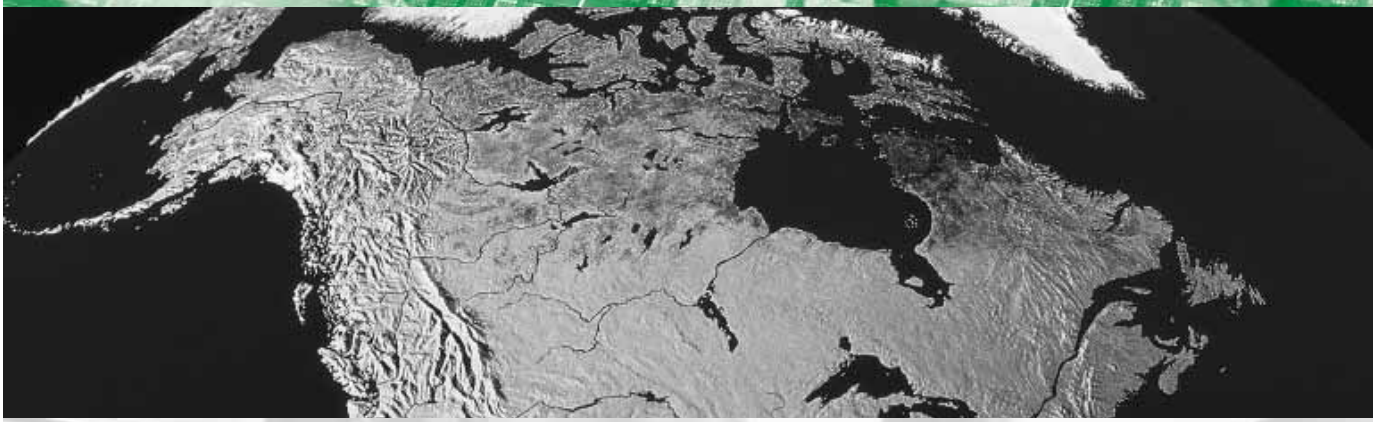
UI

The UI System as an Automatic Stabilizer in Canada

by Peter Dungan and Steve Murphy



Human Resources Development Canada
Développement des ressources humaines Canada

UI Macroeconomic Stabilization

Canada

UI

The UI System as an Automatic Stabilizer in Canada

by Peter Dungan and Steve Murphy
University of Toronto

UI Macroeconomic Stabilization

May 1995
Publication également disponible en français
IN-AH-209E-05-95

Acknowledgements
This is the tenth in a series of papers sponsored by Human Resources Development Canada (HRDC). The authors would like to express their thanks to Arun Roy of HRDC for his comments on earlier versions of this paper. The views expressed here are those of the authors and do not necessarily represent those of HRDC.

****This version has been reformatted for electronic presentation. For the purpose of reference, the page numbers have been maintained identical to the published report.**

Unemployment Insurance Evaluation Series

Human Resources Development Canada (HRDC), in its policies and programs, is committed to assisting all Canadians in their efforts to live contributing and rewarding lives and to promote a fair and safe workplace, a competitive labour market with equitable access to work, and a strong learning culture.

To ensure that public money is well spent in pursuit of this mission, HRDC rigorously evaluates the extent to which its programs are achieving their objectives. To do this, the Department systematically collects information to evaluate the continuing rationale, net impacts and effects, and alternatives for publicly-funded activities. Such knowledge provides a basis for measuring performance and the retrospective lessons learned for strategic policy and planning purposes.

As part of this program of evaluative research, the Department has developed a major series of studies contributing to an overall evaluation of UI Regular Benefits. These studies involved the best available subject-matter experts from seven Canadian universities, the private sector and Departmental evaluation staff. Although each study represented a stand alone analysis examining specific UI topics, they are all rooted in a common analytical framework. The collective wisdom provides the single most important source of evaluation research on unemployment insurance ever undertaken in Canada and constitutes a major reference.

The Unemployment Insurance Evaluation Series makes the findings of these studies available to inform public discussion on an important part of Canada's social security system.

I.H. Midgley
Director General
Evaluation Branch

Ging Wong
Director
Insurance Programs

Table of Contents

List of Tables

List of Figures

Abstract

This study examines the effectiveness and potential of Canada's Unemployment Insurance (UI) system to act as an automatic stabilizer of the Canadian macroeconomy over the business cycle. A variety of simulations were conducted with the FOCUS macroeconometric model to investigate the stabilizing properties of UI. The model was used to simulate what might have been the economy's performance if the UI system had been made inoperative and was not allowed to respond to cyclical changes in the economy. This "simulated" performance is then compared with the actual performance of the economy to see whether and by how much the UI program has acted to reduce fluctuations in income and employment.

The study finds that there is indeed a strong correlation between the net spending of the UI system and the performance of the economy. This is especially true with respect to UI benefits paid, and much less so with respect to UI premiums collected. A review of the data also finds that the UI premium rate, which is not automatic but changed by policy choice, appears to have moved pro-cyclically — that is, this "tax rate" has been raised in downturns and reduced in upturns.

The simulations show that the power of the UI system as a stabilizer varies over time with the size of the UI system relative to that of the economy. They also indicate that the UI system acts as a stabilizer with rather long time lags: the dampening effect is very small in the first year and takes more than three years to have the maximum impact on income and employment.

The UI program did act as a stabilizer in the 1981-1982 recession. It reduced the GDP loss by about 13 percent in 1982, and by 14 percent for 1983. The losses in employment that were prevented by the UI program were of a similar magnitude. Virtually the entire stabilizing effect of of the UI system in 1982 and 1983, however, came from the benefit payments side — there was no stabilizing effect from the premium side. The study found that the UI system also acted as a stabilizer in the 1990-1991 recession. The results of these findings were quite similar to those for the 1981-1982 recession.

The present study also compares the stabilizing property of the UI program with other fiscal stabilizers. The results show that the federal personal income tax system had no stabilizing effect, and that the sum of all other federal non-UI transfers to persons had a stabilizing effect significantly below that of the UI system. In addition, the sum of all provincial and local government transfers to persons, which includes all social assistance payments, had a smaller stabilizing effect than did UI. It would therefore appear that the UI system is the single most powerful automatic stabilizer.

The major conclusion arising out of the study is that the UI system, through its benefit payments to the unemployed, acted as a powerful and important automatic stabilizer for the Canadian economy in the two recent recessions. Its potential for operating as a more powerful automatic stabilizer requires a mechanism whereby UI premium rates are not increased during economic downturns and decreased during growth periods as has been done during the last two recession/recovery episodes.

Introduction

Economics textbooks traditionally teach that the UI system is an 'automatic stabilizer' of the Canadian economy, lessening the impact of economic downturns and dampening inflationary pressures in periods of high growth. This paper investigates the extent to which this is true.

The Unemployment Insurance system in Canada is currently undergoing a major review. This is appropriate for an instrument of social and economic policy that has such important impacts on major aspects of Canadian life. Among those impacts is the effect of the Unemployment Insurance (UI) system on the cyclical performance of the Canadian macroeconomy, what is referred to as the Canadian 'business cycle.' Economics textbooks traditionally teach that the UI system is an 'automatic stabilizer' of the Canadian economy, lessening the impact of economic downturns and dampening inflationary pressures in periods of high growth. This paper investigates the extent to which this is true.

Organization of this Report

The paper begins with an introduction defining the automatic stabilizer and presenting our review of the literature on the subject.

Section 1 uses data from 1972 to 1992 to assess whether the UI system has responded to economic downturns and economic recoveries in ways that would stabilize the economy.

Section 2 presents an overview of the evolution of the Canadian UI system and explains how we modified the FOCUS econometric model to test certain aspects of the UI system. The section also gives an overview of the six simulation sets we conducted to test the effectiveness of the UI system as an automatic stabilizer.

Sections 3 to 8 present the six simulation sets we conducted to measure the approximate contribution that the UI system makes in stabilizing the Canadian economy under conditions of economic shock. The simulation sets also examine whether the stabilizing properties of the UI system have changed over time and its effectiveness in this role compared to other fiscal programs, such as the federal income tax, or provincial transfers to persons, that also act as automatic stabilizers.

The paper closes with our conclusions on the effectiveness of UI as an automatic stabilizer.

Unemployment Insurance as an Automatic Stabilizer

In an ideal context, the Canadian economy would remain at full employment with stable and low inflation. Full employment, however does not mean zero unemployment. Economists recognize that, at any given time, large numbers of workers — equal to several percent of the labour force — are unemployed as they quit their jobs to relocate or look for new challenges, or as they train for new occupations in a constantly changing economy.[1]

From time to time external shocks or policy choices will push the economy above or below the level of full employment. It is commonly seen as desirable for governments to try to return the economy to full employment — to stabilize the economy — as soon as possible. In the face of a downturn, for example,

1 This level of unemployment is sometimes called the "natural" unemployment rate or the "Non-accelerating Inflation Rate of Unemployment" (NAIRU).

There are two features of the UI system that should make it an automatic stabilizer. First, when unemployment increases, total UI payments increase, with only a short time lag. Secondly, when people lose their jobs, they and their employers immediately stop paying the UI premiums associated with those jobs.

governments might cut taxes or increase expenditures to increase demand in the economy.[2]

What is an Automatic Stabilizer?

It takes time before the problem of rising unemployment or a sluggish economy is recognized. Because there is a further lapse of time before policy decisions are made, implemented and have an effect on the economy, economists and policy-makers look for "automatic stabilizers" that respond immediately when the economy slips from the level of full employment. Such automatic stabilizers should respond quickly — changing taxes, or increasing or reducing government spending — to even out the economic impacts of cyclical fluctuations.

How Can UI Stabilize the Economy?

There are two features of the UI system that should make it an automatic stabilizer. First, when unemployment increases, total UI payments increase, with only a short time lag. Secondly, when people lose their jobs, they and their employers immediately stop paying the UI premiums associated with those jobs. When an economic downturn results in fewer jobs, therefore, the total tax represented in UI premiums immediately falls. At the same time, increased payments in UI benefits puts some purchasing power back into the economy by automatically increasing government spending.

While it seems clear that the UI system should have some impact as an automatic stabilizer, there is still the question of just how effective the system is in that role. The experience of the last fifteen years has shown that the system has not lived up to its full potential. Two major economic downturns, one in the early 1980's and another in the early 1990's, had a severe impact on the Canadian economy. The automatic stabilizers in place during those two periods, including UI, were not fully successful in stabilizing the economy in the face of these shocks. It is certainly legitimate, however, to consider how much worse these shocks might have been in the absence of UI. It is also worth examining the extent to which UI lessens the impact of economic shocks. This paper will consider the question of how UI can stabilize the economy.

A Review of the Literature on Unemployment Insurance as an Automatic Stabilizer

Numerous studies over the last few decades have looked at the UI system in Canada, but none has focused on quantifying the system's role as an "automatic stabilizer". An overwhelming number of studies[3] concentrate on UI's impact on labour supply activity or the duration of unemployment.

In the lone published macroeconometric study of Canadian automatic stabilizers, Helliwell and Gorbet used the RDX1 model of the Canadian economy (the Bank of Canada's econometric model) to study the dynamic efficiency of UI and

2 An alternate view, referred to as "real business cycle theories," considers the ups and downs of the business cycle as natural reflections of inevitable changes on the supply side of the economy. Advocates of this view see no need for counter-acting macroeconomic responses from governments.

3 See, for example, Rea (1977), Grubel and Walker (1978), Fortin (1984), Ham and Rea (1987), Grubel (1988), Coe (1990), Moorthy (1990), Milbourne *et al.* (1991), Phipps (1991), Phipps (1993), Baker and Rea (1993).

selected other stabilizers. Using mid-1960's data, they simulated three-year cycles of world activity and prices and computed the improvements or deteriorations in economic performance that each stabilizer produced. They concluded that UI was a less effective stabilizer in 1964 than it was in 1958, and that almost all of the stabilizers they studied were markedly less effective in countering cyclical shocks than in countering one-time shocks or sustained shocks. In fact, many of the stabilizers were found to be destabilizing after the economy had been subjected to periodic shocks for six years.

U.S. Research

Studies concentrating on the income stabilizing impact of unemployment insurance have been somewhat more prevalent in the United States and elsewhere, but these studies have focussed on the impact on labour supply and job search decisions.[4] The stabilization properties of unemployment insurance have been studied in the United States since the early 1960's. Of course, the results are not directly applicable to Canada because the systems in the two countries are markedly different in terms of their coverage and their operation.

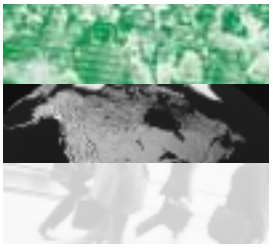
The most recent and extensive study of unemployment insurance as an automatic stabilizer is a 1992 study by Dunson *et al*. They used the DRI (Data Resources Inc.) econometric model of the U.S. economy to examine changes in the effectiveness of unemployment insurance as a stabilizer. The simulations showed that in the 1980's, the unemployment insurance system was only two-thirds as effective in stabilizing the economy after a monetary shock as it had been in the 1970's.

The study found that in the 1970's the unemployment insurance system could offset 5.4 percent of the maximum loss in real GNP or 4.9 percent of employment losses from a recession caused by a monetary shock. In the 1980's, the system could offset only 3.7 percent of the GNP loss or 3.5 percent of the employment loss. If the performance of the unemployment insurance system in the 1990's reflects its declining performance in the 1980's, unemployment insurance benefits would offset only 2.9 percent of the loss in GNP at the peak of a recession caused by a monetary shock[5]. The study concludes that the unemployment insurance system does act as an automatic stabilizer, although to quite a minor extent and one that has diminished in importance over the last two decades.

To simulate a recession, the DRI study of the unemployment insurance system in the United States imposed an arbitrary 2 percent reduction in the permanent money supply. The researchers then observed the effects with the unemployment insurance system functioning normally and with unemployment insurance payments and receipts fixed in real terms at a historical level. They found that when the effects of the shock were at their worst, the unemployment insurance system dampened the negative effects of this shock on real GDP and employment by between 3 and 5 percent.

4 See, for example, Bjorkland *et al.* (1991), Blank and Card (1991), Blau and Robbins (1986), Brechling (1981), Brown (1986), Deere (1991), Edgell and Wandner (1974), Ehrenberg and Oaxaca (1976), Hamermesh (1979), Katz and Meyer (1990), Lancaster (1979), Meyer (1990), Mortensen (1977), Narendranathan *et al.* (1985), Solon (1984), ten Hacken *et al.* (1989), Topel (1983), and Vijlbrief (1992).

5 At page 3.



1. A Review of Aggregate UI Data

If the UI system were working effectively as a stabilizer, one would expect that UI benefits would constitute a greater proportion of total personal income during downturns in the economy and that this proportion would decline as the economy improves.

While econometric simulations can demonstrate with some precision the effectiveness of the Canadian UI system as an automatic stabilizer in the economy, aggregate data can indicate general trends. In this section, we examine UI-account data to determine the overall impact of the UI system from 1972 to 1992. To determine whether these trends helped offset recessionary and inflationary trends, we look at the role of UI benefits in determining Canadians' personal income at the level of UI premiums collected and at the rate assessed for employees' and employers' UI premiums.

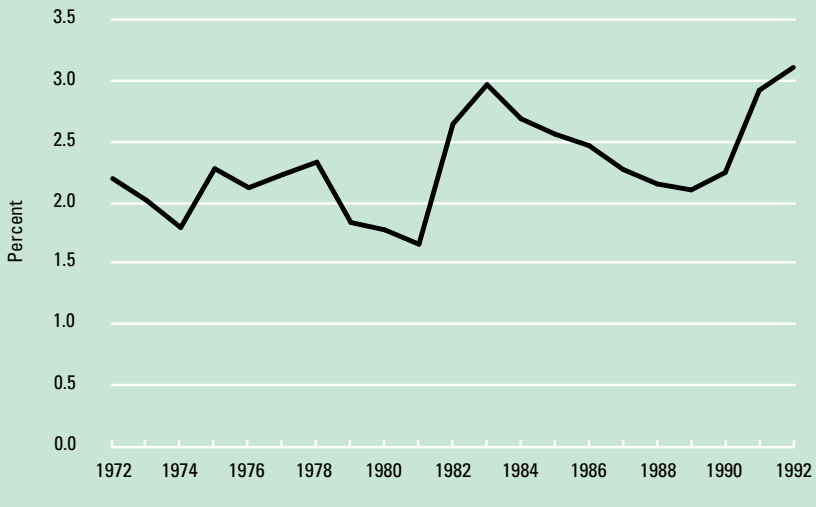
Measuring UI's Effectiveness as an Automatic Stabilizer

If the UI system were working effectively as a stabilizer, one would expect that UI benefits would constitute a greater proportion of total personal income during downturns in the economy and that this proportion would decline as the economy improves. Conversely, the ratio of UI premiums collected, as a percentage of GDP, would be expected to fall in downturns and increase as the economy improves.

UI Benefits as a Percentage of Canadians' Total Income

Figure 1 shows that the ratio of UI benefits to Canadians' total personal income responded to changes in the economy from 1981 to 1992. In 1981, at the beginning of the recession, UI benefits represented 1.8 percent of total personal income. By 1983, this proportion had increased to 3 percent. Then, as the economy improved through the rest of the 1980's, the proportion dropped, to just over 2 percent in 1989. Another recession hit in 1990 and the UI system responded, increasing UI benefits as a proportion of total personal income to over 3 percent by 1992.

Figure 1
UI Benefits Received as a Proportion of Personal Income



Source : Statistics Canada

Total UI Premiums Collected as a Percentage of GDP

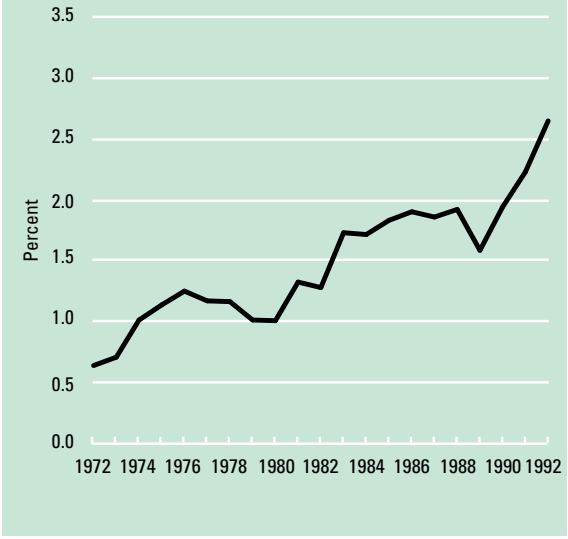
Figure 2 shows that the ratio of total UI premiums collected as a percentage of GDP often changes without regard to economic conditions. During the recession in the early 1980's this ratio began to decrease, meaning that employees and employers paid relatively less for UI, but the ratio turned up sharply in 1983 while the economy was still in recession.

The ratio of premiums collected increased slightly through the second half of the 1980's as the economy expanded rapidly. However, the ratio *decreased* again in 1989, when the Canadian economy was operating above its potential. If the premiums were indeed working as a stabilizer, the ratio should have *increased*.

UI Premium Rates as a Percentage of GDP

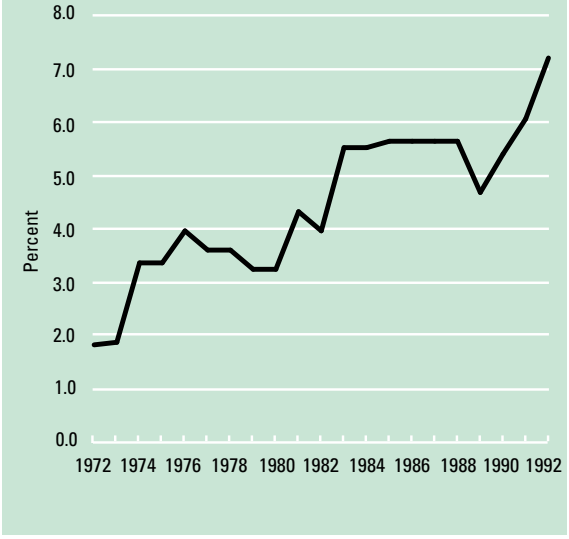
The "automatic stabilizer" impact of the UI system has been lessened because UI premium rates have often increased at the same time as total benefit payments have increased. It is apparent from Figure 3 that the increase in total premiums collected from 1990 to 1992 was related to the increase in UI premium rates paid by employees and employers during these periods, rather than, for example, an increase in the number of workers or employers. The UI premium rate changes automatically because the program calculates rates using a moving average of the program's historical costs as a percentage of Canadians' insurable earnings. It would seem, however, that the lag structure on the rates is not sufficient to allow for a recession to end before the rates increase.

Figure 2
UI Premiums Collected as a Proportion of GDP



Source : Statistics Canada

Figure 3
UI Premium Rates (Employee+Employer)



Source : Statistics Canada

The UI Account and UI Premium Rates

Premium adjustments may also be the result of a government decision to raise or lower rates, independent of standard program policy. Tables 1 and 2 present data on the revenues and expenditures of the UI system from 1973-1992. The increase in UI premium rates in the 1982-1983 recession and again in the early 1990's was a policy response to keep the cumulative UI balance from falling too far into deficit. As well, the 1990 decision by the government no longer pay directly into the UI fund for administrative and other costs meant that the UI premium rate had to be increased to replace that source of funding.

Table 1
UI Revenues, 1973-1992
(Millions of Dollars)

Year	Net contribution from employers and employees	Government contribution	Net interest earned	Income from penalties	Total revenue
1973	928	915	-16	1	1,828
1974	1,545	874	-28	1	2,392
1975	1,953	1,703	-14	1	3,643
1976	2,476	1,353	8	2	3,839
1977	2,551	1,784	12	2	4,348
1978	2,838	2,251	20	7	5,116
1979	2,812	1,289	25	4	4,130
1980	3,125	1,030	12	4	4,171
1981	4,716	992	26	4	5,738
1982	4,793	1,776	-89	6	6,486
1983	7,017	2,811	-409	10	9,428
1984	7,627	2,890	-453	12	10,076
1985	8,753	2,888	-522	14	11,133
1986	9,616	2,814	-463	16	11,982
1987	10,212	2,767	-275	18	12,722
1988	11,876	2,633	-104	20	14,425
1989	10,369	2,748	60	30	13,207
1990	12,867	2,416	222	45	15,550
1991	14,761	—	-5	62	14,818
1992	17,885	—	-255	96	17,726

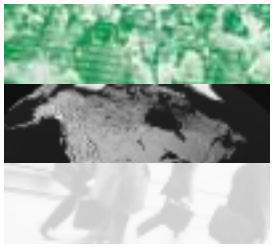
Source : Statistics Canada (1993) , Unemployment Insurance Statistics. Catalogue 73-202S.

Table 2
UI Expenditures, 1973-1992
(Millions of Dollars)

Year	Benefit payments	Bad debts	Administration	Total expenditure	Excess of revenue over expenditure	Balance end of period
1973	2,004	—	141	2,145	-318	-502
1974	2,116	—	163	2,279	113	-418
1975	3,130	—	192	3,322	321	-97
1976	3,332	—	207	3,539	301	204
1977	3,900	4	234	4,138	210	414
1978	4,508	5	277	4,789	327	741
1979	3,947	7	267	4,221	-91	650
1980	4,332	5	490	4,827	-656	-6
1981	4,757	5	639	5,401	337	331
1982	8,455	-12	772	9,214	-2,728	-2,397
1983	10,063	5	818	10,885	-1,457	-3,854
1984	9,859	11	898	10,768	-692	-4,546
1985	10,118	12	902	11,032	101	-4,445
1986	10,394	8	928	11,330	653	-3,792
1987	10,326	10	962	11,298	1,424	-2,368
1988	10,716	17	968	11,701	2,724	356
1989	11,373	24	1,054	12,451	758	1,113
1990	13,368	39	1,215	14,622	928	2,161
1991	17,691	105	1,228	19,024	-4,205	-2,045
1992	19,102	28	1,227	20,357	-2,631	-4,676

Source : Statistics Canada (1993) , Unemployment Insurance Statistics. Catalogue 73-202S.

This brief review of the revenues and expenditures of the UI system leads us to believe that UI benefit payments have had a potentially significant impact as automatic economic stabilizers. UI premiums, on the other hand, have had a far less significant impact because of the way premiums have been adjusted historically.



2. Testing UI's Role as an Automatic Stabilizer

The Canadian UI system has undergone many changes since it was first introduced in 1946, and especially over the past two decades as new types of benefits have been introduced and others scaled back or eliminated. As well, the funding of the system recently underwent a major overhaul, with the federal government having exited altogether from directly funding any of the UI system.

We conducted a series of simulations designed to measure the extent to which the UI system could act or has acted as an automatic stabilizer for the Canadian economy. The simulations were prepared with the FOCUS econometric model of the Canadian economy. FOCUS is a medium-size model of the Canadian macro-economy developed and maintained at the Institute for Policy Analysis, University of Toronto.[6] While it has its own special properties, FOCUS can be viewed as representative of the class of multi-equation macro models often used to conduct this kind of macro policy analysis. The model is roughly equivalent — at least in its conceptual view of the macro economy — with the DRI model used to examine the unemployment insurance system in the United States.[7]

Evolution of the Canadian UI System

The Canadian UI system has undergone many changes since it was first introduced in 1946, and especially over the past two decades as new types of benefits have been introduced and others scaled back or eliminated. As well, the funding of the system recently underwent a major overhaul, with the federal government having exited altogether from directly funding any of the UI system.

Countercyclical Benefits

Countercyclical benefits have been introduced during recessions over the past twenty years either to maintain a certain level of employment until the economy improves or to prepare laid-off workers for new types of jobs. In 1975, training benefits were introduced so that workers might have the skills needed to exploit new employment opportunities as the economy changed. This program was expanded dramatically in the most recent recession to help workers respond to the restructuring of the economy.

Noncyclical Benefits

Other benefits are noncyclical. That is, they do not increase in times of recession or decrease in times of growth. Sickness and fishing benefits have been available since the early 1970's. Retirement benefits were introduced at that time and ended in 1990. Maternity benefits, adoption benefits and parental benefits are also noncyclical.

---

6 The model has been developed in the tradition of the Keynesian-Classical synthesis; that is, markets (especially the labour market) can fail to clear for extended periods of time, and most expectations are not "rational" in the sense of being formed with full knowledge of the model and of the present and future values of all exogenous variables. For detailed descriptions of the models see Peter Dungan and Gregory Jump, *FOCUS: Forecasting and User Simulation Model of the Canadian Economy* Version 93A, Institute for Policy Analysis, 1993 (mimeo). There are, however, some mechanisms in FOCUS for explicitly recognizing expectations and for permitting them to change relatively quickly in light of changes in, for example, money supply or the exchange rate. For a discussion of the properties of FOCUS with and without more "rational" expectations, see Peter Dungan and Thomas A. Wilson, "Modeling Anticipated and Temporary Fiscal Policy Shocks in a Macro-Econometric Model of Canada," in *Canadian Journal of Economics* XXI:1 (February 1988) 41-60.

7 *The Cyclical Effects of the Unemployment Insurance (UI) Program* (1990) by Bruce H. Dunson, S. Charles Maurice and Gerald P. Dwyer, Jr. Metrica Inc., The Woodlands, TX. Report prepared for the U.S. Department of Labor, Employment and Training Administration. Washington, D.C., December 31, 1990.

Cyclical Benefits

Work-sharing and job-creation benefits were introduced into the UI system in 1982. Work-sharing is designed to deal with situations in which an employer would be required to reduce the firm's work force temporarily. Instead of laying off selected employees, the program enables employers to reduce the working hours of an entire group, while UI benefits partially offset the financial loss for the individuals. Job creation benefits are designed to encourage businesses to continue to use workers' skills during periods of unemployment. Benefit rates are based on regional occupational rates.

In 1992, Self-employment Assistance was introduced. This provides benefits to claimants who want to start a business or become self-employed. Any claimant who has a viable business plan can receive benefits that provide income security during the early stages of setting up and operating a business.

The value of cyclical, countercyclical and noncyclical benefits has been small, compared to regular benefits, since the 1970's. Regular benefits represent about 85 percent of all benefits paid to Canadians. Cyclical, countercyclical and non-cyclical benefits represent the remaining 15 percent of benefits paid.

UI Eligibility

Additional changes to the UI system were introduced in 1978 and 1991. In 1978, the number of weeks individuals had to work in order to qualify for UI was increased from 8 weeks to a range of 10 to 14 weeks, depending on the level of unemployment in the region in which the individual was living. At the same time, the number of weeks of benefits available to claimants who had worked the minimum number of qualifying weeks was reduced. In 1991, the range of weeks that individuals in certain regions would have to work to qualify for benefits was expanded.

Modifications to the FOCUS Model

To conduct our study we expanded the FOCUS model's detail on the UI system and distinguished three types of UI claims:

(1) regular unemployment insurance claims;

(2) cyclical claims, including training and work-sharing; and

(3) noncyclical claims, including sickness, maternity and fishing benefits.

To determine the level of UI benefits paid into the economy, we calculated the total number of weeks of benefits paid for each type of claim and multiplied this number by the maximum weekly benefit payable.[8] For the first two categories, our calculation of the total weeks of benefits paid is a function of the level of unemployment in the economy in a given year. For noncyclical claims, the total population determines the total number of weeks of benefits paid.

8 In each of the six regressions in this part of the model (weeks and benefits for each of the three categories), dummies have been introduced for the two major UI reforms spanned by our estimation data-set — namely, the 1978 reform and the 1991 reform. These dummies test for aggregate shifts in weeks or benefits paid relative to the prior regime. The 1978 dummy is significant (and negative) for regular weekly benefits claimed, but has no effect otherwise. The 1991 dummy adds very slightly to regular benefits paid (but not weeks claimed) and strongly to non-regular, noncyclical weeks and benefits (due to the introduction of parental benefits).

The simulation results show that it takes three or more years for the stabilizing effects of UI to build up to their full impact.

The UI sub-model within FOCUS is by no means a complete and fully-detailed description of the UI system and its possible impacts on the Canadian economy. It had to be designed to interact with the other variables of the model, such as the aggregate unemployment rate. It is intended to capture only major macroeconomic effects and not changes in microeconomic structure in the economy. Major revisions in UI, for example, could have significant impacts on wage formation and total labour force participation, but these issues are not relevant to the focus of this report.

Overview of the Simulation Sets

We conducted six sets of simulations to test the stabilizing properties of the UI system under conditions of one-time shocks to the economy. We also tested the impact of the 1978 and 1991 changes in the UI system itself and the effectiveness of other fiscal stabilizers, such as the personal income tax system. The six simulation sets are:

Simulated Shocks to the Economy
Simulation Set A: A 2 percent reduction in the money supply, simulating a recession
Simulation Set B: A 10 percent cut in government spending

Changes in the UI System
Simulation Set C: A test of the impact of the 1978 and 1991 reforms to the UI system

Historical Economic Shocks
Simulation Set D: The 1982 recession
Simulation Set E: The 1990 recession

A Comparison of Stabilizers
Simulation Set F: A comparison of UI and other automatic stabilizers in the 1982 recession

All of the simulations consider the stabilizing properties of UI in the face of downward shocks to the economy. It is in the context of downward shocks that discussion of automatic stabilizers is usually set, although of course their usefulness applies equally to dampening movements of the economy above full employment and into inflationary ranges. For relatively small shocks, the economic impacts demonstrated by econometric models are linear. Had we chosen to do upward rather than downward shocks of the same sizes — such as a 2 percent *increase* in money supply, for example — we would have obtained results equal in magnitude, but opposite in sign, to those presented here.

The simulation results show that it takes three or more years for the stabilizing effects of UI to build up to their full impact. This is because of a range of lags in the model's behavioural equations that in turn reflects the functioning of the UI system itself. Employment and unemployment will not respond fully to a shock for a number of quarters and the UI system cannot respond until unemployment increases. Also, the UI equations in the model take one to two quarters to respond to any change in unemployment. Finally, the model's consumption equations cause individuals' consumption to respond only gradually to the additional income they receive from UI benefits. So, while the simulations reveal that UI, in our opinion, is a significant stabilizer over the medium term, the model's lags (if properly specified and estimated) indicate that its stabilization properties are blunted somewhat in the shorter term.

3. Simulation Set A: A 2 Percent Reduction in the Money Supply, Simulating a Slowdown in the Economy

In Simulation Set A, we applied a shock to the 1979 economy and examined the impact that the shock had over five years. We then applied the same shock to the 1982 economy and examined the impact over five years. We repeated the process for the 1985 economy and the 1988 economy, each time looking at annual changes for five years. The different shock years allowed us to account for the fact that the size of the UI system in relation to GDP and incomes has varied significantly over the last two decades. Measures of UI's effectiveness as a stabilizer can be expected to vary with the size of UI in the economy.

For each shock year, we examined the effects of a reduction in the money supply with the UI system at work, as it responded to increasing unemployment by paying more benefits and collecting less in premiums (the standard model); and then as the UI system was "unresponsive" — by which we mean that we held UI payments and UI premiums collected to their actual levels in each year.[9] This is equivalent to the way in which the unemployment insurance system was disabled in simulations conducted in the DRI study of the U.S. unemployment system. We have used the same method for comparability.

A summary of the results is presented in Tables 3 and 4. Table 3 presents results for real GDP, while Table 4 contains results for employment. For each "shock" year, four columns are shown for GDP effects and employment effects. The first column shows how much higher or lower real GDP and employment would be with the normal UI system in place. The second column shows the changes in real GDP and employment with an unresponsive UI system. For real GDP the change in impact is expressed as a percentage of the actual GDP level in that year. For employment, the change in impact is shown in thousands of jobs gained or lost, compared to the actual number of jobs in that year. The remaining two columns show the difference attributable to the "normal" UI system, and the percentage change that represents.

With a money-supply shock in 1979 and the normal UI system in place, real GDP is 0.189 percent below the actual 1979 level. This negative impact grows to 0.817 percent of GDP in 1981 and falls back to 0.271 percent by 1983. Without the UI system operating as a stabilizer — as shown in the "Unresponsive UI" column — the same money shock would have caused real GDP to decline by 0.193 percent in 1979, a difference of approximately 0.005, or 2.5 percent. Similarly, without the response of the UI system to the shock, the GDP loss in 1982 would have been 0.821 percent, or 0.106 percent more than with the UI system operating normally. This is a difference of almost 13 percent.

An examination of the real GDP results in Table 3 shows that the UI system dampens only from 2.5 to 3.5 percent of a money shock in the first year, but that

Without the response of the UI system to the shock, the GDP loss in 1982 would have been 0.821 percent, or 0.106 percent more than with the UI system operating normally. This is a difference of almost 13 percent.

9 It should be noted that, to keep UI premiums paid constant in real terms at historical levels, it was necessary to change the UI-premium rate endogenously within the simulation. That is, in solving each quarter, the model searches for the UI-premium rate such that premiums collected equal those of the base case in real terms. This adjustment is important because in the FOCUS model the UI premium rate itself, as well as the total premiums collected, enters into important behavioural relationships (including the calculation of unit labour costs for determining the aggregate price level).

Table 3
2 Percent Cut in the Money Supply
Impact on Real GDP
(Percent)

	1979 Shock					1982 Shock			
	Normal UI	Unresponsive UI	Difference	% Difference		Normal UI	Unresponsive UI	Difference	% Difference
1979	-0.189	-0.193	0.005	2.5	1982	-.0228	-0.234	0.007	2.9
1980	-0.544	-0.572	0.028	5.0	1983	-0.489	-0.530	0.041	7.7
1981	-0.817	-0.882	0.065	7.3	1984	-0.703	-0.793	0.090	11.4
1982	-0.715	-0.821	0.106	12.9	1985	-0.645	-0.773	0.128	16.5
1983	-0.271	-0.368	0.097	26.4	1986	-0.412	-0.540	0.127	23.6
	1985 Shock					**1988 Shock**			
	Normal UI	Unresponsive UI	Difference	% Difference		Normal UI	Unresponsive UI	Difference	% Difference
1985	-0.187	-0.193	0.006	2.5	1988	-0.343	-0.356	0.012	3.5
1986	-0.470	-0.503	0.033	5.0	1989	-0.813	-0.880	0.067	7.6
1987	-0.787	-0.876	0.088	7.3	1990	-1.007	-1.143	0.136	11.9
1988	-0.828	-0.970	0.142	12.9	1991	-0.835	-1.022	0.187	18.3
1989	-0.538	-0.680	0.143	26.4	1992	-0.332	-0.498	0.166	33.3

Table 4
2 Percent Cut in the Money Supply
Impact on Employment
(Numbers of Jobs)

	1979 Shock					1982 Shock			
	Normal UI	Unresponsive UI	Difference	% Difference		Normal UI	Unresponsive UI	Difference	% Difference
1979	-4,110	-4,280	170	3.9	1982	-6,540	-6,780	230	3.4
1980	-25,250	-26,680	1,430	5.3	1983	-26,520	-28,640	2,120	7.4
1981	-54,710	-59,130	4,420	7.5	1984	-49,910	-56,110	6,200	11.1
1982	-64,970	-73,080	8,100	11.1	1985	-60,440	-71,400	10,960	15.4
1983	-41,820	-52,170	10,350	19.8	1986	-49,190	-62,760	13,580	21.6
	1985 Shock					**1988 Shock**			
	Normal UI	Unresponsive UI	Difference	% Difference		Normal UI	Unresponsive UI	Difference	% Difference
1985	-5,170	-5,400	230	4.2	1988	-11,940	-12,460	520	4.2
1986	-24,340	-26,160	1,820	7.0	1989	-50,840	-54,920	4,090	7.4
1987	-53,370	-59,480	6,110	10.3	1990	-86,980	-97,920	10,940	11.2
1988	-74,580	-86,780	12,200	14.1	1991	-91,870	-109,580	17,710	16.2
1989	-66,170	-82,240	16,060	19.5	1992	-62,230	-82,770	20,540	24.8

the dampening effect grows over time, reaching well over 10 percent at the point of the shock's maximum impact and rising further to above 20 percent by the fifth year of the shock. For employment, Table 4 shows that the dampening effects are slightly larger in the initial years following the shock and slightly smaller by the fourth and fifth years, although the values are clearly in the same broad range.

The stabilizing effect of UI varies with the level of unemployment and UI benefits paid and premiums collected in each year. The UI system will therefore have a greater stabilizing effect in years when the level of unemployment and total UI benefits paid are higher. This was the case in 1982, when unemployment and UI benefits paid were proportionally much higher compared to 1979. The first year dampening of the 1982 shock is therefore greater than the first year dampening for the 1979 shock. But the fifth year dampening is higher for the 1979 shock (where the fifth year is 1983) than for the 1982 shock (where the fifth year is 1986 and UI payments had far surpassed their 1983 levels in proportion to GDP).

4. Simulation Set B: A 10 Percent Cut in Government Spending

This shock gives approximately the same longer-run impact on GDP as the 2 percent money reduction, but the effects are much larger in the initial years.

In the FOCUS model for Canada, a money shock takes several years to have its full effect on GDP. In the first year especially, the impacts are relatively small. We therefore decided to test the UI system as a stabilizer against a more direct demand shock — in this case, a 10 percent cut in real federal spending on current goods and services except wages. This shock gives approximately the same longer-run impact on GDP as the 2 percent money reduction, but the effects are much larger in the initial years. The results are summarized in Tables 5 and 6.

Table 5
10 Percent Cut in Real Federal Government Current Spending
Impact on Real GDP
(Percent)

	1979 Shock					1982 Shock			
	Normal UI	Unresponsive UI	Difference	% Difference		Normal UI	Unresponsive UI	Difference	% Difference
1979	-0.620	-0.641	0.021	3.3	1982	-0.679	-0.704	0.025	3.6
1980	-0.827	-0.906	0.079	8.7	1983	-0.853	-0.962	0.109	11.4
1981	-0.797	-0.922	0.124	13.5	1984	-0.828	-1.007	0.179	17.7
1982	-0.657	-0.795	0.137	17.3	1985	-0.743	-0.944	-0.201	21.3
1983	-0.432	-0.540	0.108	20.0	1986	-0.587	-0.768	0.180	23.5
	1985 Shock					**1988 Shock**			
	Normal UI	Unresponsive UI	Difference	% Difference		Normal UI	Unresponsive UI	Difference	% Difference
1985	-0.669	-0.695	0.026	3.7	1988	-0.566	-0.589	0.023	3.9
1986	-0.914	-1.020	0.105	10.3	1989	-0.784	-0.874	0.090	10.3
1987	-0.929	-1.120	0.191	17.1	1990	-0.692	-0.818	0.126	15.4
1988	-0.669	-0.876	0.207	23.6	1991	-0.482	-0.606	0.124	20.5
1989	-0.303	-0.430	0.127	29.4	1992	-0.231	-0.305	0.074	24.3

Table 6
10 Percent Cut in Real Federal Government Current Spending
Impact on Employment
(Numbers of Jobs)

	1979 Shock					1982 Shock			
	Normal UI	Unresponsive UI	Difference	% Difference		Normal UI	Unresponsive UI	Difference	% Difference
1979	-27,080	-27,910	830	3.0	1982	-29,720	-30,710	980	3.2
1980	-63,000	-67,580	4,580	6.8	1983	-68,960	-75,250	6,290	8.4
1981	-82,050	-91,960	9,910	10.8	1984	-86,380	-100,380	14,000	13.9
1982	-75,700	-88,620	12,920	14.6	1985	-85,400	-105,090	19,680	18.7
1983	-59,320	-72,280	12,960	17.9	1986	-74,490	-95,390	20,900	21.9
	1985 Shock					**1988 Shock**			
	Normal UI	Unresponsive UI	Difference	% Difference		Normal UI	Unresponsive UI	Difference	% Difference
1985	-30,870	-31,970	1,100	3.5	1988	-27,840	-28,860	1,020	3.5
1986	-73,920	-80,360	6,440	8.0	1989	-67,920	-73,910	5,990	8.1
1987	-98,620	-113,940	15,320	13.4	1990	-82,960	-94,760	11,800	12.5
1988	-91,720	-113,450	21,730	19.2	1991	-69,850	-84,010	14,160	16.9
1989	-60,750	-80,650	19,900	24.7	1992	-45,870	-58,080	12,200	21.0

Because the government spending shock affects GDP and employment levels more quickly than the money shock, the degree of dampening provided by the UI system is also greater. In the first year of the shock, the UI system dampens about 3.5 percent of the impact, but this rises to over 15 percent by the third year and sometimes well over 20 percent thereafter.

5. Simulation Set C: The Impact of UI Reforms

We tested the impact of the 1978 UI reforms and the 1991 reforms and found that only with the 1978 reforms was there a noticeable difference in the system's response to cyclical changes in the unemployment rate, in terms of impact on GDP levels in that year.

We tested the impact of the 1978 UI reforms and the 1991 reforms and found that only with the 1978 reforms was there a noticeable difference in the system's response to cyclical changes in the unemployment rate, in terms of impact on GDP levels in that year. To test the extent of the impact of the 1978 reforms, we ran the government-expenditure shock — Simulation Set B above — with the model's UI equations reflecting the regime in effect *before* the 1978 reforms.[10] Table 7 below shows how much less real GDP would have declined if the 1978 reforms had never been instituted, for the four shock years and the five years following each shock.

Table 7
Proportion of GDP Decline Dampened by UI With and Without the 1978 UI Reforms
(Percent)

	Without '78 Reforms	With '78 Reforms		Without '78 Reforms	With '78 Reforms
	1979 Shock			**1982 Shock**	
1980	3.4	3.3	1983	3.8	3.6
1981	9.3	8.7	1984	12.1	11.4
1982	14.5	13.5	1985	19.0	17.7
1983	19.1	17.3	1986	23.0	21.3
1984	22.1	20.0	1987	25.4	23.5
	1985 Shock			**1988 Shock**	
1986	4.1	3.7	1989	4.0	3.9
1987	11.2	10.3	1990	10.9	10.3
1988	18.5	17.1	1991	16.6	15.4
1989	25.6	23.6	1992	22.4	20.5
1990	32.2	29.4	1993	26.8	24.3

Tables 8 and 9 summarize the impact of a government-spending shock without the 1978 changes in UI. The UI system had a slightly greater ability to lessen a decline in GDP before the 1978 reforms. The 1978 reforms, therefore, had a small negative impact on UI's ability to stabilize shocks.

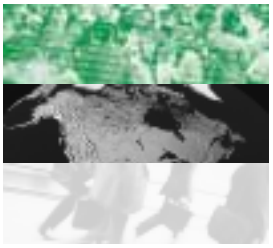
10 To do this, we simply zero out the post-reform dummies when conducting the "Normal UI" simulations. Note that the "Unresponsive UI" simulations will be identical in each case.

Table 8
10 Percent Cut in Real Federal Government Current Spending
Impact on Real GDP Without 1978 UI Reform
(Percent)

	1979 Shock					1982 Shock				
	Normal UI	Unresponsive UI	Difference	% Difference		Normal UI	Unresponsive UI	Difference	% Difference
1979	-0.619	-0.641	0.022	3.4	1982	-0.678	-0.704	0.027	3.8
1980	-0.822	-0.906	0.084	9.3	1983	-0.846	-0.962	0.116	12.1
1981	-0.788	-0.922	0.134	14.5	1984	-0.815	-1.007	0.192	19.0
1982	-0.643	-0.795	0.151	19.1	1985	-0.727	-0.944	0.217	23.0
1983	-0.421	-0.540	0.119	22.1	1986	-0.573	-0.768	0.195	25.4
	1985 Shock					**1988 Shock**			
	Normal UI	Unresponsive UI	Difference	% Difference		Normal UI	Unresponsive UI	Difference	% Difference
1985	-0.667	-0.695	0.029	4.1	1988	-0.565	-0.589	0.024	4.0
1986	-0.905	-1.020	0.115	11.2	1989	-0.779	-0.874	0.095	10.9
1987	-0.912	-1.120	0.207	18.5	1990	-0.682	-0.818	0.135	16.6
1988	-0.652	-0.875	0.224	25.6	1991	-0.470	-0.606	0.136	22.4
1989	-0.292	-0.430	0.138	32.2	1992	-0.224	-0.305	0.082	26.8

Table 9
10 Percent Cut in Real Federal Government Current Spending
Impact on Employment Without 1978 UI Reform
(Numbers of Jobs)

	1979 Shock					1982 Shock				
	Normal UI	Unresponsive UI	Difference	% Difference		Normal UI	Unresponsive UI	Difference	% Difference
1979	-27,050	-27,910	860	3.1	1982	-29,690	-30,710	1,010	3.3
1980	-62,720	-67,580	4,860	7.2	1983	-68,600	-75,250	6,650	8.8
1981	-81,320	-91,960	10,640	11.6	1984	-85,440	-100,380	14,930	14.9
1982	-74,540	-88,620	14,070	15.9	1985	-83,930	-105,090	21,160	20.1
1983	-57,990	-72,280	14,290	19.8	1986	-72,880	-95,390	22,530	23.6
	1985 Shock					**1988 Shock**			
	Normal UI	Unresponsive UI	Difference	% Difference		Normal UI	Unresponsive UI	Difference	% Difference
1985	-30,770	-31,970	1,200	3.8	1988	-27,810	-28,860	1,050	3.6
1986	-73,370	-80,360	6,990	8.7	1989	-67,630	-73,910	6,280	8.5
1987	-97,320	-113,940	16,610	14.6	1990	-82,200	-94,760	12,560	13.3
1988	-89,900	-113,450	23,540	20.8	1991	-68,670	-84,010	15,340	18.3
1989	-59,040	-80,650	21,610	26.8	1992	-44,770	-58,080	13,310	22.9



6. Simulation Set D: The 1982 Recession

These results show that it is the payment of UI benefits that yields virtually all the stabilizing effect of the UI system. There is virtually no stabilizing effect from the "tax" side of the UI system, that is, from the reduction in UI premiums paid in a downturn.

In Simulation Set D, we examined a historical shock episode, the 1982 recession and its aftermath. We looked at the efficacy of the UI system as a stabilizer by asking how the subsequent years would have looked had the UI system not been responding to the downturn. Note that simulations of historical events do not rely on the model to measure the extent to which unemployment rose with the recession. We already know how much unemployment increased and how much UI benefits paid increased as a result.

We simulated the effects of the 1982 recession under varying combinations of UI benefits paid and premiums collected and examined the results for 1982 to 1986.[11]

Changes in the UI Premium Rate

The 1982-1986 episode is not a completely clean test of UI as a fully automatic stabilizer because the UI premium rate for employees changed during this period. In 1982, the rate was lowered slightly to 1.65 percent from 1.8 percent; then in 1983 it was raised significantly to 2.3 percent; finally, in 1985 it was raised slightly again to 2.35 percent. Had the UI system been permitted to operate as a fully automatic stabilizer in the period 1982-1986, the premium rate should not have changed at all.

Because the premium rate did change historically, we ran three counter-factual simulations for 1982-1986:

- In the first, we held UI benefits paid and premiums collected at *real* 1981 levels. The only change in these amounts from 1982 to 1986, therefore, is that caused by inflation.
- In the second, we held UI premiums collected constant at 1981 levels while total benefits paid rose with unemployment.
- In the third, we held benefits constant at 1981 levels and allowed premiums to change as they in fact did.

1981 UI Benefits & Premiums

This simulation is equivalent to the "Unresponsive-UI" simulations conducted for the money-supply and government spending shocks above. Column 1 of Table 10 indicates that, without the UI system responding to the recession, real GDP would have been almost one percent lower in 1982 and 1983 (0.88 percent and 1.01 percent) and employment would have fallen by an additional 38,500 in 1982 and 88,500 jobs in 1983.

How much of the recession in 1982 and 1983 did the UI system actually forestall? The answer depends partly on what one thinks would have happened if there had been no recession. Let us assume, conservatively, that GDP would have grown at a potential growth rate of about 3 percent. Since GDP actually fell by 3.2 percent in 1982, the total output shortfall was 6.2 percent. The simulation results indicate that without a responsive UI system, GDP would have fallen an

11 Detailed results of Simulation D are presented in Appendix A.

Table 10
The 1982 Recession and its Aftermath

	UI Premiums & Benefits at 1981 Levels (Unresponsive UI)	1981 Premiums Responsive Benefits	Net Effect of Responsive Benefits	1981 Benefits, Changing Premium Rates
	— Real GDP, Percent Change from History —			
1982	-0.88	-0.17	+0.71	-0.76
1983	-1.01	+0.48	+1.49	-1.45
1984	-0.11	+1.07	+1.18	-1.46
1985	+0.49	+1.21	+0.72	-1.34
1986	+1.32	+1.27	-0.05	-1.03
	— Employment, Change from History in Numbers of Jobs —			
1982	-38,500	-9,600	+28,900	-31,700
1983	-88,500	+18,900	+107,400	-104,600
1984	-51,400	+78,100	+129,500	-144,700
1985	+10,200	+118,100	+107,900	-152,700
1986	+93,900	+136,800	+42,900	-133,200

additional 0.9 percent, for a total loss of 7.1 percent. The UI stabilizer therefore "saved" 0.9 percent out of a 7.1 percent decline, or 12.7 percent of the total recession effect. This figure is in line with the estimates from Simulation Sets A and B above. For 1983, the amount of lost GDP "saved" by UI rises to just over 14 percent.

However, we must recall that the UI premium rate was being adjusted — mostly upwards — in this period. From column 1 of Table 10, it will be seen that the de-stabilizing effect of freezing UI at real 1981 levels diminishes rapidly after 1983. Indeed, by 1986 the simulation shows that GDP would have been over 1 percent higher if premiums had been frozen at real 1981 levels instead of being decreased and then later increased, which is what actually occurred.

1981 Premiums, Responsive Benefits

We attempt to measure what the full stabilizing effect of UI would have been from 1982 to 1986 had there been no change in premiums, by running a second simulation, holding the UI premium rate constant at 1981 levels from 1982 to 1986. Column 2 of Table 10 shows that, had the UI premium rate not been reduced slightly in 1982, GDP would have been just under 0.2 percent worse, with a cost of about 9,600 jobs. However, by taking away the rate increases in 1983 and after, GDP would have increased more than 1 percent by 1984, and there would have been an additional 100,000 jobs by 1985.

To estimate what the UI system contributed and could have contributed to muting the 1982 recession had it been able to function as a fully automatic stabilizer, it is necessary to combine the results of these two simulations. Column 3 of Table 10 shows that the 1982 impacts are indeed muted, with 0.71 percent of GDP and 29,000 jobs being "saved". For 1983 and 1984, however, the GDP loss that was and could have been prevented amounts to well over 1 percent of historical levels. In 1984, almost 130,000 jobs would have been saved if benefits alone — and not premiums — had been allowed to respond to the recession. The loss in GDP

growth caused by the recession, that was and could have been forestalled by the operation of UI as a stabilizer, amounts to about 20 percent at peak.

1981 Benefits, Changing Premium Rates

A third counter-factual simulation for the 1982 recession episode was designed to single out the stabilizing properties of the two "halves" of the UI system — the payment of UI benefits and the collection of UI premiums. Column 4 of Table 10 shows the results of holding UI benefits at real 1981 levels, while premiums change as they did historically. A comparison of columns 3 and 4 in Table 10 indicate that virtually the entire stabilizing effect of the UI system in 1982 and 1983 resulted from the way benefit payments increased in the recession. That is to say, if total UI benefits paid out in 1982 and 1983 had been the same in real terms as in 1981, real GDP would have been almost 1.5 percent lower in 1983, and another 105,000 jobs would have been lost. There is virtually no stabilizing effect from the "tax" side of the UI system, that is, from the reduction in UI premiums paid in a downturn. Moreover, Table 10 also shows that, after 1983, the increase in UI premiums collected reduces UI's role as an automatic stabilizer compared to the payment of UI benefits alone.

These results show that it is the payment of UI benefits that yields virtually all the stabilizing effect of the UI system. This observation is reinforced if we simply examine the history of UI benefits paid and premiums collected, as shown in Table 11. The ratio of UI benefits to personal income moves much more strongly with the unemployment rate than does the ratio of premiums collected to personal income. Columns 4 and 5 show that almost all the year-to-year rate of change in UI premiums collected is accounted for by changes in the UI premium rate, leaving very little left over to be explained by cyclical changes in GDP.

Table 11
UI Premiums and Benefits — Cyclical Sensitivity

	Unemployment Rate	Ratio of UI Benefits to Personal Income	Ratio of UI Premiums to Personal Income	Annual rate of Change in Ratio of UI Premiums to Personal Income	Annual rate of Change in UI Premium Rate
1979	7.4	1.84	1.28	—	—
1980	7.5	1.74	1.26	-1.55	0.00
1981	7.5	1.62	1.61	28.13	33.33
1982	11.0	2.60	1.47	-8.28	-8.33
1983	11.8	2.93	2.05	38.63	39.39
1984	11.2	2.65	2.05	0.17	0.00
1985	10.5	2.53	2.19	6.75	2.17
1986	9.5	2.43	2.25	2.89	0.00
1987	8.8	2.24	2.22	-1.24	0.00
1988	7.7	2.13	2.30	3.47	0.00
1989	7.5	2.08	1.87	-18.47	-17.02
1990	8.1	2.23	2.21	17.94	15.38
1991	10.3	2.86	2.48	12.34	12.22
1992	11.3	2.90	2.93	18.01	18.81

7. Simulation Set E: The 1990 Recession

As data for 1993 were not yet complete at the time we ran the simulations for the 1990 recession, we could only simulate the period 1990-1992. We performed two sets of simulations, using 1988 and 1989 as "base" years, and ran the simulations for four years. For the 1988 base, we fixed real UI benefits, premiums collected and premium rates at 1988 levels.[12]

After negligible impacts in 1989 and 1990 (when the unemployment rate showed little change), UI benefits kept real GDP from falling a further 1.2 percent by 1992 and "saved" just over 100,000 jobs.

Table 12
1990 Recession, 1988 Base year

	UI Premiums & Benefits at 1988 Levels	1988 Premiums Responsive Benefits	Net Effect of Responsive Benefits	1988 Benefits, Changing Premium Rates
	— Real GDP, Percent Change from History —			
1989	-0.56	-0.54	+0.02	-0.06
1990	-0.51	0.00	-0.18	-0.18
1991	-0.32	+0.90	+0.41	-0.76
1992	+0.74	+1.39	+0.65	-1.21
	— Employment, Change from History in Numbers of Jobs —			
1989	-36,400	-33,100	3,300	-5,900
1990	-56,000	-56,700	-700	-12,000
1991	-45,600	-27,300	+18,300	-48,400
1992	+28,100	+82,200	+54,100	-103,900

In the 1990 recession, the increase in the unemployment rate was gradual, so we would expect the stabilizing effects of UI to be slow and slight. From column 4 of Table 12 it can be seen that the benefits side of UI eventually acted as an important stabilizer. After negligible impacts in 1989 and 1990 (when the unemployment rate showed little change), UI benefits kept real GDP from falling a further 1.2 percent by 1992 and "saved" just over 100,000 jobs.

12 Detailed results of Simulation E with the 1988 base are presented in Appendix B.

In the second set, the UI system was fixed at 1989 levels. The results are shown in Table 13 below.[13]

Table 13
1990 Recession, 1989 Base year

	UI Premiums & Benefits at 1989 Levels	1989 Premiums Responsive Benefits	Net Effect of Responsive Benefits	1989 Benefits, Changing Premium Rates
	— Real GDP, Percent Change from History —			
1990	+0.38	+0.39	+0.01	-0.16
1991	+0.58	+0.97	+0.39	-0.75
1992	+1.61	+2.23	+0.62	-1.21
	— Employment, Change from History in Numbers of Jobs —			
1990	+23,800	+24,500	+700	-9,900
1991	+54,700	+73,800	+19,100	-47,400
1992	+132,500	+184,900	+52,400	-103,400

Changes in the UI Premium Rate

The UI premium rate was changing before and during the 1990-1992 period, so the UI system was not being allowed to act as a true passive stabilizer. In 1988, the UI premium rate for employees was 2.35 percent; in 1989, at the peak of the recovery, when some fiscal tightening might have been in order, the rate was reduced to 1.95 percent. Then, in 1990, with the recession coming on, the rate was raised to 2.25 percent, undoing almost all of the 1989 reduction. Finally, in 1991 and 1992, the rate was raised twice more, so that average annual rates rose to 2.52 percent and 3 percent.

From column 2 of Table 12 it can also be seen that changes in the UI premium rate can have powerful impacts. If the premium rate had not been lowered in 1989, GDP would have been 0.5 percent lower, but the higher rate would have eventually yielded a 1.4 percent improvement in GDP by 1992 and 80,000 more jobs. Column 2 of Table 13 shows that, if the low 1989 premium rate had been held through 1990-1992, GDP would have been over 2 percent higher in 1992, and there would have been over 180,000 more jobs. Columns 3 and 4 of Tables 12 and 13 indicate that the operation of the full UI system (even with *fixed* premium rates) is somewhat less stabilizing than the operation of a system of benefit payments alone.

13 The detailed results for Simulation E with the 1989 base are shown in Appendix C.

8. Simulation Set F: Comparing UI With Other Fiscal Measures

In a final set of simulations, we compared our measurements of the stabilizing impact of UI in the 1982 recession to measures of the stabilizing properties of several other key components of the fiscal system. They include: the federal personal income tax, other federal transfers to persons (such as Old Age Security payments), and provincial and municipal transfers to persons, including "social assistance." In each case, we froze the variable or variables at their real 1981 levels and examined the results over five years. We summarize the results in Table 14.[14] Because these stabilizers vary greatly in value, we also show their historical values from 1981 through 1986 in Table 15, which uses National Accounts values.

The federal personal income tax is rxevealed to have no stabilizing power in response to cyclical economic changes.

Table 14
The 1982 Recession with 1981 Levels of Transfers and Taxes Impact on GDP and Employment

	1981 UI Benefits and Premiums	1981 UI Benefits Actual Premiums	Federal Income Tax to Persons	Other Federal Transfers to Persons	Provincial and Local Transfers to Persons
	— Real GDP, Percent Change from History —				
1982	-0.88	-0.76	+0.27	-0.17	-0.21
1983	-0.01	-1.45	+0.33	-0.53	-0.45
1984	-0.11	-1.46	+0.28	-0.88	-0.52
1985	+0.49	-1.34	+1.22	-1.17	-0.52
1986	+1.32	-1.03	-1.03	-1.28	-0.52
	— Employment, Change from History in Numbers of Jobs —				
1982	-38,500	-31,700	+13,100	-2,000	-8,100
1983	-88,500	-104,600	+32,500	-30,700	-29,700
1984	-51,400	-144,700	+23,200	-65,900	-48,700
1985	+10,200	-152,700	+70,400	-103,400	-55,000
1986	+93,900	-133,200	+187,100	-127,600	-58,400

Column 1 of Table 14 shows how much lower GDP and employment would have been in the 1982 recession if real UI benefits and premiums had been frozen at their 1981 levels. Column 2 shows the impact of freezing benefits only at 1981 levels. As we noted earlier, freezing benefits and premiums would have significantly worsened GDP and employment in 1982 and 1983, but in later years the rise in UI premiums meant that the full UI system was much less stabilizing in 1984-1986. Looking at column 2, we recall that the benefits portion of the UI system was determined to be a much more effective stabilizer. Indeed, from 1983 to 1986, the payment of UI benefits kept the economy stronger by at least 1 percent than it otherwise would have been, and it improved employment by over 130,000 jobs.

14 Detailed results for Simulation F are presented in Appendix D.

Other federal transfers to individuals provided some stability during this period, but the effect was much less compared to the UI system.

The federal personal income tax is revealed to have no stabilizing power in response to cyclical economic changes. Beginning in 1982, it would have been economically advantageous to freeze federal income tax at the real 1981 levels.

Other federal transfers to individuals provided some stability during this period, but the effect was much less compared to the UI system in 1982 and 1983. By 1985 and 1986, other federal transfers to persons generated impacts similar to the magnitude of UI benefits. These impacts, however, may be due to an increase in the real value of these transfers over the period and not to a cyclical response. Table 15 indicates that even this stabilizing power is coming from a fiscal instrument roughly double or more the size of UI benefit payments.

Table 15
Historical Values of Selected Transfers and Taxes
Current-Account Basis
($ Billions)

	UI Benefits	Federal Personal Income Tax	Other Federal Transfers to Persons	Provincial and Local Transfers to Persons
1981	4.8	23.0	13.9	13.1
1982	8.5	25.7	15.9	15.4
1983	10.0	26.8	18.0	17.2
1984	9.9	28.2	19.8	18.2
1985	10.1	32.1	21.6	19.7
1986	10.4	37.5	22.8	21.0

The sum of provincial and municipal transfers to persons, including all social assistance payments, stabilized the recession by about one-half of 1 percent of GDP and almost 58,000 jobs, by 1986. That is, GDP would have been about 0.5 percent lower in 1986 and 58,000 more jobs would have been lost if provincial and local transfers such as social assistance had been held at 1981 levels through the 1982 recession and in the following four years. These figures are significantly lower than the stabilizing contribution of UI, especially in the most significant recession years of 1982 and 1983. It should also be noted that provincial and local transfers to individuals are almost double the value of UI transfers.

9. Conclusion

This study has examined the effectiveness and potential of Canada's Unemployment Insurance (UI) system to act as an "automatic stabilizer" of the Canadian macroeconomy over the business cycle. The following are our conclusions.

UI spending improves economic performance in shock conditions.
When we set basic indicators for the UI system, such as benefits and premiums relative to personal income, against GDP growth and employment, we found that there is indeed a strong correlation between the net spending of the UI system and the performance of the economy. This is especially true with respect to UI benefits paid and much less so with respect to UI premiums collected. A review of the data also finds that the UI premium rate (which, we would argue, is *not* automatic but changed by policy choice) appears to have moved *pro*cyclically. In other words, this "tax rate" has been raised in downturns and reduced in upturns.

UI reduces the impacts of shocks to the economy.
We conducted a variety of simulations with the FOCUS macroeconometric model to investigate the stabilizing properties of UI. We have found that the stabilizing effect of the UI system builds up over a period of 2 to 3 years, reaching a maximum of about 15 percent to just over 20 percent. In other words, the operation of the UI system reduces the monetary or fiscal shock on the GDP and employment by 15 to 20 percent. This figure compares to estimates of 3 to 5 percent for the stabilizing properties of the unemployment insurance system in the United States.

The simulations also show that the power of the UI system as a stabilizer, when measured in this fashion, naturally varies over time with the size of the UI system in the historical economy. This variation amounts to perhaps 3 to 4 percentage points on the basic range of 15 to 20 percent.

A further set of simulations examined the impact of the 1978 UI reforms on the stabilizing properties of the UI system. We found that the 1978 reforms had almost no impact on the stabilizing effect of UI in the first two years of a shock and had a small effect by the fifth year. As best as we can tell from the data thus far, the 1991 reforms to UI should have no significant impact as a stabilizer.

A further set of simulations looked at the impact of the UI system as a stabilizer in the 1982 recession and its aftermath. We found that had the UI system not been operating, real GDP could have fallen another 1 percent or more in 1983 and 1984, and a further 100,000 or more jobs would have been lost. From 1982 to 1984, the UI system prevented a further drop of 15 to 20 percent in economic output and a significant decline in employment.

UI premium rate increases implemented beginning in 1983 severely undercut the stabilizing effect of the UI system so significantly that by 1985 and 1986, the economy would actually have benefitted if real UI benefits and premiums had been frozen at pre-recession levels.

UI premium rate increases undercut UI's ability to stabilize the economy during downturns.

Our simulations also showed that the UI premium rate increases implemented beginning in 1983 severely undercut the stabilizing effect of the UI system so significantly that by 1985 and 1986, the economy would actually have benefitted if real UI benefits *and* premiums had been frozen at pre-recession levels. We obtained similar results when we examined the 1990-1992 recessionary period, a period in which UI premium rates were again raised in the very early stages of recovery.

Our simulations of the two recent recessions indicate that the UI system has the potential to act as a powerful automatic stabilizer if indeed the premium rate is kept unchanged; but that the premium increases that historically occurred virtually wiped out the stabilizing effect of UI at a point at which recovery was only tentatively underway.

The UI system is a more effective stabilizer than other fiscal measures.

Our simulations have determined that the UI system in Canada has a significantly larger stabilizing effect than the UI system in the United States. But how does the UI system compare in this respect with other possible automatic stabilizers? To investigate this question we simulated the 1982 recession and its aftermath and froze several other fiscal instruments at their pre-recession levels, that is, following the same method we had used to isolate the stabilizing impact of the UI system.

These simulations show that the federal personal income tax system had effectively no stabilizing effect and that, as long as the UI premium rate was not adjusted, the sum of all other federal transfers to persons had a stabilizing effect significantly below that of the UI system in the recession itself and the early recovery phase. Moreover, the sum of all provincial and local government transfers to individuals has a lesser stabilizing effect than UI. It would appear, therefore, that the UI system is the single most powerful automatic stabilizer — in the absence of UI premium rate changes.

We conclude that the UI system, through its benefit payments to the unemployed, has been a powerful and important automatic stabilizer for the Canadian economy. Its potential for operating as a more powerful automatic stabilizer requires a mechanism whereby UI premium rates are not increased during economic downturns and decreased during growth periods.

Appendix A: Results of Simulation D

Table A.1
1982 Recession
FOCUS MODEL — INSTITUTE FOR POLICY ANALYSIS
UI Stabilizer Tests : UI Real Premiums and Benefits Frozen at 1981 Values

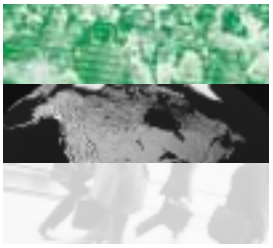
	1982	1983	1984	1985	1986
Real Output and Components					
Real Gross Domestic Product	-0.88	-1.01	-0.11	0.49	1.32
Real GDP (Change in $ Bill)	-3.76	-4.42	-0.51	2.40	6.66
Real Gross National Product	-0.90	-1.02	-0.19	0.42	1.26
Consumption	-1.66	-2.01	-0.88	0.08	1.20
Government Currency & Capital	0.00	0.00	0.00	0.00	0.00
Residential Construction	-0.75	-1.93	-1.17	0.65	2.85
Non-residential Construction	-0.20	-0.60	0.06	0.71	1.27
Machinery and Equipment	-0.27	-0.64	-0.15	-0.69	1.50
Exports	-0.06	-0.37	-0.12	0.34	0.85
Imports	-0.81	-2.39	-2.01	-0.81	0.08
Prices, Wages and Unemployment					
Implicit Deflator for GDP	0.07	-0.70	-1.55	-2.12	-2.58
Consumer Price Index (CPI)	0.03	-0.76	-1.62	-2.12	-2.51
CPI — Inflation Rate	0.04	-0.83	-0.91	-0.53	-0.42
Average Wage	-0.13	-0.77	-1.25	-1.64	-1.79
Real Wage (CPI)	-0.17	-0.01	0.38	0.49	0.74
Labour Productivity	-0.67	-0.32	0.35	0.45	0.62
Capital Stock	-0.01	-0.05	-0.09	-0.06	0.06
Employment (% Change)	-0.36	-0.83	-0.47	0.09	0.81
Employment (Change in '000)	-38.50	-88.50	-51.40	10.20	93.90
Unemployment Rate (% Pts)	0.23	0.50	0.25	-0.12	-0.58
Money and Interest Rates					
90-day Paper Rates (% Pts)	-0.21	-0.28	-0.26	-0.19	-0.09
Industrial Bond Rate (% Pts)	-0.05	-0.17	-0.25	-0.23	-0.17
Exchange Rate and Balance of Payments					
Exchange Rate	0.15	1.14	1.08	0.75	0.28
Current Account Balance	0.64	1.80	1.63	0.80	0.17
Terms of Trade	0.00	0.08	-0.11	-0.33	-0.60
Deficits and Debt					
Aggregate Surplus/Deficit ($ Bill)	1.59	0.40	0.59	1.16	2.13
Federal Surplus/Deficit ($ Bill)	2.56	2.00	1.80	1.80	1.91
Ratio of Federal Debt to GDP (% Pts)	-0.26	-0.68	-0.87	-1.12	-1.43
Provincial Surplus/Deficit ($ Bill)	-0.95	-1.53	-1.15	-0.61	0.19

Table A.2
1982 Recession
FOCUS MODEL — INSTITUTE FOR POLICY ANALYSIS
UI Stabilizer Tests : 1981 Premium Rate For 1982 to 1986 — Full Stabilizer

	1982	1983	1984	1985	1986
Real Output and Components					
Real Gross Domestic Product	-0.17	0.48	1.07	1.21	1.27
Real GDP (Change in $ Bill)	-0.73	2.10	5.00	5.92	6.42
Real Gross National Product	-0.17	0.46	1.06	1.24	1.32
Consumption	-0.26	0.72	1.65	1.93	1.91
Government Currency & Capital	0.00	0.00	0.00	0.00	0.00
Residential Construction	-0.16	0.27	1.36	2.01	2.24
Non-residential Construction	-0.06	0.16	0.64	0.66	0.48
Machinery and Equipment	-0.05	0.11	0.62	0.79	0.62
Exports	-0.03	0.05	0.37	0.59	0.68
Imports	-0.03	-1.10	0.71	1.22	1.05
Prices, Wages and Unemployment					
Implicit Deflator for GDP	0.13	-0.35	-0.64	-0.69	-0.61
Consumer Price Index (CPI)	0.13	-0.36	-0.67	-0.69	-0.62
CPI — Inflation Rate	0.14	-0.51	-0.33	-0.02	0.07
Average Wage	0.04	-0.11	-0.09	-0.04	0.15
Real Wage (CPI)	-0.09	0.25	0.58	0.65	0.77
Labour Productivity	-0.11	0.37	0.48	0.28	0.20
Capital Stock	0.00	-0.01	0.03	0.10	0.16
Employment (% Change)	-0.09	0.18	0.71	1.05	1.19
Employment (Change in '000)	-9.60	18.90	78.10	118.10	136.80
Unemployment Rate (% Pts)	0.06	-0.11	-0.45	-0.66	-0.73
Money and Interest Rates					
90-day Paper Rates (% Pts)	-0.02	0.04	0.15	0.15	0.16
Industrial Bond Rate (% Pts)	-0.01	0.00	0.06	0.10	0.12
Exchange Rate and Balance of Payments					
Exchange Rate	0.00	0.04	-0.24	-0.51	-0.61
Current Account Balance	0.03	-0.02	-0.64	-1.02	-0.79
Terms of Trade	0.03	-0.08	-0.20	-0.31	-0.35
Deficits and Debt					
Aggregate Surplus/Deficit ($ Bill)	0.20	-1.00	-0.05	0.39	0.62
Federal Surplus/Deficit ($ Bill)	0.30	-1.26	-0.85	-0.71	-0.63
Ratio of Federal Debt to GDP (% Pts)	-0.04	0.08	0.22	0.29	0.33
Provincial Surplus/Deficit ($ Bill)	-0.10	0.26	0.76	1.01	1.14

Table A.3
1982 Recession
FOCUS MODEL — INSTITUTE FOR POLICY ANALYSIS
UI Stabilizer Tests : 1981 Real Benefits (Only) Frozen at 1981 Values

	1982	1983	1984	1985	1986
Real Output and Components					
Real Gross Domestic Product	-0.76	-1.45	-1.46	-1.34	-1.03
Real GDP (Change in $ Bill)	-3.22	-6.38	-6.83	-6.54	-5.21
Real Gross National Product	-0.77	-1.46	-1.52	-1.44	-1.14
Consumption	-1.46	-2.70	-2.97	-2.86	-2.41
Government Currency & Capital	0.00	0.00	0.00	0.00	0.00
Residential Construction	-0.63	-2.14	-2.85	-2.15	-0.89
Non-residential Construction	-0.16	-0.73	-0.73	-0.30	0.16
Machinery and Equipment	-0.24	-0.73	-0.89	-0.45	0.24
Exports	-0.03	-0.40	-0.54	-0.45	-0.25
Imports	-0.79	-2.29	-2.82	-2.52	-1.84
Prices, Wages and Unemployment					
Implicit Deflator for GDP	-0.03	-0.38	-0.79	-1.20	-1.62
Consumer Price Index (CPI)	-0.06	-0.43	-0.82	-1.20	-1.55
CPI — Inflation Rate	-0.07	-0.39	-0.41	-0.40	-0.37
Average Wage	-0.16	-0.67	-1.14	-1.62	-2.04
Real Wage (CPI)	-0.10	-0.24	-0.32	-0.43	-0.50
Labour Productivity	-0.58	-0.69	-0.32	-0.12	0.02
Capital Stock	-0.01	-0.05	-0.13	-0.18	-0.17
Employment (% Change)	-0.30	-0.98	-1.32	-1.36	-1.16
Employment (Change in '000)	-31.70	-104.60	-144.70	-152.70	-133.20
Unemployment Rate (% Pts)	0.19	0.60	0.80	0.80	0.65
Money and Interest Rates					
90-day Paper Rates (% Pts)	-0.19	-0.32	-0.45	-0.42	-0.39
Industrial Bond Rate (% Pts)	-0.05	-0.18	-0.32	-0.37	-0.37
Exchange Rate and Balance of Payments					
Exchange Rate	0.15	1.10	1.36	1.49	1.40
Current Account Balance	0.62	1.82	2.40	2.32	1.89
Terms of Trade	-0.05	-0.15	0.13	0.10	0.00
Deficits and Debt					
Aggregate Surplus/Deficit ($ Bill)	1.41	1.47	0.97	1.33	1.90
Federal Surplus/Deficit ($ Bill)	2.31	3.32	3.22	3.65	4.05
Ratio of Federal Debt to GDP (% Pts)	-0.23	-0.75	-1.16	-1.59	-2.09
Provincial Surplus/Deficit ($ Bill)	-0.88	-1.78	-2.14	-2.19	-2.00



Appendix B: Results of Simulation E (1988 Base)

Table B.1
1990 Recession
FOCUS MODEL — INSTITUTE FOR POLICY ANALYSIS
UI Stabilizer Tests : UI Real Premiums and Benefits Frozen at 1988 Values

	1989	1990	1991	1992
Real Output and Components				
Real Gross Domestic Product	-0.56	-0.51	-0.32	0.74
Real GDP (Change in $ Bill)	-3.20	-2.88	-1.76	4.15
Real Gross National Product	-0.55	-0.50	-0.33	0.72
Consumption	-0.87	-0.89	-0.87	0.42
Government Currency & Capital	0.00	0.00	0.00	0.00
Residential Construction	-0.32	-0.59	-0.74	0.17
Non-residential Construction	-0.26	-0.27	-0.83	0.77
Machinery and Equipment	-0.19	-0.34	-0.49	0.45
Exports	-0.10	-0.22	-0.42	0.24
Imports	-0.15	-0.63	-0.95	-0.87
Prices, Wages and Unemployment				
Implicit Deflator for GDP	0.30	0.02	-0.63	-1.67
Consumer Price Index (CPI)	0.30	0.02	-0.59	-1.54
CPI — Inflation Rate	0.31	-0.29	-0.65	-0.97
Average Wage	0.02	-0.24	-0.56	-1.03
Real Wage (CPI)	-0.28	-0.26	0.03	0.52
Labour Productivity	-0.34	-0.11	0.02	0.58
Capital Stock	-0.01	-0.04	-0.07	-0.05
Employment (% Change)	-0.29	-0.45	-0.37	0.23
Employment (Change in '000)	-36.40	-56.00	-45.60	28.10
Unemployment Rate (% Pts)	0.20	0.29	0.22	-0.20
Money and Interest Rates				
90-day Paper Rates (% Pts)	-0.09	-0.13	-0.14	-0.06
Industrial Bond Rate (% Pts)	-0.10	-0.15	-0.16	-0.06
Exchange Rate and Balance of Payments				
Exchange Rate	0.06	0.28	0.53	0.53
Current Account Balance	0.41	1.03	1.56	1.54
Terms of Trade	0.11	0.10	-0.01	-0.32
Deficits and Debt				
Aggregate Surplus/Deficit ($ Bill)	1.17	-0.68	0.44	0.72
Federal Surplus/Deficit ($ Bill)	1.79	0.45	2.16	1.30
Ratio of Federal Debt to GDP (% Pts)	-0.11	-0.14	-0.20	-0.37
Provincial Surplus/Deficit ($ Bill)	-0.60	-1.04	-1.63	-0.58

Table B.2
1990 Recession
FOCUS MODEL — INSTITUTE FOR POLICY ANALYSIS
UI Stabilizer Tests : 1988 Premium Rate For 1989 to 1992 — Full Stabilizer

	1989	1990	1991	1992
Real Output and Components				
Real Gross Domestic Product	-0.54	-0.51	0.09	1.39
Real GDP (Change in $ Bill)	-3.03	-2.89	0.49	7.78
Real Gross National Product	-0.52	-0.50	0.08	1.38
Consumption	-0.80	-0.77	0.07	1.86
Government Currency & Capital	0.00	0.00	0.00	0.00
Residential Construction	-0.30	-0.62	-0.59	1.14
Non-residential Construction	-0.24	-0.31	0.10	1.30
Machinery and Equipment	-0.17	-0.34	-0.80	0.79
Exports	-0.09	-0.24	-0.15	0.31
Imports	-0.07	-0.44	-0.40	0.23
Prices, Wages and Unemployment				
Implicit Deflator for GDP	0.36	0.23	-0.20	-0.94
Consumer Price Index (CPI)	0.35	0.23	-0.19	-0.86
CPI — Inflation Rate	0.37	-0.13	-0.43	-0.69
Average Wage	0.06	-0.11	-0.22	-0.34
Real Wage (CPI)	-0.29	-0.33	-0.04	0.52
Labour Productivity	-0.33	-0.11	0.33	0.87
Capital Stock	-0.01	-0.04	-0.06	-0.02
Employment (% Change)	-0.27	-0.45	-0.22	0.67
Employment (Change in '000)	-33.10	-56.70	-27.30	82.20
Unemployment Rate (% Pts)	0.18	0.30	0.13	-0.47
Money and Interest Rates				
90-day Paper Rates (% Pts)	-0.07	-0.10	-0.02	0.09
Industrial Bond Rate (% Pts)	-0.08	-0.11	-0.02	0.11
Exchange Rate and Balance of Payments				
Exchange Rate	0.00	0.02	0.24	-0.13
Current Account Balance	0.24	0.70	0.44	-0.68
Terms of Trade	0.10	0.14	0.02	-0.33
Deficits and Debt				
Aggregate Surplus/Deficit ($ Bill)	1.21	-0.93	-1.41	-0.70
Federal Surplus/Deficit ($ Bill)	1.71	-0.15	-1.25	-2.27
Ratio of Federal Debt to GDP (% Pts)	-0.09	-0.12	-0.11	-0.04
Provincial Surplus/Deficit ($ Bill)	-0.49	-0.70	-0.10	1.52

Table B.3
1990 Recession
FOCUS MODEL — INSTITUTE FOR POLICY ANALYSIS
UI Stabilizer Tests : UI Real Benefits (Only) Frozen at 1988 Values

	1989	1990	1991	1992
Real Output and Components				
Real Gross Domestic Product	-0.06	-0.18	-0.76	-1.21
Real GDP (Change in $ Bill)	-0.36	-1.00	-4.21	-6.79
Real Gross National Product	-0.06	-0.18	-0.75	-1.22
Consumption	-0.12	-0.37	-1.43	-2.27
Government Currency & Capital	0.00	0.00	0.00	0.00
Residential Construction	-0.04	-0.10	-0.58	-1.82
Non-residential Construction	-0.04	-0.05	-0.32	-0.87
Machinery and Equipment	-0.03	-0.06	-0.27	-0.67
Exports	-0.02	-0.01	-0.09	-0.27
Imports	-0.08	-0.21	-0.67	-1.42
Prices, Wages and Unemployment				
Implicit Deflator for GDP	-0.02	-0.06	-0.20	-0.51
Consumer Price Index (CPI)	-0.02	-0.05	-0.18	-0.48
CPI — Inflation Rate	-0.02	-0.03	-0.14	-0.30
Average Wage	-0.04	-0.09	-0.32	-0.72
Real Wage (CPI)	-0.01	-0.04	-0.13	-0.25
Labour Productivity	-0.02	-0.10	-0.47	-0.51
Capital Stock	0.00	-0.01	-0.02	-0.07
Employment (% Change)	-0.05	-0.10	-0.39	-0.85
Employment (Change in '000)	-5.90	-12.00	-48.40	-103.90
Unemployment Rate (% Pts)	0.03	0.06	0.26	0.54
Money and Interest Rates				
90-day Paper Rates (% Pts)	-0.02	-0.05	-0.15	-0.20
Industrial Bond Rate (% Pts)	-0.02	-0.06	-0.18	-0.24
Exchange Rate and Balance of Payments				
Exchange Rate	0.06	0.06	0.36	0.84
Current Account Balance	0.17	0.36	1.35	2.76
Terms of Trade	0.01	0.00	0.07	0.16
Deficits and Debt				
Aggregate Surplus/Deficit ($ Bill)	-0.01	0.60	1.90	1.47
Federal Surplus/Deficit ($ Bill)	0.12	1.08	3.89	4.53
Ratio of Federal Debt to GDP (% Pts)	-0.02	-0.04	-0.15	-0.38
Provincial Surplus/Deficit ($ Bill)	-0.12	-0.47	-1.93	-2.96

Appendix C: Results of Simulation E (1989 Base)

Table C.1
1990 Recession
FOCUS MODEL — INSTITUTE FOR POLICY ANALYSIS
UI Stabilizer Tests : UI Real Premiums and Benefits Frozen at 1990 Values

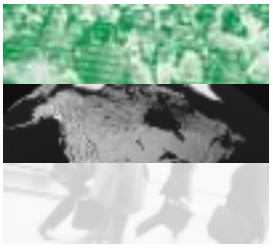
	1990	1991	1992
Real Output and Components			
Real Gross Domestic Product	0.38	0.58	1.61
Real GDP (Change in $ Bill)	2.14	3.22	9.02
Real Gross National Product	0.38	0.56	1.59
Consumption	0.49	0.55	1.82
Government Currency & Capital	0.00	0.00	0.00
Residential Construction	0.26	0.81	2.06
Non-residential Construction	0.19	0.39	1.07
Machinery and Equipment	0.11	0.27	0.82
Exports	0.07	0.28	0.63
Imports	-0.07	-0.19	-0.07
Prices, Wages and Unemployment			
Implicit Deflator for GDP	-0.37	-0.87	-1.73
Consumer Price Index (CPI)	-0.38	-0.83	-1.66
CPI — Inflation Rate	-0.39	-0.48	-0.85
Average Wage	-0.12	-0.30	-0.59
Real Wage (CPI)	0.26	0.54	1.08
Labour Productivity	0.23	0.18	0.67
Capital Stock	0.00	0.03	0.08
Employment (% Change)	0.19	0.44	1.08
Employment (Change in '000)	23.80	54.70	132.50
Unemployment Rate (% Pts)	-0.13	-0.30	-0.72
Money and Interest Rates			
90-day Paper Rates (% Pts)	0.03	0.00	0.05
Industrial Bond Rate (% Pts)	0.03	0.00	0.06
Exchange Rate and Balance of Payments			
Exchange Rate	0.08	0.07	0.05
Current Account Balance	0.07	0.34	0.25
Terms of Trade	-0.09	-0.25	-0.52
Deficits and Debt			
Aggregate Surplus/Deficit ($ Bill)	-0.97	0.56	0.85
Federal Surplus/Deficit ($ Bill)	-1.12	0.75	-0.07
Ratio of Federal Debt to GDP (% Pts)	0.07	0.14	0.06
Provincial Surplus/Deficit ($ Bill)	0.15	-0.24	0.77

Table C.2
1990 Recession
FOCUS MODEL — INSTITUTE FOR POLICY ANALYSIS
UI Stabilizer Tests : 1989 Premium Rate For 1990 to 1992 — Full Stabilizer

	1990	1991	1992
Real Output and Components			
Real Gross Domestic Product	0.39	0.97	2.23
Real GDP (Change in $ Bill)	2.20	5.40	12.50
Real Gross National Product	0.39	0.96	2.23
Consumption	0.58	1.40	3.14
Government Currency & Capital	0.00	0.00	0.00
Residential Construction	0.23	1.02	3.02
Non-residential Construction	0.18	0.53	1.56
Machinery and Equipment	0.12	0.39	1.16
Exports	0.06	0.28	0.72
Imports	0.06	0.28	0.91
Prices, Wages and Unemployment			
Implicit Deflator for GDP	-0.26	-0.57	-1.18
Consumer Price Index (CPI)	-0.26	-0.55	-1.13
CPI — Inflation Rate	-0.27	-0.30	-0.60
Average Wage	-0.05	-0.05	-0.03
Real Wage (CPI)	0.21	0.50	1.12
Labour Productivity	0.24	0.47	0.94
Capital Stock	0.00	0.03	0.11
Employment (% Change)	0.20	0.60	1.51
Employment (Change in '000)	24.50	73.80	184.90
Unemployment Rate (% Pts)	-0.13	-0.40	-0.98
Money and Interest Rates			
90-day Paper Rates (% Pts)	0.05	0.10	0.19
Industrial Bond Rate (% Pts)	0.06	0.11	0.22
Exchange Rate and Balance of Payments			
Exchange Rate	0.03	-0.17	-0.51
Current Account Balance	-0.16	-0.61	-1.69
Terms of Trade	-0.07	-0.24	-0.56
Deficits and Debt			
Aggregate Surplus/Deficit ($ Bill)	-1.04	-0.95	-0.23
Federal Surplus/Deficit ($ Bill)	-1.43	-2.13	-3.08
Ratio of Federal Debt to GDP (% Pts)	0.08	0.19	0.30
Provincial Surplus/Deficit ($ Bill)	0.39	1.11	2.65

Table C.3
1990 Recession
FOCUS MODEL — INSTITUTE FOR POLICY ANALYSIS
UI Stabilizer Tests : UI Real Benefits (Only) Frozen at 1990 Values

	1990	1991	1992
Real Output and Components			
Real Gross Domestic Product	-0.16	-0.75	-1.21
Real GDP (Change in $ Bill)	-0.93	-4.17	-6.78
Real Gross National Product	-0.17	-0.75	-1.22
Consumption	-0.33	-1.40	-2.24
Government Currency & Capital	0.00	0.00	0.00
Residential Construction	-0.05	-0.60	-1.86
Non-residential Construction	-0.06	-0.34	-0.88
Machinery and Equipment	-0.06	-0.29	-0.69
Exports	-0.01	-0.10	-0.28
Imports	-0.17	-0.65	-1.40
Prices, Wages and Unemployment			
Implicit Deflator for GDP	-0.03	-0.16	-0.47
Consumer Price Index (CPI)	-0.02	-0.15	-0.43
CPI — Inflation Rate	-0.02	-0.13	-0.29
Average Wage	-0.05	-0.27	-0.67
Real Wage (CPI)	-0.03	-0.12	-0.24
Labour Productivity	-0.11	-0.47	-.051
Capital Stock	0.00	-0.02	-0.07
Employment (% Change)	-0.08	-0.38	-0.85
Employment (Change in '000)	-9.90	-47.40	-103.40
Unemployment Rate (% Pts)	0.05	0.25	0.54
Money and Interest Rates			
90-day Paper Rates (% Pts)	-0.05	-0.15	-0.20
Industrial Bond Rate (% Pts)	-0.05	-0.17	-0.23
Exchange Rate and Balance of Payments			
Exchange Rate	0.04	0.34	0.83
Current Account Balance	0.31	1.30	2.70
Terms of Trade	0.01	0.08	0.16
Deficits and Debt			
Aggregate Surplus/Deficit ($ Bill)	0.56	1.80	1.34
Federal Surplus/Deficit ($ Bill)	0.98	3.74	4.37
Ratio of Federal Debt to GDP (% Pts)	-0.04	-0.13	-0.33
Provincial Surplus/Deficit ($ Bill)	-0.41	-1.89	-2.93



Appendix D: Results of Simulation F

Table D.1
Comparison of Stabilizers
FOCUS MODEL — INSTITUTE FOR POLICY ANALYSIS
UI Stabilizer Tests : Real Federal PIT Frozen at 1981 Values

	1982	1983	1984	1985	1986
Real Output and Components					
Real Gross Domestic Product	0.27	0.33	0.28	1.22	2.76
Real GDP (Change in $ Bill)	1.15	1.44	1.33	5.96	13.94
Real Gross National Product	0.28	0.32	0.31	1.24	2.79
Consumption	0.52	0.66	0.62	2.39	5.34
Government Currency & Capital	0.00	0.00	0.00	0.00	0.00
Residential Construction	0.27	0.70	0.31	1.04	3.11
Non-residential Construction	0.08	0.19	-0.06	0.30	1.17
Machinery and Equipment	0.10	0.17	0.06	0.42	1.26
Exports	0.01	0.14	0.07	0.14	0.53
Imports	0.34	0.72	0.41	1.36	3.51
Prices, Wages and Unemployment					
Implicit Deflator for GDP	0.02	0.09	0.18	0.32	0.86
Consumer Price Index (CPI)	0.03	0.15	0.19	0.36	0.94
CPI — Inflation Rate	0.03	0.13	0.04	0.18	0.60
Average Wage	0.07	0.22	0.25	0.59	1.49
Real Wage (CPI)	0.04	0.07	0.06	0.23	0.54
Labour Productivity	0.19	0.07	0.11	0.76	1.47
Capital Stock	0.00	0.02	0.03	0.03	0.10
Employment (% Change)	0.12	0.30	0.21	0.63	1.62
Employment (Change in '000)	13.10	32.50	23.20	70.40	187.10
Unemployment Rate (% Pts)	-0.08	-0.18	-0.12	-0.38	-1.01
Money and Interest Rates					
90-day Paper Rates (% Pts)	0.08	0.08	0.08	0.26	0.60
Industrial Bond Rate (% Pts)	0.02	0.06	0.06	0.13	0.28
Exchange Rate and Balance of Payments					
Exchange Rate	-0.06	-0.36	-0.18	-0.55	-1.68
Current Account Balance	-0.26	-0.57	-0.28	-1.64	-4.71
Terms of Trade	0.01	-0.05	0.00	-0.05	-0.27
Deficits and Debt					
Aggregate Surplus/Deficit ($ Bill)	-0.42	-0.26	-0.69	-2.86	-4.75
Federal Surplus/Deficit ($ Bill)	-0.64	-0.58	-1.01	-4.14	-7.98
Ratio of Federal Debt to GDP (% Pts)	0.08	0.24	0.20	0.43	0.81
Provincial Surplus/Deficit ($ Bill)	0.20	0.30	0.30	1.22	3.07

Table D.2
Comparison of Stabilizers
FOCUS MODEL — INSTITUTE FOR POLICY ANALYSIS
UI Stabilizer Tests : Real Federal Non-UI Transfers to Persons Frozen at 1981 Values

	1982	1983	1984	1985	1986
Real Output and Components					
Real Gross Domestic Product	-0.17	-0.53	-0.88	-1.17	-1.28
Real GDP (Change in $ Bill)	-0.73	-2.32	-4.10	-5.73	-6.46
Real Gross National Product	-0.17	-0.53	-0.90	-1.21	-1.35
Consumption	-0.33	-0.99	-1.74	-2.37	-2.57
Government Currency & Capital	0.00	0.00	0.00	0.00	0.00
Residential Construction	-0.14	-0.60	-1.35	-1.88	-1.85
Non-residential Construction	-0.03	-0.21	-0.40	-0.47	-0.41
Machinery and Equipment	-0.05	-0.24	-0.49	-0.58	-0.46
Exports	-0.01	-0.11	-0.22	-0.33	-0.40
Imports	-0.18	-0.69	-1.38	-1.96	-2.03
Prices, Wages and Unemployment					
Implicit Deflator for GDP	0.00	-0.09	-0.28	-0.56	-0.97
Consumer Price Index (CPI)	-0.01	-0.12	-0.30	-0.59	-0.96
CPI — Inflation Rate	-0.02	-0.11	-0.20	-0.30	-0.39
Average Wage	-0.04	-0.19	-0.46	-0.85	-1.33
Real Wage (CPI)	-0.02	-0.08	-0.16	-0.26	-0.37
Labour Productivity	-0.13	-0.32	-0.39	-0.39	-0.32
Capital Stock	0.00	-0.01	-0.04	-0.09	-0.13
Employment (% Change)	-0.07	-0.29	-0.60	-0.92	-1.11
Employment (Change in '000)	-7.00	-30.70	-65.90	-103.40	-127.60
Unemployment Rate (% Pts)	0.04	0.18	0.37	0.56	0.67
Money and Interest Rates					
90-day Paper Rates (% Pts)	-0.04	-0.11	-0.24	-0.29	-0.35
Industrial Bond Rate (% Pts)	-0.01	-0.05	-0.13	-0.20	-0.25
Exchange Rate and Balance of Payments					
Exchange Rate	0.03	0.30	0.57	0.96	1.33
Current Account Balance	0.14	0.57	1.29	2.02	2.26
Terms of Trade	0.00	0.04	0.06	0.11	0.15
Deficits and Debt					
Aggregate Surplus/Deficit ($ Bill)	0.33	0.77	1.06	1.40	1.34
Federal Surplus/Deficit ($ Bill)	0.54	1.44	2.35	3.26	3.60
Ratio of Federal Debt to GDP (% Pts)	-0.05	-0.20	-0.43	-0.77	-1.12
Provincial Surplus/Deficit ($ Bill)	-0.20	-0.65	-1.24	-1.78	-2.14

Table D.3
Comparison of Stabilizers
FOCUS MODEL — INSTITUTE FOR POLICY ANALYSIS
UI Stabilizer Tests : Real Provincial and Local Transfers to Persons Frozen at 1981 Values

	1982	1983	1984	1985	1986
Real Output and Components					
Real Gross Domestic Product	-0.21	-0.45	-0.52	-0.53	-0.52
Real GDP (Change in $ Bill)	-0.91	-1.98	-2.42	-2.61	-2.61
Real Gross National Product	-0.21	-0.42	-0.44	-0.42	-0.35
Consumption	-0.42	-0.90	-1.11	-1.22	-1.24
Government Currency & Capital	0.00	0.00	0.00	0.00	0.00
Residential Construction	-0.15	-0.59	-0.98	-0.85	-0.61
Non-residential Construction	-0.04	-0.20	-0.26	-0.13	-0.04
Machinery and Equipment	-0.06	-0.22	-0.34	-0.24	-0.10
Exports	0.01	-0.07	-0.13	-0.09	-0.03
Imports	-0.24	-0.75	-1.07	-1.09	-1.05
Prices, Wages and Unemployment					
Implicit Deflator for GDP	0.00	-0.08	-0.22	-0.35	-0.52
Consumer Price Index (CPI)	-0.01	-0.10	-0.23	-0.35	-0.49
CPI — Inflation Rate	-0.01	-0.10	-0.13	-0.13	-0.15
Average Wage	-0.04	-0.18	-0.35	-0.51	-0.71
Real Wage (CPI)	-0.03	-0.08	-0.12	-0.16	-0.22
Labour Productivity	-0.17	-0.24	-0.14	-0.10	-0.07
Capital Stock	0.00	-0.01	-0.04	-0.06	-0.07
Employment (% Change)	-0.08	-0.28	-0.45	-0.49	-0.51
Employment (Change in '000)	-8.10	-29.70	-48.70	-55.00	-58.40
Unemployment Rate (% Pts)	0.05	0.17	0.27	0.29	0.30
Money and Interest Rates					
90-day Paper Rates (% Pts)	-0.05	-0.09	-0.15	-0.15	-0.16
Industrial Bond Rate (% Pts)	-0.01	-0.05	-0.10	-0.12	-0.14
Exchange Rate and Balance of Payments					
Exchange Rate	0.00	0.22	0.34	0.36	0.38
Current Account Balance	0.21	0.77	1.41	1.81	2.27
Terms of Trade	-0.02	0.02	0.02	0.00	-0.02
Deficits and Debt					
Aggregate Surplus/Deficit ($ Bill)	0.44	0.79	0.88	1.53	2.04
Federal Surplus/Deficit ($ Bill)	-0.41	-0.85	-1.18	-1.53	-1.82
Ratio of Federal Debt to GDP (% Pts)	0.09	0.34	0.65	1.00	1.41
Provincial Surplus/Deficit ($ Bill)	0.86	1.65	2.10	3.11	3.92

Bibliography

BAKER, Michael and Samuel A. Rea. (1993) "Employment Spells and Unemployment Insurance Eligibility Requirements," Department of Economics, University of Toronto, mimeo.

BJORKLUND, Anders, Robert Haveman, Robinson Hollister, and Bertil Holmlund. (1991) *Labour Market Policy and Unemployment Insurance*. (New York: Oxford University Press).

BLANK, Rebecca M. and David Card. (1991) "Recent Trends in Insured and Uninsured Unemployment: Is There an Explanation?" in *The Quarterly Journal of Economics*. Vol. 106, November, pp.1157-1189.

BLAU, D.M. and P.K. Robins. (1986) "Job Search, Wage Offers and Unemployment Insurance," in *Journal of Public Economics*. Vol. 29, pp.173-197.

BRECHLING, F. (1981) "Layoffs and Unemployment Insurance," in S. Rosen (ed.) *Studies in Labor Markets*. (Chicago: University of Chicago Press) pp.187-202.

BROWN, Eleanor P. (1986) "Unemployment Insurance Taxes and Cyclical Layoff Incentives," in *Journal of Labor Economics*. Vol. 4, January, pp.50-65.

CLEMENT, M.O. (1960) "The Quantitative Impact of Automatic Stabilizers," in *Review of Economics and Statistics*. Vol. 42, No. 1, pp.56-61.

COE, David. (1990) "Structural Determinants of the Natural Rate of Unemployment in Canada," in *International Monetary Fund Staff Papers*. Vol. 37, March, pp.94-115.

DEERE, D. (1991) "Unemployment Insurance and Employment," in *Journal of Labor Economics*. Vol. 9, pp.307-324.

DUNGAN, Peter and Gregory Jump. (1993) *FOCUS: Forecasting and User Simulation Model of the Canadian Economy Version 93A*. Institute for Policy Analysis, (mimeo).

DUNGAN, Peter and Thomas A. Wilson. (1988) "Modeling Anticipated and Temporary Fiscal Policy Shocks in a Macro-econometric Model of Canada," in *Canadian Journal of Economics*. XXI:1, 41-60.

DUNSON, Bruce H., S. Charles Maurice and Gerald P. Dwyer, Jr. (1990) *The Cyclical Effects of the Unemployment Insurance (UI) Program: Final Report*. (Report prepared for the U.S. Department of Labor, Employment and Training Administration by Metrica Inc.)

EDGELL, David L. and Stephen A. Wandner. (1974) "Unemployment Insurance: Its Economic Performance," in *Monthly Labor Review*. April, pp.33-40.

EHRENBERG, R.G. and R.L. Oaxaca. (1976) "Unemployment Insurance, Duration of Unemployment and Subsequent Wage Gain," in *American Economic Review*. Vol. 66, pp.754-766.

EILBOTT, Peter. (1966) “The Effectiveness of Automatic Stabilizers,” in *American Economic Review*. Vol. 56, No. 3, pp.450-465.

FORTIN, Pierre. (1984) “Unemployment Insurance Meets the Classical Labour Supply Model,” in *Economic Letters*. Vol. 14, pp.275-281.

FRIEDMAN, Milton. (1953) “The Effects of Full Employment Policy on Economic Stability: A Formal Analysis,” in *Essays in Positive Economics*. (Chicago: University of Chicago Press).

GRUBEL, Herbert G. and Michael A. Walker. (ed.) (1978) *Unemployment Insurance: Global Evidence of its Effects on Unemployment*. (Vancouver: Fraser Institute).

GRUBEL, Herbert G. (1988) “Drifting Apart: Canadian and U.S. Labor Markets,” *Contemporary Policy Issues*. Vol. 6, January, pp.39-54.

HAM, John C. and Samuel A. Rea. (1987) “Unemployment Insurance and Male Unemployment in Canada,” in *Journal of Labor Economics.* Vol. 5, pp.325-353.

HAMERMESH, Daniel S. (1979) “Entitlement Effects, Unemployment Insurance and Employment Decisions,” in *Economic Enquiry*. Vol. 17, pp.317-332.

HELLIWELL, John and Fred Gorbet. (1971) “Assessing the Dynamic Efficiency of Automatic Stabilizers,” in *Journal of Political Economy*. Vol. 79, No. 4, pp.826-845.

KATZ, L.F. and B.D. Meyer. (1990) “The Impact of the Potential Duration of Unemployment Benefits on the Duration of Unemployment,” in *Journal of Public Economics*. Vol. 41, pp.45-72.

LANCASTER, Tony. (1979) “Econometric Methods for the Duration of Unemployment,” in *Econometrica*. Vol. 47, pp.939-956.

LESTER, Richard A. (1960) “The Economic Significance of Unemployment Compensation, 1948-1959,” in *Review of Economics and Statistics*. Vol. 42, November, pp.349-372.

MCGIBANY, James M. (1983) *An Econometric Analysis of the Stabilization Effectiveness of the Unemployment Insurance Program*. University Microfilms International, 300 N. Zeeb Road, Ann Arbor, MI 48106.

MEYER, Bruce D. (1990) “Unemployment Insurance and Unemployment Spells,” in *Econometrica*. Vol. 58, pp.757-782.

MILBOURNE, Ross D., Douglas D. Purvis and W. David Scoones. (1991) “Unemployment Insurance and Unemployment Dynamics,” in *Canadian Journal of Economics*. Vol. XXIV, No. 4, pp.804-826.

MOORTHY, Vivek. (1990) “Unemployment in Canada and the United States: The Role of Unemployment Insurance Benefits,” *Federal Reserve Bank of New York Quarterly Review*. 14, Winter, pp.48-61.

MORTENSEN, D.T. (1977) “Unemployment Insurance and Job Search Decisions,” in *Industrial and Labour Relations Review*. Vol. 30, pp.505-517.

NARENDRANATHAN, W., S. Nickell, and J. Stern. (1985) “Unemployment Benefits Revisited,” in *Economic Journal*. Vol. 95, pp.307-329.

OAXACA, Ronald L. and Carol L. Taylor. (1986) “Simulating the Impacts of Economic Programs on Urban Areas: The Case of Unemployment Insurance Benefits,” in *Journal of Urban Economics*. Vol. 19, January, pp.23-46.

PALMER, Edward E. and Marten Palme. (1989) “A Macroeconomic Analysis of Employer-contribution Financed Social Security,” in B.A. Gustafsson and N.A. Klevmarken (ed.) *The Political Economy of Social Security*. (Amsterdam: Elsevier Science Publishers B.V.).

PALOMBA, N. (1968) “Unemployment Compensation Program: Stabilizing or Destabilizing,” in *Journal of Political Economy*. Vol. 76, January, pp.91-100.

PHIPPS, Shelley A. (1993) “Does Unemployment Insurance Increase Unemployment?,” in *Canadian Business Economics*. Vol. 1, No. 3, pp.37-50.

PHIPPS, Shelley A. (1991) “Behavioural Response to UI Reform in Constrained and Unconstrained Models of Labour Supply,” in *Canadian Journal of Economics*. Vol. XXIV, No. 1, pp.34-54.

REA, Samuel A. (1977) “Unemployment Insurance and Labour Supply: a Simulation of the 1971 Unemployment Insurance Act,” in *Canadian Journal of Economics*. Vol. 10, No. 2, pp.263-275.

REJDA, George. (1966) “Unemployment Insurance as an Automatic Stabilizer,” in *Journal of Risk and Insurance*. Vol. 33, No. 2, pp.195-208.

SCARFE, Brian L. (1987) “Economic Fluctuations and Stabilization Policy in Canada: The State of the Art,” in *Canadian Public Policy*. Vol. XIII, No. 1, pp.75-85.

SMYTH, David J. (1963) “Can ‘Automatic Stabilizers’ Be Destabilizing?” in *Public Finance/Finances Publiques*. Vol. 3-4, pp.357-363.

SMYTH, David J. (1966) “Built-in Flexibility of Taxation and Automatic Stabilizers,” in *Journal of Political Economy*. Vol. 74, No. 4, August, pp.396-400.

SOLON, G. (1984) “The Effects of Unemployment Insurance Eligibility Rules on Job Quitting Behavior,” in *Journal of Human Resources*. Vol. 19, pp.118-125.

STATISTICS CANADA (1993) *Unemployment Insurance Statistics*. Catalogue 73-202S.

TEN HACKEN, Peter, Arie Kapteyn and Isolde Woittiez. (1989) “Unemployment Benefits and the Labor Market, A Micro/Macro Approach,” in B.A. Gustafsson and N.A. Klevmarken (ed.) *The Political Economy of Social Security*. (Amsterdam: Elsevier Science Publishers B.V.).

THIRLWELL, A.P. (1969) “Unemployment Compensation as an Automatic Stabilizer,” in *Bulletin of the Oxford University Institute of Economics and Statistics*. Vol. 31, No. 1, pp.23-37.

TOPEL, R.H. (1983) “On Layoffs and Unemployment Insurance,” in *American Economic Review*. Vol. 73, pp.541-559.

VIJLBRIEF, J.A. (1992) *Unemployment Insurance and the Dutch Labour Market*. (Amsterdam: Thesis Publishers).

VON FURSTENBERG, George M. (1976) “Stabilization Characteristics of Unemployment Insurance,” in *Industrial and Labor Relations Review*. Vol. 29, April, pp.363-376.