AN EMPIRICAL ANALYSIS OF THE EFFECTIVENESS
OF CANADA'S UNEMPLOYMENT INSURANCE
PROGRAMME AS AN AUTOMATIC STABILIZER

by

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September, 1967
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ABSTRACT

During recent years unemployment insurance has come to be recognized as an automatic stabilizer in the economy. This implies that unemployment insurance programmes operate so as to automatically dampen both economic expansions and contractions. In Canada, however, little empirical research aimed at determining the magnitude of this dampening effect has been undertaken. In an attempt to fill this void, this study makes an empirical assessment of the effectiveness of Canada's unemployment insurance programme as an automatic stabilizer.

To do this the period 1950-1965 was broken down into its component periods of economic expansion and contraction. This period was chosen to reflect modern post-war economic conditions. The component periods consisted of three downswings and four upswings. Three techniques were then employed to determine the countercyclical role of the programme during each of the seven periods.

Firstly, the change in national income during each period was compared to the changes in unemployment insurance benefits and contributions during the same periods. From this was obtained a measure of the portion
of any change in national income offset by compensatory changes in benefits and/or contributions. Secondly, using the same periods, a simple multiplier model was employed to determine what portion of any potential change in national income was prevented by the unemployment insurance programme. For both of these techniques both historical data and data adjusted to remove the effect of changes in the programme were used. And thirdly, a correlation analysis was employed to determine whether benefits and contributions were directly or inversely associated with the level of economic activity.

The results of this study indicate that Canada's unemployment insurance programme has performed creditably as an automatic stabilizer during periods of economic contraction. The benefit component of the scheme has been almost totally responsible for this effectiveness. Moreover, the efficacy of the programme during downswings has doubled in recent years - increasing from a compensatory effect of about 14% of the change in national income during the contraction of 1953-1954 to one of about 27% of the change in national income during the contraction of 1960-1961.
The programme has been relatively less effective as an automatic stabilizer during periods of economic expansion. However, during the last two upswings a significant compensatory effect was experienced. The magnitude of this effect lay between 10% and 17% of the change in national income during the expansion of 1958-1960 and between 5% and 8% of the change in national income during the upswing of 1961-1965.
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CHAPTER 1

INTRODUCTION

Perspective

The business cycle forms an integral part of free enterprise economies such as exist in Canada today. It is generally taken for granted that periods of economic expansion will give way to periods of contraction and vice versa. Recently, however, there has emerged a conviction that severe economic convulsions, such as the one experienced during the depression of 1929-1933, are a thing of the past. The feeling is that these severe movements have been replaced by mild upswings and downswings in economic activity.

This confidence stems from a number of factors. The most important of these include recent historical evidence, improved economic knowledge and experience with monetary and fiscal policy, the growing importance of government expenditure and the existence of an

automatic countercyclical impact within the fiscal system.\(^1\) This latter consideration refers to the existence of automatic stabilizers within today's institutional structure. These are simply mechanisms which automatically reduce the flow of income or money to individuals and corporations during periods of expansion and which increase these flows in times of contraction.\(^2\)

Along with the business cycle, unemployment has come to be recognized as an accepted fact in modern free enterprise economies. As a result unemployment compensation programmes have been introduced in many countries throughout the world. Canada's version of such a programme is based on insurance principles and has come to be known as the unemployment insurance programme. The main aim of this programme is to partially compensate workers for wage losses resulting from involuntary unemployment. However, because this programme automatically affects the flow of funds to and from individuals and corporations in relation to the level of economic activity, automatic stabilization has been a fortuitous by-product.

\(^1\) Ibid

This stabilization effect results from an increase in the benefit payments and a decrease in contributions during contractions and a decrease in benefit payments and an increase in contributions during expansions.

The importance of automatic stabilizers stems from their political and economic advantages over discretionary controls. Discretionary controls are those which require a policy decision before coming into effect. Automatic mechanisms avoid the difficult problems involved in the recognition of economic movements, the analysis and forecast of trends and the prescription and implementation of corrective action. Further, the time delays involved in carrying out these steps and in taking legislative action, where necessary, is avoided. As an extreme case, needed discretionary adjustments may not be made because of the expectation of adverse political repercussions.

Because of these advantages, automatic stabilization is to be preferred to the use of discretionary measures given that other factors are equal. The most

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important of these other factors pertains to the relative effectiveness of alternate approaches. Given equal effectiveness, automatic stabilization is the preferred compensatory mechanism.

The preceding paragraphs have attempted to establish two points. Firstly, automatic stabilizers are important to the health of the economy. Secondly, Canada's unemployment insurance programme is, at least theoretically, an automatic stabilizer. Keeping this background in mind, it is now possible to discuss the purpose of this study.

Purpose of the Study

Although a priori considerations suggest that the unemployment insurance programme will function in a countercyclical manner, they say nothing about the efficacy of the programme as a stabilizer. The purpose of this study is to empirically determine the effectiveness of Canada's unemployment insurance programme as an automatic stabilizer in the economy. This objective can be met

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1 - The concept of automatic stabilization differs from that of "economic significance". The latter refers to the importance of unemployment insurance benefits relative to other sources of purchasing power in allowing individuals to consume. Appendix I gives data regarding the economic significance of the benefits.
by answering the following sets of questions:

(1) Has the programme functioned in the desired countercyclical manner during the recent past? Have the benefit and contributory components of the programme both performed in this manner?

(2) What was the magnitude of any stabilizing effect that was experienced? What portion of any stabilizing effect can be assigned to the benefit component of the programme and what portion to the contributory portion?

(3) Has the programme been relatively more effective during periods of expansion or contraction in the level of economic activity?

(4) Has the Canadian programme been more or less effective than the comparable United States' compensation programme?

The methodology designed for this study attempts to answer these questions. Given the answers, it then becomes possible to make some judgement as to the effectiveness of the programme as an automatic stabilizer. This in turn will allow implications to be drawn with regards to government stabilization policies and the future role
of unemployment insurance. It must be kept in mind, however, that any discussion of the future role of the programme must include consideration not only of the stabilization objective but also of social and motivational objectives.

Outline of the Study

The first three chapters of the study are introductory in nature. Chapter 1 serves simply to describe the importance of the study, present its purpose and outline the direction it takes. Chapter 2 deals with the concept of unemployment compensation. In particular, Canada's unemployment insurance programme and its relation to the Unemployment Insurance Act will be discussed. An attempt is made to place the role of the programme as an automatic stabilizer in the perspective of its numerous objectives. Chapter 3 attempts to clarify the concept of automatic stabilizers by setting up certain classificatory criteria. Chapters 4, 5, and 6 form the heart of the study. Chapter 4 outlines the three empirical techniques used to determine the programme's countercyclical effectiveness. Chapter 5 presents the results of the study. The results of each technique are presented individually before they are combined so
as to allow formation of some conclusion with regards to the programme's efficacy. Chapter 6 discusses these results in terms of certain inconsistencies and limitations. Chapter 7 offers a summary and certain concluding remarks. These remarks deal with the implications of the study in terms of future government stabilization policies and in terms of the future role of unemployment insurance. Several suggestions for further research are also presented.
CHAPTER 2

THE CONCEPT OF UNEMPLOYMENT INSURANCE

Historical Evolution

The origins of unemployment insurance schemes can be traced, on the one hand, to the customary payments by trade unions of "out of work" benefits to their members and, on the other hand, to the feudal relationship which gave the master responsibility for the welfare of his servants. The former tradition led to the emergence of private insurance schemes, while the latter led to employer's liability plans. These employer plans were particularly important to the development of modern programmes because they were based upon recognition of the principle that the burden of unemployment should not be borne solely by the workers.

The trade union schemes were generally compulsory for all members, while the employer schemes were generally voluntary. Because these schemes were limited either to a single union or to a single firm, the risk

of unemployment was not widely spread and the schemes were quite vulnerable.

This serious shortcoming left the door open for government intervention which took the form either of subsidies to existing programmes or of establishment and administration of government schemes. The first of these programmes was established in Belgium in 1901 through allowance of subsidies to municipal programmes. The first national schemes were adopted by France, Norway and Denmark during the early years of the twentieth century. Britain established such a programme in 1911. In order that the risk would be as widely spread as possible, most of these programmes called for compulsory participation of all individuals covered by the programme.

In Canada discussion of the establishment of an unemployment insurance programme emerged during the second decade of the twentieth century. In 1919 the Royal Commission on Industrial Relations recommended

1 - Ibid, p. 2.
2 - Ibid, p. 3.
3 - Ibid, p. 4.
that an inquiry be made into the possibilities of implementing such a scheme. 1 In 1928, and again in 1929, the Standing Committee of the House of Commons on Industrial and International Relations endorsed the concept of unemployment insurance. 2 Seven years later, in 1935, The Unemployment and Social Insurance Act was passed by the federal government. The Act was modelled along the lines of the British legislation of 1911.

The 1935 Act was later declared unconstitutional by the Judicial Committee of the Privy Council. This declaration emerged from an interpretation of the British North America Act which made unemployment insurance a provincial concern. However, a Royal Commission on Dominion Provincial Relations in 1940 came to the following conclusion:

"In our public hearings representatives from most provinces and many public bodies supported the view that unemployment insurance should be within the jurisdiction of the Dominion Parliament. We have no hesitation in so recommending." 3


2 - Ibid.

By June 1940, all provincial governments concurred with this view. The British North America Act was, as a result, amended to enable the federal government to implement a national unemployment insurance scheme. Later in 1940 the Unemployment Insurance Act was passed and by mid 1941 the scheme had become fully operational.

It should be noted that this Act placed more emphasis on the role of the national employment service than on the role of unemployment insurance. This was stated as follows:

"The principal function of the Act is to provide an employment service. The fundamental objective of the service is to find suitable work for employable persons who desire employment. To the extent that there is failure to place insured persons involuntarily unemployed, the Act provides aid by way of insurance benefits."

Subsequently, these two objectives have been accorded equal importance.

Since 1940 many changes in the programme have been made. In fact, in 1955 the Unemployment Insurance Act of 1940 was repealed and replaced by a completely revised form of the old Act. These changes did not,

however, alter the general nature of the unemployment insurance programme and will not be discussed at this point.

The Canadian Unemployment Insurance Programme

Three general types of protection against the risk of unemployment are in existence today: compulsory insurance schemes, voluntary insurance schemes and non-insurance schemes. The first two are characterized by the pooling of risk, contributions by employees or employers or both, clear entitlement of benefits by virtue of contributions, the continuity of the scheme and the absence of any kind of means test. The difference between compulsory and voluntary programmes hinges on the presence or absence of compulsion to participate in the scheme. Non-insurance programmes are systems of unemployment allowances which are not based on insurance principles and where payment is generally subject to a means test.

Using this system of classification Canada's programme may be labelled a compulsory insurance scheme.

1 - Schweitzer, op. cit., p. 11.
Further, it is contributory in nature. For each employed worker a weekly contribution is made to the unemployment insurance fund. From the beginning, 40% of the contribution has been collected from the employer, 40% from the employee and 20% from the government. When an individual becomes unemployed he is automatically entitled to receive benefits from the fund for a certain period of time or until he obtains new employment. Benefit and contribution rates are both determined by the individual's earnings.

Numerous detailed regulations surround the administration of this programme. These are described in the 1955 Act and deal with such considerations as benefit and contribution rates, eligibility for coverage, methods of making claims, excepted occupations and so on. Since this chapter attempts only to give a broad overview of the workings of the programme no discussion of these is presented. The interested reader may refer to several government publications for detailed information.

Objectives of Unemployment Insurance

This study deals with the role of unemployment insurance as an automatic stabilizer. It is important to bear in mind, however, that stabilization is not the sole, or even the primary, objective of such programmes. A brief review of the numerous aims of unemployment insurance will facilitate placing the study in its proper perspective.

Among the main objectives are:

(1) The provision of a measure of economic security for employees and their families through partial compensation for wage losses resulting from involuntary unemployment,

(2) Stabilization of the business cycle through compensatory adjustments to the flow of funds to and from individuals and corporations,

(3) A just distribution of the costs of unemployment,

(4) The preservation of work skills,

(5) Assurance of benefits as a matter of right to those regularly attached to the labour market, and

(6) Maintenance of normal economic incentives.

In other words, at the micro level such programmes aim at promoting individual social welfare. At the macro level they aim at promoting the economic well-being of the country. At the same time, they are constrained by a need to maintain employee motivation at a productive level.

Although this study is concerned only with stabilization, the social and motivational objectives of the programme must be kept in mind. Complete consistency among objectives is not possible. For example, an increase in benefit payments aimed at improving the efficacy of Canada's programme as an automatic stabilizer might adversely affect employee motivation. As a result, any recommendations arising out of this study, or any other similar study, must be examined in the light of the totality of these objectives.
CHAPTER 3

AUTOMATIC STABILIZATION AND UNEMPLOYMENT INSURANCE

Automatic Stabilization - An Historical Perspective

It was not until the mid 1940's that economists, on the basis of theoretical arguments, proposed that the fiscal system exerted an automatic stabilizing impact on the economy. The concept, however, may be traced to an earlier period in the development of economic thought. Two strands in the development of a concept of automatic stabilization assist in placing it in historical perspective. These are (1) the classical concept of automaticity and (2) the development and elaboration of fiscal policy.

Traditional economic theory dealt with the market forces under which the factors of perfect competition governed the production and distribution of goods while maintaining almost full employment of resources.

1 - Clement, op. cit., p. 303.

A significant degree of automatism is implicit in this theoretical orientation: given certain conditions, certain consequences automatically followed. Admittedly this interpretation is quite different from that given to automatic stabilizers. However, the concepts are similar in that both are said to operate under predetermined and prescribed rules which exclude discretionary changes. The proposition that automatic stabilizers have a theoretical carry-over from traditional economic thought, therefore, appears quite reasonable.

A second strand can be traced to the emergence of fiscal policy as a means of economic stabilization. Early economists virtually ignored the effects of fiscal policy on income and expenditure levels. At the same time the balanced budget was accepted as normal procedure. This stemmed directly from the theoretical orientation of traditional economics with its emphasis on full employment. Keynes' attack on the classical principles of full employment equilibrium, budgeting and public finance\(^1\) changed this. As a result there emerged the

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view that compensatory fiscal and monetary policy might be used to maintain the economy at prosperous levels. Hansen and Lerner were, perhaps, most instrumental in carrying Keynes' work in this direction. Taking this development one step further by removing the discretionary element yields the concept of automatic stabilization.

The above paragraphs have simply attempted to place the concept of automatic stabilizers into the perspective of economic thought. No attempt has been made to thoroughly review its historical development. This would involve discussion of the contributions of a considerable number of economists and would appear out of place in a study of this sort. For such a treatment the reader may refer to Keiser's discussion of the subject.


3 - Keiser, *op. cit.*
The Concept of Automatic Stabilizers

As stated previously, automatic stabilizers are mechanisms which automatically reduce the flow of income or money to individuals and corporations during periods of expansion and which increase these flows in times of contraction. Further development of the automatic stabilizer concept, however, is necessary to adequately reflect their nature. This development will proceed by outlining three criteria which must be met before any mechanism can be classified as an automatic stabilizer. The criteria are taken from the writings of Hart and Clement.

(1) The first criteria is, perhaps, the most obvious. It states that the mechanism must act in a countercyclical manner. In more detail, the device must (a) tend to produce budget deficits during downswings and surpluses during upswings, or (b) expand the community's stock of money (or near money) during downswings and reduce it during upswings, or (c) tend to lower the public's

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2 - Clement, *op. Cit.*
demand for cash balances during downswings and raise it during upswings, or (d) any combination of these.¹

A prerequisite of these types of effects is that the device's action be closely tied to operational variables that are sensitive to and conform with economic fluctuations. Figure 1 illustrates the business cycle, with the trend line representing stabilization objectives. A countercyclical mechanism works to assist movements toward the trend line and cancel movements away from it. In theory, if the stabilizer worked instantaneously and conformed perfectly with economic fluctuations the compensatory effect would result only during the periods of depression and prosperity. However, despite a lack of empirical evidence it appears likely that in most cases there is a time lag before the stabilizer comes into effect.²

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1 - These four sub-criteria allow automatic stabilizers to work through fiscal, monetary or expectational mechanisms. Since it is extremely difficult to quantify the effects of these latter two mechanisms, they are often overlooked. However, liquidity positions, expectations and habits often have significant impacts on the economy. The study presented here makes no attempt to quantify these effects so that the estimates of countercyclical efficiency that are developed will tend to be on the low side.

2 - Clement, op. cit., p. 311.
The effect of an automatic stabilizer linked closely to economic activity, because of this time lag approximates the desired compensatory effect over the entire cycle.

FIGURE 1

Simple model of the business cycle and the action of automatic stabilizers.

* This figure is adapted from Clement, op. cit., p. 308.
(2) A second criteria requires that the device begin its countercyclical effect without waiting for a new policy decision. This criteria is necessary for automaticity. Since the prime value of these stabilizers lies in this automatism it is necessary that administrative discretion be kept to a minimum.

(3) The third criteria is that the mechanism display "predictability of action". This condition stems from the fact that the effective automatic stabilizer should not have harmful indirect side effects. In the absence of predictability, the expectations of decision makers may vacillate and as a result "the stability of the economy's internal response mechanism diminishes". This, in turn, may cause an effective stabilization policy to become less satisfactory or even damaging.

It may appear at first, that this third criteria is one for effective automatic stabilization and that it is unnecessary if effectiveness is not at issue. However, adverse side effects on expectations are virtually impossible to quantify. Consequently, it cannot

2 - Ibid.
be accurately determined whether any such effects more than offset the beneficial effects of the device being considered. To be certain that an overall compensatory effect is being experienced it is necessary that no adverse expectational effects be experienced. Predictability of action promotes such a condition.

**Unemployment Insurance as an Automatic Stabilizer**

Automatic stabilizers must meet the three criteria developed above. By examining Canada's unemployment insurance programme in terms of these criteria it is then possible to determine whether or not it can theoretically be classified as a stabilizer. It should

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1 - The discussion of these criteria helps to distinguish automatic stabilizers from formula flexible stabilizers, discretionary stabilization policies and institutional stabilizers. Formula flexible stabilizers automatically come into effect when some economic variable gives a danger signal. The difference between this concept and automatic stabilizers lies in the fact that the automatic stabilizers are continually operating in the economy while the formula flexible stabilizers come into effect only when some predetermined signal is given. Discretionary stabilization policies differ from automatic stabilizers in their need for policy decisions. Institutional stabilizers, or bulwarks, are institutions which act to strengthen the economy and need not necessarily work in a countercyclical manner. The magnitude of government spending and the Bank of Canada are examples of such bulwarks.
be noted that this is a theoretical exercise only, and that in the final analysis only empirical test can allow the positive identification of the programme as an automatic stabilizer. However, before performing such empirical tests it is assuring to have a theoretical framework suggesting what role the programme can be expected to play.

Theoretically, the unemployment insurance programme meets the criteria that it function in a counter-cyclical manner. Actually the compensatory action is twofold: (1) because contributions (a flow of funds from individuals and corporations) are derived from the wage-bill of covered employees, they move parallel to the level of economic activity; and (2) because benefits (a flow of funds to individuals) are derived from the level of unemployment, they move in a direction opposite to the level of economic activity. Thus by the very nature of the programme a reduction in the level of economic activity should, theoretically, be accompanied by a lowering of the level of contributions and by an increase in the level of benefit payments. Similarly, an increase in the level of economic activity should, theoretically, be accompanied by an increase in the level of contributions and by a reduction in the level of benefit payments.
Further, because employers will not immediately adjust their work force to the economy's level of activity, it appears likely, that there will be a lag between any change in economic activity and the commencement of the stabilizing effect. For example, an employer faced by the necessity of decreasing production will retain valuable workers despite the fact that a portion of their time will be idle. This results from the employer's expectation that bad times will be replaced by good times when the skills of these workers will be vital. Thus, the action of the unemployment insurance programme as a stabilizer probably approximates movements of the business cycle more closely, than if no lag existed.

The unemployment insurance programme also meets the second criteria. Contribution and benefit formulas and conditions are stated in legislation and are not subject to the discretion of individuals or groups of individuals. Only when the interpretation of regulations is at issue can officials interfere. These interferences are of minor significance.

The criteria of stability of action is also met by the programme. The workings of the programme are quite predictable and subject to change only through additions or amendments to the Unemployment Insurance Act. Although changes during the 1950's were frequent, the direction of change was predictable. Changes tended to increase the level of both benefits and contributions. Benefit increases should not have adverse effects on expectations and because contributions form such a small part of individual and corporate outlays, they, similarly, should have minimum effects on expectations.

In theory, then, the Canadian unemployment insurance programme should act as an automatic stabilizer. The final test, however, must be empirical. Theory does not provide the means by which quantitative assessment of the efficacy of the programme as a stabilizer can be derived. Chapters 4, 5, and 6 provide such a quantitative assessment.
CHAPTER 4

THE STUDY: METHODOLOGY

Introduction

Eilbott points out that two quite different approaches to the measurement of the quantitative impact of an automatic stabilizer may be employed. The first approach attempts to determine what portion of any change in the variable being used to represent the level of economic activity is offset by an opposing change in the stabilizer. The second attempts to determine what portion of a potential change in the variable representing economic activity is prevented from occurring by the stabilizer. In this case the stabilizer is said to limit any change in economic activity rather than simply acting to partially offset any change that has already occurred. These two approaches form the basis of the methodology to be employed in this study.

In terms of the unemployment insurance programme the contrast between these two formulations is

1 - Eilbott, op. cit. p. 450.
readily apparent. One works from the position that a change in economic activity will lead to a change in unemployment benefits and contributions. The other proposes that changes in the level of benefits and contributions affect private and corporate spending and thus movement in economic activity. The key difference is in terms of which change is to be labelled the cause and which is to be labelled the effect.

It is intuitively clear that both of these propositions have validity. Changes in the level of benefits and contributions can cause changes in economic activity. At the same time changes in economic activity can and do lead to changes in the benefit and contribution levels. Due to this interdependence it is useful to employ both approaches in forming a methodology to determine the countercyclical effectiveness of Canada's unemployment insurance programme.

Before describing in detail the methodology resulting from the adoption of these two approaches, it will be constructive to describe the type of data to be employed. Net national income at factor cost is used to represent the level of economic activity. This variable adequately reflects the activity of the economy.
and is a common choice in studies of this type. Further, national income represents the sum of income received for productive services rendered. Since transfer payments such as unemployment insurance benefits are not given as payment for productive services their value is not included in national income. Since this study attempts to determine what portion of any change in the level of economic activity is prevented or offset by unemployment benefits and contribution, it is necessary that the variable chosen to represent the level of activity does not include the value of these benefits. National income is then a particularly useful measure of economic activity for the purposes of this study.

Quarterly time series data were employed for both national income and the unemployment insurance benefits and contributions. Annual data are too crude and do not adequately reflect the dynamics of recessions and expansions. Swings in the economy during the period under consideration did not coincide with calendar year turning points and at times lasted less than a year. The use of quarterly data made it necessary to have seasonally adjusted values for the three series.
Choice of the time period 1950 to 1965 resulted primarily from a desire to reflect postwar economic conditions. The exact dates of the first quarter of 1950 to the fourth quarter of 1965 resulted from data limitations. The Dominion Bureau of Statistics has tabulated seasonally adjusted data for unemployment benefits and contributions only since the first quarter of 1950. This set the lower limit on the time period. When research was originally undertaken complete data for 1966 was not available, so that the last quarter of 1965 was taken as the upper limit of the period. These limitations are not thought to prevent adequate representation of modern postwar economic conditions.

All raw data was originally compiled by the Dominion Bureau of Statistics (D.B.S.), an agency of the federal government. Data on national income was taken from various issues of the D.B.S. publication *National Accounts, Income and Expenditures, by Quarters*. Data on unemployment insurance benefits and contributions was supplied to the author by D.B.S. in personal correspondence. National income data is reproduced in Appendix II, but in compliance with a D.B.S. request, data on benefits and contributions are not reproduced.
The methodology employed required that the period 1950 to 1965 be broken into its component periods of economic expansion and contraction. The total period was marked off by the turning points of the business cycles developed by E.J. Chambers (for the period 1950 to 1953) and the Federal Department of Trade and Commerce (for the period 1954 to 1965).

The following cycles were established:

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<th>PEAK</th>
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<tr>
<td>1</td>
<td>Jan. 1950</td>
<td>May 1953</td>
<td>June 1954</td>
</tr>
<tr>
<td>2</td>
<td>June 1954</td>
<td>Apr. 1957</td>
<td>Apr. 1958</td>
</tr>
</tbody>
</table>

The trough of the first cycle actually occurred in October 1949 but due to the limitation in data mentioned above it was taken to be January 1950 for the purpose of the study. Also, the expansion being experienced at the time of writing is discontinued as of December 1965. It is felt that these approximations will not significantly alter the results of the study.

The above cycles yield the following expansions and contractions:

**EXPANSIONS**

1) 1st quarter 1950 - 2nd quarter 1953
2) 2nd quarter 1954 - 2nd quarter 1957
3) 2nd quarter 1958 - 1st quarter 1960
4) 1st quarter 1961 - 4th quarter 1965

**CONTRACTIONS**

1) 2nd quarter 1953 - 2nd quarter 1954
2) 2nd quarter 1957 - 2nd quarter 1958
3) 1st quarter 1960 - 1st quarter 1961

An atypical situation required the shortening of the second contraction. Although most indicators showed an economic contraction from April 1957 to April 1958, national income actually increased by $1 billion during the period. The largest part of this increase resulted from advances in non-military and military wages and from a significant increase in the figure for inventory evaluation adjustment.¹ Wage values apparently

---
increased due to an inflationary factor despite a recession in the productive sector. The inventory valuation adjustment value, being quite arbitrary, often moves in a direction opposite to the movement in economic activity.

Since the methodology employed in this study compares the decrease in national income during contractions to increases in benefits and decreases in contributions, a downswing not reflected in national income cannot be used. National income did, however, decrease between the third and fourth quarters of 1957 so that this period may be subjected to the test. Although such a short period does not allow too much reliance to be placed on the results, this period is taken to reflect the second contraction. The three contractions to be used throughout the study are then as follows:

**CONTRACTIONS**

<p>| | | | | |</p>
<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1)</td>
<td>2nd quarter</td>
<td>1953</td>
<td>-</td>
<td>2nd quarter</td>
</tr>
<tr>
<td>2)</td>
<td>3rd quarter</td>
<td>1957</td>
<td>-</td>
<td>4th quarter</td>
</tr>
<tr>
<td>3)</td>
<td>1st quarter</td>
<td>1960</td>
<td>-</td>
<td>1st quarter</td>
</tr>
</tbody>
</table>
To date this chapter has discussed methodological considerations common to each of the various types of analysis performed in the overall research. Attention is now turned to a more detailed description of the specific techniques employed. Basically, three types of analysis were performed. Each of these will now be described.

**Offsetting Effects**

As discussed previously one approach to counter-cyclical effectiveness is to measure what portion of any change in national income is offset by an opposing change in the stabilizer. To do this a technique similar to that of Rejda was employed.¹ Changes in national income were first compared to changes in unemployment insurance benefits and then to changes in unemployment insurance contributions during the periods of economic expansion and contraction established above. The comparison performed yielded the percentage of any change in national income offset by a change in the level of contributions and benefits. For example, if national income increased by $200 million during an expansion...

---

¹ - Rejda, *op. cit.*
and benefits decreased by $20 million over the same period, the offsetting effect of the benefits are said to be 10% of the change in national income. Appendix III demonstrates in more detail the calculations involved in using this technique.

Prevention of Change in National Income

The second approach to the effectiveness of the unemployment insurance programme as an automatic stabilizer attempts to determine the percentage of a potential change in national income prevented by the action of the programme. Again the effectiveness of benefits and contributions were analyzed separately during both the expansions and contractions of the period.

A simple multiplier model based on approaches similar to those of Musgrave and Miller and Eilbott was used to determine this prevention effect. This model may be described mathematically as follows:

For benefits

\[ A_B = \frac{-c_{E_B} r_B}{I - c_{AX} - c_{E_B} r_B} \]  

(A)


2 - Eilbott, op. cit.
For contributions \( A_C = \frac{cE_C r_C + iE_C r_C}{I - \frac{\Delta X}{\Delta Y} - \frac{\Delta Z}{\Delta Y} + cE_C r_C + iE_C r_C} \)

where \( A_B = \) the percentage of potential change in national income prevented by a change in benefits,

\( A_C = \) the percentage of a potential change in national income prevented by a change in contributions,

\( c = \) the marginal propensity to consume out of disposable income,

\( i = \) the marginal propensity to invest out of retained corporate earnings,

\( E_B = \) the income elasticity of benefits over a period of time,

\( E_C = \) the income elasticity of both employee and employer contributions over a period of time,

\( r_B = \) the ratio of benefits to national income at the beginning of the period,

\( r_C = \) the ratio of both employee and employer contributions to national income at the beginning of the period,
\[ \frac{\Delta X}{\Delta Y} = \text{the personal share of the change in national income}, \]

and \[ \frac{\Delta Z}{\Delta Y} = \text{the corporate share of the change in national income}. \]

Derivation of the benefit component of the model may best serve to explain what is involved in the use of this type of model.

Holding all economic variables constant except the level of unemployment insurance benefits, the expression for a change in income between two periods may be represented by the following multiplier model:

\[ \Delta Y = \Delta I + cZ\Delta Y + c(r_1Y_1 - r_2Y_2) \quad (1) \]

where \( \Delta Y \) equals \( Y_1 - Y_2 \), or the change in income; \( \Delta I \) equals \( I_1 - I_2 \), or the change in investment; \( c \) equals the marginal propensity to consume out of disposable income; \( Z \) equals \( \frac{\Delta X}{\Delta Y} \), or the personal share of the change in income and \( r_1 \) and \( r_2 \) are the ratios of benefits to income in the two periods.

The income elasticity \( (E_B) \) of the benefits \( (B) \) is the ratio of the percentage change in benefits to the percentage change in income. This may be expressed as
\[ E_B = \frac{\Delta B}{\Delta Y B_1} Y_1 \]  

Solving for \( \Delta B \) gives

\[ \Delta B = \frac{E_B - \Delta Y B_1}{Y_1} \]  

Now \( \Delta B = r_1 Y_1 - r_2 Y_2 \)

So substituting (3) into (1) gives

\[ \Delta Y = \Delta l + cZ\Delta Y + \frac{cE_B \Delta Y B_1}{Y_1} \]  

But by definition \( B_1 = \frac{r_B}{Y_1} \)

So substituting (6) into (5) yields

\[ \Delta Y = \Delta l + cZ\Delta Y + cE_B r_B \Delta Y \]  

Solving (7) for \( \Delta Y \) gives

\[ \Delta Y = \frac{\Delta l}{1 - cZ - cE_B r_B} \]  

As a convenient measure of countercyclical effectiveness one may use the expression
\[ A_B = 1 - \frac{\Delta Y}{\Delta Y_a} \]  

(9)

where \( \Delta Y \) refers to a change in income for the system under discussion and \( \Delta Y_a \) refers to a system where unemployment benefits do not exist. There is then no countercyclical effect and \( E_B \) equals zero. \( \frac{\Delta Y}{\Delta Y_a} \), then, is the ratio of the decline (or increase) in income in the system under consideration to the decline (or increase) in income if the system had no benefit system acting countercyclically; \( A_B \) is then the fraction of the change in income prevented by the existence of unemployment benefits.

Substituting (8) into (9) with \( E_B \) equal to zero for \( \Delta Y_a \) yields

\[ A_B = 1 - \frac{\Delta l}{l - cZ - cE_B r_B} \]  

(10)

\[ \frac{\Delta l}{l - cZ} \]

rearranging yields

\[ A_B = \frac{-cE_B r_B}{1 - cZ - cE_B r_B} \]  

(11)

and substituting \( Z = \frac{\Delta X}{\Delta Y} \)
\[ A_B = \frac{-cE_B r_B}{1 - \frac{cA_X}{A_Y} - cE_B r_B} \]  

Equation A will be used to determine the percentage of any potential change in income prevented by the benefits. Equation B, which is derived in Appendix IV, is used to determine the percentage change prevented by the contributions. Using the same quarterly data for national income and unemployment benefits and contributions and the same business cycles as were used in the first analysis the following steps were performed to determine \( A_B \) and \( A_C \):

1. Income elasticities were derived by computing the percentage changes in the levels of benefits and contributions between the initial and terminal quarters of each expansion and contraction. The ratios of these percentages to the percentage change in national income during the same period were then determined. Since this process yields an arc elasticity the resultant values of \( A_B \) and \( A_C \) measure the average effectiveness of the stabilizer over the complete period.
(2) Ratios of benefits and contributions to national income at the beginning of the period were established. The use of the beginning quarters results from the derivation of the model.

(3) The corporate share of national income was obtained by relating the change in corporate profits before taxes (after adjusting for changes in inventory valuation) during the period under consideration to changes in national income over the same period. This is measured as a percentage so that the personal share of national income is obtained by subtracting the corporate share from 100%.

(4) Finally, the marginal propensities were assigned values. Two sets of values were employed: $c = 0.9; i = 0.5$ and $c = 0.8; i = 0.3$. The former may be considered to be the maximum possible values; the latter may be taken as minimum values. Since $A_B$ and $A_C$ are increasing functions of $c$ and $i$ these values yield the maximum and minimum possible values for the prevention of a potential change in national income. The $c$ and $i$ values may be thought of as average values over the period and need not be fixed.

1 - Ibid, p. 455.
It is noted that in contrast to the first technique described this test yields a range within which the effectiveness of the unemployment insurance programme as an automatic stabilizer must fall.

Single values for $A_B$ and $A_C$ can be obtained only by assigning specific values to $c$ and $i$. Since no consensus exists as to the values of these variables specificity is avoided. Appendix V gives an example of the calculations involved in the use of this model.

**Correlation of Cyclical Components**

Additional evidence indicating the relationship of unemployment insurance benefits and contributions to national income can be obtained by performing a correlation analysis of the cyclical components of each quarterly series.\(^\text{1}\) In the case of benefits an inverse relationship (negative correlation) with national income indicates a countercyclical effect. That is, benefits, if acting as a stabilizer, should increase as national income decreases and decrease when national income increases. For contributions the reverse is true. A

---

\(^\text{1}\) Rejda, *op. cit.*
direct relationship (positive correlation) with national income indicates a countercyclical effect. That is, contributions should increase and decrease with national income if acting as a stabilizer. As the correlation coefficient (r) approaches 1 for contributions and -1 for benefits, one can be more certain that a stabilization effect is taking place.

To obtain the cyclical components of the three series (national income, benefits and contributions) the 1 cyclical residual technique was employed. This method consists of eliminating seasonal variation and trend from each series and obtaining the cyclical irregular components as residuals. This may be shown in equation form as follows:

\[
\begin{align*}
(1) & \quad T \times S \times C \times l \cdot S = T \times C \times l \\
(2) & \quad T \times C \times l \cdot T = C \times l
\end{align*}
\]

where

- \( T \) = the trend component,
- \( S \) = the seasonal component,
- \( C \) = the cyclical component,
- \( l \) = the irregular component.

---

Since the data used in this study was already seasonally adjusted only the trend component had to be removed. A linear relationship was used to calculate this trend component. An attempt was made to improve the correlation coefficients resulting from this technique by removing the irregular component. A 1, 2, 1 moving average was used for this purpose. Since no improvement resulted this adjustment was eliminated from the study. In most studies of this nature, the irregular component is not removed.

Having obtained the cyclical irregular components of the three series, correlation coefficients for national income and benefits and for national income and contributions were determined for each of the four expansions and two of the contractions. Because the period was too short (one quarter) this technique could not be applied to the contraction of 1957. The least squares technique was employed to obtain these coefficients.

1 - Ibid.
Adjustments

The methodology outlined in this chapter involves comparison of the level of benefits and contributions existing at the beginning and end of specific expansions and contractions.

To date the implicit assumption that any change in these levels reflects a change in the level of economic activity has been made. However, a portion of these changes have resulted from specific non-recurring changes in the Unemployment Insurance Act.

Almost without exception these changes have increased the coverage of the Act, increased benefit rates and/or increased contributions rates. This has resulted in a secular increase in the amount of benefits and contributions paid. During expansions, therefore, data uncorrected for these changes in the Act will tend to overstate the stabilizing effects of contributions and understate the stabilizing effects of benefits. During the contractions the opposite is true - the effects of contributions is understated and that of benefits is overstated.

1 - One exception was a tightening of regulations with regards to claims of married women.
The employment of unadjusted data yields a picture of the actual historical effectiveness of the unemployment insurance programme as an automatic stabilizer. This knowledge is useful, but because of the effects of the non-recurring changes in the Act prediction of the future role of the programme is impossible. By removing the effects of these changes an estimate of the future role can be made assuming that the Act will not be changed during the future period being considered. For this reason estimates of the countercyclical effectiveness of the programme will be made using data adjusted to remove the effect of changes in the programme.

It was not feasible to make exact adjustments for changes in the programme during the 1950-1965 period. It is virtually impossible to determine what portion of any increase (or decrease) in benefits or contribution levels is attributable to changes in the programme and what portion is attributable to changes in economic activity. However, at a minimum the direction of the effect of any change in the programme can be determined, and by estimating its magnitude a more useful estimate of the efficacy of the unemployment insurance programme as an automatic stabilizer in the economy can be obtained.
The significant changes in the Act during the period 1950-1965 and the adjustments made to offset these changes are outlined below:

(1) The expansion of 1950-1953: The introduction of supplementary benefits payable to persons unable to qualify for regular benefits resulted in an increase of about $5 million in benefit payouts.\(^1\) At the same time between January 1950 and July 1952 benefit rates were increased by about 25\% or $6 million.\(^2\) Adjustment for these changes in the programme required reducing the change in benefit level during the period by $11 million. Also, during this period contribution rates were increased by about 20\% or $5 million.\(^3\) The change in the contribution level was, therefore, decreased by this amount.

(2) The contraction of 1953-1954: The programme did not significantly change and no adjustments were necessary.

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3 - Ibid.
(3) The expansion of 1954-1957: The complete revision of the Act that occurred in 1955 made it virtually impossible to accurately estimate the necessary adjustments. A rough analysis of the new benefit classes and of the number of additional workers covered after the revision (including parts of the agricultural labour force, forestry workers, horticultural workers, municipal policemen and fishermen) yielded a rough estimate of a 20% increase in the benefits and contributions\(^1\) during the period. In absolute terms this necessitated reducing the change in benefits over the period by $11 million and reducing the change in contributions by $8 million.

(4) The contraction of 1957: A one month extension of the supplementary benefit payments during the fourth quarter of 1957 was estimated to have increased the benefit payout of the quarter by $10 million.\(^2\) This $10 million was, therefore, subtracted from the actual change in benefit payments.

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2 - Ibid.
(5) The expansion of 1958-1960: An increase in benefit categories was approximately offset by a tightening of the regulation pertaining to married women\(^1\) so that no adjustment was made to the benefit figure. Contribution rates were increased by about 30% or $15 million\(^2\) during the period so that it was necessary to reduce the change in the contribution level by this amount.

(6) The contraction of 1960 and the expansion of 1961-1965: The programme did not change to a significant extent and no adjustments were necessary.

Again, it should be stressed that all these adjustments are based on crude estimates of the magnitude of changes in the programme. Despite this, it is felt that the adjusted data are somewhat more useful than the historical data.

This chapter has described the type of data and the techniques used in this study to evaluate the effectiveness of Canada's unemployment insurance programme as an automatic stabilizer. The appendices to the chapter present specific examples of the use of these techniques. The following chapter presents the results of this research methodology.

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1 - Ibid.
2 - Ibid.
CHAPTER 5

THE STUDY: RESULTS

Introduction

This chapter will present the results of the analysis described in the previous chapter. Firstly, the tabulated results of the three specific techniques will be individually exhibited and described. And secondly, a comparison of the three sets of data will be made. Chapter 6 directs itself to a discussion of these results, in the light of the primary objective of empirical determination of the effectiveness of the Canadian unemployment insurance programme as an automatic stabilizer.

Offsetting Effects

Table 1 shows the relationship between changes in national income and changes in unemployment insurance benefits during the four expansions and three contractions of the 1950 to 1965 period. Results shown are based on both historical and adjusted values of the changes in benefit level.
TABLE 1

Changes in unemployment insurance benefits as a percentage of the change in national income during periods of economic expansion and contraction, historical and adjusted, 1950-1965.

<table>
<thead>
<tr>
<th>Period</th>
<th>Change in benefits as a percentage of the change in national income</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Historical</td>
</tr>
<tr>
<td>Expansions</td>
<td>1st quarter 1950 - 2nd quarter 1953</td>
</tr>
<tr>
<td></td>
<td>2nd quarter 1954 - 2nd quarter 1957</td>
</tr>
<tr>
<td></td>
<td>2nd quarter 1958 - 1st quarter 1960</td>
</tr>
<tr>
<td></td>
<td>1st quarter 1961 - 4th quarter 1965</td>
</tr>
<tr>
<td>Contractions</td>
<td>2nd quarter 1953 - 2nd quarter 1954</td>
</tr>
<tr>
<td></td>
<td>3rd quarter 1957 - 4th quarter 1957</td>
</tr>
<tr>
<td></td>
<td>1st quarter 1960 - 1st quarter 1961</td>
</tr>
</tbody>
</table>

* A negative value indicates a destabilizing effect; a positive value indicates a stabilizing effect.

Table 1 reveals several salient points. In all 7 periods the adjusted, and more relevant, data show that unemployment insurance benefits have produced the desired compensatory effects. The destabilizing
effects shown by the historical data during the first two expansions of the period resulted from changes in the programme which increased the benefit payment level. As pointed out earlier, when this type of change occurs during a period of expansion the countercyclical effectiveness of the programme is understated. In these two particular cases understatement produced an apparent destabilizing effect.

Another critical point relates to the creditable performance of the benefits as an automatic stabilizer during the three contractions. Adjusted data reveal compensatory effects of 13.82%, 17.65%, and 24.55% respectively during the three contractions considered. These figures also point to a substantial improvement in the effectiveness of the benefits during downswings between the earliest and most recent contractions considered.

---

1 - It should be noted that because the period taken to represent the contraction of 1957-1958 extended for only one quarter, less reliance should be placed on the results of this period than on those of the other two contractions.
Thirdly, Table 1 indicates that unemployment insurance benefits have been relatively ineffective as automatic stabilizers during periods of economic expansion. The maximum amount of any increase in national income offset by a decrease in benefits occurred during the 1958-1960 upswing when a countercyclical effect of 3.45% was experienced. It appears that the benefit component of the unemployment insurance programme is not a powerful stabilizer during expansionary periods. However, a substantially larger effect was experienced during the two most recent expansions than during the two earlier ones.

Table II presents data comparable to that of Table I for the contributory component of the programme. That is, it shows the relationship between changes in national income and changes in unemployment insurance contributions during the four expansions and three contractions of the period. Results based on historical and adjusted data are again shown.

Table II suggests that unemployment insurance contributions have not been effective as an automatic stabilizer during either periods of economic expansion or contraction. The maximum compensatory effect occurred during the most recent contraction and its magnitude
TABLE II

Changes in unemployment insurance contributions as a percentage of the change in national income during periods of economic expansion and contraction, historical and adjusted, 1950-1965.

<table>
<thead>
<tr>
<th>Period</th>
<th>Historical</th>
<th>Adjusted</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Expansions</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1st quarter 1950 - 2nd quarter 1953</td>
<td>0.94%*</td>
<td>0.60%</td>
</tr>
<tr>
<td>2nd &quot; 1954 - 2nd &quot; 1957</td>
<td>0.62%</td>
<td>0</td>
</tr>
<tr>
<td>2nd &quot; 1958 - 1st &quot; 1960</td>
<td>4.08%</td>
<td>1.72%</td>
</tr>
<tr>
<td>1st &quot; 1961 - 4th &quot; 1965</td>
<td>0.36%</td>
<td>0.36%</td>
</tr>
<tr>
<td><strong>Contraction</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2nd quarter 1953 - 2nd quarter 1954</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>3rd &quot; 1957 - 4th &quot; 1957</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>1st &quot; 1960 - 1st &quot; 1961</td>
<td>2.73%</td>
<td>2.73%</td>
</tr>
</tbody>
</table>

* Positive values indicate stabilizing effects.

was only 2.73% of the change in national income. During the other two contractions and during the expansion of 1954-1957 no offsetting effects were experienced. However, in no period was a destabilizing effect experienced. A trend toward improved effectiveness over time appears to have occurred.
Table III combines the benefit and contributary components of the programme and shows the relationship between their net changes and changes in national income. This table indicates the effectiveness of the complete unemployment insurance programme as an automatic stabilizer. In short, Table III combines the data of Tables I and II.

**TABLE III**

Combined change in unemployment insurance benefits and contributions as a percentage of the change in national income during periods of economic expansion and contraction, historical and adjusted, 1950-1965.

<table>
<thead>
<tr>
<th>Period</th>
<th>Combined change in benefits and contributions as a percentage of the change in national income</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Expansions</td>
</tr>
<tr>
<td></td>
<td>Historical</td>
</tr>
<tr>
<td>1st quarter 1950 - 2nd quarter 1953</td>
<td>0.27%*</td>
</tr>
<tr>
<td>2nd &quot; 1954 - 2nd &quot; 1957</td>
<td>0.07%</td>
</tr>
<tr>
<td>2nd &quot; 1958 - 1st &quot; 1960</td>
<td>7.53%</td>
</tr>
<tr>
<td>1st &quot; 1961 - 4th &quot; 1965</td>
<td>2.13%</td>
</tr>
<tr>
<td><strong>Contractions</strong></td>
<td></td>
</tr>
<tr>
<td>2nd quarter 1953 - 2nd quarter 1954</td>
<td>13.82%</td>
</tr>
<tr>
<td>3rd &quot; 1957 - 4th &quot; 1957</td>
<td>32.35%</td>
</tr>
<tr>
<td>1st &quot; 1960 - 1st &quot; 1961</td>
<td>27.28%</td>
</tr>
</tbody>
</table>

* Positive values indicate stabilizing effects.
This table simply serves to further clarify some of the points made earlier. The overall picture may be summarized as follows: The unemployment insurance programme has performed creditably as an automatic stabilizer during economic downswings. In addition this performance has improved over time so that the compensatory effects of 27.28% experienced during the most recent downswing was about double the offsetting effects of the programme during the first contraction considered. During expansions, however, the programme has been relatively ineffective. Only during the upswing of 1958-1960, when a countercyclical effect of 5.17% was experienced, did the programme assume a role of any importance. However, a trend toward improvement is apparent when the offsetting effects experienced during the first two expansions are compared to those experienced during the two most recent ones.

Prevention of Change in National Income

The second technique employed aimed at determination of the percentage of change in national income prevented by the unemployment insurance programme. Due to the nature of the methodology employed data is
presented in the form of a range of possible preventative effects. The actual compensatory effect lies somewhere within this range. Tables IV, V, and VI show the results of this technique for each of the expansions and two of the contractions of the period 1950-1965. Results based on both historical and adjusted data for the benefits and contributions are given in each table.

Table IV shows the percentage of changes in national income prevented by changes in unemployment insurance benefits during four expansions and two contractions of the 1950-1965 period. In most instances these results clearly parallel those arrived at by using the offsetting technique. At the same time, some differences are also apparent.

Looking first at the similarities, it is noted that all periods subjected to the test showed that the benefits, when adjusted for changes in the programme, yielded desired countercyclical effects. The two tests also give the same ranking to the magnitude of the effect during various periods. For example, both techniques showed the greatest effect during upswings during the

1 - As explained in Chapter 4 this test could not be applied to the contraction of 1960-1961.
TABLE IV

The role of unemployment insurance benefits in preventing changes in national income during periods of economic expansion and contraction, minimum and maximum preventative effects, historical and adjusted, 1950-1965.

<table>
<thead>
<tr>
<th>Period</th>
<th>Preventative effects as a percentage of the change in national income</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Historical Min.</td>
</tr>
<tr>
<td><strong>Expansions</strong></td>
<td></td>
</tr>
<tr>
<td>1st quarter 1950-2nd quarter 1953</td>
<td>-1.78%*</td>
</tr>
<tr>
<td>2nd &quot; 1954-2nd &quot; 1957</td>
<td>-1.39%</td>
</tr>
<tr>
<td>2nd &quot; 1958-1st &quot; 1960</td>
<td>7.28%</td>
</tr>
<tr>
<td>1st &quot; 1961-4th &quot; 1965</td>
<td>4.28%</td>
</tr>
<tr>
<td><strong>Contractions</strong></td>
<td></td>
</tr>
<tr>
<td>2nd quarter 1953-2nd quarter 1954</td>
<td>13.01%</td>
</tr>
<tr>
<td>3rd &quot; 1957-4th &quot; 1957</td>
<td>27.53%</td>
</tr>
<tr>
<td>1st &quot; 1960-1st &quot; 1961</td>
<td>-</td>
</tr>
</tbody>
</table>

* A negative value indicates a destabilizing effect; a positive value indicates a stabilizing effect.

1958-1960 period and the least effect during the 1950-1953 period. A second similarity lies in the fact that both
tests reveal benefits to have been relatively more stabilizing during downswings than during upswings. A final parallel indicates a more effective compensatory role for the benefits during the two most recent expansions than during the two earlier ones.

The most striking difference lies in the substantially more effective role assigned to the benefits during periods of expanding economic activity. This is particularly noticeable during the last two expansions. A second difference stems from the inapplicability of this multiplier methodology to the contraction of 1960-1961. This results in an inability to substantiate the improved effectiveness over time during contractions indicated by the offsetting technique. This trend was, however, apparent between the two contractions subjected to the test.

Table V shows the percentage change in national income prevented by changes in the level of unemployment insurance contributions. It presents data comparable to that of Table IV, for the contributory component of the programme.

Again, except for the more effective role assigned to the contributions during upswings, these results are quite similar to those arrived at through
TABLE V

The role of unemployment insurance contributions in preventing changes in national income during periods of economic expansion and contraction, minimum and maximum preventative effects, historical and adjusted, 1950-1965.

<table>
<thead>
<tr>
<th>Period</th>
<th>Expansions</th>
<th>Preventative effects as a percentage of the change in national income</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Historical</td>
<td>Adjusted</td>
</tr>
<tr>
<td></td>
<td>Min.</td>
<td>Max.</td>
</tr>
<tr>
<td>1st quarter 1950- 2nd quarter 1953</td>
<td>1.88%*</td>
<td>4.10%</td>
</tr>
<tr>
<td>2nd &quot; 1954- 2nd &quot; 1957</td>
<td>1.22%</td>
<td>2.65%</td>
</tr>
<tr>
<td>2nd &quot; 1958- 1st &quot; 1960</td>
<td>6.94%</td>
<td>13.74%</td>
</tr>
<tr>
<td>1st &quot; 1961- 4th &quot; 1965</td>
<td>0.71%</td>
<td>1.54%</td>
</tr>
</tbody>
</table>

Contractions

<table>
<thead>
<tr>
<th>Period</th>
<th>Expansions</th>
<th>Preventative effects as a percentage of the change in national income</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Historical</td>
<td>Adjusted</td>
</tr>
<tr>
<td></td>
<td>Min.</td>
<td>Max.</td>
</tr>
<tr>
<td>2nd quarter 1953- 2nd quarter 1954</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>3rd &quot; 1957- 4th &quot; 1957</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>1st &quot; 1960- 1st &quot; 1961</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

* Positive values indicate stabilizing effects.

use of the offsetting technique (see Table II). The contributions were completely ineffective as a stabilizer during both contractions considered, and were not potent in their effect during expansions. Only during the
1958-1960 expansion, when between 3.03 and 6.27% of the potential increase in national income was prevented, is an effect of any magnitude indicated.

Table VI combines the benefit and contributory components of the unemployment insurance scheme to give an indication of the overall effectiveness of the programme as an automatic stabilizer. It shows the percentage change in national income prevented by the combined effects of the unemployment insurance benefits and contributions.

This table indicates that the programme functioned creditably as an automatic stabilizer during both contractions considered. Also, somewhat lower, but still significant, compensatory effects were experienced during the two recent expansions. In comparing these results to those arrived at using the offsetting technique, and shown in Table III the main difference again lies in the greater effectiveness that the multiplier approach assigns to the programme during expansions. It appears that a trend toward improvement over time is conjecturable from the data.
TABLE VI

The role of the unemployment insurance programme in preventing changes in national income during periods of economic expansion and contraction, minimum and maximum preventative effects, historical and adjusted, 1950-1965.

<table>
<thead>
<tr>
<th>Period</th>
<th>Preventative effects as a percentage of the change in national income.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Historical</td>
</tr>
<tr>
<td></td>
<td>Min.</td>
</tr>
<tr>
<td>Expansions</td>
<td></td>
</tr>
<tr>
<td>1st quarter 1950-2nd quarter 1953</td>
<td>0.10%*</td>
</tr>
<tr>
<td>2nd &quot; 1954-2nd &quot; 1957</td>
<td>-0.17%</td>
</tr>
<tr>
<td>2nd &quot; 1958-1st &quot; 1960</td>
<td>14.22%</td>
</tr>
<tr>
<td>1st &quot; 1961-4th &quot; 1965</td>
<td>4.99%</td>
</tr>
<tr>
<td>Contractions</td>
<td></td>
</tr>
<tr>
<td>2nd quarter 1953-2nd quarter 1954</td>
<td>13.01%</td>
</tr>
<tr>
<td>3rd &quot; 1957-4th &quot; 1957</td>
<td>27.53%</td>
</tr>
<tr>
<td>1st &quot; 1960-1st &quot; 1961</td>
<td>-</td>
</tr>
</tbody>
</table>

* A negative value indicates a destabilizing effect; a positive value indicates a stabilizing effect.
Correlation of Cyclicl Components

The third test performed correlated the cyclical irregular percentage of national income with both the cyclical irregular percentage of unemployment insurance benefits and contributions. For benefits a negative correlation indicates a stabilizing effect; for contributions a positive correlation indicates a stabilizing effect. Table VII presents the results of this test. Only historical data were employed for the levels of benefits and contributions.

Of the 12 values of \( r \) computed\(^1\), 10 indicate the desired stabilizing effect. The exception during the expansion of 1958-1960 is readily explained. The programme was subjected to several changes during the period causing an inconsistency in the relationship between the cyclical irregular percentages of the national income and benefit series. These changes caused benefits and national income to move together during the majority of the quarters of the period. This, however, does not preclude an overall stabilizing effect during the

---

1 - Coefficients could not be determined for the period of 1957 because the period was too short.
TABLE VII

Correlation coefficients for the relationship between the cyclical irregular percentages of national income and unemployment insurance benefits and contributions during periods of economic expansion and contraction, historical data 1950-1965.

<table>
<thead>
<tr>
<th>Period</th>
<th>Value of r for benefits</th>
<th>Value of r for contributions</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Expansions</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1st quarter 1950-2nd quarter 1953</td>
<td>-0.59*</td>
<td>0.48**</td>
</tr>
<tr>
<td>2nd &quot; 1954-2nd &quot; 1957</td>
<td>-0.86</td>
<td>0.29</td>
</tr>
<tr>
<td>2nd &quot; 1958-1st &quot; 1960</td>
<td>0.52</td>
<td>0.13</td>
</tr>
<tr>
<td>1st &quot; 1961-4th &quot; 1965</td>
<td>-0.86</td>
<td>-0.60</td>
</tr>
<tr>
<td><strong>Contractions</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2nd quarter 1953-2nd quarter 1954</td>
<td>-0.78</td>
<td>0.98</td>
</tr>
<tr>
<td>3rd &quot; 1957-4th &quot; 1957</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>1st &quot; 1960-1st &quot; 1961</td>
<td>-0.61</td>
<td>0.67</td>
</tr>
</tbody>
</table>

* For benefits a negative value indicates a stabilizing effect and a positive value indicates a destabilizing effect.

** For contributions a positive value indicates a stabilizing effect and a negative value indicates a destabilizing effect.
period so long as that when the values moved in opposite directions the differences between them were greater than when they moved together. This unusual movement appears to have occurred as a result of changes in the programme.

The exception during the 1961-1965 upswing is less readily explained since the programme was not subjected to significant change during the period. A weakness in the methodology may, however, explain this unusual result. As stated in Chapter 3, in arriving at the cyclical irregular percentages, a straight line relationship was used to remove the trend component. In late 1959 a sharp increase in the level of contributions caused a break in the trend. After this break, a new straight line relationship appears to have emerged. In removing the trend component, therefore, the total period should have been divided into two periods (1950-1959 and 1960-1965) with two different straight line trends. The exceptional result may readily have been caused by this methodological inadequacy.

Table VII indicates that the association between the cyclical component of national income and benefits is somewhat greater than that between the cyclical
component of national income and contributions. Also, the association for both series appears to have been stronger during contractions than during expansions. Both of these results are congruent with those of the two other techniques. It should be noted again, however, that the strength of the relationship is not a good indication of the size of a stabilizing effect. The correlation coefficient should be used only as an indication as to whether or not compensatory effects were experienced. Used in this manner this test yields further evidence to support the notion that the unemployment insurance programme functions in a countercyclical manner.

**Summary of Results**

Table VIII retabulates the most relevant data from Tables 1 to VII from the viewpoint of evaluating Canada's unemployment insurance programme as an automatic stabilizer. Except for the correlation coefficients all values are based on adjusted data for benefits and contributions. The results may be summarized as follows:

(1) The programme has performed creditably as a stabilizer during periods of contraction. The benefit component
Summary of results relevant in determining the effectiveness of Canada's unemployment insurance program as an automatic stabilizer during the economic expansions and contractions of the period 1950 - 1965.

<table>
<thead>
<tr>
<th>PERIOD</th>
<th>BENEFITS</th>
<th>CONTRIBUTIONS</th>
<th>COMBINED</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Off-Setting effects</td>
<td>Range of preventative effects</td>
<td>r for cyclical comp.</td>
</tr>
<tr>
<td>Expansions</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1st qu. 1950-2nd 1953</td>
<td>0.07%</td>
<td>0.17-0.28%</td>
<td>-.59</td>
</tr>
<tr>
<td>2nd qu. 1954-2nd 1957</td>
<td>0.31%</td>
<td>0.78-1.19%</td>
<td>-.86</td>
</tr>
<tr>
<td>2nd qu. 1958-1st 1960</td>
<td>3.45%</td>
<td>7.28-10.32%</td>
<td>+.52</td>
</tr>
<tr>
<td>1st qu. 1961-4th 1965</td>
<td>1.77%</td>
<td>4.28-6.47%</td>
<td>-.86</td>
</tr>
<tr>
<td>Contractions</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2nd qu. 1953-2nd 1954</td>
<td>13.82%</td>
<td>13.01-14.97%</td>
<td>-.78</td>
</tr>
<tr>
<td>3rd qu. 1957-4th 1957</td>
<td>17.65%</td>
<td>17.17-19.87%</td>
<td>-</td>
</tr>
<tr>
<td>1st qu. 1960-1st 1961</td>
<td>24.55%</td>
<td>-</td>
<td>-.61</td>
</tr>
</tbody>
</table>
of the scheme has been almost totally responsible for this effectiveness. Further, the efficacy of the programme during downswings increased from a stabilizing effect of about 14% of the change in national income during the contraction of 1953-1954 to one of about 28% of the change in national income during the contraction of 1960-1961.

(2) The programme has been a relatively less effective stabilizer during periods of expansion. However, during the last two expansions a significant compensation was experienced. This is particularly true if the results of the multiplier model give a fair indication of the situation. If so a stabilizing effect of between 10% and 17% of the change in national income was experienced during the 1958-1960 upswing. If the offsetting technique gives a better indication the stabilizing effect during this period is reduced to about 5% of the change in national income. The difference between the results of the offsetting and multiplier techniques must be resolved before a useful statement about the efficiency of the programme as an automatic stabilizer during expansions can be made. Chapter 6 will attempt such a resolution.
CHAPTER 6

DISCUSSION OF RESULTS

Introduction

This chapter offers a general statement as to the efficacy of Canada's unemployment insurance programme as an automatic stabilizer. Before such a statement was possible, however, the conflict between the magnitude of the stabilizing during expansions indicated by the multiplier and offsetting techniques had to be resolved. Such a resolution is presented. To assist in the development of the general statement, the effectiveness of Canada's programme is compared to that of the United States' programme. This gives some sort of yardstick by which the Canadian programme can be evaluated. Finally, Chapter 6 gives an indication of how the various limitations of the study effect the conclusions that have been drawn with regards to the programme's counter-cyclical effectiveness.
Magnitude of the Stabilizing Effects During Expansions

In the previous Chapter, it was noted that the multiplier technique indicates a stabilizing effect during expansions much greater than that indicated by the offsetting technique. As Eilbott\(^1\) points out, the difference can be explained by reference to the stabilizers impact on the economy's overall marginal propensity to save \(^{2}\) out of national income (m.p.s.). The resolution now presented follows the argument of Eilbott\(^3\) quite closely.

The effectiveness of the programme as a stabilizer depends on its impact on the economy's marginal propensity to save out of national income (m.p.s.). Because of the programme's action as a stabilizer, the government's budget is pushed toward a surplus during periods of rising income. The government, therefore, becomes a net saver and increases the economy's overall

\(^{1}\) Eilbott, op. cit. p. 460.

\(^{2}\) The economy's overall marginal propensity to save is a weighted average of the individual, government and corporate sectors' marginal propensities to save.

\(^{3}\) Eilbott, op. cit., pp. 460-461.
m.p.s. Similarly during periods of falling income the budget is pushed toward a deficit and the overall m.p.s. decreases.

The value of the economy's multiplier is the reciprocal of the m.p.s. so that when the unemployment insurance programme increases the m.p.s. during expansions, it dampens the multiplier. The decrease in the value of the multiplier depends on two factors:

(1) The absolute increase effected on the m.p.s. and

(2) The initial value of the m.p.s. An example may serve to clarify this point:

"For example, the stabilizers reduce the value of the multiplier from 3\(-1/3\) to 2\(\frac{1}{2}\) and diminish potential income changes by 25 percent, if they increase the m.p.s. from 0.3 to 0.4. If they raise its value from 0.1 to 0.2 they lower the multiplier from 10 to 5 and dampen income changes by 50 percent. Consequently, the lower the m.p.s. the greater the impact of a given set of stabilizers."\(^1\)

\(^1\) - Ibid, p. 461.
In terms of this study, where only one stabilizer is under consideration, the last sentence may be rephrased - "consequently, the lower the m.p.s. the greater the impact of the unemployment insurance programme".

In general, a higher m.p.s. has characterized economic contractions than economic expansions. The corporate sector absorbs a large share of declines in national income while maintaining dividend payments relatively constant. This leads to a high m.p.s. since the marginal propensity to invest out of retained earnings is lower than the marginal propensity to consume out of disposable income.

The situation is quite different during expansions. The corporate sector absorbs a much smaller share of the overall increase in income and also raised

1 - During the contraction of 1953-1954 the corporate sector absorbed about 67% of the decline in national income; during the contraction of 1957 it absorbed about 60%; and during the contraction of 1960-1961 it absorbed about 124%.

2 - Eilbott, op. cit., p. 461.

3 - During the expansion of 1950-1953 the corporate sector absorbed only about 13% of the increase in national income; during the expansion of 1954-1957 it absorbed about 14%; during the expansion of 1958-1960 it absorbed about 19%; and during the expansion of 1961-1965 it absorbed about 14%.
dividends. The m.p.s. was, therefore, lower during expansions and allowed smaller absolute increases in its magnitude to have a sizeable impact.

This resolution may be phrased more simply. The downswings of the period would have been relatively mild even in the absence of the programme's stabilizing effect because of the cushioning effect of the corporate sector. Thus, mild downswings were made even less severe by the programme. During expansions, however, the individual sector absorbed a relatively larger part of increases in national income so that a smaller cushioning effect resulted. The impact of the programme is, therefore, enhanced during expansions over what the offsetting technique, which ignores the magnitude of the m.p.s., indicates.

This factor should not be ignored, so that the multiplier model apparently assigns the more realistic stabilizing effect to the unemployment insurance programme during expansions. In arriving at a general statement as to the countercyclical efficacy of the programme conclusions for periods of expansion will, therefore,

1 - Eilbott, op. cit., p. 461.
be based on the findings of the multiplier model. The similarity of the results yielded by the two techniques during contractions, make it unnecessary to choose between the two for these periods.

Comparison: United States and Canada

In addition to evaluating the programme's countercyclical effectiveness in terms of the magnitude of compensatory movements, it is useful to judge its effectiveness relative to that of a comparable programme. 1 Rejda used the offsetting and correlation techniques described in Chapter 4 to test the efficacy of the United States' unemployment compensation programme. By comparing Rejda's results with those of this study it is then possible to throw further light on the effectiveness of the Canadian programme.

Tables IX and X present such a comparison. The periods of expansion and contraction employed in the two studies correspond quite closely. Rejda's results are based on unadjusted values of the changes in unemployment benefits and contributions. Since the United

1 - Rejda, op. cit.

<table>
<thead>
<tr>
<th>Country</th>
<th>Period</th>
<th>Effects of Benefits</th>
<th>Effects of Combined Benefits</th>
<th>Effects of Combined Benefits</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Expansions</td>
<td>Contractions</td>
</tr>
<tr>
<td>US</td>
<td>4th quar. 1949- 3rd quar.</td>
<td>1953 0.16%* 0.34% 0.50%</td>
<td>1954 24.13% 4.27% 28.40%</td>
<td>1957 17.65% 0 17.65%</td>
</tr>
<tr>
<td>Can. 1st</td>
<td>1950- 2nd</td>
<td>1953 0.07% 0.60% 0.67%</td>
<td>1954 23.10% 1.00% 24.10%</td>
<td>1957 17.65% 0 17.65%</td>
</tr>
<tr>
<td>US 3rd</td>
<td>1954- 3rd</td>
<td>1957 0.79% 0.74% 1.53%</td>
<td>1957 17.65% 0 17.65%</td>
<td>1957 17.65% 0 17.65%</td>
</tr>
<tr>
<td>Can. 2nd</td>
<td>1954- 2nd</td>
<td>1957 0.31% 0 0.31%</td>
<td>1957 17.65% 0 17.65%</td>
<td>1957 17.65% 0 17.65%</td>
</tr>
<tr>
<td>US 2nd</td>
<td>1958- 2nd</td>
<td>1960 3.12% 1.85% 4.97%</td>
<td>1960 3.45% 1.72% 5.17%</td>
<td>1960 3.45% 1.72% 5.17%</td>
</tr>
<tr>
<td>Can. 2nd</td>
<td>1958- 1st</td>
<td>1960 3.45% 1.72% 5.17%</td>
<td>1960 3.45% 1.72% 5.17%</td>
<td>1960 3.45% 1.72% 5.17%</td>
</tr>
<tr>
<td>US 1st</td>
<td>1961- 1st</td>
<td>1964 1.85% 2.69% 4.54%</td>
<td>1964 1.85% 2.69% 4.54%</td>
<td>1964 1.85% 2.69% 4.54%</td>
</tr>
<tr>
<td>Can. 1st</td>
<td>1961- 4th</td>
<td>1965 1.77% 0.36% 2.13%</td>
<td>1965 1.77% 0.36% 2.13%</td>
<td>1965 1.77% 0.36% 2.13%</td>
</tr>
</tbody>
</table>

* Positive values indicate stabilizing effects.
States' programme has been quite stable this is not a serious limitation. Table IX, however, employs adjusted data for the Canadian values because they are believed to be more relevant for this test despite the fact that the U.S. data is unadjusted. Since Rejda applied the correlation technique only to the contributory component of the programme, comparison is limited to this component of the programme in Table X.

Table IX suggests that both programmes have been about equally ineffective as an automatic stabilizer during periods of expansion. It should be remembered that the offsetting technique understates the effectiveness because it ignores the fact that the marginal propensity to save out of national income has been relatively low during expansions. However, at this point it is relative effectiveness and not the magnitude of the effect that is being considered. During the first two contractions considered the United States' programme appears to have been substantially more effective than the Canadian

---

1 - This technique was used by Rejda only in an attempt to determine if merit rating caused the contributory component of the United States' programme to be destabilizing.
programme. During the downswing of 1953-1954 the stabilizing effect was about double in the United States - about 28% of the change in national income compared to about 14% in Canada. During the most recent downswing the programmes were roughly equivalent in terms of their offsetting effects - about 30% of the change in national income in the United States and about 27% in Canada. Thus, relative to the United States' programme there has been a substantial improvement during contractions in Canada's programme over time.

This last finding was to be expected. Over the period under consideration the Canadian programme was greatly expanded in coverage relative to the United States programme. Since the level of coverage has levelled off in the United States and since Canada's programme appears to have almost reached a comparable level, it can be postulated that the Canadian programme has probably just about reached the peak of its counter-cyclical effectiveness during downswings. This assumes no major revisions of the programme.

Table X shows the correlation coefficient for the cyclical irregular percentages of national income and unemployment insurance contributions for comparable periods in the United States and Canada. For the five
TABLE X

Comparison of the coefficients of correlation for the cyclical irregular percentages of national income and unemployment insurance contributions during periods of economic expansion and contraction, Canada vs United States, 1949 - 1965

<table>
<thead>
<tr>
<th>COUNTRY</th>
<th>PERIOD</th>
<th>VALUE OF r</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>Expansions</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>US</strong> 4th quarter 1944 - 3rd quarter 1953</td>
<td>.20*</td>
</tr>
<tr>
<td></td>
<td>Canada 1st &quot; 1950 - 2nd &quot; 1953</td>
<td>.48</td>
</tr>
<tr>
<td></td>
<td>US 3rd &quot; 1954 - 3rd &quot; 1957</td>
<td>.23</td>
</tr>
<tr>
<td></td>
<td>Canada 2nd &quot; 1954 - 2nd &quot; 1957</td>
<td>.29</td>
</tr>
<tr>
<td></td>
<td>US 2nd &quot; 1958 - 2nd &quot; 1960</td>
<td>.82</td>
</tr>
<tr>
<td></td>
<td>Canada 2nd &quot; 1958 - 1st &quot; 1960</td>
<td>.13</td>
</tr>
<tr>
<td></td>
<td>US 1st &quot; 1961 - 1st &quot; 1964</td>
<td>--</td>
</tr>
<tr>
<td></td>
<td>Canada 1st &quot; 1961 - 4th &quot; 1965</td>
<td>-.60</td>
</tr>
<tr>
<td></td>
<td><strong>Contractions</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>US 3rd &quot; 1953 - 3rd &quot; 1954</td>
<td>.90</td>
</tr>
<tr>
<td></td>
<td>Canada 2nd &quot; 1953 - 2nd &quot; 1954</td>
<td>.98</td>
</tr>
<tr>
<td></td>
<td>US 3rd &quot; 1957 - 2nd &quot; 1958</td>
<td>.40</td>
</tr>
<tr>
<td></td>
<td>Canada 3rd &quot; 1957 - 4th &quot; 1957</td>
<td>--</td>
</tr>
<tr>
<td></td>
<td>Canada 1st &quot; 1960 - 1st &quot; 1961</td>
<td>.67</td>
</tr>
</tbody>
</table>

* A positive value indicates a stabilizing effect, a negative value indicates a destabilizing effect.
periods subject to the comparison stabilizing effects are suggested in both countries. As stated earlier no coefficient could be determined for the downswing of 1957 in Canada because the period was too short. Since the negative value of the 1961-1965 expansion is exceptional it would have been interesting to compare it with a figure for a comparable period in the United States. Rejda, however, omits this expansion from this part of his study.¹ The values of r do not yield a good indication of the magnitude of an offsetting effect, but do tend to indicate the direction of the effect. This comparison then indicates a stabilizing effect for the contributory component of both programmes.

A General Statement

The findings of this study may be summarized as follows:

(1) Canada's unemployment insurance programme has performed creditably as an automatic stabilizer during periods of economic contraction. The benefit component

¹ - Rejda, op. cit., p. 204.
of the scheme has been almost totally responsible for this effectiveness. Moreover, the efficacy of the programme during downswings has doubled in recent years - increasing from a stabilizing effect of about 14% of the change in national income during the contraction of 1953-1954 to one of about 27% of the change in national income during the contraction of 1960-1961. This improvement made the programme about as effective as the United States' programme during the most recent downswing.

(2) The programme has been relatively less effective as a stabilizer during periods of economic expansion. However, during the last two expansions a significant compensatory effect was experienced. The magnitude of the effect lay between 10% and 17% of the change in national income during the expansion of 1958-1960 and between 5% and 8% of the change in national income during the upswing of 1961-1965. This experience roughly parallels that of the United States' programme.¹

¹ - This assumes that if the multiplier methodology had been applied to the United States' programme the stabilizing effect would have been increased by the same order of magnitude as was the Canadian programme when this technique was applied.
Limitations

The above points emerge despite several limitations in the methodology employed. It may be useful to summarize these limitations and their effect on the reliability of the results. They are as follows:

(1) The contraction extending from the 2nd quarter of 1957 to the 2nd quarter of 1958 was not subjected to any of the three tests employed in this study. This limitation was unavoidable because national income increased during the period despite a general decrease in the level of economic activity. The period substituted - the 3rd quarter 1957 to the 4th quarter 1957 - gives some indication of the programme's effectiveness over the period, but because it is so short little reliance can be placed on these results.

(2) Because the personal share of national income rose although national income, as a whole, declined, the multiplier technique could not be used to test the programme's effectiveness during the downswing of 1960-1961. This made it impossible to check the results yielded by the offsetting technique during this downswing.
(3) Because the period used to represent the contraction of 1957-1958 was so short the correlation technique could not be applied to it. This is not a serious limitation because the two other techniques yielded consistent results for the period.

(4) The adjustments made to reflect changes in benefit rates, contribution rates and coverage were quite crude. It is felt, however, that because the adjustments were, at a minimum, correct, in direction, the adjusted data represent an improvement over historical data.

(5) All the downswings investigated were short in duration. The study does not yield information regarding the efficacy of the programme as a stabilizer during longer and more serious economic contractions.

(6) The study does not attempt to quantify the effects of the programme on liquidity, expectations, or habits. Since the programme should positively affect these factors, the study will tend to underestimate the programme's effectiveness.

These limitations, admittedly, reduce the validity and generality of the results of this study.
However, where the tests could be applied the results are remarkably consistent. This consistency lends sufficient reliability to the results to make them useful. It would be surprising if the precise magnitude of the stabilizing effects indicated by this study are correct. But, it would be more surprising if these estimates are so unreliable as to be unusable.
Summary

Automatic stabilizers may be defined as mechanisms which automatically reduce the flow of funds to individuals and corporations during periods of economic expansion and which increase the flow during periods of economic contraction. Theoretically, classification of Canada's unemployment insurance programme as an automatic stabilizer can be justified by consideration of its two fold action. Firstly, because contributions (a flow of funds from individuals and corporations) are derived from the wage bill of covered employees, they should move parallel to the level of economic activity. And secondly, because benefits (a flow of funds to individuals) are derived from the level of unemployment, they should move in a direction opposite to the level of economic activity.

Thus, by the very nature of the programme, a reduction in the level of economic activity should be accompanied by an increased level of benefit payments.
and a reduced level of contributions. Similarly, an 
increase in the level of economic activity should be 
accompanied by an increase in the level of contributions 
and by a reduction in the level of benefit payments.

As a result of such theoretical considerations, 
the Canadian unemployment insurance programme has come 
to be accepted as an automatic stabilizer. Empirical 
research which demonstrated that the United States' 
unemployment compensation scheme does in fact operate 
as an automatic stabilizer strengthened this acceptance. ¹

Such support is, however, inconclusive because the 
Canadian programme differs from the United States' pro-
gramme in several ways. ² Conclusive verification requires 
empirical support based on Canadian data.

This study presents empirical evidence to 
support the notion that Canada's programme functions as

¹ - For example, Eilbott, op. cit. and Clement, M.O. 
"The Quantitative Impact of Automatic Stabi-
lizers," Review of Economics and Statistics, 
XLII (February, 1960).

² - For example, the United States' programme incorporates 
merit rating; the Canadian programme does not. 
As a second example, in the United States 
contributions are not collected from employees; 
in Canada they are.
an automatic stabilizer. Further, two of the three techniques employed allow estimation of the magnitude of the stabilizing effect.

Canada's unemployment insurance programme has performed creditably as an automatic stabilizer during periods of economic contraction. The benefit component of the scheme has been almost totally responsible for this effectiveness. Moreover, the efficacy of the programme during downswings has doubled in recent years - increasing from a stabilizing effect of about 14% of the change in national income during the contraction of 1953-1954 to one of about 27% of the change in national income during the contraction of 1960-1961.

The programme has been relatively less effective as a stabilizer during periods of economic expansion. However, during the last two upswings a significant compensatory effect was experienced. The magnitude of the effect lay between 10% and 17% of the change in national income during the expansion of 1958-1960 and between 5% and 8% of the change in national income during the upswing of 1961-1965.
Implications

It is difficult to draw implications from a study of such narrow scope. It may, however, be useful to make such an attempt. The study has implications for, at least, two government policy areas: (1) overall stabilization policies and (2) policy toward the unemployment insurance programme.

In terms of government policy toward the unemployment insurance programme, it appears that more emphasis should be placed on the programme's role as an automatic stabilizer. So long as the programme operates in such a manner as to offset a significant portion of economic movements, this role should be seriously considered whenever changes in the programme are contemplated. This is not to say that stabilization should be made the prime objective of the programme. It appears that the social objective will (and should) remain its prime aim. However, stabilization, and any other secondary objectives, should not be overlooked by government officials.

Fortunately, there is a substantial degree of consistency between social and stabilization objectives. Most changes stemming from social objectives act so as
to improve the countercyclical action of the programme. For example, the government's recent statement that it intends to expand the programme is desirable from both social and stabilization viewpoints. Despite this, the government should state explicitly the priority given to the various objectives of the unemployment insurance programme.

The study also raises the possibility of using the unemployment insurance programme as a formula flexible stabilizer. This would involve changes in benefit rates in response to danger signals given by some economic indicator. In particular, during downswings benefit rates could be increased when some previously set level of activity is reached. Although, this mechanism would not be classified as automatic stabilization it might be quite effective.

In terms of overall government stabilization policy little useful generalization is possible without empirical research into the countercyclical effectiveness of the other automatic stabilizers working on the Canadian economy. The most important of these are personal income taxes, corporate income taxes and excise taxes.

Adding the compensatory effects of these mechanisms would yield a value for the overall built-in stabilization within the economy. Judging from studies on the United States' economy\(^1\) the total battery probably yields a potent stabilizing influence. However, the effect is probably not so large as to make discretionary policies unnecessary.

**Suggestions for Further Research**

Further research into some of the topics touched upon in this study might prove useful. Some suggestions are as follows:

1. An attempt should be made to quantify the countercyclical effect of any expectational and monetary adjustments caused by the unemployment insurance programme,

2. The effect of the time lag between changes in economic activity and the onset of the compensatory effect of the unemployment insurance programme should be investigated,

3. Estimates of the effect of hypothetical changes in the programme on countercyclical efficacy should be made, and

\(^1\) For example, Eilbott, *op. cit.* and Clement, *op. cit.*
(4) Parallel studies aimed at quantifying the effectiveness of income and excise taxes as automatic stabilizers should be undertaken.
BIBLIOGRAPHY

A. ARTICLES


B. BOOKS


C. GOVERNMENT PUBLICATIONS


D. UNPUBLISHED MATERIAL


APPENDIX I

Annual unemployment insurance benefits as a percentage of disposable income and personal expenditures on goods and services, 1950 - 1965.

<table>
<thead>
<tr>
<th>Year</th>
<th>Benefits as a % of disposable income</th>
<th>Benefits as a percentage of expenditures on goods and services</th>
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<tr>
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<td>0.8%</td>
<td>0.8%</td>
</tr>
<tr>
<td>1951</td>
<td>0.5%</td>
<td>0.6%</td>
</tr>
<tr>
<td>1952</td>
<td>0.7%</td>
<td>0.8%</td>
</tr>
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<td>1.3%</td>
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<tr>
<td>1956</td>
<td>1.0%</td>
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<tr>
<td>1957</td>
<td>1.4%</td>
<td>1.5%</td>
</tr>
<tr>
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<tr>
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</tr>
<tr>
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</tr>
<tr>
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</tr>
<tr>
<td>1965</td>
<td>0.9%</td>
<td>1.0%</td>
</tr>
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</table>
APPENDIX II

Net national income at factor cost, by quarters, seasonally adjusted, annual rates, 1950-1965 ($ millions)

<table>
<thead>
<tr>
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<th>Third Quarter</th>
<th>Fourth Quarter</th>
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Sources:  


APPENDIX III

Sample calculation: Offsetting Technique

The offsetting method works from the formula,
that for benefits

\[ s = \frac{-\Delta B}{\Delta N_1} \times 100 \]

and for contributions

\[ s = \frac{\Delta C}{\Delta N_1} \times 100 \]

where \( s \) equals the percentage stabilizing effect, \( \Delta B \) equals the change in the level of benefits, \( \Delta C \) equals the change in the level of contributions, and \( \Delta N_1 \) equals the change in the level of national income.

The use of \( -\Delta B \) simply serves to assure that a positive value for \( s \) will always indicate a stabilizing effect.

The role of benefits during the contraction of 1953-1954 will serve to illustrate the method. The level of national income for the 2nd quarter 1953 (peak) was $19,388 million. For the 2nd quarter 1954 (trough) it was $18,780 million. The change over the downswing was, therefore, -$608 million. However, since national income data was expressed as seasonally adjusted quarterly
totals at annual rates, it was necessary to divide -$608 million by 4 to compute the actual change. Thus the true change in national income from peak to trough was -$152 million.

The level of unemployment insurance benefits for the 2nd quarter 1953 (peak) was $35 million. For the second quarter 1954 (trough) it was $56 million. The change in benefit payments over the downswing was, therefore, $21 million. Since the data for unemployment benefits was in terms of quarterly totals no adjustment was necessary.

Now \[ \Delta B = -21 \text{ million} \]
and \[ \Delta NI = -152 \text{ million} \]

\[ s = \frac{-21}{-152} \times 100 = 13.82\% \]

That is, 13.82% of the decline in national income was offset by an increase in unemployment insurance benefit payments.
APPENDIX IV

Derivation of Equation B

Holding all economic variables constant except the level of unemployment insurance contributions, the expression for a change in income between two periods may be represented as follows:

\[ \Delta Y = \Delta I + cq\Delta Y - c(r_1Y_1 - r_2Y_2) + ip\Delta Y - \frac{1}{r_1}Y_1 - \frac{1}{r_2}Y_2 \]  

(1)

where \( \Delta Y = Y_1 - Y_2 \), or the change in income; \( \Delta I = I_1 - I_2 \), or the change in investment; \( c \) = the marginal propensity to invest out of retained corporate earnings; \( q = \frac{AX}{\Delta Y} \) or the personal share of the change in income; \( p = \frac{AZ}{\Delta Y} \) or the corporate share of a change in income and \( r_1 \) and \( r_2 \) are the ratios of contributions to income in the two periods. Note that terms using both \( c \) and \( i \) are necessary because contributions are shared by employees and employers.

The income elasticity \( (E_C) \) of the contributions \( (C) \) is the ratio of the percentage change in contributions to the percentage change in income. This may be expressed as follows:

\[ E_C = \frac{\Delta CY_1}{\Delta YC_1} \]  

(2)

Solving for \( \Delta C \) gives

\[ \Delta C = \frac{E_C\Delta YC_1}{Y_1} \]  

(3)
Now

\[ \Delta C = r_1 Y_1 - r_2 Y_2 \]  

(4)

So substituting (3) into (1) gives

\[ \Delta Y = \Delta I + cq \Delta Y - cE_C \Delta Y_{C_1} + ip \Delta Y - E_C \Delta Y_{C_1} \]

\[ \frac{Y_1}{Y_1} \]  

(5)

Now by definition

\[ \frac{C_1}{Y_1} = r_C \]  

(6)

So substituting (6) into (5) yields

\[ \Delta Y = \Delta I + cq \Delta Y - cE_C \Delta Y_{r_C} + ip \Delta Y - iE_C \Delta Y_{r_C} \]  

(7)

Solving (7) for \( \Delta Y \) gives

\[ \Delta Y = \frac{\Delta I}{I - cq + cE_C r_C - ip + iE_C r_C} \]  

(8)

As a convenient measure of countercyclical effectiveness one may use the expression

\[ A_C = \frac{I - \Delta Y}{\Delta Y_a} \]  

(9)

Where \( \Delta Y \) refers to a change in income for the system under discussion and \( \Delta Y_a \) refers to a system where unemployment contributions do not exist. There is then no countercyclical effect and \( E_C \) equals zero. \( \frac{\Delta Y}{\Delta Y_a} \), then,
is the ratio of the decline (or increase) in income in
the system under consideration to the decline (or in­
crease) in income if the system had no contributory system
acting countercyclically. \( A_C \) is then the fraction of
the change in income prevented by the existence of un­
employment contributions.

Substituting (8) into (9) with \( E_C \) equal to
zero for \( \Delta Y_A \) yields

\[
A_C = \frac{I - cq - ip}{I - cq + cE_{C}r_{C} - ip + iE_{C}r_{C}}
\]

\[
= \frac{cE_{C}r_{C} + iE_{C}r_{C}}{I - cq + cE_{C}r_{C} - ip + iE_{C}r_{C}}
\]

and substituting \( q = \frac{\Delta X}{\Delta Y} \) and \( p = \frac{\Delta Z}{\Delta Y} \)

\[
A_C = \frac{cE_{C}r_{C} + iE_{C}r_{C}}{I - c\frac{\Delta X}{\Delta Y} - i\frac{\Delta Z}{\Delta Y} + cE_{C}r_{C} + iE_{C}r_{C}}
\]

This is equation B.
APPENDIX V

Sample calculation: Multiplier Model

The role of benefits during the contraction of 1953-1954 will serve to illustrate the calculations involved in the employment of this method.

As stated in the text of this study,

\[ A_B = \frac{-cE_B r_B}{1 - c \frac{\Delta X}{\Delta Y} - cE_B r_B} \]

where \( A_B \) = the percentage of a potential change in national income prevented by a change in benefits,

\( c \) = the marginal propensity to consume out of disposable income,

\( r_B \) = the ratio of benefits to national income at the beginning of the period,

\( E_B \) = the income elasticity of benefits,

and \( \frac{\Delta X}{\Delta Y} \) = the personal share of a change in national income.

Now, \( E_B = \frac{A_B}{B_1} \times \frac{N1}{\Delta N1} \)
where \( \Delta B \) = the change in benefit level,
\[ B_1 \] = the level of benefits at the beginning of the period
\( \Delta N_{l1} \) = the change in national income,
\[ N_{l1} \] = the level of national income at the beginning of the period.

The level of national income for the 2nd quarter 1953 (peak) was $19,388 million. For the 2nd quarter 1954 (trough) it was $18,780 million. The change over the downswing was therefore, $-608 million. The level of unemployment insurance benefits for the 2nd quarter 1953 (peak) was $35 million. For the 2nd quarter 1954 (trough) it was $56 million. The change over the downswing was, therefore, $21 million.

\[
\therefore E_B = \frac{21}{35} \times \frac{19,388}{-608} = -19.1328
\]

\[
r_B = \frac{B_1}{N_{l1}}
\]

As stated above \( B_1 \) was $35 million and \( N_{l1} \) $19,388 million. However, because national income data was expressed in quarterly totals at annual rates, it was necessary to
divide $19,388 million by 4 to compute the actual value of national income. The actual value was, therefore, $4847 million. Note that this adjustment was not necessary in determining $E_B$ because a ratio of national income values was employed.

Then \[ r_B = \frac{35}{4847} = .0072 \]

Any change in national income can be divided into two components - the corporate share and the personal share. The personal share of any change may then be determined by subtracting the corporate share \( \frac{\Delta Z}{\Delta Y} \) from 1,

\[ \frac{\Delta X}{\Delta Y} = 1 - \frac{\Delta Z}{\Delta Y} \]

For the 1953 - 1954 period, \( \Delta Y \) was -$608 million (see above). The level of corporate profits the 2nd quarter 1953 (peak) was $2736 million and the inventory valuation adjustment figure was $-16 million. The level of corporate profits for the 2nd quarter 1954 (trough) was $2252 million and the inventory valuation adjustment figure was $60 million. Using these to represent the corporate share of national income, the change in this share over the period was -$408 million.
\[ \frac{AZ}{AY} = \frac{-408}{-508} = 0.6710 \]

and

\[ \frac{AX}{AY} = 1 - 0.6710 = 0.3290 \]

Assuming \( c = 0.8 \)

\[ A_B = \frac{-0.8 \times -19.1328 \times 0.0072}{1 - (0.8 \times 0.3290) - (0.8 \times -19.1328 \times 0.0072)} \]

\[ = 0.1301 \text{ or as a percentage } = 13.01\% \]

Assuming \( c = 0.9 \)

\[ A_B = \frac{-0.9 \times -19.1328 \times 0.0072}{1 - (0.9 \times 0.3290) - (0.9 \times -19.1328 \times 0.0072)} \]

\[ = 0.1497 \text{ or as a percentage } = 14.97\% \]

That is, depending on the value assigned to \( c \) the stabilizing effect falls between 13.01 and 14.97\%.