1-1-1989

Experience Rating of Unemployment Insurance in Michigan and Other States: A Microeconomic Comparison for 1988

Timothy L. Hunt
W.E. Upjohn Institute, hunt@upjohn.org

Christopher J. O'Leary
W.E. Upjohn Institute, oleary@upjohn.org

Citation

Hunt, Timothy L. and Christopher J. O'Leary. 1989. "Experience Rating of Unemployment Insurance in Michigan and Other States: A Microeconomic Comparison for 1988." Report prepared for the Michigan Employment Security Commission and the Michigan Department of Commerce.

EXPERIENCE RATING OF UNEMPLOYMENT INSURANCE IN MICHIGAN AND OTHER STATES: A MICROECONOMIC COMPARISON FOR 1988

by

Timothy L. Hunt and Christopher J. O'Leary*

The W.E. Upjohn Institute for Employment Research
300 South Westnedge Avenue
Kalamazoo, Michigan 49007
(616) 343-5541

Prepared for:

The Michigan Employment Security Commission

and

The Michigan Department of Commerce

August, 1989

---

*The authors wish to acknowledge the invaluable research assistance of Wei-Jang Huang, and the excellent clerical support provided by Ellen Maloney and Claire Vogelsong.

EXPERIENCE RATING OF UNEMPLOYMENT INSURANCE IN MICHIGAN AND OTHER STATES: A MICROECONOMIC COMPARISON FOR 1988

Timothy L. Hunt and Christopher J. O'Leary
The W.E. Upjohn Institute for Employment Research

EXECUTIVE SUMMARY

Introduction

This study compares the extent of experience rating in unemployment insurance (UI) in Michigan to that in 27 other industrial states in 1988. The study neither suggests nor endorses any specific policy action but rather focuses on the issues of (1) measurement of the extent of UI experience rating in the 1988 statutory provisions and (2) comparison of the extent of UI experience rating across states.

Experience rating defined

When a business firm is effectively experience rated, the firm's UI taxes increase when there is an increase in benefits paid to the firm's unemployed workers, and taxes fall when benefit payments fall. Statutory provisions such as minimum tax rates, maximum tax rates, and taxable wage ceilings may reduce the direct response of taxes to benefit payments.

Design of the study

This study extends the simulation methodology of three earlier reports by Timothy Hunt (1986, 1987 and 1988) which compared UI tax costs and worker benefits across states. The same computerized structural model of state UI systems is used here to contrast the degree of UI experience rating in Michigan in 1988 with that in 27 other states listed by groups in Table A.

Nine hypothetical firm types, characterized by various insured unemployment rates and average annual wage levels (IUR-AAW), are examined. Two simulations are run to estimate the degree of experience rating for each hypothetical firm type. In the first simulation, called the control run, the insured unemployment rate remains constant for thirty periods, representing thirty years. In the second, called the spike run, the IUR increases in period eleven, and then returns to the pre-spike level for the remaining nineteen periods.

The simulation process is illustrated graphically by two figures. Figure A shows the control and spike values of the UI tax cost, while Figure B shows the control and spike values of UI benefits charged. The figures summarize the thirty year experience of an average-average Michigan firm.

The concept of taxes involved here is not just the affect on 1988 UI tax bills, rather it is the long term impact on taxes which results from a change in benefit charges. In Figure A it can be seen that the additional UI tax which results from a change in benefit charges is paid back over six years. Since a firm incurs this future cost at the time the layoff decision is made, it is natural to consider the full cost of a change in benefit charges to be the present discounted value of the additional tax payments.

Method of measuring experience rating

Experience rating provisions were designed to tie UI tax changes to benefit charge changes, therefore the working of these laws is best described by an indicator of the responsiveness of taxes to changes in benefit charges. The degree of experience rating is summarized by a concept called the marginal UI tax cost of a change in benefits, or marginal cost (MC) for short. The MC is computed as the ratio of the change in UI taxes to the change in benefits paid.

By using MC as a measure of contrast between state experience rating systems, comparison depends on how the UI taxes of various hypothetical firms respond to a change in benefit charges. Since we control for firm characteristics in this "micro" approach, any difference across states in tax treatment must be attributable to a difference in statutory provisions.

When examining the MC estimates, several points should be remembered. First, these estimates are for hypothetical firm types; it is impossible to easily relate these results to the experience of any group of actual Michigan firms. Second, the marginal cost figures summarize the responsiveness of the tax system; a value of MC greater than zero indicates that UI taxes will respond to a change in benefit charges. The greater the value of MC the more responsive is the system. Third, it is impossible to extrapolate from MC to trust fund solvency statements. MC summarizes only an incremental tax change, not an average or total tax change.

Experience rating in Michigan compared to other states

Table B summarizes the nominal marginal cost and ranking for the hypothetical firms under the Michigan UI experience rating system compared to 27 other state systems for a 1% spike of insured unemployment. The marginal cost (MC) estimates given indicate that all hypothetical firm types considered are effectively experience rated in Michigan. The rankings which appear in parentheses in Table B are the position of Michigan when the MCs for a given firm type across all 28 states are ordered from high to low. The ranking results indicate that among the 28 states compared, Michigan is ranked no lower than sixth and is ranked first in two instances.

The nominal 1% spike results suggest that all firm types are relatively highly experience rated in Michigan, the MC estimates range from 1.03 to 1.84 with these values always being ranked in the top six of the 28 states. The MC figures for the average-high and high-high firms are lower than for other firms because the tax rate cap for one component of the Michigan tax is reached for these firms when the IUR rises by 1%. Note that among the 28 states, these firms are relatively as experience rated in Michigan as any other firm type considered, being ranked sixth and fourth respectively.

In Table C the present value results for a 1% spike in IUR are listed. These were computed by introducing a 10% discount rate when adding up the annual tax costs. Naturally the marginal cost figures fall as a result of discounting, but Michigan remains in the top quarter of the 28 states in terms of tax system responsiveness. The relatively long five year benefit history in Michigan's tax formula only slightly affects the state experience rating ranking.

Among the regional groupings considered, the great lakes states have a high relative degree of statutory experience rating. Tables D and E show that among the eight great lakes states Michigan is always ranked in the top half. Furthermore, the hypothetical firm type with the lowest nominal and discounted marginal cost in Michigan--the high-high firm--is shown to be highly experience rated in Michigan relative to the treatment of the high-high firm type in other states of the Great Lakes region.

Some other important findings not listed in this summary bear mention. The estimates of tax system responsiveness are consistent for modest and more severe spikes of insured unemployment. Marginal cost estimates for a doubling of the firm's insured unemployment rate are similar in magnitude and ranking to those for the 1% spike. A sensitivity analysis of the statutes confirmed certain expectations, and revealed some other facts about how the various provisions in the Michigan UI tax system affect the degree of experience rating. The general finding was that if restrictions like the taxable wage base ceiling are removed, MCs become equal across firm types.

Summary

The Michigan UI tax system experience rates the hypothetical firms considered here relatively well compared to other state systems. If all tax payback streams are discounted, the Michigan system ranks slightly lower compared to other states. Among the regional groupings considered, the Great Lakes states have the highest relative degree of statutory experience rating, and Michigan is always ranked in the top half of the eight Great Lakes states. Taxes for firms under the Michigan system are equally responsive to modest and more severe bouts of insured unemployment.

Finally, a caveat on the interpretation of these results. The estimates reported here apply only in the in the context of the hypothetical cases considered. The present findings should be reexamined in the context of a "macro" study which relies on the actual distribution of firms by insured unemployment, average wages, and initial reserve account level.

Table A. States in Each of the Groupings for Comparison, Excluding Michigan

28 States	Great Lake States	Northeast-Northcentral States	Southern States
Alabama	Illinois	Connecticut	Alabama
Arkansas	Indiana	Illinois	Arkansas
California	Minnesota	Indiana	Florida
Connecticut	New York	Iowa	Georgia
Florida	Ohio	Massachusetts	Kentucky
Georgia	Pennsylvania	Minnesota	Maryland
Illinois	Wisconsin	Missouri	Mississippi
Indiana		New Jersey	North Carolina
Iowa		New York	South Carolina
Kentucky		Ohio	Tennessee
Maryland		Pennsylvania	Texas
Massachusetts		Wisconsin	Virginia
Minnesota			
Mississippi			
Missouri			
New Jersey			
New York			
North Carolina			
Ohio			
Oregon			
Pennsylvania			
South Carolina			
Tennessee			
Texas			
Virginia			
Washington			
Wisconsin			

Table B. Michigan Marginal Cost (MC) Estimates and Rank of Michigan MC Among the 28 States A 1% Increase in the Insured Unemployment Rate Nominal Value (Michigan Rank in Parentheses)

Insured Unemployment Rate[b]	Wages[a]		
	Low	Average	High
Low	1.46 (5)	1.45 (3)	1.29 (6)
Average	1.46 (4)	1.48 (1)	1.31 (3)
High	1.84 (1)	1.07 (6)	1.03 (4)

Table C. Michigan Marginal Cost (MC) Estimates and Rank of Michigan MC Among the 28 States A 1% Increase in the Insured Unemployment Rate Present Value (Michigan Rank in Parentheses)

Insured Unemployment Rate[b]	Wages[a]		
	Low	Average	High
Low	1.15 (5)	1.11 (4)	0.97 (7)
Average	1.15 (5)	1.13 (2)	0.98 (6)
High	1.42 (1)	0.81 (4)	0.63 (5)

[a] Firm wages: Low = $11,300, Average = $20,200, High = $32,700
[b] Firm IUR : Low = 1.45%, Average = 2.9%, High = 5.8%

Table D. Michigan Marginal Cost (MC) Estimates and Rank of Michigan MC Among the Great Lakes States A 1% Increase in the Insured Unemployment Rate Nominal Value (Michigan Rank in Parentheses)

Insured Unemployment Rate[b]	Wages[a]		
	Low	Average	High
Low	1.46 (3)	1.45 (1)	1.29 (3)
Average	1.46 (3)	1.48 (1)	1.31 (3)
High	1.84 (1)	1.07 (4)	1.03 (3)

Table E. Michigan Marginal Cost (MC) Estimates and Rank of Michigan MC Among the Great Lakes States A 1% Increase in the Insured Unemployment Rate Present Value (Michigan Rank in Parentheses)

Insured Unemployment Rate[b]	Wages[a]		
	Low	Average	High
Low	1.15 (3)	1.11 (2)	0.97 (3)
Average	1.15 (3)	1.13 (1)	0.98 (4)
High	1.42 (1)	0.81 (3)	0.63 (1)

[a] Firm wages: Low = $11,300, Average = $20,200, High = $32,700
[b] Firm IUR : Low = 1.45%, Average = 2.9%, High = 5.8%

EXPERIENCE RATING OF UNEMPLOYMENT INSURANCE IN MICHIGAN AND OTHER STATES: A MICROECONOMIC COMPARISON FOR 1988

I. INTRODUCTION

Unemployment insurance (UI) provides temporary benefits to covered workers during periods of involuntary unemployment. Established by the Social Security Act in 1935, the UI system is a cooperative federal-state program in which the states retain broad discretionary powers to determine the specifics of their individual programs. Consequently, the UI system varies widely by state.

The UI system is financed almost entirely by employer contributions.[2] The states are primarily responsible for providing the bulk of regular benefit payments to their workers[3]. Benefit payments are by far the largest proportion of total UI costs. The federal government pays for administration of the federal-state program, assumes partial responsibility for the cost of extended benefits,[4] and maintains a federal unemployment trust fund from which states may borrow should any state exhaust their state unemployment trust fund. Since

---

[2] A few state UI systems are also financed by employee contributions. Two of the 28 states in this study have such a tax, New Jersey and Pennsylvania. Details of the UI tax systems for the 28 states examined here are given in Hunt (1988).

[3] As discussed later, regular benefits are generally available for a maximum of 26 weeks. Details of the UI benefit provisions in the 28 states examined here can be found in Hunt (1988).

[4] Extended benefits are provided to workers who have exhausted regular benefits in states only when state unemployment reaches certain prescribed levels.

any federal loans to states must eventually be repaid by those states, the UI system is essentially self-financed by each state's own employers.[5]

Employer UI taxes are not assessed uniformly or through any simple function of firm wages and unemployment in any state. UI taxes are experience rated in all states.[6] When a firm[7] is effectively experience rated, the firm's UI taxes are directly related to the firm's insured unemployment. Taxes increase when there is an increase in benefits paid to the firm's unemployed workers, and taxes fall when benefits fall.[8] However, certain statutory provisions such as minimum tax rates, maximum tax rates, and taxable wage ceilings may render the experience rating system ineffective. For firms with a recent history of particularly high insured unemployment it is very possible that an increase in insured unemployment will not affect UI taxes at all. The response in a firm's UI taxes relative to a change in unemployment benefit charges is therefore the best measure of experience rating at the firm or "micro" level.

---

[5] Unless an employee tax is imposed, of course.

[6] Of the 53 jurisdictions in the United States operating UI systems, only in Puerto Rico are there no experience rating provisions. In this report the word "state" is used to refer to a UI jurisdiction, a group which includes the fifty states, the District of Columbia, and the U.S. Virgin Islands.

[7] For UI tax purposes employers are referred to as establishments, a label which can apply to profit making business firms, non profit organizations, and other employers. In this paper we frequently use the concise label: firm.

[8] The principle involved is similar to the case of private auto insurance where the premium is increased for a car owner with a poor recent driving record, and the premium is decreased for good driving experience.

The three principal reasons for experience rating of UI are: 1) To encourage stabilization of employment, 2) To properly allocate the costs of unemployment, and 3) To encourage participation of employers in the UI system.[9] On the first point, firms seeking to maximize profit or minimize costs should be slower to reduce their workforce if each successive layoff costs more in UI taxes. The second point is that the price of goods should fully reflect their costs of production, this point regards the social efficiency aspects of resource utilization; where employment varies more widely a higher cost of unemployment should be imputed into the price of the good. The third point is that by charging higher taxes for successive layoffs firms will be encouraged to keep vigilant of UI claims against them and remain fully involved in UI eligibility determination, making it a more accurate process.

Given the freedom specifically reserved to the states to structure their UI statutes, it should not be surprising that there exists tremendous variation in the actual degree and method of experience rating among the states.

Some attempts have been made to compare experience rating across state programs on an aggregate basis.[10] The U.S. Department of Labor (DOL) has begun to report on one index for interstate comparison regularly.[11] The development

---

[9] Complete discussions of the objectives of experience rating can be found in Haber and Murray (1966) and Becker (1972).

[10] Becker (1972) and Wandner and Crosslin (1980) have reported comparisons of experience rating across selected states.

[11] After the 1985 report of the Office of the Inspector General (OIG), the Division of Actuarial Services in the U.S. Department of Labor developed an experience rating index (ERI) along with the OIG. On September 21, 1987 OMB approved a revised ETA-204 Experience Rating Report which will provide data to compute the new ERI. ETA published their ERI for the 1988 rate year in UI Data

of this index followed the release of an Office of Inspector General (1985) report entitled "Financing the Unemployment Insurance Program has Shifted from a System based on Individual Employer's Responsibility Towards a Socialized System." The study found that the fraction of total benefit payments which are not chargeable to a particular establishment has increased in recent years. The DOL index focuses on the proportion of benefit charges which are non-socialized costs. The present study proceeds from the premise that comparison of experience rating across states can be best achieved by conducting a firm level analysis for a variety of worker/firm situations.

Such micro level analysis has the advantage that it isolates the interstate differences in experience rating due to differences in the statutory provisions themselves.[12] Given the complexities of the individual state UI programs, it should be understood at the outset that the research methodology underlying this study only provides approximations of the degree of experience rating.

The purpose of this study is to compare the total impact of the UI statutes in 1988 on experience rating of UI in Michigan relative to other states for similarly situated establishments. In Section II the structure of the model for analysis is reviewed. This section also includes a statement of the hypothetical worker/firm situations to be considered, and the states examined. Specific estimates of the degree of experience rating in Michigan relative to the various state groupings are reviewed in Section III, where a

---

Summary, Employment and Training Administration (1988).

[12] The interested reader can consult the study by Hunt (1985) for a further elaboration of this general methodology and an application of it to a wide variety of state and local tax costs.

detailed description of the methodology is given. Results of a sensitivity analysis of how changes in the features of the Michigan tax law would affect the degree of experience rating in Michigan are given in Section IV. Finally, conclusions are offered in Section V.

Before proceeding, it should be emphasized that this study neither suggests nor endorses any specific policy actions but rather focuses on the issue of experience rating at the establishment level. Although the research methodology of this study is highly detailed, it does not deal with a number of the features of the UI system such as the role that the complicated statutory and administrative structure plays in "qualifying" workers for benefits. The limitations of this study are discussed in more detail in each section of the report.

II. A SIMULATION MODEL FOR EVALUATING EXPERIENCE RATING

This study extends the methodology of three earlier works by Hunt (1986, 1987, and 1988) which compared UI tax costs and worker benefits across states.[13] Those investigations were conducted at the firm level using a structural model of each state's UI system. The approach was to simulate as closely as possible the way in which an individual worker's benefit and the employer's UI taxes are actually determined in each state. The characteristics of the worker and firm

---

[13] The Economic Alliance for Michigan not only provided partial financial support for the 1986 study but also their Unemployment Insurance Staff Group provided valuable technical advice in constructing the model. The 1987 study was supported in part by the Economic Alliance for Michigan, Michigan Department of Commerce, Michigan Department of Labor, Michigan House of Representatives, and the Michigan Senate Fiscal Agency. The 1988 study was prepared for the governor's UI Fact Finding Group.

were assumed to be invariant across the states, so that any differences in the tax and benefit estimates could be attributed to the statutory provisions of the state UI programs. This structural model is hereafter referred to as the Unemployment Insurance Micro-Simulation Model (UIMSM).

The research underlying this report involved the development of additional UIMSM algorithms for the experience rating analysis. To implement this extended version of UIMSM, the program was converted from a PC lotus spreadsheet to a mainframe SAS program.[14] The new environment accommodates the added size, and provides the required flexibility to compute the necessary multi-period computations.

The 28 states included in this study are the largest manufacturing states in the U.S., as shown in Table 1. Cumulatively they account for just over 90 percent of all U.S. manufacturing employment. The large number of states in UIMSM permits the examination of certain regional aggregations of states as well as consideration of the 28-state average. First, the Great Lakes states are defined to include those eight states which border on one of the Great Lakes, namely Illinois, Indiana, Michigan, Minnesota, New York, Ohio, Pennsylvania, and Wisconsin. These are the same eight states examined in Hunt (1986, 1987, and 1989) and at least one other study as well (St. Antoine, 1984). These seven states are Michigan's nearest neighbors, they share a

---

[14] The 1988 provisions which were estimated for states with changes slated to become effective mid-year or later in Hunt (1988) have been replaced with the actual program parameters.

Table 1. States Ranked by Manufacturing Employment, 1987

States[1]	Manufacturing Employment (thousands)	Cumulative Percent
CALIFORNIA	2104.9	11.10
NEW YORK	1221.9	17.54
OHIO	1095.3	23.31
PENNSYLVANIA	1042.1	28.81
MICHIGAN	966.0	33.90
ILLINOIS	931.7	38.81
TEXAS	928.2	43.71
NORTH CAROLINA	855.3	48.22
NEW JERSEY	676.4	51.78
INDIANA	616.0	55.03
MASSACHUSETTS	597.0	58.18
GEORGIA	569.4	61.18
FLORIDA	529.9	63.97
WISCONSIN	526.4	66.75
TENNESSEE	495.4	69.36
VIRGINIA	429.1	71.62
MISSOURI	419.7	73.84
CONNECTICUT	384.0	75.86
MINNESOTA	374.9	77.84
SOUTH CAROLINA	373.4	79.80
ALABAMA	367.6	81.74
WASHINGTON	316.8	83.41
KENTUCKY	260.2	84.79
MISSISSIPPI	228.0	85.99
ARKANSAS	219.5	87.14
IOWA	213.4	88.27
MARYLAND	207.2	89.36
OREGON	204.9	90.44
Arizona	187.2	91.43
Colorado	184.2	92.40
Kansas	175.9	93.33
Louisiana	163.5	94.19
Oklahoma	154.4	95.00
New Hampshire	118.3	95.63
Rhode Island	116.5	96.24
Maine	103.6	96.79
Utah	92.1	97.27
Nebraska	88.1	97.74
West Virginia	85.8	98.19
Delaware	69.5	98.56
Idaho	54.1	98.84
Vermont	49.3	99.10
New Mexico	38.4	99.30
South Dakota	28.7	99.46
Nevada	23.2	99.58
Hawaii	22.1	99.69
Montana	20.8	99.80
North Dakota	15.7	99.89
Alaska	13.5	99.96
Wyoming	8.0	100.00

Source: Employment and Earnings, U.S. Department of Labor, May, 1988.

[1] States in capital letters have been included in this study.

common industrial structure, and many of them are repaying or have repaid large UI debts to the federal government, incurred during the last recession.

The other two aggregations of the 28 states in the study follow the U.S. Bureau of the Census definitions of regions, as shown in Figure 1. The combined Northeast and Northcentral states include the eight Great Lakes states plus Connecticut, Iowa, Massachusetts, Missouri, and New Jersey, while the Southern states include Alabama, Arkansas, Florida, Georgia, Kentucky, Maryland, Mississippi, North Carolina, South Carolina, Tennessee, Texas, and Virginia. The figure should make it clear that this study does not include all of the states in the South but rather the 12 largest Southern states in terms of manufacturing employment (out of a total of 16 Southern states identified by the U.S. Bureau of the Census) and the largest 13 of 22 states in the combined Northeast-Northcentral region. Since only three states from the West are included in this study, it is not identified as a separate region in the analysis, but those states are included in the average for all 28 states.

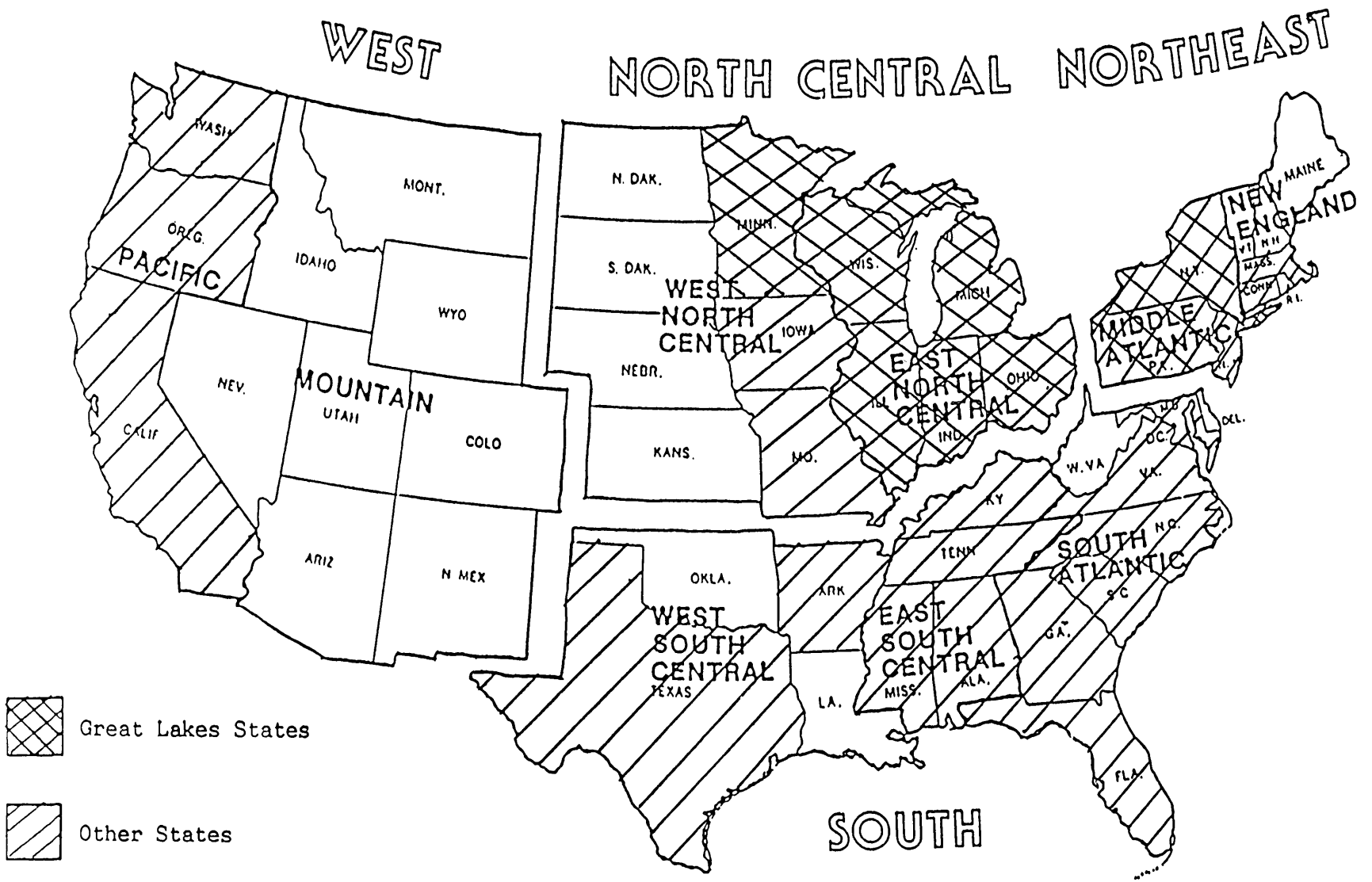
This report focuses on the comparison of how provisions for experience rating of UI taxes affect the cost of layoffs for hypothetical firms located in Michigan relative to identical firms located in other states. Two key variables characterize a hypothetical firm: the insured unemployment rate and the average annual wage level. The five year (1983-87) national average weekly insured unemployment rate[15] of 2.9 percent is defined as "average" for this

---

[15] Insured unemployment rates are significantly lower than total unemployment rates. The insured unemployed are limited to covered workers qualifying for benefits, while total unemployment rates account for all those seeking work, whether or not covered by the UI system. Clearly, the insured unemployment rate is the more appropriate concept for a study of the UI system.

Figure 1

STATES SELECTED FOR STUDY BY REGION



Source: Bureau of the Census, General Social and Economic Characteristics, United States Summary, 1980 Census of Population, PC80-1-C2.

Note: Four separate regions are analyzed in this study: all 28 states, the eight Great Lakes states, the 13 states in the combined Northeast-Northcentral region, and the 12 states in the South.

study, double that figure is labeled "high", and one-half of it as "low." Similarly, "average" annual wages for this study are $20,200, the national average wage for all UI covered workers in private employment in 1986 (U.S. Bureau of Labor Statistics, 1987), updated to 1987 levels[16] using the average change in wages from 1986 to 1987 (U.S. Bureau of Labor Statistics, 1988).[17] In similar fashion, "high" average annual wages are $32,700, and "low" average annual wages are $11,300, the highest and lowest average annual industrial wages for industries covered by UI data. The nine "hypothetical" firms for this study, arrayed in Table 2, are therefore representative of actual industry data and provide a reasonably broad range of wages and unemployment with which to conduct the simulations.

Table 2. Characteristics of Hypothetical Establishments (Insured Unemployment Rate, Average Annual Earnings)

Insured Unemployment Rate	Wages		
	Low	Average	High
Low	(1.45, 11,300)	(1.45, 20,200)	(1.45, 32,700)
Average	(2.90, 11,300)	(2.90, 20,200)	(2.90, 32,700)
High	(5.80, 11,300)	(5.80, 20,200)	(5.80, 32,700)

[16] In reality, of course, the 1988 taxes incurred by employers will be based upon 1988 wages actually paid by those employers. For purposes of this research, however, it is far simpler to utilize the estimated 1987 wage bill. Moreover, since wages are fixed (constant) across all 28 states and the total impact of the UI statutes are estimated, a small change in wages would not impact the interstate comparisons substantively in any event.

[17] At the time of this writing, data for the growth of wages in 1987 were available only for non-supervisory workers.

Prior to the specification of a hypothetical firm's insured unemployment rate and average annual wage, decisions regarding the specification of the dependency status and exhaustion rate of the firm's insured layoffs must be made. UIMSM contains the detailed methods used by the states themselves to compute a claimant's benefits, including rounding provisions. In UIMSM it is assumed that all workers are earning the average wage for that firm and that one-half of the workers are married with a working spouse and two dependents, except for low wage simulations where it is assumed that none of the workers have dependents.[18] Furthermore, all workers are assumed to be eligible for the maximum duration of benefits and to actually apply for benefits if laid off.[19] Thus, these simplifying assumptions should make it clear that access to UI benefits is assumed for all workers in this study, in spite of the fact that there is great variation in qualifying criteria across states.[20]

---

[18] It is well-known that dependency status varies significantly with wage levels. In 1978, the last year for which data on dependency allowances are available from the UI system (U.S. Employment and Training Administration, 1979:22-24), only about one-third of all beneficiaries claimed any dependents (in those states that had dependency allowances, of course), while that figure jumped to about one-half for workers receiving the maximum weekly benefit amount. Furthermore, of those workers claiming dependents, only 15 percent had a dependent spouse, while 94 percent claimed from one to three total dependents. It turns out that at national average wages many workers qualify for near maximum benefit amounts. Thus, the wage/dependency combinations selected for this study are arbitrary but consistent with available data.

[19] In the simulations it is assumed that 33.6% is the benefit exhaustion rate for a firm's UI claimants. This figure is the five year weighted average (1982-87) of national figures reported in Unemployment Insurance Financial Data, ET Handbook 394 and issues of Quarterly Unemployment Insurance Compilation and Characteristics for 1987.

[20] In general, monetary qualifying requirements will have the greatest impact on part-time workers earning at or close to minimum wages with less than one-half year of employment. For instance, Michigan has both a regular earnings qualifier and an alternate earnings qualifier. The regular earnings qualifier, applicable to the vast majority of claimants in Michigan, requires

As discussed in Hunt (1986:5-6), UIMSM is highly stylized, meaning that the model only accounts for a limited number of the many institutional characteristics of the state UI systems that can affect individual benefit levels. UIMSM does not include extended benefits, monetary and nonmonetary eligibility requirements, or special provisions for part-time workers, work-sharing, and seasonal workers, among others. Turnover is limited to that implied by the firm's unemployment rate. These limitations notwithstanding, it should also be noted that no data base exists from which to develop the detailed characteristics of the workforce which would be necessary to include more of the complicated UI statutory and administrative structure in the model.[21]

At this point a few items merit special emphasis. First, it is the long term impact of the 1988 statutory provisions that is estimated not just the affect on 1988 UI tax bills. For instance, increases in weekly benefit amounts

---

20 credit weeks in the most recent 52 calendar week period, where a credit week is defined as $100.50 in earnings, for a minimum total earnings of $2,010. This is among the more stringent monetary qualifying requirements of the states in this study, but note also that a worker in Michigan earning the federal minimum wage of $3.35 per hour must work only 30 hours per week to earn a credit week. The hypothetical workers in this study are earning $5.43 per hour at low wages, $9.71 per hour at average wages, and $15.72 per hour at high wages. Thus, unless the hypothetical firms have an unusual distribution of wages and employment, one would expect that state monetary qualifying criteria would play an extremely minor role in the simulations with average and high wages and a minor but perhaps more significant role in the simulations with low wages.

[21] The effects that changing eligibility criteria and other factors have had on increasing the gap between the insured unemployment rate and the total unemployment rate nationwide have been explored elsewhere (Burtless, 1983). The U.S. Department of Labor recently sponsored a major study of this subject by Corson and Nicholson (1988).

in 1988 are not expected to impact 1988 taxes, because current tax rates are a function of the firm's experience in prior years. In future years, however, 1988 benefits will become an obligation of employers and therefore are a legitimate part of the economic costs of UI in 1988. The full tax impact of UI benefits charged against a firm in a given year is the total cost which is paid back over time.

Second, this study focuses exclusively on the UI statutes actually in place and effective during 1988. It is beyond the scope of this study to evaluate legislated changes and automatic provisions for change that are scheduled to be effective in future years. Concomitantly, various so-called temporary or emergency taxes are included in this study because they are actually effective in 1988 regardless of the fact that they may expire at a future date. While projecting the impacts of UI in the years ahead is an important subject, this study is limited to following the 1988 statutes as closely as possible, thereby determining the impacts of the known, existing legislation.

Finally, it should be emphasized that there is no simple way to aggregate the micro estimates from this study to arrive at statewide estimates of experience rating. Similarly, there is no reason to think that any one of the nine simulations are more significant than the others. In short, rather than focusing on the estimates from any individual simulation one should examine the general trends in experience rating across the simulations of this study.

III. Measurement of Experience Rating

The individual state UI tax structures, especially their experience rated elements, are complex and differ considerably across the states. The general provisions for each state's experience rating system and any uniform rate additions for all 28 states in UIMSM are presented in Table 3. Three methods are used for experience rating in these 28 states: reserve ratio, benefit ratio, and benefit wage ratio. In the reserve ratio approach the cumulative balance in the employer's experience rating account (generally all past experienced rated taxes paid less all benefits charged) is divided by a payroll measure. In the other two systems, the benefit ratio and the benefit-wage approach, the taxes paid by the employer are not a factor in the rate determination process nor does the employer have an experience rating account. They rely on benefits charged or benefit-wages (wages represented by benefits charged) divided by some payroll measure (both over a specified time period) to more directly determine the employer's tax rate. The employer's basic experience determined tax rates in all systems may also be multiplied by a specified factor and/or there may be uniform additional tax rates, all of which act to increase employer tax rates.

The actual implementation by the states of the three separate types of experience rating may be very different indeed. Two states, Michigan and Pennsylvania, use combined reserve ratio and benefit ratio systems. The combined systems have interesting properties which, for Michigan, will be examined in Section IV of this report where a sensitivity analysis of the statutes is conducted.

Table 3. Characteristics of 1988 State Experience Rating Systems

State	Type of Experience Rating	State Taxable Wage Base (in dollars)	Range of Experience Rates (percent)	Uniform Rate Addition (percent)
Alabama	BWR	8,000	0.5 to 5.4	None
Arkansas	RR	7,500	0.1 to 6.0	0.5
California	RR	7,000	0.3 to 5.4	0.1[2]
Connecticut	BR	7,100	0.5 to 5.4	0.7
Florida	BR	7,000	0.1 to 5.4	0.01[3,4]
Georgia	RR	7,500	0.06 to 8.64	0.06[3]
Illinois[7]	BWR	9,000	0.2 to 7.1	0.4
Indiana	RR	7,000	0.3 to 5.4	None
Iowa	BR	11,000	0.0 to 9.0	0.06
Kentucky	RR	8,000	0.5 to 9.5	None
Maryland	BR	7,000	0.1 to 5.4	None
Massachusetts	RR	7,000	1.2 to 5.4	0.34
Michigan	BR[1]	9,500	0.0 to 9.0	1.0
Minnesota	BR	11,700	0.0 to 8.0	0.8[3]
Mississippi	BR	7,000	0.1 to 5.4	None
Missouri	RR	7,000	0.0 to 6.0	None
New Jersey[6]	RR	12,000	0.5 to 5.8	None
New York	RR	7,000	0.0 to 5.4	1.0
North Carolina	RR	10,100	0.01 to 5.7	None[5]
Ohio	RR	8,000	0.3 to 7.3	0.7
Oregon	BR	14,000	1.9 to 5.4	0.3[3]
Pennsylvania[6]	BR[1]	8,000	0.0 to 7.7	2.0
South Carolina	RR	7,000	0.19 to 5.4	1.11[2,3]
Tennessee	RR	7,000	0.15 to 10.0	None
Texas	BR	8,000	0.0 to 6.0	0.77[5]
Virginia	BR	7,000	0.1 to 6.2	None
Washington	BR	15,100	1.88 to 5.4	0.02
Wisconsin	RR	10,500	0.27 to 8.9	0.10[5]

Source: Based on data from the employment security agencies of the individual states and the U.S. Department of Labor.

BWR = Benefit Wage Ratio
RR = Reserve Ratio
BR = Benefit Ratio

Note: Footnotes follow on subsequent page.

Table 3. Footnotes

---

[1] Michigan and Pennsylvania also include a reserve ratio in computing a portion of the tax rate.

[2] The rate additions apply only to positive balance employers in California and South Carolina (1.05%).

[3] The rate additions cannot increase the maximum experience tax rates in Florida, Minnesota, Oregon, and South Carolina, or minimum and maximum tax rates in Georgia.

[4] The rate addition does not increase the tax rate unless, when combined with other rating factors, the sum thereof rounds to the next highest one-tenth of one percent. The minimum tax rate is .1%.

[5] There is also a variable, additional tax in North Carolina (0.002 to 1.14%) and Texas (0.64% to 2%) that is determined from the employer's basic experience tax rate. In Wisconsin a variable additional rate of 0.43% to 1.70% applies to employers with total payroll in excess of $200,000; for firms with smaller payrolls the variable additional rate ranges from 0.00% to 1.20%.

[6] Tax rates do not include employee taxes in New Jersey (.625%) and Pennsylvania (.1%).

[7] In Illinois for employers with quarterly payrolls less than $50,000 and regular UI tax rates of 5.1% or higher the maximum tax is 5.0%.

Federal guidelines require that the state taxable wage base at least match the federal taxable wage base ($7,000), but states may have higher state taxable wage bases, and many do. Table 3 shows that there are precious few consistencies in the UI tax structure across the states, although federal rules require that the highest experience tax rate be at least 5.4 percent. States differ in terms of their usage of explicit surcharges, minimum tax rates, and maximum tax rates, among other ways. Notice that the minimum experience tax rates are not necessarily zero. All states must find a way to fund the uncharged benefits of bankrupt employers and the excess benefit charges of employers at ceiling tax rates, among other special situations. From the employer's perspective, the state experience rating systems are not necessarily pure cost recovery systems. In addition to the state rates, the minimum federal UI tax rates (0.8%) are assumed to be applicable in all 28 states in 1988.[22]

UIMSM contains the detailed tax provisions of the UI system, including the statutory provisions shown in Table 3, and the specific state tax schedules and computation methods used to determine the employer's tax rates. Among other details of the tax calculations, the model includes the charging provisions for each element of the tax, the lag between the data available on tax computation dates and the effective dates of those rates, rounding provisions, the effects of the waiting week on employer costs,[23] write-down procedures and tax limiters,

---

[22] Employers in Michigan are not paying federal penalty taxes because the state has made the necessary debt repayments directly from state trust funds and met other federal solvency standards.

[23] The effect of the waiting week on employer costs depends on the average duration rate of unemployment for the firm and the average exhaustion rate. In UIMSM these variables are assigned national average values of 16.1 weeks and

if any. In UIMSM, the employer's UI record is maintained as would the states themselves in order to enhance the flexibility of the model and to facilitate the iteration of the model for any number of annual periods.

While the tax provisions of UIMSM are a reasonably detailed representation of reality, some deficiencies remain. The model deals only with the general state tax rates, ignoring any special rate provisions for particular types of employers by size, industry, or other factors. It also does not include the special tax provisions for new firms.[24] Thus, it is assumed that the firms are permanent, with ongoing operations in each state. Benefit charges for extended benefits are not modeled,[25] nor is there any specific accounting for each state's non-charging provisions or appeal procedures. Many of the features of UIMSM and its limits are described further in Hunt (1986).

Having detailed the range of statutory experience rating provisions captured in UIMSM we may now describe the assumptions and process used for measuring experience rating. Two ideas are fundamental to understanding our approach and the results generated by it, these have been stated earlier in this paper. First, to measure experience rating we seek to measure how a firm's UI taxes respond to a change in unemployment benefit charges. Second,

---

33.6 percent respectively for this study.

[24] Most states assign a new firm a given tax rate for a year or so and then phase in experience rating. Notice that the total impact of the UI system on new employers over time asymptotically approaches that for a permanent ongoing employer, exactly the type of firm which is included in the model.

[25] It should be noted that currently no states are paying extended benefits nor does the U.S. Unemployment Insurance Service expect extended benefits to be paid in the near future (U.S. Employment and Training Administration, September 1987:2).

the concept of taxes involved here is the long term impact on taxes which result from a change in benefit charges under the 1988 statutory provisions, not just the affect on 1988 UI tax bills. Necessarily, therefore UIMSM is a multi-period simulation model, and certain aspects of its working should be clearly understood.

UIMSM is designed to simulate a hypothetical firm's UI taxes and benefit charges for thirty periods, representing thirty years. It is assumed that the 1988 UI statutes for the 28 states apply in each of the thirty periods. To estimate the degree of experience rating--the tax response to a change in benefit charges--a one period change or "spike" of unemployment is imposed on the hypothetical firms in period eleven. Recall there are nine firm types, each characterized by a specific insured unemployment rate (IUR) and average annual earnings (AAE). The model is run for thirty periods. This provides adequate time (ten periods) to allow a firm to develop a benefit and tax history before a spike of insured unemployment is imposed, and enough time (nineteen periods) to observe the full impact of the unemployment spike on UI taxes. The historical information on benefit charges, tax payments, and the experience rating account (ERA) balance are necessary for the determination of present and future tax rates.

One requirement for conducting interstate comparison of experience rating for identically situated firms is that the initial ERA balance must be set at the level required in each state to achieve tax rate stability for the particular

firm type.[26] This assumption of equilibrium (initial condition only) has the advantage that it captures the permanent, on-going costs of UI. Moreover, it is the only assumption possible to insure comparability across states because each state's UI system is so different under conditions of disequilibrium.

To estimate the degree of experience rating for each hypothetical firm and spike of insured unemployment two simulations must be run, the first is called the control run and the second the spike run. In the control run the assumed IUR remains constant for each of the thirty periods. For the spike run the IUR increases in period eleven, either by one percent or doubling, and then returns to the pre-spike level for the remaining nineteen periods. In each simulation total UI taxes and total UI benefits charged are computed in a fashion completely analogous to the methodology of Hunt (1986, 1987, and 1988). These results are used to compute the responsiveness of the experience rated UI tax system for a particular firm type for a particular spike of IUR across the 28 states examined in this study.

In the body of this paper marginal cost estimates and rankings of the Michigan degree of experience rating are reported. It is important to understand the foundation on which these estimates rest. First, we perform a control run of the model which yields a control estimate of total UI tax cost (T_c) and a control estimate of total UI benefit charges (B_c). Next we re-run the model imposing a spike of unemployment in period eleven, this yields a "spike" estimate of total UI tax cost (T_s) and a spike estimate of total UI benefit

---

[26] For some states, including Tennessee and Kentucky which have broad steps in their tax schedule, tax rate stability is a situation where the tax rate, which depends on the ERA, fluctuates between two rates.

charges (B_S). Given these four figures, each of which is a sum computed over thirty periods, we can compute the UI tax response to a change in benefit charges. The result, which is called the marginal tax cost of a change in insured unemployment, or marginal cost (MC) for short, is the simple ratio of two changes. The formula is:

$$MC = (\Delta Taxes/\Delta Benefits) = (T_S - T_C)/(B_S - B_C)$$

Data to evaluate this expression for the average-average case, where the IUR = 2.9% and AAE = $20,200, in Michigan with a 1% spike in insured unemployment is given in Table 4. Appendix A, at the back of this report, lists results in a similar format for all basic MC estimations conducted for this study. All index values and rankings discussed in this section of the report are based on results given in appendix tables A.1 to A.36. For Michigan the average-average computation is simply:

$$MC = (T_S-T_C)/(B_S-B_C) = (857,166 - 841,510)/(644,625 - 634,062)$$
$$= (15,656)/(10,563) = 1.48$$

Table 4. Total Figures for Marginal Cost Computation
A 1% Increase in the Insured Unemployment Rate
Nominal Value
Average IUR , Average Wages
(IUR = 2.9% , Wages = $20,200)

State	MC	T_C	B_C	T_S	B_S
Michigan	1.48	841,510	634,062	857,166	644,625

The source of data for this computation is depicted graphically in figures 2 and 3. Each of these figures displays information for the full thirty periods of the simulation. For the average-average case in Michigan Figure 2 shows the control and spike values of the tax cost data, and Figure 3 shows the control and spike values of benefits charged. The value for the numerator in MC is the sum of the difference in the bars representing spike and control taxes in Figure 2, while the value in the denominator is the same difference for benefits in Figure 3. The result for benefits is easy to eyeball; it amounts to the simple difference in the period 11 bars as all others simply cancel out.

Another matter which is made clear by considering Figure 2 is that the UI tax considered as a response to a change in benefit charges is the entire future tax liability. In this case the taxes are paid over six years.[27] Since a firm incurs this future cost at the time the layoff decision is made it is natural to consider the full cost as the present discounted value of those payments.[28] In this report, estimates of the degree of experience rating are given in both nominal (not discounted) and present value terms. Since the length of the payback period varies from three to five years or more across

---

[27] The benefit ratio component of Michigan's UI tax considers a five year benefit history, with a six month lag. The lag means that the final payment for liabilities incurred will not be made until the sixth calendar year after the year in which the benefits are paid.

[28] The interest rate used for discounting purposes here is 10%. This is in line with the recent prime rate and somewhat above recent Treasury Bill rates. Ten percent is also lower than the median rate used by business firms for internal decision making in mid-1985 as reported by Summers (1987), and this is consistent with the fact that rates have generally fallen since that time.

Figure 2. UI Taxes, Average–Average Michigan Firm
A 1% Spike of Insured Unemployment

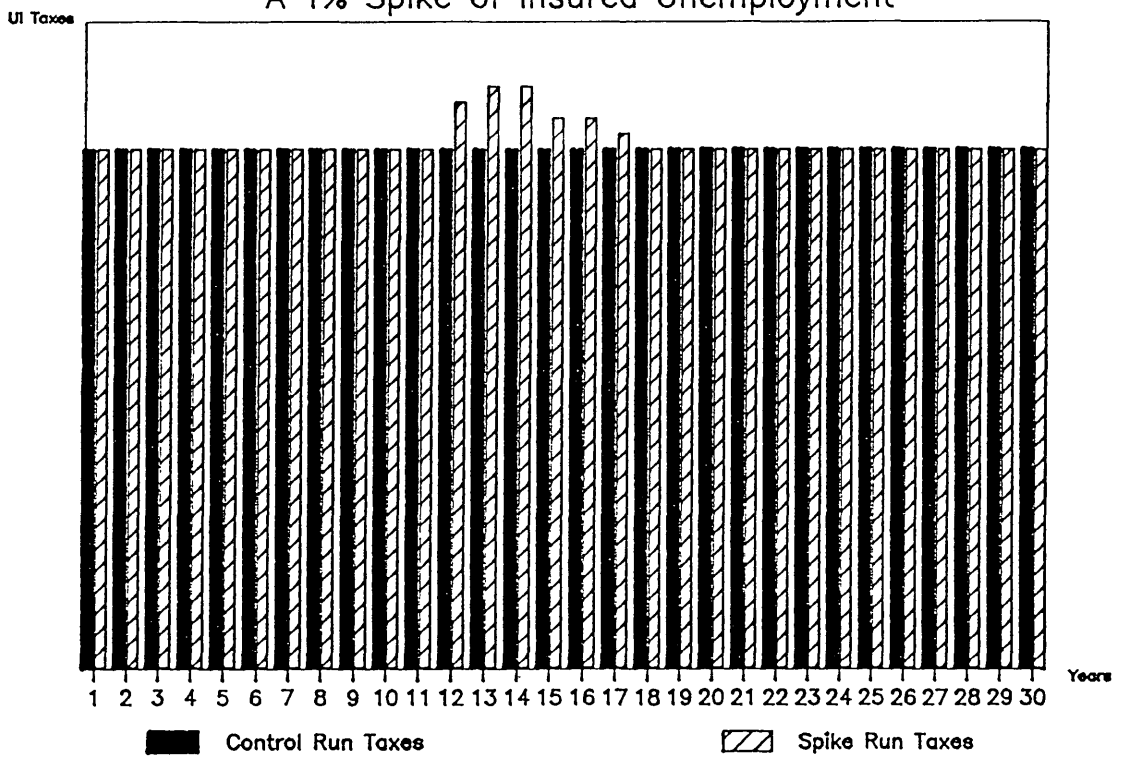
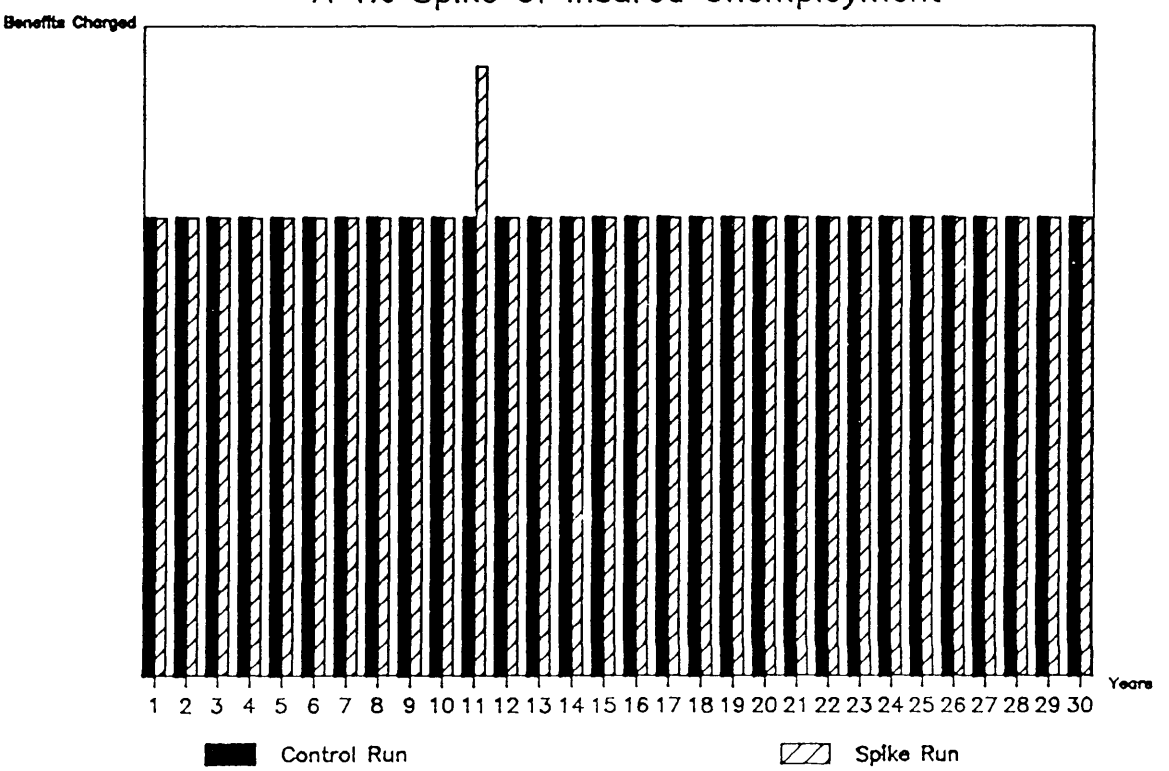


Figure 3. Benefits Charged, Average–Average Michigan Firm
A 1% Spike of Insured Unemployment



states, the ranking of states by degree of experience rating can be significantly altered by adding the discounting process.

The graphs of figures 2 and 3 show that in the average-average case for Michigan the payback stream is quite regular. It is not necessarily a typical case, but it provides a baseline from which to discuss some of the less standard possibilities. First, about the value of MC itself. When MC takes a value of 1.48 we can say that: "one dollar in additional benefit charges costs a firm, with the exact characteristics assumed here, $1.48 in additional UI taxes." This conclusion may seem surprising, but care must be taken to remember exactly what it means. This result applies only in the context of the precise case considered. Without doing a "macro" study of experience rating which would involve identifying the actual distribution of firms by IUR and AAE, we have no idea how many firms of the hypothetical type we consider exist in Michigan or other states.

Other estimates of MC which might seem surprising are also very possible under the statutory provisions of the states. For example, one finding which may seem troublesome is where MC = 0, meaning that the tax system does not respond to changes in benefit charges. This can happen if a firm is already paying maximum tax rates prior to a spike in insured unemployment.

Extremely large values of MC may result from a popular provision in state statutory UI tax systems regarding the rounding of tax rates. Rather than employ the standard rule of arithmetic which calls for rounding to the "nearest" significant digit, many systems call for "rounding up." For example if a tax

formula yields a tax rate of .0321 (3.21%), arithmetic rounding yields .032 (3.2%) where as statutory rounding up yields .033 (3.3%). In the extreme such rounding rules may result in marginal costs which differ by a factor of ten. Rounding is one of the features of the Michigan combined benefit ratio-reserve ratio system examined via sensitivity analysis in Section IV.[29]

Since the three different levels of wages and unemployment in all possible combinations lead to nine basic simulations, it is easiest to array the cost estimates in a matrix in which total UI taxes in Michigan are compared to one of the regional averages. Thus, the primary estimates of experience rating in this study are contained in four sets of tables, each of which focuses on the experience of firms in Michigan relative to one of the regional groupings. Each of the four sets contains four tables. Results are presented for a 1% spike of unemployment in both nominal and present value terms; similarly nominal and present value tables are given for a spike of unemployment which amounts to a doubling of the IUR.

---

[29] Some other surprising marginal cost estimates occur because of uneven tax increments. As mentioned earlier Tennessee and Kentucky, two reserve ratio states, have big steps in their tax schedules and resulting "equilibrium" initial tax rates which fluctuate. It is possible when tax rates fluctuate in this way that the present value of tax pay back may be greater than the nominal value. This can result because both the terms and the ordering of their relative magnitude in the pay back series may differ.

Another possibility in our model is a negative MC. In the period when layoffs occur, if the taxable wage base on individual earnings is greater than the average annual earnings of UI exhaustees ((25/52)*AAE for full year workers) the total taxable wage base and therefore total UI taxes could fall in that period. The total value of this one period drop could exceed the increased taxes in subsequent periods resulting in a negative marginal cost.

In Massachusetts and Washington the maximum duration of benefits is 30. In these states the average annual earnings of exhaustees is ((21/52)*(AAE of full year workers)), a formula which accounts for the presence of a waiting week in both states.

The four sets of experience rating estimates presented in this section are in tables numbered 5a through 8d. In each set table a displays results based on nominal costs for a 1% spike of IUR, b gives results based on nominal costs for a doubling of IUR, c gives results based on the present value of costs for a 1% spike of IUR, and d gives results based on the present value of costs for a doubling of IUR. The tables numbered 5 list simulation results for the marginal cost and rank of Michigan relative to all 27 other states, those numbered 6 give similar results for Michigan relative to the seven other Great Lakes states, those numbered 7 give the MC and rank of Michigan relative to 12 other Northeast-Northcentral states, and those numbered 8 give the MC and rank of Michigan relative to 12 Southern states.

While marginal cost and rank estimates for all states, firm types, and state groupings could be constructed from the data given in Tables A.1 to A.36, the results here focus on Michigan only. In each table rankings are placed in each IUR-AAE cell in parentheses to the right of the marginal cost estimate. The range of rankings depends on the number of states in the grouping. The ordering is from highest MC to lowest, an approach consistent with UI benefit cost recovery.

Table 5a summarizes the nominal marginal cost and ranking for the hypothetical firms under the Michigan UI experience rating system compared to 27 other state systems for a 1% spike of insured unemployment. The marginal cost (MC) estimates given indicate that all hypothetical firm types considered are effectively experience rated in Michigan. The rankings which appear in

Table 5a. Michigan Marginal Cost (MC) Estimates and Rank of Michigan MC Among the 28 States A 1% Increase in the Insured Unemployment Rate Nominal Value (Michigan Rank in Parentheses)

Insured Unemployment Rate[b]	Wages[a]		
	Low	Average	High
Low	1.46 (5)	1.45 (3)	1.29 (6)
Average	1.46 (4)	1.48 (1)	1.31 (3)
High	1.84 (1)	1.07 (6)	1.03 (4)

Table 5b. Michigan Marginal Cost (MC) Estimates and Rank of Michigan MC Among the 28 States A Doubling of the Insured Unemployment Rate Nominal Value (Michigan Rank in Parentheses)

Insured Unemployment Rate[b]	Wages[a]		
	Low	Average	High
Low	1.33 (5)	1.56 (3)	1.55 (2)
Average	1.55 (3)	1.50 (1)	1.45 (2)
High	1.86 (1)	1.01 (4)	1.00 (2)

[a] Firm wages: Low = $11,300, Average = $20,200, High = $32,700
[b] Firm IUR : Low = 1.45%, Average = 2.9%, High = 5.8%

Table 5c. Michigan Marginal Cost (MC) Estimates and Rank of Michigan MC Among the 28 States A 1% Increase in the Insured Unemployment Rate Present Value (Michigan Rank in Parentheses)

Insured Unemployment Rate[b]	Wages[a]					
	Low		Average		High	
Low	1.15	(5)	1.11	(4)	0.97	(7)
Average	1.15	(5)	1.13	(2)	0.98	(6)
High	1.42	(1)	0.81	(4)	0.63	(5)

Table 5d. Michigan Marginal Cost (MC) Estimates and Rank of Michigan MC Among the 28 States A Doubling of the Insured Unemployment Rate Present Value (Michigan Rank in Parentheses)

Insured Unemployment Rate[b]	Wages[a]					
	Low		Average		High	
Low	1.04	(5)	1.18	(3)	1.16	(2)
Average	1.20	(3)	1.14	(1)	1.08	(1)
High	1.42	(1)	0.72	(5)	0.60	(4)

[a] Firm wages: Low = $11,300, Average = $20,200, High = $32,700
[b] Firm IUR : Low = 1.45%, Average = 2.9%, High = 5.8%

Table 6a. Michigan Marginal Cost (MC) Estimates and Rank of Michigan MC Among the 8 Great Lake States A 1% Increase in the Insured Unemployment Rate Nominal Value (Michigan Rank in Parentheses)

Insured Unemployment Rate[b]	Wages[a]		
	Low	Average	High
Low	1.46 (3)	1.45 (1)	1.29 (3)
Average	1.46 (3)	1.48 (1)	1.31 (3)
High	1.84 (1)	1.07 (4)	1.03 (3)

Table 6b. Michigan Marginal Cost (MC) Estimates and Rank of Michigan MC Among the 8 Great Lake States A Doubling of the Insured Unemployment Rate Nominal Value (Michigan Rank in Parentheses)

Insured Unemployment Rate[b]	Wages[a]		
	Low	Average	High
Low	1.33 (3)	1.56 (1)	1.55 (1)
Average	1.55 (2)	1.50 (1)	1.45 (1)
High	1.86 (1)	1.01 (3)	1.00 (2)

[a] Firm wages: Low = $11,300, Average = $20,200, High = $32,700
[b] Firm IUR : Low = 1.45%, Average = 2.9%, High = 5.8%

Table 6c. Michigan Marginal Cost (MC) Estimates and Rank of Michigan MC Among the 8 Great Lake States A 1% Increase in the Insured Unemployment Rate Present Value (Michigan Rank in Parentheses)

Insured Unemployment Rate[b]	Wages[a]					
	Low		Average		High	
Low	1.15	(3)	1.11	(2)	0.97	(3)
Average	1.15	(3)	1.13	(1)	0.98	(4)
High	1.42	(1)	0.81	(3)	0.63	(1)

Table 6d. Michigan Marginal Cost (MC) Estimates and Rank of Michigan MC Among the 8 Great Lake States A Doubling of the Insured Unemployment Rate Present Value (Michigan Rank in Parentheses)

Insured Unemployment Rate[b]	Wages[a]					
	Low		Average		High	
Low	1.04	(3)	1.18	(1)	1.16	(1)
Average	1.20	(2)	1.14	(1)	1.08	(1)
High	1.42	(1)	0.72	(3)	0.60	(2)

[a] Firm wages: Low = $11,300, Average = $20,200, High = $32,700
[b] Firm IUR : Low = 1.45%, Average = 2.9%, High = 5.8%

Table 7a. Michigan Marginal Cost (MC) Estimates and Rank of Michigan MC Among the 13 Northeast-North Central States
A 1% Increase in the Insured Unemployment Rate
Nominal Value
(Michigan Rank in Parentheses)

Insured Unemployment Rate[b]	Wages[a]					
	Low		Average		High	
Low	1.46	(4)	1.45	(2)	1.29	(4)
Average	1.46	(3)	1.48	(1)	1.31	(3)
High	1.84	(1)	1.07	(4)	1.03	(3)

Table 7b. Michigan Marginal Cost (MC) Estimates and Rank of Michigan MC Among the 13 Northeast-North Central States
A Doubling of the Insured Unemployment Rate
Nominal Value
(Michigan Rank in Parentheses)

Insured Unemployment Rate[b]	Wages[a]					
	Low		Average		High	
Low	1.33	(4)	1.56	(2)	1.55	(2)
Average	1.55	(3)	1.50	(1)	1.45	(1)
High	1.86	(1)	1.01	(3)	1.00	(2)

[a] Firm wages: Low = $11,300, Average = $20,200, High = $32,700
[b] Firm IUR : Low = 1.45%, Average = 2.9%, High = 5.8%

Table 7c. Michigan Marginal Cost (MC) Estimates and Rank of Michigan MC Among the 13 Northeast-North Central States A 1% Increase in the Insured Unemployment Rate Present Value (Michigan Rank in Parentheses)

Insured Unemployment Rate[b]	Wages[a]					
	Low		Average		High	
Low	1.15	(4)	1.11	(3)	0.97	(4)
Average	1.15	(3)	1.13	(1)	0.98	(5)
High	1.42	(1)	0.81	(3)	0.63	(2)

Table 7d. Michigan Marginal Cost (MC) Estimates and Rank of Michigan MC Among the 13 Northeast-North Central States A Doubling of the Insured Unemployment Rate Present Value (Michigan Rank in Parentheses)

Insured Unemployment Rate[b]	Wages[a]					
	Low		Average		High	
Low	1.04	(4)	1.18	(2)	1.16	(2)
Average	1.20	(3)	1.14	(1)	1.08	(1)
High	1.42	(1)	0.72	(3)	0.60	(2)

[a] Firm wages: Low = $11,300, Average = $20,200, High = $32,700
[b] Firm IUR : Low = 1.45%, Average = 2.9%, High = 5.8%

Table 8a. Michigan Marginal Cost (MC) Estimates and Rank of Michigan MC when added to a Group of 12 Southern States A 1% Increase in the Insured Unemployment Rate Nominal Value (Michigan Rank in Parentheses)

Insured Unemployment Rate[b]	Wages[a]		
	Low	Average	High
Low	1.46 (1)	1.45 (1)	1.29 (3)
Average	1.46 (2)	1.48 (1)	1.31 (1)
High	1.84 (1)	1.07 (3)	1.03 (2)

Table 8b. Michigan Marginal Cost (MC) Estimates and Rank of Michigan MC when added to a Group of 12 Southern States A Doubling of the Insured Unemployment Rate Nominal Value (Michigan Rank in Parentheses)

Insured Unemployment Rate[b]	Wages[a]		
	Low	Average	High
Low	1.33 (1)	1.56 (1)	1.55 (1)
Average	1.55 (1)	1.50 (1)	1.45 (2)
High	1.86 (1)	1.01 (2)	1.00 (1)

[a] Firm wages: Low = $11,300, Average = $20,200, High = $32,700
[b] Firm IUR : Low = 1.45%, Average = 2.9%, High = 5.8%

Table 8c. Michigan Marginal Cost (MC) Estimates and Rank of Michigan MC when added to a Group of 12 Southern States A 1% Increase in the Insured Unemployment Rate Present Value (Michigan Rank in Parentheses)

Insured Unemployment Rate[b]	Wages[a]					
	Low		Average		High	
Low	1.15	(1)	1.11	(1)	0.97	(4)
Average	1.15	(3)	1.13	(2)	0.98	(2)
High	1.42	(1)	0.81	(2)	0.63	(4)

Table 8d. Michigan Marginal Cost (MC) Estimates and Rank of Michigan MC when added to a Group of 12 Southern States A Doubling of the Insured Unemployment Rate Present Value (Michigan Rank in Parentheses)

Insured Unemployment Rate[b]	Wages[a]					
	Low		Average		High	
Low	1.04	(1)	1.18	(1)	1.16	(1)
Average	1.20	(1)	1.14	(1)	1.08	(1)
High	1.42	(1)	0.72	(3)	0.60	(3)

[a] Firm wages: Low = $11,300, Average = $20,200, High = $32,700
[b] Firm IUR : Low = 1.45%, Average = 2.9%, High = 5.8%

parentheses in Table 5a are the position of Michigan when the MCs for a given firm type across all 28 states are ordered from high to low. The ranking results indicate that among the 28 states compared, Michigan is ranked no lower than sixth and is ranked first in two instances.

The nominal 1% spike results suggest that all firm types are relatively highly experience rated in Michigan, the MC estimates range from 1.03 to 1.84 with these values always being ranked in the top six of the 28 states. The MC figures for the average-high and high-high firms are lower than for other firms because the tax rate cap for one component of the Michigan tax is reached for these firms when the IUR rises by 1%. Among the 28 states, the average-high and high-high firms are relatively as experience rated in Michigan as any other firm type considered, being ranked sixth and fourth respectively.

Comparing the responsiveness of tax systems for a modest increase in IUR (Table 5a, a 1% rise in IUR) to their responsiveness for a more severe spike in IUR (Table 5b, a doubling of IUR), Michigan's relative position among the 28 states remains about the same.

The affect of introducing discounting into the process can be appreciated by comparing the nominal results from Tables 5a and 5b to the present value 1% and doubling IUR results given in 5c and 5d respectively. In Table 5c the present value results for a 1% spike in IUR are listed. These were computed by introducing a 10% discount rate when adding up the annual tax costs. Naturally the marginal cost figures fall as a result of discounting, but Michigan remains in the top quarter of the 28 states in terms of tax system responsiveness. The

relatively long five year benefit history in Michigan's tax formula only slightly affects the state experience rating ranking.

Tables 6a to 6d report comparisons for Michigan in a group of eight Great Lakes states. They show the same general trends as 5a through 5d. Michigan is always ranked in the top half of the Great Lakes states.

When five additional states are added to the Great Lakes states to form the Northeast-Northcentral states, the rankings remain nearly. This can be seen by comparing Tables 6a to 6d for the Great Lakes states with Tables 7a to 7d for the Northeast-Northcentral states. These results obtain because the statutory UI tax provisions in the states added to the Great Lakes group to form the Northeast-Northcentral group (Connecticut, Iowa, Massachusetts, Missouri, and New Jersey) provide for relatively less tax response to changes in benefit charges.

Including Michigan with a number of Southern states to form a group of thirteen for interstate comparison, Michigan is found to be extremely experience rated. Tables 8a through 8d show that Michigan is always in the top four states in this group. The comparisons summarized in Tables 8a through 8d mean that for the hypothetical firms considered, the statutory UI tax rules in Michigan are very responsive to benefit charges relative to those in the twelve Southern states.

To summarize, the statutory provisions of the Michigan UI tax system experience rate the hypothetical firms considered here relatively well compared

to other state systems. The Michigan system is equally responsive to modest and more severe bouts of insured unemployment. If all tax payback streams are discounted, the present value of cost recovery for the Michigan system is somewhat lower since Michigan has a relatively long pay back period compared to other states. For the regional groupings considered, the Great Lakes states have the highest relative degree of statutory experience rating, with Michigan always being ranked in the top half of the eight Great Lakes states.

IV. A SENSITIVITY ANALYSIS OF THE MICHIGAN UI EXPERIENCE RATING TAX SYSTEM

The UI tax code for Michigan is more complex than that in most other states. Indeed Michigan is one of only two states, the other being Pennsylvania, to have a system for determining experience rated taxes which involves both a benefit ratio and a reserve ratio tax. The objective of this section is to clearly lay out the features of the Michigan UI experience rating tax system, and then to assess the impact on the degree of experience rating which results from changing separately several of the key features of the system. This process is referred to here as a sensitivity analysis of the Michigan UI experience rating system.

For a firm in Michigan that has operated for five or more years with workers covered by unemployment insurance, the UI tax rate may have as many as four components. Two of these, the nonchargeable benefits component (NBC) and

the solvency tax (ST) do not depend entirely on the firm's own experience,[30] while two others the chargeable benefits component (CBC) and the account building component (ABC) depend only on the firm's individual experience. It is these latter two taxes on which this discussion focuses.

Our approach is to first develop the Michigan formula for experience rated taxes in a particular year, t, (ERT_t) and then outline the systematic analysis of this formula. We first consider the CBC component of the formula, which is a benefit ratio tax. It is computed as the sum of the ratio of benefits charged (BC) against a firm to the firm's total taxable wages (TTW) over the last 5 years, or

$$BR_t = [\Sigma_{i=1}^{5}(BC_{t-i})/\Sigma_{i=1}^{5}(TTW_{t-i})] = \text{Benefit Ratio.}$$

The CBC tax rate is capped at 6% or .06, so that the CBC rate for a given year t is:

$$CBCt = \min[.06,(BR_t)] = \text{Chargeable Benefits Component.}$$

The ABC depends on a reserve ratio, where the reserve is the balance in a firm's experience rating account (ERA). In Michigan there is a target level

---

[30] The NBC is a 1% flat tax levied on the taxable wage base of all UI taxable employers in the state. An ST may be levied against firms with a negative experience rating account (ERA) balance if there is outstanding interest bearing debt owed to the federal government. The ST is therefore partially experience rated.

for the ERA set at 3.75% of a firm's total wages (TW) paid in a year.[31] The ABC tax rate depends on the experience rating account deficiency (ERAD) from the target

$$ERAD_t = (.0375xTW_{t-1} - ERA_{t-1}) = \text{ERA Deficiency},$$

relative to total wages (ERADR),

$$ERADR_t = ((.0375xTW_{t-1}-ERA_{t-1})/TW_{t-1}) = \text{ERA Deficiency Ratio},$$

where, TW_t is total wages in year t, and ERA_t is the experience rating account balance at the start of year t. The ABC tax rate is capped at 3% or .03, so that the rate for a given year t is:

$$ABC_t = \min[.03,(ERADR_t x(.5))] = \text{Account Building Component}.$$

Note the multiplier of one-half (.5) which is applied to ERADR in this formula. Statutory provisions change this multiplier as the state trust fund balance changes.[32] This multiplier obviously has a major impact on the ABC tax.

The CBC and ABC rates are combined by simple addition with the resulting range of experience rated tax rates being zero to nine percent. Multiplying

---

[31] The target ERA level depends on the payroll for the twelve months which end six months prior to start of the tax year.

[32] See the Michigan Employment Security Act Section 19.4.

this result by total taxable wages (TTW) yields the total experience rated taxes (ERT),

$ERT_t = TTW_t x(CBC_t + ABC_t) =$ Experience Rated Taxes.

The following six features of the Michigan UI experience rating tax system were subjected to sensitivity analysis: 1) The reserve ratio multiple, 2) The reserve ratio denominator, 3) The number of years in the benefit history, 4) The taxable wage base, 5) The tax rate ceilings, and 6) The rounding rules.

Figure 4 clearly summarizes the array of changes considered. The top half of Figure 4 lists definitions of and notation for fundamental concepts. These are then combined to form a complete statement of Michigan experience rated taxes (ERT). Below this one line statement are listed the six categories of items considered in the sensitivity analysis. These are listed with their statutory and alternative values. With the exception of the sixth item, arrows are drawn from each of the categories to the part of the ERT formula where they enter. The last item in the list, change in the rounding rule, applies to the final result of the separate CBC and ABC formulae.

Results of the sensitivity analysis are presented in Tables 9a through 10d. Table 9a lists estimates of the nominal marginal tax cost of UI benefit charges (MC) for all nine hypothetical firm types and a 1% spike of IUR under the 1988 Michigan UI statutes and under the variety of six categories of changes detailed in Figure 4. The basic format of Table 9a is repeated in the seven other tables which report the results of the statutory sensitivity

Figure 4. A Guide to Sensitivity Analysis of Michigan Experience Rated UI Taxes to Statutory Change

---

ERT_t = Experience Rated Taxes in year t.

TTW_t = Total Taxable Wages in year t.

BC_t = Benefits Charged against a firm in year t.

TW_t = Total Wages in year t.

ERA_t = Experience Rating Account balance at the start of year t.

$BR_t = [\sum_{i=1}^{5}(BC_{t-i})/\sum_{i=1}^{5}(TTW_{t-i})]$ = Benefit Ratio

$CBCt = \min[.06,(BR_t)]$ = Chargeable Benefits Component

$ERADR_t = ((.0375 \times TW_{t-1} - ERA_{t-1})/TW_{t-1})$ = ERA Deficiency Ratio.

$ABC_t = \min[.03,(ERADR_t \times (.5))]$ = Account Building Component

$ERT_t = TTW_t \times (CBC_t + ABC_t)$ = Experience Rated Taxes

---

$$ERT_t = TTW_t \times (\min[.06,([\sum_{i=1}^{5}(BC_{t-i})/\sum_{i=1}^{5}(TTW_{t-i})]] + \min[.03,(((.0375 \times TW_{t-1} - ERA_{t-1})/TW_{t-1}) \times (.5))])$$

1. Change the reserve ratio multiple from .5 to .33,.25

2. Change in the reserve ratio denominator from TW_t to TTW_t.

3. Change in the number of years history in benefit ratio computation from 5 to 4 and 3.

4. Change in TTW_t from $9,500 to $10,000, $12,000, $14,000, $15,000, $16,000, $18,000, $19,000, $25,000, $35,000.

5. Change in the max(CBC,ABC) from (.06,.03) to (.07,.03), (.08,.03), (.09,.03) (.06,.04), (.07,.04), (.08,.04), (.09,.04), (.06,.05), (.07,.05), (.08,.05),and (.09,.05).

6. Change the tax rate rounding rule from the statutory round up to the next .001 to round to the nearest .001.

---

analysis. Table 9b gives the nominal sensitivity results under a doubling of IUR. Table 9c and 9d show in present value terms the results given in Tables 9a and 9b respectively.

Before proceeding to discuss the particular results in detail, it should be mentioned that some of the most interesting results are related to item six of Figure 4, the rounding provisions. On the whole there is more consistency across the MC estimates when the statutory rule to determine tax rates is removed; that is to say, when no rounding is done. To get a better feel for the implications of changes in various program parameters the computations done to calculate the estimates given in Tables 9a through 9d were re-done after removing the statutory rounding rule. The results of this effort are given in Tables 10a through 10d.

The full set of tables are presented here for completeness. We choose, however, to focus our discussion of the results on those for a 1% spike of insured unemployment with a nominal value payback. For statutory rounding these results are given in Table 9a, results for the same cases without rounding are given in Table 10a.

Across the top row of Table 9a are given the nominal MC estimates for the nine hypothetical firms, given 1988 Michigan UI statutes and a 1% spike of IUR. These figures show all hypothetical firm types to be effectively experience rated, with marginal cost (MC) ranging from 1.03 to 1.84. Each of the several rows below the top line report MC estimates for a single program change.

Table 9a. MC Sensitivity Results from Changes in Michigan UI Statutes

A 1% Increase in the Insured Unemployment Rate

Nominal Value

Statutory Rounding

Firm Type (IUR-Wage)	L-L	L-A	L-H	A-L	A-A	A-H	H-L	H-A	H-H
MC for 1988 Statutes	1.46	1.45	1.29	1.46	1.48	1.31	1.84	1.07	1.03
Statutory Change									
1. ABC reserve ratio multiple									
Is_____.50									
.33	1.29	1.36	1.21	1.30	1.39	1.23	1.67	1.07	1.03
.25	1.13	1.36	1.21	1.13	1.39	1.23	1.67	1.07	0.95
2. Change in the reserve ratio denominator									
Is_____Total Wages									
Total Taxable Wages	1.46	1.73	1.61	1.46	1.76	1.64	1.84	1.07	1.03
3. Change in the number of years in the benefit history									
Is_____5 years									
4 years	1.29	1.45	1.45	1.30	1.48	1.48	2.18	1.07	1.03
3 years	1.62	1.55	1.29	1.63	1.39	1.31	1.84	1.07	1.03
4. Change in the TTW									
Is_____$9,500									
$10,000	1.87	1.53	1.36	1.53	1.66	1.73	1.55	1.02	1.00
$12,000	1.90	1.02	1.53	1.70	1.74	1.66	2.11	1.81	1.52
$14,000	1.90	1.19	1.66	1.70	1.20	1.82	2.11	1.52	1.14
$15,000	1.90	1.56	1.78	1.70	2.16	1.04	2.11	2.23	1.90
$16,000	1.90	2.27	1.90	1.70	1.67	1.93	2.11	1.41	1.16
$18,000	1.90	1.85	2.13	1.70	1.86	1.54	2.11	1.89	2.26
$19,000	1.90	1.59	1.28	1.70	1.95	1.30	2.11	1.41	2.37
$25,000	1.90	2.06	1.46	1.70	2.06	0.84	2.11	1.68	2.19
$35,000	1.90	2.06	1.87	1.70	2.06	2.69	2.11	1.68	2.44
5. Change in the max(CBC, ABC)									
Is_____(.06, .03)									
(.07, .03)	1.46	1.45	1.29	1.46	1.48	1.31	1.84	2.04	1.03
(.08, .03)	1.46	1.45	1.29	1.46	1.48	1.31	1.84	2.04	1.29
(.09, .03)	1.46	1.45	1.29	1.46	1.48	1.31	1.84	2.04	1.29
(.06, .04)	1.46	1.45	1.29	1.46	1.48	1.31	1.84	1.07	1.03
(.07, .04)	1.46	1.45	1.29	1.46	1.48	1.31	1.84	2.04	1.03
(.08, .04)	1.46	1.45	1.29	1.46	1.48	1.31	1.84	2.04	1.29
(.09, .04)	1.46	1.45	1.29	1.46	1.48	1.31	1.84	2.04	1.29
(.06, .05)	1.46	1.45	1.29	1.46	1.48	1.31	1.84	1.07	1.03
(.07, .05)	1.46	1.45	1.29	1.46	1.48	1.31	1.84	2.04	1.03
(.08, .05)	1.46	1.45	1.29	1.46	1.48	1.31	1.84	2.04	1.29
(.09, .05)	1.46	1.45	1.29	1.46	1.48	1.31	1.84	2.04	1.29
6. Change in rounding rule									
Is____round up to next .001									
round to nearest .001	1.46	1.36	1.13	1.30	1.30	1.15	1.33	0.87	0.86

Table 9b. MC Sensitivity Results from Changes in Michigan UI Statutes
A Doubling of the Insured Unemployment Rate
Nominal Value
Statutory Rounding

Firm Type (IUR-Wage)	L-L	L-A	L-H	A-L	A-A	A-H	H-L	H-A	H-H
MC for 1988 Statutes	1.33	1.56	1.55	1.55	1.50	1.45	1.86	1.01	1.00
Statutory Change									
1. ABC reserve ratio multiple									
Is .50									
.33	1.22	1.44	1.44	1.43	1.40	1.36	1.67	1.01	0.81
.25	1.11	1.37	1.38	1.31	1.34	1.30	1.61	1.01	0.82
2. Change in the reserve ratio denominator									
Is Total Wages									
Total Taxable Wages	1.33	1.81	1.88	1.61	1.79	1.85	1.92	1.01	1.00
3. Change in the number of years in the benefit history									
Is 5 years									
4 years	1.56	1.50	1.49	1.61	1.53	1.36	1.80	1.01	1.00
3 years	1.56	1.44	1.38	1.61	1.40	1.36	1.73	1.01	1.00
4. Change in the TTW									
Is $9,500									
$10,000	1.87	1.64	1.63	1.62	1.58	1.52	1.70	1.00	0.97
$12,000	2.10	1.33	1.68	1.80	1.71	1.57	1.88	1.58	0.97
$14,000	2.10	1.55	1.71	1.80	1.56	1.62	1.88	1.67	1.43
$15,000	2.10	1.66	1.84	1.80	1.72	1.46	1.88	1.75	1.68
$16,000	2.10	1.87	2.05	1.80	1.77	1.56	1.88	1.69	1.50
$18,000	2.10	1.97	1.67	1.80	1.72	1.69	1.88	1.85	1.64
$19,000	2.10	1.45	1.65	1.80	1.81	1.55	1.88	1.76	1.73
$25,000	2.10	2.06	1.29	1.80	1.84	1.41	1.88	1.84	1.70
$35,000	2.10	2.06	1.65	1.80	1.84	2.27	1.88	1.84	2.06
5. Change in the max(CBC, ABC)									
Is (.06, .03)									
(.07, .03)	1.33	1.56	1.55	1.55	1.50	1.45	1.86	1.31	1.00
(.08, .03)	1.33	1.56	1.55	1.55	1.50	1.45	1.86	1.61	1.11
(.09, .03)	1.33	1.56	1.55	1.55	1.50	1.45	1.86	1.61	1.33
(.06, .04)	1.33	1.56	1.55	1.55	1.50	1.45	1.86	1.01	1.00
(.07, .04)	1.33	1.56	1.55	1.55	1.50	1.45	1.86	1.31	1.00
(.08, .04)	1.33	1.56	1.55	1.55	1.50	1.45	1.86	1.61	1.11
(.09, .04)	1.33	1.56	1.55	1.55	1.50	1.45	1.86	1.61	1.33
(.06, .05)	1.33	1.56	1.55	1.55	1.50	1.45	1.86	1.01	1.00
(.07, .05)	1.33	1.56	1.55	1.55	1.50	1.45	1.86	1.31	1.00
(.08, .05)	1.33	1.56	1.55	1.55	1.50	1.45	1.86	1.61	1.11
(.09, .05)	1.33	1.56	1.55	1.55	1.50	1.45	1.86	1.61	1.33
6. Change in rounding rule									
Is round up to next .001									
round to nearest .001	1.78	1.37	1.11	1.78	1.44	1.24	1.67	0.97	0.97

Table 9c. MC Sensitivity Results from Changes in Michigan UI Statutes
A 1% Increase in the Insured Unemployment Rate
Present Value
Statutory Rounding

Firm Type (IUR-Wage)	L-L	L-A	L-H	A-L	A-A	A-H	H-L	H-A	H-H
MC for 1988 Statutes	1.15	1.11	0.97	1.15	1.13	0.98	1.42	0.81	0.63
Statutory Change									
1. ABC reserve ratio multiple									
Is_____.50									
.33	1.00	1.02	0.89	1.00	1.04	0.91	1.27	0.71	0.53
.25	0.86	1.02	0.89	0.86	1.04	0.91	1.24	0.71	0.46
2. Change in the reserve ratio denominator									
Is_____Total Wages									
Total Taxable Wages	1.15	1.34	1.26	1.15	1.37	1.28	1.42	0.91	0.84
3. Change in the number of years in the benefit history									
Is_____5 years									
4 years	1.05	1.14	1.12	1.05	1.16	1.14	1.71	0.81	0.63
3 years	1.33	1.25	1.03	1.33	1.12	1.05	1.49	0.81	0.63
4. Change in the TTW									
Is_____$9,500									
$10,000	1.45	1.17	1.02	1.20	1.27	1.28	1.22	0.78	0.63
$12,000	1.48	0.81	1.14	1.33	1.33	1.24	1.63	1.38	1.15
$14,000	1.48	0.94	1.25	1.33	0.95	1.36	1.63	1.18	0.87
$15,000	1.48	1.21	1.34	1.33	1.64	0.80	1.63	1.70	1.43
$16,000	1.48	1.73	1.43	1.33	1.30	1.46	1.63	1.11	0.90
$18,000	1.48	1.44	1.60	1.33	1.44	1.18	1.63	1.46	1.70
$19,000	1.48	1.25	0.99	1.33	1.51	1.00	1.63	1.11	1.79
$25,000	1.48	1.60	1.13	1.33	1.59	0.69	1.63	1.31	1.67
$35,000	1.48	1.60	1.45	1.33	1.59	2.05	1.63	1.31	1.85
5. Change in the max(CBC, ABC)									
Is_____(.06, .03)									
(.07, .03)	1.15	1.11	0.97	1.15	1.13	0.98	1.42	1.55	0.63
(.08, .03)	1.15	1.11	0.97	1.15	1.13	0.98	1.42	1.55	0.97
(.09, .03)	1.15	1.11	0.97	1.15	1.13	0.98	1.42	1.55	0.97
(.06, .04)	1.15	1.11	0.97	1.15	1.13	0.98	1.42	0.81	0.63
(.07, .04)	1.15	1.11	0.97	1.15	1.13	0.98	1.42	1.55	0.63
(.08, .04)	1.15	1.11	0.97	1.15	1.13	0.98	1.42	1.55	0.97
(.09, .04)	1.15	1.11	0.97	1.15	1.13	0.98	1.42	1.55	0.97
(.06, .05)	1.15	1.11	0.97	1.15	1.13	0.98	1.42	0.81	0.63
(.07, .05)	1.15	1.11	0.97	1.15	1.13	0.98	1.42	1.55	0.63
(.08, .05)	1.15	1.11	0.97	1.15	1.13	0.98	1.42	1.55	0.97
(.09, .05)	1.15	1.11	0.97	1.15	1.13	0.98	1.42	1.55	0.97
6. Change in rounding rule									
Is____round up to next .001									
round to nearest .001	1.19	1.23	0.84	1.15	1.18	0.85	1.02	0.64	0.57

Table 9d. MC Sensitivity Results from Changes in Michigan UI Statutes

A Doubling of the Insured Unemployment Rate

Present Value

Statutory Rounding

Firm Type (IUR-Wage)	L-L	L-A	L-H	A-L	A-A	A-H	H-L	H-A	H-H
MC for 1988 Statutes	1.04	1.18	1.16	1.20	1.14	1.08	1.42	0.72	0.60
Statutory Change									
1. ABC reserve ratio multiple									
Is .50									
.33	0.95	1.08	1.06	1.09	1.05	1.00	1.26	0.63	0.50
.25	0.84	1.02	1.02	0.99	0.99	0.96	1.20	0.58	0.42
2. Change in the reserve ratio denominator									
Is Total Wages									
Total Taxable Wages	1.04	1.40	1.45	1.24	1.39	1.43	1.47	0.83	0.80
3. Change in the number of years in the benefit history									
Is 5 years									
4 years	1.23	1.17	1.15	1.21	1.20	1.05	1.41	0.72	0.60
3 years	1.26	1.15	1.11	1.30	1.13	1.09	1.40	0.72	0.60
4. Change in the TTW									
Is $9,500									
$10,000	1.43	1.24	1.22	1.25	1.19	1.14	1.31	0.72	0.61
$12,000	1.60	1.02	1.26	1.39	1.30	1.18	1.43	1.20	0.73
$14,000	1.60	1.19	1.30	1.39	1.19	1.22	1.43	1.27	1.08
$15,000	1.60	1.27	1.39	1.39	1.32	1.11	1.43	1.33	1.27
$16,000	1.60	1.44	1.55	1.39	1.36	1.18	1.43	1.29	1.14
$18,000	1.60	1.50	1.28	1.39	1.32	1.28	1.43	1.41	1.24
$19,000	1.60	1.13	1.26	1.39	1.39	1.17	1.43	1.34	1.31
$25,000	1.60	1.58	1.02	1.39	1.41	1.09	1.43	1.41	1.30
$35,000	1.60	1.58	1.29	1.39	1.41	1.73	1.43	1.41	1.57
5. Change in the max(CBC, ABC)									
Is (.06, .03)									
(.07, .03)	1.04	1.18	1.16	1.20	1.14	1.08	1.42	1.00	0.60
(.08, .03)	1.04	1.18	1.16	1.20	1.14	1.08	1.42	1.21	0.83
(.09, .03)	1.04	1.18	1.16	1.20	1.14	1.08	1.42	1.21	0.99
(.06, .04)	1.04	1.18	1.16	1.20	1.14	1.08	1.42	0.72	0.60
(.07, .04)	1.04	1.18	1.16	1.20	1.14	1.08	1.42	1.00	0.60
(.08, .04)	1.04	1.18	1.16	1.20	1.14	1.08	1.42	1.21	0.83
(.09, .04)	1.04	1.18	1.16	1.20	1.14	1.08	1.42	1.21	0.99
(.06, .05)	1.04	1.18	1.16	1.20	1.14	1.08	1.42	0.72	0.60
(.07, .05)	1.04	1.18	1.16	1.20	1.14	1.08	1.42	1.00	0.60
(.08, .05)	1.04	1.18	1.16	1.20	1.14	1.08	1.42	1.21	0.83
(.09, .05)	1.04	1.18	1.16	1.20	1.14	1.08	1.42	1.21	0.99
6. Change in rounding rule									
Is round up to next .001									
round to nearest .001	1.41	1.17	0.82	1.42	1.16	0.92	1.28	0.70	0.59

Table 10a. MC Sensitivity Results from Changes in Michigan UI Statutes
A 1% Increase in the Insured Unemployment Rate
Nominal Value
No Rounding

Firm Type (IUR-Wage)	L-L	L-A	L-H	A-L	A-A	A-H	H-L	H-A	H-H
MC for 1988 Statutes	1.72	1.51	1.36	1.73	1.51	1.36	1.75	1.00	0.97
Statutory Change									
1. ABC reserve ratio multiple									
Is_____.50									
.33	1.56	1.38	1.26	1.57	1.38	1.26	1.58	0.97	0.88
.25	1.46	1.31	1.20	1.47	1.31	1.21	1.48	0.93	0.79
2. Change in the reserve ratio denominator									
Is_____Total Wages									
Total Taxable Wages	1.81	1.82	1.81	1.82	1.82	1.81	1.84	1.00	1.00
3. Change in the number of years in the benefit history									
Is_____5 years									
4 years	1.70	1.47	1.32	1.71	1.48	1.33	1.73	1.00	0.97
3 years	1.66	1.42	1.28	1.66	1.42	1.29	1.68	1.00	0.97
4. Change in the TTW									
Is_____$9,500									
$10,000	1.75	1.53	1.37	1.76	1.53	1.37	1.78	1.00	0.97
$12,000	1.81	1.59	1.42	1.82	1.60	1.42	1.85	1.61	1.43
$14,000	1.81	1.65	1.47	1.82	1.65	1.48	1.85	1.67	1.49
$15,000	1.81	1.67	1.49	1.82	1.68	1.50	1.85	1.69	1.51
$16,000	1.81	1.69	1.52	1.82	1.70	1.52	1.85	1.72	1.53
$18,000	1.81	1.75	1.56	1.82	1.76	1.57	1.85	1.78	1.58
$19,000	1.81	1.78	1.58	1.82	1.79	1.59	1.85	1.81	1.60
$25,000	1.81	1.81	1.67	1.82	1.83	1.68	1.85	1.85	1.69
$35,000	1.81	1.81	1.80	1.82	1.83	1.81	1.85	1.85	1.83
5. Change in the max(CBC, ABC)									
Is_____(.06, .03)									
(.07, .03)	1.72	1.51	1.36	1.73	1.51	1.36	1.75	1.52	0.97
(.08, .03)	1.72	1.51	1.36	1.73	1.51	1.36	1.75	1.52	1.37
(.09, .03)	1.72	1.51	1.36	1.73	1.51	1.36	1.75	1.52	1.37
(.06, .04)	1.72	1.51	1.36	1.73	1.51	1.36	1.75	1.00	0.97
(.07, .04)	1.72	1.51	1.36	1.73	1.51	1.36	1.75	1.52	0.97
(.08, .04)	1.72	1.51	1.36	1.73	1.51	1.36	1.75	1.52	1.37
(.09, .04)	1.72	1.51	1.36	1.73	1.51	1.36	1.75	1.52	1.37
(.06, .05)	1.72	1.51	1.36	1.73	1.51	1.36	1.75	1.00	0.97
(.07, .05)	1.72	1.51	1.36	1.73	1.51	1.36	1.75	1.52	0.97
(.08, .05)	1.72	1.51	1.36	1.73	1.51	1.36	1.75	1.52	1.37
(.09, .05)	1.72	1.51	1.36	1.73	1.51	1.36	1.75	1.52	1.37

Table 10b. MC Sensitivity Results from Changes in Michigan UI Statutes
A Doubling of the Insured Unemployment Rate
Nominal Value
No Rounding

Firm Type (IUR-Wage)	L-L	L-A	L-H	A-L	A-A	A-H	H-L	H-A	H-H
MC for 1988 Statutes	1.72	1.51	1.36	1.74	1.51	1.36	1.76	1.00	0.97
Statutory Change									
1. ABC reserve ratio multiple									
Is_____.50									
.33	1.56	1.38	1.26	1.57	1.38	1.26	1.59	0.98	0.88
.25	1.46	1.31	1.21	1.47	1.31	1.21	1.49	0.93	0.79
2. Change in the reserve ratio denominator									
Is_____Total Wages									
Total Taxable Wages	1.81	1.82	1.81	1.82	1.82	1.81	1.84	1.00	1.00
3. Change in the number of years in the benefit history									
Is_____5 years									
4 years	1.70	1.47	1.32	1.71	1.48	1.33	1.74	1.00	0.97
3 years	1.66	1.42	1.29	1.67	1.43	1.29	1.70	1.00	0.97
4. Change in the TTW									
Is_____$9,500									
$10,000	1.75	1.53	1.37	1.76	1.53	1.38	1.79	1.00	0.97
$12,000	1.81	1.59	1.42	1.83	1.60	1.42	1.86	1.62	1.03
$14,000	1.81	1.65	1.47	1.83	1.66	1.48	1.86	1.67	1.49
$15,000	1.81	1.67	1.50	1.83	1.68	1.50	1.86	1.70	1.51
$16,000	1.81	1.69	1.52	1.83	1.71	1.53	1.86	1.73	1.54
$18,000	1.81	1.76	1.56	1.83	1.77	1.57	1.86	1.80	1.58
$19,000	1.81	1.78	1.58	1.83	1.80	1.59	1.86	1.83	1.60
$25,000	1.81	1.81	1.68	1.83	1.83	1.68	1.86	1.87	1.70
$35,000	1.81	1.81	1.80	1.83	1.83	1.82	1.86	1.87	1.85
5. Change in the max(CBC, ABC)									
Is_____(.06, .03)									
(.07, .03)	1.72	1.51	1.36	1.74	1.51	1.36	1.76	1.28	0.97
(.08, .03)	1.72	1.51	1.36	1.74	1.51	1.36	1.76	1.53	1.17
(.09, .03)	1.72	1.51	1.36	1.74	1.51	1.36	1.76	1.53	1.37
(.06, .04)	1.72	1.51	1.36	1.74	1.51	1.36	1.76	1.00	0.97
(.07, .04)	1.72	1.51	1.36	1.74	1.51	1.36	1.76	1.28	0.97
(.08, .04)	1.72	1.51	1.36	1.74	1.51	1.36	1.76	1.53	1.17
(.09, .04)	1.72	1.51	1.36	1.74	1.51	1.36	1.76	1.53	1.37
(.06, .05)	1.72	1.51	1.36	1.74	1.51	1.36	1.76	1.00	0.97
(.07, .05)	1.72	1.51	1.36	1.74	1.51	1.36	1.76	1.28	0.97
(.08, .05)	1.72	1.51	1.36	1.74	1.51	1.36	1.76	1.53	1.17
(.09, .05)	1.72	1.51	1.36	1.74	1.51	1.36	1.76	1.53	1.37

Table 10c. MC Sensitivity Results from Changes in Michigan UI Statutes
A 1% Increase in the Insured Unemployment Rate
Present Value
No Rounding

Firm Type (IUR-Wage)	L-L	L-A	L-H	A-L	A-A	A-H	H-L	H-A	H-H
MC for 1988 Statutes	1.32	1.13	1.01	1.33	1.14	1.01	1.34	0.70	0.59
Statutory Change									
1. ABC reserve ratio multiple									
Is .50									
.33	1.18	1.02	0.93	1.18	1.03	0.93	1.19	0.61	0.48
.25	1.09	0.97	0.88	1.09	0.97	0.89	1.10	0.53	0.41
2. Change in the reserve ratio denominator									
Is Total Wages									
Total Taxable Wages	1.40	1.40	1.40	1.40	1.40	1.40	1.41	0.82	0.82
3. Change in the number of years in the benefit history									
Is 5 years									
4 years	1.33	1.14	1.02	1.34	1.15	1.02	1.35	0.70	0.59
3 years	1.34	1.14	1.02	1.34	1.14	1.03	1.35	0.70	0.59
4. Change in the TTW									
Is $9,500									
$10,000	1.34	1.15	1.02	1.35	1.15	1.02	1.36	0.72	0.60
$12,000	1.39	1.21	1.06	1.40	1.21	1.06	1.41	1.22	1.07
$14,000	1.39	1.25	1.10	1.40	1.26	1.11	1.41	1.27	1.12
$15,000	1.39	1.28	1.12	1.40	1.28	1.13	1.41	1.29	1.14
$16,000	1.39	1.30	1.14	1.40	1.30	1.15	1.41	1.31	1.16
$18,000	1.39	1.35	1.18	1.40	1.35	1.18	1.41	1.36	1.19
$19,000	1.39	1.37	1.19	1.40	1.37	1.20	1.41	1.39	1.21
$25,000	1.39	1.39	1.28	1.40	1.40	1.28	1.41	1.41	1.29
$35,000	1.39	1.39	1.38	1.40	1.40	1.38	1.41	1.41	1.40
5. Change in the max(CBC, ABC)									
Is (.06, .03)									
(.07, .03)	1.32	1.13	1.01	1.33	1.14	1.01	1.34	1.15	0.59
(.08, .03)	1.32	1.13	1.01	1.33	1.14	1.01	1.34	1.15	1.02
(.09, .03)	1.32	1.13	1.01	1.33	1.14	1.01	1.34	1.15	1.02
(.06, .04)	1.32	1.13	1.01	1.33	1.14	1.01	1.34	0.70	0.59
(.07, .04)	1.32	1.13	1.01	1.33	1.14	1.01	1.34	1.15	0.59
(.08, .04)	1.32	1.13	1.01	1.33	1.14	1.01	1.34	1.15	1.02
(.09, .04)	1.32	1.13	1.01	1.33	1.14	1.01	1.34	1.15	1.02
(.06, .05)	1.32	1.13	1.01	1.33	1.14	1.01	1.34	0.70	0.59
(.07, .05)	1.32	1.13	1.01	1.33	1.14	1.01	1.34	1.15	0.59
(.08, .05)	1.32	1.13	1.01	1.33	1.14	1.01	1.34	1.15	1.02
(.09, .05)	1.32	1.13	1.01	1.33	1.14	1.01	1.34	1.15	1.02

Table 10d. MC Sensitivity Results from Changes in Michigan UI Statutes
A Doubling of the Insured Unemployment Rate
Present Value
No Rounding

Firm Type (IUR-Wage)	L-L	L-A	L-H	A-L	A-A	A-H	H-L	H-A	H-H
MC for 1988 Statutes	1.32	1.14	1.01	1.33	1.14	1.01	1.35	0.70	0.59
Statutory Change									
1. ABC reserve ratio multiple									
Is .50									
.33	1.18	1.03	1.93	1.18	1.03	0.93	1.19	0.61	0.48
.25	1.09	0.97	0.88	1.10	0.97	0.89	1.11	0.54	0.41
2. Change in the reserve ratio denominator									
Is Total Wages									
Total Taxable Wages	1.40	1.40	1.40	1.40	1.40	1.40	1.41	0.82	0.80
3. Change in the number of years in the benefit history									
Is 5 years									
4 years	1.34	1.14	1.02	1.34	1.15	1.02	1.36	0.70	0.59
3 years	1.34	1.14	1.02	1.35	1.14	1.03	1.37	0.70	0.59
4. Change in the TTW									
Is $9,500									
$10,000	1.34	1.15	1.02	1.35	1.16	1.02	1.37	0.71	0.60
$12,000	1.39	1.21	1.06	1.40	1.21	1.07	1.42	1.22	0.77
$14,000	1.39	1.26	1.10	1.40	1.26	1.11	1.42	1.27	1.12
$15,000	1.39	1.28	1.12	1.40	1.28	1.13	1.42	1.30	1.14
$16,000	1.39	1.30	1.14	1.40	1.31	1.15	1.42	1.32	1.16
$18,000	1.39	1.35	1.18	1.40	1.36	1.18	1.42	1.37	1.20
$19,000	1.39	1.37	1.20	1.40	1.38	1.20	1.42	1.40	1.21
$25,000	1.39	1.40	1.28	1.40	1.41	1.28	1.42	1.43	1.30
$35,000	1.39	1.40	1.38	1.40	1.41	1.39	1.42	1.43	1.41
5. Change in the max(CBC, ABC)									
Is (.06, .03)									
(.07, .03)	1.32	1.14	1.01	1.33	1.14	1.01	1.35	0.97	0.59
(.08, .03)	1.32	1.14	1.01	1.33	1.14	1.01	1.35	1.15	0.87
(.09, .03)	1.32	1.14	1.01	1.33	1.14	1.01	1.35	1.15	1.02
(.06, .04)	1.32	1.14	1.01	1.33	1.14	1.01	1.35	0.70	0.59
(.07, .04)	1.32	1.14	1.01	1.33	1.14	1.01	1.35	0.97	0.59
(.08, .04)	1.32	1.14	1.01	1.33	1.14	1.01	1.35	1.15	0.87
(.09, .04)	1.32	1.14	1.01	1.33	1.14	1.01	1.35	1.15	1.02
(.06, .05)	1.32	1.14	1.01	1.33	1.14	1.01	1.35	0.70	0.59
(.07, .05)	1.32	1.14	1.01	1.33	1.14	1.01	1.35	0.97	0.59
(.08, .05)	1.32	1.14	1.01	1.33	1.14	1.01	1.35	1.15	0.87
(.09, .05)	1.32	1.14	1.01	1.33	1.14	1.01	1.35	1.15	1.02

The first set of sensitivity results presented in Table 9a report the results of changes in the multiplier on the experience rating account deficiency ratio (ERADR) in the ABC formula. If the ABC part of the total tax rate during any of the periods of the simulation run is greater than zero, it is expected that reducing this multiple should cause the MC to fall. From Table 9a it can be seen that a reduction in the ABC reserve ratio multiple from .50 to .33 causes all MC estimates to either fall or stay the same. Reading across the firms from left to right the first seven MCs fall, MC remains constant for the firms with high IUR (5.8%) and average or high wages. A second reduction in the multiple to .25 can be seen to reduce the MC even further. The reductions in MC are observed for all firm types in Table 10a where there is no rounding. Recall that the reason for removing the rounding rules is to clearly illustrate the workings of the statutory provisions.

The second set of results given in Table 9a report on the effect of replacing total wages in the denominator of the reserve ratio of the ABC with total taxable wages. Since, on a per worker basis, all hypothetical firms have average wages greater than the Michigan taxable wage base of $9,500, this change would tend to raise tax rates and therefore MC. This increase in the MC will only occur if the ABC rate before the change was not always at the upper limit of .03 (3%). Furthermore, the increase in MC should be relatively more for higher wage firms since the reduction in the denominator of ERADR is greater. The estimates all either increase or remain unchanged. The estimates given for item two in Table 10a provide even stronger confirmation of the effect of this statute change on the degree of experience rating.

It is also important to note that the MC estimates for the first seven firm types listed in Table 10a (the firms below the CBC cap) the MC is about the same across all firms and equal to around 1.82, whereas MC falls as total wages rise under current statutory law. This occurs because under current law total wages is used as the base to calculate the ABC tax rate. Thus the calculated tax rate must fall as firm wages rise, lowering MC.

The third change considered is the number of years in the history of benefit charges in the CBC. Michigan considers a five year history, the longest among the states. The alternatives considered here are four and three years. The change to fewer years essentially speeds up the benefit pay back, associated with the CBC component of the tax, thereby decreasing any ERA deficiency sooner and lowering any ABC taxes. The results given in Table 9a are generally consistent with the expectations, except that for high IUR firms with average and high wages MC remains constant. Again, this is due to the cap on the CBC tax rate. The single contradictory result is found for a firm with low IUR and low wages. For this firm the MC with the three year benefit history is greater than that for a four year history; indeed it is greater than for the statutory case of a five year history. This result must be due to the statutory rounding provisions as it disappears in the results based on no rounding given in Table 10a. The results in Table 10a are uniformly consistent with expectations.

The fourth item changed is the taxable wage base.[33] In Table 9a we report on a sensitivity analysis of experience rating for nine alternative total taxable wage (TTW) levels. It is expected that by increasing the taxable wage base there will be an increase in MC, but that MC across firm types should equalize as the TW rises and the various constraints in the system become ineffective. Recall the possible average wages (Low = $11,300, Average = $20,200, High = $32,700) for the hypothetical firm types. Due to the statutory rounding the results in Table 9a are difficult to clearly interpret, but in Table 10a it can easily be seen that as TTW rises the MC rises until the firm's average wage level is reached. Furthermore, in the absence of rounding MC across firms equalizes around 1.82. This result is universally true for the Michigan system when all tax rate caps and taxable wage base ceilings are ineffective.

If the tax rate caps on CBC and ABC are binding constraints on the taxes levied on a firm, raising these caps should result in higher MC estimates. The fifth set of sensitivity results are a guide to exactly which experience rated tax rate ceilings are binding for the various firm types. In either Table 9a or Table 10a, under item 5 the MC estimates remain unchanged as the CBC and ABC ceilings are changed for the first seven firm types. For the high IUR average wage (H-A) firm it is seen that the CBC cap is a binding constraint, when the CBC cap is raised to 7% MC rises and further increases in the CBC cap leave MC unchanged. Holding CBC constant and raising the ABC cap does not affect MC for the H-A firm; the ABC cap is not a binding constraint. In the absence of caps,

---

[33] Hamermesh (1977) has argued that the taxable wage base for UI should equal that used for social security taxes. In 1988 the taxable wage base for social security was $45,000.

the CBC rate for the H-H firm would be between 7% and 8%. Also, for the H-H firm the cap on the ABC is not a binding constraint. When the ABC and CBC caps are made ineffective MC estimates rise, however, the MCs do not equalize across firms, at say 1.81.

It can be shown that when total taxable wages is the denominator in ERADR, if firms do not hit CBC and ABC caps, MC becomes equal across firms at about 1.82 regardless of the spike of IUR. Raising the TTW achieves the same result once total payroll is less than or equal to total taxable wages (TTW). For the H-A and H-H firms when TTW = $35,000 the caps become ineffective because the benefit ratio in CBC falls.

Finally, as discussed in Section III, Michigan statutes call for the various components of the total UI tax rate to be rounded up to the next .001 instead of to the nearest .001, which is the standard rule for rounding in arithmetic. For example, if a tax formula yields a rate of .0221 (2.21%) arithmetic rounding gives .022 (2.2%) whereas Michigan statutory rounding up yields .023 (2.3%). On first consideration the only potential impact of this change would seem to be a reduction in marginal cost. However, changing the rounding rule from the round-up to arithmetic rounding could result in an increase, a decrease, or no change in MC estimates, since the rounding rules are applied to both the control and the spike level of taxes. The arithmetic rule will sometimes round the tax rate up, just as the statutory rule, and sometimes round it down. Since MC is computed as spike minus control taxes, if the control level of taxes falls (i.e., the tax rate is rounded down not up)

and the spike level of taxes remains unchanged (i.e., both rules round up) the MC will rise.

For all of the nine cases considered on Table 9.a, the change to arithmetic rounding reduces the MC. Across the four tables 9.a to 9.d, MC rises for eight of the thirty-six cases, this is somewhat less than would be predicted on probability grounds. The arithmetic rounding was included as an item in the list of statutory features to adjust in the sensitivity analysis, since it is a potential policy option. While rounding up is likely to slightly increase tax revenues to the UI trust fund, the sensitivity analysis confirms that the impact on experience rating for a particular firm is uncertain. In some of the cases considered rounding up increases the responsiveness of taxes to benefit payment changes, but in the majority of the cases examined here it diminishes the effective degree of experience rating.

Overall, the sensitivity analysis performed for a doubling of the IUR yielded results similar to those for the 1% spike. It should be observed that when the CBC cap is ineffective, replacing total wages in the ERADR denominator with total taxable wages (the second of the six features subjected to sensitivity analysis) the nominal MC is about 1.82 for the doubling IUR spike. The same as when the caps are removed and a 1% spike is imposed.

While the discounted results are uniformly smaller than the nominal results, the comparisons across estimates remain similar.

V. CONCLUSIONS

The purpose of this study has been to compare unemployment insurance experience rating in Michigan to that in 27 other states in 1988. The full impact of the current UI statutes is approximated, since all of the provisions of the 1988 statutes are fully reflected in firm costs and benefit payments. Since the interstate comparisons are made for hypothetical situations in which the firm and worker characteristics are identical across states, differences in experience rating across states can be attributed to differences in their UI statutes.

The research underlying this study was accomplished using a detailed, micro-simulation model, called UIMSM. UIMSM reproduces the manner in which both worker benefits and employer UI taxes are determined in each state. The model is necessarily highly stylized, meaning that it is by no means a complete description of the institutional characteristics of UI or the complicated world in which firms actually operate. The limitations of UIMSM notwithstanding, our judgment is that UIMSM incorporates the most important benefit and tax features of each state's UI system for the hypothetical firms and workers investigated in this study.

The statutory provisions of the Michigan UI tax system experience rate the hypothetical firms considered here relatively well compared to other state systems. Taxes for firms under the Michigan system are equally responsive to modest and more severe bouts of insured unemployment. If all tax payback streams are discounted, the present value of cost recovery for the Michigan

system is somewhat lower since Michigan has a relatively long pay back period compared to other states. Among the regional groupings considered, the Great Lakes states have the highest relative degree of statutory experience rating, and Michigan is always ranked in the top half of the eight Great Lakes states.

The sensitivity analysis of the statutes confirmed certain expectations, and revealed several other interesting facts about how the various provisions in the Michigan UI tax system affect the degree of experience rating.

It was not surprising to find that a reduction in the multiplier on the experience rating account deficiency ratio in the ABC reduces marginal tax costs, or that raising tax rate caps affects only those firms currently at the maximum rates. Also as expected was the finding that a shorter benefit history in the benefit ratio of the CBC lowers marginal tax cost.

Perhaps the most enlightening result of the sensitivity analysis related to changes in the taxable wage base. Changing the denominator in the experience rating account deficiency ratio from total payroll to the total taxable wage base raises the marginal tax cost, but also leads to equality of the marginal UI tax cost of benefit charges across firm types. This same phenomenon of marginal tax costs becoming equal results when the taxable wage base is raised to exceed the average annual wage in all firms. Furthermore, marginal costs become equal across firm types for these statutory changes when either a modest or a more severe spike of insured unemployment occurs.

Finally, we repeat one important caveat concerning the interpretation of these results. The estimates reported here apply only in the in the context of the carefully specified cases considered. Without a close examination of the actual distribution of firms by insured unemployment, average wages, and initial reserve account level, we can not reasonably estimate how many firms of the hypothetical type considered here actually exist in Michigan or other states. Similarly, we may have provided little information here concerning how well the systems experience rate firms which do exist. The present findings should be reexamined in the context of a "macro" study which relies on the actual distribution of firms by insured unemployment, average wages, and initial reserve account level.

SELECTED REFERENCES

Becker, Joseph (1972), Experience Rating in Unemployment Insurance: Virtue or Vice, Kalamazoo, MI: W.E. Upjohn Institute for Employment Research.

Blaustein, Saul (1982), Unemployment Insurance Fund Insolvency and Debt in Michigan. Kalamazoo, MI: W. E. Upjohn Institute for Employment Research.

Burtless, Gary (1983), "Why is Insured Unemployment So Low?," Brookings Papers on Economic Activity, No. 1: 225-252.

Commerce Clearing House 1988 Unemployment Insurance with Social Security. Chicago, IL: Commerce Clearing House.

Corson, Walter and Nicholson, Walter (1988), An Examination of Declining UI Claims During the 1980s, UI Occasional Paper 88-3, Employment and Training Administration. Washington, DC: U.S. Department of Labor.

Economic Alliance for Michigan (1986), Refinancing of Michigan's Unemployment Insurance System. Unemployment Insurance Report (July): 1-8.

Haber, William and Murray, Merrill G. (1966), Unemployment Insurance in the American Economy: An Historical Review and Analysis. Homewood, IL: Richard D. Irwin.

Hamermesh, Daniel S. (1977), Jobless Pay and the Economy, Policy Studies in Employment and Welfare Number 29. Baltimore, MD: The Johns Hopkins University Press.

Hunt, H. Allan and Blaustein, Saul (1984), The Cost of Unemployment Insurance by Size of Firm, in A Comparative Study of State Controlled Business Costs by Size of Firm. Ann Arbor, MI: Independent Business Research Office of Michigan.

Hunt, Timothy (1987), Employer Costs and Worker Benefits of Unemployment Insurance In Michigan: An Interstate Comparison for 1987. Kalamazoo, MI: The W. E. Upjohn Institute for Employment Research.

_____ (1986), Employer Costs and Worker Benefits of Unemployment Insurance In Michigan Relative to Selected Other States. Detroit, MI: The Economic Alliance for Michigan.

_____ (1985), Michigan's Business Tax Costs Relative to the Other Great Lakes States. Kalamazoo, MI: The W. E. Upjohn Institute for Employment Research.

Michigan Employment Security Commission (1985), A Report on Implications of a Wage Record Reporting Unemployment Insurance System. Detroit, MI: Michigan Employment Security Commission.

National Foundation for Unemployment Compensation and Workers' Compensation (1986). Highlights of State Unemployment Compensation Laws. Washington, DC: National Foundation for Unemployment Compensation and Workers' Compensation.

National Commission on Unemployment Compensation (1980) Unemployment Compensation: Final Report. Washington, DC: National Commission on Unemployment Compensation.

Office of the Inspector General (1985), Financing the Unemployment Insurance Program has Shifted form a System Based on Individual Employer's Responsibility Towards a Socialized System, Audit Report Number 03-3-203-03-315, Office of Audit. Washington, DC: U.S. Department of Labor.

St. Antoine, Theodore (1984), Workers' Compensation in Michigan: Costs, Benefits, and Fairness. A Report to Governor James J. Blanchard's Cabinet Council on Jobs and Economic Development. Lansing, MI: Cabinet Council on Jobs and Economic Development.

Summers, Lawrence H. (1986), "Investment Incentives and the Discounting of Depreciation Allowances," NBER Working Paper Series, Working Paper No. 1941, Cambridge, MA: National Bureau of Economic Research.

U.S. Bureau of the Census (1980), General Social and Economic Characteristics: United States Summary, 1980 Census of Population, PC80-1-C1. Washington, DC: U.S. Department of Commerce.

U.S. Bureau of Labor Statistics (1988), Employment and Earnings (various issues). Washington, DC: U.S. Department of Labor.

_____ (1987), News, USDC 87-377. Washington, DC: U.S. Department of Labor.

U.S. Employment and Training Administration (1988), UI Data Summary, 4th Quarter CY88, December 1988, Washington, DC:

_____ (1987a) Unemployment Insurance Financial Data, ET Handbook 394. Washington, DC: U.S. Department of Labor.

_____ (1987b) Comparison of State Unemployment Insurance Laws. Washington, DC: U.S. Department of Labor.

_____ (1987c) Quarterly Unemployment Insurance Compilation and Characteristics (various issues). Washington, DC: U.S. Department of Labor.

_____ (1979) Unemployment Insurance Statistics. Washington, DC: U.S. Department of Labor.

Vroman, Wayne (1986), The Funding Crisis in State Unemployment Insurance. Kalamazoo, MI: W.E. Upjohn Institute for Employment Research.

Wandner, Stephen A. and Crosslin, Robert L. (1980), Measuring Experience Rating, in National Commission on Unemployment Compensation Unemployment Compensation: Final Report. Washington, DC: National Commission on Unemployment Compensation.

APPENDIX A

Total Figures for Marginal Cost Computation

Table A.1 Total Figures for Marginal Cost Computation
A 1% Increase in the Insured Unemployment Rate
Nominal Value in Dollars
Low IUR , Low Wages
(IUR = 1.45% , Wages = $11,300)

State	MC[a]	TAX[b]	BC[c]	TAXNEW[d]	BCNEW[e]
Alabama	1.38	120,430	173,224	128,439	179,029
Arkansas	0.88	229,023	152,064	233,508	157,161
California	0.91	154,850	137,984	159,056	142,609
Connecticut	0.79	271,231	160,012	275,482	165,374
Florida	0.82	168,928	152,064	173,132	157,161
Georgia	1.05	175,233	165,884	181,083	171,443
Illinois	2.13	432,895	150,656	443,632	155,706
Indiana	0.93	137,254	135,168	141,458	139,699
Iowa	2.16	407,755	179,096	420,722	185,098
Kentucky	0.97	202,322	196,712	208,709	203,304
Maryland	1.09	211,160	173,224	217,471	179,029
Massachusetts	0.96	217,659	169,344	222,574	174,441
Michigan	1.46	380,546	173,224	389,013	179,029
Minnesota	0.84	382,471	153,264	386,785	158,401
Mississippi	0.83	112,618	152,064	116,829	157,161
Missouri	0.94	181,597	178,816	187,208	184,810
New Jersey	1.04	185,049	190,840	191,711	197,236
New York	0.95	295,623	153,472	300,518	158,616
North Carolina	1.17	186,595	152,064	192,583	157,161
Ohio	1.25	264,946	152,064	271,322	157,161
Oregon	0.97	674,949	198,528	681,371	205,183
Pennsylvania	0.92	484,128	153,472	488,860	158,616
South Carolina	0.00	183,005	152,064	182,985	157,161
Tennessee	0.93	140,773	135,168	144,981	139,699
Texas	1.28	669,590	165,884	676,708	171,443
Virginia	1.05	177,374	165,884	183,196	171,443
Washington	2.04	720,140	177,184	731,017	182,517
Wisconsin	2.32	343,342	158,544	355,670	163,857

[a] MC = (TAXNEW - TAX)/(BCNEW - BC) = Marginal UI tax cost of a change in benefit charges.

[b] TAX = Total UI taxes in control run.

[c] BC = Total UI benefits charged in control run.

[d] TAXNEW = Total UI taxes in spike (1% IUR increase) run.

[e] BCNEW = Total UI benefits charged in spike (1% IUR increase) run.

Table A.2 Total Figures for Marginal Cost Computation
A 1% Increase in the Insured Unemployment Rate
Present Value in Dollars (Interest Rate = 10%)
Low IUR , Low Wages
(IUR = 1.45% , Wages = $11,300)

State	PVMC[a]	PVTAX[b]	PVBC[c]	PVTAXNEW[d]	PVBCNEW[e]
Alabama	1.09	56,391	81,111	62,734	86,917
Arkansas	0.93	107,711	71,203	112,432	76,301
California	0.75	72,508	64,610	75,992	69,236
Connecticut	0.63	127,003	74,925	130,360	80,287
Florida	0.68	79,100	71,203	82,582	76,301
Georgia	0.78	82,530	77,675	86,893	83,234
Illinois	1.68	202,702	70,544	211,179	75,594
Indiana	0.77	65,153	63,292	68,645	67,823
Iowa	1.55	190,930	83,861	200,219	89,863
Kentucky	0.59	96,776	92,110	100,635	98,702
Maryland	0.81	98,875	81,111	103,561	86,917
Massachusetts	0.80	102,166	79,295	106,239	84,392
Michigan	1.15	178,189	81,111	184,853	86,917
Minnesota	0.59	179,091	71,765	182,147	76,903
Mississippi	0.65	52,733	71,203	56,062	76,301
Missouri	0.60	85,302	83,730	88,921	89,724
New Jersey	0.65	85,479	89,360	89,637	95,756
New York	0.79	138,425	71,863	142,484	77,007
North Carolina	0.66	88,457	71,203	91,811	76,301
Ohio	0.87	125,102	71,203	129,543	76,301
Oregon	0.75	316,042	92,960	321,056	99,615
Pennsylvania	0.72	227,972	71,863	231,699	77,007
South Carolina	0.00	85,691	71,203	85,671	76,301
Tennessee	0.77	65,916	63,292	69,400	67,823
Texas	1.03	313,533	77,675	319,234	83,234
Virginia	0.79	83,055	77,675	87,454	83,234
Washington	1.53	337,203	82,966	345,358	88,299
Wisconsin	1.20	162,673	74,238	169,047	79,551

[a] PVMC = Present value of (TAXNEW - TAX)/(BCNEW - BC) = Present value of marginal UI tax cost of a change in benefit charges.

[b] PVTAX = Present value of total UI taxes in control run.

[c] PVBC = Present value of total UI benefits charged in control run.

[d] PVTAXNEW = Present value of total UI taxes in spike (1% IUR increase) run.

[e] PVBCNEW = Present value of total UI benefits charged in spike (1% IUR increase) run.

Table A.3 Total Figures for Marginal Cost Computation
A 1% Increase in the Insured Unemployment Rate
Nominal Value in Dollars
Low IUR , Average Wages
(IUR = 1.45% , Wages = $20,200)

State	MC[a]	TAX[b]	BC[c]	TAXNEW[d]	BCNEW[e]
Alabama	1.37	121,200	176,160	129,280	182,064
Arkansas	0.99	351,480	273,152	360,570	282,308
California	0.99	231,896	214,016	238,966	221,190
Connecticut	1.14	401,576	300,940	413,050	311,025
Florida	0.93	296,940	273,152	305,424	282,308
Georgia	1.09	251,490	242,220	360,353	250,337
Illinois	1.14	436,320	285,824	447,228	295,405
Indiana	1.33	163,317	158,400	170,387	163,710
Iowa	3.73	545,344	265,708	578,565	274,613
Kentucky	1.19	245,632	243,688	255,328	251,855
Maryland	1.05	353,500	300,940	364,105	311,025
Massachusetts	1.03	392,385	343,392	402,990	353,728
Michigan	1.45	518,130	314,886	533,482	325,439
Minnesota	1.28	541,753	274,352	553,484	283,548
Mississippi	1.24	155,540	204,160	164,024	211,004
Missouri	1.07	197,960	197,120	205,030	203,728
New Jersey	0.77	355,586	347,916	364,605	359,576
New York	1.00	395,920	253,440	404,404	261,935
North Carolina	1.07	330,261	273,152	340,039	282,308
Ohio	0.98	361,984	247,104	370,064	255,387
Oregon	0.25	899,471	322,432	902,144	333,240
Pennsylvania	1.04	597,920	277,376	607,616	286,674
South Carolina	0.71	220,937	206,976	225,886	213,914
Tennessee	1.19	216,695	212,608	225,179	219,735
Texas	1.22	835,472	296,536	847,592	306,474
Virginia	1.10	267,246	258,368	276,790	267,027
Washington	1.59	1,088,075	316,736	1,103,187	326,270
Wisconsin	1.36	530,287	284,792	543,291	294,336

[a] MC = (TAXNEW - TAX)/(BCNEW - BC) = Marginal UI tax cost of a change in benefit charges.

[b] TAX = Total UI taxes in control run.

[c] BC = Total UI benefits charged in control run.

[d] TAXNEW = Total UI taxes in spike (1% IUR increase) run.

[e] BCNEW = Total UI benefits charged in spike (1% IUR increase) run.

Table A.4 Total Figures for Marginal Cost Computation
A 1% Increase in the Insured Unemployment Rate
Present Value in Dollars (Interest Rate = 10%)
Low IUR , Average Wages
(IUR = 1.45% , Wages = $20,200)

State	PVMC[a]	PVTAX[b]	PVBC[c]	PVTAXNEW[d]	PVBCNEW[e]
Alabama	1.08	56,751	82,486	63,155	88,390
Arkansas	0.83	166,126	127,902	173,742	137,059
California	0.67	109,903	100,212	114,745	107,386
Connecticut	0.90	188,036	140,914	197,119	150,999
Florida	0.77	139,041	127,902	146,074	137,059
Georgia	0.75	117,759	113,419	123,827	121,536
Illinois	0.90	204,305	133,836	212,936	143,417
Indiana	0.61	78,036	74,170	81,263	79,480
Iowa	2.71	255,355	124,417	279,461	133,321
Kentucky	0.80	117,123	114,106	123,637	122,273
Maryland	0.79	165,525	140,914	173,459	150,999
Massachusetts	0.69	184,366	160,792	191,449	171,128
Michigan	1.11	242,612	147,444	254,328	157,997
Minnesota	0.92	253,673	128,464	262,151	137,660
Mississippi	0.98	72,831	95,597	79,544	102,441
Missouri	0.74	92,694	92,301	97,581	98,908
New Jersey	0.69	168,382	162,910	176,397	174,570
New York	0.80	185,388	118,672	192,179	127,168
North Carolina	0.89	155,876	127,902	164,040	137,059
Ohio	0.82	170,037	115,705	176,804	123,989
Oregon	0.19	421,174	150,977	423,254	161,786
Pennsylvania	0.83	279,974	129,880	287,646	139,178
South Carolina	0.75	104,585	96,916	109,796	103,854
Tennessee	0.78	102,523	99,553	108,103	106,680
Texas	0.99	391,206	138,852	401,071	148,790
Virginia	0.83	125,137	120,980	132,363	129,638
Washington	1.20	509,487	148,310	520,944	157,844
Wisconsin	1.13	250,280	133,353	261,037	142,897

[a] PVMC = Present value of (TAXNEW - TAX)/(BCNEW - BC) = Present value of marginal UI tax cost of a change in benefit charges.

[b] PVTAX = Present value of total UI taxes in control run.

[c] PVBC = Present value of total UI benefits charged in control run.

[d] PVTAXNEW = Present value of total UI taxes in spike (1% IUR increase) run.

[e] PVBCNEW = Present value of total UI benefits charged in spike (1% IUR increase) run.

Table A.5 Total Figures for Marginal Cost Computation
A 1% Increase in the Insured Unemployment Rate
Nominal Value in Dollars
Low IUR , High Wages
(IUR = 1.45% , Wages = $32,700)

State	MC[a]	TAX[b]	BC[c]	TAXNEW[d]	BCNEW[e]
Alabama	1.37	121,200	176,160	129,280	182,064
Arkansas	0.92	372,690	294,272	381,780	304,136
California	0.90	250,278	233,728	257,348	241,563
Connecticut	1.08	458,944	358,192	471,852	370,196
Florida	1.12	296,940	281,600	307,545	291,039
Georgia	1.09	251,490	242,220	260,353	250,337
Illinois	1.14	436,320	285,824	447,228	295,405
Indiana	0.00	169,680	158,400	169,680	163,710
Iowa	3.74	546,612	265,708	579,942	274,613
Kentucky	1.19	245,632	243,688	255,328	251,855
Maryland	1.05	353,500	300,940	364,105	311,025
Massachusetts	0.97	485,002	434,336	497,728	447,410
Michigan	1.29	556,510	355,256	571,862	367,162
Minnesota	1.38	638,118	358,832	654,662	370,860
Mississippi	1.24	155,540	204,160	164,024	211,004
Missouri	1.07	197,960	197,120	205,030	203,728
New Jersey	1.07	358,752	353,788	371,478	365,644
New York	1.00	395,920	253,440	404,404	261,935
North Carolina	1.14	389,270	321,024	401,511	331,785
Ohio	1.04	393,496	278,080	403,192	287,401
Oregon	0.26	904,960	322,432	907,788	333,240
Pennsylvania	1.13	662,560	342,144	675,488	353,613
South Carolina	0.71	220,937	206,976	225,886	213,914
Tennessee	0.87	224,119	218,240	230,482	225,556
Texas	1.33	851,632	308,280	865,368	318,611
Virginia	1.10	267,246	258,368	276,790	267,027
Washington	0.93	1,156,197	327,712	1,165,325	337,576
Wisconsin	1.33	545,924	293,600	558,968	303,439

[a] MC = (TAXNEW - TAX)/(BCNEW - BC) = Marginal UI tax cost of a change in benefit charges.

[b] TAX = Total UI taxes in control run.

[c] BC = Total UI benefits charged in control run.

[d] TAXNEW = Total UI taxes in spike (1% IUR increase) run.

[e] BCNEW = Total UI benefits charged in spike (1% IUR increase) run.

Table A.6 Total Figures for Marginal Cost Computation
A 1% Increase in the Insured Unemployment Rate
Present Value in Dollars (Interest Rate = 10%)
Low IUR , High Wages
(IUR = 1.45% , Wages = $32,700)

State	PVMC[a]	PVTAX[b]	PVBC[c]	PVTAXNEW[d]	PVBCNEW[e]
Alabama	1.08	56,751	82,486	63,155	88,390
Arkansas	0.86	175,581	137,792	184,045	147,656
California	0.66	118,216	109,442	123,372	117,277
Connecticut	0.85	214,899	167,722	225,112	179,726
Florida	0.93	139,041	131,858	147,832	141,297
Georgia	0.70	117,759	113,419	123,430	121,536
Illinois	0.90	204,305	133,836	212,936	143,417
Indiana	0.00	79,452	74,170	79,452	79,480
Iowa	2.72	255,949	124,417	280,142	133,321
Kentucky	0.80	117,123	114,106	123,637	122,273
Maryland	0.79	165,525	140,914	173,459	150,999
Massachusetts	0.65	227,418	203,376	235,972	216,450
Michigan	0.97	260,584	166,347	272,083	178,253
Minnesota	0.99	298,796	168,022	310,753	180,050
Mississippi	0.98	72,831	95,597	79,544	102,441
Missouri	0.74	92,694	92,301	97,581	98,908
New Jersey	0.75	170,451	165,660	179,297	177,516
New York	0.80	185,388	118,672	192,179	127,168
North Carolina	0.93	183,588	150,318	193,586	161,079
Ohio	0.86	185,086	130,210	193,117	139,531
Oregon	0.21	423,744	150,977	425,975	161,786
Pennsylvania	0.89	310,241	160,208	320,474	171,676
South Carolina	0.75	104,585	96,916	109,796	103,854
Tennessee	0.70	105,451	102,190	110,570	109,506
Texas	1.08	398,773	144,351	409,912	154,682
Virginia	0.83	125,137	120,980	132,363	129,638
Washington	0.70	541,385	153,450	548,263	163,314
Wisconsin	1.08	256,891	137,477	267,525	147,316

[a] PVMC = Present value of (TAXNEW - TAX)/(BCNEW - BC) = Present value of marginal UI tax cost of a change in benefit charges.

[b] PVTAX = Present value of total UI taxes in control run.

[c] PVBC = Present value of total UI benefits charged in control run.

[d] PVTAXNEW = Present value of total UI taxes in spike (1% IUR increase) run.

[e] PVBCNEW = Present value of total UI benefits charged in spike (1% IUR increase) run.

Table A.7 Total Figures for Marginal Cost Computation
A 1% Increase in the Insured Unemployment Rate
Nominal Value in Dollars
Average IUR , Low Wages
(IUR = 2.9% , Wages = $11,300)

State	MC[a]	TAX[b]	BC[c]	TAXNEW[d]	BCNEW[e]
Alabama	-0.01	244,889	348,808	244,851	354,619
Arkansas	1.79	383,149	306,288	392,293	311,390
California	1.23	296,547	277,928	302,245	282,558
Connecticut	0.80	435,779	322,204	440,087	327,572
Florida	0.84	329,497	306,288	333,759	311,390
Georgia	0.86	345,141	334,028	349,921	339,592
Illinois	2.14	805,138	303,452	815,941	308,507
Indiana	0.94	275,058	272,256	279,325	276,791
Iowa	-0.06	763,228	360,632	762,881	366,640
Kentucky	0.98	399,170	396,104	405,636	402,703
Maryland	1.23	401,127	348,808	408,246	354,619
Massachusetts	1.02	374,534	323,568	380,199	329,102
Michigan	1.46	557,919	348,808	566,417	354,619
Minnesota	1.27	565,565	308,688	572,079	313,830
Mississippi	1.40	257,867	306,288	265,002	311,390
Missouri	1.14	378,922	375,412	386,042	381,666
New Jersey	0.76	389,109	384,280	393,991	390,682
New York	0.69	456,282	309,124	459,813	314,274
North Carolina	1.41	369,043	306,288	376,225	311,390
Ohio	0.95	424,475	306,288	429,306	311,390
Oregon	-0.06	791,791	399,876	791,409	406,537
Pennsylvania	0.93	636,712	309,124	641,510	314,274
South Carolina	0.98	319,111	306,288	324,088	311,390
Tennessee	0.94	274,342	272,256	278,605	276,791
Texas	1.30	893,030	334,028	900,236	339,592
Virginia	1.09	345,256	334,028	351,306	339,592
Washington	1.10	949,748	338,548	956,093	344,338
Wisconsin	1.70	575,038	319,248	584,065	324,566

[a] MC = (TAXNEW - TAX)/(BCNEW - BC) = Marginal UI tax cost of a change in benefit charges.

[b] TAX = Total UI taxes in control run.

[c] BC = Total UI benefits charged in control run.

[d] TAXNEW = Total UI taxes in spike (1% IUR increase) run.

[e] BCNEW = Total UI benefits charged in spike (1% IUR increase) run.

Table A.8 Total Figures for Marginal Cost Computation
A 1% Increase in the Insured Unemployment Rate
Present Value in Dollars (Interest Rate = 10%)
Average IUR , Low Wages
(IUR = 2.9% , Wages = $11,300)

State	PVMC[a]	PVTAX[b]	PVBC[c]	PVTAXNEW[d]	PVBCNEW[e]
Alabama	-0.01	114,668	163,328	114,630	169,139
Arkansas	1.48	179,408	143,418	186,979	148,520
California	0.64	139,843	130,139	142,814	134,769
Connecticut	0.63	204,052	150,871	207,450	156,238
Florida	0.69	154,286	143,418	157,812	148,520
Georgia	0.66	162,365	156,407	166,030	161,972
Illinois	1.68	377,003	142,090	385,514	147,145
Indiana	0.63	129,970	127,483	132,821	132,018
Iowa	-0.06	357,378	168,864	357,032	174,872
Kentucky	0.41	187,843	185,474	190,564	192,073
Maryland	0.92	187,826	163,328	193,198	169,139
Massachusetts	0.62	175,933	151,509	179,388	157,044
Michigan	1.15	261,244	163,328	267,917	169,139
Minnesota	0.90	264,824	144,542	269,477	149,684
Mississippi	1.11	120,745	143,418	126,388	148,520
Missouri	0.36	178,694	175,785	180,959	182,039
New Jersey	0.67	183,940	179,938	188,249	186,339
New York	0.32	214,211	144,746	215,851	149,896
North Carolina	1.16	174,102	143,418	180,031	148,520
Ohio	0.98	198,759	143,418	203,743	148,520
Oregon	-0.06	370,753	187,240	370,371	193,902
Pennsylvania	0.73	298,138	144,746	301,913	149,896
South Carolina	0.72	150,968	143,418	154,652	148,520
Tennessee	0.78	129,505	127,483	133,032	132,018
Texas	1.04	418,158	156,407	423,923	161,972
Virginia	0.82	161,665	156,407	166,233	161,972
Washington	0.81	444,716	158,524	449,390	164,314
Wisconsin	1.34	271,346	149,487	278,465	154,805

[a] PVMC = Present value of (TAXNEW - TAX)/(BCNEW - BC) = Present value of marginal UI tax cost of a change in benefit charges.

[b] PVTAX = Present value of total UI taxes in control run.

[c] PVBC = Present value of total UI benefits charged in control run.

[d] PVTAXNEW = Present value of total UI taxes in spike (1% IUR increase) run.

[e] PVBCNEW = Present value of total UI benefits charged in spike (1% IUR increase) run.

Table A.9 Total Figures for Marginal Cost Computation
A 1% Increase in the Insured Unemployment Rate
Nominal Value in Dollars
Average IUR , Average Wages
(IUR = 2.9% , Wages = $20,200)

State	MC[a]	TAX[b]	BC[c]	TAXNEW[d]	BCNEW[e]
Alabama	0.00	247,200	354,720	247,200	360,629
Arkansas	1.35	627,270	550,184	639,630	559,349
California	1.00	447,020	431,072	454,230	438,253
Connecticut	1.01	716,674	605,980	726,912	616,075
Florida	0.94	591,220	550,184	599,872	559,349
Georgia	0.99	498,417	487,740	506,451	495,865
Illinois	1.35	797,220	575,708	810,198	585,298
Indiana	1.22	319,403	319,050	325,892	324,365
Iowa	-0.01	1,233,015	535,036	1,232,945	543,949
Kentucky	0.10	510,880	490,696	511,704	498,870
Maryland	1.07	692,160	605,980	702,975	616,075
Massachusetts	0.96	703,696	656,124	714,511	667,346
Michigan	1.48	841,510	634,062	857,166	644,625
Minnesota	1.29	887,360	552,584	899,277	561,789
Mississippi	0.84	374,920	411,220	380,688	418,070
Missouri	0.94	415,296	413,840	421,785	420,734
New Jersey	1.05	703,065	700,572	715,285	712,243
New York	0.00	681,345	510,480	681,345	518,984
North Carolina	1.09	670,865	550,184	680,828	559,349
Ohio	1.09	616,352	497,718	625,416	506,009
Oregon	-0.01	1,028,977	649,444	1,028,823	660,263
Pennsylvania	1.06	889,920	558,692	899,808	567,999
South Carolina	1.09	409,528	416,892	417,098	423,837
Tennessee	1.21	435,484	428,236	444,136	435,370
Texas	1.33	1,231,056	597,112	1,244,240	607,059
Virginia	1.12	545,076	520,256	554,809	528,923
Washington	-0.03	1,418,102	605,192	1,417,783	615,543
Wisconsin	0.99	910,552	573,464	920,014	583,017

[a] MC = (TAXNEW - TAX)/(BCNEW - BC) = Marginal UI tax cost of a change in benefit charges.

[b] TAX = Total UI taxes in control run.

[c] BC = Total UI benefits charged in control run.

[d] TAXNEW = Total UI taxes in spike (1% IUR increase) run.

[e] BCNEW = Total UI benefits charged in spike (1% IUR increase) run.

Table A.10 Total Figures for Marginal Cost Computation
A 1% Increase in the Insured Unemployment Rate
Present Value in Dollars (Interest Rate = 10%)
Average IUR , Average Wages
(IUR = 2.9% , Wages = $20,200)

State	PVMC[a]	PVTAX[b]	PVBC[c]	PVTAXNEW[d]	PVBCNEW[e]
Alabama	0.00	115,750	166,096	115,750	172,005
Arkansas	0.87	297,372	257,621	305,381	266,787
California	0.76	209,315	201,848	214,782	209,029
Connecticut	0.80	335,580	283,748	343,677	293,843
Florida	0.78	276,836	257,621	284,008	266,787
Georgia	0.66	233,986	228,382	239,317	236,507
Illinois	1.07	373,295	269,573	383,560	279,163
Indiana	1.01	150,709	149,394	156,088	154,709
Iowa	-0.01	577,354	250,528	577,284	259,442
Kentucky	0.08	256,887	229,766	257,568	237,941
Maryland	0.80	324,101	283,748	332,192	293,843
Massachusetts	0.67	328,720	307,227	336,256	318,450
Michigan	1.13	394,034	296,897	405,982	307,460
Minnesota	0.93	415,503	258,745	424,107	267,950
Mississippi	0.67	175,555	192,552	180,115	199,402
Missouri	1.07	196,739	193,779	204,113	200,673
New Jersey	0.75	331,356	328,040	340,100	339,711
New York	0.00	329,118	239,030	329,118	247,534
North Carolina	0.72	314,849	257,621	321,487	266,787
Ohio	0.89	289,501	233,054	296,891	241,346
Oregon	-0.01	481,814	304,100	481,660	314,918
Pennsylvania	0.84	416,701	261,605	424,526	270,912
South Carolina	0.54	187,614	195,208	191,384	202,153
Tennessee	1.28	207,595	200,520	216,724	207,654
Texas	1.07	576,437	279,595	587,059	289,542
Virginia	0.85	255,230	243,608	262,599	252,275
Washington	-0.03	664,021	283,379	663,701	293,730
Wisconsin	1.12	428,033	268,522	438,693	278,075

[a] PVMC = Present value of (TAXNEW - TAX)/(BCNEW - BC) = Present value of marginal UI tax cost of a change in benefit charges.

[b] PVTAX = Present value of total UI taxes in control run.

[c] PVBC = Present value of total UI benefits charged in control run.

[d] PVTAXNEW = Present value of total UI taxes in spike (1% IUR increase) run.

[e] PVBCNEW = Present value of total UI benefits charged in spike (1% IUR increase) run.

Table A.11 Total Figures for Marginal Cost Computation
A 1% Increase in the Insured Unemployment Rate
Nominal Value in Dollars
Average IUR , High Wages
(IUR = 2.9% , Wages = $32,700)

State	MC[a]	TAX[b]	BC[c]	TAXNEW[d]	BCNEW[e]
Alabama	0.00	247,200	354,720	247,200	360,629
Arkansas	0.94	676,710	592,724	685,980	602,598
California	1.10	487,396	470,776	496,048	478,618
Connecticut	0.85	833,682	721,264	843,920	733,279
Florida	0.92	605,640	567,200	614,292	576,649
Georgia	0.99	498,417	487,740	506,451	495,865
Illinois	1.35	797,220	575,708	810,198	585,298
Indiana	0.81	321,566	319,050	325,892	324,365
Iowa	0.00	1,237,236	535,036	237,236	543,949
Kentucky	0.10	510,880	490,696	511,704	498,870
Maryland	1.07	692,160	605,980	702,975	616,075
Massachusetts	0.00	827,708	829,892	827,708	844,086
Michigan	1.31	919,790	715,352	935,446	727,269
Minnesota	1.60	1,084,590	722,744	103,872	734,784
Mississippi	0.84	374,920	411,220	380,688	418,070
Missouri	0.94	415,296	413,840	421,785	420,734
New Jersey	0.89	716,262	712,396	726,768	724,264
New York	0.00	681,345	510,480	681,345	518,984
North Carolina	0.46	773,983	646,608	778,977	657,379
Ohio	1.06	678,976	560,110	688,864	569,441
Oregon	0.00	1,038,240	649,444	1,038,240	660,263
Pennsylvania	0.86	1,021,760	689,148	1,031,648	700,628
South Carolina	1.09	409,528	416,892	417,098	423,837
Tennessee	1.18	444,136	439,580	452,788	446,903
Texas	1.20	1,264,016	620,760	1,276,376	631,101
Virginia	1.12	545,076	520,256	554,809	528,923
Washington	-0.01	1,427,391	626,164	1,427,303	636,874
Wisconsin	0.97	936,341	591,200	945,858	601,049

[a] MC = (TAXNEW - TAX)/(BCNEW - BC) = Marginal UI tax cost of a change in benefit charges.

[b] TAX = Total UI taxes in control run.

[c] BC = Total UI benefits charged in control run.

[d] TAXNEW = Total UI taxes in spike (1% IUR increase) run.

[e] BCNEW = Total UI benefits charged in spike (1% IUR increase) run.

Table A.12 Total Figures for Marginal Cost Computation
A 1% Increase in the Insured Unemployment Rate
Present Value in Dollars (Interest Rate = 10%)
Average IUR , High Wages
(IUR = 2.9% , Wages = $32,700)

State	PVMC[a]	PVTAX[b]	PVBC[c]	PVTAXNEW[d]	PVBCNEW[e]
Alabama	0.00	115,750	166,096	115,750	172,005
Arkansas	0.93	318,549	277,541	327,705	287,414
California	0.67	229,497	220,439	234,725	228,281
Connecticut	0.67	390,368	337,729	398,476	349,744
Florida	0.76	283,589	265,589	290,761	275,038
Georgia	0.56	234,512	228,382	239,028	236,507
Illinois	1.07	373,295	269,573	383,560	279,163
Indiana	0.94	151,098	149,394	156,088	154,709
Iowa	0.00	579,331	250,528	579,331	259,442
Kentucky	0.08	256,887	229,766	257,568	237,941
Maryland	0.80	324,101	283,748	332,192	293,843
Massachusetts	0.00	387,571	388,594	387,571	402,788
Michigan	0.98	430,688	334,961	442,415	346,878
Minnesota	1.16	507,855	338,422	521,825	350,462
Mississippi	0.67	175,555	192,552	180,115	199,402
Missouri	1.07	196,739	193,779	204,113	200,673
New Jersey	0.72	337,205	333,577	345,766	345,444
New York	0.00	329,118	239,030	329,118	247,534
North Carolina	0.37	362,415	302,772	366,354	313,543
Ohio	0.81	319,050	262,269	326,617	271,600
Oregon	0.00	486,152	304,100	486,152	314,918
Pennsylvania	0.68	478,435	322,691	486,259	334,171
South Carolina	0.54	187,614	195,208	191,384	202,153
Tennessee	1.21	211,712	205,832	220,558	213,154
Texas	0.97	591,870	290,668	601,930	301,009
Virginia	0.85	255,230	243,608	262,599	252,275
Washington	-0.01	668,370	293,199	668,283	303,909
Wisconsin	1.02	439,761	276,827	449,835	286,676

[a] PVMC = Present value of (TAXNEW - TAX)/(BCNEW - BC) = Present value of marginal UI tax cost of a change in benefit charges.

[b] PVTAX = Present value of total UI taxes in control run.

[c] PVBC = Present value of total UI benefits charged in control run.

[d] PVTAXNEW = Present value of total UI taxes in spike (1% IUR increase) run.

[e] PVBCNEW = Present value of total UI benefits charged in spike (1% IUR increase) run.

Table A.13 Total Figures for Marginal Cost Computation
A 1% Increase in the Insured Unemployment Rate
Nominal Value in Dollars
High IUR , Low Wages
(IUR = 5.8% , Wages = $11,300)

State	MC[a]	TAX[b]	BC[c]	TAXNEW[d]	BCNEW[e]
Alabama	1.30	449,602	697,616	457,026	703,321
Arkansas	1.54	691,815	610,416	699,548	615,422
California	0.79	556,773	553,896	560,376	558,438
Connecticut	0.83	757,448	644,408	761,819	649,678
Florida	1.30	644,685	610,416	651,209	615,422
Georgia	0.90	671,154	668,056	676,077	673,520
Illinois	-0.06	1,398,240	604,764	1,397,953	609,724
Indiana	-0.01	468,862	542,592	468,811	547,042
Iowa	-0.11	1,407,036	721,264	1,406,411	727,163
Kentucky	-0.03	794,297	792,208	794,117	798,687
Maryland	-0.01	791,204	697,616	791,119	703,321
Massachusetts	1.02	709,924	662,256	715,015	667,262
Michigan	1.84	897,607	697,616	908,095	703,321
Minnesota	1.26	951,098	615,616	957,442	620,662
Mississippi	0.87	571,425	610,416	575,759	615,422
Missouri	1.18	754,574	750,824	761,818	756,965
New Jersey	1.38	769,937	768,560	778,630	774,846
New York	0.27	778,017	616,068	779,382	621,120
North Carolina	0.94	730,192	610,416	734,878	615,422
Ohio	0.97	729,354	610,416	734,234	615,422
Oregon	-0.06	860,518	796,932	860,110	803,468
Pennsylvania	0.96	949,160	616,068	954,009	621,120
South Carolina	-0.01	600,729	610,416	600,665	615,422
Tennessee	-0.02	556,773	542,592	556,695	547,042
Texas	1.33	1,327,158	668,056	1,334,447	673,520
Virginia	0.66	707,688	668,056	711,275	673,520
Washington	-0.09	1,109,317	692,916	1,108,859	698,154
Wisconsin	1.71	990,165	638,496	999,111	643,718

[a] MC = (TAXNEW - TAX)/(BCNEW - BC) = Marginal UI tax cost of a change in benefit charges.

[b] TAX = Total UI taxes in control run.

[c] BC = Total UI benefits charged in control run.

[d] TAXNEW = Total UI taxes in spike (1% IUR increase) run.

[e] BCNEW = Total UI benefits charged in spike (1% IUR increase) run.

Table A.14 Total Figures for Marginal Cost Computation
A 1% Increase in the Insured Unemployment Rate
Present Value in Dollars (Interest Rate = 10%)
High IUR , Low Wages
(IUR = 5.8% , Wages = $11,300)

State	PVMC[a]	PVTAX[b]	PVBC[c]	PVTAXNEW[d]	PVBCNEW[e]
Alabama	1.08	210,524	326,656	216,667	332,361
Arkansas	1.10	326,585	285,825	332,113	290,831
California	0.60	260,707	259,360	263,424	263,902
Connecticut	0.65	354,672	301,741	358,113	307,012
Florida	1.08	301,871	285,825	307,268	290,831
Georgia	0.77	312,306	312,815	316,539	318,278
Illinois	-0.06	654,720	283,178	654,433	288,138
Indiana	-0.01	219,543	254,067	219,492	258,516
Iowa	-0.11	658,839	337,729	658,214	343,628
Kentucky	0.75	377,774	370,948	382,602	377,427
Maryland	-0.01	370,478	326,656	370,397	332,361
Massachusetts	0.66	331,766	310,099	335,078	315,105
Michigan	1.42	420,301	326,656	428,425	332,361
Minnesota	0.89	445,348	288,260	449,829	293,306
Mississippi	0.68	267,567	285,825	270,984	290,831
Missouri	0.63	354,691	351,570	358,548	357,711
New Jersey	1.03	360,520	359,875	367,024	366,161
New York	0.14	368,787	288,471	369,514	293,524
North Carolina	0.89	340,244	285,825	344,706	290,831
Ohio	0.91	342,595	285,825	347,149	290,831
Oregon	-0.06	402,934	373,160	402,526	379,696
Pennsylvania	0.75	444,440	288,471	448,247	293,524
South Carolina	-0.01	281,289	285,825	281,225	290,831
Tennessee	0.50	261,511	254,067	263,723	258,516
Texas	1.06	621,437	312,815	627,255	318,278
Virginia	0.49	331,372	312,815	334,073	318,278
Washington	-0.09	519,433	324,455	518,975	329,693
Wisconsin	1.10	465,721	298,973	471,449	304,195

[a] PVMC = Present value of (TAXNEW - TAX)/(BCNEW - BC) = Present value of marginal UI tax cost of a change in benefit charges.

[b] PVTAX = Present value of total UI taxes in control run.

[c] PVBC = Present value of total UI benefits charged in control run.

[d] PVTAXNEW = Present value of total UI taxes in spike (1% IUR increase) run.

[e] PVBCNEW = Present value of total UI benefits charged in spike (1% IUR increase) run.

Table A.15 Total Figures for Marginal Cost Computation
A 1% Increase in the Insured Unemployment Rate
Nominal Value in Dollars
High IUR , Average Wages
(IUR = 5.8% , Wages = $20,200)

State	MC[a]	TAX[b]	BC[c]	TAXNEW[d]	BCNEW[e]
Alabama	1.32	457,920	709,440	465,552	715,242
Arkansas	0.00	1,033,500	1,096,488	1,033,500	1,105,480
California	0.00	801,360	859,104	801,360	866,149
Connecticut	0.00	918,172	1,211,960	918,172	122,187
Florida	0.00	801,360	1,096,488	801,360	1,105,480
Georgia	0.96	974,352	975,480	981,984	983,458
Illinois	0.00	1,431,000	1,147,356	1,431,000	1,156,765
Indiana	3.13	474,880	635,850	491,204	641,065
Iowa	-0.01	1,704,972	1,070,072	1,704,877	1,078,824
Kentucky	0.26	982,832	981,392	984,952	989,418
Maryland	0.00	801,360	1,211,960	801,360	1,221,872
Massachusetts	0.00	851,816	1,342,908	851,816	1,353,059
Michigan	1.07	1,470,220	1,268,124	1,481,297	1,278,495
Minnesota	1.35	1,572,185	1,101,688	1,584,340	1,110,720
Mississippi	0.88	771,680	819,540	777,616	826,261
Missouri	0.88	831,040	827,680	836,976	834,449
New Jersey	-0.01	1,409,262	1,401,144	1,409,133	1,412,603
New York	0.00	949,760	1,017,360	949,760	1,025,703
North Carolina	1.14	1,307,562	1,096,488	1,317,793	1,105,480
Ohio	0.83	1,114,272	991,926	1,121,056	1,000,061
Oregon	-0.02	1,137,450	1,294,308	1,137,283	1,304,922
Pennsylvania	0.56	1,187,200	1,113,444	1,192,288	1,122,575
South Carolina	0.00	801,360	830,844	801,360	837,658
Tennessee	0.80	847,735	853,452	853,300	860,451
Texas	0.00	1,487,392	1,194,224	1,487,392	1,203,991
Virginia	0.00	920,080	1,040,512	920,080	1,049,022
Washington	0.00	1,558,946	1,238,664	1,558,946	1,248,027
Wisconsin	1.58	1,412,799	1,146,928	1,427,597	1,156,308

[a] MC = (TAXNEW - TAX)/(BCNEW - BC) = Marginal UI tax cost of a change in benefit charges.

[b] TAX = Total UI taxes in control run.

[c] BC = Total UI benefits charged in control run.

[d] TAXNEW = Total UI taxes in spike (1% IUR increase) run.

[e] BCNEW = Total UI benefits charged in spike (1% IUR increase) run.

Table A.16 Total Figures for Marginal Cost Computation
A 1% Increase in the Insured Unemployment Rate
Present Value in Dollars (Interest Rate = 10%)
High IUR , Average Wages
(IUR = 5.8% , Wages = $20,200)

State	PVMC[a]	PVTAX[b]	PVBC[c]	PVTAXNEW[d]	PVBCNEW[e]
Alabama	1.09	214,419	332,192	220,746	337,995
Arkansas	0.00	483,932	513,426	483,932	522,418
California	0.00	375,234	402,272	375,234	409,317
Connecticut	0.00	429,930	567,495	429,930	577,407
Florida	0.00	375,234	513,426	375,234	522,418
Georgia	0.43	454,145	456,765	457,599	464,743
Illinois	0.00	670,060	537,245	670,060	546,654
Indiana	0.51	222,361	297,734	225,030	302,949
Iowa	-0.01	798,346	501,057	798,252	509,809
Kentucky	0.68	464,951	459,533	470,379	467,559
Maryland	0.00	375,234	567,495	375,234	577,407
Massachusetts	0.00	398,859	628,811	398,859	638,962
Michigan	0.81	688,425	593,794	696,835	604,165
Minnesota	0.97	736,169	515,861	744,931	524,893
Mississippi	0.70	361,336	383,746	366,040	390,467
Missouri	0.69	389,131	387,558	393,835	394,327
New Jersey	-0.01	659,881	656,080	659,759	667,539
New York	0.00	444,721	476,375	444,721	484,718
North Carolina	0.60	612,260	513,426	617,688	522,418
Ohio	0.58	522,435	464,465	527,146	472,600
Oregon	-0.02	532,606	606,055	532,439	616,669
Pennsylvania	0.48	555,902	521,366	560,317	530,497
South Carolina	0.00	375,234	389,039	375,234	395,853
Tennessee	0.62	394,398	399,625	398,768	406,625
Texas	0.00	696,465	559,191	696,465	568,958
Virginia	0.00	430,824	487,216	430,824	495,725
Washington	0.00	729,970	579,999	729,970	589,362
Wisconsin	0.84	663,343	537,044	671,219	546,425

[a] PVMC = Present value of (TAXNEW - TAX)/(BCNEW - BC) = Present value of marginal UI tax cost of a change in benefit charges.

[b] PVTAX = Present value of total UI taxes in control run.

[c] PVBC = Present value of total UI benefits charged in control run.

[d] PVTAXNEW = Present value of total UI taxes in spike (1% IUR increase) run.

[e] PVBCNEW = Present value of total UI benefits charged in spike (1% IUR increase) run.

Table A.17 Total Figures for Marginal Cost Computation
A 1% Increase in the Insured Unemployment Rate
Nominal Value in Dollars
High IUR , High Wages
(IUR = 5.8% , Wages = $32,700)

State	MC[a]	TAX[b]	BC[c]	TAXNEW[d]	BCNEW[e]
Alabama	1.32	457,920	709,440	465,552	715,242
Arkansas	0.00	1,033,500	1,181,268	1,033,500	1,190,955
California	0.00	801,360	938,232	801,360	945,926
Connecticut	0.00	918,172	1,442,528	918,172	1,454,326
Florida	0.00	801,360	1,130,400	801,360	1,139,670
Georgia	0.96	966,720	975,480	974,352	983,458
Illinois	0.00	1,431,000	1,147,356	1,431,000	1,156,765
Indiana	0.00	474,880	635,850	474,880	641,065
Iowa	0.00	1,716,352	1,070,072	1,716,352	1,078,824
Kentucky	0.26	982,832	981,392	984,952	989,418
Maryland	0.00	801,360	1,211,960	801,360	1,221,872
Massachusetts	0.00	851,816	1,698,564	851,816	1,711,403
Michigan	1.03	1,639,396	1,430,704	1,651,480	1,442,405
Minnesota	0.00	1,984,320	1,440,808	1,984,320	1,452,621
Mississippi	0.88	771,680	819,540	777,616	826,261
Missouri	0.88	831,040	827,680	836,976	834,449
New Jersey	0.00	1,424,640	1,424,792	1,424,640	1,436,445
New York	0.00	949,760	1,017,360	949,760	1,025,703
North Carolina	0.00	1,464,581	1,288,656	1,464,581	1,299,224
Ohio	0.00	1,221,120	1,116,270	1,221,120	1,125,424
Oregon	0.00	1,157,520	1,294,308	1,157,520	1,304,922
Pennsylvania	1.05	1,373,760	1,373,436	1,385,632	1,384,699
South Carolina	0.00	801,360	830,844	801,360	837,658
Tennessee	0.77	873,705	876,060	879,270	883,244
Texas	0.00	1,487,392	1,241,520	1,487,392	1,251,674
Virginia	0.00	920,080	1,040,512	920,080	1,049,022
Washington	0.00	1,589,235	1,281,588	1,589,235	1,291,275
Wisconsin	1.54	1,440,645	1,182,400	1,455,559	1,192,070

[a] MC = (TAXNEW - TAX)/(BCNEW - BC) = Marginal UI tax cost of a change in benefit charges.

[b] TAX = Total UI taxes in control run.

[c] BC = Total UI benefits charged in control run.

[d] TAXNEW = Total UI taxes in spike (1% IUR increase) run.

[e] BCNEW = Total UI benefits charged in spike (1% IUR increase) run.

Table A.18 Total Figures for Marginal Cost Computation
A 1% Increase in the Insured Unemployment Rate
Present Value in Dollars (Interest Rate = 10%)
High IUR , High Wages
(IUR = 5.8% , Wages = $32,700)

State	PVMC[a]	PVTAX[b]	PVBC[c]	PVTAXNEW[d]	PVBCNEW[e]
Alabama	1.09	214,419	332,192	220,746	337,995
Arkansas	0.00	483,932	553,124	483,932	562,811
California	0.00	375,234	439,323	375,234	447,018
Connecticut	0.00	429,930	675,458	429,930	687,256
Florida	0.00	375,234	529,305	375,234	538,576
Georgia	0.19	452,663	456,765	454,145	464,743
Illinois	0.00	670,060	537,245	670,060	546,654
Indiana	0.00	222,361	297,734	222,361	302,949
Iowa	0.00	803,675	501,057	803,675	509,809
Kentucky	0.68	464,951	459,533	470,379	467,559
Maryland	0.00	375,234	567,495	375,234	577,407
Massachusetts	0.00	398,859	795,346	398,859	808,185
Michigan	0.63	769,778	669,921	777,143	681,622
Minnesota	0.00	929,150	674,653	929,150	686,466
Mississippi	0.70	361,336	383,746	366,040	390,467
Missouri	0.69	389,131	387,558	393,835	394,327
New Jersey	0.00	667,082	667,153	667,082	678,806
New York	0.00	444,721	476,375	444,721	484,718
North Carolina	0.00	685,784	603,408	685,784	613,976
Ohio	0.00	571,785	522,689	571,785	531,843
Oregon	0.00	542,004	606,055	542,004	616,669
Pennsylvania	0.63	643,258	643,106	650,374	654,369
South Carolina	0.00	375,234	389,039	375,234	395,853
Tennessee	0.49	406,761	410,212	410,294	417,396
Texas	0.00	696,465	581,337	696,465	591,491
Virginia	0.00	430,824	487,216	430,824	495,725
Washington	0.00	744,153	600,098	744,153	609,786
Wisconsin	0.60	677,542	553,654	683,330	563,324

[a] PVMC = Present value of (TAXNEW - TAX)/(BCNEW - BC) = Present value of marginal UI tax cost of a change in benefit charges.

[b] PVTAX = Present value of total UI taxes in control run.

[c] PVBC = Present value of total UI benefits charged in control run.

[d] PVTAXNEW = Present value of total UI taxes in spike (1% IUR increase) run.

[e] PVBCNEW = Present value of total UI benefits charged in spike (1% IUR increase) run.

Table A.19 Total Figures for Marginal Cost Computation
A Doubling of the Insured Unemployment Rate
Nominal Value in Dollars
Low IUR , Low Wages
(IUR = 1.45% , Wages = $11,300)

State	MC[a]	TAX[b]	BC[c]	TAXNEW[d]	BCNEW[e]
Alabama	0.95	120,430	173,224	128,439	181,675
Arkansas	0.91	229,023	152,064	235,768	159,474
California	0.83	154,850	137,984	160,464	144,708
Connecticut	0.91	271,231	160,012	278,337	167,818
Florida	0.85	168,928	152,064	175,244	159,474
Georgia	1.09	175,233	165,884	184,021	173,977
Illinois	2.44	432,895	150,656	450,829	157,998
Indiana	0.96	137,254	135,168	143,570	141,755
Iowa	1.47	407,755	179,096	420,637	187,833
Kentucky	1.00	202,322	196,712	211,921	206,308
Maryland	1.25	211,160	173,224	221,694	181,675
Massachusetts	0.95	217,659	169,344	224,681	176,754
Michigan	1.33	380,546	173,224	391,806	181,675
Minnesota	0.57	382,471	153,264	386,703	160,734
Mississippi	0.95	112,618	152,064	119,645	159,474
Missouri	0.96	181,597	178,816	190,727	188,292
New Jersey	0.95	185,049	190,840	193,922	200,150
New York	0.94	295,623	153,472	302,629	160,951
North Carolina	1.13	186,595	152,064	194,972	159,474
Ohio	1.08	264,946	152,064	272,928	159,474
Oregon	0.65	674,949	198,528	681,225	208,203
Pennsylvania	0.85	484,128	153,472	490,466	160,951
South Carolina	0.00	183,005	152,064	182,985	159,474
Tennessee	0.96	140,773	135,168	147,092	141,755
Texas	1.18	669,590	165,884	679,117	173,977
Virginia	0.98	177,374	165,884	185,308	173,977
Washington	2.26	720,140	177,184	737,643	184,938
Wisconsin	2.28	343,342	158,544	360,947	166,278

[a] MC = (TAXNEW - TAX)/(BCNEW - BC) = Marginal UI tax cost of a change in benefit charges.

[b] TAX = Total UI taxes in control run.

[c] BC = Total UI benefits charged in control run.

[d] TAXNEW = Total UI taxes in spike (1% IUR increase) run.

[e] BCNEW = Total UI benefits charged in spike (1% IUR increase) run.

Table A.20 Total Figures for Marginal Cost Computation
A Doubling of the Insured Unemployment Rate
Present Value in Dollars (Interest Rate = 10%)
Low IUR , Low Wages
(IUR = 1.45% , Wages = $11,300)

State	PVMC[a]	PVTAX[b]	PVBC[c]	PVTAXNEW[d]	PVBCNEW[e]
Alabama	0.75	56,391	81,111	62,734	89,562
Arkansas	0.90	107,711	71,203	114,416	78,614
California	0.66	72,508	64,610	76,953	71,335
Connecticut	0.72	127,003	74,925	132,622	82,731
Florida	0.71	79,100	71,203	84,332	78,614
Georgia	0.80	82,530	77,675	88,965	85,767
Illinois	1.93	202,702	70,544	216,866	77,886
Indiana	0.80	65,153	63,292	70,414	69,879
Iowa	1.05	190,930	83,861	200,134	92,598
Kentucky	0.80	96,776	92,110	104,473	101,706
Maryland	0.93	98,875	81,111	106,751	89,562
Massachusetts	0.71	102,166	79,295	107,455	86,705
Michigan	1.04	178,189	81,111	186,979	89,562
Minnesota	0.40	179,091	71,765	182,064	79,236
Mississippi	0.75	52,733	71,203	58,293	78,614
Missouri	0.65	85,302	83,730	91,430	93,206
New Jersey	0.61	85,479	89,360	91,187	98,670
New York	0.79	138,425	71,863	144,346	79,342
North Carolina	0.72	88,457	71,203	93,760	78,614
Ohio	0.79	125,102	71,203	130,947	78,614
Oregon	0.50	316,042	92,960	320,909	102,635
Pennsylvania	0.67	227,972	71,863	232,965	79,342
South Carolina	0.00	85,691	71,203	85,671	78,614
Tennessee	0.76	65,916	63,292	70,914	69,879
Texas	0.95	313,533	77,675	321,231	85,767
Virginia	0.74	83,055	77,675	89,045	85,767
Washington	1.69	337,203	82,966	350,321	90,719
Wisconsin	1.30	162,673	74,238	172,710	81,972

[a] PVMC = Present value of (TAXNEW - TAX)/(BCNEW - BC) = Present value of marginal UI tax cost of a change in benefit charges.

[b] PVTAX = Present value of total UI taxes in control run.

[c] PVBC = Present value of total UI benefits charged in control run.

[d] PVTAXNEW = Present value of total UI taxes in spike (1% IUR increase) run.

[e] PVBCNEW = Present value of total UI benefits charged in spike (1% IUR increase) run.

Table A.20 Total Figures for Marginal Cost Computation
A Doubling of the Insured Unemployment Rate
Present Value in Dollars (Interest Rate = 10%)
Low IUR , Low Wages
(IUR = 1.45% , Wages = $11,300)

State	PVMC[a]	PVTAX[b]	PVBC[c]	PVTAXNEW[d]	PVBCNEW[e]
Alabama	0.75	56,391	81,111	62,734	89,562
Arkansas	0.90	107,711	71,203	114,416	78,614
California	0.66	72,508	64,610	76,953	71,335
Connecticut	0.72	127,003	74,925	132,622	82,731
Florida	0.71	79,100	71,203	84,332	78,614
Georgia	0.80	82,530	77,675	88,965	85,767
Illinois	1.93	202,702	70,544	216,866	77,886
Indiana	0.80	65,153	63,292	70,414	69,879
Iowa	1.05	190,930	83,861	200,134	92,598
Kentucky	0.80	96,776	92,110	104,473	101,706
Maryland	0.93	98,875	81,111	106,751	89,562
Massachusetts	0.71	102,166	79,295	107,455	86,705
Michigan	1.04	178,189	81,111	186,979	89,562
Minnesota	0.40	179,091	71,765	182,064	79,236
Mississippi	0.75	52,733	71,203	58,293	78,614
Missouri	0.65	85,302	83,730	91,430	93,206
New Jersey	0.61	85,479	89,360	91,187	98,670
New York	0.79	138,425	71,863	144,346	79,342
North Carolina	0.72	88,457	71,203	93,760	78,614
Ohio	0.79	125,102	71,203	130,947	78,614
Oregon	0.50	316,042	92,960	320,909	102,635
Pennsylvania	0.67	227,972	71,863	232,965	79,342
South Carolina	0.00	85,691	71,203	85,671	78,614
Tennessee	0.76	65,916	63,292	70,914	69,879
Texas	0.95	313,533	77,675	321,231	85,767
Virginia	0.74	83,055	77,675	89,045	85,767
Washington	1.69	337,203	82,966	350,321	90,719
Wisconsin	1.30	162,673	74,238	172,710	81,972

[a] PVMC = Present value of (TAXNEW - TAX)/(BCNEW - BC) = Present value of marginal UI tax cost of a change in benefit charges.

[b] PVTAX = Present value of total UI taxes in control run.

[c] PVBC = Present value of total UI benefits charged in control run.

[d] PVTAXNEW = Present value of total UI taxes in spike (1% IUR increase) run.

[e] PVBCNEW = Present value of total UI benefits charged in spike (1% IUR increase) run.

Table A.21 Total Figures for Marginal Cost Computation
A Doubling of the Insured Unemployment Rate
Nominal Value in Dollars
Low IUR , Average Wages
(IUR = 1.45% , Wages = $20,200)

State	MC[a]	TAX[b]	BC[c]	TAXNEW[d]	BCNEW[e]
Alabama	0.94	121,200	176,160	129,280	184,754
Arkansas	1.14	351,480	273,152	366,630	286,463
California	0.95	231,896	214,016	241,794	224,446
Connecticut	1.07	401,576	300,940	417,352	315,621
Florida	0.96	296,940	273,152	309,666	286,463
Georgia	1.08	251,490	242,220	264,292	254,037
Illinois	1.17	436,320	285,824	452,682	299,753
Indiana	1.10	163,317	158,400	171,801	166,119
Iowa	2.56	545,344	265,708	578,565	278,670
Kentucky	1.09	245,632	243,688	258,560	255,576
Maryland	1.16	353,500	300,940	370,468	315,621
Massachusetts	1.04	392,385	343,392	407,939	358,419
Michigan	1.56	518,130	314,886	542,117	330,248
Minnesota	0.88	541,753	274,352	553,484	287,723
Mississippi	1.14	155,540	204,160	166,852	214,109
Missouri	1.02	197,960	197,120	208,565	207,566
New Jersey	0.85	355,586	347,916	370,039	364,889
New York	0.97	395,920	253,440	407,939	265,791
North Carolina	1.10	330,261	273,152	344,932	286,463
Ohio	0.94	361,984	247,104	373,296	259,146
Oregon	0.53	899,471	322,432	907,766	338,145
Pennsylvania	1.08	597,920	277,376	612,464	290,893
South Carolina	0.98	220,937	206,976	230,835	217,062
Tennessee	1.02	216,695	212,608	227,300	222,969
Texas	1.34	835,472	296,536	854,864	311,002
Virginia	1.22	267,246	258,368	282,659	270,972
Washington	1.74	1,088,075	316,736	1,112,255	330,596
Wisconsin	1.34	530,287	284,792	548,903	298,685

[a] MC = (TAXNEW - TAX)/(BCNEW - BC) = Marginal UI tax cost of a change in benefit charges.

[b] TAX = Total UI taxes in control run.

[c] BC = Total UI benefits charged in control run.

[d] TAXNEW = Total UI taxes in spike (1% IUR increase) run.

[e] BCNEW = Total UI benefits charged in spike (1% IUR increase) run.

Table A.22 Total Figures for Marginal Cost Computation
A Doubling of the Insured Unemployment Rate
Present Value in Dollars (Interest Rate = 10%)
Low IUR , Average Wages
(IUR = 1.45% , Wages = $20,200)

State	PVMC[a]	PVTAX[b]	PVBC[c]	PVTAXNEW[d]	PVBCNEW[e]
Alabama	0.75	56,751	82,486	63,155	91,080
Arkansas	0.83	166,126	127,902	177,136	141,214
California	0.61	109,903	100,212	116,215	110,642
Connecticut	0.85	188,036	140,914	200,523	155,595
Florida	0.79	139,041	127,902	149,590	141,214
Georgia	0.70	117,759	113,419	126,036	125,235
Illinois	0.93	204,305	133,836	217,252	147,765
Indiana	0.59	78,036	74,170	82,622	81,889
Iowa	1.86	255,355	124,417	279,461	137,379
Kentucky	0.84	117,123	114,106	127,095	125,994
Maryland	0.86	165,525	140,914	178,188	155,595
Massachusetts	0.68	184,366	160,792	194,650	175,819
Michigan	1.18	242,612	147,444	260,749	162,806
Minnesota	0.63	253,673	128,464	262,151	141,836
Mississippi	0.90	72,831	95,597	81,785	105,546
Missouri	0.72	92,694	92,301	100,261	102,747
New Jersey	0.70	168,382	162,910	180,217	179,883
New York	0.75	185,388	118,672	194,615	131,023
North Carolina	0.93	155,876	127,902	168,241	141,214
Ohio	0.79	170,037	115,705	179,547	127,747
Oregon	0.42	421,174	150,977	427,709	166,690
Pennsylvania	0.85	279,974	129,880	291,482	143,397
South Carolina	0.76	104,585	96,916	112,266	107,002
Tennessee	0.74	102,523	99,553	110,155	109,914
Texas	1.09	391,206	138,852	406,916	153,318
Virginia	0.93	125,137	120,980	136,802	133,584
Washington	1.32	509,487	148,310	527,777	162,171
Wisconsin	1.14	250,280	133,353	266,072	147,246

[a] PVMC = Present value of (TAXNEW - TAX)/(BCNEW - BC) = Present value of marginal UI tax cost of a change in benefit charges.

[b] PVTAX = Present value of total UI taxes in control run.

[c] PVBC = Present value of total UI benefits charged in control run.

[d] PVTAXNEW = Present value of total UI taxes in spike (1% IUR increase) run.

[e] PVBCNEW = Present value of total UI benefits charged in spike (1% IUR increase) run.

Table A.23 Total Figures for Marginal Cost Computation
A Doubling of the Insured Unemployment Rate
Nominal Value in Dollars
Low IUR , High Wages
(IUR = 1.45% , Wages = $32,700)

State	MC[a]	TAX[b]	BC[c]	TAXNEW[d]	BCNEW[e]
Alabama	0.94	121,200	176,160	129,280	184,754
Arkansas	1.06	372,690	294,272	387,840	308,613
California	0.99	250,278	233,728	261,590	245,118
Connecticut	1.15	458,944	358,192	479,023	375,666
Florida	1.08	296,940	281,600	311,787	295,323
Georgia	1.08	251,490	242,220	264,292	254,037
Illinois	1.17	436,320	285,824	452,682	299,753
Indiana	0.37	169,680	158,400	172,508	166,119
Iowa	2.57	546,612	265,708	579,942	278,670
Kentucky	1.09	245,632	243,688	258,560	255,576
Maryland	1.16	353,500	300,940	370,468	315,621
Massachusetts	0.93	485,002	434,336	502,677	453,343
Michigan	1.55	556,510	355,256	583,376	372,587
Minnesota	1.35	638,118	358,832	661,752	376,320
Mississippi	1.14	155,540	204,160	166,852	214,109
Missouri	1.02	197,960	197,120	208,565	207,566
New Jersey	1.05	358,752	353,788	376,932	371,047
New York	0.97	395,920	253,440	407,939	265,791
North Carolina	1.25	389,270	321,024	408,856	336,668
Ohio	1.01	393,496	278,080	407,232	291,632
Oregon	0.54	904,960	322,432	913,444	338,145
Pennsylvania	1.21	662,560	342,144	682,760	358,818
South Carolina	0.98	220,937	206,976	230,835	217,062
Tennessee	1.00	224,119	218,240	234,724	228,875
Texas	1.29	851,632	308,280	871,024	323,319
Virginia	1.22	267,246	258,368	282,659	270,972
Washington	0.64	1,156,197	327,712	1,165,325	342,053
Wisconsin	1.04	545,924	293,600	560,877	307,923

[a] MC = (TAXNEW - TAX)/(BCNEW - BC) = Marginal UI tax cost of a change in benefit charges.

[b] TAX = Total UI taxes in control run.

[c] BC = Total UI benefits charged in control run.

[d] TAXNEW = Total UI taxes in spike (1% IUR increase) run.

[e] BCNEW = Total UI benefits charged in spike (1% IUR increase) run.

Table A.24 Total Figures for Marginal Cost Computation
A Doubling of the Insured Unemployment Rate
Present Value in Dollars (Interest Rate = 10%)
Low IUR , High Wages
(IUR = 1.45% , Wages = $32,700)

State	PVMC[a]	PVTAX[b]	PVBC[c]	PVTAXNEW[d]	PVBCNEW[e]
Alabama	0.75	56,751	82,486	63,155	91,080
Arkansas	0.87	175,581	137,792	188,003	152,132
California	0.67	118,216	109,442	125,904	120,832
Connecticut	0.91	214,899	167,722	230,790	185,196
Florida	0.90	139,041	131,858	151,348	145,581
Georgia	0.64	117,759	113,419	125,283	125,235
Illinois	0.93	204,305	133,836	217,252	147,765
Indiana	0.29	79,452	74,170	81,683	81,889
Iowa	1.87	255,949	124,417	280,142	137,379
Kentucky	0.84	117,123	114,106	127,095	125,994
Maryland	0.86	165,525	140,914	178,188	155,595
Massachusetts	0.64	227,418	203,376	239,497	222,383
Michigan	1.16	260,584	166,347	280,692	183,678
Minnesota	0.98	298,796	168,022	315,900	185,510
Mississippi	0.90	72,831	95,597	81,785	105,546
Missouri	0.72	92,694	92,301	100,261	102,747
New Jersey	0.71	170,451	165,660	182,767	182,919
New York	0.75	185,388	118,672	194,615	131,023
North Carolina	0.93	183,588	150,318	198,080	165,963
Ohio	0.83	185,086	130,210	196,274	143,761
Oregon	0.43	423,744	150,977	430,457	166,690
Pennsylvania	0.98	310,241	160,208	326,514	176,881
South Carolina	0.76	104,585	96,916	112,266	107,002
Tennessee	0.78	105,451	102,190	113,710	112,825
Texas	1.04	398,773	144,351	414,483	159,390
Virginia	0.93	125,137	120,980	136,802	133,584
Washington	0.48	541,385	153,450	548,263	167,790
Wisconsin	1.05	256,891	137,477	271,882	151,800

[a] PVMC = Present value of (TAXNEW - TAX)/(BCNEW - BC) = Present value of marginal UI tax cost of a change in benefit charges.

[b] PVTAX = Present value of total UI taxes in control run.

[c] PVBC = Present value of total UI benefits charged in control run.

[d] PVTAXNEW = Present value of total UI taxes in spike (1% IUR increase) run.

[e] PVBCNEW = Present value of total UI benefits charged in spike (1% IUR increase) run.

Table A.25 Total Figures for Marginal Cost Computation
A Doubling of the Insured Unemployment Rate
Nominal Value in Dollars
Average IUR , Low Wages
(IUR = 2.9% , Wages = $11,300)

State	MC[a]	TAX[b]	BC[c]	TAXNEW[d]	BCNEW[e]
Alabama	0.36	244,889	348,808	250,896	365,307
Arkansas	1.26	383,149	306,288	401,385	320,740
California	1.08	296,547	277,928	310,775	291,042
Connecticut	0.94	435,779	322,204	450,155	337,444
Florida	1.03	329,497	306,288	344,431	320,740
Georgia	0.99	345,141	334,028	360,707	349,827
Illinois	2.27	805,138	303,452	837,621	317,771
Indiana	0.94	275,058	272,256	287,141	285,103
Iowa	2.01	763,228	360,632	797,541	377,690
Kentucky	0.86	399,170	396,104	415,303	414,840
Maryland	1.16	401,127	348,808	420,335	365,307
Massachusetts	0.99	374,534	323,568	390,096	339,316
Michigan	1.55	557,919	348,808	583,461	365,307
Minnesota	1.19	565,565	308,688	582,887	323,260
Mississippi	1.08	257,867	306,288	273,541	320,740
Missouri	0.80	378,922	375,412	393,121	393,169
New Jersey	1.09	389,109	384,280	408,879	402,456
New York	0.78	456,282	309,124	467,592	323,710
North Carolina	1.16	369,043	306,288	385,738	320,740
Ohio	1.00	424,475	306,288	438,968	320,740
Oregon	0.06	791,791	399,876	792,967	418,744
Pennsylvania	0.99	636,712	309,124	651,105	323,710
South Carolina	1.03	319,111	306,288	334,043	320,740
Tennessee	1.00	274,342	272,256	287,132	285,103
Texas	1.21	893,030	334,028	912,200	349,827
Virginia	1.14	345,256	334,028	363,265	349,827
Washington	0.61	949,748	338,548	959,731	355,025
Wisconsin	1.49	575,038	319,248	597,525	334,348

[a] MC = (TAXNEW - TAX)/(BCNEW - BC) = Marginal UI tax cost of a change in benefit charges.

[b] TAX = Total UI taxes in control run.

[c] BC = Total UI benefits charged in control run.

[d] TAXNEW = Total UI taxes in spike (1% IUR increase) run.

[e] BCNEW = Total UI benefits charged in spike (1% IUR increase) run.

Table A.26 Total Figures for Marginal Cost Computation
A Doubling of the Insured Unemployment Rate
Present Value in Dollars (Interest Rate = 10%)
Average IUR , Low Wages
(IUR = 2.9% , Wages = $11,300)

State	PVMC[a]	PVTAX[b]	PVBC[c]	PVTAXNEW[d]	PVBCNEW[e]
Alabama	0.30	114,668	163,328	119,628	179,826
Arkansas	1.04	179,408	143,418	194,498	157,870
California	0.64	139,843	130,139	148,194	143,253
Connecticut	0.74	204,052	150,871	215,392	166,111
Florida	0.86	154,286	143,418	166,647	157,870
Georgia	0.71	162,365	156,407	173,618	172,207
Illinois	1.79	377,003	142,090	402,611	156,409
Indiana	0.70	129,970	127,483	139,008	140,329
Iowa	1.43	357,378	168,864	381,824	185,922
Kentucky	0.42	187,843	185,474	195,623	204,210
Maryland	0.87	187,826	163,328	202,231	179,826
Massachusetts	0.62	175,933	151,509	185,766	167,258
Michigan	1.20	261,244	163,328	280,983	179,826
Minnesota	0.85	264,824	144,542	277,160	159,114
Mississippi	0.86	120,745	143,418	133,133	157,870
Missouri	0.43	178,694	175,785	186,319	193,542
New Jersey	0.76	183,940	179,938	197,717	198,114
New York	0.44	214,211	144,746	220,691	159,332
North Carolina	0.93	174,102	143,418	187,515	157,870
Ohio	0.86	198,759	143,418	211,148	157,870
Oregon	0.04	370,753	187,240	371,451	206,109
Pennsylvania	0.78	298,138	144,746	309,464	159,332
South Carolina	0.74	150,968	143,418	161,679	157,870
Tennessee	0.69	129,505	127,483	138,339	140,329
Texas	0.98	418,158	156,407	433,607	172,207
Virginia	0.86	161,665	156,407	175,260	172,207
Washington	0.44	444,716	158,524	451,964	175,001
Wisconsin	1.19	271,346	149,487	289,348	164,587

[a] PVMC = Present value of (TAXNEW - TAX)/(BCNEW - BC) = Present value of marginal UI tax cost of a change in benefit charges.

[b] PVTAX = Present value of total UI taxes in control run.

[c] PVBC = Present value of total UI benefits charged in control run.

[d] PVTAXNEW = Present value of total UI taxes in spike (1% IUR increase) run.

[e] PVBCNEW = Present value of total UI benefits charged in spike (1% IUR increase) run.

Table A.27 Total Figures for Marginal Cost Computation
A Doubling of the Insured Unemployment Rate
Nominal Value in Dollars
Average IUR , Average Wages
(IUR = 2.9% , Wages = $20,200)

State	MC[a]	TAX[b]	BC[c]	TAXNEW[d]	BCNEW[e]
Alabama	0.37	247,200	354,720	253,380	371,498
Arkansas	1.13	627,270	550,184	656,625	576,145
California	0.99	447,020	431,072	467,208	451,412
Connecticut	0.92	716,674	605,980	743,001	634,643
Florida	1.00	591,220	550,184	617,176	576,145
Georgia	1.00	498,417	487,740	521,515	510,810
Illinois	1.30	797,220	575,708	832,446	602,873
Indiana	1.10	319,403	319,050	335,986	334,105
Iowa	-0.01	1,233,015	535,036	1,232,804	560,343
Kentucky	1.46	510,880	490,696	544,664	513,906
Maryland	0.60	692,160	605,980	709,464	634,643
Massachusetts	0.99	703,696	656,124	735,420	688,058
Michigan	1.50	841,510	634,062	886,521	664,053
Minnesota	1.19	887,360	552,584	918,316	578,665
Mississippi	0.89	374,920	411,220	392,224	430,624
Missouri	1.14	415,296	413,840	437,647	433,415
New Jersey	1.03	703,065	700,572	737,268	733,709
New York	0.00	681,345	510,480	681,345	534,567
North Carolina	1.06	670,865	550,184	698,261	576,145
Ohio	0.91	616,352	497,718	637,776	521,203
Oregon	0.17	1,028,977	649,444	1,034,230	680,088
Pennsylvania	1.09	889,920	558,692	918,760	585,054
South Carolina	1.03	409,528	416,892	429,716	436,563
Tennessee	0.61	435,484	428,236	447,741	448,443
Texas	1.20	1,231,056	597,112	1,264,840	625,355
Virginia	1.07	545,076	520,256	571,465	544,864
Washington	0.12	1,418,102	605,192	1,421,768	634,647
Wisconsin	1.28	910,552	573,464	945,303	600,589

[a] MC = (TAXNEW - TAX)/(BCNEW - BC) = Marginal UI tax cost of a change in benefit charges.

[b] TAX = Total UI taxes in control run.

[c] BC = Total UI benefits charged in control run.

[d] TAXNEW = Total UI taxes in spike (1% IUR increase) run.

[e] BCNEW = Total UI benefits charged in spike (1% IUR increase) run.

Table A.28 Total Figures for Marginal Cost Computation
A Doubling of the Insured Unemployment Rate
Present Value in Dollars (Interest Rate = 10%)
Average IUR , Average Wages
(IUR = 2.9% , Wages = $20,200)

State	PVMC[a]	PVTAX[b]	PVBC[c]	PVTAXNEW[d]	PVBCNEW[e]
Alabama	0.31	115,750	166,096	120,873	182,874
Arkansas	0.88	297,372	257,621	320,270	283,582
California	0.71	209,315	201,848	223,854	222,188
Connecticut	0.73	335,580	283,748	356,411	312,410
Florida	0.83	276,836	257,621	298,353	283,582
Georgia	0.54	233,986	228,382	246,533	251,452
Illinois	1.03	373,295	269,573	401,164	296,738
Indiana	0.78	150,709	149,394	162,431	164,448
Iowa	-0.01	577,354	250,528	577,143	275,836
Kentucky	0.31	256,887	229,766	264,117	252,976
Maryland	0.46	324,101	283,748	337,191	312,410
Massachusetts	0.67	328,720	307,227	349,974	339,162
Michigan	1.14	394,034	296,897	428,106	326,888
Minnesota	0.86	415,503	258,745	437,861	284,826
Mississippi	0.71	175,555	192,552	189,247	211,956
Missouri	0.87	196,739	193,779	213,812	213,353
New Jersey	0.66	331,356	328,040	353,068	361,177
New York	0.00	329,118	239,030	329,118	263,117
North Carolina	0.75	314,849	257,621	334,385	283,582
Ohio	0.85	289,501	233,054	309,533	256,540
Oregon	0.13	481,814	304,100	485,881	334,744
Pennsylvania	0.88	416,701	261,605	439,809	287,967
South Carolina	0.62	187,614	195,208	199,842	214,879
Tennessee	0.79	207,595	200,520	223,477	220,726
Texas	0.97	576,437	279,595	603,829	307,839
Virginia	0.81	255,230	243,608	275,185	268,216
Washington	0.09	664,021	283,379	666,547	312,834
Wisconsin	1.08	428,033	268,522	457,429	295,647

[a] PVMC = Present value of (TAXNEW - TAX)/(BCNEW - BC) = Present value of marginal UI tax cost of a change in benefit charges.

[b] PVTAX = Present value of total UI taxes in control run.

[c] PVBC = Present value of total UI benefits charged in control run.

[d] PVTAXNEW = Present value of total UI taxes in spike (1% IUR increase) run.

[e] PVBCNEW = Present value of total UI benefits charged in spike (1% IUR increase) run.

Table A.29 Total Figures for Marginal Cost Computation
A Doubling of the Insured Unemployment Rate
Nominal Value in Dollars
Average IUR , High Wages
(IUR = 2.9% , Wages = $32,700)

State	MC[a]	TAX[b]	BC[c]	TAXNEW[d]	BCNEW[e]
Alabama	0.37	247,200	354,720	253,380	371,498
Arkansas	0.88	676,710	592,724	701,430	620,692
California	0.91	487,396	470,776	507,584	492,990
Connecticut	0.34	833,682	721,264	845,383	755,380
Florida	0.97	605,640	567,200	631,596	593,964
Georgia	1.04	498,417	487,740	522,519	510,810
Illinois	1.30	797,220	575,708	832,446	602,873
Indiana	1.01	321,566	319,050	336,707	334,105
Iowa	0.00	1,237,236	535,036	1,237,236	560,343
Kentucky	1.46	510,880	490,696	544,664	513,906
Maryland	0.60	692,160	605,980	709,464	634,643
Massachusetts	0.00	827,708	829,892	827,708	870,284
Michigan	1.45	919,790	715,352	968,715	749,188
Minnesota	1.41	1,084,590	722,744	1,132,794	756,854
Mississippi	0.89	374,920	411,220	392,224	430,624
Missouri	1.14	415,296	413,840	437,647	433,415
New Jersey	0.99	716,262	712,396	749,634	746,092
New York	0.00	681,345	510,480	681,345	534,567
North Carolina	0.98	773,983	646,608	803,944	677,119
Ohio	0.94	678,976	560,110	703,696	586,539
Oregon	0.19	1,038,240	649,444	1,044,008	680,088
Pennsylvania	0.86	1,021,760	689,148	1,049,776	721,666
South Carolina	1.03	409,528	416,892	429,716	436,563
Tennessee	0.87	444,136	439,580	462,161	460,322
Texas	1.04	1,264,016	620,760	1,294,504	650,122
Virginia	1.07	545,076	520,256	571,465	544,864
Washington	0.14	1,427,391	626,164	1,431,784	656,640
Wisconsin	1.25	936,341	591,200	971,274	619,164

[a] MC = (TAXNEW - TAX)/(BCNEW - BC) = Marginal UI tax cost of a change in benefit charges.

[b] TAX = Total UI taxes in control run.

[c] BC = Total UI benefits charged in control run.

[d] TAXNEW = Total UI taxes in spike (1% IUR increase) run.

[e] BCNEW = Total UI benefits charged in spike (1% IUR increase) run.

Table A.30 Total Figures for Marginal Cost Computation
A Doubling of the Insured Unemployment Rate
Present Value in Dollars (Interest Rate = 10%)
Average IUR , High Wages
(IUR = 2.9% , Wages = $32,700)

State	PVMC[a]	PVTAX[b]	PVBC[c]	PVTAXNEW[d]	PVBCNEW[e]
Alabama	0.31	115,750	166,096	120,873	182,874
Arkansas	0.79	318,549	277,541	340,599	305,509
California	0.60	229,497	220,439	242,793	242,653
Connecticut	0.27	390,368	337,729	399,641	371,845
Florida	0.80	283,589	265,589	305,105	292,353
Georgia	0.51	234,512	228,382	246,263	251,452
Illinois	1.03	373,295	269,573	401,164	296,738
Indiana	0.74	151,098	149,394	162,249	164,448
Iowa	0.00	579,331	250,528	579,331	275,836
Kentucky	0.31	256,887	229,766	264,117	252,976
Maryland	0.46	324,101	283,748	337,191	312,410
Massachusetts	0.00	387,571	388,594	387,571	428,985
Michigan	1.08	430,688	334,961	467,183	368,797
Minnesota	1.02	507,855	338,422	542,740	372,532
Mississippi	0.71	175,555	192,552	189,247	211,956
Missouri	0.87	196,739	193,779	213,812	213,353
New Jersey	0.64	337,205	333,577	358,612	367,273
New York	0.00	329,118	239,030	329,118	263,117
North Carolina	0.69	362,415	302,772	383,442	333,282
Ohio	0.83	319,050	262,269	340,920	288,698
Oregon	0.15	486,152	304,100	490,723	334,744
Pennsylvania	0.69	478,435	322,691	500,997	355,209
South Carolina	0.62	187,614	195,208	199,842	214,879
Tennessee	0.99	211,712	205,832	232,309	226,573
Texas	0.84	591,870	290,668	616,662	320,030
Virginia	0.81	255,230	243,608	275,185	268,216
Washington	0.11	668,370	293,199	671,616	323,675
Wisconsin	1.04	439,761	276,827	468,851	304,791

[a] PVMC = Present value of (TAXNEW - TAX)/(BCNEW - BC) = Present value of marginal UI tax cost of a change in benefit charges.

[b] PVTAX = Present value of total UI taxes in control run.

[c] PVBC = Present value of total UI benefits charged in control run.

[d] PVTAXNEW = Present value of total UI taxes in spike (1% IUR increase) run.

[e] PVBCNEW = Present value of total UI benefits charged in spike (1% IUR increase) run.

Table A.31 Total Figures for Marginal Cost Computation
A Doubling of the Insured Unemployment Rate
Nominal Value in Dollars
High IUR , Low Wages
(IUR = 5.8% , Wages = $11,300)

State	MC[a]	TAX[b]	BC[c]	TAXNEW[d]	BCNEW[e]
Alabama	0.70	449,602	697,616	471,666	728,925
Arkansas	1.18	691,815	610,416	724,126	637,884
California	0.90	556,773	553,896	579,126	578,821
Connecticut	0.80	757,448	644,408	780,701	673,329
Florida	0.79	644,685	610,416	666,249	637,884
Georgia	0.99	671,154	668,056	700,690	698,039
Illinois	-0.06	1,398,240	604,764	1,396,667	631,978
Indiana	-0.01	468,862	542,592	468,561	567,008
Iowa	-0.11	1,407,036	721,264	1,403,610	753,634
Kentucky	0.93	794,297	792,208	827,355	827,762
Maryland	-0.02	791,204	697,616	790,696	728,925
Massachusetts	1.01	709,924	662,256	739,884	691,884
Michigan	1.86	897,607	697,616	955,818	728,925
Minnesota	1.30	951,098	615,616	987,119	643,304
Mississippi	0.95	571,425	610,416	597,432	637,884
Missouri	1.03	754,574	750,824	789,250	784,521
New Jersey	1.12	769,937	768,560	808,693	803,053
New York	-0.02	778,017	616,068	777,415	643,790
North Carolina	1.21	730,192	610,416	763,386	637,884
Ohio	0.98	729,354	610,416	756,137	637,884
Oregon	0.06	860,518	796,932	862,806	832,793
Pennsylvania	1.08	949,160	616,068	979,088	643,790
South Carolina	0.83	600,729	610,416	623,420	637,884
Tennessee	0.79	556,773	542,592	576,083	567,008
Texas	0.74	1,327,158	668,056	1,349,243	698,039
Virginia	1.01	707,688	668,056	737,929	698,039
Washington	0.02	1,109,317	692,916	1,109,912	723,916
Wisconsin	1.32	990,165	638,496	1,028,014	667,152

[a] MC = (TAXNEW - TAX)/(BCNEW - BC) = Marginal UI tax cost of a change in benefit charges.

[b] TAX = Total UI taxes in control run.

[c] BC = Total UI benefits charged in control run.

[d] TAXNEW = Total UI taxes in spike (1% IUR increase) run.

[e] BCNEW = Total UI benefits charged in spike (1% IUR increase) run.

Table A.32 Total Figures for Marginal Cost Computation
A Doubling of the Insured Unemployment Rate
Present Value in Dollars (Interest Rate = 10%)
High IUR , Low Wages
(IUR = 5.8% , Wages = $11,300)

State	PVMC[a]	PVTAX[b]	PVBC[c]	PVTAXNEW[d]	PVBCNEW[e]
Alabama	0.56	210,524	326,656	228,179	357,965
Arkansas	0.87	326,585	285,825	350,515	313,293
California	0.50	260,707	259,360	273,162	284,284
Connecticut	0.63	354,672	301,741	372,972	330,663
Florida	0.65	301,871	285,825	319,676	313,293
Georgia	0.68	312,306	312,815	332,811	342,797
Illinois	-0.06	654,720	283,178	653,148	310,392
Indiana	-0.01	219,543	254,067	219,242	278,482
Iowa	-0.11	658,839	337,729	655,413	370,099
Kentucky	0.94	377,774	370,948	411,070	406,503
Maryland	-0.02	370,478	326,656	369,993	357,965
Massachusetts	0.66	331,766	310,099	351,274	339,727
Michigan	1.42	420,301	326,656	464,711	357,965
Minnesota	0.92	445,348	288,260	470,717	315,948
Mississippi	0.75	267,567	285,825	288,069	313,293
Missouri	0.64	354,691	351,570	376,090	385,267
New Jersey	0.92	360,520	359,875	392,118	394,368
New York	0.21	368,787	288,471	374,576	316,194
North Carolina	0.85	340,244	285,825	363,619	313,293
Ohio	0.84	342,595	285,825	365,570	313,293
Oregon	0.04	402,934	373,160	404,282	409,021
Pennsylvania	0.86	444,440	288,471	468,236	316,194
South Carolina	0.42	281,289	285,825	292,692	313,293
Tennessee	0.83	261,511	254,067	281,842	278,482
Texas	0.59	621,437	312,815	639,048	342,797
Virginia	0.76	331,372	312,815	354,137	342,797
Washington	-0.01	519,433	324,455	519,192	355,455
Wisconsin	0.93	465,721	298,973	492,450	327,629

[a] PVMC = Present value of (TAXNEW - TAX)/(BCNEW - BC) = Present value of marginal UI tax cost of a change in benefit charges.

[b] PVTAX = Present value of total UI taxes in control run.

[c] PVBC = Present value of total UI benefits charged in control run.

[d] PVTAXNEW = Present value of total UI taxes in spike (1% IUR increase) run.

[e] PVBCNEW = Present value of total UI benefits charged in spike (1% IUR increase) run.

Table A.33 Total Figures for Marginal Cost Computation
A Doubling of the Insured Unemployment Rate
Nominal Value in Dollars
High IUR , Average Wages
(IUR = 5.8% , Wages = $20,200)

State	MC[a]	TAX[b]	BC[c]	TAXNEW[d]	BCNEW[e]
Alabama	0.72	457,920	709,440	480,816	741,280
Arkansas	0.00	1,033,500	1,096,488	1,033,500	1,145,828
California	0.00	801,360	859,104	801,360	897,762
Connecticut	0.00	918,172	1,211,960	918,172	1,266,353
Florida	0.00	801,360	1,096,488	801,360	1,145,828
Georgia	0.93	974,352	975,480	1,015,056	1,019,260
Illinois	0.00	1,431,000	1,147,356	1,431,000	1,198,985
Indiana	1.14	474,880	635,850	507,528	664,462
Iowa	-0.01	1,704,972	1,070,072	1,704,403	1,118,097
Kentucky	0.98	982,832	981,392	1,026,080	1,025,437
Maryland	0.00	801,360	1,211,960	801,360	1,266,353
Massachusetts	0.00	851,816	1,342,908	851,816	1,402,987
Michigan	1.01	1,470,220	1,268,124	1,527,619	1,325,038
Minnesota	1.22	1,572,185	1,101,688	1,632,835	1,151,248
Mississippi	0.16	771,680	819,540	777,616	856,418
Missouri	0.96	831,040	827,680	866,656	864,826
New Jersey	-0.01	1,409,262	1,401,144	1,408,493	1,464,028
New York	0.00	949,760	1,017,360	949,760	1,063,140
North Carolina	1.19	1,307,562	1,096,488	1,366,387	1,145,828
Ohio	0.25	1,114,272	991,926	1,125,296	1,036,561
Oregon	0.08	1,137,450	1,294,308	1,142,280	1,352,550
Pennsylvania	0.44	1,187,200	1,113,444	1,209,248	1,163,547
South Carolina	0.00	801,360	830,844	801,360	868,231
Tennessee	0.97	847,735	853,452	884,835	891,856
Texas	0.00	1,487,392	1,194,224	1,487,392	1,247,821
Virginia	0.00	920,080	1,040,512	920,080	1,087,210
Washington	0.25	1,558,946	1,238,664	1,572,800	1,294,079
Wisconsin	0.95	1,412,799	1,146,928	1,461,800	1,198,402

[a] MC = (TAXNEW - TAX)/(BCNEW - BC) = Marginal UI tax cost of a change in benefit charges.

[b] TAX = Total UI taxes in control run.

[c] BC = Total UI benefits charged in control run.

[d] TAXNEW = Total UI taxes in spike (1% IUR increase) run.

[e] BCNEW = Total UI benefits charged in spike (1% IUR increase) run.

Table A.34 Total Figures for Marginal Cost Computation
A Doubling of the Insured Unemployment Rate
Present Value in Dollars (Interest Rate = 10%)
High IUR , Average Wages
(IUR = 5.8% , Wages = $20,200)

State	PVMC[a]	PVTAX[b]	PVBC[c]	PVTAXNEW[d]	PVBCNEW[e]
Alabama	0.58	214,419	332,192	232,824	364,032
Arkansas	0.00	483,932	513,426	483,932	562,767
California	0.00	375,234	402,272	375,234	440,930
Connecticut	0.00	429,930	567,495	429,930	621,888
Florida	0.00	375,234	513,426	375,234	562,767
Georgia	0.55	454,145	456,765	478,318	500,544
Illinois	0.00	670,060	537,245	670,060	588,874
Indiana	0.22	222,361	297,734	228,526	326,347
Iowa	-0.01	798,346	501,057	797,777	549,082
Kentucky	0.84	464,951	459,533	501,737	503,578
Maryland	0.00	375,234	567,495	375,234	621,888
Massachusetts	0.00	398,859	628,811	398,859	688,890
Michigan	0.72	688,425	593,794	729,639	650,708
Minnesota	0.88	736,169	515,861	779,850	565,421
Mississippi	0.13	361,336	383,746	366,040	420,624
Missouri	0.54	389,131	387,558	409,182	424,704
New Jersey	-0.01	659,881	656,080	659,147	718,964
New York	0.00	444,721	476,375	444,721	522,154
North Carolina	0.75	612,260	513,426	649,148	562,767
Ohio	0.20	522,435	464,465	531,343	509,101
Oregon	0.06	532,606	606,055	536,225	664,297
Pennsylvania	0.30	555,902	521,366	570,812	571,469
South Carolina	0.00	375,234	389,039	375,234	426,426
Tennessee	0.70	394,398	399,625	421,120	438,030
Texas	0.00	696,465	559,191	696,465	612,788
Virginia	0.00	430,824	487,216	430,824	533,914
Washington	0.18	729,970	579,999	740,054	635,415
Wisconsin	0.80	663,343	537,044	704,382	588,519

[a] PVMC = Present value of (TAXNEW - TAX)/(BCNEW - BC) = Present value of marginal UI tax cost of a change in benefit charges.

[b] PVTAX = Present value of total UI taxes in control run.

[c] PVBC = Present value of total UI benefits charged in control run.

[d] PVTAXNEW = Present value of total UI taxes in spike (1% IUR increase) run.

[e] PVBCNEW = Present value of total UI benefits charged in spike (1% IUR increase) run.

Table A.35 Total Figures for Marginal Cost Computation
A Doubling of the Insured Unemployment Rate
Nominal Value in Dollars
High IUR , High Wages
(IUR = 5.8% , Wages = $32,700)

State	MC[a]	TAX[b]	BC[c]	TAXNEW[d]	BCNEW[e]
Alabama	0.72	457,920	709,440	480,816	741,280
Arkansas	0.00	1,033,500	1,181,268	1,033,500	1,234,423
California	0.00	801,360	938,232	801,360	980,451
Connecticut	0.00	918,172	1,442,528	918,172	1,507,269
Florida	0.00	801,360	1,130,400	801,360	1,181,266
Georgia	0.93	966,720	975,480	1,007,424	1,019,260
Illinois	0.00	1,431,000	1,147,356	1,431,000	1,198,985
Indiana	0.00	474,880	635,850	474,880	664,462
Iowa	0.00	1,716,352	1,070,072	1,716,352	1,118,097
Kentucky	0.98	982,832	981,392	1,026,080	1,025,437
Maryland	0.00	801,360	1,211,960	801,360	1,266,353
Massachusetts	0.00	851,816	1,698,564	851,816	1,774,554
Michigan	1.00	1,639,396	1,430,704	1,703,844	1,494,914
Minnesota	0.00	1,984,320	1,440,808	1,984,320	1,505,628
Mississippi	0.16	771,680	819,540	777,616	856,418
Missouri	0.96	831,040	827,680	866,656	864,826
New Jersey	0.04	1,424,640	1,424,792	1,427,184	1,488,737
New York	0.00	949,760	1,017,360	949,760	1,063,140
North Carolina	0.00	1,464,581	1,288,656	1,464,581	1,346,644
Ohio	0.10	1,221,120	1,116,270	1,226,208	1,166,501
Oregon	0.10	1,157,520	1,294,308	1,163,456	1,352,550
Pennsylvania	0.92	1,373,760	1,373,436	1,430,576	1,435,239
South Carolina	0.00	801,360	830,844	801,360	868,231
Tennessee	0.94	873,705	876,060	910,805	915,481
Texas	0.00	1,487,392	1,241,520	1,487,392	1,297,240
Virginia	0.00	920,080	1,040,512	920,080	1,087,210
Washington	0.27	1,589,235	1,281,588	1,604,653	1,338,923
Wisconsin	1.11	1,440,645	1,182,400	1,499,745	1,235,466

[a] MC = (TAXNEW - TAX)/(BCNEW - BC) = Marginal UI tax cost of a change in benefit charges.

[b] TAX = Total UI taxes in control run.

[c] BC = Total UI benefits charged in control run.

[d] TAXNEW = Total UI taxes in spike (1% IUR increase) run.

[e] BCNEW = Total UI benefits charged in spike (1% IUR increase) run.

Table A.36 Total Figures for Marginal Cost Computation
A Doubling of the Insured Unemployment Rate
Present Value in Dollars (Interest Rate = 10%)
High IUR , High Wages
(IUR = 5.8% , Wages = $32,700)

State	PVMC[a]	PVTAX[b]	PVBC[c]	PVTAXNEW[d]	PVBCNEW[e]
Alabama	0.58	214,419	332,192	232,824	364,032
Arkansas	0.00	483,932	553,124	483,932	606,279
California	0.00	375,234	439,323	375,234	481,542
Connecticut	0.00	429,930	675,458	429,930	740,199
Florida	0.00	375,234	529,305	375,234	580,172
Georgia	0.45	452,663	456,765	472,566	500,544
Illinois	0.00	670,060	537,245	670,060	588,874
Indiana	0.00	222,361	297,734	222,361	326,347
Iowa	0.00	803,675	501,057	803,675	549,082
Kentucky	0.84	464,951	459,533	501,737	503,578
Maryland	0.00	375,234	567,495	375,234	621,888
Massachusetts	0.00	398,859	795,346	398,859	871,336
Michigan	0.60	769,778	669,921	808,482	734,132
Minnesota	0.00	929,150	674,653	929,150	739,473
Mississippi	0.13	361,336	383,746	366,040	420,624
Missouri	0.54	389,131	387,558	409,182	424,704
New Jersey	0.03	667,082	667,153	669,189	731,098
New York	0.00	444,721	476,375	444,721	522,154
North Carolina	0.00	685,784	603,408	685,784	661,396
Ohio	0.09	571,785	522,689	576,550	572,920
Oregon	0.08	542,004	606,055	546,708	664,297
Pennsylvania	0.51	643,258	643,106	674,782	704,909
South Carolina	0.00	375,234	389,039	375,234	426,426
Tennessee	0.62	406,761	410,212	431,101	449,633
Texas	0.00	696,465	581,337	696,465	637,056
Virginia	0.00	430,824	487,216	430,824	533,914
Washington	0.20	744,153	600,098	755,728	657,434
Wisconsin	0.80	677,542	553,654	719,930	606,720

[a] PVMC = Present value of (TAXNEW - TAX)/(BCNEW - BC) = Present value of marginal UI tax cost of a change in benefit charges.

[b] PVTAX = Present value of total UI taxes in control run.

[c] PVBC = Present value of total UI benefits charged in control run.

[d] PVTAXNEW = Present value of total UI taxes in spike (1% IUR increase) run.

[e] PVBCNEW = Present value of total UI benefits charged in spike (1% IUR increase) run.