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SOME [illegible] OF C.E. DIN
[illegible]ONETARY POLICY [illegible] THE ATLANTIC REGION

by

H. Richard Moss

Submitted in Partial Fulfillment of the Requirements for the Degree of Doctor of Philosophy in Economics at Dalhousie University

September 1975

APPROVED BY:

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TABLE OF CONTENTS

Page

ABSTRACT iv

LIST OF TABLES v

ACKNOWLEDGEMENTS ix

Chapter

I. INTRODUCTION 1

Statement of the Problem and Purpose 1

Scope. 4

Methodology. 6

II. MONETARY POLICY. 12

III. MONETARY POLICY INDICATORS 28

Price Stability. 29

High Employment Levels 32

Growth 35

IV. MONETARY POLICY AND THE ATLANTIC REGION. . . . 39

Unemployment 42

Growth 54

Inflation. 69

V. LAGS IN THE EFFECT OF MONETARY POLICY. 90

The Polynomial Distributed Lag 91

The Outside Lag With Respect to Growth 97

The Outside Lag With Respect to Unemployment 100

Chapter | Page

The Outside Lag With Respect to Inflation. . 104

Summary of the Outside Lag 107

The Inside Lag With Respect to Growth. . . . 112

The Inside Lag With Respect to Inflation . . 114

The Inside Lag With Respect to Unemployment 117

Summary of the Inside Lag. 118

THE TOTAL LAG IN THE EFFECT OF MONETARY POLICY 124

VI. SUMMARY AND CONCLUSION 127

BIBLIOGRAPHY 132

APPENDIXES

A. CREDIT POLICY IN THE ATLANTIC REGION 135

Monetary Policy. 138

Credit Policy. 140

Employment 143

Inflation. 145

Growth 146

Summary. 148

B. THE QUANTITATIVE SIGNIFICANCE OF THE IMPACT OF MONETARY POLICY. 150

C. SOME DIFFERENTIAL EFFECTS OF CANADIAN MONETARY POLICY UPON THE ATLANTIC REGION 1970-1973. . 150

Unemployment 153

Growth 157

Inflation. 161

Summary. 164

D. HOMOGENEOUS PERIODS. 165

ABSTRACT

This thesis is an attempt to determine if differential effects of monetary policy, operating within the present institutional arrangements, exist between the Canadian economy and the economy of the Atlantic Region. Two approaches were used to determine if differential effects do exist. First, a month by month comparison was made of actual monetary policy, as carried out by the Bank of Canada, and the desired monetary policy, as determined by the indicators of need, unemployment, growth and inflation, and a comparison between the two economies was made. Second, the differences in the length of the inside and outside lags in the effect of monetary policy between the two economies were determined.

In terms of growth, monetary policy met the needs of the Atlantic Region as well, if not better, than it met the needs of Canada. This was not the case for the goal of unemployment. With unemployment, monetary policy was very ineffective if the goal of a three percent unemployment rate were used. In no case did monetary policy do well in meeting the unemployment needs of either economy. With inflation being basically an imported phenomenon for the Atlantic Region it was determined that due to excess capacity which existed in the Atlantic Region throughout the period analyzed, monetary policy should not be concerned with regional inflationary problems. If the national indicators of need had been the same as the regional indicators of need, it is doubtful that the Bank of Canada would have ever carried out a restrictive policy.

The analysis of the lags in the effect of monetary policy revealed that in every case the Atlantic Region suffered from a longer lag structure than did Canada. This was true for both the inside lag and the outside lag.

LIST OF TABLES

Table		Page
2-1.	GROSS NATIONAL EXPENDITURE IN CONSTANT (1957) DOLLARS - SEASONALLY ADJUSTED AT ANNUAL RATES	16
2-2.	TOTAL CURRENCY AND CHARTERED BANK DEPOSITS HELD BY THE GENERAL PUBLIC	18
2-3.	PERCENTAGE MONTHLY GROWTH RATE OF SEASONALLY ADJUSTED MONEY SUPPLY	19
2-4.	DATING OF CHANGES IN MONETARY POLICY	20
2-5.	CLASSIFICATION OF POLICY	23
2-6.	CLASSIFICATION OF MONETARY POLICY	24
2-7.	CLASSIFICATION OF MONETARY POLICY BY HOMOGENEOUS PERIODS	26
4-1.	SEASONALLY ADJUSTED UNEMPLOYMENT PERCENTAGE RATES FOR THE ATLANTIC REGION	43
4-2.	CLASSIFICATION OF DESIRED MONETARY POLICY WITH RESPECT TO UNEMPLOYMENT IN THE ATLANTIC REGION	46
4-3.	DESIRED MONETARY POLICY WITH RESPECT TO UNEMPLOYMENT IN THE ATLANTIC REGION COMPARED WITH ACTUAL MONETARY POLICY IN CANADA	47
4-4.	SEASONALLY ADJUSTED UNEMPLOYMENT PERCENTAGE RATES FOR CANADA	50
4-5.	DESIRED MONETARY POLICY WITH RESPECT TO UNEMPLOYMENT IN CANADA COMPARED WITH ACTUAL MONETARY POLICY IN CANADA	52
4-6.	VALUE OF CONSTANT DOLLAR RETAIL TRADE FOR THE ATLANTIC REGION IN MILLIONS OF DOLLARS, SEASONALLY ADJUSTED	57
4-7.	PERCENT GROWTH IN CONSTANT DOLLAR RETAIL TRADE FOR THE ATLANTIC REGION	58

Table		Page
4- 8.	DESIRED MONETARY POLICY WITH RESPECT TO GROWTH IN THE ATLANTIC REGION DEFINED IN TERMS OF HOMOGENEOUS PERIODS OF TIME	59
4- 9.	ACTUAL MONETARY POLICY COMPARED TO DESIRED MONETARY POLICY IN THE ATLANTIC REGION WITH RESPECT TO GROWTH.	61
4-10.	VALUE OF CONSTANT DOLLAR RETAIL TRADE FOR CANADA IN MILLIONS OF DOLLARS--SEASONALLY ADJUSTED ANNUAL RATE	64
4-11.	MONTHLY PERCENTAGE CHANGE IN DOLLAR VALUE OF RETAIL TRADE IN CANADA	65
4-12.	DESIRED MONETARY POLICY WITH RESPECT TO GROWTH IN CANADA DEFINED IN TERMS OF HOMOGENEOUS PERIODS OF TIME.	66
4-13.	ACTUAL MONETARY POLICY COMPARED TO DESIRED MONETARY POLICY IN CANADA WITH RESPECT TO GROWTH	67
4-14.	HALIFAX TOTAL CONSUMER PRICE INDEX 1961 = 100.	71
4-15.	MONTHLY PERCENTAGE CHANGE IN TOTAL CONSUMER PRICE INDEX--HALIFAX, 1961 = 100	72
4-16.	CLASSIFICATION OF DESIRED MONETARY POLICY WITH RESPECT TO INFLATION IN THE ATLANTIC REGION	74
4-17.	ACTUAL MONETARY POLICY COMPARED TO DESIRED MONETARY POLICY IN THE ATLANTIC REGION WITH RESPECT TO INFLATION	75
4-18.	CONSUMERS PRICE INDEX FOR CANADA, 1961 = 100 .	78
4-19.	MONTHLY PERCENTAGE CHANGE IN TOTAL CONSUMERS PRICE INDEX--CANADA, 1961 = 100.	79
4-20.	CLASSIFICATION OF DESIRED MONETARY POLICY WITH RESPECT TO INFLATION IN CANADA.	80
4-21.	ACTUAL MONETARY POLICY COMPARED TO DESIRED MONETARY POLICY IN CANADA WITH RESPECT TO INFLATION.	81
4-22.	A COMPARISON OF INFLATION IN THE ATLANTIC REGION TO INFLATION IN CANADA.	85

Table		Page
5- 1.	ANALYSIS OF POLYNOMIAL DISTRIBUTED LAG COEFFICIENTS CUMULATIVE PERCENTAGE IMPACT OF INDIVIDUAL COEFFICIENTS BY MONTH FOR GROWTH	99
5- 2.	ANALYSIS OF POLYNOMIAL DISTRIBUTED LAG COEFFICIENTS CUMULATIVE PERCENTAGE IMPACT OF INDIVIDUAL COEFFICIENTS BY MONTH FOR UNEMPLOYMENT	103
5- 3.	ANALYSIS OF POLYNOMIAL DISTRIBUTED LAG COEFFICIENTS CUMULATIVE PERCENTAGE IMPACT OF INDIVIDUAL COEFFICIENTS BY MONTH FOR INFLATION.	106
5- 4.	COMPARISON OF THE OUTSIDE LAG IN THE EFFECT OF MONETARY POLICY IN CANADA AND THE ATLANTIC REGION, IN MONTHS	108
5- 5.	COMPARISON OF AVERAGES BETWEEN CANADA AND THE ATLANTIC REGION FOR THE OUTSIDE LAG ANALYSIS	109
5- 6.	ANALYSIS OF POLYNOMIAL DISTRIBUTED LAG COEFFICIENTS CUMULATIVE PERCENTAGE IMPACT OF INDIVIDUAL COEFFICIENTS BY MONTH FOR RETAIL SALES	113
5- 7.	ANALYSIS OF POLYNOMIAL DISTRIBUTED LAG COEFFICIENTS CUMULATIVE PERCENTAGE IMPACT OF INDIVIDUAL COEFFICIENTS BY MONTH FOR INFLATION.	116
5- 8.	ANALYSIS OF POLYNOMIAL DISTRIBUTED LAG COEFFICIENTS CUMULATIVE PERCENTAGE IMPACT OF INDIVIDUAL COEFFICIENTS BY MONTH FOR UNEMPLOYMENT	119
5- 9.	A COMPARISON OF THE INSIDE LAG IN EFFECT OF MONETARY POLICY IN CANADA AND THE ATLANTIC REGION IN MONTHS	120
5-10.	COMPARISON OF AVERAGES BETWEEN CANADA AND THE ATLANTIC REGION FOR THE INSIDE LAG ANALYSIS	121
5-11.	A COMPARISON OF JOHNSON AND WINDER'S INSIDE LAG ANALYSIS WITH THIS STUDY'S INSIDE LAG ANALYSIS FOR CANADA IN MONTHS.	122
5-12.	TOTAL LAG ANALYSIS IN EFFECT OF MONETARY POLICY IN MONTHS	125

Table		Page
A-1.	A CLASSIFICATION OF DESIRED MONETARY POLICY WITH RESPECT TO INFLATION.	137
A-2.	A COMPARISON OF ACTUAL MONETARY POLICY AND DESIRED MONETARY POLICY FOR THE ATLANTIC REGION ON AN ANNUAL BASIS.	139
A-3.	SELECTED FEDERAL AGENCIES' FISCAL POLICY FOR THE ATLANTIC REGION BY YEAR.	142
A-4.	A COMPARISON OF DESIRED AND ACTUAL MONETARY POLICY WITH FISCAL POLICY IN ATLANTIC REGION	144
B-1.	THE QUANTITATIVE SIGNIFICANCE OF THE IMPACT OF MONETARY POLICY	151
C-1.	DESIRED MONETARY POLICY WITH RESPECT TO UNEMPLOYMENT IN CANADA COMPARED WITH ACTUAL MONETARY POLICY IN CANADA.	155
C-2.	DESIRED MONETARY POLICY WITH RESPECT TO UNEMPLOYMENT IN THE ATLANTIC REGION COMPARED WITH ACTUAL MONETARY POLICY IN THE ATLANTIC REGION	156
C-3.	ACTUAL MONETARY POLICY COMPARED TO DESIRED MONETARY POLICY IN THE ATLANTIC REGION WITH RESPECT TO GROWTH.	158
C-4.	ACTUAL MONETARY POLICY COMPARED TO DESIRED MONETARY POLICY IN THE ATLANTIC REGION WITH RESPECT TO INFLATION	159
C-5.	ACTUAL MONETARY POLICY COMPARED TO DESIRED MONETARY POLICY IN THE ATLANTIC REGION WITH RESPECT TO INFLATION	162
C-6.	ACTUAL MONETARY POLICY COMPARED TO DESIRED MONETARY POLICY IN CANADA WITH RESPECT TO INFLATION.	163

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Naturally, the responsibility for the conclusions expressed in this paper rests with the author.

CHAPTER I

INTRODUCTION

Statement of the Problem and Purpose

Money is an important variable in the Canadian economy and monetary policy is employed to influence economic variables for the purpose of achieving certain predetermined goals. Since the early fifties Canadian monetary policy has generally assumed the responsibility of maintaining short run economic stabilization. This function is often expressed in terms of the pursuit of three objectives: price stability, growth and high employment.

Some special clarification might be noted with respect to the objective of economic growth. In this study growth is not used as a long-run concept which is a function of the factors of production and technology. In the long-run, monetary policy contributes to growth by contributing to high levels of employment and price stability. However, in the short-run monetary policy can contribute toward real economic growth by serving as an accommodating factor, that is, money should grow at a rate which is appropriate to finance the "real" factors in economic activity at stable prices. [1]

[1] Milton Friedman, "The Role of Monetary Policy," The American Economic Review, LVIII, March 1968., p.p. 1-17.

The reliability of using monetary policy for maintaining the above objectives involves certain assumptions. The three assumptions usually referred to are:

(i) Monetary authorities will quickly recognize the need for a change in monetary policy and will be able to implement the appropriate policy.

(ii) Monetary policy is effective in influencing economic activity.

(iii) The period that elapses from the time that a problem arises to the time that monetary policy solves the problem is comparatively short.

In addition to the above three assumptions a fourth is usually implied but seldom stated.

(iv) Monetary policy is uniform in terms of impact, on all regions and industries.

Regarding this last assumption very little analysis has been undertaken, and that which has been undertaken was concerned with the effects of monetary policy upon certain industries. A few economists such as Leon H. Keyserling[1]

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[1] Leon H. Keyserling, January 1957 Economic Report of the President: Hearings before the Joint Economic Committee (Washington, D.C.: U.S. Government Printing Office, 1957).

and J. K. Galbraith[1] have argued that monetary policy discriminated against such industries as residential construction, small businesses and consumers. This discrimination, they argue, limits the usefulness of monetary policy and should limit the use of monetary controls. This study is not concerned with discrimination from industry to industry but with possible differential effects of monetary policy from region to region.

It is the hypothesis of this study that monetary policy, within the present institutional arrangements, affects the Atlantic Region differently than the Canadian Economy as a whole and that this difference leads to a form of unintentional discrimination against the Atlantic Provinces. If it is found that the Atlantic Region has a disadvantage with respect to monetary policy, the region could claim some type of compensatory relief. This relief could be in the form of some type of fiscal policy relief or, possibly, some form of monetary policy with specific regional goals.

It could also suggest the need for changing the present institutional arrangements in such a way as to

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[1] J. K. Galbraith, January 1958 Economic Report of the President: Hearings before the Joint Economic Committee (Washington, D.C.: U.S. Government Printing Office, 1958).

eliminate regional disadvantages. Mundell,[1] Johnson[2] and McKinnon[3] discussed the concept of optimum currency areas as opposed to the present national currency areas. Slater[4] and Cairncross[5] discussed some of the Canadian aspects of regional monetary policy, and Comeau[6] did a more general analysis of regional monetary policy in a report submitted to the Atlantic Development Council.

Scope

The study examines data for monetary policy and for monetary policy objectives in the Canadian national economy and in the four Atlantic Provinces during the period from 1954 to 1969. The initial year, 1954, was chosen because it was not possible to obtain a complete set of data prior to this. The main text of this study terminates with 1969 but succeeding years are analyzed briefly in Appendix III.

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[1]Robert A. Mundell, International Economics (New York: The MacMillan Company, 1968), pp. 177-186.

[2]Harry G. Johnson, "Conditions of International Monetary Equilibrium: Equilibrium Under Fixed Exchanges," American Economic Review, LIII, 1963, pp. 112-119.

[3]Ronald I. McKinnon, "Optimum Currency Areas," American Economic Review, LIII, 1963, pp. 717-725.

[4]D. Slater, "Balancing Payments Between Regions," Canadian Banker, 73:1, Spring, 1966.

[5]A. K. Cairncross, Economic Development and the Atlantic Provinces, Atlantic Provinces Research Board (Fredericton: 1961).

[6]R. L. Comeau, Credit Conditions For Business in the Atlantic Provinces 1965-70, Atlantic Development Council (Ottawa: 1971).

Chapter II classifies on a monthly basis the actual monetary policy that was carried out by the Bank of Canada. This includes six different classifications ranging from "extremely expansionary" to "extremely contractionary" and includes deviations from a long run normal rate of growth of the Canadian economy from 1954 through 1969.

Chapter III defines an appropriate set of "monetary policy indicators" in terms of monetary policy. This set of indicators are used to designate the needs for monetary policy in Canada and in the Atlantic Region.

Chapter IV analyzes monetary policy and the relationship between actual, as determined in Chapter II, and desired monetary policy for the economies of Canada and the Atlantic Region. Is the correlation between the actual monetary policy and the desired monetary policy higher for Canada than it is for the four Atlantic Provinces? If the answer is yes, the hypothesis of harmful differential effects becomes meaningful.

Chapter V analyzes the possibility of differential effects of monetary policy in terms of the lags in effect of monetary policy. Both the inside[1] and outside[2] lags of

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[1]The inside lag is defined as the interval between an indicators signal for a desired monetary policy change and the implementation of the desired monetary policy as evidenced by the money supply.

[2]The outside lag is the period of time between when the money supply indicates a change in monetary policy and when that monetary policy becomes effective, as shown by one of the indicators.

monetary policy are analyzed and a comparison of these lags for Canada and the Atlantic Region are made. If the lag analysis for the Atlantic Region tends to be longer than the lag analysis for Canada, the hypothesis of differential effects of monetary policy which are harmful to the Atlantic Region becomes meaningful. By combining the inside and outside lags the amount of time which elapses between when a problem arises and when that problem is solved is determined.

Chapter VI will present the summary and conclusions of the thesis.

Methodology

It was necessary to identify changes in Canadian monetary policy before it could be determined to what extent such changes in policy met the needs of the Atlantic Region. If the Bank of Canada made such information readily available this would not have constituted a problem; however, the central bank does not make public announcements of such changes. In addition, this type of information is very difficult to derive from the Annual Report of the Bank of Canada. Even if an attempt were made to obtain the dates of monetary policy changes from the

Annual Reports, this information might not be very reliable.[1]

This suggested that a quantitative study was needed in order to determine the dates of changes in monetary policy. This study employs a method suggested by Milton Friedman and later employed by Johnson and Winder in their report to the Royal Commission on Banking and Finance in 1962.[2] It involves the grouping together of months in which the rate of increase of some variable, used to designate monetary policy changes, is approximately the same.[3] These groups of months represent homogeneous periods in which monetary policy did not change, and the points which connect such homogeneous periods represent the dates at which monetary policy did change. Since this study is concerned with the general results the central bank was trying to accomplish, erratic fluctuation in monetary policy was ignored. Monetary policy changes were defined according to the rate of change rather than the

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[1]Harry G. Johnson and John W. L. Winder, Lags in the Effects of Monetary Policy in Canada, Working Paper prepared for the Royal Commission on Banking and Finance (Ottawa: Royal Commission on Banking and Finance, 1962), pp. 6-85. Johnson and Winder pointed out that the dates of changes in monetary policy referred to by the Bank of Canada did not always coincide with the actual changes. They also suggested that at least in one case the difference was due to an attempt to cover up a mistake in judgment on the part of central bank officials.

[2]Ibid.

[3]Such groups of months will be referred to as "homogeneous periods." (See Appendix D.)

direction of change. This eliminated any problems associated with an upward trend which might have been present and which would have made it very difficult to identify such changes.[1] Because there seemed to be no way of determining the exact date a given policy was implemented, it was also necessary to assume the intermediate lag[2] existed as part of the inside lag.

The choice of the variables to serve as the indicators of monetary policy changes is a topic which deserves some consideration. The choice can be reduced to two variables: money supply[3] and net free reserves,[4] depending on what the individual believes is used in monetary policy as an instrument in the attempt to control the economy. Other variables such as interest rates and "credit conditions" were not considered, based upon the belief that these levels are the result of an interaction of demand and supply in a complex market system in which the central bank is only one of the actors. The money supply and net reserve series, however, are subject to

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[1] Ibid., p. 13.

[2] The intermediate lag is defined as the period of time needed for central bank actions to affect the variable used to indicate monetary policy changes through the reactions of chartered banks.

[3] Money supply refers to currency outside banks and privately held Canadian dollar deposits including demand deposits, non-personal term and notice deposits, and personal savings deposits.

[4] Net free reserves is defined as the excess of total reserves over required reserves plus borrowings from the central bank.

closer control by the central bank. The most prominent exception to the central bank's control over the money supply is that chartered banks, as well as other financial intermediaries, can within certain limits, vary the money supply by varying the amount of free reserves they hold.

The central bank also enjoys a high level of control over net reserves. However, the use of net reserves as an indicator of monetary policy in Canada entails some problems. Net reserves provide little evidence of whether easy or tight reserve positions have any effect on the volume of bank credit. Secondly, the changes in certain statutory rules and definitions of the reserve requirements in 1954 and again in 1967 changed the amount of deposits a chartered bank could create on the basis of a given amount of reserves, so that the meaning of net reserves changes. Thirdly, the fact that the Bank of Canada has made extended use of purchase and resale agreements to help bring about the development of Canadian money markets during certain periods, such as 1954, means that during such periods net reserves, which subtracts advances on purchase and resale agreements from chartered bank reserves, may be an unreliable indicator of monetary policy. Finally, net reserve movements are significant because of their impact upon the potential supply of money in the economy. Thus the money supply was selected as the indicator of monetary policy for this study.

The money supply employed for this purpose is the nominal stock of money. The central bank has a high degree of direct control over the nominal stock of money, so it is employed as the indicator of monetary policy. The real stock of money, on the other hand, is determined in part by prices which the central bank influences only indirectly.[1]

The three objectives or goals of high employment, stable prices and growth are treated as separate "conditional goals": i.e., given an indicator of need, it is assumed a subsequent change in monetary policy was directed to that need. If the objective of the bank was to increase the level of employment is there evidence of a policy shift to that effect. This is not to suggest that one instrument can achieve various goals effectively at one time.[2] As indicated above this study is not addressing the "stated goals" of the Bank of Canada.

In conclusion, the purpose of this study was to discover if there are any differential effects of a national monetary policy, operating within the present institutional arrangements, upon the Atlantic Region of Canada. This was

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[1]Johnson and Winder, op. cit., p. 12.

[2]Robert A. Mundell, op. cit., pp. 201-216.

done by comparing the actual monetary policies, as carried out by the Bank of Canada, with the desired monetary policies for Canada and for the Atlantic Region. Also, a comparison of the lags of monetary policy between the two economies was made.

CHAPTER II

MONETARY POLICY

In this chapter six different monetary policies are identified according to the degree of departure from the normal long run growth rate of the Canadian economy. These six policy types range from "extremely expansionary" to "extremely contractionary" and are used to describe the degree of monetary ease or stringency that the central bank is carrying out. In addition, the various policies carried out by the Bank of Canada are dated according to when each policy begins and when it ends.

What constitutes a period of monetary ease and a period of monetary stringency? This problem was greatly simplified by assuming that the velocity of circulation in Canada is constant. This may seem to be a very strong assumption since there seems to be a great deal of evidence to suggest that velocity does shift. If we define velocity to be current dollar disposable income divided by the money supply, velocity by year is as follows:

Year	Velocity	Year	Velocity
1954	1.79	1962	1.97
1955	1.78	1963	1.96
1956	1.91	1964	1.94
1957	2.00	1965	1.90
1958	1.89	1966	1.96
1959	2.01	1967	1.82
1960	2.01	1968	1.75
1961	1.87	1969	1.84

As can be seen, velocity was quite stable from 1954 through 1969. The mean velocity was 1.90 with a variation of about eight percent on the low side in 1968 and about six percent on the high side in 1959 and 1960. Thus the assumption of a stable velocity is not far from reality.

By holding velocity constant, a "neutral" monetary policy can be defined as one that increases the nominal supply of money at a rate equal to the long-run normal rate of growth of the economy. This provides the money required to maintain the long-run growth of the economy at stable prices--that is, with no inflationary or deflationary pressure. A money supply which increases more slowly than the long-run growth rate represents a restrictive monetary policy, and a supply of money growing faster than the long-run growth rate represents an expansionary monetary policy.

The normal long-run rate of growth was obtained by finding the monthly rate of growth of Gross National Expenditure (GNE) in constant dollars over the period in question. Since GNE data are not available in a monthly series and because of the desire to pinpoint changes in monetary policy as closely as possible, it was necessary to convert the quarterly growth rate of GNE to a monthly rate. This was accomplished by dividing the quarterly growth rate, r, by three--that is $r/3$. Knowing the value of GNE at the beginning of the first quarter of the period dealt with and the value of GNE at the end of the final quarter of that same period, the value of r was determined by

placing the two values into equation (2.1) and solving for r.

$$(2.1) \quad Y_n = Y_o(1+r)^{n+1}$$

where: Y_n = GNE for the final quarter
Y_o = GNE for the first quarter
r = Quarterly growth rate
n = Number of quarters

One problem was encountered in the above process but it is probably not significant enough to have much influence on the real value of r. Because of the change, by the Dominion Bureau of Statistics, from a 1957 constant dollar base to a 1961 constant dollar base, it was not possible to obtain a complete series using the same base year. It was, however, possible to obtain data using the 1957 base from the last quarter of 1953 through the first quarter of 1969 inclusive. Thus there were three quarters unavailable. Because only three quarters were involved, it was decided to drop these quarters from the computation of the long-run normal growth rate of the economy.

In addition to determining the desired direction of change in monetary policy as dictated by the long-run normal growth of the economy, a method used by Johnson and Winder to classify monetary policy according to its departure from that rate was utilized.[1] For this purpose a set of criteria was selected, ranging from extremely expansionary to extremely contractionary.

[1] Johnson and Winder, op. cit., p. 13.

Table 2-1 shows that GNE at the end of the final quarter of 1953 was $27,656 million and at the end of the first quarter of 1969 it was $53,716 million. By placing these two figures into equation (1) and solving for r, the normal long-run quarterly rate of growth over the period in question was 1.09 percent. Solving for $r/_3$ the normal long-run monthly rate of growth was equal to .363 percent per month which means that the money supply should have grown at the rate of .363 percent per month in order to maintain a neutral monetary policy.

Criteria for the classification of the degree of expansion or contraction that the Bank of Canada was seeking to obtain, as listed below, are used. The different magnitudes are an attempt to classify the different degrees of policy, taking into account the greatest degree of expansion, as well as contraction, that occurred during the period under consideration. Thus, expansion or contraction are discussed in relative terms as they existed from 1954 through 1969 based upon the decisions made by the Bank of Canada regarding monetary policy. The criteria are:

"Extremely expansionary"	Monthly rate of increase of the nominal money supply greater than 1.00%.
"Expansionary"	Monthly rate of increase of the nominal money supply from .650% to 1.00%.
"Mildly expansionary:	Monthly rate of increase of the nominal money supply from .363% to less than .650%.

TABLE 2-1

GROSS NATIONAL EXPENDITURE IN CONSTANT (1957) DOLLARS - SEASONALLY ADJUSTED AT ANNUAL RATES

Year	Quarter I	Quarter II	Quarter III	Quarter IV
1953	27,276	27,564	27,604	27,656
1954	26,596	26,480	26,768	27,012
1955	28,020	28,984	29,540	29,528
1956	30,920	31,264	31,676	32,172
1957	32,044	31,828	32,124	31,640
1958	31,788	32,224	32,496	32,628
1959	32,936	33,308	33,336	33,544
1960	34,136	33,636	33,692	34,164
1961	33,332	34,220	35,092	35,472
1962	36,192	37,076	37,564	38,020
1963	38,468	38,652	39,300	40,160
1964	41,132	41,588	41,816	42,176
1965	43,696	44,180	45,364	45,832
1966	47,188	47,728	47,520	48,244
1967	48,552	49,252	49,012	49,212
1968	50,328	50,928	51,592	52,956
1969	53,716	53,350[1]	53,972[1]	55,547[1]

[1]Estimated by converting the data from a 1961 constant dollar base to a 1957 constant dollar base.

Sources: Dominion Bureau of Statistics, National Accounts and Balance of Payments Division, National Accounts Income and Expenditure by Quarters, 1947-61 (Ottawa: Queen's Printer and Controller of Stationery, August 1962), pp. 71-77; Dominion Bureau of Statistics, Economic Accounts Branch, Canadian Statistical Review (Ottawa: Queen's Printer, 1962-1970).

"Mildly contractionary"	Monthly rate of increase of the nominal money supply from 0.0% to .363%.
"Contractionary"	Monthly rate of decrease of the nominal money supply from less than 0.0% to -.300%.
"Extremely contractionary"	Monthly rate of decrease of the nominal money supply which is less than -.300%.

An obvious question with regards to any such arbitrary classification is: Would a different set of criteria change the outcome of the classification? The answer is yes, if the criteria were changed to a significant degree. As an alternative, we might adopt the approach used by Johnson and Winder and take multiples of the long-run growth rate. Following their pattern, the classification would range from 1.089 percent (3 x .363% = 1.089%), above which monetary policy would be classified as extremely expansionary, to -.363 percent, below which monetary policy would be classified as extremely contractionary. The only change that would result from using this different classification is for the period from August 1960 to August 1961. (See Table 2-4, page 17.) Using the latter criteria this period would be classified as mildly expansionary rather than expansionary, not a significant change.

Table 2-2 contains total currency and chartered bank deposits held by the public. It is interesting to note that the arithmetic mean of the percentage monthly growth rate of the money supply as found in Table 2-3 is .57

TABLE 2-2

TOTAL CURRENCY AND CHARTERED BANK DEPOSITS
HELD BY THE GENERAL PUBLIC[1]

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1954	9316	9359	9438	9456	9538	9545	9679	9690	9765	9868	9934	10060
1955	10226	10333	10449	10565	10657	10763	10871	10947	10965	10975	10986	10911
1956	10856	10930	10944	10993	11057	11057	11068	11060	11006	11083	11086	11183
1957	11168	11160	11127	11162	11180	11267	11225	11169	11180	11224	11309	11399
1958	11467	11567	11685	11832	11924	12068	12223	12451	12610	12763	12786	12851
1959	12854	12873	12917	12877	12889	12885	12917	12881	12828	12711	12710	12662
1960	12694	12703	12737	12758	12777	12856	12839	12897	13009	13101	13186	13242
1961	13359	13512	13634	13580	13676	13725	13864	14073	14085	14103	14332	14390
1962	14383	14362	14390	14508	14619	14626	14549	14524	14640	14768	14777	14929
1963	15028	15147	15211	15329	15543	15488	15588	15574	15672	15735	15800	15884
1964	16014	16028	16189	16215	16297	16436	16445	16477	16598	16707	16832	17046
1965	17239	17444	17646	17901	18036	18251	18424	18682	18708	18781	18994	19070
1966	19177	19293	19407	19510	19567	19678	19775	19915	19966	20107	20304	20310
1967	20666	21141	21274	21341	21716	21874	22107	22402	22880	23282	23696	23584
1968	23678	23757	23797	24146	24641	25092	25568	25837	25934	26063	26272	26719
1969	27177	27556	27867	27698	27670	27686	27453	27373	27407	27471	27580	27730

[1] In millions of Canadian dollars; seasonally adjusted; average of Wednesdays.

Source: Bank of Canada Research Department, Statistical Supplements and Summaries, June 19, 1969; Bank of Canada, Bank of Canada Review (Ottawa: December 1970); Private correspondence.

TABLE 2-3

PERCENTAGE MONTHLY GROWTH RATE OF SEASONALLY ADJUSTED MONEY SUPPLY[1]

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1954		.46	.84	.19	.87	.07	1.40	.11	.77	1.05	.67	1.27
1955	1.65	1.05	1.12	1.11	.87	.99	1.00	.70	.16	.09	.10	- .68
1956	- .50	.68	.13	.45	.58	.00	.10	- .07	- .49	.70	.03	.87
1957	.13	- .07	- .30	.31	.61	.78	- .37	- .50	.10	.39	.76	.80
1958	.60	.61	1.28	1.26	.78	1.21	1.28	1.87	1.28	1.21	.18	.51
1959	.02	.15	.34	- .31	.09	- .03	.25	- .28	- .41	- .91	- .01	- .38
1960	.25	.07	.28	.16	.15	.62	- .13	.45	.87	.71	.65	.42
1961	.88	1.15	.90	- .40	.71	.36	1.01	1.51	.09	.13	1.62	.40
1962	- .05	- .15	.40	.82	.77	.05	- .53	.17	.80	.87	.06	1.03
1963	.66	.79	.42	.78	1.40	.35	.65	- .09	.63	1.03	.41	.53
1964	.82	.09	1.00	.16	.51	.85	.05	.01	.73	.66	.75	1.27
1965	1.13	1.19	1.16	1.45	.75	1.19	.95	1.40	.14	.39	1.13	.40
1966	.56	.60	.59	.53	.29	.57	.49	.71	.26	.72	.98	.03
1967	1.75	2.30	.63	.31	1.76	.73	1.07	1.33	2.13	1.76	1.78	- .47
1968	.40	.33	.17	1.46	2.05	1.83	1.90	1.05	.38	.50	.80	1.70
1969	1.71	1.39	1.13	- .61	- .10	.06	- .84	- .29	.12	.23	.40	.54

[1]Percentages derived from Table 2-2, p. 15.

percent with a standard deviation of .78 percent. Thus, on the average, monetary policy during this period was mildly expansionary, though the value of the standard deviation suggests a great deal of dispersion which reduces the meaningfulness of the mean. Table 2-4 contains the results of dating changes in monetary policy by applying the above set of criteria.

TABLE 2-4

DATING OF CHANGES IN MONETARY POLICY

Monetary Policy	Johnson & Winder	Present Money Supply
	Dates[1]	Dates
To Restriction	August 1955	September 1955
To Expansion	August 1957	October 1957
To Restriction	October 1958	November 1958
To Expansion	August 1960	August 1960
To Restriction		December 1967
To Expansion		April 1968
To Restriction		April 1969
To Expansion		November 1969

[1]Johnson and Winder, p. 21.

Table 2-4 indicates the extended period of growth that the national economy enjoyed during the 1960's. The central bank carried on an expansionary policy from August 1960 to December 1967, followed by a brief period of monetary restriction and a return to a twelve month period of expansion. As is well known, 1968 and 1969 were periods of high inflationary pressure, as compared to the rest of the period under analysis, which the central bank seems to

have acknowledged only briefly--from April to November of 1969. After this time the bank again undertook an expansionary policy.[1]

It appears that the Bank of Canada had some intentions of trying to halt the inflationary pressure that was starting to develop in the latter part of 1967 but, due to the many policy changes, seems to have been unsure of the appropriateness of such a move. Hindsight now suggests that it was probably a mistake not to remain with the restrictive policy. Had the Bank of Canada carried out a restrictive policy from December 1967 through November 1969 much of the inflationary pressure may have been averted. Of course the central bank can always suggest that it was more concerned with a goal other than inflation during this period.

Table 2-4 also compares the findings of the present dating of monetary policy with those of Johnson and Winder.[2] Their study uses the same series, but their long-run rate of growth was taken from the Hood and Scott Study[3] which estimates a net annual immigration of 50,000 and a rate of productivity increase of 2.50 percent per annum.

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[1]The real extent or duration of this final monetary expansion will not be discussed here because the study must have an ending point.

[2]Johnson and Winder, op. cit., p. 21.

[3]W. C. Hood and A. D. Scott, Output, Labor and Capital in the Canadian Economy (Ottawa: Royal Commission on Canada's Economic Prospects, 1958), p. 226.

Using a 1955 base, Hood and Scott estimate an index of GNP for 1980 of 254.5, representing a growth rate of 3.807 percent. Johnson and Winder then rounded this to 3.8 percent and used it as the long-run annual rate of growth of the economy.

The major difference between the two approaches is that Johnson and Winder used a forecasted long-run growth rate while the present study uses an actual long-run growth rate determined from past data. Also, the former study does not extend beyond 1960. The two sets of datings do, however, correspond within one month, with the exception of the 1957 change to expansion.

Table 2-5 shows basically the same information as that shown in Table 2-3 except that the information in Table 2-5 is broken down into a more detailed classification, pointing out the degree of contraction or expansion in monetary policy. Table 2-5 indicates that this relative basis approach classifies six of the twenty periods as contractionary to some degree and fourteen periods as expansionary to some degree. This is not unrealistic in light of the expected growth in the economy.

Columns (1) and (2) of the table detail the periods and their corresponding type of policies (indicated in the column titled "Classification"). Column (3) shows the average rate of change in the money supply per month in each period. Table 2-6 shows a monthly breakdown of the classification of monetary policy and by referring to it,

TABLE 2-5

CLASSIFICATION OF POLICY

(1) Period	(2) Classification	(3) Average Rate of Change/Month
Feb 1954 - Jun 1954	mex	.486%
Jul 1954 - Apr 1955	xex	1.200%
May 1955 - Aug 1955	ex	.890%
Sep 1955 - Sep 1957	mcon	.113%
Oct 1957 - Feb 1958	mex	.632%
Mar 1958 - Oct 1958	xex	1.271%
Nov 1958 - Jul 1959	mcon	.133%
Aug 1959 - Dec 1959	xcon	- .398%
Jan 1960 - Jul 1960	mcon	.200%
Aug 1960 - Aug 1961	ex	.709%
Sep 1961 - Nov 1964	mex	.486%
Dec 1964 - Aug 1965	xex	1.166%
Sep 1965 - Dec 1966	mex	.523%
Jan 1967 - Nov 1967	xex	1.415%
Dec 1967 - Mar 1968	mcon	.108%
Apr 1968 - Aug 1968	xex	1.658%
Sep 1968 - Nov 1968	mex	.560%
Dec 1968 - Mar 1969	xex	1.483%
Apr 1969 - Oct 1969	con	- .204%
Nov 1969 - Dec 1969	mex	.470%

xex -- extremely expansionary
ex -- expansionary
mex -- mildly expansionary
mcon -- mildly contractionary
con -- contractionary
xcon -- extremely contractionary

TABLE 2-6

CLASSIFICATION OF MONETARY POLICY

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1954	mex	mex	ex	mcon	ex	mcon	xex	mcon	ex	xex	mex	xex
1955	xex	xex	xex	xex	ex	ex	ex	ex	mcon	mcon	mcon	xcon
1956	xcon	mex	mcon	mex	mex	mcon	mcon	con	xcon	ex	mcon	ex
1957	mcon	con	con	mcon	mex	ex	xcon	xcon	mcon	mex	ex	ex
1958	mex	mex	xex	xex	ex	xex	xex	xex	xex	xex	mcon	mex
1959	mcon	mcon	mcon	xcon	mcon	con	mcon	con	xcon	xcon	con	xcon
1960	mcon	mcon	mcon	mcon	mcon	mex	con	mex	ex	ex	mex	mex
1961	ex	xex	ex	xcon	ex	mcon	xex	xex	mcon	mcon	xex	mex
1962	con	con	mex	ex	ex	mcon	xcon	mcon	ex	ex	mcon	xex
1963	mex	ex	mex	ex	xex	xcon	mex	con	mex	xex	mex	mex
1964	ex	mcon	ex	mcon	mex	ex	mcon	mcon	ex	mex	ex	xex
1965	xex	xex	xex	xex	ex	xex	ex	xex	mcon	mex	xex	mex
1966	mex	mex	mex	mex	mcon	mex	mex	ex	mcon	ex	ex	mcon
1967	xex	xex	mex	mcon	xex	ex	xex	xex	xex	xex	xex	xcon
1968	mex	mcon	mcon	xex	xex	xex	xex	xex	mex	mex	ex	xex
1969	xex	xex	xex	xcon	con	mcon	xcon	con	mcon	mcon	mex	mex

xex -- extremely expansionary
ex -- expansionary
mex -- mildly expansionary
mcon -- mildly contractionary
con -- contractionary
xcon -- extremely contractionary

the reader may obtain better insight into this classification. Again examination of this table reveals a very erratic movement in the money supply during periods such as 1968 and 1969. Part of this movement may be attributed to the currency-to-deposit ratio, bank cash reserve ratio, or the level of borrowed reserves. It could also indicate that the central bank should have a greater assurance of the needs of monetary policy before making such a policy decision so that later counteractions could be avoided. This may imply the need for improved forecasting tools with which to operate or even a better understanding of the effects of monetary policy. This erratic behavior may or may not make the actual monetary policy further from the needs of the Atlantic Region than would have been the case if the policy had been of a more deliberate nature.

Table 2-7 classifies Canadian monetary policy according to homogeneous periods of time. This is done to eliminate the erratic fluctuations and, thus, classify monetary policy according to the general direction that monetary policy was taking over time.

In summary, because of the lack of reliable information on the specific policy that the Bank of Canada was following, it was necessary to identify such policies by means of a quantitative analysis of the rates of change in the money supply. This quantitative study is summarized in Table 2-7 according to homogeneous periods of time. The classification of monetary policy, as listed in Table 2-7,

TABLE 2-7

CLASSIFICATION OF MONETARY POLICY BY HOMOGENEOUS PERIODS[1]

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1954	mex	mex	mex	mex	mex	mex	xex	xex	xex	xex	xex	xex
1955	xex	xex	xex	xex	ex	ex	ex	ex	mcon	mcon	mcon	mcon
1956	mcon	mcon	mcon	mcon	mcon	mcon	mcon	mcon	mcon	mcon	mcon	mcon
1957	mcon	mcon	mcon	mcon	mcon	mcon	mcon	mcon	mcon	mex	mex	mex
1958	mex	mex	xex	xex	xex	xex	xex	xex	xex	xex	mcon	mcon
1959	mcon	mcon	mcon	mcon	mcon	mcon	mcon	xcon	xcon	xcon	xcon	xcon
1960	mcon	mcon	mcon	mcon	mcon	mcon	mcon	ex	ex	ex	ex	ex
1961	ex	ex	ex	ex	ex	ex	ex	ex	mex	mex	mex	mex
1962	mex	mex	mex	mex	mex	mex	mex	mex	mex	mex	mex	mex
1963	mex	mex	mex	mex	mex	mex	mex	mex	mex	mex	mex	mex
1964	mex	mex	mex	mex	mex	mex	mex	mex	mex	mex	mex	xex
1965	xex	xex	xex	xex	xex	xex	xex	xex	mex	mex	mex	mex
1966	mex	mex	mex	mex	mex	mex	mex	mex	mex	mex	mex	mex
1967	xex	xex	xex	xex	xex	xex	xex	xex	xex	xex	xex	mcon
1968	mcon	mcon	mcon	xex	xex	xex	xex	xex	mex	mex	mex	xex
1969	xex	xex	xex	con	con	con	con	con	con	con	mex	mex

xex - extremely expansionary mcon - mildly contractionary

ex - expansionary con - contractionary

mex - mildly expansionary xcon - extremely contractionary

[1]Classification defined from Table 2-5, p. 20.

is used in succeeding chapters and is referred to as the "actual monetary policy" carried out by the Bank of Canada.

CHAPTER III

MONETARY POLICY INDICATORS

Chapter II identified the periods of monetary ease and stringency and classified them according to the degree of departure from an established normal long-run rate of growth. A considerable part of Chapter II dealt with the identification of a monetary policy indicator which would clarify the type of policy the Bank of Canada was actually implementing. The reason for identifying monetary policy in Canada was to determine the relationship between this policy and the needs of the Atlantic Region. This implies a need to identify a set of appropriate policy indicators for the Atlantic Region in terms of monetary policy--that is, a set of variables which will designate the needs of the Atlantic Region.

The purpose of this study, it should be remembered, is to identify differential effects, if any, of a national monetary policy upon the Atlantic Region. Since it is generally believed that the Bank of Canada usually refers to price levels, employment levels, growth levels, and the balance of payments as the indicators of policy needs in Canada, it is not unreasonable to assume that the best set of indicators of need for the Atlantic Provinces would be very similar.[1]

[1]The regional balance of payments will not be used as a regional indicator due to the lack of quarterly data.

Because of the lack, or inadequacy, of regional statistics, it is not possible, in all cases, to use a corresponding regional indicator. Thus, the problem of identifying regional goals often becomes one of finding a "next best" variable to serve as a proxy for the desirable regional indicator. Thus, the regional indicators of need should represent as closely as possible the needs of the region, just as the national indicators do for Canada as a whole. For example, since the level of employment is a national indicator of need for the Central Bank, it would be desirable to have the level of employment as a regional indicator of need. However, if there were no regional data available on employment, it would be necessary to find a proxy variable which would closely approximate the regional employment variable.

The Bank of Canada, in implementing monetary policy, may consider only one or any combination of the above national indicators of need. However, all of the national goals may not be attainable at any one time. For example, high levels of employment are not always compatible with price stability. For this reason each of the national indicators was considered separately.

Price Stability

While the Bank of Canada is often forced to adopt only one of the above mentioned goals, it will seldom completely disregard the other two goals. If it is assumed

that the objective of monetary policy is to maintain stable prices, the central bank is immediately faced with two questions which must be answered before a given monetary policy can be implemented: first, when do prices become unstable (or to put it in a more meaningful way, when is the economy suffering from inflation?); second, if inflation does exist, what degree of contractionary monetary policy is needed to stop or slow the rate of price increase?

In answering the first question the Second Annual Review of the Economic Council of Canada is referred to.[1] In a projection to 1970 the Economic Council of Canada adopted an acceptable price increase of two percent per year. For this study inflation was defined as a homogeneous period during which prices increased at a rate of 2 1/2 percent or greater. Thus, if prices are increasing at a rate of 2 1/2 percent or more, some degree of contractionary monetary policy would be needed. Again homogeneous periods of time were referred to in order to overcome the problem of the general upward trend of prices and it is practical to assume policy changes are not required unless the price index changes at a substantial rate.

In order to determine the degree of contractionary policy needed, the following criteria were adopted:

2 1/2% to 3 1/2% annual increase.....Mildly inflationary
3 1/2% to 5% annual increase.....Inflationary

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[1] Economic Council of Canada, Towards Sustained and Balanced Economic Growth, Second Annual Review (Ottawa: The Queen's Printer, 1965), p. 7.

5% to 10% annual increase.....Extremely inflationary
over 10% annual increase.....Hyper-inflationary

In order to use the above criteria for determining the needs of the Atlantic Region in terms of monetary policy, it was necessary to define a price index for reference. This presented a problem since a price index for the Atlantic Region does not exist. However, price indices for St Johns, Newfoundland, Halifax, Nova Scotia and St. John, New Brunswick do exist. The nature of these indices makes it difficult to combine them to develop a regional index; they cannot be used to compare levels of prices among the cities. Thus, the price index for Halifax was selected as the indicator of prices for the region. This selection was made because of the important economic role Halifax plays in the region and, also, because the price indices of the three cities move in a similar manner. While we cannot use these indices to compare price levels at any given time, it can be noted that they increase at approximately the same rate in each city during the period covered by this study. Thus, it is felt that the selection of the Halifax price index is a realistic choice as the indicator of prices and their movements in the Atlantic Provinces.

Since the Halifax price index has been chosen to represent price movements within the Atlantic Region, it is important that it is also a reliable indicator of the needs of the region. Does the price index represent economic

conditions within the Atlantic Region or does it represent economic conditions in some other region of Canada?

The economic conditions within the Atlantic Provinces play a very small role in setting the price level and in determining the rate of change of the regional prices. Instead, the price levels in Central Canada tend to be shared by the Atlantic Region due to the close relationship of capital markets and price setting forces. The extent to which this is true is described more fully in Chapter IV where the appropriateness of monetary policy with regard to the Atlantic Region is determined. It is important, however, to recognize that the price index for the Atlantic Provinces does not necessarily reflect the regional economic climate, and as such, the goal of stable prices may not be a reliable objective to observe in trying to determine the appropriateness of a national monetary policy for the region.

High Employment Levels

The second regional objective to be dealt with is full employment and since employment data for the region are available,[1] the problem seems to be very straight forward. However, this is not the case due to the extremely high levels of unemployment that have existed since 1954.

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[1]Dominion Bureau of Statistics, Special Surveys Division, Seasonally Adjusted Labor Force Statistics, January 1953 - December 1969 (Ottawa: The Queen's Printer, 1970).

The employment data used are seasonally adjusted and because of this, total employment plus total unemployment does not necessarily equal total labor force. In order to arrive at the percentage rate of unemployment, the regional unemployment figure for each month was divided by total unemployment plus total employment, i.e.,

$$\frac{\text{unemployment}}{\text{employment + unemployment}}$$

According to the Second Annual Review,[2] full employment for Canada is defined as achieved when ninety-seven percent of the labor force is employed. There seems to be no a priori reasons to believe that a higher level of unemployment would be accepted as full employment in the Atlantic Provinces and this would mean that, if the objective of monetary policy is to maintain full employment, some form of expansionary policy should be implemented each time the level of employment drops below ninety-seven percent.

This presents a very interesting problem for the Atlantic Region. The highest level of employment in the Region for any one month between 1954 and 1969 was 95.15 percent (or 4.85 percent unemployed). This occurred in July 1956 (See Table 4-1, page 39 of Chapter IV). According to the standards set by the Economic Council of Canada, the unemployment rates would be considered too high

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[1] Economic Council of Canada, op. cit., p. 7.

and an expansionary monetary policy would always have been needed.

In an effort to obtain information from this data, relative rates of unemployment for the Region are considered, but in doing this, it is not intended to lower the acceptable level of employment for the people of the Atlantic Provinces. This situation alone may suggest some shortcomings in Canada's present monetary arrangements of a national policy and this is explored further in the following chapter.

What constitutes an unemployment problem relative to past experience in the region? To answer this question the following criteria were established:

0 to 6 percent	Not serious relative to past conditions in the region
6 through 8 percent	Moderately serious
Over 8 percent	Very serious

This breakdown makes it possible to assign different degrees of expansionary policy in an effort to move the economy of the region back toward a full employment level. This set of relative criteria can be justified, in that it takes into account the structural labor force problems that exist in the Atlantic Region which tend to keep the rate of unemployment higher in the region than in Canada as a whole. Further analysis of these structural problems is made in Chapter IV.

Growth

A third objective of the Bank of Canada is to manipulate monetary policy in an effort to accomodate growth. What is growth? How do we measure growth? These are questions which must be answered before growth can be discussed to any extent. It is easy to become confused when considering the first question. The economist often refers to "growth" when speaking of productivity, of technology, of the labor force, or of population without qualifying the term in a more precise manner. For this study growth refers to a combination of two important factors--growth of employment and growth of output per employed person. For example, if employment increased by five percent and output per person increased by four percent over some given period of time, the total growth would be nine percent for the period. There are a number of ways to measure this growth, but it is difficult to pick the best indicator of it. Generally, reference is made to some series in the national accounts; for example, the Bank of Canada may look at national income, disposable income or Gross National Expenditure (GNE) as the measure. This same type of measure is used here: it is assumed that growth in Canada is measured for movements in constant dollar GNE when trying to determine the type of monetary policy needed when the objective of the Central Bank is to promote growth.

If the Bank of Canada refers to the growth of constant dollar GNE as the indicator of growth for Canada, we can assume that the appropriate indicator of growth for the region would be Gross Regional Expenditures. This, however, is not possible in the Atlantic Region because such data are not available on a monthly basis. Correlation analysis and the analysis of growth rates were used to determine the most appropriate substitute for GNE, that is, which national variable, for which there is a corresponding monthly regional variable, best coincides with GNE. This variable was found to be constant dollar retail trade. The correlation coefficient (R) was .9909 for the two variables and the monthly growth rate for both GNE and Canadian retail trade was .36 percent.

However, the use of retail sales as a proxy for GNE is not consistent since one is a measure of aggregate demand and the other is a measure of output. Also the use of retail trade neglects the problem of unintended changes in inventories. This of course places a large question mark on the analysis of growth and thus on any implications derived from the analysis. The use of retail trade as a goal for monetary policy was not dropped from the thesis because it is of interest to determine if monetary policy was accommodating to the goal of growth. It would have been preferable to use some output variable such as industrial output but none could be found.

In determining an acceptable rate of growth, reference is made again to the Second Annual Review.[1] For the Economic Council of Canada projection to 1970, an acceptable rate of growth was broken down into the above-mentioned categories as follows:

Employment growth	3.0 percent
Output per employed person	2.4 percent
Total Growth	5.4 percent

From this it can be assumed that anytime the annual growth of retail sales in the Atlantic Region drops below 5.4 percent, the region would require an expansionary monetary policy. Anytime the annual growth rate exceeds 5.4 percent, growth is no longer an objective of monetary policy and at this point the Bank of Canada could turn its attention toward unemployment or price increases. Such periods as these are ignored when referring to growth. It is assumed that the Central Bank would not, ceteris paribus, intentionally hold down the rate of growth and, while such an assumption may be less meaningful today, it would probably not be far from the truth during the period from 1954 through 1969.

In this chapter we have defined a set of variables, used in Chapter IV, to define the desired monetary policies for Canada and for the Atlantic Region. The desired monetary policies can be compared with the actual monetary policy, as derived in Chapter II, to determine if the needs

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[1]Economic Council of Canada, ibid., p. 7.

of the Atlantic Region are met less often than the needs of Canada. In Chapter IV such an analysis will be made to determine if differential effects of monetary policies exist between the two economies.

CHAPTER IV

MONETARY POLICY AND THE ATLANTIC REGION

The very nature of monetary policy under its present arrangements in Canada seems to imply that the criteria on which it is based are by necessity national in scope. For example, the Governor of the Bank of Canada has stated:

> It is the nature of monetary policy that its effects cannot be directed towards particular areas on a pinpointed basis. Its impact and the criteria on which it is based are necessarily nationwide. There is no escape for this.[1]

For a geographically smaller country, such as some of those in Europe, this presents no particular problem; however, in a country such as Canada, where the needs and circumstances vary greatly from one region to another, this can be a serious handicap. In fact, it is the concern of this thesis to test the hypothesis that the criteria for monetary policy in Canada reflect the indicators of economic activity of central Canada at the expense of the needs and circumstances of the Atlantic Region.

It has been suggested that there are two endogenous correctives which would tend to eliminate discrimination of monetary policy against any one region. Assume that a country consists of two regions: a buoyant region, which

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[1]Remarks of Mr. Louis Rasminsky, Governor of the Bank of Canada, at a meeting of the Halifax Board of Trade, February 7, 1966.

enjoys a high level of employment and a high level of demand, and a lagging region, and that the buoyant region is able to attract money flows from the lagging area in search of better investment opportunities in the high growth area. From this, Professor Slater[1] suggests that the export of debt from the lagging region into the buoyant region would result in a worsening of the liquidity position of the slow growth region. This will in turn cause the short term capital movements to slow or perhaps reverse. The other corrective is a result of a real balance effect. The demand pressure in the buoyant region will push prices up while the excess capacity in the depressed area will force prices down. Thus the real balance effect will tend to bring a halt to the inflationary pressures in one region while at the same time giving an economic thrust to the lagging region.

Past experience in Canada would not encourage much confidence in these corrective mechanisms. Instead, because of the close connections, in terms of trade, between the various regions in Canada, inflationary pressures tend to be shared by all areas--one would become an inflationary high employment region and the other an inflationary low employment area. This comes about because the prices of traded goods in the depressed area are pulled up by the price increases in the high growth area; at the

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[1] D. Slater, op. cit.

same time, prices of non-traded goods would tend to adjust as a result of arbitrage.

Because of this price sharing experience, continued inflationary pressures may result, in many cases, in a restrictive monetary policy in the nation as a whole, even when the lagging region, not troubled with excess demand and facing high levels of unemployment, is, in fact, requiring an expansionary monetary policy. The problem arises because the needs of this depressed region may carry very little, if any, weight in determining monetary policy needs for the country.

This chapter compares the actual monetary policy, as carried out by the Bank of Canada, with the desired policies of the national economy and of the Atlantic Region for each of the three indicators: inflation, unemployment and growth. Then a comparison is made between the two areas of the appropriateness of monetary policy (i.e., how often has the actual policy been the same as the desired policy). This analysis is static in nature ignoring the concepts of an inside lag and an outside lag. The analysis determines whether the needs of the Atlantic Region are being met as often and as systematically as the needs of Canada as a whole, on a month by month basis. If the Atlantic Region fares less well than does Canada as a whole, the charge of differential effects, which are a burden to the Atlantic Region, becomes feasible.

Unemployment

The Atlantic Region of Canada has been plagued by a consistently high level of unemployment which would seem to call for expansionary monetary policies. At the same time restrictive monetary policies, designed to alleviate the economic problems of central Canada, have added further to the disabilities of the Atlantic Region. It was this type of problem that led Robert Mundell to state, "In a currency area comprising many regions and a single currency, the pace of inflation is set by the willingness of central authorities to allow unemployment in deficit regions."[1]

As was indicated in Chapter III, monetary policy in Canada has not performed well in the past, if we consider it in light of the rates of unemployment in the Atlantic Region. In order to determine the impact of this poor performance, monetary policy and the unemployment rates of the Atlantic Region from January 1954 through December 1969 are analyzed. Unemployment ranges from 4.69 percent in October 1956 to 14.29 percent in August 1958 with a mean of 8.53 percent, excessively high by any reasonable standards. If these numbers are compared with the E.C.C. criteria for full employment, it is found that some type of expansionary monetary policy was always needed, in fact it would be difficult to justify any policy, except one which was extremely expansionary most of the time. (See Table 4-1)

[1]Robert A. Mundell, op. cit., p. 179.

TABLE 4-1

SEASONALLY ADJUSTED UNEMPLOYMENT PERCENTAGE
RATES FOR THE ATLANTIC REGION

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1954	5.92	6.07	6.65	7.04	8.15	8.12	6.11	6.25	6.00	7.68	6.34	5.70
1955	6.40	6.36	7.31	5.51	6.65	7.05	7.71	6.99	7.02	6.95	5.45	6.32
1956	6.15	6.11	6.29	7.25	6.35	5.21	4.85	5.04	4.86	4.69	5.79	6.60
1957	6.75	7.68	7.76	7.65	7.30	7.34	9.43	8.36	10.58	9.41	10.43	10.60
1958	11.29	11.24	12.13	12.36	11.52	13.52	12.05	14.29	12.41	13.89	13.74	13.73
1959	11.85	11.11	11.13	10.26	11.56	11.80	12.04	11.33	11.03	10.19	9.18	9.72
1960	10.66	10.58	10.50	11.07	10.81	9.78	8.91	10.66	10.22	11.66	11.33	11.33
1961	10.83	12.05	11.41	11.68	12.11	11.94	11.36	10.82	12.09	10.15	10.54	10.40
1962	10.56	10.75	10.76	10.54	10.90	10.98	11.92	10.55	9.93	10.21	10.88	11.38
1963	10.47	9.64	9.71	9.44	10.54	9.60	8.92	9.22	8.69	9.91	9.14	8.39
1964	8.73	8.15	8.25	8.18	6.98	7.56	7.55	7.56	8.57	8.32	8.11	6.97
1965	7.26	8.35	7.74	8.55	7.68	7.54	7.19	7.03	6.07	5.55	5.89	7.52
1966	6.98	6.68	6.54	5.72	5.79	5.71	6.60	6.39	6.96	6.68	6.22	5.90
1967	6.54	6.54	6.66	6.71	7.32	6.67	6.31	6.16	6.30	6.38	6.90	6.80
1968	7.17	6.86	6.91	7.06	7.02	7.87	7.73	8.02	7.24	7.91	7.60	7.31
1969	6.57	6.73	6.89	7.25	7.85	8.50	8.54	8.54	8.17	7.81	7.55	7.50

Source: "Seasonally Adjusted Labor Force Statistics Jan. 1953-Dec. 1969," DBS--Special Surveys Division, The Queen's Printer, Ottawa, March 1970.

There are three factors which could cause the rate of unemployment in the Atlantic Region to be higher than the rate of unemployment, for corresponding intervals of time, in Canada. These are seasonal factors, cyclical factors and structural factors. Seasonal factors can be ignored since the unemployment data for both economies have been seasonally adjusted. Also, there seems to be no evidence to suggest that cyclical patterns are such that unemployment in the Atlantic Region should be consistently higher than in Canada. This leaves structural problems, such as the lack of skills by the regional labor force, as the basic reason for the differences that existed in the rates of unemployment for the two economies.

Because of the severity of these structural unemployment problems that have existed in the Atlantic Provinces during the period from 1954 through 1969, the following alternative set of relative rates was established in Chapter III:

0 to 6 percent	Not serious relative to past conditions in the region
6 through 8 percent	Moderately serious
Over 8 percent	Very serious

Even with six percent representing a level of unemployment which is not serious relative to past conditions in the region, there are only sixteen months, or just over eight percent of the time that unemployment was not a problem. There were eighty-six months, or fifty-five percent of the time, during which unemployment exceeded eight percent--a

very serious problem. This means that forty-five percent of the time monetary policy should have been extremely expansionary, and forty-seven percent of the time it should have been at least moderately expansionary.

Table 4-2 is a classification of desired monetary policy with respect to unemployment in the Atlantic Region. This classification was developed in the same manner as Table 2-5. Deviations of one or two months were ignored. The classification was made using the following information:

Rate of Unemployment	Monetary Policy Needed
Less than 6 percent	Not appropriate (NA)
6 to 8 percent	Mildly expansionary (Mex)
8 through 10 percent	Expansionary (Ex)
Greater than 10 percent	Extremely expansionary (Xex)

The classification of "Not appropriate" (NA) is used to designate those periods of time in which the level of unemployment was low enough that no action was required by the monetary authorities. Therefore, the assumption is made that unemployment does not get low enough to require a contractionary monetary policy.

Table 4-3 compares the actual monetary policy derived in Chapter II with the monetary policy called for by the level of unemployment in the Atlantic Region. This table shows that in 49 of the 192 months, or 25.5 percent of the time, monetary policy was of a contractionary nature when an expansionary policy was needed. In 47 of the months, or 24.5 percent of the time, monetary policy did not allow

TABLE 4-2

CLASSIFICATION OF DESIRED MONETARY POLICY
WITH RESPECT TO UNEMPLOYMENT
IN THE ATLANTIC REGION

Period	Classification	Average Rate of Unemployment
Jan 1954 - May 1956	Mex	6.60%
Jun 1956 - Nov 1956	NA	5.07%
Dec 1956 - Jun 1957	Mex	7.30%
Jul 1957 - Oct 1957	Ex	9.45%
Nov 1957 - Jan 1963	Xex	11.22%
Feb 1963 - Jan 1964	Ex	9.33%
Feb 1964 - May 1969	Mex	7.06%
Jun 1969 - Aug 1969	Ex	8.53%
Sep 1969 - Dec 1969	Mex	7.76%

Mex - Mildly expansionary monetary policy
Ex - Expansionary monetary policy
NA - Not appropriate monetary policy
Xex - Extremely expansionary monetary policy

TABLE 4-3

DESIRED MONETARY POLICY WITH RESPECT TO UNEMPLOYMENT IN THE ATLANTIC REGION COMPARED WITH ACTUAL MONETARY POLICY IN CANADA

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Policy
1954	Mex	Mex	Mex	Mex	Mex	Mex	Mex	Mex	Mex	Mex	Mex	Mex	Desired
	mex	mex	mex	mex	mex	mex	mex	mex	mex	mex	mex	mex	Actual
1955	Mex	Mex	Mex	Mex	Mex	Mex	Mex	Mex	Mex	Mex	Mex	Mex	Desired
	xex	xex	xex	xex	ex	ex	ex	ex	mcon	mcon	mcon	mcon	Actual
1956	Mex	Mex	Mex	Mex	Mex	NA	NA	NA	NA	NA	NA	Mex	Desired
	mcon	mcon	mcon	mcon	mcon	mcon	mcon	mcon	mcon	mcon	mcon	mcon	Actual
1957	Mex	Mex	Mex	Mex	Mex	Mex	Ex	Ex	Ex	Ex	Xex	Xex	Desired
	mcon	mcon	mcon	mcon	mcon	mcon	mcon	mcon	mcon	mex	mex	mex	Actual
1958	Xex	Xex	Xex	Xex	Xex	Xex	Xex	Xex	Xex	Xex	Xex	Xex	Desired
	mex	mex	xex	xex	xex	xex	xex	xex	xex	xex	mcon	mcon	Actual
1959	Xex	Xex	Xex	Xex	Xex	Xex	Xex	Xex	Xex	Xex	Xex	Xex	Desired
	mcon	mcon	mcon	mcon	mcon	mcon	mcon	xcon	xcon	xcon	xcon	xcon	Actual
1960	Xex	Xex	Xex	Xex	Xex	Xex	Xex	Xex	Xex	Xex	Xex	Xex	Desired
	mcon	mcon	mcon	mcon	mcon	mcon	mcon	ex	ex	ex	ex	ex	Actual
1961	Xex	Xex	Xex	Xex	Xex	Xex	Xex	Xex	Xex	Xex	Xex	Xex	Desired
	ex	ex	ex	ex	ex	ex	ex	ex	mex	mex	mex	mex	Actual
1962	Xex	Xex	Xex	Xex	Xex	Xex	Xex	Xex	Xex	Xex	Xex	Xex	Desired
	mex	mex	mex	mex	mex	mex	mex	mex	mex	mex	mex	mex	Actual
1963	Xex	Ex	Ex	Ex	Ex	Ex	Ex	Ex	Ex	Ex	Ex	Ex	Desired
	mex	mex	mex	mex	mex	mex	mex	mex	mex	mex	mex	mex	Actual
1964	Ex	Mex	Mex	Mex	Mex	Mex	Mex	Mex	Mex	Mex	Mex	Mex	Desired
	mex	mex	mex	mex	mex	mex	mex	mex	mex	mex	mex	xex	Actual

TABLE 4-3 (continued)

DESIRED MONETARY POLICY WITH RESPECT TO UNEMPLOYMENT IN THE ATLANTIC REGION COMPARED WITH ACTUAL MONETARY POLICY IN CANADA

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Policy
1965	Mex	Mex	Mex	Mex	Mex	Mex	Mex	Mex	Mex	Mex	Mex	Mex	Desired
	xex	xex	xex	xex	xex	xex	xex	xex	mex	mex	mex	mex	Actual
1966	Mex	Mex	Mex	Mex	Mex	Mex	Mex	Mex	Mex	Mex	Mex	Mex	Desired
	mex	mex	mex	mex	mex	mex	mex	mex	mex	mex	mex	mex	Actual
1967	Mex	Mex	Mex	Mex	Mex	Mex	Mex	Mex	Mex	Mex	Mex	Mex	Desired
	xex	xex	xex	xex	xex	xex	xex	xex	xex	xex	xex	mcon	Actual
1968	Mex	Mex	Mex	Mex	Mex	Mex	Mex	Mex	Mex	Mex	Mex	Mex	Desired
	mcon	mcon	mcon	xex	xex	xex	xex	xex	mex	mex	mex	xex	Actual
1969	Mex	Mex	Mex	Mex	Mex	Ex	Ex	Ex	Mex	Mex	Mex	Mex	Desired
	xex	xex	xex	con	con	con	con	con	con	con	mex	mex	Actual

Desired

Xex - Extremely expansionary
Ex - Expansionary
Mex - Mildly expansionary
NA - Not appropriate

Actual

xex - extremely expansionary
ex - expansionary
mex - mildly expansionary
xcon - extremely contractionary
con - contractionary
mcon - mildly contractionary

the money supply to increase as fast as the unemployment problems in the Atlantic Region required, according to the specifications outlined above. This leaves 96 months, or 50.0 percent of the time in which the monetary authorities carried out the proper policy for the Atlantic Region.

Table 4-4 is a list of the monthly rates of unemployment for Canada from 1954 through 1969. It is interesting to note that during most of the period in question, a problem of unemployment existed in all of Canada. A high rate of 7.9 percent occurred in June, 1958 and a low rate of 2.8 percent occurred in October, 1956, with a mean rate of unemployment for the period of 4.5 percent. This compared with a high of 14.3 percent, a low of 4.7 percent and a mean of 8.5 percent for the Atlantic Region. Thus, under the two sets of criteria used, the average monetary policy needed for both the Atlantic Region and Canada was expansionary. However, it must be kept in mind that in order to obtain such a comparison, the criteria upon which the needs of the Atlantic Provinces were based were 100 percent higher than the criteria used for Canada.

If these rates are compared with the three percent rate which the E.C.C. recommended for full employment, a comparison similar to that given in Table 4-2, page 42, can be made. The classification of needed policy is based upon the following breakdown:

TABLE 4-4

SEASONALLY ADJUSTED UNEMPLOYMENT
PERCENTAGE RATES FOR CANADA

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1954	3.9	4.0	4.1	4.4	4.7	5.1	5.2	5.2	5.1	5.1	5.1	4.7
1955	4.8	4.7	4.9	4.5	4.5	4.3	4.3	3.8	4.1	4.0	3.8	3.7
1956	3.7	3.8	3.6	3.5	3.4	3.2	3.0	3.0	3.1	2.8	3.1	3.4
1957	3.8	3.9	4.1	4.2	3.9	4.3	4.6	4.8	5.4	5.3	6.2	6.5
1958	6.5	6.6	6.9	6.9	7.0	7.9	7.5	7.5	7.1	7.5	7.2	7.0
1959	6.5	6.2	6.0	5.8	6.3	5.6	5.5	5.9	5.4	5.5	5.8	6.0
1960	6.1	6.4	6.5	6.8	7.2	6.7	7.1	7.6	7.5	7.6	7.5	7.6
1961	7.6	7.7	7.6	7.6	7.6	7.4	7.2	6.8	6.9	6.5	6.1	6.0
1962	6.0	6.2	6.0	5.9	5.6	5.7	6.0	5.7	5.7	5.7	5.9	6.0
1963	5.9	5.8	5.9	5.7	5.7	5.5	5.4	5.3	5.4	5.2	5.1	5.0
1964	4.9	4.9	4.8	4.9	4.6	4.8	4.6	4.6	4.5	4.9	4.3	4.0
1965	4.2	4.1	4.1	4.4	4.0	4.0	3.9	3.8	3.6	3.1	3.6	3.5
1966	3.7	3.6	3.5	3.4	3.6	3.4	3.7	3.9	4.0	3.4	3.7	3.6
1967	3.8	3.9	4.0	4.1	4.1	4.0	4.0	4.0	4.1	4.3	4.3	4.7
1968	4.6	4.8	4.9	4.8	4.8	5.1	5.1	5.0	4.7	4.7	4.8	4.8
1969	4.5	4.5	4.3	4.5	4.7	4.8	4.6	4.8	4.9	5.0	5.0	4.8

Source: "Historical Labor Force Statistics, Actual Data, Seasonally Factors, Seasonally Adjusted Data," Catalogue 71-201, Statistics Canada, Ottawa, 1971.

Rate of Unemployment	Monetary Policy Needed
Less than 3 percent	Not appropriate (NA)
3 to 4 percent	Moderately expansionary (Mex)
4 through 5 percent	Expansionary (Ex)
Greater than 5 percent	Extremely expansionary (Xex)

Table 4-5 is a month-by-month comparison of the actual monetary policy and the desired monetary policy for Canada as a whole. In terms of unemployment in Canada, monetary policy was acceptable, i.e., equal to or greater than the desired degree of expansion, 66 of the 192 months or 34.4 percent of the time. Monetary policy was contractionary when the level of unemployment was actually calling for an expansionary policy 57 of the 192 months, or 29.7 percent of the time. About 36 percent of the time, or 69 months, monetary policy was in the correct direction but not of the proper magnitude.

When a comparison is made between the relationship of monetary policy with respect to unemployment in Canada and the relationship of monetary policy with respect to unemployment in the Atlantic Region, it is found that the needs of the Atlantic Region come out quite favorably. However, if the standards of the E.C.C. concerning unemployment to the Atlantic Region are applied, monetary policy does not look as effective. In fact, by applying the E.C.C. criteria to the Atlantic Region, only 23.96 percent of the time, or 46 months, was monetary policy in the proper direction with the proper magnitude. Also, 46.35 percent of the time monetary policy was in the

TABLE 4-5

DESIRED MONETARY POLICY WITH RESPECT TO UNEMPLOYMENT IN CANADA COMPARED WITH ACTUAL MONETARY POLICY IN CANADA

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Policy
1954	Ex	Ex	Ex	Ex	Ex	Xex	Xex	Xex	Xex	Xex	Xex	Ex	Desired
	mex	mex	mex	mex	mex	mex	mex	xex	xex	xex	xex	xex	Actual
1955	Ex	Ex	Ex	Ex	Ex	Ex	Ex	Ex	Ex	Ex	Mex	Mex	Desired
	xex	xex	xex	xex	ex	ex	ex	ex	mcon	mcon	mcon	mcon	Actual
1956	Mex	Mex	Mex	Mex	Mex	Mex	Mex	Mex	Mex	Mex	Mex	Mex	Desired
	mcon	mcon	mcon	mcon	mcon	mcon	mcon	mcon	mcon	mcon	mcon	mcon	Actual
1957	Mex	Mex	Ex	Ex	Ex	Ex	Ex	Ex	Xex	Xex	Xex	Xex	Desired
	mcon	mcon	mcon	mcon	mcon	mcon	mcon	mcon	mcon	mex	mex	mex	Actual
1958	Xex	Xex	Xex	Xex	Xex	Xex	Xex	Xex	Xex	Xex	Xex	Xex	Desired
	mex	mex	xex	xex	xex	xex	xex	xex	xex	xex	mcon	mcon	Actual
1959	Xex	Xex	Xex	Xex	Xex	Xex	Xex	Xex	Xex	Xex	Xex	Xex	Desired
	mcon	mcon	mcon	mcon	mcon	mcon	mcon	xcon	xcon	xcon	xcon	xcon	Actual
1960	Xex	Xex	Xex	Xex	Xex	Xex	Xex	Xex	Xex	Xex	Xex	Xex	Desired
	mcon	mcon	mcon	mcon	mcon	mcon	mcon	ex	ex	ex	ex	ex	Actual
1961	Xex	Xex	Xex	Xex	Xex	Xex	Xex	Xex	Xex	Xex	Xex	Xex	Desired
	ex	ex	ex	ex	ex	ex	ex	ex	mex	mex	mex	mex	Actual
1962	Xex	Xex	Xex	Xex	Xex	Xex	Xex	Xex	Xex	Xex	Xex	Xex	Desired
	mex	mex	mex	mex	mex	mex	mex	mex	mex	mex	mex	mex	Actual
1963	Xex	Xex	Xex	Xex	Xex	Xex	Xex	Xex	Xex	Xex	Xex	Xex	Desired
	mex	mex	mex	mex	mex	mex	mex	mex	mex	mex	mex	mex	Actual
1964	Ex	Ex	Ex	Ex	Ex	Ex	Ex	Ex	Ex	Ex	Ex	Ex	Desired
	mex	mex	mex	mex	mex	mex	mex	mex	mex	mex	mex	mex	Actual

TABLE 4-5 (continued)

DESIRED MONETARY POLICY WITH RESPECT TO UNEMPLOYMENT IN CANADA COMPARED WITH ACTUAL MONETARY POLICY IN CANADA

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Policy
1965	Ex	Ex	Ex	Ex	Ex	Ex	Mex	Mex	Mex	Mex	Mex	Mex	Desired
	xex	xex	xex	xex	xex	xex	xex	xex	mex	mex	mex	mex	Actual
1966	Mex	Mex	Mex	Mex	Mex	Mex	Mex	Mex	Mex	Mex	Mex	Mex	Desired
	mex	mex	mex	mex	mex	mex	mex	mex	mex	mex	mex	mex	Actual
1967	Ex	Ex	Ex	Ex	Ex	Ex	Ex	Ex	Ex	Ex	Ex	Ex	Desired
	xex	xex	xex	xex	xex	xex	xex	xex	xex	xex	xex	mcon	Actual
1968	Ex	Ex	Ex	Ex	Ex	Xex	Xex	Xex	Ex	Ex	Ex	Ex	Desired
	mcon	mcon	mcon	xex	xex	xex	xex	xex	mex	mex	mex	xex	Actual
1969	Ex	Ex	Ex	Ex	Ex	Ex	Ex	Ex	Ex	Ex	Ex	Ex	Desired
	xex	xex	xex	con	con	con	con	con	con	con	mex	mex	Actual

Desired

Xex - Extremely expansionary
Ex - Expansionary
Mex - Mildly expansionary

Actual

xex - extremely expansionary
ex - expansionary
mex - mildly expansionary
xcon - extremely contractionary
con - contractionary
mcon - mildly contractionary

correct direction but not of the proper magnitude. Finally, 29.69 percent of the time, or 57 months, monetary policy was in the wrong direction. The effectiveness of the monetary authorities in carrying out the proper policy under the above specifications is as follows:

Criteria	Percentage of Months in Which Actual Policy Corresponded to Desired Policy
Canada with E.C.C. Criteria	34.40
Atlantic Region with E.C.C. Criteria	23.96
Atlantic Region with Relative Criteria	50.00

If the structural unemployment problems of the Atlantic Region are taken into consideration it appears that monetary policy was, at the very least, fair and adequate for the Atlantic Region, when compared to Canada as a whole. However, it does appear that monetary policy was very ineffective in controlling unemployment in either economy. This lends some support to the monetarist argument that the nominal supply of money cannot be used to control a real quantity such as the unemployment rate.

Growth

The Central banking authorities often refer, among other variables, to Gross National Expenditure (GNE) as the indicator of growth in Canada, so to remain consistent, it

would be desirable to use Gross Regional Expenditures (GRE) as an indicator of growth for the Atlantic Region. Since, as was pointed out in Chapter III, data for GRE in the Atlantic Provinces exist only in annual figures, a proxy variable is needed, one which is related closely to GRE and is a coincidental indicator of growth. In searching for such a variable it was discovered that the dollar value of retail trade seemed to be the best candidate. It has been suggested that this relationship may not be as good as desired, because retail trade would be influenced by government transfer payments while GRE is not. Accordingly, it is not the level but the rate of change in retail trade that will serve as the indicator of growth, and, since transfer payments tend to fluctuate far less than retail trade, they should not affect the growth rate of retail trade in a significant manner.

In Chapter III, again, it was established that an annual growth rate of 5.4 percent was the mean in the Canadian economy, including the Atlantic Provinces. The desire to classify growth in retail trade in a manner that would enable a comparison between growth and the different classifications of monetary policy outlined previously was abandoned. Because of the magnitude of the monthly growth rate of retail trade, which is equivalent to the annual growth rate, little, if any, additional information could be obtained by sub-classifying the 5.4 percent growth rate. Thus, desired monetary policy will be described only as

expansionary or not appropriate. As long as growth in the Atlantic Region is taking place at an annual rate of 5.4 percent or greater it is assumed that a monetary policy to aid growth is not needed. Whenever the growth rate drops below the 5.4 percent annual rate, an expansionary policy is needed. The actual monetary policy is defined either as expansionary or contractionary.

Table 4-6 is a list of the constant dollar value by month of retail trade for the Atlantic Region from 1954 through 1969. Table 4-7 lists the monthly rate of growth of constant dollar retail trade in the Atlantic Region for the same period. In order to compare the monthly growth rates in Table 4-7 with the annual growth rates established as acceptable, the annual growth rate had to be re-estimated in terms of a monthly growth rate. It was found that a monthly growth rate of .45 percent per month is equivalent to the annual growth rate of 5.4 percent.

In Table 4-8 the monetary policy needs of the Atlantic Region, in terms of growth, are defined by homogeneous periods of time. "Ex" represents the need for an expansionary policy. "NA" defines those periods where growth is not a problem and monetary policy is not appropriate. The column on the left identifies homogeneous periods of need; the middle column specifies the periods as either "not appropriate" or as "in need of an expansionary monetary policy"; and, the column on the right represents

TABLE 4-6

VALUE OF CONSTANT DOLLAR RETAIL TRADE FOR THE ATLANTIC REGION IN MILLIONS OF DOLLARS, SEASONALLY ADJUSTED[1]

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1954	92	96	96	96	97	97	96	96	96	95	97	99
1955	100	101	102	104	103	107	108	107	106	109	107	106
1956	108	109	108	110	114	111	116	112	112	112	113	111
1957	108	110	111	111	110	112	110	111	112	106	108	110
1958	114	111	112	110	110	112	111	112	112	112	114	117
1959	113	114	116	114	115	114	117	117	118	117	116	116
1960	116	119	117	121	122	122	119	122	122	121	120	119
1961	122	122	119	119	120	123	124	122	122	123	124	123
1962	125	123	127	126	125	124	124	124	124	124	126	127
1963	125	127	125	126	129	130	130	131	132	133	132	135
1964	137	136	139	136	136	136	136	137	139	141	142	139
1965	137	147	141	145	139	144	144	148	145	148	148	147
1966	148	149	148	145	141	145	146	150	147	151	151	151
1967	147	141	140	143	147	151	148	146	151	148	152	150
1968	152	151	147	146	151	152	157	157	157	155	159	154
1969	160	165	167	148	150	153	153	152	155	154	152	155

[1]Monthly data may not add up to the yearly total due to rounding.

Sources: "Retail Trade," Catalogue Number 63-005, Bureau of Statistics, Ottawa, Canada, 1954-1966; "Canadian Statistical Review," Catalogue Number 11-003, Dominion Bureau of Statistics, Ottawa, Canada, 1967-1969; Private correspondence.

TABLE 4-7

PERCENT GROWTH IN CONSTANT DOLLAR RETAIL TRADE FOR THE ATLANTIC REGION[1]

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1954	-4.2	4.4	0	0	1.0	0	-1.0	0	0	-1.0	2.1	2.1
1955	1.0	1.0	1.0	2.0	-1.0	3.9	1.0	-1.0	-1.0	2.8	-1.8	-1.0
1956	1.9	.9	- .9	1.9	3.6	-2.6	4.5	-3.5	0	0	.9	-1.8
1957	-2.7	1.9	.9	0	- .9	1.8	-1.8	.9	.9	-5.4	1.9	1.9
1958	3.6	-2.6	.9	-1.8	0	1.9	- .9	.9	0	0	1.8	2.6
1959	-3.4	.9	1.8	-1.7	.9	- .9	2.6	0	.9	- .9	- .9	0
1960	0	2.6	-1.7	3.4	.8	0	-2.5	2.5	0	- .8	- .8	- .8
1961	2.5	0	-2.5	0	.8	2.5	.8	-1.6	0	.8	.8	- .8
1962	1.6	-1.6	3.3	- .8	- .8	- .8	.8	- .8	0	0	1.6	.8
1963	-1.6	1.6	-1.6	.8	2.4	.8	0	.8	.8	.8	- .7	2.3
1964	1.5	- .7	2.2	-2.2	0	0	0	.7	1.5	1.4	.7	-2.1
1965	-1.4	7.3	-4.1	2.8	-4.1	3.6	0	2.8	-2.0	2.1	0	- .7
1966	.7	.7	- .7	-2.0	-2.8	2.8	.7	2.7	-2.0	2.7	0	0
1967	-2.6	-4.1	- .7	2.1	2.8	2.7	-2.0	-1.4	3.4	-2.0	2.7	-1.3
1968	1.3	- .7	-2.6	- .7	3.4	.7	3.3	0	0	-1.3	2.6	-3.1
1969	3.9	3.1	1.2	-11.4	1.4	2.0	0	.7	2.0	- .7	-1.3	2.0

[1]Derived from data in Table 4-6.

TABLE 4-8

DESIRED MONETARY POLICY WITH RESPECT TO GROWTH IN THE ATLANTIC REGION DEFINED IN TERMS OF HOMOGENEOUS PERIODS OF TIME

Homogeneous Period of Time	Desired Monetary Policy	Average Rate of Monthly Growth For Period
Jan 1954 - Oct 1954	Ex	- .08%
Nov 1954 - Jul 1955	NA	1.31%
Aug 1955 - Dec 1955	Ex	- .40%
Jan 1956 - Jul 1956	NA	1.33%
Aug 1956 - Jul 1957	Ex	- .43%
Aug 1957 - Jan 1958	NA	.63%
Feb 1958 - Oct 1958	Ex	-1.80%
Nov 1958 - Sep 1959	NA	.50%
Oct 1959 - Mar 1960	Ex	- .15%
Apr 1960 - Aug 1960	NA	.84%
Sep 1960 - Apr 1961	Ex	- .30%
May 1961 - Mar 1962	NA	.60%
Apr 1962 - Oct 1962	Ex	- .34%
Nov 1962 - Mar 1964	NA	.69%
Apr 1964 - Jul 1964	Ex	- .55%
Aug 1964 - Nov 1964	NA	1.08%
Dec 1964 - May 1966	Ex	.08%
Jun 1966 - Oct 1966	NA	1.38%
Nov 1966 - Mar 1967	Ex	-1.4 %
Apr 1967 - Jun 1967	NA	2.53%
Jul 1967 - Apr 1968	Ex	- .33%
May 1968 - Jul 1968	NA	2.47%
Aug 1968 - Dec 1968	Ex	- .36%
Jan 1969 - Sep 1969	NA	.32% [1]
Oct 1969 - Dec 1969	Ex	.00%

Ex - Expansionary policy
NA - Not appropriate

[1] This average rate of monthly growth for the period from January 1969 through September 1969 indicates a need for an expansionary monetary policy. This, however, is the result of an 11.4 percent decrease in April 1969 (see Table 4.7). If the -11.4 is not included in the calculation the average rate of monthly growth is 1.78 percent instead of .32 percent. Thus the period was classified as NA which conforms closer to the monetary needs during that period.

the average percentage rate of growth for the different periods.

Table 4-9 presents the monthly relationship between the desired monetary policy of the Atlantic Region and the actual monetary policy that was carried out by the central bank for Canada. Table 4-9 shows that an expansionary policy was needed to promote growth in the Atlantic Provinces 53.6 percent of the time, or 102 months. This compares with 136 months, or 70.8 percent, during which an expansionary policy was carried out by the Bank of Canada. Of the 102 months when an expansionary policy was needed, there were 26 months when an expansionary policy was not carried out. This means that 74.5 percent of the time the central bank carried out an expansionary policy when it was needed in the Atlantic Region.

As noted earlier, the constant dollar value of retail trade in Canada and real Gross National Expenditure in Canada have a correlation value of .9909. Because of this close relationship, retail trade in the Atlantic Provinces was substituted for gross regional product as an indicator of growth. In order to evaluate monetary policy in terms of growth in Canada on a monthly basis, retail trade in Canada is substituted for Gross National Expenditures, available only on a quarterly basis. This permits a better comparison to be made of the effectiveness of monetary policy between Canada and the Atlantic Region.

TABLE 4-9

ACTUAL MONETARY POLICY COMPARED TO DESIRED MONETARY POLICY IN THE ATLANTIC REGION WITH RESPECT TO GROWTH

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Policy
1954	Ex	Ex	Ex	Ex	Ex	Ex	Ex	Ex	Ex	Ex	NA	NA	Desired
	ex	ex	ex	ex	ex	ex	ex	ex	ex	ex	ex	ex	Actual
1955	NA	NA	NA	NA	NA	NA	NA	Ex	Ex	Ex	Ex	Ex	Desired
	ex	ex	ex	ex	ex	ex	ex	ex	con	con	con	con	Actual
1956	NA	NA	NA	NA	NA	NA	NA	Ex	Ex	Ex	Ex	Ex	Desired
	con	con	con	con	con	con	con	con	con	con	con	con	Actual
1957	Ex	Ex	Ex	Ex	Ex	Ex	Ex	NA	NA	NA	NA	NA	Desired
	con	con	con	con	con	con	con	con	con	ex	ex	ex	Actual
1958	NA	Ex	Ex	Ex	Ex	Ex	Ex	Ex	Ex	Ex	NA	NA	Desired
	ex	ex	ex	ex	ex	ex	ex	ex	ex	ex	con	con	Actual
1959	NA	NA	NA	NA	NA	NA	NA	NA	NA	Ex	Ex	Ex	Desired
	con	con	con	con	con	con	con	con	con	con	con	con	Actual
1960	Ex	Ex	Ex	NA	NA	NA	NA	NA	Ex	Ex	Ex	Ex	Desired
	con	con	con	con	con	con	con	ex	ex	ex	ex	ex	Actual
1961	Ex	Ex	Ex	Ex	NA	NA	NA	NA	NA	NA	NA	NA	Desired
	ex	ex	ex	ex	ex	ex	ex	ex	ex	ex	ex	ex	Actual
1962	NA	NA	NA	Ex	Ex	Ex	Ex	Ex	Ex	Ex	NA	NA	Desired
	ex	ex	ex	ex	ex	ex	ex	ex	ex	ex	ex	ex	Actual
1963	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Desired
	ex	ex	ex	ex	ex	ex	ex	ex	ex	ex	ex	ex	Actual
1964	NA	NA	NA	Ex	Ex	Ex	Ex	NA	NA	NA	NA	Ex	Desired
	ex	ex	ex	ex	ex	ex	ex	ex	ex	ex	ex	ex	Actual

TABLE 4-9 (continued)

ACTUAL MONETARY POLICY COMPARED TO DESIRED MONETARY POLICY IN THE ATLANTIC REGION WITH RESPECT TO GROWTH

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Policy
1965	Ex	Ex	Ex	Ex	Ex	Ex	Ex	Ex	Ex	Ex	Ex	Ex	Desired
	ex	ex	ex	ex	ex	ex	ex	ex	ex	ex	ex	ex	Actual
1966	Ex	Ex	Ex	Ex	Ex	NA	NA	NA	NA	NA	Ex	Ex	Desired
	ex	ex	ex	ex	ex	ex	ex	ex	ex	ex	ex	ex	Actual
1967	Ex	Ex	Ex	NA	NA	NA	Ex	Ex	Ex	Ex	Ex	Ex	Desired
	ex	ex	ex	ex	ex	ex	ex	ex	ex	ex	ex	ex	Actual
1968	Ex	Ex	Ex	Ex	NA	NA	NA	Ex	Ex	Ex	Ex	Ex	Desired
	con	con	con	ex	ex	ex	ex	ex	ex	ex	ex	ex	Actual
1969	NA	NA	NA	NA	NA	NA	NA	NA	NA	Ex	Ex	Ex	Desired
	ex	ex	ex	con	con	con	con	con	con	con	ex	ex	Actual

Desired

Ex - Expansionary

NA - Not appropriate

Actual

ex - expansionary

con - contractionary

Table 4-10 is a list of the dollar values and Table 4-11 is a list of the monthly percentage changes in the dollar values of retail trade in Canada. Using these monthly growth rates, homogeneous periods of monetary policy needs were defined and can be found in Table 4-12. The 5.4 percent annual growth rate and the equivalent .45 percent monthly growth rate were again used to make this classification.

Table 4-13 compares the monetary policy carried out by the Bank of Canada with the policy that was desired, when growth in Canada as a whole was the indicator of need. Table 4-13 shows that an expansionary policy was needed 43.2 percent of the time, or 83 of the 192 months. Of the 83 months, there were 38 months when the desired policy was not carried out. Thus, 60.2 percent of the time the central bank carried out an expansionary policy when it was desired. This compares with 74.5 percent when growth in the Atlantic Provinces is considered. In terms of growth it is difficult to show that the Atlantic Region has been neglected by the monetary policy of the central bank. The average monthly growth rate in constant dollar retail trade for both Canada and the Atlantic Region was .36 percent which is synonymous with the average monthly growth rate of real GNE. The fact that an actual monetary expansion was carried out 74.5 percent of the time when needed is better than most monetary critics might have expected. However, neither the 60.2 percent effectiveness level in Canada nor the 74.5 percent

TABLE 4-10

VALUE OF CONSTANT DOLLAR RETAIL TRADE FOR CANADA IN MILLIONS OF DOLLARS--SEASONALLY ADJUSTED ANNUAL RATE

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1954	1079	1127	1132	1104	1117	1114	1116	1118	1115	1090	1109	1154
1955	1172	1158	1166	1185	1212	1243	1205	1223	1229	1250	1231	1224
1956	1256	1242	1258	1308	1314	1306	1325	1313	1325	1310	1305	1325
1957	1307	1326	1335	1311	1301	1307	1308	1315	1327	1277	1289	1315
1958	1352	1323	1339	1315	1311	1318	1324	1322	1306	1333	1353	1369
1959	1360	1399	1398	1397	1398	1380	1398	1381	1392	1391	1373	1346
1960	1345	1381	1370	1382	1399	1394	1382	1383	1406	1398	1373	1371
1961	1386	1375	1362	1378	1386	1412	1407	1449	1369	1404	1422	1411
1962	1430	1448	1498	1473	1471	1462	1483	1458	1463	1472	1495	1508
1963	1494	1506	1501	1506	1514	1532	1513	1529	1539	1556	1554	1589
1964	1601	1587	1596	1571	1589	1576	1589	1598	1623	1624	1620	1589
1965	1587	1626	1635	1652	1671	1662	1652	1697	1703	1704	1725	1720
1966	1706	1734	1786	1663	1639	1711	1694	1717	1744	1745	1745	1715
1967	1735	1679	1695	1710	1721	1735	1693	1714	1772	1722	1742	1711
1968	1774	1646	1718	1717	1727	1755	1806	1771	1794	1778	1809	1804
1969	1805	1843	1808	1774	1784	1781	1774	1783	1801	1825	1812	1823

Sources: "Retail Trade," Catalogue Number 63-005, Dominion Bureau of Statistics, Ottawa, Canada, 1954-1966; "Canadian Statistical Review," Catalogue Number 11-003, Dominion Bureau of Statistics, Ottawa, Canada, 1967-1969.

TABLE 4-11

MONTHLY PERCENTAGE CHANGE IN DOLLAR VALUE OF RETAIL TRADE IN CANADA[1]

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1954	-3.3	4.5	.4	-2.5	1.2	.3	.2	.2	- .3	-2.2	1.7	4.1
1955	1.6	-1.2	.7	1.6	2.3	2.6	3.1	1.5	.5	1.7	-1.5	- .6
1956	2.6	-1.1	1.3	4.0	.5	- .6	1.5	- .9	.9	-1.1	- .4	1.5
1957	-1.4	1.5	.7	-1.8	- .8	.5	.1	.5	.9	-3.8	.9	2.0
1958	2.8	-2.1	1.2	-1.8	- .3	.5	.5	.2	-1.2	2.1	1.5	1.2
1959	- .7	2.9	- .1	.1	.1	-1.3	1.2	.8	.8	- .1	-1.3	-2.0
1960	- .1	2.7	- .8	.9	1.2	- .4	- .9	.1	1.7	- .6	-1.8	- .1
1961	1.1	- .8	- .9	1.2	.6	1.9	- .4	3.0	-9.5	2.6	1.3	- .8
1962	1.3	.9	3.8	-1.7	- .1	.6	1.4	-1.7	.4	.6	1.6	.9
1963	-1.0	.8	- .3	.3	.5	1.2	-1.2	1.1	.7	1.1	- .1	2.3
1964	.8	- .9	.6	-1.6	1.1	- .8	.8	.6	1.6	.1	- .2	-1.9
1965	- .1	2.5	.6	1.0	1.2	- .5	- .6	2.7	.4	.4	.9	- .3
1966	- .8	1.6	3.0	-6.9	-1.4	4.4	-1.0	1.4	1.6	.1	0	-1.7
1967	1.2	-3.2	1.0	.9	.6	.8	-2.4	1.2	3.4	-2.8	1.2	-1.8
1968	3.7	-7.2	4.4	- .1	.6	1.6	2.9	-1.9	1.8	- .9	1.7	- .3
1969	.1	2.1	-1.9	-1.9	.6	.8	-1.3	.5	1.0	1.3	- .7	.6

[1]Derived from data in Table 4-10.

TABLE 4-12

DESIRED MONETARY POLICY WITH RESPECT TO GROWTH IN CANADA DEFINED IN TERMS OF HOMOGENEOUS PERIODS OF TIME.

Homogeneous Period of Time	Desired Monetary Policy[1]	Average Rate of Monthly Growth For Period
Jan 1954 - Oct 1954	Ex	- .15 %
Nov 1954 - Oct 1955	NA	1.68 %
Nov 1955 - Feb 1956	Ex	- .15 %
Mar 1956 - Jul 1956	NA	1.34 %
Aug 1956 - May 1957	Ex	- .180%
Jun 1957 - Jan 1958	NA	4.60 %
Feb 1958 - Sep 1958	Ex	- .08 %
Oct 1958 - Feb 1959	NA	1.40 %
Mar 1959 - Mar 1961	Ex	- .10 %
Apr 1961 - Mar 1962	NA	.49 %
Apr 1962 - Sep 1962	Ex	- .38 %
Oct 1962 - Sep 1964	NA	.45 %
Oct 1964 - Jan 1965	Ex	- .53 %
Feb 1965 - Mar 1966	NA	.86 %
Apr 1966 - Feb 1967	Ex	- .50 %
Mar 1967 - Sep 1967	NA	.79 %
Oct 1967 - Feb 1968	Ex	-1.38 %
Mar 1968 - Dec 1969	NA	.495%

[1] Ex - Expansionary policy
NA - Not appropriate

TABLE 4-13

ACTUAL MONETARY POLICY COMPARED TO DESIRED MONETARY POLICY IN CANADA WITH RESPECT TO GROWTH

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Policy
1954	Ex	Ex	Ex	Ex	Ex	Ex	Ex	Ex	Ex	Ex	NA	NA	Desired
	ex	ex	ex	ex	ex	ex	ex	ex	ex	ex	ex	ex	Actual
1955	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Ex	Ex	Desired
	ex	ex	ex	ex	ex	ex	ex	ex	con	con	con	con	Actual
1956	Ex	Ex	NA	NA	NA	NA	NA	Ex	Ex	Ex	Ex	Ex	Desired
	con	con	con	con	con	con	con	con	con	con	con	con	Actual
1957	Ex	Ex	Ex	Ex	Ex	NA	NA	NA	NA	NA	NA	NA	Desired
	con	con	con	con	con	con	con	con	con	ex	ex	ex	Actual
1958	NA	Ex	Ex	Ex	Ex	Ex	Ex	Ex	Ex	NA	NA	NA	Desired
	ex	ex	ex	ex	ex	ex	ex	ex	ex	ex	con	con	Actual
1959	NA	NA	Ex	Ex	Ex	Ex	Ex	Ex	Ex	Ex	Ex	Ex	Desired
	con	con	con	con	con	con	con	con	con	con	con	con	Actual
1960	Ex	Ex	Ex	Ex	Ex	Ex	Ex	Ex	Ex	Ex	Ex	Ex	Desired
	con	con	con	con	con	con	con	ex	ex	ex	ex	ex	Actual
1961	Ex	Ex	Ex	NA	NA	NA	NA	NA	NA	NA	NA	NA	Desired
	ex	ex	ex	ex	ex	ex	ex	ex	ex	ex	ex	ex	Actual
1962	NA	NA	NA	Ex	Ex	Ex	Ex	Ex	Ex	NA	NA	NA	Desired
	ex	ex	ex	ex	ex	ex	ex	ex	ex	ex	ex	ex	Actual
1963	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Desired
	ex	ex	ex	ex	ex	ex	ex	ex	ex	ex	ex	ex	Actual
1964	NA	NA	NA	NA	NA	NA	NA	NA	NA	Ex	Ex	Ex	Desired
	ex	ex	ex	ex	ex	ex	ex	ex	ex	ex	ex	ex	Actual

TABLE 4-13 (continued)

ACTUAL MONETARY POLICY COMPARED TO DESIRED MONETARY POLICY IN CANADA WITH RESPECT TO GROWTH

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Policy
1965	Ex	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Desired
	ex	ex	ex	ex	ex	ex	ex	ex	ex	ex	ex	ex	Actual
1966	NA	NA	NA	Ex	Ex	Ex	Ex	Ex	Ex	Ex	Ex	Ex	Desired
	ex	ex	ex	ex	ex	ex	ex	ex	ex	ex	ex	ex	Actual
1967	Ex	Ex	NA	NA	NA	NA	NA	NA	NA	Ex	Ex	Ex	Desired
	ex	ex	ex	ex	ex	ex	ex	ex	ex	ex	ex	ex	Actual
1968	Ex	Ex	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Desired
	con	con	con	ex	ex	ex	ex	ex	ex	ex	ex	ex	Actual
1969	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Desired
	ex	ex	ex	con	con	con	con	con	con	con	ex	ex	Actual

Desired

Ex - Expansionary

NA - Not appropriate

Actual

ex - expansionary

con - contractionary

effectiveness level in the Atlantic Region says very much for the use of monetary policy as a short run stabilizer for the economy.

Inflation

The role of prices in the economy and the role that prices play in the policymaking process is, in many ways, unique from the other indicators of need. Price movements tend to be contracyclical, in terms of monetary needs, to growth and unemployment, that is, rapid growth and/or high level employment will often lead to a rapid increase in prices, and attempts to control prices will often tend to hold down the rate of growth and increase the level of unemployment. Further, inflation affects a broader base of the population than does an unemployment level of five to ten percent. Also, a decrease in the growth rate will cause less of an adverse reaction by the general public than a corresponding increase in prices might. Price movements also tend to be distributed on a more equal geographical and demographic basis than the other two indicators of need, as pointed out in Chapter III.

It was suggested in Chapter III that the economic conditions within the Atlantic Region play little, if any, role in determining the level or the rate of change of prices within that region. Instead, it was suggested that

price movements are inherited from Central Canada because of the close relationship of capital markets and price setting forces. In an effort to determine the extent to which this is true, the monetary needs and the movement of prices in the Atlantic Region are compared to the monetary needs and price movements of Canada as a whole.

The criteria by which inflation is evaluated are listed on page 26, Chapter III. Using this definition, inflation does not exist until prices are increasing at an annual rate of 2 1/2 percent or better. Depending upon the degree of inflation that exists, monetary policy is defined as follows:

Classification of Inflation	Classification of Monetary Policy
Mildly inflationary	Mildly contractionary
Inflationary	Contractionary
Extremely inflationary Hyper-inflationary	Extremely contractionary

It is assumed that if inflation does not exist, a "neutral monetary policy," defined as a growth rate of the money supply of .363 percent per month, is implemented.

Table 4-14 lists the Halifax consumer price index, which serves as a proxy for the consumer price index of the Atlantic Region, and Table 4-15 lists the percentage increases in this consumer price index from month to month. In Chapter III the various degrees of inflation were defined in terms of annual rates of increase and in order to make use of the monthly rates of increase, the annual

TABLE 4-14

HALIFAX TOTAL CONSUMER PRICE
INDEX 1961 = 100

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1953	87.8	88.0	87.9	87.7	87.3	87.7	88.5	88.9	88.6	88.2	88.4	88.1
1954	88.1	88.6	88.5	88.6	88.4	88.6	88.6	89.7	89.3	89.2	89.1	89.1
1955	88.9	89.2	89.1	89.2	89.8	89.2	89.3	89.6	89.6	89.4	89.4	89.3
1956	89.1	88.8	88.9	89.3	89.3	90.0	90.3	91.5	91.2	91.6	91.8	92.2
1957	92.3	92.5	92.4	92.9	92.7	92.7	92.8	93.9	94.1	93.9	94.3	94.2
1958	93.9	94.3	95.5	96.1	95.5	95.3	95.6	95.9	95.8	96.3	96.7	96.7
1959	97.1	97.4	97.3	97.4	97.6	97.7	97.7	98.4	98.3	98.8	99.4	99.1
1960	98.9	98.8	98.6	98.8	98.7	98.8	98.4	98.6	98.9	99.7	99.9	99.9
1961	99.5	99.6	99.6	100.0	99.6	99.5	99.5	100.2	100.2	100.5	100.9	100.8
1962	100.6	100.9	100.9	101.2	100.5	100.9	101.4	102.2	101.9	101.8	101.9	101.8
1963	101.9	101.9	102.2	102.1	102.2	102.7	102.7	103.1	102.4	102.1	102.3	102.6
1964	102.4	102.4	102.4	102.6	102.6	102.9	103.3	103.3	103.0	102.3	102.6	103.1
1965	103.2	103.5	103.5	103.9	104.2	105.1	105.4	105.4	104.9	104.7	105.3	105.8
1966	105.4	105.8	106.5	107.3	107.2	107.5	107.8	108.2	108.1	108.2	108.3	108.3
1967	108.2	108.4	108.6	109.1	109.2	109.5	110.0	111.4	110.8	110.9	111.3	111.6
1968	112.3	112.7	112.5	113.4	113.4	114.2	114.6	115.3	115.4	114.7	115.4	115.9
1969	115.8	115.5	115.9	119.0	119.3	120.0	120.4	121.4	121.2	121.1	122.0	122.6

Source: "Prices and Price Indexes," Dominion Bureau of Statistics, Price Division, Ottawa, The Queen's Printer, 1953-1970.

TABLE 4-15

MONTHLY PERCENTAGE CHANGE IN TOTAL CONSUMER PRICE INDEX--HALIFAX[1]
1961 = 100

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1954	---	.6	- .1	.1	- .2	.2	---	.1	- .5	- .1	- .1	---
1955	- .2	.3	- .1	.1	.7	+ .7	.1	.3	---	- .2	---	- .1
1956	- .2	- .3	.1	.5	---	.8	.3	1.3	- .3	.3	.2	.4
1957	.1	.3	- .1	.6	- .2	---	.1	1.2	.2	- .2	.4	- .1
1958	- .3	.4	1.3	.6	- .6	- .2	.3	.3	- .1	.5	.4	---
1959	.4	.3	.1	.1	.2	.1	---	.7	- .1	.5	.6	- .3
1960	- .2	- .1	- .2	.2	- .1	.1	- .4	.2	.3	.8	.2	---
1961	- .4	.1	---	.4	- .4	- .1	---	.7	---	- .2	.4	- .1
1962	- .2	.3	---	.3	- .7	.4	.5	.8	- .3	- .1	.1	- .1
1963	.1	---	.3	- .1	.1	.5	---	.4	- .7	- .3	.2	.3
1964	- .2	---	0	.2	---	.3	.4	---	- .3	- .7	.3	.5
1965	.1	.3	---	.4	.3	.9	.3	---	- .5	- .2	.6	.5
1966	- .4	.4	.7	.8	- .1	.3	.3	.4	- .1	.1	.1	---
1967	- .1	.2	.2	.5	.1	.3	.5	1.3	- .5	.1	.4	.3
1968	.6	.4	- .2	.8	---	.7	.4	.6	.1	- .6	.6	.4
1969	- .1	- .3	.3	2.7	.3	.6	.3	.8	- .2	- .1	.7	.5

[1]Derived from data in Table 4-14.

rates are defined in terms of the equivalent monthly rates as follows:

Annual Rates of Increase	Degree of Inflation	Equivalent Monthly Rates of Increase
Less than 2 1/2%	Not appropriate	Less than .205%
2 1/2 to 3 1/2%	Mild inflation	.205 to .287%
3 1/2 to 5%	Inflation	.287 to .407%
5 through 10%	Extreme inflation	.407 through .796%
Over 10%	Hyper-inflation	Over .796%

Table 4-16 lists, by homogeneous periods of time, the monetary policy needs of the Atlantic Provinces in terms of inflationary pressures. The column on the left identifies the periods of time in which price movements were homogeneous in nature. The middle column presents the monetary policy that was called for by the conditions of inflation that existed in the four Atlantic Provinces. The numbers in the right hand column represent the average monthly growth rates of prices during the homogeneous time periods.

Table 4-17 shows the relationship between the actual monetary policy, as carried out by the Bank of Canada, and the desired monetary policy, in terms of inflation, for the Atlantic Region. There were only 77 months, or 40 percent of the time, in the 16 year period when inflation in the Atlantic Provinces called for a contractionary monetary policy. Of the 77 months there were 11 months, or 14.3 percent, in which the actual policy carried out was exactly the same as the desired monetary policy. During 51 of the 77 months, or 66.2 percent, an expansionary policy was

TABLE 4-16

CLASSIFICATION OF DESIRED MONETARY POLICY WITH RESPECT TO INFLATION IN THE ATLANTIC REGION

Homogeneous Period of Time	Classification of Monetary Policy[1]	Average Monthly Rate of Inflation Per Period
Jan 1954 - May 1956	NA	.010
Jun 1956 - Apr 1957	Con	.355
May 1957 - Jan 1958	NA	.122
Feb 1958 - Feb 1959	Mcon	.276
Mar 1959 - May 1962	NA	.066
Jun 1962 - Aug 1962	Xcon	.567
Sep 1962 - Oct 1964	NA	.004
Nov 1964 - Jul 1965	Con	.344
Aug 1965 - Oct 1965	NA	-.233
Nov 1965 - Aug 1966	Con	.350
Sep 1966 - May 1967	NA	.111
Jun 1967 - Dec 1969	Con	.377

[1] Xcon - Extremely contractionary
Con - Contractionary
Mcon - Mildly contractionary
NA - Not appropriate

TABLE 4-17

ACTUAL MONETARY POLICY COMPARED TO DESIRED MONETARY POLICY IN THE ATLANTIC REGION WITH RESPECT TO INFLATION

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Policy
1954	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Desired
	mex	mex	mex	mex	mex	mex	mex	mex	mex	mex	mex	mex	Actual
1955	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Desired
	xex	xex	xex	xex	ex	ex	ex	ex	mcon	mcon	mcon	mcon	Actual
1956	NA	NA	NA	NA	NA	Con	Con	Con	Con	Con	Con	Con	Desired
	mcon	mcon	mcon	mcon	mcon	mcon	mcon	mcon	mcon	mcon	mcon	mcon	Actual
1957	Con	Con	Con	Con	NA	NA	NA	NA	NA	NA	NA	NA	Desired
	mcon	mcon	mcon	mcon	mcon	mcon	mcon	mcon	mcon	mex	mex	mex	Actual
1958	NA	Mcon	Mcon	Mcon	Mcon	Mcon	Mcon	Mcon	Mcon	Mcon	Mcon	Mcon	Desired
	mex	mex	xex	xex	xex	xex	xex	xex	xex	xex	mcon	mcon	Actual
1959	Mcon	Mcon	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Desired
	mcon	mcon	mcon	mcon	mcon	mcon	mcon	xcon	xcon	xcon	xcon	xcon	Actual
1960	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Desired
	mcon	mcon	mcon	mcon	mcon	mcon	mcon	ex	ex	ex	ex	ex	Actual
1961	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Desired
	ex	ex	ex	ex	ex	ex	ex	ex	mex	mex	mex	mex	Actual
1962	NA	NA	NA	NA	NA	Xcon	Xcon	Xcon	NA	NA	NA	NA	Desired
	mex	mex	mex	mex	mex	mex	mex	mex	mex	mex	mex	mex	Actual
1963	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Desired
	mex	mex	mex	mex	mex	mex	mex	mex	mex	mex	mex	mex	Actual
1964	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Con	Con	Desired
	mex	mex	mex	mex	mex	mex	mex	mex	mex	mex	mex	ex	Actual

TABLE 4-17 (continued)

ACTUAL MONETARY POLICY COMPARED TO DESIRED MONETARY POLICY IN THE ATLANTIC REGION WITH RESPECT TO INFLATION

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Policy
1965	Con	Con	Con	Con	Con	Con	Con	NA	NA	NA	Con	Con	Desired
	xex	xex	xex	xex	xex	xex	xex	xex	mex	mex	mex	mex	Actual
1966	Con	Con	Con	Con	Con	Con	Con	Con	NA	NA	NA	NA	Desired
	mex	mex	mex	mex	mex	mex	mex	mex	mex	mex	mex	mex	Actual
1967	NA	NA	NA	NA	NA	Con	Con	Con	Con	Con	Con	Con	Desired
	xex	xex	xex	xex	xex	xex	xex	xex	xex	xex	xex	mcon	Actual
1968	Con	Con	Con	Con	Con	Con	Con	Con	Con	Con	Con	Con	Desired
	mcon	mcon	mcon	xex	xex	xex	xex	xex	mex	mex	mex	mex	Actual
1969	Con	Con	Con	Con	Con	Con	Con	Con	Con	Con	Con	Con	Desired
	xex	xex	xex	con	con	con	con	con	con	con	mex	mex	Actual

Desired

Xcon - Extremely contractionary

Con - Contractionary

Mcon - Mildly contractionary

NA - Not appropriate

Actual

xex - extremely expansionary

ex - expansionary

mex - mildly expansionary

xcon - extremely contractionary

con - contractionary

mcon - mildly contractionary

carried out when the region called for a contractionary policy. Just over 19 percent of the time, or 15 months, the actual monetary policy was of a contractionary nature, as called for in the region, but it was not of sufficient strength. This means that 33.7 percent of the time monetary policy was of a contractionary nature when a contractionary policy was called for by the Atlantic Region.

If comments above, concerning the relationship of price movements in the Atlantic Region and price movements in Canada as a whole, are true, it can be expected that the effectiveness of monetary policy for Canada will be very similar to the effectiveness of monetary policy for the Atlantic Provinces.

Table 4-18 lists the consumer price index for Canada (1961 = 100); Table 4-19 gives the monthly rate of change in the consumer price index. In designating the various degrees of inflation, the same criteria were used as in determining the degrees of inflation in the Atlantic Region (see page 69). Table 4-20 classifies desired monetary policy in Canada according to the rate of inflation during homogeneous periods of time. Using Table 4-20, Canadian desires for monetary policy, with respect to inflation, can be determined on a monthly basis and compared to the actual monetary policy that was carried out in Canada. This comparison is given in Table 4-21.

Once again "NA" defines those periods for which monetary policy was not appropriate. That is, prices in

TABLE 4-18

CONSUMERS' PRICE INDEX FOR CANADA
1961 = 100

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1953	89.6	89.4	88.9	88.7	88.5	88.9	89.3	89.6	89.9	90.3	89.9	89.6
1954	89.6	89.6	89.4	89.5	89.4	89.9	89.9	90.6	90.4	90.4	90.4	90.2
1955	90.1	90.0	89.8	89.9	90.1	89.7	89.8	90.1	90.4	90.5	90.5	90.5
1956	90.4	90.1	90.1	90.2	90.2	91.2	91.7	92.2	92.1	92.7	93.1	93.2
1957	93.1	93.3	93.3	93.6	93.7	94.1	94.3	94.9	95.4	95.5	95.4	95.3
1958	95.5	95.7	96.2	96.9	96.8	96.8	96.5	96.9	97.2	97.5	97.8	97.7
1959	97.6	97.3	97.1	97.1	97.2	97.4	97.4	97.8	98.4	99.1	99.3	99.0
1960	98.7	98.5	98.2	98.7	98.6	98.8	98.7	99.0	99.4	100.2	100.3	100.3
1961	100.0	99.8	99.9	99.9	99.8	99.8	99.8	99.9	99.9	100.0	100.4	100.5
1962	100.4	100.5	100.4	100.9	100.7	101.0	101.4	101.7	101.4	101.8	102.1	102.1
1963	102.2	102.2	102.2	102.4	102.4	102.8	103.3	103.6	103.3	103.4	103.7	103.9
1964	103.9	104.1	104.2	104.5	104.5	104.7	105.4	105.3	105.0	105.0	105.2	105.9
1965	106.0	106.2	106.3	106.6	106.8	107.6	108.0	107.9	107.7	107.8	108.4	109.0
1966	109.3	110.0	110.2	110.8	111.0	111.3	111.7	112.2	112.3	112.5	112.6	112.9
1967	113.0	113.1	113.4	114.4	114.6	115.2	116.3	116.8	116.6	116.5	116.9	117.5
1968	118.1	118.2	118.6	119.3	119.3	119.7	120.4	120.7	121.1	121.4	121.9	122.3
1969	122.6	122.6	123.2	124.6	124.9	125.9	126.4	126.9	126.8	126.8	127.4	127.9

Source: "Prices and Price Indexes," Dominion Bureau of Statistics, Price Division, Ottawa, The Queen's Printer, 1953-1970.

TABLE 4-19

MONTHLY PERCENTAGE CHANGE IN TOTAL CONSUMERS PRICE INDEX--CANADA[1]
1961 = 100

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1954	---	---	- .2	.1	- .1	.6	---	.8	- .2	---	---	- .2
1955	- .1	- .1	- .2	.1	- .2	- .4	.1	.3	.3	.1	---	---
1956	- .1	- .3	---	.1	---	1.1	.5	.5	- .1	.7	.4	.1
1957	- .1	.2	---	.3	.1	.4	.2	.6	.5	.1	- .1	- .1
1958	.2	.2	.5	.7	- .1	---	- .3	.4	.3	.3	.3	- .1
1959	- .1	- .3	- .2	---	.1	.2	---	.4	.6	.7	.2	- .3
1960	- .3	- .2	- .3	.5	- .1	.2	- .1	.3	.4	.8	.1	---
1961	- .3	- .2	.1	---	- .1	---	---	.1	---	.1	.4	.1
1962	- .1	.1	- .1	.5	- .2	.3	.4	.3	- .3	.4	.3	---
1963	.1	---	---	.2	---	.4	.5	.3	- .3	.1	.3	.2
1964	---	.2	.1	.3	---	.2	.7	- .1	- .3	---	.2	.7
1965	.1	.2	.1	.3	.2	.8	.4	- .1	- .2	.1	.6	.6
1966	.3	.7	.2	.6	.2	.3	.4	.4	.1	.2	.1	.3
1967	.1	.1	.3	.9	.2	.5	1.0	.4	- .2	- .1	.3	.5
1968	.5	.1	.3	.6	---	.3	.6	.2	.3	.2	.4	.3
1969	.2	---	.5	1.1	.2	.8	.4	.4	- .1	---	.5	.4

[1]Derived from Data in Table 4-18.

TABLE 4-20

CLASSIFICATION OF DESIRED MONETARY POLICY WITH RESPECT TO INFLATION IN CANADA

Homogeneous Period of Time	Classification of Monetary Policy[1]	Average Monthly Rate of Inflation Per Period
Jan 1954 - May 1956	NA	.014
Jun 1956 - Nov 1956	Xcon	.517
Dec 1956 - Jul 1958	NA	.170
Aug 1958 - Nov 1958	Con	.325
Dec 1958 - Jul 1959	NA	.050
Aug 1959 - Oct 1959	Xcon	.567
Nov 1959 - Jul 1960	NA	-.044
Aug 1960 - Oct 1960	Xcon	.500
Nov 1960 - May 1962	NA	.026
Jun 1962 - Nov 1962	Mcon	.233
Dec 1962 - May 1963	NA	.050
Jun 1963 - Aug 1963	Con	.400
Sep 1963 - Oct 1965	NA	.162
Nov 1965 - Aug 1966	Xcon	.430
Sep 1966 - Feb 1967	NA	.150
Mar 1967 - Dec 1969	Con	.353

[1] Xcon - Extremely contractionary
Con - Contractionary
Mcon - Mildly contractionary
NA - Not appropriate

TABLE 4-21

ACTUAL MONETARY POLICY COMPARED TO DESIRED MONETARY POLICY IN CANADA WITH RESPECT TO INFLATION

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Policy
1954	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Desired
	mex	mex	mex	mex	mex	mex	mex	mex	mex	mex	mex	mex	Actual
1955	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Desired
	xex	xex	xex	xex	ex	ex	ex	ex	mcon	mcon	mcon	mcon	Actual
1956	NA	NA	NA	NA	NA	Xcon	Xcon	Xcon	Xcon	Xcon	Xcon	NA	Desired
	mcon	mcon	mcon	mcon	mcon	mcon	mcon	mcon	mcon	mcon	mcon	mcon	Actual
1957	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Desired
	mcon	mcon	mcon	mcon	mcon	mcon	mcon	mcon	mcon	mex	mex	mex	Actual
1958	NA	NA	NA	NA	NA	NA	NA	Con	Con	Con	Con	NA	Desired
	mex	mex	xex	xex	xex	xex	xex	xex	xex	xex	mcon	mcon	Actual
1959	NA	NA	NA	NA	NA	NA	NA	Xcon	Xcon	Xcon	NA	NA	Desired
	mcon	mcon	mcon	mcon	mcon	mcon	mcon	mcon	xcon	xcon	xcon	xcon	Actual
1960	NA	NA	NA	NA	NA	NA	NA	Xcon	Xcon	Xcon	NA	NA	Desired
	mcon	mcon	mcon	mcon	mcon	mcon	mcon	ex	ex	ex	ex	ex	Actual
1961	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Desired
	ex	ex	ex	ex	ex	ex	ex	ex	mex	mex	mex	mex	Actual
1962	NA	NA	NA	NA	NA	Mcon	Mcon	Mcon	Mcon	Mcon	Mcon	NA	Desired
	mex	mex	mex	mex	mex	mex	mex	mex	mex	mex	mex	mex	Actual
1963	NA	NA	NA	NA	NA	Con	Con	Con	NA	NA	NA	NA	Desired
	mex	mex	mex	mex	mex	mex	mex	mex	mex	mex	mex	mex	Actual
1964	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Desired
	mex	mex	mex	mex	mex	mex	mex	mex	mex	mex	mex	xex	Actual

TABLE 4-21 (continued)

ACTUAL MONETARY POLICY COMPARED TO DESIRED MONETARY POLICY IN CANADA WITH RESPECT TO INFLATION

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Policy
1965	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Xcon	Xcon	Desired
	xex	xex	xex	xex	xex	xex	xex	xex	mex	mex	mex	mex	Actual
1966	Xcon	Xcon	Xcon	Xcon	Xcon	Xcon	Xcon	Xcon	NA	NA	NA	NA	Desired
	mex	mex	mex	mex	mex	mex	mex	mex	mex	mex	mex	mex	Actual
1967	NA	NA	Con	Con	Con	Con	Con	Con	Con	Con	Con	Con	Desired
	xex	xex	xex	xex	xex	xex	xex	xex	xex	xex	xex	mcon	Actual
1968	Con	Con	Con,	Con	Con	Con	Con	Con	Con	Con	Con	Con	Desired
	mcon	mcon	mcon	xex	xex	xex	xex	xex	mex	mex	mex	mex	Actual
1969	Con	Con	Con	Con	Con	Con	Con	Con	Con	Con	Con	Con	Desired
	xex	xex	xex	con	con	con	con	con	con	con	mex	mex	Actual

Desired

Xcon - Extremely contractionary

Con - Contractionary

Mcon - Mildly contractionary

NA - Not appropriate

Actual

xex - extremely expansionary

ex - expansionary

mex - mildly expansionary

xcon - extremely contractionary

con - contractionary

mcon - mildly contractionary

Canada were increasing at a rate less than 2.5 percent per year. According to Table 4-21 there were inflationary pressures in 69 of the 192 months, or 35.9 percent of the time, compared to 77 months in the Atlantic Region. Of the 69 months in which inflation was a problem, 48 of them or 69.6 percent, were characterized by monetary policy of an expansionary nature when a contractionary policy was called for. This compares with 66.2 percent of the inflationary months for the Atlantic Region during which policy was expansionary when a contractionary policy was needed. Only nine months, or 13 percent of the time, was the actual policy of the same degree and type as the desired policy. This corresponds to 11 months, or 14.3 percent, in the Atlantic Region. During 11 of the 69 inflationary months, or 15.9 percent, the actual policy was of a contractionary nature when desired but not of sufficient strength. A similar result occurred in the Atlantic Region analysis for 19 percent of the time or 15 months. In 20 of the 69 months, or 29 percent, the actual policy was of a contractionary nature as needed for Canada, compared to 33.7 percent for the Atlantic Region.

The above comparison between the analysis for Canada and the analysis for the Atlantic Provinces points out the close relationship between the two price movements, neither of which presents a very impressive record for monetary policy.

Table 4-22 gives further support to the hypothesis that price movements in the Atlantic Region are governed by the economic conditions of Canada as a whole, Central Canada playing the major role, rather than by economic conditions within the Atlantic Region. Table 4-22 gives a month by month comparison of inflation in the Atlantic Region and Canada. About 67.7 percent of the time inflation in the two regions was either identical or no inlfation existed. In only 18.8 percent of the months did inflation exist in one of the areas and not in the other. Four different times the two areas concerned went from a period of inflation to a period of no inflation or vice-versa in the same month. Such changes occurred 15 times in Canada and 11 times in the Atlantic Provinces. Using 1961 as the base year, over the sixteen year period the price index for Canada went from 89.9 in 1954 to 125.5 in 1969, an increase of 39.6 percent. During this same time period, prices in the Atlantic Region increased from 88.8 to 119.5, an increase of 34.6 percent.

The effectiveness of Canadian Monetary Policy in fulfilling the needs of the Atlantic Region had mixed results. Concerning unemployment, there was a definite disadvantage for the citizens of the Atlantic Region compared to the rest of Canada but this, however, could be all due to structural problems. With respect to growth, it was found that monetary policy was not only properly directed but possibly more effective than many would

TABLE 4-22

A COMPARISON OF INFLATION IN THE ATLANTIC REGION TO INFLATION IN CANADA

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Region
1954	No	No	No	No	No	No	No	No	No	No	No	No	Atlantic
	No	No	No	No	No	No	No	No	No	No	No	No	Canada
1955	No	No	No	No	No	No	No	No	No	No	No	No	Atlantic
	No	No	No	No	No	No	No	No	No	No	No	No	Canada
1956	No	No	No	No	No	I	I	I	I	I	I	I	Atlantic
	No	No	No	No	No	XI	XI	XI	XI	XI	XI	No	Canada
1957	I	I	I	I	No	No	No	No	No	No	No	No	Atlantic
	No	No	No	No	No	No	No	No	No	No	No	No	Canada
1958	No	MI	MI	MI	MI	MI	MI	MI	MI	MI	MI	MI	Atlantic
	No	No	No	No	No	No	No	I	I	I	I	No	Canada
1959	MI	MI	No	No	No	No	No	No	No	No	No	No	Atlantic
	No	No	No	No	No	No	No	XI	XI	XI	No	No	Canada
1960	No	No	No	No	No	No	No	No	No	No	No	No	Atlantic
	No	No	No	No	No	No	No	XI	XI	XI	No	No	Canada
1961	No	No	No	No	No	No	No	No	No	No	No	No	Atlantic
	No	No	No	No	No	No	No	No	No	No	No	No	Canada
1962	No	No	No	No	No	XI	XI	XI	No	No	No	No	Atlantic
	No	No	No	No	No	MI	MI	MI	MI	MI	MI	No	Canada
1963	No	No	No	No	No	No	No	No	No	No	No	No	Atlantic
	No	No	No	No	No	I	I	I	No	No	No	No	Canada
1964	No	No	No	No	No	No	No	No	No	No	I	I	Atlantic
	No	No	No	No	No	No	No	No	No	No	No	No	Canada

TABLE 4-22 (continued)

A COMPARISON OF INFLATION IN THE ATLANTIC REGION TO INFLATION IN CANADA

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Region
1965	I	I	I	I	I	I	I	No	No	No	I	I	Atlantic
	No	No	No	No	No	No	No	No	No	No	XI	XI	Canada
1966	I	I	I	I	I	I	I	I	No	No	No	No	Atlantic
	XI	XI	XI	XI	XI	XI	XI	XI	No	No	No	No	Canada
1967	No	No	No	No	No	I	I	I	I	I	I	I	Atlantic
	No	No	I	I	I	I	I	I	I	I	I	I	Canada
1968	I	I	I	I	I	I	I	I	I	I	I	I	Atlantic
	I	I	I	I	I	I	I	I	I	I	I	I	Canada
1969	I	I	I	I	I	I	I	I	I	I	I	I	Atlantic
	I	I	I	I	I	I	I	I	I	I	I	I	Canada

No - No Inflation Present

I - Inflationary

MI - Mildly Inflationary

XI - Extremely Inflationary

believe. Most of the time monetary policy seems to have been accommodating. As far as inflation is concerned, it was pointed out that prices are not a good indication of the needs of the Atlantic Region, instead, price changes are inherited from the rest of Canada due to the high mobility of goods, factors and capital. All of this lends some support to the Mundell theory that the control of inflation is determined by the willingness of policymakers to allow unemployment to remain unchecked in the high unemployment areas. From this, it could be concluded that the effectiveness of monetary policy in dealing with inflation was due to its ineffectiveness in dealing with unemployment. This seeming "dilemma" faced by the monetary policymaker suggests that he must determine how much of a sacrifice regarding unemployment must be made in order to hold the line on inflation.

In recent years an interesting debate concerning the trade off between inflation and unemployment has arisen. Phillips,[1] in 1958 presented what has come to be known as the "Phillips Curve" which suggests that the rate of increase in money wages for the economy increases as the rate of unemployment declines. Later individuals such as

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[1] A. W. Phillips, "The Relationship between Unemployment and the Rate of Change of Money Wage Rates in the United Kingdom, 1861-1957," Economica, XXV, 1958, pp. 283-299.

Phelps[1] and Friedman[2] suggested that such a relationship was of a short run nature and that in the longer run it is the real wage rather than the money wage which is important in determining the level of unemployment. Thus the term "natural rate of unemployment" was coined to separate the real forces from the monetary forces. The "natural rate of unemployment" will be consistent with the equilibrium real wage rate.

While Friedman recognizes a temporary trade-off between inflation and unemployment he finds no permanent trade-off.[3] The temporary trade-off comes from an unanticipated increasing rate of inflation which tends to lower the real wage and hence increase employment. However, there is no permanent trade-off because expectations of rising prices will occur and this will raise the real wage rate and force the unemployment rate back toward a "natural" rate of unemployment. However, over the short run period, prices do tend to rise more rapidly as the unemployment rate is reduced. Thus in the short-run, policy makers need to consider the trade-off between inflation and unemployment.

It has been shown in this chapter that differential effects of monetary policy exist between Canada and the Atlantic Region, especially in terms of unemployment rates, and that these differential effects tend to be a burden to

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[1]E. S. Phelps, "Money-Wage Dynamics and Labor-Market Equilibrium," Journal of Political Economy, LXXVI, 1968, pp. 678-711.

[2]Milton Friedman, op. cit., pp. 1-17.

[3]Ibid.

the Atlantic Region. However, it could be argued that such differential effects are offset by such actions as. government credit policy. While this study is not concerned directly with such an argument, a brief dissucssion on this topic is included in Appendix A.

The above analysis of monetary policy is based upon the assumption that lags in the effect of monetary policy are non-existent. It was also assumed that each of the indicators of need existed independently and that monetary policy was affecting only one at a time. Both of these assumptions are dropped in the following chapter.

CHAPTER V

LAGS IN THE EFFECT OF MONETARY POLICY

The effects of the inside and outside lags of monetary policy upon the Atlantic Region are examined now. The inside lag is the interval of time between an indicator signal for a desired monetary change and implementation of the desired monetary policy, as evidenced by the money supply. The intermediate lag is included as part of the inside lag because there is no way of knowing when the policymakers at the Bank of Canada become aware of a problem and when a policy is implemented. The outside lag is the period of time between when the money supply indicates a change in policy and when that monetary policy becomes effective, as shown by one of the indicators.

In the initial stages of this study the plan was to measure the inside and outside lags of monetary policy with reference to the Atlantic Provinces and then compare those lags with the corresponding lags that Johnson and Winder had found for the Canadian economy as a whole. Because the techniques used in this study differ somewhat from the techniques used by Johnson and Winder, it became necessary to measure the inside and outside lags for both the national economy and the regional economy. Not only are the inside and outside lags analyzed but also the degree of variability in these lags. The methods for measuring the inside lags

closely parallel those used by Johnson and Winder except this study relies more upon the polynomial distributed lag function. The techniques used in this study for measuring the outside lag are also similar to those used by Johnson and Winder, however, the indicators used to determine the point in time at which monetary policy became an influence are different.

The Polynomial Distributed Lag

The basic assumption behind the polynomial distributed lag is that the lag is finite in length and is known not to exceed p periods. The general model is:

$$(1) \quad Y_t = W_o X_t + W_1 X_{t-1} + \cdots W_{p-1} X_{t-p+1} + e_t$$

$$\text{or } Y_t = \sum_{i=o}^{p-1} W_i X_{t-i} + e_t$$

where Y_t = dependent variable

X_t = independent variable

$W_o, W_1, \ldots$ lag coefficients and weights. Together they are called the lag distribution.

Using the usual regression techniques, the W_is cannot be estimated separately. However, the polynomial distributed lag function imposes parametric restrictions on the lag structure such that the above collinearity is removed. Also since equation (1) is a special case of the general regression model, the usual assumptions of regression are assumed, that is:

$$E(e_t) = 0$$

$$V(e_t) = \sigma^2$$

$$Cov(e_t, e_t) = 0, t \neq t$$

$$Cov(e, x) = 0$$

and ordinary least squares is the minimum variance estimator. In addition it is assumed that the degree of the polynomial is less than the number of lags in the lag distribution.

Because of the infinite number of combinations of lags and degrees of polynomials that are possible, it is necessary to start with some ground rules for approaching the correct length of lag and the correct degree of the polynomial. The following symptoms of incorrect length or order of lag specification are used as guides in determining the proper length of the outside lag in effect of monetary policy.[1]

(1) If the last few coefficients are so large that the distribution ends discontinuously, this means that the length of the distributed lag is too short.

(2) When the distribution changes signs in the middle it may indicate that the degree is too low.

(3) If the lag distribution slopes upward at the end, it is usually a sign that the length is too short and/or the degree of the polynomial is too low.

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[1]Robert E. Hall, The Theory and Application of Polynomial Distributed Lags, Lecture Notes prepared for the Data Resources, Inc. Educational Program, "The Estimation of Dynamic Economic and Financial Models," held at the Waldorf-Astoria Hotel, New York, New York, June 13-14, 1974.

(4) If the lag distribution cycles above and below zero toward the end, this may indicate the the length is too long. Polynomials are incapable of lying flat along the axis.

(5) When the lag distribution contains unexpected wiggles and the standard errors of the lag coefficients are large, this suggests that the degree of the polynomial may be too high.

Using the above information, the general area of the length of the lag can be determined. Once the approximate lag is determined, in most cases, reliance is upon the significance (t-statistic) of the sum of the lag coefficients to determine the best lag. A concept that is often used to find overlooked problems in a distributed lag analysis is used here as a starting point to determine the length of the lag. That is to use a long lag and a high power. The high power is often flexible enough to follow the approximate path of the lag distribution during the early stages of the lag, and thus it can serve as an indicator of the true lag. This is especially true when the actual degree of the polynomial is three or less.

Throughout this chapter the following mnemonics are used:

Rt = Constant dollar value of retail trade.
Un = Unemployment rate.
Inf = Consumer price index.[1]
MS = Currency plus chartered bank deposits.
A dash (—) above a variable such as Un indicates the variable is for the Atlantic Region. If no dash is present the variable is for the Canadian Economy as a whole.
Subscripts t, t-1, . . . etc. represent the time period involved.

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[1]Inflation in the Atlantic Region is measured by the consumer price index for Halifax.

The number in parentheses beneath each coefficient is the t-statistic for that coefficient.

Each of the equations in this chapter has the general form as follows:

$$(2)\quad Y_t = A_o + A_1X_{1_t} + A_2X_{2_t} + \cdots A_NX_{N_t} + \sum_{i=o}^{p-1} W_iZ + e_t$$

where Y = Dependent variable

$X_1, X_2, \ldots X_N$ = Normal independent variable

Z = Polynomial distributed lag variable

p = Length of the lag.[1]

Most of the equations in this chapter are based on the basic values which, along with the distributed lag, make first order autocorrelation[2] a problem. To overcome this problem the following procedure is followed:

1. Estimated the P (rho) value where

$$\hat{P} = 1 - \frac{D.W.}{2}$$

D.W. = Durbin Watson Statistic

2. Preform the autoregressive transformations where

$$\hat{Y}_t = Y_t - PY_{t-1}$$

$$\hat{X}_t = X_t - PX_{t-1}$$

3. Apply OLS (Ordinary Least Squares) to $\hat{Y}$ and $\hat{X}$.

This procedure eliminates the first order autocorrelation

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[1]Note that the length of the lag includes period t which is the period of initiation of the monetary policy.

[2]First order autocorrelation is used to describe the lag correlation of a particular time series with itself, lagged by one unit of time. This in turn causes the residuals (error terms) to be correlated with each other over time, which in turn violates the independency assumption necessary for least squares.

problem but does not affect the lag coefficients significantly and does not affect the length of the lag at all.

Even though a distributed lag analysis is used to determine this lag structure, it is important to specify the manner by which the distributed lag measures the lags with respect to monetary policy. Kareken and Solow,[1] for example, used the period of time needed for the total impact of a given monetary policy to run its course. Such a method would tend to overextend the lag. The lag could also be measured by examining the individual t-statistic of the lag coefficients of a distributed lag equation and determining at which period it became insignificant or, at which period the t-statistic was at a maximum. One could also use the distributed lag coefficients to measure the lag by looking at the point where it becomes maximum or by making an a priori judgment as to the percentage impact that needs to be completed. In terms of this analysis, it makes little difference which method is used. This study is not concerned so much with the exact length of the lag as it is with the difference between the lags in Canada and the lags in the Atlantic Region. In this analysis the lag is the mean lag, a measure of the center of gravity of the lag distribution, and is defined as:

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[1]John Kareken and Robert M. Solow, "Lags in Monetary Policy," The Commission of Money and Credit, Stabilization Policies (Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1963).

$$M = \frac{\sum_{i=0}^{p-1} i W_i}{S}$$

where W_i = the individual coefficients of the lag distribution

and S = the sum of the coefficients of the lag distribution

p = the number of lag periods

The standard deviation of the mean is used to determine the amount of variability in the length of the lag. This measure of variability is referred to as the maximum lag and is obtained by adding three standard deviations to the mean. Thus 99.0 percent of the lags are less than or equal to the maximum lag. In addition the period of "total impact" is referred to; this refers to the number of months necessary for the distributed lag to complete its impact upon the dependent variable.

Since this study is not interested in tracing the paths by which monetary policy affects the economy, the so-called structural type models are not used. Because of the complicated nature of the Canadian economy it would be very difficult to trace the path of monetary policy through the Canadian economy. Instead the equations used to determine the length of the various lags are monetary policy oriented--designed to relate a given objective with the money supply and the alternative goals of monetary policy. These alternative goals are used as independent variables where feasible because the attainment of any one

goal may be contingent upon the realization of the other or of another goal.

The Outside Lag With Respect to Growth

When growth is the goal of the central bank it is usually understood that monetary controls do not involve the authoritarian direction of resources into certain uses. Instead monetary policy takes a less direct approach which is indeed complicated. Regardless of this complication the contribution to growth by monetary controls would have to include the effects that these controls have upon maintaining a high level of employment and thus avoiding wastes and misdirected production. Thus any attempt to measure the outside lag with respect to growth should take into account some measure of the current level of unemployment within the region. The consumer price index is not used as an independent variable in equations (3) and (4) because the dependent variable, retail trade, is in constant dollars and thus inflation should not be a significant factor. The equations for measuring the outside lag of monetary policy with respect to growth are as follows:

$$(3)\quad \overline{Rt}_t = \underset{(28.6)}{77.20} \underset{(-5.3)}{-.08}\overline{Un}_t + \underset{1=o}{\overset{p-1}{\Sigma}} W_1 \underset{(29.6)}{*MS}$$

$$\bar{R}^2 = .89$$

$$\hat{P} = .89$$

$$(4)\quad Rt_t = 967.09 - 8.84 * Un_t + \sum_{l=o}^{p-1} W_l * MS_t$$

$$(31.2)(-2.1) \qquad (34.5)$$

$$\bar{R}^2 = .90$$

$$\hat{P} = .93$$

The values (W_l) of the lag coefficients are listed in Table 5-1 along with the cumulative percentage impact of the lag coefficients. The best measure of the effect of the money supply upon retail trade in equations (3) and (4) was obtained with a polynomial of degree one. A large percentage of the total impact occurs in the same month as the movement in the money supply after which the coefficients approach zero very rapidly. This same pattern occurs when using a higher degree polynomial, but the one degree polynomial makes the whole equation more robust. The average total length of time needed (total impact period) for the monetary policy to move through the economies of Canada and the Atlantic Region was five and seven months respectively. According to our definition the outside lag in the effect of monetary policy was 1.3 months for Canada and 2.0 months for the Atlantic Region. The extreme quickness with which the money supply affects the expansion of the economy suggests that the Bank of Canada should be able to have a great deal of influence upon growth in the Atlantic Region as well as in Canada. This of course represents an average lag and does not take into account the variation of the lag in the two economies. A look at the standard deviation of the two lag distributions

TABLE 5-I

ANALYSIS OF POLYNOMIAL DISTRIBUTED LAG COEFFICIENTS
CUMULATIVE PERCENTAGE IMPACT OF INDIVIDUAL
COEFFICIENTS BY MONTH FOR GROWTH

Months Lagged	ATLANTIC REGION Coefficients for Equation (3)	ATLANTIC REGION Cumulative Percent Impact	CANADA Coefficients for Equation (4)	CANADA Cumulative Percent Impact
0	.712E-03	25.0	.105E-01	33.0
1	.611E-03	46.1	.840E-02	60.0
2	.509E-03	64.1	.630E-02	80.0
3	.407E-03	79.1	.420E-02	93.0
4	.305E-03	89.0	.210E-02	100.0
5	.204E-03	96.0		
6	.102E-03	100.0		
Mean Lag	= 2.0	months	1.3	months
Standard Deviation	= 3.90	months	.89	months
Sum of Coefficients	= .285E-02		.315E-01	
Maximum Lag	= 13.70	months	3.97	months
Total Impact	= 7.0	months	5.0	months

shows a great deal more variation taking place in the Atlantic Region than in Canada. Since plus or minus three standard deviations will contain 99 percent of the lags, it can be said that 99 percent of the time the outside lag in the effect of monetary policy with respect to growth did not exceed 3.97 months for Canada. In the Atlantic Region 99 percent of the time the lag did not exceed 13.70 months. Thus while very little difference existed in the mean lags of the two areas, the variations about the mean lags were very different. This variation in the lag for the Atlantic Region means that the impact of monetary policy will be much more difficult to anticipate, and the central bank runs a much greater risk of implementing a monetary policy which will be contrary to the growth needs of the Atlantic Region. In this respect, it can be said that differential effects did take place.

A word of caution is necessary. Since growth in this study is defined as retail trade, it is possible, in fact probable, that a different lag would be found if growth were being measured by gross national expenditure and gross regional expenditure. Thus it is not reasonable to compare the lags found here with lags found with respect to the national or regional income accounts.

The Outside Lag With Respect to Unemployment

The equations for unemployment contain, as independent variables, growth, as measured by the retail

trade, and the distributed lag of money supply. Inflation is not an independent variable in equations (5) and (6) due to its close correlation with the money supply. The correlation coefficients between the money supply and the consumer price index for Canada and the Atlantic Region are .99 and .97 respectively. There is also high correlation between inflation and retail sales. Thus to introduce inflation into equations (5) and (6) would add a severe serial correlation problem without making a significant contribution to the equations. The equations for the Atlantic Provinces and for Canada are listed as equations numbered (5) and (6) respectively.

$$(5)\quad \overline{Un}_t = 22.15 - .12*\overline{Rt}_t - \sum_{i=o}^{p-1} W_i * MS$$

$$(9.9)(-4.5) \qquad (-7.0)$$

$$\bar{R}^2 = .59$$

$$\hat{P} = .14$$

$$(6)\quad Un_t = 15.01 - .008*Rt_t - \sum_{i=o}^{p-1} W_i * MS$$

$$(10.0)(-5.5) \qquad (-12.5)$$

$$\bar{R}^2 = .56$$

$$\hat{P} = .84$$

In measuring the impact of the money supply upon unemployment, the best distribution was found when using a two degree polynomial. In Canada the impact started at a negative level which went slightly more negative and then approached zero after the fourth month. In the Atlantic Region the impact was actually positive for the first four months before going negative; the greatest impact occurred in the seventh month after which the impact approached zero.

What does the positive impact in the first few months of the distributed lag mean? This, of course, is hard to justify in terms of economics. It is probably because of reverse causation due to the length of the outside lag in the Atlantic Region. Thus, this positive impact is ignored in this analysis by assuming the effect of monetary policy upon unemployment in the Atlantic Provinces is zero until the fifth month when the negative impact starts. The Mean lag and the standard deviations are computed by assuming the first four positive coefficients of the distributed lag are zero. It must be remembered that if, in reality, this initial impact is zero, a two degree polynomial could not show this because it is impossible for it to remain constant along the zero axis over time.

Table 5-2 contains the values of the lag coefficients and the cumulative percentage impact over time. As can be seen, the length of time needed for the total impact to be felt is longer for the Atlantic Region than for Canada. Total impact occurred at 10 and 5 months for the Atlantic Region and Canada respectively. Also, the mean lag, which takes into account the skewness of the distribution, is 6.57 months for the Atlantic Provinces and only 2.65 months for Canada. Using the concept of three standard deviations as discussed above, it can be said that 99 percent of the lags are less than or equal to 10.68 months for the Atlantic Region and less than or equal to 5.50 for

TABLE 5-2

ANALYSIS OF POLYNOMIAL DISTRIBUTED LAG COEFFICIENTS
CUMULATIVE PERCENTAGE IMPACT OF INDIVIDUAL
COEFFICIENTS BY MONTH FOR
UNEMPLOYMENT

Months Lagged	ATLANTIC REGION		CANADA	
	Coefficients for Equation (5)	Cumulative Percent Impact	Coefficients for Equation (6)	Cumulative Percent Impact
0	0	0	-.045E-03	6.9
1	0	0	-.082E-03	19.5
2	0	0	-.114E-03	37.1
3	0	0	-.223E-03	71.5
4	-.054E-03	9.4	-.185E-03	100.0
5	-.101E-03	26.9		
6	-.124E-03	48.4		
7	-.127E-03	70.4		
8	-.107E-03	88.9		
9	-.064E-03	100.0		
Mean Lag	= 6.57 months		2.65 months	
Standard Deviation	= 1.37 months		.95 months	
Sum of Coefficients	= - .577E-03		- .649E-03	
Maximum Lag	= 10.68 months		5.50 months	
Total Impact	= 10.0 months		5.0 months	

Canada. The standard deviations of the lags for Canada and the Atlantic Region are .95 months and 1.37 months respectively. The effect of monetary policy upon the level of unemployment was not nearly as responsive nor as consistent in the Atlantic Region as it was for Canada as a whole.

The Outside Lag With Respect to Inflation

The equations for inflation in Canada and in the Atlantic Provinces contain retail trade, unemployment rates and a distributed lag of the money supply. The unemployment rates are used in a first difference form. This allows the unemployment rate to serve as an indicator of consumer confidence, which is a factor in demand pull inflation and it serves as an alternative goal with which monetary policy would have to be concerned. Equation (7) is for the Atlantic Region and equation (8) is for Canada.

$$(7)\quad \overline{Inf}_t = \underset{(39.6)}{73.13} + \underset{(1.6)}{.04}*Rt_t - \underset{(-0.6)}{.09}*\Delta\overline{Un}_t + \underset{(21.9)}{\sum_{i=o}^{p-1} W_i}*MS$$

$$\bar{R}^2 = .96$$

$$\hat{P} = .91$$

$$(8)\quad Inf_t = \underset{(47.4)}{68.09} + \underset{(3.07)}{.004}*Rt_t - \underset{(1.64)}{.54}*\Delta Un + \underset{(49.1)}{\sum_{i=o}^{p-1} W_i}*MS$$

$$\bar{R}^2 = .99$$

$$\hat{P} = .94$$

Like the unemployment equations, a two degree polynomial is used to determine the lag in the effect of monetary policy with respect to inflation. The distributed

lag in the Atlantic Region is negative for the first three months, becomes positive reaching a maximum in the tenth month and then approaches zero. Concerning the inflation equation for the Atlantic Provinces, it is difficult to explain the economic meaning of the first three negative coefficients. Again it will be blamed on reverse causation and the inability of a two degree polynomial to remain constant. The negative coefficients are assumed to be zero, meaning that monetary policy has no effect until after the third month. Of course the mean lag and the standard deviation reflect this. The distributed lag for Canada starts out relatively low, moves toward a maximum impact in the sixth month and then approaches zero. All of the coefficients are positive.

Table 5-3 presents the individual coefficients and the cumulative percentage impact for both economies.

In Canada it took an average of 13 months for the total impact of monetary policy to run its course, compared with 15 months in the Atlantic Region. The mean lag for Canada was 6.6 months with a standard deviation of 5.16 months. The mean lag is not extremely long but the variation in the lag is extreme when compared to the mean. In fact, 99 percent of the lags are less than or equal to 22.11 months. To have lags of this length makes monetary policy questionable in terms of its ability to control inflation.

TABLE 5-3

ANALYSIS OF POLYNOMIAL DISTRIBUTED LAG COEFFICIENTS
CUMULATIVE PERCENTAGE IMPACT OF INDIVIDUAL
COEFFICIENTS BY MONTH FOR INFLATION

Months Lagged	ATLANTIC REGION Coefficients for Equation (7)	ATLANTIC REGION Cumulative Percent Impact	CANADA Coefficients for Equation (8)	CANADA Cumulative Percent Impact
0	0	0	.312E-05	.2
1	0	0	.237E-04	1.9
2	0	0	.699E-04	6.9
3	.120E-04	.6	.107E-03	14.5
4	.650E-04	4.9	.136E-03	24.1
5	.141E-03	12.1	.156E-03	35.2
6	.187E-03	21.6	.167E-03	47.0
7	.220E-03	32.8	.169E-03	59.0
8	.238E-03	44.9	.163E-03	70.7
9	.244E-03	57.3	.148E-04	80.9
10	.236E-03	69.3	.124E-03	90.1
11	.214E-03	80.2	.914E-04	96.5
12	.181E-03	89.4	.501E-04	100.0
13	.136E-03	96.3		
14	.073E-03	100.0		
Mean Lag	= 8.91 months		6.63 months	
Standard Deviation	= 6.84 months		5.16 months	
Sum of Coefficients	= .196E-02		.141E-02	
Maximum Lag	= 29.43 months		22.11 months	
Total Impact	= 15.0 months		13.0 months	

The mean lag for the Atlantic Region is 8.91 months with a standard deviation of 6.84. This means that 99 percent of the lags are less than or equal to 29.43 months. The ability of the Bank of Canada to effectively combat inflation is low for Canada and even worse for the Atlantic Region.

Summary of the Outside Lag

Table 5-4 presents a comparison of the above analysis of the outside lag for the economies of Canada and the Atlantic Region. This comparison refers to the mean lag, the standard deviation, the maximum lag and the period of total impact.

As the table indicates, monetary policy was, in every category, more effective, in terms of the outside lag, for Canada than for the Atlantic Provinces. By averaging the mean lags, the maximum lags and the periods of total impact for the two economies, the differences in the general effectiveness of monetary policy between the two areas can be easily recognized. These averages are presented in Table 5-5. Canada has an average mean lag of 3.53 months and the Atlantic Region has an average mean lag of 5.83 months, 2.30 months or 65 percent longer than for Canada. The maximum lag is 17.94 months for the Atlantic Region but only 10.53 months for Canada. Thus, the average maximum lag is 7.41 months or 70 percent longer in the Atlantic Region than in Canada. The average period of

TABLE 5-4

COMPARISON OF THE OUTSIDE LAG IN THE EFFECT OF MONETARY POLICY IN CANADA AND THE ATLANTIC REGION, IN MONTHS

	CANADA			ATLANTIC REGION		
	Growth	Unemployment	Inflation	Growth	Unemployment	Inflation
Mean Lag	1.30	2.65	6.63	2.00	6.57	8.91
Standard Deviation	.89	.95	5.16	3.90	1.37	6.84
Maximum Lag	3.97	5.50	22.11	13.70	10.68	29.43
Average Total Impact	5.00	5.00	13.00	7.00	10.00	15.00

TABLE 5-5

COMPARISON OF AVERAGES BETWEEN CANADA AND THE ATLANTIC REGION FOR THE OUTSIDE LAG ANALYSIS

	Canada	Atlantic Region
Average Mean Lag	3.53 Months	5.83 Months
Average Maximum Lag	10.53 Months	17.94 Months
Average Total Impact	7.67 Months	10.67 Months

total impact is 7.67 months for Canada and 10.67 months for the Atlantic Region.

The above analysis suggests that monetary policy seems to be more effective in dealing with the goals of the Canadian economy as a whole than it is in dealing with the goals of the Atlantic Region. This conclusion, however, has not taken into account the quantitative significance of the impact of monetary policy. That is, how much of a percentage change in the mean of the dependent variable takes place due to a one percent change in the money supply. This topic is covered briefly in Appendix B.

The above lags differ somewhat from the outside lag found by others for Canada and for the United States. For example, Johnson and Winder found an average outside lag of six months to a year with some lags as long as 2.5 years.[1]

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[1]Johnson and Winder, ibid., p. 241.

Friedman found that the lag from the peak of the money stock to the peak in the general business to be, on the average, 16 months in length with some lags as long as 29 months.[1] The Commission on Money and Credit published a paper by Kareken and Solow in which the lag was estimated to be on the order of six to nine months.[2] The Federal Reserve System in the United States has indicated that the outside lag in the effect of monetary policy is too short to be of any consequence.[3]

The lengths of the above lags differ for at least two reasons. First, the definition of the lag can and, in fact, does differ from study to study. For example, Friedman's lag is the time between a policy action and the succeeding cyclical turning point. This seems to imply that once monetary policy has been put into effect, it has no results until the level of economic activity is forced to change directions. He does not include the ability of monetary policy to affect a given variable without bringing about an absolute change in direction. Thus, Friedman's lag is more closely related, in this study, to the period of total impact than it is to the mean lag. If related in this manner the difference between Friedman's lag, 16 months,

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[1]Milton Friedman, "Lag in Effect of Monetary Policy," Journal of Political Economy, LXIX (1961), pp. 457, 464.

[2]Kareken and Solow, ibid., pp. 14-96.

[3]T. Mayer, "The Lag in the Effect of Monetary Policy: Some Criticisms," Western Economic Journal (September, 1967), pp. 326-328.

and this study's period of total impact, 13.33 months, is not that different. The second reason for different lag lengths from study to study is the different variables upon which monetary policy is assumed to act and the different variables used as an indicator of monetary policy. As objective variables, Friedman used cyclical turning points while Kareken and Solow used fixed investment, inventories, and residential construction. Of course this study uses prices, retail trade and unemployment. The Johnson and Wonder study is very similar to the Kareken and Solow study. As an indicator of monetary policy, the variables are the money supply, of which there are various measures, different measures of reserves and interest rates.

As defined earlier the inside lag of monetary policy is the lag of changes in monetary policy behind changes in unemployment, inflation and retail trade. The inside lag in each case was measured by taking into consideration other objectives of monetary policy. Once again, the polynomial distributed lag analysis was used. The length of the lag is determined by the mean lag, which measures the center of gravity, and the variation of the lag is determined by three standard deviations of the mean lag. The procedure used to find the correct average lag is the same as was used above in arriving at the outside lag. When using a high degree polynomial of considerable length it was found that the distributed lag, in each case, took the form of a one degree polynomial where succeeding

coefficients took on a value closer to zero. In no case did the coefficients have the wrong sign in the initial periods as was the case with the outside lag.

The Inside Lag With Respect to Growth

The equations used to measure the lag with respect to growth for the Atlantic Region and Canada are listed as equations (9) and (10) respectively. These equations do not contain the consumer price indices as independent variables due to their high correlation with retail trade. The correlation coefficients between inflation and retail trade for Canada and the Atlantic Region are .95 and .94 respectively.

$$(9)\quad MS_t = -5377.32 - 147.18*\overline{Un}_t + \sum_{i=0}^{p-1} W_i * \overline{Rt}_t$$
$$(-10.3)\quad (-4.1)\quad (63.4)\qquad \bar{R}^2 = .96,\ \hat{P} = .90$$

$$(10)\quad MS_t = -5537.14 - 51.51*Un_t + \sum_{i=0}^{p-1} W_i * Rt_t$$
$$(-11.5)\quad (-1.1)\quad (70.0)\qquad \bar{R}^2 = .96,\ \hat{P} = .94$$

Table 5-6 lists the lag coefficients for equations (9) and (10) along with the cumulative percentage impact of the distributed lag. The length of time needed for the average total impact of retail sales upon the money supply is seven months for Canada and ten months for the Atlantic Region. The mean lag for Canada is two months while the mean lag for the Atlantic Region is three months. Canada

TABLE 5-6

ANALYSIS OF POLYNOMIAL DISTRIBUTED LAG COEFFICIENTS
CUMULATIVE PERCENTAGE IMPACT OF INDIVIDUAL
COEFFICIENTS BY MONTH FOR RETAIL SALES

Months Lagged	ATLANTIC REGION Coefficients for Equation (9)	ATLANTIC REGION Cumulative Percent Impact	CANADA Coefficients for Equation (10)	CANADA Cumulative Percent Impact
0	31.91	18.0	3.54	25.0
1	28.72	35.0	3.03	46.0
2	25.53	49.0	2.53	64.0
3	22.34	62.0	2.02	79.0
4	19.15	73.0	1.52	89.0
5	15.96	82.0	1.01	96.0
6	12.76	89.0	.51	100.0
7	9.57	95.0		
8	6.38	98.0		
9	3.19	100.0		
Mean Lag	= 3.0	months	2.0	months
Standard Deviation	= 1.47	months	.94	months
Sum of Coefficients	= 175.51		14.14	
Maximum Lag	= 7.41	months	4.82	months
Total Impact	= 10.0	months	7.0	months

had a maximum lag of almost seven months as compared to about 12 months for the Atlantic Provinces.

The difference between the analysis of the inside lags for the two economies is not as significant as the difference for the outside lag analysis with respect to growth. This indicates that the needs of the Atlantic Region in terms of the implementation of monetary policy are relatively well satisfied.

The Inside Lag With Respect to Inflation

Equation (11), which was used to determine the inside lag with respect to inflation in the Atlantic Region, states that the money supply is a function of unemployment and a distributed lag of inflation. This equation produces a mean lag of two months, a maximum lag of 5.62 months and it takes an average of seven months for the total impact of inflation upon the money supply to be felt. This impact, of course, is brought about by the central bank implementing a monetary policy in an effort to offset inflationary problems.

The analysis of the inside lag for Canada shows slightly better results. Equation (12) contains as independent variables unemployment and a distributed lag of the consumer price index. Equation (12) produces a mean lag of 1.67 months, a maximum lag of 4.69 months and the period of total impact in Canada is six months.

$$(11)\quad MS_t = -40512.3 - 420.73*\overline{Un}_t + \sum_{i=o}^{p-1} W_i * \overline{Inf}_t$$
$$(-48.9)\quad (-14.5)\qquad (78.2)$$
$$\bar{R}^2 = .97$$
$$\hat{P} = .91$$

$$(12)\quad MS_t = -34021.9 - 366.5 *Un_t + \sum_{i=o}^{p-1} W_i * Inf_t$$
$$(-73.4)\quad (-11.5)\qquad (125.9)$$
$$\bar{R}^2 = .99$$
$$\hat{P} = .97$$

In both equations, retail sales is not used as an independent variable. This again is due to the high correlation between retail sales and the consumer price index in Canada and in the Atlantic Provinces.

The equations ((11) and (12)) emphasize the "dilemma" that the monetary policymakers face when stable prices or full employment is the objective being sought--the "dilemma" being how much of a sacrifice of one objective needs to be made in order to achieve the other objective. Stable prices and full employment are not compatible at the same time. If a problem of inflation occurs, the central bank must take into consideration the level of unemployment, and if the level of unemployment is too high, their ability to fight inflation by holding back on the supply of money is limited or else the central bank runs the risk of contributing substantially to unemployment.

Table 5-7 presents the analysis of equations (11) and (12). As indicated, the mean lags for Canada and the Atlantic Region are 1.67 months and two months respectively and the maximum lags are 4.7 months and 5.6 months

TABLE 5-7

ANALYSIS OF POLYNOMIAL DISTRIBUTED LAG COEFFICIENTS
CUMULATIVE PERCENTAGE IMPACT OF INDIVIDUAL
COEFFICIENTS BY MONTH FOR INFLATION

Months Lagged	ATLANTIC REGION		CANADA	
	Coefficients for Equation (11)	Cumulative Percent Impact	Coefficients for Equation (12)	Cumulative Percent Impact
0	148.91	25.0	143.97	29.0
1	127.64	47.0	119.98	52.0
2	106.36	65.0	95.98	71.0
3	85.09	79.0	71.99	86.0
4	63.82	89.0	47.99	95.0
5	42.55	96.0	24.00	100.0
6	21.27	100.0		
Mean Lag	= 2.0	months	1.67	months
Standard Deviation	= 1.21	months	1.01	months
Sum of Coefficients	= 505.62		503.91	
Maximum Lag	= 5.63	months	4.7	months
Total Impact	= 7.0	months	6.0	months

respectively. The period of total impact for Canada is six months compared to seven months for the Atlantic economy. As was the case in the actual versus desired policies analyzed in the preceding chapter, and as indicated by the outside lag description, Table 5-7 suggests that price movements in the Atlantic Region are very closely related to price movements in Canada. In each case very little difference could be found regarding the impact of monetary policy upon prices between the two economies. Once again the above analysis points out that the inside lag is shorter than expected.

The Inside Lag With Respect to Unemployment

The equations used to find the length of the inside lag with respect to unemployment are basically mirror images of equations (11) and (12) which were used to find the inside lag with respect to inflation. Equations (13) and (14) have as independent variables the consumer price index and a polynomial distributed lag of unemployment for the respective economies. The lag coefficients, of course, have negative signs where the first month is the largest in absolute value and each succeeding lag coefficient is closer to zero but never positive. As with equations (11) and (12), equations (13) and (14) indicate the so-called "dilemma" between inflation and unemployment. Monetary policymakers cannot operate upon unemployment with monetary policy without taking into consideration the impact of the

policies upon inflation.

$$(13)\quad MS_t = -39413.10 + 585.67*\overline{Inf}_t - \sum_{i=0}^{p-1} W_i * \overline{Un}_t \qquad \bar{R}^2 = .97$$
$$(-824.0) \quad (7.3) \quad (-28.4) \qquad \hat{P} = .96$$

$$(14)\quad MS_t = -33768.10 + 496.59*Inf_t - \sum_{i=0}^{p-1} W_i * Un_t \qquad \bar{R}^2 = .99$$
$$(-561.6) \quad (4.7) \quad (-37.4) \qquad \hat{P} = .96$$

Table 5-8 presents the lagged coefficients of equations (13) and (14) along with the cumulative percentage impact by period and other information regarding the inside lag with respect to unemployment. The period of total impact was eleven months for the Atlantic Region and nine months for Canada. Canada has a mean lag of 2.67 months and a maximum lag of 6.66 months while the Atlantic Region had a mean lag of 3.33 months and a maximum lag of 8.76 months. In each comparison monetary policy was less effective for the Atlantic Region than for Canada in terms of solving unemployment problems.

Summary of the Inside Lag

A comparison of the inside lag analysis for Canada and the inside lag analysis for the Atlantic Region is found in Table 5-9.

As was the case with the outside lag, the table indicates that the inside lag of monetary policy was shorter in all cases for Canada than the inside lag for the Atlantic Region. The differences here, however, are not as

TABLE 5-8

ANALYSIS OF POLYNOMIAL DISTRIBUTED LAG COEFFICIENTS
CUMULATIVE PERCENTAGE IMPACT OF INDIVIDUAL
COEFFICIENTS BY MONTH FOR UNEMPLOYMENT

Months Lagged	ATLANTIC REGION		CANADA	
	Coefficients for Equation (13)	Cumulative Percent Impact	Coefficients for Equation (14)	Cumulative Percent Impact
0	-76.32	17.0	-60.62	20.0
1	-69.38	32.0	-53.89	38.0
2	-62.44	45.0	-47.15	53.0
3	-55.50	58.0	-40.42	67.0
4	-48.57	68.0	-33.68	78.0
5	-41.63	77.0	-26.94	87.0
6	-34.69	85.0	-20.21	93.0
7	-27.75	91.0	-13.47	98.0
8	-20.81	95.0	6.74	100.0
9	-13.88	98.0		
10	- 6.94	100.0		
Mean Lag	= 3.33 months		2.67 months	
Standard Deviation	= 1.81 months		1.33 months	
Sum of Coefficients	= -457.81		-303.12	
Maximum Lag	= 8.76 months		6.67 months	
Total Impact	= 11.00 months		9.0 months	

TABLE 5-9

A COMPARISON OF THE INSIDE LAG IN EFFECT OF MONETARY POLICY IN CANADA AND THE ATLANTIC REGION IN MONTHS

	CANADA			ATLANTIC REGION		
	Growth	Unemployment	Inflation	Growth	Unemployment	Inflation
Mean Lag	2.00	2.67	1.67	3.00	3.33	2.00
Standard Deviation	0.94	1.33	1.01	1.47	1.81	1.21
Maximum Lag	4.82	6.67	4.70	7.41	8.76	5.63
Average Total Impact	7.00	9.00	6.00	10.00	11.00	7.00

great as the differences in the outside lags. The above lag analysis has been averaged for the two economies and the results are found in Table 5-10. The average mean lag for Canada is 2.11 months and the average mean lag for the Atlantic Region is 2.78 months or 32.0 percent longer. For the Canadian Economy the maximum lag is 5.40 months, compared to 7.27 months for the Atlantic Region, about 35.0 percent longer. The period of total impact for the Atlantic Region is about 28.0 percent longer than for Canada.

In Table 5-10 the variables used in the analysis of the inside lag are the same as those used by Johnson and Winder except for "Growth." Johnson and Winder used the Manufacturing Index as an indicator of growth rather than the dollar value of retail sales. This makes possible a comparison of the two inside lags for Canada. This comparison is set up in Table 5-11.

TABLE 5-10

COMPARISON OF AVERAGES BETWEEN CANADA AND THE ATLANTIC REGION FOR THE INSIDE LAG ANALYSIS

	Canada	Atlantic Region
Average Mean Lag	2.11 Months	2.78 Months
Average Maximum Lag	5.40 Months	7.27 Months
Average Total Impact	7.33 Months	9.33 Months

Some comments are necessary regarding the determination of the mean lags and the maximum lags in the

TABLE 5-11

A COMPARISON OF JOHNSON AND WINDER'S[1] INSIDE LAG ANALYSIS WITH THIS STUDY'S INSIDE LAG ANALYSIS FOR CANADA IN MONTHS

	GROWTH		INFLATION		UNEMPLOYMENT	
	Present Study	Johnson & Winder	Present Study	Johnson & Winder	Present Study	Johnson & Winder
Mean Lag	2.00	8.83	1.67	7.00	2.67	10.00
Maximum Lag	4.82	17.00	4.70	10.00	6.67	17.00
Total Impact	7.00		6.00		9.00	

[1]Johnson and Winder, op. cit., pp. 25-38.

Johnson and Winder Study. For unemployment the various lags for both the changes to expansionary policy and the changes to contractionary policy were averaged for the entire period of their study. For price movements, only the initiation lags were considered. The time periods, in which the lags have negative signs, are not utilized in this study. The lags, with respect to growth, for the Johnson and Winder study were determined by utilizing only the initiation lags having positive signs.

Table 5-11 shows a rather wide discrepancy between the two studies in terms of the length of the inside lag. It is interesting to note, however, that the mean lags from the Johnson and Winder study are very similar to the periods of total impact derived in this study except for growth where different variables were used as an indicator. The dissimilarity that exists between the mean lags is probably due to the difference in definitions of the inside lag. Johnson and Winder dealt with a set of "conditional" lags--"lags of changes in monetary policy behind changes in the indicators relevant to various possible objectives of monetary policy."[1] This definition is more comparable to this study's period of total impact than to the mean lag. Johnson and Winder's "conditional" lag does not take into consideration the gradual buildup of the influence of a given objective upon monetary policy. Thus the two studies

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[1]Johnson and Winder, ibid., p. 22.

become more compatible when the definition of the inside lag is made more compatible.

THE TOTAL LAG IN THE EFFECT OF MONETARY POLICY

The total lag in the effect of monetary policy is defined as the inside lag plus the outside lag. How much time elapses between the point at which a problem arises and when that problem is solved by the use of a monetary policy? Table 5-12 brings the inside and outside lags together and compares the total lag for Canada with the total lag for the Atlantic Region.

Table 5-12 reveals that in every instance monetary policy is less effective as a short run stabilizer for the economy of the Atlantic Region than it is for the Canadian economy. The period of total impact, with respect to unemployment, is 14 months for Canada and 21 months for the Atlantic Region, which is 50 percent longer for the Atlantic Region. The mean lag of growth is 3.30 months for Canada and 5.00 months for the Atlantic Region or 51.5 percent longer for the Atlantic Region. In terms of growth Canada had a maximum lag of 8.79 months and an average period of total impact of 12.00 months compared to a maximum lag of 21.11 months and an average period of total impact of 17.00 months for the Atlantic Region. This is a difference, in favor of Canada, of 140.2 percent for the maximum lag and 41.7 percent for the average period of total impact. In

TABLE 5-12

TOTAL LAG ANALYSIS IN EFFECT OF
MONETARY POLICY IN MONTHS

	CANADA			ATLANTIC REGION		
	Growth	Unemployment	Inflation	Growth	Unemployment	Inflation
Mean Lag	3.30	5.32	8.30	[illegible]0	9.90	10.91
Maximum Lag	8.79	12.17	26.81	21.11	19.44	35.06
Average Total Impact	12.00	14.00	19.00	17.00	21.00	22.00

the area of unemployment Canada's mean lag is 5.32 months compared to 9.90 months for the Atlantic Region--a difference of 86.1 percent longer for the Atlantic Region. Canada's maximum lag for unemployment is 12.17 months compared to the Atlantic Region's 19.44 months. The maximum lag for unemployment for the Atlantic Region is 59.7 percent longer than for Canada. The mean lag, with respect to inflation for Canada and the Atlantic Region, is 8.30 months and 10.91 months respectively or 31.5 percent longer for the Atlantic Economy. The maximum lags for inflation for Canada and the Atlantic Region are 26.81 months and 35.06 months respectively, or 30.8 percent longer for the Atlantic Provinces. The average periods of total impact are 19.00 months for Canada and 22.00 months for the Atlantic economy. In terms of inflation the average period of total impact is 15.8 percent longer for the Atlantic Region.

CHAPTER VI

SUMMARY AND CONCLUSION

The purpose of this study has been to discover if there are any differential effects upon the Atlantic Region of Canada of a national monetary policy operating within the present institutional arrangements. Quantitative evidence has been provided for two considerations crucial to the evaluation of the ability and limitations of monetary policy in a regionally differentiated economy--the ability of monetary policy to meet the needs of the Atlantic Region and the lags in the effect of monetary policy in the Atlantic Region. In both cases the effect of monetary policy on the Atlantic economy was compared with the effect of monetary policy on the Canadian economy.

In order to determine how often monetary policy met the needs of the economies of Canada and the Atlantic Provinces, it was necessary to define monetary policy on a monthly basis. A quantitative analysis, based upon the normal long-run rate of growth, established a set of six classifications of monetary policy, ranging from extremely expansionary to extremely contractionary, according to the monthly rate of change in the money supply.

Having defined monetary policy on a monthly basis, a set of monetary policy objectives for the Atlantic Region were defined. These regional goals were selected according

to their similarity with the national objectives of monetary policy (growth, inflation and unemployment). The regional objectives were current dollar retail sales as a proxy for growth, the Halifax consumer price index as an indicator of inflation and the regional unemployment rate. By computing the monthly rate of change for each of these objectives it was possible to determine the monthly needs of the Atlantic Region with respect to growth, inflation and unemployment. The criteria used to establish these needs were the same for the Atlantic Region as they were for Canada when the goals of growth and inflation were considered. However, due to the structural unemployment problem which existed in the Atlantic Provinces it was necessary to establish an acceptable level of unemployment which was higher for the Atlantic Region than the acceptable rate in Canada. The Atlantic economy was analyzed under both sets of unemployment criteria.

In testing the hypothesis, in Chapter IV, that monetary policy reflects the needs of the economic core of Canada to the neglect of the needs of the Atlantic Region, it was found that Canadian monetary policy was as effective in meeting the needs of the Atlantic economy as it was in meeting the needs of Canada as a whole. However, throughout the test period there was a considerable amount of excess capacity in the Atlantic Region with unemployment rates far exceeding the goal established by the E.C.C. and the corresponding rates for Canada. This is accounted for by the

structural unemployment problems that existed in the Atlantic Provinces.

In terms of growth there was little evidence to suggest that monetary policy was less accommodating for the Atlantic Region than it was for Canada. Again, due to the nature of the variable used to measure growth (retail trade) little additional information can be derived. About all that can be said is that growth measured in terms of retail trade has not led to any contradictions of the information derived from the analysis of the goals of price stability and high employment levels.

Considering the excess capacity which existed throughout the test period it is unlikely that the inflationary pressure within the Atlantic Region was generated by demand pull causes within the region. Instead, inflationary pressures in Central Canada tend to be shared by the Atlantic Provinces due to the close relationship of capital markets and price setting forces.

The study of the lag structures in Chapter V suggested that the length of both the inside and outside lags were similar to the lags found in other studies once the definitions of the lags were made comparable. In most cases the lags found in this study were slightly

shorter. The analysis of the lags in the effect of monetary policy showed that without exception monetary policy was more effective for Canada as a whole than it was for the Atlantic Region.

In conclusion, the analyses of this thesis suggests that within a unified currency area, comprising more than one region, the effect of monetary policy is not significantly different from one region to another with the exception of the lag structure. One of the more important findings of this study is that, without exception, the length and variability of the lags in the effect of monetary policy were greater for the Atlantic Region than they were for Canada as a whole. It was also found that monetary policy as presently construed in Canada is not very effective in controlling real economic quantities. The use of monetary policy to avoid the unemployment problems of the Atlantic Region involves trade-offs which may impose unacceptable burdens in the form of inflation for Canada as a whole. Therefore, the solution to the unemployment problems in the Atlantic Region must be found in the use of fiscal policies, Canada manpower policies or other policies aimed at real resource

utilization. This, of course could include new institutional arrangements for the Bank of Canada.

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APPENDIX A

CREDIT POLICY IN THE ATLANTIC REGION

It has been shown that the actual monetary policy as carried out by the Bank of Canada does not correspond to the desired monetary policy of the Atlantic Economy as often as it corresponds to the needs of the Canadian Economy. It is also pointed out that the difference in the effectiveness of monetary policy in the two economies is due, at least in part, to the length and variation of the length of the lags in effect of monetary policy. Such a statement as this makes one ask what can be done to offset the differential effects caused by monetary policy within the present institutional arrangements. One obvious answer to such a question is credit flows.

In an effort to discover if credit policy, as directed into the Atlantic Economy by the Federal Government, does offset the effects of monetary policy, the four major Federal Government agencies which contribute to credit policy in the Atlantic Economy are analyzed. The four agencies which are considered are the Farm Credit Corporation, the Central Mortgage and Housing Commission, Small Business Loans and the Industrial Development Bank. The major problem encountered with these agencies was the frequency with which the data could be collected. Only for

the Farm Credit Corporation was monthly data available. All other agencies could furnish only annual data. Since the Farm Credit Corporation accounted for an average of only 7.25 percent of the total credit of the four agencies, it was decided to analyze the offsetting effects of credit policy only on an annual basis. In order to accomplish this, the analysis carried out in Chapter IV was reconstructed on an annual basis.

The criteria for determining the desired annual monetary policy for three goals--unemployment, growth, and inflation--were derived by multiplying the monthly criteria contained in Chapter IV by twelve. The criterion for growth called for an expansionary (Ex) policy if the annual growth rate was less than 5.4 percent. If the annual growth rate was less than or equal to 5.4 percent, monetary policy was not appropriate (NA).

The relationship between inflation and desired monetary policy at annual rates is outlined in Table A-1 on page 129.

For the goal of unemployment the interpretation of desired versus actual is more difficult to make. As was mentioned in Chapter IV, if the recommendations of the E.C.C. were followed, unemployment would always be a problem in the Atlantic Economy and, thus, little analysis could be done. Therefore the criteria developed in Chapter IV for an unemployment goal which is 100 percent higher

TABLE A-1

A CLASSIFICATION OF DESIRED MONETARY POLICY
WITH RESPECT TO INFLATION

Annual Rates of Price Increase	Classification of Inflation	Classification of Desired Monetary Policy
Less than 2 1/2 percent	Not Inflationary	Not Applicable (NA)
2 1/2 to 3 1/2 percent	Mildly Inflationary	Mildly contractionary (Mcon)
3 1/2 to 5 percent	Inflationary	Contractionary (Con)
5 through 10 percent	Extremely Inflationary	Extremely contractionary (Xcon)
Over 10 percent	Hyper-inflation	Extremely contractionary (Xcon)

than the E.C.C. recommendations are used. The criteria are as follows:

Rate of Unemployment	Monetary Policy Desired
Less than 6 percent	Not Appropriate (NA)
6 to 8 percent	Mildly expansionary (Mex)
8 through 10 percent	Expansionary (Ex)
Greater than 10 percent	Extremely expansionary (Xex)

Using the above criteria, an annual analysis of the desired monetary policy compared to the actual monetary policy is made for the Atlantic Region. Once the different policy relationships are established, the ability of credit policy to offest any harm done by monetary policy can be estimated. Table A-2 lists the annual data from 1954 through 1969 for each of the goals of monetary policy as defined earlier. In addition the desired monetary policy for each year is defined and compared to the actual monetary policy for these goals.

Monetary Policy

If the goal of the central bank had been to combat the problems of unemployment, our analysis indicates that monetary policy would have met the needs of the Atlantic Region in nine of the 16 years. In five of the 16 years monetary policy was moving in the correct direction but was too mild. In two years actual monetary policy was moving in the wrong direction. It should be remembered, however, that if the guideline of the E.C.C. had been followed,

TABLE A-2

A COMPARISON OF ACTUAL MONETARY POLICY AND DESIRED MONETARY POLICY FOR THE ATLANTIC REGION ON AN ANNUAL BASIS

	ATLANTIC REGION UNEMPLOYMENT			HALIFAX INFLATION			ATLANTIC REGION GROWTH		
Year	Rate[1]	Desired Monetary Policy	Actual Monetary Policy	Consumer Price Index 1961=100[2]	Desired Monetary Policy	Actual Monetary Policy	Dollar Value of Retail Trade[3]	Desired Monetary Policy	Actual Monetary Policy
1954	6.67	Mex	mex	88.82	NA	mex	1153	Ex	mex
1955	6.64	Mex	ex	89.33	NA	ex	1260	Ex	ex
1956	5.77	NA	mcon	90.33	NA	mcon	1336	NA	mcon
1957	8.61	Ex	mcon	93.23	Mcon	mcon	1319	Ex	mcon
1958	12.68	Xex	ex	95 63	Mcon	ex	1347	Ex	ex
1959	10.93	Xex	ex	98.03	Mcon	ex	1387	Ex	ex
1960	10.63	Xex	mcon	99.00	NA	mcon	1440	Ex	mcon
1961	10.42	Xex	mex	100.00	NA	mex	1463	Ex	mex
1962	10.78	Xex	mex	101.33	NA	mex	1499	Ex	mex
1963	9.47	Ex	mex	102.35	NA	mex	1555	Ex	mex
1964	7.91	Mex	mex	102.74	NA	mex	1654	NA	mex
1965	7.20	Mex	ex	104.58	NA	ex	1733	Ex	ex
1966	6.35	Mex	ex	107.38	Mcon	ex	1772	Ex	ex
1967	6.61	Mex	xex	109 92	NA	xex	1764	Ex	xex
1968	7.39	Mex	xex	114.15	Con	xex	1838	Ex	xex
1969	7.03	Mex	ex	119.50	Con	ex	1864	Ex	ex

Desired

NA - Not Applicable
Mex - Mildly expansionary
Ex - Expansionary
Xex - Extremely expansionary
Mcon - Mildly contractionary
Con - Contractionary

Actual

NA - Not Applicable
mex - mildly expansionary
ex - expansionary
xex - extremely expansionary
mcon - mildly contractionary
con - contractionary

[1]Derived from Table 4-1, p. 39.

[2]Derived from Table 4-14, p. 67.

[3]Derived from Table 4-6, p. 53.

monetary policy would have been wrong in all years except 1967 and 1968 when the Bank of Canada carried out an extremely expansionary policy.

In terms of inflation, monetary policy met the needs of the Atlantic Region in 11 of the 16 years. In the remaining five years, actual monetary policy was of an expansionary nature while the Atlantic Economy was calling for a contractionary policy.

Analyzing growth trends in retail trade revealed that the Bank of Canada implemented the wrong policy in 1957 and 1960. Monetary policy was not a problem for the Atlantic Region in 10 of the 16 years. In four of the years, monetary policy was mildly expansionary when an expansionary policy was needed.

The above analysis and results are very similar to Chapter IV. However, using the above information, it is now possible to determine, on an annual basis, if the Federal Government was able to use credit policy to offset any harm caused by monetary policy.

Credit Policy

In order to determine the effects of credit policy by government agencies upon the Atlantic Region it is necessary to define credit policy in terms of an expansionary or contractionary policy. This is accomplished by finding the average percentage change from 1954 through 1969. If credit policy is growing at a rate faster than this average

it is considered an expansionary credit policy. If it grows at a slower rate it is considered a contractionary credit policy.

Table A-3 lists the data for each of the four Federal Government agencies mentioned above. The data were available from 1953 for each agency except the Central Mortgage and Housing Corporation which has had information available only since 1954. This created a problem because when adding the dollar value of each of the four agencies to obtain total expenditure numbers, a total for 1953 was not available. When the percentage change of these totals was calculated, the 1954 number was, of course, lost. Thus, the analysis of credit policy covers the period from 1955 through 1969.

Table A-3 contains the dollar value of expenditures for each of the four agencies, a total of the four agencies, the percentage rate of change of the total, and a classification in terms of contractionary or expansionary credit policy. By averaging the column of percentage changes it was found that the average growth rate of credit policy in the Atlantic Economy was 26.3 percent per year. This growth rate was classified as a neutral credit policy. By defining credit policy based on the above mean it was found that in eight years a contractionary credit policy was carried out and in seven years an expansionary credit policy was carried out.

TABLE A-3

SELECTED FEDERAL AGENCIES' CREDIT POLICY FOR THE ATLANTIC REGION BY YEAR[a]

Year	Farm Credit Corporation ($000)[1]	Central Housing and Mortgage Corporation ($000)[2]	Small Business Loans ($000)[3]	Industrial Development Bank ($000)[4]	Agencies' Total ($000)	Percentage Change of Total	Definition of Credit Policy
1954	603	2709	0	1318	4630		
1955	494	1649	0	2201	4344	- 6.2	con
1956	871	4336	0	3081	8289	91.0	ex
1957	957	5529	0	4824	11310	36.0	ex
1958	1031	13783	0	8155	22969	103.1	ex
1959	1156	14499	0	8729	24384	6.2	con
1960	1021	13820	0	9071	23912	- 1.9	con
1961	1489	16385	1924	12191	31988	33.8	ex
1962	2797	16624	1913	15467	36801	15.0	con
1963	2727	12521	1365	17826	34439	- 6.4	con
1964	2877	15525	1516	20182	40101	16.4	con
1965	3093	25477	1570	21934	52073	30.0	ex
1966	5956	41540	1278	23687	72461	39.2	ex
1967	6072	61300	1118	25047	93537	29.1	ex
1968	5735	54561	1091	26382	87769	- 6.2	con
1969	5232	63738	1014	31035	101019	15.1	con

con - contractionary
ex - expansionary

[1]"Number and Amount of Loans Granted in each of the Atlantic Provinces, April 1952-December 1973 by Month," Farm Credit Corporation, Ottawa, 1974.

[2]"Summary Housing Statistics in the Province of Newfoundland, 1954-1969," Central Mortgage and Housing Corporation, Regional Office, Halifax Nova Scotia, 1970.

[3]"Annual Report, Small Business Loans Act," Department of Finance (Ottawa: The Queen's Printer, 1961-1969). The Small Business Loans Act was not brought into force until January 1961.

[4]"Annual Report," Industrial Development Bank, Ottawa, 1954-1969. The annual reports are of a fiscal year ending in September. To convert the fiscal to a calendar year, this equation was used:

$.75 * \text{Fiscal Year}_t + .25 * \text{Fiscal Year}_{t+1} = \text{Calendar Year}$

Table A-4 indicates the direction of the actual credit policy of these selected Federal agencies. This table also indicates those years when desired monetary policy in the Atlantic Region differed from the actual monetary policy as carried out by the Bank of Canada. By analyzing these classifications it was possible to determine if credit policy offset any problems created by monetary policy or contributed to the problem, when a problem did exist. This analysis is separated into three areas: unemployment, inflation and growth. Because credit policy was classified as either expansionary or contractionary, monetary policy was classified in the same manner with different degrees being ignored. In terms of desired monetary policy some years are still classified as not appropriate (NA).

Employment

Examination of the unemployment section revealed that there were only two years in which the actual monetary policy differed from desired monetary policy, 1957 and again in 1960. In 1957 the Atlantic Region needed an expansionary policy but the Bank of Canada carried out a contractionary policy. This conflict may have been at least partially offset because credit policy, as carried out by the four selected government agencies, was of an expansionary nature. In 1960 the Atlantic Region again needed an expansionary policy but the Bank of Canada

TABLE A-4

A COMPARISON OF DESIRED AND ACTUAL MONETARY POLICY WITH CREDIT POLICY IN ATLANTIC REGION

	ATLANTIC REGION UNEMPLOYMENT			HALIFAX INFLATION			ATLANTIC REGION GROWTH		
Year	Desired Monetary Policy	Actual Monetary Policy	Actual Credit Policy	Desired Monetary Policy	Actual Monetary Policy	Actual Credit Policy	Desired Monetary Policy	Actual Monetary Policy	Actual Credit Policy
1954	Ex	ex		NA	mex		Ex	ex	
1955	Ex	ex	con	NA	ex	con	NA	ex	con
1956	NA	con	ex	NA	con	ex	NA	con	ex
1957	Ex	con	ex	Con	con	ex	Ex	con	ex
1958	Ex	ex	ex	Con	ex	ex	Ex	ex	ex
1959	Ex	ex	con	Con	ex	con	NA	ex	con
1960	Ex	con	con	NA	con	con	Ex	con	con
1961	Ex	ex	ex	NA	ex	ex	Ex	ex	ex
1962	Ex	ex	con	NA	ex	con	Ex	ex	con
1963	Ex	ex	con	NA	ex	con	Ex	ex	con
1964	Ex	ex	con	NA	ex	con	NA	ex	con
1965	Ex	ex	ex	NA	ex	ex	NA	ex	ex
1966	Ex	ex	ex	Con	ex	ex	Ex	ex	ex
1967	Ex	ex	ex	NA	ex	ex	Ex	ex	ex
1968	Ex	ex	con	Con	ex	con	NA	ex	con
1969	Ex	ex	con	Con	ex	con	NA	ex	con

Desired

NA - Not appropriate
Ex - Expansionary
Con - Contractionary

Actual

ex - expansionary
con - contractionary

carried out a policy of contraction. Unlike 1957, credit policy did not come to the rescue in 1960. Instead, credit policy was also of a contractionary nature adding to the unemployment problems of the Atlantic Economy. In 1957 the Atlantic Region averaged an 8.61 percent unemployment rate but in 1960 the average was 10.63. Also of interest are seven additional years--1955, 1959, 1962, 1963, 1964, 1968 and 1969. In each of these years the Atlantic Economy needed some degree of expansionary policy which was provided by the central bank. However, the funds granted by the above selected federal agencies created a credit policy which was contractionary and could have offset any positive effects accomplished by monetary policy. It is also of interest that monetary policy conformed to the needs of the region, on an annual basis, 12 of the 15 years, from 1955 through 1969, while credit policy met the regional needs only six times. Concerning unemployment, little evidence surfaces to suggest that credit policy was used in an attempt to offset harmful effects to the Atlantic Region caused by monetary policy. If anything, the evidence suggests that credit policy almost completely ignored the needs of the Atlantic Region.

Inflation

In terms of inflation there were five years in which actual monetary policy differed from the desired monetary policy of the Atlantic Region. In three of these five

years the credit policy, as carried out by the selected Federal agencies, was of the type desired by the region. This was the case in 1959, 1968 and 1969. In these years the desired monetary policy was contractionary; the actual monetary policy was expansionary while the credit policy was contractionary. In 1958 and 1966 the desired monetary policy was contractionary but the actual monetary and credit policies were both expansionary. Only once, in 1957, did desired and actual monetary policy coincide but credit policy was in the wrong direction, possibly counteracting any benefit that actual monetary policy could accomplish. In terms of credit policy the needs of the Atlantic Region were met in three of the years. Thus, credit policy was more equitable to the Atlantic Economy than was monetary policy. However, it should be remembered that inflation in the Atlantic Region is a result of the inflationary pressures in Canada as a whole rather than being a regional problem. This being the case, it is possible to assume that credit policy was effective because the selected agencies' spending patterns in the Atlantic Region were being determined by the needs of Canada rather than the needs of the Atlantic Region. This probability becomes even greater when considered in light of the effectiveness of credit policy in dealing with unemployment.

Growth

A comparison of the growth and unemployment sections

of Table A-4, page 136, shows a very close relationship. In both sections actual monetary policy differed from desired monetary policy in the same years, 1957 and 1960. In 1957, both sections indicate that credit policy was correct and thus tended to offset any harmful effects of monetary policy. In 1960, both sections show that credit policy was of the same classification as monetary policy and both were wrong with respect to the needs of the Atlantic Region. This close relationship is not surprising since unemployment problems and growth problems tend to occur at the same time. The relationship between desired monetary policy and actual government credit policy was much closer with respect to growth than with respect to unemployment. With unemployment there were seven years in which monetary policy met the needs of the Region only to have credit policy move in the opposite direction. With growth, this occurred only twice, in 1962 and 1963. During the 15 year period from 1955 through 1969, monetary policy met the needs of the Atlantic Economy seven times while credit policy met these needs five times.

Once again little evidence occurred to support the contention that government credit policy was used to overcome any problem caused by monetary policy. Again credit policy seems to come out second best in terms of solving the needs of the Atlantic Region.

Summary

In terms of unemployment and growth, the above analysis suggests that credit policy as directed into the Atlantic Region by the selected Federal Government agencies did not offset harmful effects of monetary policy in any consistent manner. The surprising aspect of the above analysis is that it suggests that credit policy was not as effective in the Atlantic Provinces as was monetary policy. Under the present institutional monetary arrangements, monetary policy should not be as effective on a regional basis as was credit policy as it is defined above. This suggests that the Federal Government is not considering the needs of the Atlantic Region in terms of unemployment and growth.

The analysis of inflation did suggest some tendency for credit policy to meet the needs of the Atlantic Region. It was suggested that this was not due to any planning on the part of the Federal agencies but was due to the fact that inflation in the Region was inherited from Central Canada. In all, it is probably fair to say that credit policy as carried out by the four Federal agencies was of little use in the Atlantic Region in terms of solving problems related to unemployment, growth and inflation. In fact it might be suggested that the actions of these Federal agencies did not constitute a policy for the Atlantic Region but rather an uncorrelated distribution of

funds for reasons not pertaining to the cyclical needs of the Atlantic Provinces.

APPENDIX B

THE QUANTITATIVE SIGNIFICANCE OF THE IMPACT OF MONETARY POLICY

In measuring the outside lag in the effect of monetary policy it was found that the Atlantic Region suffered from a longer lag in every instance. However, it was suggested that monetary policy could still have a greater impact upon the Atlantic Region than in Canada, due to the elasticity with respect to the money supply in the different equations. The purpose of this appendix is to measure the elasticity at the mean for each of the equations dealing with the outside lag. The elasticity at the mean is defined as the percentage change in the mean of the dependent variable brought about by a one percent change in the mean of the money supply.

Table B-1 lists the elasticity at the mean for equations (3) through (8). The odd numbered equations are for the Atlantic Region and the even numbered equations are for Canada.

In measuring the elasticity at the mean it was found that monetary policy had a larger effect upon the Atlantic Region than upon Canada for retail trade and inflation. Since the outside lag for growth and inflation was longer in the Atlantic Region than in Canada, it is difficult to determine where monetary policy was the most effective with

TABLE B-1

THE QUANTITATIVE SIGNIFICANCE OF THE IMPACT OF MONETARY POLICY

Equation Number	Dependent Variable	Economy	Elasticity at Mean	Transformed Elasticity
(3)	Retail Trade	Atlantic Region	.38	.27
(4)	Retail Trade	Canada	.34	
(5)	Unemployment	Atlantic Region	1.07	.54
(6)	Unemployment	Canada	2.02	
(7)	Inflation	Atlantic Region	.30	.25
(8)	Inflation	Canada	.23	

respect to the goals of growth and inflation. However, if the elasticities of the mean for these two goals in the Atlantic Region are transformed by multiplying them by the ratio of the lag length in Canada to the lag length in the Atlantic Region, the elasticity at the mean becomes comparable. These new elasticities are shown under the column headed "Transformed Elasticity." As can be seen, the Atlantic Region now has an advantage only with inflation which is very insignificant. Also as pointed out in the preceding chapters inflation in the two economies is very closely related so the closeness of the elasticities is of no surprise. Table B-1 also indicates that unemployment has a big advantage in Canada, which was also expected.

The measurement of the quantitative significance of the impact of monetary policy provided very little additional

information. The results turned out about the same as the results in Chapters IV and V.

APPENDIX C

SOME DIFFERENTIAL EFFECTS OF CANADIAN MONETARY POLICY UPON THE ATLANTIC REGION 1970-1973

Chapter IV of this thesis analyzed some of the differential effects of monetary policy upon the Atlantic Region from 1954 through 1969. The purpose of this appendix is to update that analysis for the period 1970 through 1973. The method of defining actual monetary policy as outlined in Chapter II is used. Also the criteria established in Chapter IV are used to determine the effects of monetary policy in the two economies for each of the indicators (unemployment, growth and inflation).

Unemployment

In Chapter IV a set of relative criteria[1] were presented which accounted for the structural unemployment problem in the Atlantic Region. It was indicated that without this relative criteria the needs of the Atlantic Region always called for a monetary policy which was extremely expansionary. During the period from 1970 through 1973 this same problem not only existed in the Atlantic Region but also for Canada. This is shown in

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[1] This set of relative criteria and the corresponding monetary policy needed can be found on page 41 of this thesis. Also the set of criteria established for the Canadian economy can be found on page 47.

Table C-1. Throughout the period unemployment in Canada called for a monetary policy which was extremely expansionary. Since the needs of both economies were always the same, if the relative criteria is not considered monetary policy was equally efficient and thus no differential effects occurred. As can be seen in Table C-1 monetary policy either met or exceeded the needs of the two economies 40 of the 48 months or 83.3 percent of the time. During five months or 10.4 percent of the time, actual monetary policy was of a contractionary nature and during the remaining three months the actual policy was mildly expansionary.

Table C-2 lists the needs of the Atlantic Region when the relative criteria are applied. Under these conditions monetary policy either met or exceeded the needs of the Atlantic Region 43 of the 48 months or 89.6 percent of the time. Again there were five months when a contractionary policy was carried out. This analysis suggests that monetary policy was more effective for the Atlantic Region than it was for Canada. Also a comparison of Table C-1 with Table C-2 suggests that the Atlantic Region had less of an unemployment problem than did Canada. However, the mean unemployment rate for Canada was 6.1 percent while the mean unemployment rate for the Atlantic Region was 8.6 percent or 41 percent higher. In terms of the mean unemployment rates it is difficult to justify the contention

TABLE C-1

DESIRED MONETARY POLICY WITH RESPECT TO UNEMPLOYMENT IN CANADA COMPARED WITH ACTUAL MONETARY POLICY IN CANADA

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Policy
1970	Xex	Xex	Xex	Xex	Xex	Xex	Xex	Xex	Xex	Xex	Xex	Xex	Desired
	xcon	xcon	xex	xex	xex	xex	xex	xex	xex	xex	xex	mex	Actual
1971	Xex	Xex	Xex	Xex	Xex	Xex	Xex	Xex	Xex	Xex	Xex	Xex	Desired
	mex	mex	xex	xex	xex	xex	xex	xex	xex	xex	xex	xex	Actual
1972	Xex	Xex	Xex	Xex	Xex	Xex	Xex	Xex	Xex	Xex	Xex	Xex	Desired
	xex	xex	xex	xex	xex	xex	xex	xex	xex	xex	con	con	Actual
1973	Xex	Xex	Xex	Xex	Xex	Xex	Xex	Xex	Xex	Xex	Xex	Xex	Desired
	con	xex	xex	xex	xex	xex	xex	xex	xex	xex	xex	xex	Actual

Desired

Xex - Extremely expansionary

Actual

xex - extremely expansionary

mex - mildly expansionary

xcon - extremely contractionary

con - contractionary

TABLE C-2

DESIRED MONETARY POLICY WITH RESPECT TO UNEMPLOYMENT IN THE ATLANTIC REGION COMPARED WITH ACTUAL MONETARY POLICY IN THE ATLANTIC REGION

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Policy
1970	Mex	Mex	Mex	Mex	Mex	Mex	Mex	Mex	Mex	Mex	Mex	Mex	Desired
	xcon	xcon	xex	xex	xex	xex	xex	xex	xex	xex	xex	mex	Actual
1971	Mex	Mex	Mex	Ex	Ex	Ex	Ex	Ex	Ex	Ex	Ex	Ex	Desired
	mex	mex	xex	xex	xex	xex	xex	xex	xex	xex	xex	xex	Actual
1972	Ex	Ex	Ex	Ex	Ex	Ex	Ex	Ex	Ex	Ex	Ex	Ex	Desired
	xex	xex	xex	xex	xex	xex	xex	xex	xex	xex	con	con	Actual
1973	Ex	Ex	Ex	Ex	Ex	Ex	Ex	Ex	Ex	Ex	Ex	Ex	Desired
	con	xex	xex	xex	xex	xex	xex	xex	xex	xex	xex	xex	Actual

Desired

Ex - Expansionary

NA - Not appropriate

Actual

xex - extremely expansionary

mex - mildly expansionary

xcon - extremely contractionary

con - contractionary

that the Atlantic Region's needs were met more often than Canada's.

It appears that perhaps the unemployment criteria used in Chapter IV are not as valid for the period from 1970 through 1973 as they were for the period from 1954 through 1969. It may be that during the seventies more second and third members of families were in the labor force than was the case during the fifties and sixties. If so we could expect the Bank of Canada to raise the unemployment rate that would be acceptable. Thus it is difficult to determine the true differential effects of monetary policy, for the years 1970 through 1973, using the criteria established in Chapter IV. The attempt to update the unemployment section of Chapter IV has provided little additional information.

Growth

As in Chapter IV the needs of monetary policy are defined either as "expansionary" or "not appropriate", depending upon whether growth was taking place at a .45 percent rate per month or not. A comparison of desired monetary policy with the actual monetary policy for the Atlantic Region and Canada is made in Tables C-3 and C-4 respectively. Table C-3 indicates that the Atlantic Region needed an expansionary monetary policy during 27 of the 48 months or 56.3 percent of the time. This compares with the need for an expansionary policy over the 1954 through 1969

TABLE C-3

ACTUAL MONETARY POLICY COMPARED TO DESIRED MONETARY POLICY IN THE ATLANTIC REGION WITH RESPECT TO GROWTH

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Policy
1970	Ex	Ex	NA	NA	NA	NA	NA	Ex	Ex	Ex	Ex	Ex	Desired
	xcon	xcon	xex	xex	xex	xex	xex	xex	xex	xex	xex	mex	Actual
1971	Ex	Ex	Ex	Ex	Ex	Ex	Ex	NA	NA	NA	NA	NA	Desired
	mex	mex	xex	xex	xex	xex	xex	xex	xex	xex	xex	xex	Actual
1972	NA	NA	NA	NA	NA	NA	Ex	Ex	Ex	NA	NA	NA	Desired
	xex	xex	xex	xex	xex	xex	xex	xex	xex	xex	con	con	Actual
1973	NA	NA	Ex	Ex	Ex	Ex	Ex	Ex	Ex	Ex	Ex	Ex	Desired
	con	xex	xex	xex	xex	xex	xex	xex	xex	xex	xex	xex	Actual

Desired

Ex - Expansionary

NA - Not appropriate

Actual

xex - extremely expansionary

mex - mildly expansionary

xcon - extremely contractionary

con - contractionary

TABLE C-4

ACTUAL MONETARY POLICY COMPARED TO DESIRED MONETARY POLICY IN CANADA WITH RESPECT TO GROWTH

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Policy
1970	Ex	Ex	Ex	Ex	Ex	Ex	NA	NA	NA	Ex	Ex	Ex	Desired
	xcon	xcon	xex	xex	xex	xex	xex	xex	xex	xex	xex	mex	Actual
1971	Ex	NA	NA	NA	NA	NA	Ex	Ex	NA	NA	NA	Ex	Desired
	mex	mex	xex	xex	xex	xex	xex	xex	xex	xex	xex	xex	Actual
1972	Ex	Ex	NA	NA	NA	Ex	Ex	Ex	Ex	Ex	Ex	Ex	Desired
	xex	xex	xex	xex	xex	xex	xex	xex	xex	xex	con	con	Actual
1973	NA	NA	NA	NA	Ex	Ex	Ex	Ex	Ex	Ex	Ex	Ex	Desired
	con	xex	xex	xex	xex	xex	xex	xex	xex	xex	xex	xex	Actual

Desired

Ex - Expansionary

NA - Not appropriate

Actual

xex - extremely expansionary

mex - mildly expansionary

xcon - extremely contractionary

con - contractionary

period 32.3 percent of the time. With respect to growth, monetary policy met the needs of the Atlantic Region in 25 of the 27 months or 92.6 percent of the time. During the 1954 through 1969 period monetary policy met the needs of the Atlantic Region only 64.5 percent of the time. Thus monetary policy in the latter period showed a big improvement over the former period, in meeting the needs of the Atlantic Region.

When growth in Canada is the indicator of need, an expansionary policy was needed during 30 months or 62.5 percent of the time. This compares to 43.2 percent of the time in which an expansionary policy was needed from 1954 through 1969. The needs of Canada were met during 26 of the 30 months or 86.7 percent of the time. Again, this is a big improvement over the 1954 through 1969 period where the needs of Canada with respect to growth were met only 66.3 percent of the time.

In both economies growth was a problem more often in the seventies than in the fifties and sixties. However in each economy monetary policy met their needs far more often in the later period than was the case in the former period. Another difference in this latter period is that the needs of the Atlantic Region were met slightly more often than were the needs of Canada. Just the opposite was the case during the 1954 through 1969 period. The average monthly growth rate of retail sales in Canada over the period 1970 through 1973 was .34 percent compared to .45

percent in the Atlantic Region. For the total period from 1954 through 1973 monetary policy met the growth needs of the Canadian economy 71.7 percent of the time while meeting the growth needs of the Atlantic Region 73.0 percent of the time. In terms of growth it is difficult to show that the Atlantic Region has been neglected by the monetary policy of the central bank.

Inflation[1]

The close relationship between price movements in Canada and in the Atlantic Region was discussed above. This closeness is again brought out in this analysis from 1970 through 1973. As Tables C-5 and C-6 show, in each economy there were 36 of the 48 months or 75 percent of the time, in which some degree of contractionary policy was needed to combat inflation. In both economies there were only five months, or 13.9 percent of the time, in which monetary policy was contractionary in some degree when needed. In Canada the actual policy met or exceeded the needs during three months. Twice an extremely contractionary policy was desired when a contractionary policy was carried out. In the Atlantic Region there were two months when actual monetary policy met the needs with respect to inflation and three months when an extremely contractionary policy was needed but a contractionary policy was carried

[1]The criteria for determining the monetary policy needed to combat the various degrees of inflation can be found on pages 66 and 69 of this thesis.

TABLE C-5

ACTUAL MONETARY POLICY COMPARED TO DESIRED MONETARY POLICY
IN THE ATLANTIC REGION WITH RESPECT TO INFLATION

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Policy
1970	Xcon	Xcon	Xcon	Xcon	Xcon	NA	NA	NA	NA	NA	NA	NA	Desired
	xcon	xcon	xex	xex	xex	xex	xex	xex	xex	xex	xex	mex	Actual
1971	NA	NA	Xcon	Xcon	Xcon	Xcon	Xcon	NA	NA	NA	Con	Con	Desired
	mex	mex	xex	xex	xex	xex	xex	xex	xex	xex	xex	xex	Actual
1972	Con	Con	Con	Con	Con	Con	Xcon	Xcon	Xcon	Xcon	Xcon	Xcon	Desired
	xex	xex	xex	xex	xex	xex	xex	xex	xex	xex	con	con	Actual
1973	Xcon	Xcon	Xcon	Xcon	Xcon	Xcon	Xcon	Xcon	Xcon	Xcon	Xcon	Xcon	Desired
	con	xex	xex	xex	xex	xex	xex	xex	xex	xex	xex	xex	Actual

Desired

Xcon - Extremely expansionary

Con - Contractionary

NA - Not appropriate

Actual

xex - extremely expansionary

mex - mildly expansionary

xcon - extremely contractionary

con - contractionary

TABLE C-6

ACTUAL MONETARY POLICY COMPARED TO DESIRED MONETARY POLICY IN CANADA WITH RESPECT TO INFLATION

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Policy
1970	Con	Con	Con	Con	Con	Con	Con	NA	NA	NA	NA	NA	Desired
	xcon	xcon	xex	xex	xex	xex	xex	xex	xex	xex	xex	mex	Actual
1971	Xcon	Xcon	Xcon	Xcon	Xcon	Xcon	Xcon	Xcon	NA	NA	NA	Xcon	Desired
	mex	mex	xex	xex	xex	xex	xex	xex	xex	xex	xex	xex	Actual
1972	Xcon	Xcon	NA	NA	NA	NA	Xcon	Xcon	Con	Con	Con	Xcon	Desired
	xex	xex	xex	xex	xex	xex	xex	xex	xex	xex	con	con	Actual
1973	Xcon	Xcon	Xcon	Xcon	Xcon	Xcon	Xcon	Xcon	Xcon	Xcon	Xcon	Xcon	Desired
	con	xex	xex	xex	xex	xex	xex	xex	xex	xex	xex	xex	Actual

Desired

Xcon - Extremely contractionary

Con - Contractionary

NA - Not appropriate

Actual

xex - extremely expansionary

mex - mildly expansionary

xcon - extremely contractionary

con - contractionary

out. Both in the Atlantic Region and in Canada there were 31 of the 36 months or 86.1 percent of the time in which monetary policy was expansionary to some degree when a contractionary policy of some degree was needed. In 27 of the 48 months or 56.3 percent of the months, desired monetary policy was either exactly the same or was not appropriate in the two economies. In 38 of the 48 months or 79.2 percent of the time desired monetary policy was either contractionary to some degree or not appropriate.

The major difference in the period 1970 through 1973 as opposed to the 1954 through 1969 period is that inflation was a problem much more often in the latter period. During the 1954 through 1969 period inflation was a problem 35.9 percent of the time in Canada and 42.3 percent of the time in the Atlantic Region. Over the period from January 1970 through December 1973 inflation was a problem 75.0 percent of the time.

Summary

It was found that during these four years, 1970 through 1973, unemployment and inflation both became serious problems. Unemployment seemed to change so dramatically that the criteria which had been established in Chapters III and IV no longer were meaningful. In terms of growth and inflation the relationships between the two economies was pretty much the same over the period from 1970 through 1973 as it was for the previous period from 1954 through 1969.

APPENDIX D

HOMOGENEOUS PERIODS

The definition of monetary policy for different periods of time was determined by establishing homogeneous periods in which the money supply was growing at approximately equal rates. For example, assume the rates of growth in the money supply for nine consecutive months were .36, .45, .89, .38, .42, .49, 1.0, 1.2, and 1.1. According to the classification criteria listed on pages 15 and 17 the first homogeneous period would include the first six data points and would be classified as mildly expansionary with an average growth rate of .50 percent. It can be noted that not all of the first six data points were in the mildly expansionary range of .363 to .650 percent. The third data point was .89 percent which is high. Since the relationship between money and economic activity requires a period which is long enough for an individual or firm to adjust cash balances, such erratic fluctuations are ignored. A second homogeneous period in the example would be the final three periods which have an average growth rate of 1.1 percent and would be classified as extremely expansionary.