
2	8.50	8.26	8.56	8.86	8.95	9.95	8.32	9.25	8.37	7.19	8.03	8.95
3	9.50	9.17	8.76	8.96	9.03	9.93	9.41	10.25	9.27	8.39	8.87	8.94
4	10.75	10.46	10.09	9.92	9.81	10.34	10.78	11.50	10.40	9.70	10.99	9.40

*Bank Rate Changes: Jan. 13/75 (decrease of 1/2% to 8 1/4%); Sept. 3/75 (9%); March 8/76 (9 1/2%); Nov. 22/76 (9%); Dec. 22/76 (8 1/2%) Feb. 1/77 (8%); May 9/77 (7 1/2%); Mar. 9/78 (8%); Apr. 4/78 (8 1/2%); July 26/78 (9%); Sept. 12/78 (9 1/2%) Oct. 16/78 (10 1/4%); Nov. 6/78 (10 3/4%).

SOURCE: BANK OF CANADA REVIEW, TABLE 20, OCTOBER, 1977, OCTOBER 1979

In conducting monetary policy that contrasted with that carried out in the United States, therefore, the

Bank of Canada contributed to a very wide spread between Canadian and U.S. short-term rates over 1976 and a substantial narrowing of that differential over 1977. Despite the fact that Canadian rate rises followed the U.S. lead in 1978, policy did not succeed in averting a further narrowing of the differential.

Not all long term rates in Canada rose with short term rates. Yields on Government of Canada securities rose modestly over the 1975-1976 period but provincial, municipal and industrial yields declined. As all rates turned up in 1978 rises in Canadian longer term rates were substantially less than short term rates. As a consequence, the usual upward slope in the yield curve was reversed by the third quarter of the year with long term rates lower than short term rates. The lesser rise in Canadian longer term rates during 1978 reflected in addition to expectations of future lower short term rates, a very abundant supply of longer term funds relative to demand in the Canadian market.[31] There was a marked lack of bond issues in the market. This was due, at least in part, to the ready availability of lower cost long term funds from the banking system in the form of income debentures and term preferred shares.[32]

Due to the decline in U.S. long term yields over

1976, the spread between Canadian and U.S. long term rates was maintained until the latter part of that year when Canadian short term rates turned down. Through 1977, however, the differential narrowed significantly and with the exception of the first quarter, continued this trend in 1978.

Credit Flows

Total funds raised by non financial borrowers rose from $33.4 billion in 1975, to $40 billion in 1976, to $44.2 billion in 1977, to $56.2 billion in 1978, and, as a percentage of GNP, represented 20.2% in 1975, 20.9% in 1976, 21.1% in 1977, 24.4% in 1978. This, largely, reflected increases in private sector requirements during 1976 and 1977 and of federal government requirements in 1977 and 1978. Provincial and municipal borrowing requirements increased moderately in 1976, from the already high levels of the previous year but declined substantially thereafter.

TABLE VI

Credit Expansion

	1975	1976	1977	1978
	(Net flows, billions of dollars)			
Private domestic sectors	19.0	22.8	27.3	29.3
Loans to persons	3.3	4.3	3.4	4.8
Mortgages[1]	7.3	9.0	12.3	12.6
Non-financial business[2]	7.9	8.6	11.0	10.9
Other non-financial borrowers	0.5	0.9	0.6	1.1
Government sector	11.7	13.1	14.5	21.3
Federal	3.9	4.1	8.0	13.7
Federal enterprises	0.8	0.7	0.6	2.4
Provincial (direct and guar. debt)	5.5	7.1	5.6	4.7
Municipal	1.7	1.3	0.4	0.5
Non-residents	2.7	4.0	2.4	5.6
Total funds raised	33.4	40.0	44.2	56.2
Less: Funds raised abroad	6.9	10.2	8.3	9.6
Funds raised in Canada	26.5	29.8	36.0	46.6
(as a percentage of GNP)	(16.0)	(15.5)	(17.1)	(20.1)

[1] Does not include mortgage borrowing from the government sector.
[2] Excludes mortgage borrowing.

SOURCE: ECONOMIC REVIEW, APRIL, 1979

The proportion of financing sourced in Canada fell markedly in 1976. Wide long term differentials between Canadian and foreign markets provided an incentive for Canadian borrowers to issue securities outside Canada and for non-residents to invest in domestically issued securities. As a result, the proportion of financing obtained abroad rose from under 21% of the total in 1975 to over 25% in 1976. As differentials narrowed over 1977, the use by Canadian borrowers of foreign markets declined. This trend continued in 1978, despite the federal government's efforts to supplement the reduced capital inflow from the activities of others. The proportion of financing secured in Canada, accordingly, rose in 1977 and 1978.

Domestic financing of non-financial business

relied heavily on short term bank loans in 1976 and on bond and equity issues in 1977 and 1978 which in 1978 were almost entirely in the form of income debentures and term preferred shares issued through the chartered banks. Household financing relied heavily on mortgage loans as well as the usual forms of consumer credit. Both business and household sectors borrowed amounts, over the three years, which were larger than necessary to finance their net investment expenditures. The excess of funds was used to finance large accumulations of financial and existing real assets and were increasingly denominated in foreign currency or located abroad and involved an outflow of funds from Canada.[33]

Exchange Rate

After showing some improvement in 1976, the deficit on Canada's current account balance worsened in 1977 and 1978. This was accompanied in all three years by negative flows of short term and direct investment capital. In 1976, the net inflow of funds resulting from Canadian long term borrowing abroad, was larger than required to finance the current account deficit and to compensate for the net outflows of capital.
This was not the case in 1977 and 1978.

TABLE VII

Canadian Balance of Payments

	1975	1976	1977	1978
	(Millions of dollars)			
Merchandise trade				
Exports	33,511	38,132	44,628	52,390
Imports	33,962	36,793	41,712	48,922
Trade balance	−451	1,339	2,916	3,468
Services balance	−4,686	−5,651	−7,432	−8,729
Net transfers	380	511	366	−24
Current account balance	−4,757	−3,801	−4,150	−5,285
Long-term capital flows				
Net direct investment	−190	−865	−240	−2,015
New issues of Canadian securities	5,038	8,986	5,936	6,560
Retirements of Canadian securities	−851	−933	−938	−1,115
Other long-term transactions	−62	721	−185	23
Total long-term flows	3,935	7,909	4,573	3,453
Short-term capital flows[1]	417	−3,586	−1,844	−1,467
Net official monetary assets	−405	522	−1,421	−3,299

[1] Includes errors and omissions.

SOURCE: ECONOMIC REVIEW, APRIL, 1979

Over 1976, the Canadian dollar in terms of the U.S.dollar reached a high of U.S. $1.0389 in June and a low of U.S. $.9588 in November, closing at U.S. $.9913. Both the strength and volatility reflected the heavy but uneven inflow of long term capital.[34] In late November, the narrowing of interest rate differentials between Canada and the U.S. coincided with the victory of the Parti Quebecois in Quebec. Uncertainties arising from the Quebec election, therefore, were combined with expectations that borrowing abroad by Canadians would be reduced while the current account deficit remained large. The exchange rate, accordingly, dropped sharply. These expectations proved accurate and the exchange rate dropped further over the following two years, closing at U.S. $.9060 in 1977 and U.S. $.8397 in in 1978.

Monetary Aggregates

Apart from the period from 1976:2Q - 1977:2Q, the Bank largely was successful in achieving monetary targets; growth in the narrow money aggregate (M_1) reflected the level of short term interest rates and the rate of increase in the dollar value of GNE. The abrupt slowing in M_1, over 1976 into the second quarter of 1977, indicated an increase in the observed tendency of recent years for larger holders of demand deposit balances to take advantage of facilities made available to them by the chartered banks for minimizing their average holdings of these deposits.[35] The average ratio of M_1 balances to GNE registered a sharp decline over 1976 to 9.4% from over 10% in 1975 and remained at 9.3% through 1977 and 1978. This implies that a shift in the demand for M_1 balances did occur during the 1976:2Q - 1977:2Q. The slow growth in the M_1 aggregate over 1976 and 1977, therefore, was not a reliable indicator that policy should be substantially eased.

That growth in the money supply during 1978 was not overly constrained by the substantial rises in short term interest rates was due, as least in part, to the willingness and ability of the banking system to acquire assets. The behavior of 90 day deposit rates indicate the

banks, in general, were not unduly restricted in that year. These deposits represent marginal funds to the banking system and when liquidity is strained the banks tend to allow the spread between these and the various loan rates to narrow. The spread between prime and 90 day deposit rates did exhibit some narrowing in the second quarter but remained, through 1978, on average very close to that in 1977 and substantially wider than in 1976. Liquidity ratios continued the declining trend apparent in recent years but the Canadian Liquid Asset Ratio fell less than in the two previous years and the Free Liquid Asset Ratio fell the same amount as in 1977 - a lesser amount than in 1976.

The broader monetary aggregates, M_2 [36] and M_3,[37] grew at rapid rates through 1976 and the pace was sustained until the second half of 1977 and resumed after the first quarter of 1978. These aggregates tend to grow faster in periods of rising interest rates as the counterpart to the decline in demand deposits and money balances. In addition, the more rapid growth reflected the fact that the banking system provided greater shares of credit flows in 1976 and 1978. The banks in both years, therefore, competed aggressively for term deposits in order to fund these credit flows. Growth in M_3 also reflected the growing tendency of the public to hold

foreign currency denominated assets. Foreign currency deposits at chartered banks increased by more than one-half in 1978.[38] In annual terms, both M_2 and M_3 indicate some slowdown in 1978 relative to the previous two years.

Output

TABLE VIII

Changes in Gross National Expenditure

Years and quarters	Personal expenditure on consumer goods and services	Government current expenditure on goods and services	Gross fixed capital formation				Value of physical change in inventories[2], [3]	Exports of goods and services	Imports of goods and services	Gross national expenditure at market prices
			Total	Government	Business[1]	Housing				
1975	16.5	19.8	16.9	15.8	22.3	5.2	−3,716	3.7	11.2	12.1
1976	14.0	16.5	12.1	−0.1	7.2	33.5	1,799	12.9	9.7	15.8
1977	10.5	11.7	7.9	10.8	9.5	2.9	−1,423	15.4	14.5	9.7
1978	11.1	9.9	8.0	9.0	9.4	4.2	1,068	17.4	17.4	10.3
					(Seasonally adjusted)					
1975 I	4.6	3.8	3.8	1.9	6.6	−2.2	−1,200	−5.0	0.4	2.2
II	3.9	4.8	5.5	3.8	5.5	7.1	−3,040	2.5	0.6	2.6
III	4.9	6.5	5.9	0.2	4.8	13.3	−1,840	0.6	2.1	4.3
IV	3.9	−0.6	4.2	3.5	1.9	10.7	−388	5.5	2.3	3.6
1976 I	1.9	5.9	1.9	−1.6	−0.3	7.7	5,132	2.3	4.0	5.1
II	4.4	6.6	4.2	−0.7	3.5	8.4	−1,676	4.5	2.6	4.3
III	2.1	−1.2	−2.3	−3.2	−3.9	1.6	332	3.3	0.4	0.9
IV	3.2	6.0	2.1	0.5	4.4	−1.6	−1,084	0.1	1.4	2.6
1977 I	2.4	1.3	3.2	3.6	4.7	−0.1	−436	9.2	7.9	2.4
II	1.8	4.4	2.6	8.8	1.5	2.0	340	0.8	3.7	2.5
III	2.3	1.5	2.7	2.5	3.4	1.2	−308	1.5	1.8	2.1
IV	2.7	1.3	−1.1	2.0	−1.4	−2.4	−88	5.5	1.3	2.4
1978 I	3.1	3.2	1.2	−0.4	1.8	0.9	−476	3.7	2.2	2.4
II	2.5	2.6	4.7	4.9	4.4	5.4	2,016	5.3	9.2	3.1
III	3.1	2.0	2.6	0.3	4.2	0.1	−520	3.3	3.8	2.5
IV	1.9	1.9	2.4	2.4	3.5	−0.1	1,708	7.9	9.7	1.8

[1] [2] See notes 1 and 2 on reference table 2.
[3] Expressed in terms of absolute difference (millions of dollars) from the previous period.

SOURCE: ECONOMIC REVIEW, APRIL, 1979

Growth in nominal GNP accellerated from a rate of roughly 12% in 1975 to over 15 1/2% in 1976 and then slowed to under 10% in 1977 and just above that rate in 1978. Over the period, domestic demand essentially was consumer led by the private sector; policy restraint

impinged less on consumption than on investment expenditure. To some degree, the lesser impact on personal expenditure likely reflected persistence in inflationary expectations and some consequent impetus to current purchases. External demand increased markedly in 1976 and continued to accelerate over the subsequent two years as the external value of the dollar fell. As a result, the proportion of final demand represented by exports rose over the period while that of gross capital formation declined and the share of personal expenditure remained roughly the same.

TABLE IX

Structural Changes in Demand
(Per cent distribution of gross national expenditure by components)

Years and quarters	Personal expenditure on consumer goods and services	Government current expenditure on goods and services	Gross fixed capital formation				Value of physical change in inventories[2]	Exports of goods and services	Imports of goods and services	Residual errror of estimate	Gross national expenditure at market prices
			Total	Government	Business[1]	Housing					
1975	58.7	20.1	24.2	3.8	14.8	5.6	−0.2	24.5	−27.6	0.2	100.0
1976	57.7	20.3	23.4	3.3	13.7	6.4	0.8	23.9	−26.1	−0.1	100.0
1977	58.2	20.6	23.0	3.3	13.7	6.0	0.1	25.1	−27.2	0.2	100.0
1978	58.6	20.3	22.2	3.5	13.3	5.4	0.2	25.5	−26.6	−0.3	100.0
(Seasonally adjusted at annual rates)											
1975 I	57.9	19.8	23.5	3.9	14.5	5.1	1.9	24.8	−28.4	0.5	100.0
II	58.7	20.3	24.1	3.9	14.9	5.3	—	24.8	−27.8	—	100.0
III	59.0	20.7	24.5	3.8	15.0	5.7	−1.1	23.9	−27.2	0.3	100.0
IV	59.2	19.8	24.7	3.8	14.8	6.1	−1.3	24.4	−26.9	0.1	100.0
1976 I	57.4	20.0	23.9	3.5	14.1	6.3	1.6	23.7	−26.6	0.1	100.0
II	57.4	20.4	23.9	3.3	14.0	6.5	0.6	23.7	−26.2	0.1	100.0
III	58.1	20.0	23.1	3.2	13.3	6.6	0.8	24.3	−26.0	−0.3	100.0
IV	58.4	20.7	23.0	3.1	13.5	6.3	0.2	23.7	−25.7	−0.3	100.0
1977 I	58.4	20.5	23.2	3.2	13.8	6.2	—	25.3	−27.1	−0.3	100.0
II	58.0	20.8	23.2	3.4	13.7	6.1	0.2	24.9	−27.4	0.3	100.0
III	58.1	20.7	23.3	3.4	13.9	6.1	—	24.7	−27.4	0.4	100.0
IV	58.3	20.5	22.5	3.4	13.4	5.8	—	25.5	−27.1	0.2	100.0
1978 I	58.7	20.7	22.3	3.3	13.3	5.7	−0.2	25.8	−27.0	−0.2	100.0
II	58.4	20.6	22.6	3.3	13.4	5.8	0.7	25.3	−28.6	—	100.0
III	58.7	19.4	21.0	3.7	13.2	4.1	0.1	24.7	−23.6	−0.4	100.0
IV	58.9	19.4	22.0	4.0	12.9	5.1	0.4	23.5	−23.3	−0.9	100.0

[1], [2] See notes 1 and 2 on reference table 2.

SOURCE: ECONOMIC REVIEW, APRIL, 1979

Labour's share of net national income continued to increase in 1976 and 1977 but declined in 1978. The counterpart to this was a reduction and levelling in the corporate share in 1976 and 1977 and an increase in that share in 1978. Labour and corporate shares of net national income, in general, move in opposite directions over the business cycle with labour's share, typically, rising during a slowdown and that of profits rising during an expansion. The 1978 rise in the corporate share was the first such occurrence since 1974 and was due, at least in part, to the depreciation of the exchange rate.

TABLE X

Structural Changes in Income
(Per cent distribution of net national income by components)

Years and quarters	Wages, salaries and supplementary labour income[1]	Corporation profits before taxes	Dividends paid to non-residents[2]	Interest and miscellaneous investment income	Accrued net income of farm operators from farm production[3]	Net income of non-farm unincorporated business including rents[4]	Inventory valuation adjustment[5]	Net national income at factor cost
1975	73.1	15.2	−1.4	6.6	3.1	5.7	−2.3	100.0
1976	73.5	13.6	−1.1	7.4	2.4	5.6	−1.4	100.0
1977	74.3	13.6	−1.1	7.9	1.9	5.4	−2.0	100.0
1978	73.2	14.4	−1.2	8.2	2.5	5.2	−2.3	100.0
				(Seasonally adjusted at annual rates)				
1975 I	72.7	15.3	−1.4	6.9	3.1	5.7	−2.3	100.0
II	73.8	14.8	−1.3	6.1	3.2	5.8	−2.4	100.0
III	73.2	15.1	−1.5	6.6	3.4	5.7	−2.4	100.0
IV	72.7	15.5	−1.5	6.7	2.7	5.7	−1.9	100.0
1976 I	72.7	13.8	−1.1	7.2	3.2	5.6	−1.3	100.0
II	72.8	14.0	−1.2	7.3	2.6	5.6	−1.1	100.0
III	73.3	14.0	−1.1	7.5	2.1	5.6	−1.3	100.0
IV	75.3	12.6	−1.1	7.7	1.8	5.5	−1.7	100.0
1977 I	74.6	14.1	−1.1	7.8	1.9	5.4	−2.7	100.0
II	74.0	13.4	−1.1	8.0	2.3	5.4	−2.0	100.0
III	74.4	13.4	−1.1	7.9	1.7	5.4	−1.8	100.0
IV	74.3	13.7	−1.2	8.0	1.6	5.3	−1.7	100.0
1978 I	74.1	14.0	−1.1	7.7	2.1	5.3	−2.1	100.0
II	73.0	13.8	−1.1	8.5	2.7	5.2	−2.2	100.0
III	72.4	14.3	−1.0	8.4	2.4	5.3	−1.8	100.0
IV	73.4	15.4	−1.7	8.3	2.6	5.1	−3.1	100.0

(1), (2), (3), (4), (5) See notes 1, 2, 3, 4 and 5 on reference table 8.

SOURCE: ECONOMIC REVIEW, APRIL, 1979

Employment

From a rate of change of 1.7% in 1975, employment increased at a rate of 2.1% in 1976, 1.8% in 1977, 3.4% in 1978. As this pace was less than the rate of change in the labour force, the unemployment rate in Canada increased from 7% in 1975 to 8% in 1977, to 8.5% in 1978. The 1978 figure, however, reflected a rate of change which peaked at 8.5% in annual terms during the second quarter and declined thereafter to 8.2% at the end of the fourth quarter. In these quarters, the employment rate surpassed growth in the labour force. This likely indicated some cumulative effects of the higher employment rates apparent since the beginning of 1978, as the cost relationship between capital and labour changed.

Prices and Costs

Price performance in Canada improved over the period 1975 to 1978. The degree of improvement, however, varied with the different aggregage indicators. The GNE implicit price deflator which nets out the effects of changing import prices indicated the best performance, declining from a 10.8% rate of change in 1975, to 9.7% in 1976, to 7% in 1977, to 6.4% in 1978. The Consumer Price Index - excluding food - indicated a similar performance

at 10.1% in 1975, 9.4% in 1976, 7.9% in 1977, and 6.4% in 1978. The CPI - including food - showed a marked decline from a 10.8% rate of change in 1975 to 7.5% in 1976 but rose to 8% in 1977 and to 9% in 1978.

The moderating influences on the trend of prices were food costs in 1976 and labour costs in the two subsequent years. Foods costs largely are exogenous to the Canadian economy and therefore any decreases in these costs, typically, reflect increases in world supplies or in the foreign exchange value of the Canadian dollar. Both occurred in 1976, and the impact of this was registered in the CPI which included all items. The poorer performance of this index in 1977 and 1978 reflects the reversal of this situation as well as the impact of other higher import costs due to the lower value of the Canadian dollar.

TABLE XI

Costs Per Unit of Output[1]

	1975	1976	1977	1978
	(Percentage change)			
Labour income	16.3	9.1	8.1	5.4
Profits and IVA[2]	5.6	2.6	1.7	11.0
Corporation CCA[3]	12.7	6.9	8.3	4.8
Other investment income[4]	9.8	32.8	15.5	13.9
Accrued net farm income	3.0	−15.4	−16.6	40.1
Unincorporated income and CCA	−11.4	3.0	−9.8	5.3
Net indirect taxes	−4.1	14.1	8.5	3.8
Imports	10.7	3.4	11.6	13.4

(1) Final sales: GNE plus imports.
(2) IVA: Inventory Valuation Adjustment.
(3) CCA: Capital Consumption Allowances.
(4) Includes interest, profits (net losses) of government business enterprises, including CCA and miscellaneous valuation adjustment (MVA) and other government investment income, including CCA and MVA.

SOURCE: ECONOMIC REVIEW, APRIL, 1979

Unit labour costs declined markedly over 1977 and 1978. This coincided with lower productivity and, therefore, was entirely attributable to more moderate increases in average money wages.[39] Some slower rise in money wages was apparent over 1976, following the introduction of mandatory wage guidelines in late 1975, and became more evident in the following years. In consequence, labour income contributed, in 1978, just slightly over 30% of the change in the implicit price index for final sales compared to over 60% in 1975. As the impact of labour costs on prices was reduced that of profits and imports increased. By 1978, the latter had become the dominant factor in price increases.

TABLE XII

Contribution of Input Costs to the Year-over-Year Average Change in the Implicit Price Index for Final Sales[1]

	1975	1976	1977	1978
	(Per cent)			
Labour income	60.6	51.0	46.1	30.2
Profits and IVA[2]	4.1	2.6	1.7	9.7
Corporation CCA[3]	−4.8	−3.9	−4.6	−2.6
Other investment income[4]	2.1	9.8	5.7	5.4
Accrued net farm income	0.5	−3.7	−3.1	5.7
Unincorporated income and CCA	−1.2	0.4	−1.1	0.5
Net indirect taxes	−3.5	14.8	9.5	4.2
Imports	20.3	9.3	30.3	35.7
Residual[5]	21.9	19.7	15.6	11.3
Total	100.0	100.0	100.0	100.0

(1) Final sales: GNE plus imports.
(2) IVA: Inventory Valuation Adjustment.
(3) CCA: Capital Consumption Allowances.
(4) Includes interest, profits (net losses) of government business enterprises including CCA and miscellaneous valuation adjustment (MVA) and other government investment income, including CCA and MVA.
(5) Includes residual error of estimate, military pay and allowances and dividends paid to non-residents.
Note: Totals may not add to rounding.
SOURCE: ECONOMIC REVIEW, APRIL, 1979

The substantial reduction in unit labour costs over 1977 and in 1978 resulted in Canada's improved international competitiveness. A distinct loss in

Canada's competitiveness occured over 1969 to 1976 as indicated in the following tables. It is estimated that, over those years, Canada's competitive position worsened 14% in domestic currency terms and 23% in U.S. dollar terms the difference representing the total trade-weighted, or effective appreciation of the Canadian dollar.[40]

TABLE XIII

Unit labour costs

	Canada		United States	Japan		United Kingdom		Germany	
	Domestic currency	U.S. $ terms	U.S. $ terms	Domestic currency	U.S. $ terms	Domestic currency	U.S. $ terms	Domestic currency	U.S. $ terms
	(Percentage change)								
1970	3.5	7.7	2.2	9.6	9.6	6.3	6.5	8.6	16.8
1971	5.1	7.6	3.1	6.0	10.1	8.5	11.0	6.4	11.9
1972	4.4	6.5	3.6	7.3	22.0	9.8	11.5	3.8	12.8
1973	5.0	4.0	4.5	13.7	27.2	8.8	7.4	5.8	28.0
1974	9.5	12.0	5.1	16.4	8.1	13.3	8.6	5.9	8.7
1975	11.6	7.3	5.8	4.8	3.0	25.3	17.6	3.3	7.6
1976	10.0	13.5	4.9	4.4	4.8	15.7	-5.9	1.8	0.3
1969-1976	60.3	75.2	33.1	80.7	118.7	126.4	70.2	41.4	121.4
1977	7.0	-1.1	5.3	1.8	13.1	1.1	-1.1	2.6	11.5
1978	3.1	-3.7	5.3	-0.9	28.0	13.1	24.0	0.3	16.4

Canada's competitiveness in manufactured goods
(Canadian unit labour costs relative to those of its competitors)

	Domestic currency	U.S. dollar terms
	(Percentage change)	
1970	0.4	4.0
1971	1.2	3.3
1972	0.3	1.1
1973	-0.3	-3.0
1974	2.9	5.9
1975	4.5	0.3
1976	4.2	9.4
1969-1976	13.9	22.6
1977	1.7	-6.7
1978	-2.1	-11.2

SOURCE: ECONOMIC REVIEW, APRIL, 1979

IV. Summary and Conclusion

Canadian monetary policy from 1975 to 1978, was in accord with the Bank of Canada's adoption of a money supply approach to policy implementation. Monetary targets were determined by the long run objective of controlling price inflation and policy was directed to the achievment of targets. The short run contra-cyclical objective of policy required interest rates to rise over 1975 - 1976 as M_1 balances exceeded the target range. Similarly, slower rates of monetary growth engendered rate decreases in late 1976 and the first half of 1977. In both periods the direction of Canadian policy was opposite to that followed in the U.S. Exchange rate objectives in 1978 required rates to rise along with U.S. rates but proved not inconsistent with monetary objectives. Apart from the period which coincided with a shift in demand for money balances, monetary targets were achieved with relative precision. This implies that the Bank did not encounter any slippage in control of monetary expansion from sources other than the demand for money.

It seems apparent that over 1976:2Q - 1977: 2Q slow growth in the money supply reflected a shift in demand for M_1 balances, with the public's desired holdings of such balances being less at any given income

level. Errors in achieving money supply goals with interest rates as the short run operating targets occur from such random shifts. The Bank's use of interest rates as short run operating instruments was the optinum policy strategy in this situation, according to Poole's stochastic model. Shifts in demand for money should be met with an interest rate target, thereby preventing essentially financial disturbances from affecting real economic activity. The Bank did lower interest rates in late 1976 in response to the slow rate of growth in the money supply. However, this followed upon a marked decline in economic activity in the third quarter which reflected a slowdown in both real output and price rises. The Bank opted to further prompt countervailing growth in the money supply and lowered interest rates again in February and May of 1977 following poor income and employment figures. Fourth quarter income figures rebounded sharply. This was too soon to reflect the full impact of the May decrease and suggests the Bank possibly erred in distinguishing the extent of slow monetary growth caused by economic activity.

When there is no instability in the demand for money, the stochastic model determines the optimum policy strategy to be a money stock target. This limits the effects of real sector shifts on income in allowing

interest rates to automatically rise or fall in an offsetting way. A money stock target as the short run operating instrument likely would have provided some interest rate rise in late 1977 but this undoubtedly would not have resulted in reestablishing Canadian - U.S. differentials.

With respect to final policy objectives, a marked slowing in price rises did occur over the period. This, largely, was due to slower increases in money wages which, in turn, reflected not only policy restraint but the mandatory guidelines imposed in late 1975. The guidelines impinged directly on wage increases and undoubtedly reduced the extent of restraint otherwise necessary to have secured similar results. Moderation in the rate of wage rises repeatedly had been stated as a principal objective of policy by the Bank of Canada. The accomplishment of this did obtain better performance in domestic prices and international competitiveness. Moreover, it contributed to a realignment in the relative cost structure between capital and labour and a rise in employment levels was evident over 1978.

Policy restraint over the period slowed consumption and investment expenditure. The greatest impact was on the latter and therefore represented the

possibility of lower capital stocks and levels of income in future than otherwise would have occured. With the exception of 1976, policy did not restrain the import leakage in final demand. This resulted in high current account deficits despite substantial export volumes. In addition the high levels of interest rates over 1976 promoted considerable inflows of foreign capital which implied future adverse effects on the current account deficit. Even higher rates over 1978 coincided with similarly high rates in the U.S. and therefore did not induce capital inflows. However, exchange rate objectives in that year prompted Bank of Canada recourse to foreign capital markets on the part of the Government. These borrowings represented not only future outflows of interest but possibly higher budgetary deficits.

The implementation of policy in accord with monetary objectives over 1976 and 1977 did incurr certain exchange rate costs. By products of policy were over-abundant capital inflows in 1976 and insufficient inflows during 1977 to balance capital outflows and the current account deficits. This was reflected initially in exchange rate appreciation and subsequently in depreciation. Without the extent of capital inflows induced by policy over 1976, appreciation in the value of the Canadian dollar would likely not have occured; the

current account deficit remained large and domestic costs and prices compared poorly with most of Canada's trading partners. The exchange rate, consequently, fell markedly following the Quebec election and a downturn in rates in late 1976. Further decreases in rates were enacted in the first half of 1977 despite the suspicion that slow growth in the money supply was an unreliable indicator for additional easement. To what extent exchange rate depreciation over 1977 could have been averted by any less ease in policy is not clear. The current account deficit continued to increase and there was considerable downward momentum engendered by circumstances in Quebec. However, had interest rates not fallen as much, a wider differential between Canadian and U.S. rates would have been maintained and, conceivably, a lesser rise in Canadian rates necessary to protect the dollar over 1978.

There is some question whether the Bank, in fact, would have wished to avert the depreciation incurred over 1977. As the 1978 Annual Report stated:

> "Since the size of the deterioration in Canada's competitive position in earlier years was too great to be made good solely through a gradual improvement in the trend of our costs relative to those abroad, a major downward adjustment of the exchange rate was undoubtedly necessary in order to correct the large deficit which had emerged in Canada's international trade in goods and services.[41]

The Quebec situation however had added an undesirable

momentum to the downward adjustment which was furthered as imports increased rather than decreased. There was, therefore, no indication of a bottom in the downward trend.

The decision by the Bank of Canada to protect the exchange rate coincided with the growing inflationary impact of import costs; in 1978 these replaced labour costs as the largest contributing factor to price rises. The priority given the exchange rate in early 1978 dictated rises in short term interest rates not warranted by money supply figures. Despite further rate rises through the remainder of the year, however, the money supply figures in subsequent quarters indicated strong growth. Economic activity had been stimulated by the depreciation of the exchange rate and policy did little to impinge upon the banking system. The ready satisfaction of credit demands was reflected in the money supply figures.

A review of Canadian monetary policy over 1975 - 1978 suggests that notwithstanding a conceptual shift, the exchange rate will not and, perhaps indeed, cannot be ignored for long. Policy priority was given to monetary objectives over 1976; this is less clear in 1977 as the two objectives required similar direction in policy. This was not the case in the beginning of 1978 but exchange

rate and monetary objectives of policy were not entirely antagonistic over the year. The degree of harmony, however, resulted from a combination of high short term interest rates and sufficient liquidity within the banking system to provide considerable domestic financing. A portion of these funds in turn was used to acquire assets denominated in foreign currency or involved an outflow of funds from Canada and thereby contributed to further downward pressure on the exchange rate. The higher interest rates impeded fixed capital formation and added inflationary pressures.

FOOTNOTES

1. Bank of Canada, Annual Report 1975, pp. 7 - 9.

2. Ibid., p. 12.

3. Ibid., p. 15.

4. W. R. White, "Alternative Monetary Targets and Instruments in Canada: Criteria For Choice", Ottawa, Bank of Canada, 19p (Mimeo), 1978, footnote 17. White points out that upward movements in the prime lending rate, typically, have tended to lag behind commercial paper and other short term rates causing, as rates moved up, a shift in borrowing out of paper and into bank loans leading the banks in turn to rely more heavily on liability management to find funds.

5. Ibid., p. 12. White points out: i) tight control over monetary growth is not necessary to ensure feedback responses conductive to income stabilization; ii) monetary agregates cannot be ranked in terms of controllability but only in terms of the relative position of the available trade-off curves between precision of control over some chosen time period and movements of control instruments.

6. Bank of Canada, Annual Report 1976, pp. 21 - 22.

7. Bank of Canada, Annual Report 1975, p. 11.

8. Bank of Canada, Annual Report 1976, p. 21

9. White, "Alternative Monetary Targets and Instruments in Canada", p. 12.

10. Ibid., p. 18.

11. Bank of Canada, Press Release, September 11, 1978, reprinted in Bank of Canada Review, September 1978.

12. Bank of Canada, Annual Report 1975, p. 43.

13. Bank of Canada, Annual Report 1976, pp. 33 - 34.

14. Bank of Canada, Press Release, August 24, 1976, reprinted in Bank of Canada Review, September, 1976.

15. Bank of Canada, Annual Report 1976, p. 23.

16. Bank of Canada, Annual Report 1975, p. 44.

17. Bank of Canada, Annual Report 1976, p. 35.

18. Ibid., p. 35.

19. Ibid., p. 35.

20. Bank of Canada, Annual Report 1975, p. 45. Annual Report 1976, p. 36.

21. Bank of Canada, Press Release, October 7, 1977, reprinted in Bank of Canada Review, October, 1977.

22. Bank of Canada, Annual Report 1977, p. 29.

23. Ibid., p. 29.

24. Ibid., p. 27.

25. Bank of Canada, Annual Report 1978, p. 27.

26. Ibid., p. 36. Due to the interest rate rises that took place during the Canada Savings Bond campaign and the lengthening of the period when the new issue could

be purchased without loss of interest, more time than usual was taken in allocating these funds to new investments.

27. Bank of Canada, Press Release September 11, 1978, Op. Cit.

28. The excess reserve ratio and the level of government deposits reflected fourth quarter distortions arising from the postal strike and CSB redemptions. However for the first nine months of the year, the average excess reserve ratio was .039 compared to .036 in the similar period of the previous year, and the average level of government deposits was $4580.8 million compared to $2851.5 million.

29. Bank of Canada, Annual Report 1978, p. 38.

30. Department of Finance, Economic Review April 1979, p. 100.

31. Bank of Canada, Annual Report 1978, p. 30.

32. Ibid., p. 30. Prior to the November 16, 1978 budget which limited the favourable tax treatment, all interest paid on income debentures and dividends paid on term preferred shares were non-deductible expenses in the computation of taxable income of a borrowing company resident in Canada and were non-taxable in the hands of a resident recipient. As a consequence a potential tax advantage could be realized if the debtor had no taxable income or at least a lower

marginal tax rate than that of the creditor.

33. Bank of Canada, Annual Report 1978, p. 30.

34. Bank of Canada, Annual Report 1976, p. 36.

35. Bank of Canada, Annual Report 1977, p. 23.

36. Currency outside banks and all Canadian dollar chequable, notice and personal term deposits (less private sector float) at chartered banks, excluding Government of Canada deposits.

37. M_2 plus all term deposits and foreign currency deposits of residents booked at chartered banks in Canada.

38. Bank of Canada, Annual Report 1978, p. 35.

39. Bank of Canada, Annual Report 1977, p. 15

40. Department of Finance, Op. Cit., p. 50.

41. Bank of Canada, Annual Report 1978, p. 7.

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