



*The Influence of Legislative  
Changes to Unemployment  
Insurance on the Economy,  
1971-94: a Full-System  
Simulation Study (a Non-  
Technical Summary)*

**by Dennis Maki and  
Jane Friesen**

Simon Fraser University

**Tom Siedule**

Human Resources Development Canada

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## *Abstract*

The UI system is the largest labour market adjustment mechanism of Human Resources Development Canada. Not surprisingly, the influence of changes to unemployment insurance on the economy has been a topic of considerable interest to economists and policy-makers for more than two decades. In Canada, many papers have been published on the topic since 1975. Their methodologies range from aggregate time series analyses and full-system macroeconomic model simulations to microeconomic analyses. With a few exceptions, the macroeconomic studies were conducted mostly in the 1970s and early 1980s, and microeconomic analysis has dominated the last 10 years or so. However, full-system simulation (which captures the linkages and interdependencies of the variables) has rarely been used, especially since the mid-1970s. While this is understandable since most analysts have not had access to a full system econometric model, it may be a good time to revisit this potentially useful evaluation instrument.

Some recent studies of UI have used large *general purpose* econometric models to gauge the impacts of selected UI attributes on certain aspects of the economic system. While such studies show the broad effects of UI expenditures and revenues on the economy, they do not capture the linkages among specific UI parameters (such as coverage, benefit levels, benefit duration, etc.), UI expenditures/revenues, and particular labour market variables such as labour force participation, employment, unemployment, and wages. Microeconomic studies from the late 1980s and the first half of the 1990s suggest that this may be the most important feature of the UI system.

Microeconomic evaluations of the UI system clearly show that changes in UI parameters affect workers' and firms' employment patterns and practice in a variety of ways, including decisions on employment duration, layoffs, and quits. How would these effects manifest themselves in aggregate terms (e.g., in total unemployment, the gross domestic product, the wage rate, inflation, and other economic indicators)? This question can be, at least, tentatively answered by the simulations of a full-system econometric model that is conceptually consistent with the theoretical underpinnings of microeconomic evaluation studies of UI.

Admittedly, some analysts have used such *UI-specific* full system econometric models to simulate the impacts of the 1971 UI legislative changes on the economy. These investigations were conducted many years ago. There have been many theoretical developments since then. Moreover, since the publication of these studies in the mid 1970s, there have been a number of major revisions to the UI system. For policy-makers, an understanding of the impacts of the recent UI revisions on firms and workers, and also on macroeconomic performance, is crucial for future reform of the UI system.

This evaluation study attempts to fill the information gap mentioned above. It uses a full-system UI econometric model to evaluate systematically the macro impacts of UI legislative changes introduced in the period 1971-94. This short report synthesizes the

study's major findings. For simplicity, discussions on model specifications and simulation designs are omitted here. Technical details concerning the model and how it works are documented in the full report, entitled: *The Influence of Legislative Changes to Unemployment Insurance on the Economy, 1971-94: A Full-System Simulation Study*.

## ***Introduction***

This study consists of two parts: (1) the development of a full-system UI econometric model that is useful for performing historical evaluations of the UI system, and (2) the estimation of the impacts of changes to the UI system in the 1971-94 period. The full report, entitled: *The Influence of Legislative Changes to Unemployment Insurance on the Economy, 1971-94: A Full-System Simulation Study*, presents technical details of the nature of the model and the theoretical underpinnings on which it is based, the assumptions used and the adjustments made in the process of estimating the model and using it to estimate the impacts of UI changes, and detailed tabular and graphical results of these estimations. This summary concentrates only on the broad implications of the simulation results.





# *1. The Model*

The model used is based on the Conference Board of Canada's *PC-Canadian Model*, which is a quarterly model consisting of approximately 240 equations, modified by adding a UI econometric module of about 40 equations developed as part of this study. Some of the equations in the UI module replace equations in the Conference Board model, and some other changes were made to the latter in order to facilitate using it for simulation, including extending the data series back to 1966.

The main components of the UI module are a labour market sector and a revenue/expenditure sector. The labour market sector consists of four major behavioural equations: one describing aggregate employment, one describing average hours worked per week, one describing the average wage rate, and one describing labour force participation rate. This sector allows examination of the impact of the various parameters of the UI program on wages, employment, unemployment, average hours and labour force participation.

The revenue/expenditure sector consists of two major equations: one modelling total payroll-tax contributions going into the UI fund, and one modelling total benefit payments coming out of the UI fund. The primary objective in modelling this sector is to provide a framework in which the implications of simulated changes to the UI program for total UI revenue and expenditure can be tracked. The effects of changes to various UI program parameters are incorporated directly into the equations in the revenue/expenditure blocks, along with indirect effects operating through the labour market variables that appear in the revenue and expenditure equations. The labour market sector is linked directly to the revenue/expenditure sector through the wage rate, the labour force participation rate, and the unemployment rate.



## 2. *Historical Simulations*

The simulations performed consist of using the full model -- including the dynamic aspects of the behaviour equations (captured by the presence of past values of the variables in the model) -- to estimate the influence of UI legislative changes on the economy during the period 1971 to 1994.

While most previous macroeconomic assessment of the effect of legislative changes in UI has been focussed primarily on the effects on the overall unemployment rate, the use of a full model allows consideration of effects on a wide range of economic activities. We limit discussion to the impacts of UI legislative changes on the labour market, aggregate demand, output and prices.

### *The 1971 UI Act and Its Aftermath*

The changes made to the UI system in 1971 were arguably the most dramatic and controversial in Canadian unemployment insurance history. The main changes are noted below.

Before 1971, the UI coverage rate (i.e., the proportion of the labour force covered under UI) had ranged from 61-67 percent. The 1971 UI Act extended coverage in such a way that the coverage rate was 87 percent in 1972. The minimum number of weeks required to qualify for UI benefits was reduced from 30 to 8. A new five-phase schedule for determining the maximum number of weeks of benefit was introduced. This complicated change can be summarized by noting that the maximum number of weeks of benefit available for a minimally qualified worker prior to the 1971 revisions was a flat 15 weeks. In 1972, it averaged 29.7 weeks. The benefit-wage ratio (maximum weekly UI benefit as a proportion of maximum insurable earnings) was increased from 53 percent to 66.7 percent. The employer contribution rate through the UI payroll tax was increased to 1.4 times the employee contribution rate, and UI benefits became taxable.

### *Simulation Results: the 1971 Changes*

Evaluating the impacts of the 1971 UI Act involves two full-system dynamic simulations. The first simulation takes the historical values of all exogenous variables as given. It runs the model dynamically from the first quarter of 1970 through the last quarter of 1989. This produces a set of calculated values for the variables in the system, which constitutes the base-case solution (the bench-mark against which a hypothetical scenario can be compared).

The second simulation involves rewriting history by creating the following hypothetical scenario: "If the changes in the 1971 UI Act had not taken place, how would the labour market and other segments of the economy have differed in 1972-89?" The dynamic simulation technique for creating the hypothetical economy is identical to that of the base-case solution, except that in this simulation the 1972-89 values of the UI parameters are set back to their pre-1971 UI Act values.

*The simulations performed consist of using the full model to estimate the influence of UI legislative changes on the economy during the period 1971 to 1994.*

The assumptions used to generate the hypothetical economy are pre-1971 Act values of: the proportion of the labour force covered under UI, number of weeks of covered employment required to become minimally qualified for benefits, maximum number of weeks of benefits for a minimally qualified worker, the benefit wage ratio and the disqualification rate (number of disqualifications and disentitlements as a proportion of total number of weeks of benefits paid). In addition to making these UI parameter changes, the simulation also eliminates the specific tax provisions (the employer and employee contribution rates and taxable UI benefits) of the 1971 UI Act. With these changes to the model, the full-system is run dynamically from the first quarter of 1970 through the last quarter of 1989. Conceptually, this solution represents the model's vision of what would have happened to the economy in 1972-89 had the 1971 revisions not taken place.

The difference between the solution for the hypothetical economy and the base-case solution is treated as capturing the influence of the 1971 UI Act on the economy in 1972-89. It should be noted that since there were significant legislative changes to the UI system in the 1970-89 period other than those in 1971, the hypothetical scenario assumes that *none* of these changes occurred. Since the first major changes following the 1971 revisions occurred in 1976, one could have estimated the hypothetical scenario to cover the sample period 1971-76 only. Such a simulation would allow the UI changes to operate on the system for five years, and would probably be sufficient to capture the short and medium-term effects, but would not capture long-term effects.

In this summary, the results of the simulations under both the hypothetical and actual scenarios are presented graphically in Figures 1-12. The results indicate that the 1971 changes to the UI system reduced both the labour force and employment, the latter by more than the former, so that the overall effect was to increase the unemployment rate by 1.2 percentage points in the 1970's, and 1.1 percentage points in the 1980's. Average hours worked per week were reduced by 0.4 hours in both decades, and the wage rate was reduced by approximately 1.3 percent. There was virtually no effect on prices or, therefore, on the rate of inflation. Effects on real GDP, real consumer expenditures and disposable income were negative but small, on the order of 0.2 per cent of actual in the 1970's, and less than that in the 1980's.

Figure 1  
Labour force and employment, 1970-89 (actual and hypothetical)

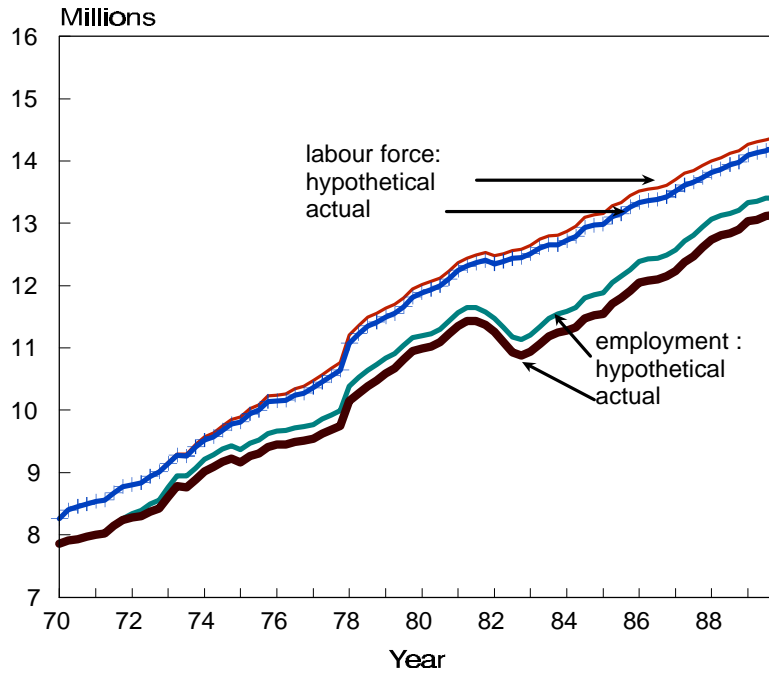


Figure 2  
The unemployment rate, 1970-89 (actual and hypothetical)

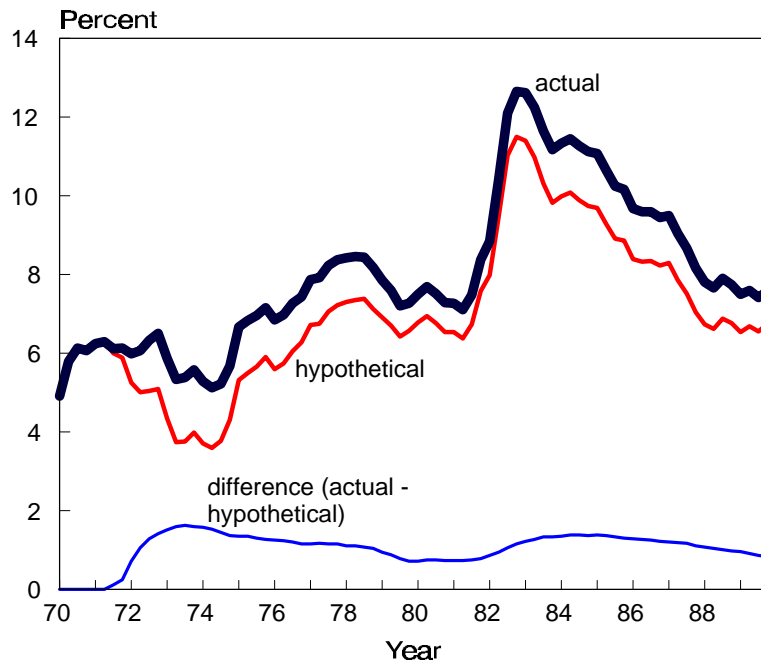


Figure 3  
Labour force participation rate, 1970-89 (actual and hypothetical)

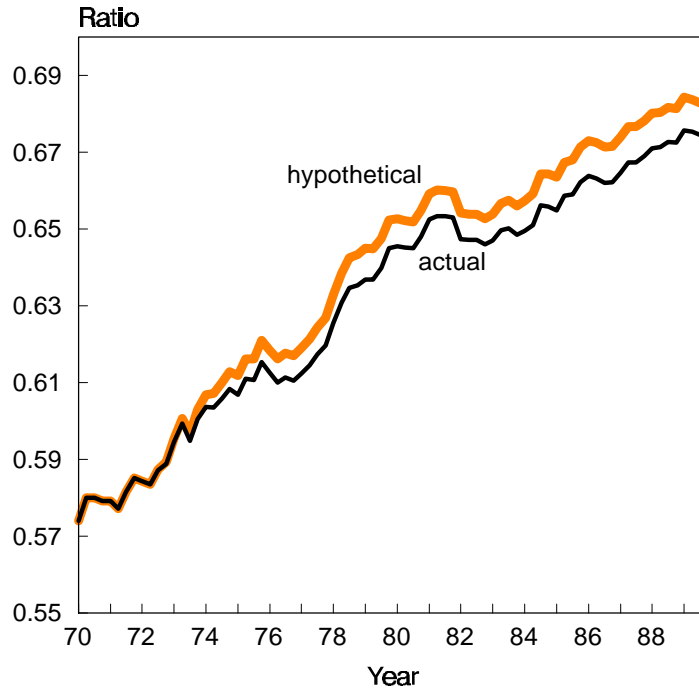
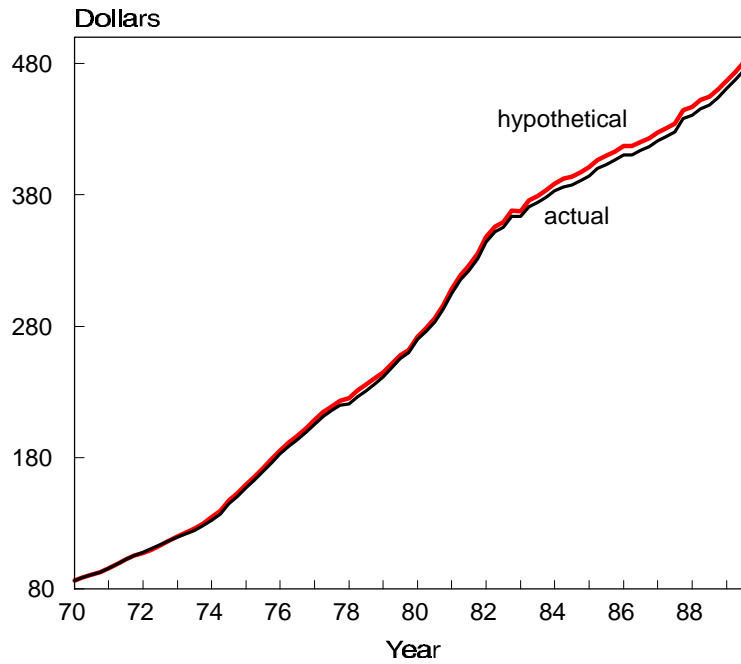
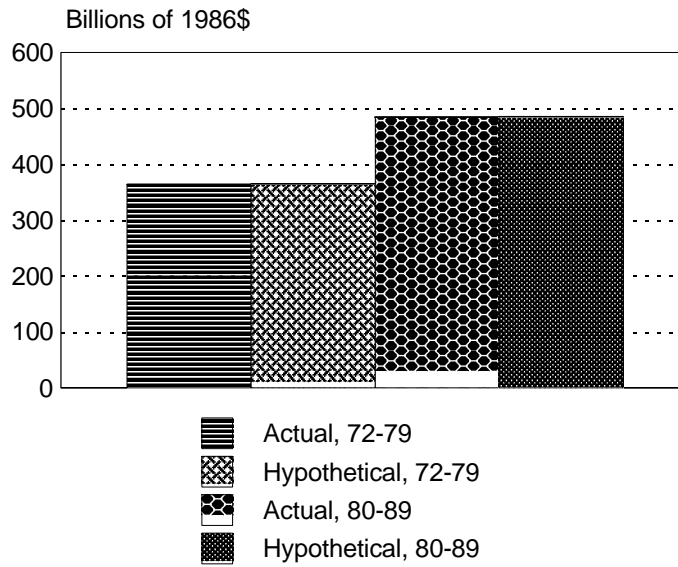


Figure 4  
Average weekly wages, 1970-89 (actual and hypothetical)



**Figure 5**  
 Real gross domestic product, quarterly average, 1972-79 and 1980-89 (actual and hypothetical)



**Figure 6**  
 Personal disposable income, quarterly average, 1972-79 and 1980-89 (actual and hypothetical)

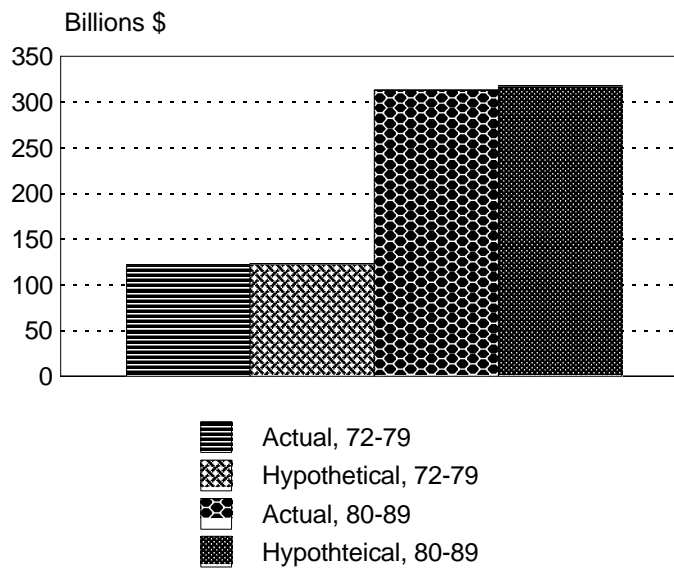


Figure 7  
 Real consumer expenditures quarterly average, 1972-79 and 1980-89, (actual and hypothetical)

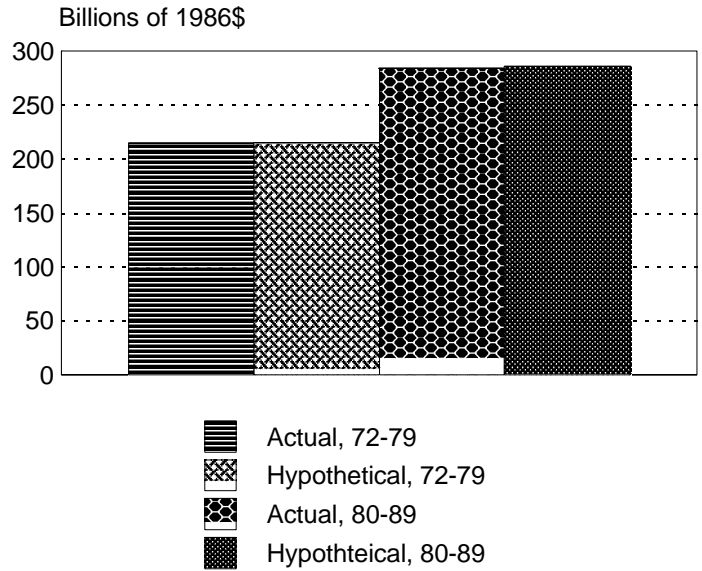


Figure 8  
 Consumer price index, quarterly average, 1972-79 and 1980-89 (actual and hypothetical)

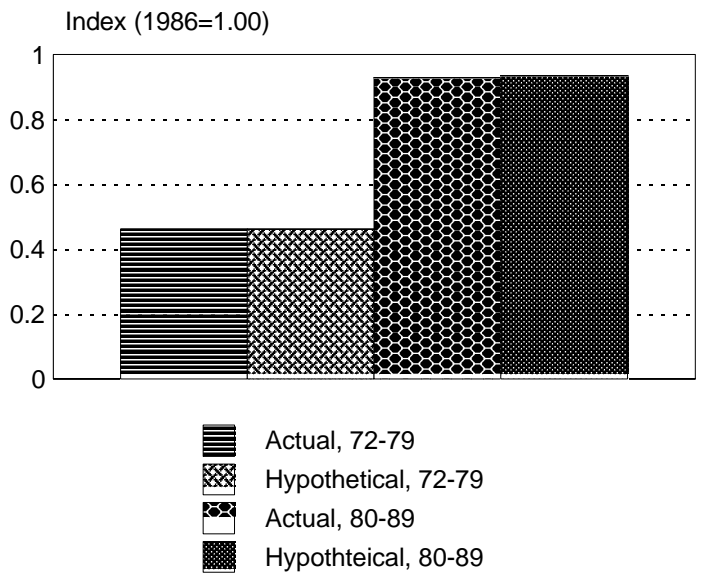
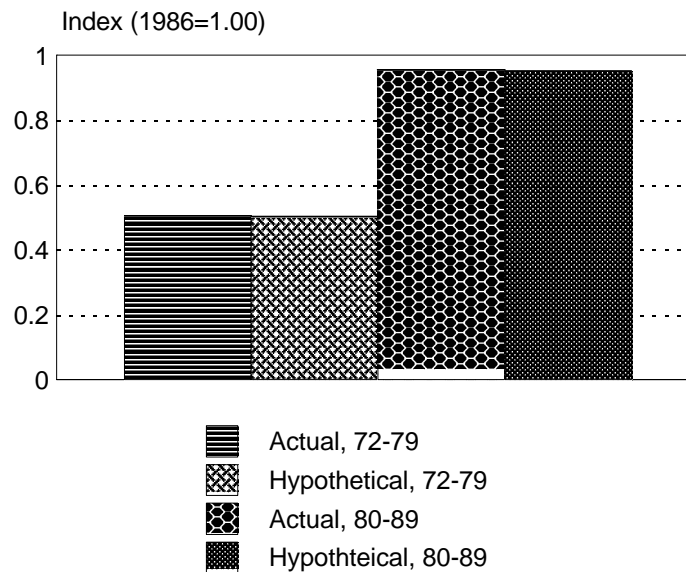




Figure 9  
Gross domestic product deflator, quarterly average, 1972-79 and 1980-89 (actual and hypothetical)



*The UI policy changes of 1976-89 did not really get the Canadian UI system back to its pre-1971 state.*

Two aspects of these results are notable. First, the results regarding the unemployment rate effects are similar in magnitude to results obtained in a number of other aggregate data studies. Second, the similarity of the results for the 1970's as compared to the 1980's tentatively refutes the position held by some that the reduction in the generosity of the UI system inherent in the 1976 and later revisions had caused a return to pre-1971 conditions by the mid-1980's.

A quick reexamination of the evolution of UI parameters since 1971 clarifies the latter issue. In terms of coverage and maximum number of weeks of benefits for a minimally qualified worker, the UI regulations were more or less the same throughout 1972-89. There was some variation in the entrance requirement between 1978 and 1989, and the trend is slightly upward. However, in comparison with the flat requirement of 30 weeks of employment, the tightening up of UI entrance requirements in the post-1978 period was still insignificant. The benefit-wage ratio was set lower (from 67 to 60 percent) in 1979-89. However, the gap between the pre- and post-1971 benefit rates was still substantial. Furthermore, the effect of the legislative changes in the benefit rate had already been dampened by the income tax provision of the 1971 UI Act making UI benefits taxable. In short, the UI policy changes of 1976-89 did not really get the Canadian UI system back to its pre-1971 state. This is reflected in the negligible impacts from the simulation reported in the next section.

Figure 10  
UI revenues and expenditures, historical data, 1972-89

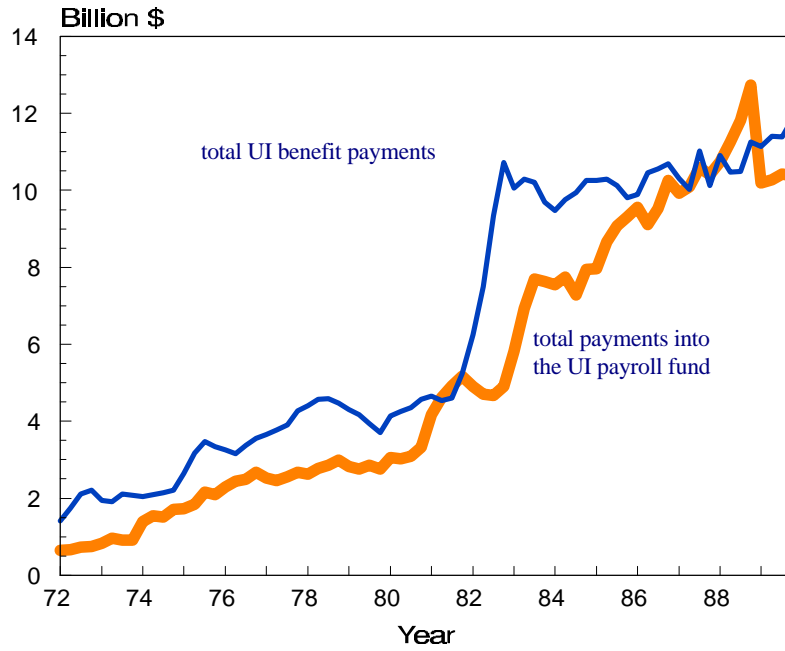


Figure 11  
UI revenues and expenditures, hypothetical scenario, 1972-89

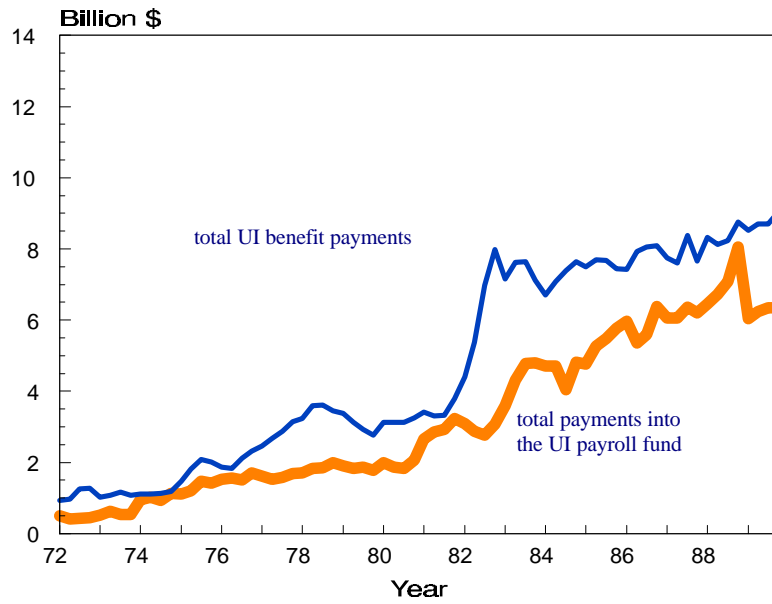
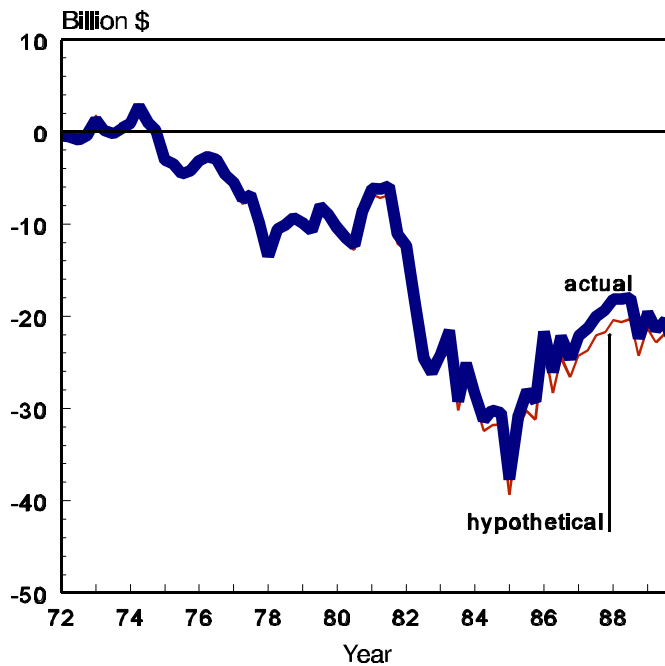


Figure 12  
Federal government surpluses and Deficits, 1972-89 (actual and hypothetical)



*Starting from the second quarter of 1983, the federal government would have experienced even larger deficits than it actually did, had all the post-1971 UI revisions not occurred.*

Under both the actual and hypothetical scenarios, total UI benefit payments on average exceeded total payments into the UI payroll fund. Indeed, between the first quarter of 1972 and the first quarter of 1983, the 1971 UI Act had a negligible effect on the federal government's budget. The simulation results indicate that starting from the second quarter of 1983, the federal government would have experienced even larger deficits than it actually did, had all the post-1971 UI revisions not occurred. In terms of net gains, the UI revisions had the effect of generating enough revenues to more than offset the increases in UI expenditures since 1983. There are at least two reasons for this: (1) Under the 1971 UI Act, the employer contribution rate through the UI payroll tax was increased to 1.4 times the employee contribution rate, and (2) UI benefits became taxable. Had the tax provisions remained unchanged, revenues collected from the workers' and employers' UI payroll tax would have been much lower. Although the 1971 changes inevitably increased total UI benefit payments, the increase was not large enough to offset the increase in the UI payroll tax fund.

Thus, relative to the pre-1971 UI system, it cannot be said that the 1971 UI Act made the deficit worse. This does not mean that the UI system did not contribute to government deficits. With very few exceptions, UI benefit payments exceeded UI revenues throughout 1972-89. If the government had eliminated the UI system altogether, then its deficits in 1972-89 might have been lower. The simulation results merely compare the deficit positions of the hypothetical and historical UI systems.

### ***Changes since 1971***

As noted earlier, one can only talk about the pure impacts of the 1971 UI Act for the period 1971-76. From 1976 onward, there were many amendments to the Act. Recently, some analysts have contended that the changes after 1976 rendered the UI system more like that of pre-1971. This contention can be addressed directly by recreating various hypothetical scenarios with different benchmarks (e.g., recasting the effects of the 1976-78 revisions in terms of "what would the economy have been like had the 1975 UI system persisted in 1976-78?"). This section presents the highlights of simulations for each of the major changes to UI since 1971, with each hypothetical scenario recreated in this way.

#### ***Simulation Results: the 1976-78 Changes***

In 1976, the maximum age for coverage was reduced from 70 to 65, and the penalty for a voluntary quit was increased from three to six weeks. On September 11, 1977, the five phases relating to the UI benefit payments were replaced by a three-phase structure. On December 4 of the same year, the minimum of eight weeks of insured employment to establish entitlement was replaced by a variable entrance requirement of 10 to 14 weeks, depending upon the unemployment rate prevailing in the region where the claimant resided.

The simulation technique used to recreate this hypothetical economy is identical to the one reported above for examining the 1971 revisions, with the exception that since the objective of the present exercise is to estimate the economic impacts of the 1976-78 revisions relative to the 1975 regulations, we only simulated the hypothetical economy for the 1976-78 period. In 1976 the economic activities of the hypothetical scenario are almost identical to those of the actual economy, since most of the changes did not become effective until 1977. From 1977 onward, some small policy effects are evident. In the hypothetical scenario there are fewer individuals in the labour force. Relative to the UI system of 1975, the 1976-78 revisions had the effect of increasing both the labour force and employment slightly. The effect on the unemployment rate is even smaller. Were it not for the 1976-78 revisions, the total unemployment rate would have been higher by 0.01 percentage point in 1977 and 1978.

Although the intention of the changes was to make the UI program less generous, they amounted in fact to little more than fine-tuning.

#### ***Simulation Results: the 1979-89 Changes***

In 1979-89, there were a number of changes to the UI program. These major changes are treated as a group, and their relative effects are measured against the benchmark of the 1978 system. In 1979, the number of hours of work per week required for coverage was increased from 15 to 20, and the maximum benefit rate was reduced from 66.7 to 60 per cent for all claimants. Effective April 1, 1980 the cost of operating the National Employment Service was shifted to employers and employees. On July 1 of that year, employers and employees also became responsible for costs relating to all benefits paid during the initial and extended benefit periods.

Revising the coverage and reducing the maximum benefit rate from 66.7 to 60 percent made UI less generous than it was in 1978 and should have had a beneficial effect on employment. The increase in employer and employee premiums, however, works in the opposite direction. It effectively increases a form of payroll taxes, and one would expect it to dampen economic activity. The net result depends upon which factors affected the economy more.

Not surprisingly, the estimated net impacts of the 1979-89 revisions on the labour market were very small. The effects were calculated separately for the periods 1979-85 and 1986-89. In 1979-85, the unemployment rate in the hypothetical economy (i.e., an economy without the 1979-89 revisions to UI) would be slightly higher, due to a larger labour force and smaller employment. However, the unemployment statistics in the second half of the sample period are more favourable to the hypothetical scenario (in 1985-89, average unemployment rates are 8.43 and 8.37 percent for the actual and hypothetical economies, respectively), due to an increase in employment which was greater than that in the labour force.

Although the 1979-89 revisions had little influence on the labour market, their effect on federal government deficits was noteworthy. UI expenditures in the actual and hypothetical economies are very similar, but the 1979-89 revisions generally increased total payments into the UI payroll fund. Starting in the second quarter of 1981, the revisions significantly decreased the federal government's deficits (the net decrease ranged from \$774 million in the second quarter of 1982 to a high of \$4038 million in the fourth quarter of 1987.) This was the most noteworthy effect of the 1979-89 revisions.

#### ***Simulation Results: the 1990-94 Revisions***

In this period, Bills C-21, C-113, and C-17 introduced a number of changes to the UI program. For the most part, the changes did not become effective until November 18, 1990. Therefore, a hypothetical economy for 1991-94 was created that could have conceptually existed under the pre-November 18, 1990 UI system.

The major UI changes and the required assumptions for creating the hypothetical scenario are as follows:

- As of November 18, 1990, the minimum number of weeks of insurable employment required to qualify for UI benefits increased from 10-14 weeks to 10-20 weeks, depending on the unemployment rate prevailing in the region in which the claimant resides. In July 1994, the minimum entrance requirement was raised from 10 to 12 weeks of insurable employment. All of these changes affected the variable entrance requirement as well as the maximum number of weeks of benefit for a minimally qualified worker in the UI system. Because the entrance requirement and therefore the maximum entitlement is a function of the UI regulations and the prevailing unemployment rate at a certain time in a certain region, there are no simple methods of setting these two parameters back to their counterfactual settings. We had to resort to multiple regression analysis (external to the full-system) to approximate the "what if" values for the entrance requirement and maximum entitlement. In both cases,

*Although the 1979-89 revisions had little influence on the labour market, their effect on federal government deficits was noteworthy.*

the calculations for the hypothetical scenario allowed the actual unemployment rates in the 1990-94 economy to remain unchanged but the entrance requirement to be recalibrated back to that of November 17, 1990. The results are: in 1991-94, the entrance requirement was lower in the hypothetical scenario than in the actual economy (0.36 weeks lower in 1991-93 and 0.89 weeks in 1994), and the maximum entitlement was, as expected, higher hypothetically than historically (0.20 weeks higher in 1991-93, and 0.50 weeks in 1994).

- The penalty for quitting employment without just cause, refusing to accept suitable employment, and being fired for misconduct was increased to between 7 and 12 weeks with a reduction in the benefit rate from 60 to 50 percent. As a result of amendments to Bill C-113 (effective April 4, 1993), the penalty for voluntary quits became disqualification from UI benefits. The effects of these changes is presently captured by estimating the impacts of Bills C-21 and C-113 on the number of weeks of UI benefits paid. The multiple regression analysis (external to the full-system) shows that Bill C-113 had the effect of reducing the number of weeks of UI benefits paid by 3-5 percent. This effect was captured in the full-system simulation of the hypothetical scenario. Bill C-21 did not seem to have any statistically significant effect on weeks of UI benefits paid, and its effect on this variable has been assumed to be zero in the simulation.
- Under the amendments to the UI Act that took effect October 22, 1990, the entire cost of the UI program was shifted to employees and employers. These changes led to an increase in employer and employee premiums, which, not surprisingly, led to a sharp increase in the maximum weekly employee (and therefore employer) contribution to the UI payroll tax. In the hypothetical scenario, maximum contributions had to be adjusted downward to capture the counterfactual effect.
- Bill C-113 (effective April 4, 1993) reduced the benefit rate (benefits as a proportion of insured earnings) for all new claimants from 60 to 57 percent. In July 1994, Bill C-17 further reduced the benefit rate from 57 to 55 percent. For individuals with dependents and low earnings, the rate remained at 60 percent. The counterfactual effect of this change is approximated by setting the benefit rate back to 60 percent throughout 1993-2 to 1994-4 in the hypothetical economy.

The changes introduced since October 1990 have been quite extensive. However, their effects on the economy have not yet been empirically demonstrated. Although many of the changes might have been designed to tighten up UI regulations, to reduce the generosity of the UI system, and consequently to minimize the negative effects of UI on employment incentives, some probably unintentionally dampened aggregate demand in the economy. The decrease in the benefit rate reduced the income of UI recipients. This in turn lowered personal consumption, although the negative impact of this factor on aggregate demand might be insignificant. But shifting the entire cost of UI to employees and employers has had a relatively large impact on the demand for goods and services. This was a significant increase in UI payroll taxes, which inevitably

checked the demand for goods and services (and therefore the demand for labour) in the system. In summary, the changes in this period were characterized by two opposing forces. One tended to increase employment and lower unemployment, the other tended to work in the opposite direction. The net effect, which would be reflected in the unemployment statistics, could not be predicted *a priori*.

The simulation results indicate that the influence of the 1990-94 legislative changes to UI on essential economic indicators was negligible. There were, however, some surprises. For example, the government would have expected the elaborate changes introduced since October 1990 to improve the unemployment situation as well as to lower the cost of the UI system. UI benefit payments did go down, but the effects on unemployment were disappointing. The results show that without the UI changes introduced since October 1990 the total labour force and employment would have been slightly higher. The employment gain was more than sufficient to offset the increase in the labour force, yielding a slightly lower unemployment rate in the hypothetical economy. Thus, instead of lowering the unemployment rate, these changes to UI might have been responsible for raising it, albeit only slightly (the average unemployment rate in 1991-94 would have been 0.1 percentage point lower without these revisions.)

The effects of changes in the financing of the UI program clearly greatly improved the UI Account. Without the 1990-94 UI revisions, the results indicate there would have been a sizable deficit in the UI Account in 1991-93. However, in 1994 this problem would have solved itself. Some of the revisions introduced in this period were, however, detrimental to aggregate demand. The sharp increase in the employee and employer weekly contributions to UI payroll tax, along with a small reduction in the UI benefit rate, withdrew a large amount of money from the total economy. A more gradual increase in the UI premium rate, at least in this period, might have been a better policy option. The consumption and income results support this analysis. Personal disposable income was slightly higher in the hypothetical economy than it was in the actual economy. The result of the changes to UI was, as expected, lower consumption expenditures in the actual economy. The real gross domestic product in the hypothetical scenario was higher than it was in the actual economy. The sharp rise in UI payroll tax in this period clearly dampened aggregate demand.

*There were some surprises, UI benefit payments did go down, but the effects on unemployment were disappointing.*





### ***3. The Power of Individual Parameter Changes, 1991-94***

The simulation exercises reported thus far have been designed in the context of the question "what if certain historical UI revisions had not taken place." The hypothetical economy, therefore, creates a counterfactual scenario in which the government made no changes. This type of simulation can evaluate the effectiveness of a whole package of UI revisions. However, it does not exhaust all the possibilities. For instance, instead of creating the "government doing nothing" scenario, a hypothetical scenario could have been created in which the government chose a different policy option. Such a simulation would indicate whether the government could have done better by taking a different course of action. With a full-system simulation model, this issue can be addressed easily.

This section presents the results of this type of simulation study. The final set of seven simulation exercises presented here is specifically designed to address two related issues: (i) the separate impacts of individual parameter changes on economic activities, and (ii) the relative importance of the effects of individual parameter changes on the labour market and the rest of the economy.

Each of the first six simulations in this set represents a hypothetical economy that is different from its historical counterpart in 1991-94, as a result of the imposition of *one* policy change. The seventh simulation incorporates the UI policy changes of the previous six simulations into the hypothetical scenario simultaneously (i.e., the changes are allowed to work their way through the economic system simultaneously). Note that the simulations in this section are, in a sense, truly hypothetical: the seven UI systems in the scenarios were never part of the UI history.

In the simulation designs, seven UI systems were created that are different from historical experience, but not so different as to be improbable. This ensures that the results can be easily interpreted and are not extremely different from the actual economic activities of 1991-94. The reader should also note that although an attempt was made to make the individual UI policy changes as comparable as possible, they are still as different as "apples and oranges" from each other.

The UI policy changes for the seven hypothetical scenarios are as follows:

- Scenario A: the maximum number of weeks of benefit entitlement for a minimally qualified worker is set to 90 percent of its historical values.
- Scenario B: the entrance requirement is equal to 110 percent of its historical values.
- Scenario C: the maximum weekly employee/employer contribution to UI payroll tax is adjusted downward by 10 percent from its historical values.

- Scenario D: the maximum weekly UI benefit as a proportion of maximum insurable earnings is reduced by 0.05 from its historical values.
- Scenario E: the disqualification and disentanglement rate under the UI program is set equal to "1.1 times historical values."
- Scenario F: the proportion of the labour force covered under the unemployment program is assumed to be 5 percentage points higher than its historical figures. For example, selected workers with short hours, and multiple jobs became insured.
- Scenario G: all of the above policy changes are simultaneously imposed on the hypothetical economy.

The simulation results (see Table 1) indicate that with the exception of scenario F, all the hypothetical economies were more buoyant than the actual economy was in 1991-94. This is to be expected, because in each of these hypothetical scenarios the UI system was slightly leaner and more efficient than the actual system was in 1991-94. Among the six individual UI policy changes, scenario C, lowering the UI premium rate, was the most powerful tool for stimulating economic activity (note that this conclusion is dependent upon the magnitude of the changes assumed in each scenario), followed by scenarios A, B, and E. In scenario C, the real output (real GDP) level and growth rate were superior to those in other scenarios. In scenario D, the reduction in the UI benefit rate increased employment by about two thousand jobs and induced about 1.4 thousand marginal workers to drop out of the labour force. The net result was a slightly lower rate of unemployment than that of the actual economy in 1991-94. This slight improvement in the labour market was made, however, at the expense of real output, consumption, and personal disposable income. Overall, the simulation results suggest that by itself the UI benefit rate is not a very effective instrument for improving the labour market and the economy.

Scenario G, which incorporates all six policy changes simultaneously, shows us that the impacts of UI policy changes on the economy were not additive. In the simulation exercises, the sum of the impacts for scenarios A- F would have improved real GDP by \$128 million (constant 1986 dollars). However, in scenario G, where all six policy changes were imposed on the system simultaneously, the improvement in real GDP was \$164 million. The lesson is that if one wishes to know the impact of a specific policy package, the more reliable technique is to impose all relevant changes on the system simultaneously. Despite the fact that scenario G created an artificially more stringent UI environment, its impact was still comparatively small. For example, the average unemployment rate in this scenario was 0.15 percentage points lower than the historical rate in 1991-94. This is an improvement, but it is hardly an answer to the unemployment problem. In comparison with the actual double-digit unemployment rate, the improvement resulting from more stringent UI regulations of the type considered here would have been inconsequential in 1990-94.

Table 1

Impacts of individual changes to UI, selected economic indicators, averages of quarterly statistics<sup>1</sup>, (actual and hypothetical), 1991-1994

	Hypothetical scenarios						
	Scenario A <sup>2</sup>	Scenario B <sup>3</sup>	Scenario C <sup>4</sup>	Scenario D <sup>5</sup>	Scenario E <sup>6</sup>	Scenario F <sup>7</sup>	Scenario G <sup>8</sup>
<b>Labour force (thousands)</b>	14,601.38 (14,596.73)	14,598.74 (14,596.73)	14,600.67 (14,596.73)	14,595.37 (14,596.73)	14,597.14 (14,596.73)	14,591.91 (14,596.73)	14,601.83 (14,596.73)
<b>Employment (thousands)</b>	13,035.17 (13,016.98)	13,025.60 (13,016.98)	13,029.73 (13,016.98)	13,018.99 (13,016.98)	13,018.49 (13,016.98)	12,999.60 (13,016.98)	13,043.59 (13,016.98)
<b>Unemployment rate (%)</b>	10.73 (10.82)	10.78 (10.82)	10.76 (10.82)	10.80 (10.82)	10.82 (10.82)	10.91 (10.82)	10.68 (10.82)
<b>Labour force participation rate (ratio)</b>	0.6587 (0.6584)	0.6585 (0.6584)	0.6586 (0.6584)	0.6584 (0.6584)	0.6585 (0.6584)	0.6582 (0.6584)	0.6587 (0.6584)
<b>Consumer price index</b>	1.2885 (1.2884)	1.2884 (1.2884)	1.2893 (1.2884)	1.2882 (1.2884)	1.2884 (1.2884)	1.2878 (1.2884)	1.2887 (1.2884)
<b>Annual change in CPI (%)</b>	2.29 (2.29)	2.29 (2.29)	2.32 (2.29)	2.28 (2.29)	2.29 (2.29)	2.27 (2.29)	2.30 (2.29)
<b>Wage rate (\$ per week)</b>	528.46 (528.19)	528.37 (528.19)	528.32 (528.19)	528.23 (528.19)	528.20 (528.19)	527.98 (528.19)	528.62 (528.19)
<b>Annual change in wage rate (%)</b>	2.90 (2.88)	2.89 (2.88)	2.88 (2.88)	2.88 (2.88)	2.88 (2.88)	2.86 (2.88)	2.91 (2.88)
<b>Real GDP (millions of 1986\$)</b>	569,996.45 (569,932.75)	569,944.92 (569,932.75)	570,369.81 (569,932.75)	569,833.23 (569,932.75)	569,941.16 (569,932.75)	569,639.21 (569,932.75)	570,096.95 (569,932.75)
<b>Annual change in real GDP (%)</b>	1.38 (1.38)	1.38 (1.38)	1.40 (1.38)	1.37 (1.38)	1.38 (1.38)	1.36 (1.38)	1.39 (1.38)
<b>Real consumer expenditures (millions of 1986\$)</b>	342,567.99 (342,523.25)	342,531.13 (342,523.25)	342,835.66 (342,523.25)	342,449.51 (342,523.25)	342,529.28 (342,523.25)	342,314.87 (342,523.25)	342,635.85 (342,523.25)
<b>Disposable income (million of \$)</b>	481,524.43 (481,371.25)	481,399.75 (481,371.25)	482,422.10 (481,371.25)	481,127.30 (481,371.25)	481,391.70 (481,371.25)	480,672.19 (481,371.25)	481,757.90 (481,371.25)

- (1) • Hypothetical figures are in the first row. They represent the results of the model's history-rewriting exercise (i.e., if the government had imposed the changes as specified in 1991-94, would the economy have been better off?)
  - The numbers in parentheses are historical figures.
  - The annual percentage change of variable X is defined as "100\*(X<sub>t</sub>-X<sub>t-4</sub>)/X<sub>t-4</sub>," where X<sub>t</sub> stands for the value of X of the current quarter, and X<sub>t-4</sub> the value of X four quarters ago.
- (2) The maximum number of weeks of entitlement for a minimally qualified worker (MAXENTIT) is set to 90 percent of its historical value.
- (3) The Variable Entrance Requirement (VER) is assumed to be equal to "1.1\*historical VER."
- (4) The maximum weekly employee/employer contribution to UI payroll tax (MAXCONT) is adjusted downward by 10 percent of its historical value.
- (5) The maximum weekly UI benefit as a proportion of maximum insurable earnings (MAXBENR) is reduced by 0.05 from its historical value.
- (6) The disqualification and disentitlement rate (DNDR) under the UI program is set equal to "1.1\*its historical value."
- (7) The proportion of the labour force covered under UI is assumed to be 5 percent higher than its historical value.
- (8) All of the above changes are simultaneously imposed on the hypothetical economy.