A Comparative Analysis of Unemployment Insurance Financing Methods

FINAL REPORT

Wayne Vroman

THE URBAN INSTITUTE

Elaine Maag

THE URBAN INSTITUTE

Christopher O'Leary

W.E. UPJOHN INSTITUTE

Stephen Woodbury

W.E. UPJOHN INSTITUTE

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Executive Summary

The state-Federal system of Unemployment Insurance (UI) programs has existed for 80 years. The programs in the states are financed by employer payroll taxes paid into state trust fund accounts maintained at the U.S. Treasury. These accounts are the source for benefit payments made to eligible unemployed workers.

This report was prepared for use by states interested in assessing their current system of unemployment insurance (UI) program financing and understanding, exploring and modeling alternative financing arrangements. This Financing Guide has been developed with two primary goals in mind. The first goal is to serve as a "how to" document, with a significant focus on demonstrating for the reader how to implement common and alternative benefit financing mechanisms. The second goal is to describe current practices, review recent state financing experiences and identify detailed tax provisions and administrative procedures associated with adequate levels of financing.

The UI programs in the states are very diverse and individual chapters explore detailed aspects of program financing. Particular attention is given to UI tax rate determination and trust fund solvency in the states. Separate chapters examine experience rating, tax rate variation, the taxable wage base, socialized benefit charges, tax rates for new employers, trust fund solvency and borrowing when trust funds become insolvent.

A unique feature of state UI programs in the United States is practice of experience rating. In each state UI payroll tax rates for individual employers are to be set based on the employer's experience with unemployment or based on factors that reasonably measure unemployment risk. Chapter 2 examines four methods states currently use to set employer tax rates (reserve ratio, benefit ratio, benefit-wage ratio, and payroll decline). Details of each method are presented and strengths and weaknesses of each method are assessed. The practice of experience rating can utilize other approaches to setting tax rates besides those currently in use. Appendix C describes and evaluates four alternative methods. The conclusion of the Appendix C analysis is that none of the four alternative methods is superior to the methods currently in use.

Two analytic findings of the project were most prominent. 1) Indexation of the taxable wage base has strongly positive effects on state-level financing experiences. Several findings reported in Chapter 5 reinforced this point. Chapter 5 documented the evolution of the tax base in the UI system and examined the determinants of tax revenue with employer micro data from Missouri and Washington. One conclusion from that analysis is that changing the tax base has been much more effective in enhancing program revenue than changing the maximum tax rate. 2) The practice of total cost targeting of tax revenue and the associated use of array allocation (AA) to set tax rates for individual employers has strongly positive effects on state-level

financing experiences. Sections of Chapters 1, 2 and 3 present findings that demonstrated the positive effects of total cost targeting and AA in the twelve state UI programs that practice this approach to tax rate determination and benefit financing.

Chapters 3 and 4 examine UI tax rate schedules and other determinants of employer tax rates. One purpose of the analysis is to illustrate the wide diversity of approaches used by states to determine tax rates for individual employers. The diversity includes differing degrees of reliance on multiple tax rate schedules and solvency taxes with differing potential tax rates. Chapter 3 also examines different features of tax rate schedules that can limit or enhance the potential revenue from schedules. The chapter also examines detailed tax provisions in the 12 states that set tax rates using total cost targeting and AA. This group of AA states exhibits wide diversity in their methods of experience rating, the number of tax rate schedules, tax bases and maximum tax rates. A state seriously considering adopting an AA approach to setting tax rates would have a variety of options from which to choose.

Chapters 6 and 7 focus on social charges; charges that generally cannot be assigned to individual employers. One systematic pattern is that larger states have a lower proportion of socialized charges compared to smaller states. Beyond this, no systematic state-level associations were found between the extent of social charges and other program provisions such as the taxable wage base, the average tax rate or the benefit cost rate. Social charges in individual states are highly varied but not easily explained. One conclusion of the analysis of social charges is that while they are substantial in many states, they have little or no systematic association with a state's overall trust fund solvency.

The report also examined three topics which have only a limited aggregate effect on program financing: new employer taxes, state reserve funds, and employee UI taxes. While all new employers are subject to new employer taxes, their role in program financing is very limited because of their small size. The analysis of Chapter 8 showed that new employer tax payments exceed their charged benefits. The chapter also singled out new employers in construction for particular attention since they experience above-average benefit charges compared to employers in most other industries. Chapter 9 examined state reserve funds and found that the three states with active reserve funds (Idaho, Iowa and Nebraska) have been able to use interest from these funds to finance certain labor market programs and UI administrative activities without limiting benefit payments under their regular UI programs. Chapter 10 examined employee UI taxes in three states: Alaska, New Jersey, and Pennsylvania. Employee UI taxes make a measurable contribution to total tax revenue in all three states, but it is not clear that these taxes significantly improve the net trust fund balances in these states. All three states have high benefit recipiency rates and employee taxes may contribute to their high recipiency. Two of the three states needed Treasury loans following the recession of 2007-2009.

As noted above, benefit payments in the regular (26-week) UI program are made from state trust fund balances maintained at the U.S. Treasury. If a state's trust fund becomes depleted it is still required to make full payments to eligible claimants. A well-established borrowing mechanism exists that states may use (termed Title XII loans) to help finance payments in the short run. Following the recession of 2007-2009, 35 state programs (36 including the Virgin Islands) secured Title XII loans, and as of late 2015, five programs still have outstanding loans. Chapter 11 examines UI borrowing, including both Title XII loans and loans secured by eight states in the municipal bond market between 2010 and 2013. The chapter describes the advantages and disadvantages of both types of borrowing. Typically, the interest rates on municipal bonds are lower than for Treasury loans, but Treasury loans have more flexibility in borrowing and repaying that permits average outstanding loan balances to be lower compared to municipal bonds. Chapter 11 also reports simulation results of borrowing by Idaho which compares the interest costs of the two borrowing mechanisms.

The UI programs studied in this Financing Guide are highly diverse. This diversity was encountered in nearly all important aspects of the programs. If a state was dissatisfied with the results of its current financing system and wanted to explore alternatives, it would have a wide range of options from which to choose. Two aspects appear particularly appealing: establishing an indexed taxable wage base and using array allocation in setting tax rates for individual covered employers.

Introduction

This report was prepared for use by states interested in assessing their current system of unemployment insurance (UI) program financing and understanding, exploring and modeling alternative financing arrangements. The Financing Guide has been developed with two primary goals in mind. The first goal is to serve as a "how to" document, with a significant focus on demonstrating for the reader how to implement common and alternative benefit financing mechanisms. The second goal is to describe current practices, review recent state financing experiences and identify detailed tax provisions and administrative procedures associated with adequate levels of financing.

The UI financing systems in the states are highly diverse and complicated, and they must also adhere to a series of Federally-mandated rules. Individual chapters of the Financing Guide focus on different aspects of this system and provide in-depth examples, analyses, and discussions about different elements of the system as well as the Federal requirements.

State UI programs have been providing cash benefits to eligible unemployed workers for more than 75 years. The programs operate as a partnership between state and Federal government in which state UI benefits are financed by payroll taxes paid into state trust fund accounts maintained at the U.S. Treasury. During this time the programs have faced a number of serious challenges, such as the major economic downturn that commenced in late 2007, which have placed heavy strains on the UI financing system. Following that recession there was widespread borrowing by the states to pay benefits and a slow recovery of state trust funds. Looking to the future, the state UI system faces a need for continued increases in fund balances if the program is to continue to discharge in an undiminished manner its important role as an automatic counter-cyclical economic stabilizer during the next recession.

This Guide has been developed to provide state analysts the tools to design sound financing systems so that loans can be repaid and strong solvency positions established in preparation for the next recession. It is structured to provide a how-to manual in the evaluation and construction of a state UI tax structure. The early chapters provide important context for the core elements of benefit financing: understanding the levels of benefits the system will need to provide for, and general approaches to developing and maintaining systems that cover those costs. Subsequent chapters provide detailed descriptions of alternative financing mechanisms. Throughout these chapters, the emphasis is on providing basic guidance for implementing and evaluating these techniques, as well as providing important context to understand the relative advantages, and disadvantages, of specific approaches.

Chapter 1 addresses several questions including, 1) how to construct an individual employer UI tax rate, 2) how much a state should collect in revenue each year in order to maintain an adequate trust fund, and 3) how to construct a measure that can be used to evaluate state tax rate adequacy. It also discusses state funding strategies and measures of state UI trust fund adequacy. Appendix A identifies and discusses the key requirements that states must satisfy in the administration of their UI programs. Conformity requirements are specified in two Federal statutes: the Social Security Act (SSA) and the Federal Unemployment Tax Act (FUTA). They relate to three broad areas; benefit payments, tax collections and program administration. Appendix B summarizes the history of UI financing. It also documents past state performance in achieving trust fund balances that meet generally recognized thresholds of fund adequacy.

Chapter 2 examines methods of experience rating. It describes the reserve ratio (RR) and benefit ratio (BR) methods in detail and discusses their respective strengths and weaknesses, their forms of application and effectiveness at distributing the UI tax burden. This chapter also introduces array allocation as a helpful technique for setting employer tax rates that can be used with any measure of employer experience. Appendix C introduces and evaluates alternative methods of determining tax rates for employers, methods that assess "experience with unemployment" using measures different from those currently used by the states.

Chapters 3 and 4 examine the methods for adjusting tax rates to a level of trust fund solvency. Nearly all states currently adjust the level of their tax rates based on the level of their state trust fund balance. Many states set employer taxes using a set of tax rate schedules, some use flat add-on solvency rates, and still others derive a specified desired level of funding from which they distribute tax rates. Each schedule has a progression of tax rates from a minimum to a maximum tax rate. Associated with each tax schedule is a trigger threshold measured on a specific date (the fund trigger date, most commonly June 30th or July 1st) which determines the particular schedule within the tax table that will be active during the next tax year. The set of tax schedules is commonly described as the tax table. An individual employer's tax rate for the coming year is determined by the active tax schedule in the tax table and employer's specific measure of experience which places the employer within a known interval in the active tax schedule. Chapters 3 and 4 describe the range of structures of both tax tables and tax schedule triggers that lead to the assignment of individual employer tax rates. Strengths and limitations of particular tax schedule structures and trigger arrangements are identified and discussed, including examples from states with more and less successful funding histories.

For the state, total UI tax revenue is the product of the average tax rate and taxable payroll, which is determined by the state's taxable wage base. Chapter 5 focuses on the role of the UI tax base in benefit financing. The taxable wage base, also referred to as the tax base, is the annual limit on each worker's annual

earnings that are subject to taxation. The tax base serves as the primary determinant of taxable payroll and plays a critical role in the level of revenue that a state can generate to pay benefits. Under Federal law, the tax bases in the states have been required to equal or exceed the level set by FUTA, the first $7,000 of annual earnings, since 1983. States set the tax base in different ways including the use of two different procedures that cause automatic changes. Indexed tax bases change automatically, on an annual basis, in response to changes in average statewide earnings (19 states), and in response to changes in the level of the trust fund balance (four states). Chapter 5 describes the diverse approaches that states use in establishing their taxable wage bases and the evolution of these approaches. It also discusses and the linkage between the tax base and tax capacity, the maximum revenue that can be generated by the tax system when employers are taxed using rates from the highest tax rate schedule. Also discussed is the critical role that the taxable wage base plays in state financing by describing how fund solvency can deteriorate when benefits are indexed to the growth of wages and taxable wages are not. This dynamic is also documented with evidence from past recessions.

Chapters 6 and 7 focus on socialized benefit charges. These chapters identify the various reasons that socialized benefit charges may occur, and how to construct financing features that recoup those charges. Some states attempt to provide a strict accounting of all socialized benefit charges and then attempt to assign specified amount back to each employer, others set a constant social add-on rate for each employer, and some do no accounting or recoupment of social charges at all. These chapters discuss how each methodology is constructed and its ability to maintain financing levels under various levels of social charges.

Chapters 8, 9 and 10 address three specialized financing topics that account for a very small share of total state UI tax revenue: new employer tax rates, state reserve fund taxes, and employee UI taxes. The chapters cover how such taxes are structured and identify the potential usefulness of these tax features to other state UI programs. New employer taxes need to be of sufficient volume to ensure that they cover associated benefit costs, particularly in an industry like construction where employers experience frequent turnover and benefit claims can be both common and substantial. State reserve funds are state-administered trust funds supported by UI taxes whose principal is dedicated to paying UI benefits. While the interest earnings of state trust funds at the Treasury can be used only to pay benefits, the interest income from state reserve funds can support activities other than paying UI benefits. State reserve fund experiences are examined in Chapter 9. Although employee UI taxes are present in just three states, they can be an important source of program revenue. Experiences with employee UI taxes, a common feature of foreign UI programs, are examined in Chapter 10.

Chapter 11 reviews the history of borrowing when state trust fund balances are low and/or negative. State experiences during recessions of varying intensity are summarized. The chapter describes current and past financing approaches when state trust funds become insolvent. States that carry Title XII loans from the

Federal government for multiyear periods are subject to mandatory repayment requirements which are described. The chapter also examines state borrowing in the municipal bond market, an option utilized by eight states between 2010 and 2014. Advantages and disadvantages of different financing options are discussed and evaluated.

Chapter 12 summarizes the key financing features that promote and hinder solvency, reemphasizing important points from earlier chapters. Two features are given paramount attention: tax base indexation and array allocation. Tax base indexation, having a tax base that responds automatically to changes in average statewide covered earnings, is now present in more than one-third of UI programs. On average, states with indexed tax bases have been much more successful in maintaining solvent trust fund balances compared to other states. The chapter also assesses the role that array allocation in fostering program solvency. Array allocation is part of an approach to program financing, often termed "total cost targeting," that calculates a desired level of funding based on a state's long run benefit cost rate, that is, benefits as a percent of covered payroll. It then sets taxes to achieve this desired level of funding. Other desirable financing features are also discussed.

The Guide's appendices are: A) the key Federal conformity requirements that states must meet in program administration, B) measuring the solvency of state UI programs, C) an analysis of alternative ways to experience rate employers, and D) a summary of selected simulations.

Chapter 1. Constructing Unemployment Insurance Tax Rates

This chapter addresses several issues and questions but three are particularly important: 1) how to build and evaluate an employer's UI tax rate, 2) how much a state should collect in UI taxes each year to maintain an adequate UI trust fund, and 3) how to construct a measure to evaluate tax rate adequacy. The chapter also examines three topics that are critically important to UI financing: long-run and cyclical benefit costs, alternative state funding strategies, and measures of state UI trust fund adequacy. Finally, the chapter sets the stage for several analyses of UI program financing undertaken in later chapters. Appendix A gives a detailed description of Federal conformity requirements that relate to three broad areas: UI taxation and financing, benefit payments and program administration. Appendix B reviews the history of state UI financing experiences since the 1970s with emphasis on state borrowing and the linkage between the level of pre-recession reserves and state borrowing.

1. Constructing a UI Tax Rate

The Federal Unemployment Tax Act (FUTA), which established the Unemployment Insurance system in the United States was enacted in the middle of the Great Depression. At that time, there were numerous employers with voluntary UI plans structured as individual employer-based severance plans. These severance plans, similar to those in existence today, required employers to maintain reserves from which they paid their own laid-off employees. When funds in the firm's account were exhausted, payments stopped. The widespread and recognized inadequacy of private compensation arrangements for the unemployed was a major factor behind the enactment Unemployment Insurance legislation (Title III of the Social Security Act of 1935and FUTA) and the establishment of UI programs in the states.

Although the program began with financing responsibility from individual employers for their own benefits, by 1949 all State UI programs switched to operating with pooled accounts that receive all employer contributions and are the source of benefit payments to the unemployed. By pooling all employer taxes into one fund the UI tax essentially adopted the characteristics of an insurance premium: limiting the benefit payment liability of any single employer, while spreading the risk of high benefit payments across all employers in the state, and no longer maintaining individual accounts.

Insurance premiums are based on the average cost of the insured event taking place, and the probability of incurring that event in the future. The pure premium or risk premium is the premium that would exactly meet the expected cost of the risk being covered: ignoring the costs of administration, commissions, and other fees. The risk

premium (rp) in insurance is the product of the average claim size (cs) and the claim frequency rate (fr). It is computed as rp = cs * fr.

The primary difficulty in any insurance program is not knowing with precision the volume of future costs. Some insured events, of course, are more predictable than others, which is why more definitive actuarial tables can be constructed for events like automobile accidents. For UI, future costs are constructed around an amount of funds needed to be kept in reserve for future payments which would match the average high level of payments experienced in the past.

In UI, the average costs of the compensable unemployment event can be calculated either by the benefits charged to a firm (for the employer premium) or the total costs incurred by the entire state UI program (for a state-wide benefit cost rate), while the probability of the event occurring in the future can be specified as a portion of future benefits payments or what may be referred to as a solvency amount.

Several foreign UI programs are financed by one flat tax on all participants, often divided between employers and workers. The methodology for calculating the effective annual tax rate is calculated similarly; the average costs of the program over a pre-specified past number of years are combined with a portion of future costs. Often the future portion of costs is accumulated until a trust fund dedicated to program benefits reaches a specified or target solvency level. Then the solvency portion of the tax is removed or the average cost portion of the tax is reduced.

2. Two Approaches to Tax Rate Determination

To arrive at individual employer tax rates state UI programs have developed two separate methodologies. One has grown out of procedures applied at the level of individual employers while the second methodology starts from an aggregate (statewide) perspective.

The states using an individual employer rate methodology basically follow a three step process in developing the employer's tax rate; starting with the individual employer's own experience with unemployment and then building up to a final rate:

1. First, a measure of the individual employer experience with layoffs is derived. Usually this reflects the volume of benefits charged against the employer from laid-off employees (or how much the employer would have had in its own fictitious reserve account, that is, the cumulative volume of benefits the employer has been charged subtracted from the cumulative amount the employer has paid into the system).

2. Then an amount of additional costs to the program that were not assigned to individual employers are added together across the state and assigned back to each individual employer's basic rate calculation,

typically by either a flat or a proportional addition to the basic rate (or incorporating this amount into the fictitious reserve account).

3. Finally, an amount of future benefit costs may be added onto the rate (a solvency amount) primarily by adding the solvency amount to reach the final tax rate.

Since state UI programs first began with individual employer-level financing, a majority have simply continued to use a methodology in which the tax rate is built up by first calculating the costs assigned to each individual employer.

Another group of states has developed a methodology that is similar to other forms of insurance premium calculations. The total costs experienced by the insurer (state) are first derived and then distributed to individual participants (employers). This method will be referred to as "total cost targeting" method. These two methodologies have major differences:

The total cost targeting method also uses a three-step process, but begins by deriving the average costs experienced by the state as a whole:

1. Calculate a target level of funding based on a measure of the state's average past total benefit costs including an average of high-cost benefit periods.

2. From the target level of funding these states then calculate the average tax rate across all taxable employers that will generate enough revenues to match the target or desired level of funding. The target may vary depending upon the current level of the state's trust fund balance.

3. Then employers are ranked by a measure of experience with unemployment and divided into groups with known shares of taxable payroll. Employers in each group pay a single tax rate and the set of rates in the tax schedule are arranged to yield a statewide tax rate that matches the target rate.

A key difference in these two methodologies is that the total cost targeting states do not calculate or track any additional costs such as those not assigned to individual employers (social costs). The beginning target funding rate (step 1 above) is expected to include the funding for all costs. Also, the distribution of tax rates in the total cost method can be done on any measure of employer experience desired, not necessarily the benefits assigned to each employer.

Of course, within each broad approach there are a variety of specific features. These can include the calculation of targets, number of tax rate intervals, the measure of experience, level of the taxable wage base, differences in social cost recoupment, and solvency tax add-ons. However, the primary methodological difference still remains: one starts with the unemployment experience associated with each individual employer while the other starts with the statewide experience with benefits.

CALIFORNIA. California is an example of the methodology that is based on a measure of individual employer experience. Like 32 other states California begins its rate calculation by first deriving each firm's reserve ratio (reserves as a percent of taxable payroll). Then each firm's reserve ratio is adjusted by how much the state has paid out in total social charges. Finally, the state increases or decreases the individual employer rates based on how much the state has in its state UI trust fund - by using eight tax rate schedules. The eight schedules are operative over different ranges of statewide experience with the highest schedule (Schedule F+) operative whenever the trust fund balance falls below 0.60 percent of statewide payroll on the fund trigger date of September 30th. Schedule F+ has all rates 15 percent higher than rates on the next lower schedule, and the 15 percent increment is intended to restore the fund to a higher level. Within each schedule there are up to 38 different rates that span fixed ranges of employer reserve ratios from -20% to 20%. Thus the employer rate depends on the size of the state trust fund (hence the operative tax schedule), total social costs, and the individual firm's reserve ratio. Schedule F+ has been operative in all years since 2004, but the 15 percent add-on has not restored the state's trust fund. California is discussed further in Chapter 3.

VERMONT. Vermont is an example of how tax rates are set when the state first calculates a targeted level of total benefit costs. First the state compares its current trust fund amount to a high period of past yearly benefit amounts. For each range of values of this measure it has decided upon a desired level of total funding (taxes) that will be collected from all employers. Then the state divides up employers, based on their individual benefit charges, into twenty-one groups, each with a different tax rate but whose average will be equal to the desired funding amount. The state has five different levels of funding (tax schedules) based on its trust fund compared to high benefits with target yields that range from 0.80 to 1.51 percent of total payroll. There are 21 tax rates in each schedule. The lowest tax rate is applied to all employers with zero benefit charges in the past three years. The 20 higher rate categories have employers ranked from low to high according to past benefit charges (benefits as a percent of payroll), each group with the same share of statewide taxable payroll. Because the shares of payroll and the tax rates in each rate category are known, the overall yield is also known with a high degree of certainty. Post-recession restoration of the trust fund occurs as the state moves to higher tax rate schedules after the trust fund is depleted. The state taxed employers under Schedule III during 2007 but then moved to Schedule IV in 2008 and 2009, and to Schedule V (the highest schedule) between 2010 and 2015. By the end of 2014 Vermont's trust fund had been largely restored. Its balance of $153 million represented 86 percent of the balance at the end of 2007.

3. Average Benefit Costs

State Unemployment Insurance (UI) programs need to generate sufficient revenue to finance benefit payments for the regular UI program. Understanding the level of benefit costs that a state may be potentially liable for is critical to both the evaluation of current financing systems, and the development of alternative systems. Without a clear understanding of the magnitude of benefit outlays, it is exceedingly difficult to know if the revenue produced by a

financing system will be adequate to finance the regular UI program that pays up to 26 weeks of benefits in most states. Regular UI benefit payments plus half of payments under the Federal-state Extended Benefit (EB) program are usually the financial responsibility of each state.

One of the first steps in tax rate construction is evaluating state-level regular UI benefit costs, which can vary widely from year to year and from state to state. Over the long run, most states have experienced average benefit cost rates (benefit payments as a percent of total covered payroll) that range between 0.50 and 1.50 percent of total payroll. In the years since World War II, at the national level, the aggregate cost of regular UI benefits has averaged almost exactly 1.0 percent of the total payroll of taxable covered employers.

The first decision of any state analyst in reviewing the benefit cost experiences of their own individual state is determining how much of the prior history to use in the determination of current revenue needs. In other words, will the future benefit payouts reflect the past ten years, twenty years, or thirty years, or has the state economy, demographics, and UI program changed enough that only the past ten years of costs would be reflective of the future. The benefit cost rate, or total benefits paid, is comprised of the number of people receiving benefits, the length of time they will be receiving, and the weekly benefit payment. If any of these variables has changed in the recent past this fact is vital to consider in developing an average benefit cost rate to use for construction of a state average tax rate.

Deciding on which period to use will also entail incorporating at least one period of previously high benefit payouts in order to properly gauge an average payout. This section emphasizes two types of comparisons: highest-ever costs and costs over ten year periods. Both comparisons utilize state-level benefit data that extend back to 1950.

Table 1.1 displays measures of state-level benefit cost differentials, focusing on average costs and highest-ever annual costs. The 51 state programs (the 50 states plus D.C.) have been sorted into the nine Census Bureau divisions so as to highlight regional contrasts. Column (3) shows average benefit costs for the 63 years from 1950 to 2012. The national average of 0.99 percent falls below the average cost rate for most states in the New England, Mid-Atlantic and Pacific divisions (13 of 14 states), but it exceeds costs for most states in the West North Central and the three Southern divisions (20 of 24 states).

TABLE 1.1
State-level UI Benefit Cost Rates, 1950 to 2012

Census Division (1)	State (2)	Average Annual Cost (3)	Maximum Annual Cost (4)	Maximum Cost Year (5)	Max Cost/ Avg. Cost =(4)/(3) (6)	Maximum 3 Year Cost (7)	3 Year/ Max Year =(7)/(4) (8)	Cost Rate 2009 (9)	2009/ Maximum =(9)/(4) (10)
N England	CT	1.08	2.95	1975	2.72	2.24	0.76	1.72	0.58
N England	ME	1.26	2.80	1958	2.22	2.14	0.76	1.67	0.60
N England	MA	1.27	2.90	1975	2.29	2.22	0.77	1.89	0.65
N England	NH	0.76	2.41	1975	3.19	1.77	0.73	1.25	0.52
N England	RI	1.84	3.85	1975	2.10	2.75	0.72	3.00	0.78
N England	VT	1.29	2.85	1975	2.22	2.22	0.78	2.40	0.84
M Atlantic	NJ	1.42	2.89	1975	2.03	2.36	0.82	2.12	0.73
M Atlantic	NY	1.09	2.22	1975	2.04	1.77	0.80	1.28	0.58
M Atlantic	PA	1.48	3.19	1982	2.15	2.60	0.82	2.53	0.79
E N Central	IL	0.99	2.41	1982	2.44	2.10	0.87	2.04	0.85
E N Central	IN	0.68	2.18	2009	3.19	1.48	0.68	2.18	1.00
E N Central	MI	1.30	3.75	1958	2.89	2.62	0.70	2.96	0.79
E N Central	OH	0.92	2.74	1982	2.99	2.13	0.78	1.87	0.68
E N Central	WI	1.10	2.84	1982	2.59	2.31	0.81	2.41	0.85
W N Central	IA	0.84	2.43	1982	2.90	1.91	0.79	1.90	0.78
W N Central	KS	0.79	1.92	1982	2.42	1.43	0.74	1.46	0.76
W N Central	MN	0.93	1.89	1982	2.04	1.56	0.82	1.83	0.97
W N Central	MO	0.76	1.79	1975	2.37	1.24	0.69	1.38	0.77
W N Central	NE	0.59	1.43	1975	2.43	0.99	0.69	0.85	0.59
W N Central	ND	1.13	2.24	1983	1.98	2.03	0.91	1.07	0.48
W N Central	SD	0.52	1.03	1963	1.99	0.91	0.88	0.68	0.66
S Atlantic	DE	0.84	2.35	1975	2.79	1.82	0.78	1.35	0.57
S Atlantic	DC	0.69	1.73	1975	2.49	1.65	0.96	0.73	0.42
S Atlantic	FL	0.56	1.64	1975	2.94	1.15	0.70	1.26	0.77
S Atlantic	GA	0.64	1.88	1975	2.92	1.23	0.65	1.29	0.69
S Atlantic	MD	0.88	2.19	1958	2.49	1.85	0.85	1.19	0.54
S Atlantic	NC	0.84	2.27	1975	2.71	1.53	0.68	2.12	0.93
S Atlantic	SC	0.82	2.66	1975	3.23	1.58	0.59	1.84	0.69
S Atlantic	VA	0.46	1.23	1975	2.68	0.86	0.70	0.80	0.65
S Atlantic	WV	1.22	3.57	1983	2.92	2.86	0.80	1.84	0.52
E S Central	AL	0.84	1.99	1975	2.38	1.48	0.74	1.14	0.57
E S Central	KY	1.14	2.85	1954	2.50	2.05	0.72	2.13	0.75
E S Central	MS	0.91	2.07	1954	2.29	1.58	0.76	1.25	0.60
E S Central	TN	0.88	2.12	1954	2.40	1.68	0.79	1.30	0.61
W S Central	AR	1.08	2.47	1975	2.29	1.60	0.65	1.92	0.78
W S Central	LA	0.95	2.83	1983	2.98	2.29	0.81	0.74	0.26
W S Central	OK	0.68	1.37	1986	2.01	1.10	0.81	1.26	0.92
W S Central	TX	0.50	1.14	1986	2.26	0.93	0.82	0.99	0.87
Mountain	AZ	0.63	2.19	1975	3.47	1.43	0.65	1.21	0.55
Mountain	CO	0.59	1.29	2009	2.19	1.06	0.82	1.29	1.00
Mountain	ID	1.22	2.74	1982	2.25	2.10	0.77	2.40	0.88
Mountain	MT	1.16	2.95	1958	2.55	2.55	0.86	1.83	0.62
Mountain	NV	1.20	2.75	2009	2.29	2.07	0.75	2.75	1.00
Mountain	NM	0.84	1.62	2009	1.93	1.44	0.89	1.62	1.00
Mountain	UT	0.85	1.95	1982	2.30	1.53	0.79	1.39	0.71
Mountain	WY	0.93	2.82	1983	3.02	2.09	0.74	1.96	0.70
Pacific	AK	2.05	4.54	1975	2.21	3.81	0.84	1.48	0.33
Pacific	CA	1.16	2.14	1961	1.85	1.94	0.91	1.86	0.87
Pacific	HI	1.14	2.25	2009	1.97	1.86	0.83	2.25	1.00
Pacific	OR	1.45	3.19	2009	2.20	2.36	0.74	3.19	1.00
Pacific	WA	1.48	3.45	1971	2.34	2.80	0.81	2.47	0.72
United States	U.S.	0.99	2.41	1975	2.47	1.86	0.78	1.71	0.72

Source: All data from the Handbook of Unemployment Insurance Financial Data, column (16), benefits paid as a percent of total payroll. Data are annual calendar year data. Columns (6), (8) and (10) derived from other data.

The highest annual cost rates (benefits as a percent of total payroll) over the entire 1950-2012 period are displayed in column (4), the maximum cost year in column (5), and the ratio of the maximum cost to the average cost rate in column (6). For nearly all states, the year of the highest annual benefit cost rate was a recession year. Counts of states with maximum costs during recognized recession years are as follows: 1954 – 3, 1958 – 4, 1961 – 1, 1971 – 1, 1975 – 20, 1982 – 9, 1983 – 4 and 2009 – 6. A total of 48 states had their highest costs in one of these recession years. The three exceptional states are as follows: Oklahoma and Texas - 1986 and South Dakota - 1963. Note that not a single state had its highest-ever annual cost rate during the mild recessions of 1991-1992 or 2002-2003.

Individual recessions have differing regional patterns as illustrated in column (5) which identifies the year of maximum annual costs. For seven of nine states in the New England and Mid-Atlantic divisions and for seven of nine states in the South Atlantic division the maximum cost year was 1975 whereas for eight of 12 states in the East North Central and West North Central divisions it was 1982. Note also in column (5) that 1975 and 1982-1983 dominate as the years of highest annual cost rates, with 20 and 13 states respectively. The highest cost year from the most recent recession was 2009, but 2009 was the maximum cost year for just six states. Five of the six, however, were from the Mountain and Pacific divisions. On average, the most recent recession impacted Western states more severely than states in other regions.

Column (4) also shows that most states have experienced a maximum cost year of 2.0 percent or more of payroll (36 of 51). For five states the maximum cost rate was more than three times the average cost rate (column (6)). For all but five states, the maximum cost was more than twice the average cost rate and the lowest (maximum/average) ratio for any state is 1.85 (California). The column (6) (maximum/average) benefit cost ratios vividly illustrate that the variability of UI benefit costs related to the business cycle is present in all states. The 12 states with (maximum/average) ratios above 2.80 should be especially aware of their cyclical costs.

For most states (40 of 51) the single year of highest-ever benefit costs is one of the three consecutive years with the highest three-year benefit cost average. Column (7) displays these three-year maxima and column (8) shows the three-year average annual cost rates as a ratio to the highest-ever cost year. A ratio of 0.67 or higher in column (8) means that the associated three-year cost totals would be at least twice the cost for the highest-cost single year (column (4)). Prudent state trust fund management should recognize that major outflows in most states occur not only in the year of highest payouts but also in two adjacent years as well. Note in column (8) that all but four of these (three-year/single year) maximum ratios are 0.67 or higher.

In the period since late 2007 the U.S. economy experienced a severe recession and a prolonged period of high unemployment rates. At the national level, regular UI benefit payouts between 2008 and 2013 were highest during 2009, totaling 1.69 percent of payroll nationwide. Column (9) of Table 1.1 shows the cost rate for the states in 2009 and column (10) displays the ratio of the 2009 cost rate to the highest-ever cost rate (column (4)). Note that

the national average state cost rate in 2009 was 71 percent of the highest-ever annual cost rate and that the column (10) ratios fell below 0.70 for 24 of the 51 state programs. Thus while benefit payouts from the regular UI program were the highest-ever in absolute dollar levels during 2009 ($78.5 billion), the annual payout rate was not exceptionally high at the national level or in many states when compared to the highest past payout rates.

Table 1.2 provides a second summary of past cost experiences for the 51 state programs. It emphasizes costs per decade for the years between 1950 and 2009. Over these 60 years the national average benefit cost rate equaled 1.00 percent of payroll. The decade averages were highest in the 1950s, 1970s and 1980s and lowest in the most recent two full decades (the1990s and the 2000s). During the four decades from 1950 to 1989 the national cost rate was 1.08 percent of payroll. The average for the two more recent decades was roughly 0.85percent of payroll, about 20 percent less than the earlier four-decade average. Note also during the 1990s and 2000s that more than two thirds of the states had cost rates below 1.0 percent of payroll. Most states experienced below-average costs during the most recent two full decades.

TABLE 1.2
State-level Regular UI Benefit Costs, 1950 to 2009.

Benefit Cost Rate (Benefits/Payroll)	Number of States During the Decade of:						
	1950s	1960s	1970s	1980s	1990s	2000s	1950 – 2009
Below 0.50	4	2	3	1	11	4	1
0.50 – 0.999	21	29	20	19	26	31	28
1.00 – 1.499	18	18	19	19	12	14	20
1.50 - 1.999	6	2	7	11	1	2	1
2.0 and Above	2	0	2	1	1	0	1
	Aggregate Benefit Cost Rate						
National Average	1.10	1.00	1.14	1.08	0.82	0.87	1.00
	Aggregate Contribution Rate						
National Average	0.98	1.10	1.00	1.10	0.76	0.65	0.93

Source: All data from the Unemployment Insurance Financial Data ET Handbook 394. Benefit costs are measured as a percent of the total payroll of taxable covered employers. Each decade entry is based on ten years of data. Averages are calculated from aggregations of 51 state UI programs.

Table 1.2 also provides details on the distribution of state-level benefit cost rates. Note that decade averages below 0.50 percent of payroll are not common. The 1990s was the only decade when more than four states had benefit cost averages below 0.50 percent of payroll. At the other extreme, the number of states with decade-long cost rate averages above 1.50 percent only exceeded two during the 1950s, 1970s and 1980s. For the full 60 years, 48 of 51 state UI programs had an average cost rate between 0.50 and 1.499 percent of payroll.

Several state cost rates have been quite stable across the six decades. Florida, South Dakota, Texas and Virginia have the four lowest 60-year averages at 0.55, 0.52, 0.50 and 0.46 percent of payroll respectively and just four of their 24 decade averages (six per state) exceeded 0.60 percent of payroll. Conversely, Alaska, Rhode Island,

Washington and Pennsylvania had the highest 60-year averages at 2.09, 1.83, 1.49 and 1.48 percent of payroll respectively. These four states had cost rates quite consistently above 1.50 percent in the three high-cost decades (11 of 12 decade averages) but quite consistently below 1.50 percent during the 1960s, 1990s and 2000s (eight of 12 decade averages). These contrasts in decade-long average benefit costs imply that the financing needs of individual states in the UI system are quite varied. In many years, benefit costs as a percent of payroll in high-cost states are three times the costs in low-cost states.

To the extent that the past is prologue, a state's historical record on benefit costs can provide a sound empirical basis for expectations about future benefit costs. The historical benefit cost data as summarized in Tables 1.1 and 1.2 extend for more than 75 years into the past for each state UI program. A state analyst can calculate the state's benefit cost rate (BCR) for selected historical periods, noting both long run averages and maximum payout rates during past recessions in order to determine what level of costs need to be matched by the state's revenue capacity. Some measure of the state's long run benefit cost rate when combined with an expected amount of future benefits costs, essentially represents the benefits that need to be financed, and should become the foundation for comparison of the expected revenue from a state's tax system and a means to evaluate the state's current tax structure.

4. Future Benefits

In addition to financing an average level of past benefit costs, the states attempt to forward fund some level of future benefits. They do this by incorporating into the employer tax rate an amount dedicated to funding these benefits. Through forward funding, trust fund reserves are built-up prior to recessions, depleted during recessions when benefit payouts exceed tax revenue, and then restored during the subsequent upturn. The so called "solvency" portion of the tax is structured so that it increases as the state's trust fund amount declines, and it decreases when the trust fund reaches a pre-determined level of solvency.

While alternative strategies could be followed, advance funding is generally recognized as the preferred UI funding strategy to achieve long run trust fund solvency and ensure that the program acts as an automatic stabilizer during recessions.

In practice, several states incorporate a very small amount for future benefits and therefore do not build adequate reserves to fully finance the drawdowns occasioned by recessions. These can be considered low solvency states. In contrast, high solvency states incorporate a much higher level of solvency tax with the goal of maintaining a higher level of UI trust fund reserves. During and after recessions, low solvency states often have needed to secure loans from the U.S. Treasury, or have borrowed from the capital market, in order to pay benefits.

Since the mid-1970s the U.S economy has experienced five recessions.[1] Over this period just five UI programs out of 51 have never borrowed from the U.S. Treasury while seven have borrowed during four or five recessions.[2] Because recession-related borrowing from the Treasury has been widespread and because the past five recessions have differed in their severity, states may not be certain what amount for advance funding to include in their tax rates. The next section explores the question of state UI trust fund adequacy.

5. Measuring Tax Rate Adequacy

While the exact amount of future benefits is unknown, the solvency portion of any tax is based on some assumption of higher benefits occurring in the future. With this in mind, a state analyst can construct for any year a state tax rate (average for all employers) that would cover an average of the total costs of the program plus an amount that would reach or maintain an "adequate" reserve fund that would be able to avoid deep borrowing in the advent of a severe recession. This measure which may be termed an Adequate Financing Rate (AFR) could then be used to gauge the adequacy of any state's average tax rate to determine if the state was underfinancing the program compared to one that was adequately financed or if the state was more than adequately financing its level of expected benefits. An AFR can be built in the same way that an individual tax rate would be, by combining the average cost rate with a rate to finance future benefit payments. Examples of AFRs for in California and Vermont for tax rate year 2014 are described in the following paragraphs. The procedure for these two states can be used for any state, and calculations have been made for all states in the USDOL publication "Significant Measures of State Unemployment Insurance Tax Systems, 2014."

To build an AFR the analyst needs to make several assumptions. The first assumption concerns the number of years prior that the cost of regular benefits will be used as an average level to finance. The example below assumes a ten-year average. The second assumption involves selecting a target level of reserves and possibly a maximum level of reserves. The assumption used in this example is that the state wants to achieve an AHCM of 1.0 based on the three highest-cost years between 1993 and 2012. The third and final assumption involves how quickly the state wants to close the gap between the trust fund balance on the fund trigger date and the balance that yields the adequate trust fund amount (assumed to be an AHCM of 1.0). The example used here assumes either five or ten years to close the gap.

Table 1.3 displays AFR calculations for tax rate year 2014. California's three highest cost years between 1993 and 2012 averaged 1.50 percent of total payroll (line 1). The state's trust fund balance on September 30th 2013

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[1] This statement treats the back-to-back recessions of 1980 and 1982 as a single recessionary episode.

[2] The present discussion refers to the 50 states plus the District of Columbia but not to Puerto Rico and the Virgin Islands. The five states that have not borrowed since 1974 are Alaska, Mississippi, Nebraska, New Mexico and Oklahoma. The seven that borrowed during four or five recessions are Connecticut, Illinois, Massachusetts, Michigan, Minnesota, Missouri and New York.

was -$9.16 billion and its reserve ratio was -1.32 percent of total payroll (line 5). The deficit between the desired fund level (a reserve ratio of +1.5) and the actual current reserve ratio (-1.32) totaled 2.82 percent of total payroll (1.50 percent high-cost payout rate).

Illustrative AFR Calculations - California and Vermont, 2014

	California	California	Vermont	Vermont
	High Cost Years		**High Cost Years**	
	2009	1.86	2009	2.40
	2010	1.43	2010	1.72
	2002	1.20	2003	1.40
1. Average Three High Cost Rates	1.50			1.84
2. Reserves – Fund Trigger Date ($B)	-9.2			0.085
3. Total Payroll 2013 ($B)	697.5			8.55
4. Taxable Payroll 2013 ($B)	109.2			3.35
5. Reserve Ratio 2013	-1.32			1.00
6. Reserve Ratio Deficit 2013	2.82			0.84
7. Fund Deficit Tax Rate – Five Years	0.56			0.17
8. Fund Deficit Tax Rate – Ten Years	0.28			0.08
9. 10 Yr. Ben. Cost Rate – Total Payroll 2013	1.01			1.28
10. 10 Yr. Ben. Cost Rate – Taxable Payroll 2013	6.45			3.27
11. AFR Total Payroll – Five Years	1.57			1.45
12. AFR Taxable Payroll – Five Years	10.04			3.70
13. AFR Total Payroll - Ten Years	1.29			1.36
14. AFR Taxable Payroll – Ten Years	8.24			3.48

Source: Data in rows 1, 2, 3, 4, 5, 6, 9 and 10 from the Handbook of UI Financial Data. AFR calculations in rows 7, 8, 11, 12, 13 and 14. Payroll and reserves in $billions ($B). Reserve ratios and tax rates in percentages. High costs: benefits as a percent of total payroll.

Lines 7 and 8 show the annual tax rates needed to move from the trust fund balance on the fund trigger date to the target balance using periods of five and ten years respectively. Lines 9 and 10 show the average benefit cost rates over the last ten years. The benefit cost rate tax rate on total payroll was 1.01 percent and on taxable payroll it was 6.45 percent. Lines 11 and 12 show the AFR tax rates implied by adding to the ten-year benefit cost rates the rates implied by a five-year gap-closing strategy. For example, line 11 equals line 9 plus line 7. Because of the large negative reserves in 2013 and other recent years, the AFR under this strategy is 1.57 percent of total payroll (10.04 percent of taxable payroll) or 55 percent higher than the average benefit cost rate. Using a ten-year window to close the gap, the tax rate on total payroll rises to 1.29 or 28 percent above the average benefit cost rate of 1.01 percent.

A much different picture emerges when similar calculations are performed for Vermont. The cost rate during the state's three highest-cost years between 1993 and 2012 averaged 1.84 percent of total payroll. The fund balance on the computation date of December 31st 2013 was 85 million or a reserve ratio of 1.00 percent. Thus there was only a relatively small gap between the actual fund balance and the fund balance implied by an AHCM of

1.0. Thus under both the five-year and ten-year gap-closing strategies the AFRs (lines 11-14) and the average benefit cost rates (lines 9 and 10) were similar.

The calculations displayed in Table 1.3 provide an objective basis for assessing the adequacy of a state's current financing provisions. An analyst can then compare this one year AFR with the state's current average tax rate. The percentage difference between the two rates shows how the state's current level of financing compares to an objectively determined adequate level. A large negative percentage suggests that a state probably has an inadequate level of taxation especially if it has been several years following a recession, whereas a positive number identifies a program with an average tax rate that is covering the average level of benefits and the solvency amount.

In 2014 the average tax rates on taxable payroll in California and Vermont were 5.02 and 3.97 percent respectively. The AFR calculations for 2014 (assuming a 5-year period to close the deviation of the actual trust fund from the trust fund with an AHCM of 1.0) imply the tax rate should be 10.04 percent in California and 3.70 percent in Vermont. Under these assumptions the 2014 tax rate in California falls 50 percent below the adequate financing rate ((5.02 − 10.04)/10.04) = -0.50) while the tax rate in Vermont is seven percent above the AFR ((3.97-3.70)/3.70) = 0.07).

AFR calculations like those just described for California and Vermont are shown for each state UI program in line 12 of the USDOL publication "Significant Measures of State Unemployment Insurance Tax Systems, 2014." State analysts can make their own assumptions as to the expected future benefit cost rate and the appropriate target trust fund balance, hence the AFR appropriate for their state.

Calculation of an AFR would be a logical first step in creating a new tax structure. The average benefit cost rate AFR (calculated by the analyst) would be used as the desired level of funding when the state has achieved it desired level of trust fund solvency. Then the level could be increased or decreased based on the size of the state trust fund. This is the same methodology as used by the so called total cost targeting states as well as many insurance companies in setting premium levels that reflect individual experiences.

All the calculations in the preceding examples are straightforward and are based on a combination of historic data and analyst judgement an accompanying spreadsheet model has been included with this guide to allow a state analyst to calculate their own AFR.

The systematic differential between the average contribution rate and the average benefit cost rate during the 1990s and the 2000s decades underlies a widespread decrease in UI trust fund balances in the states that is apparent in state-level as well as aggregate UI program data. At the end of 2007, at the onset of the 2007-2009 recession, 35 states had reserve ratios (trust fund reserves measured as a percent of payroll) of less than 1.5 percent compared to only 13 states with such low reserve ratios in December 1989, before the start of the 1991-

1992 recession. The loss of reserves in the years prior to the 2007-2009 recession was widespread across the state UI programs. The aggregate reserve ratio decreased from 1.90 in 1989 to 0.80 in 2007, a reduction of more than half of its 1989 value. The bottom rows of Table 1.2 vividly illustrate that despite decreases in the average benefit cost rate during the 1990s and 2000s, UI taxes have been insufficient to finance the regular UI program and the primary cause for declining trust fund reserve ratios since 1989.

Later chapters of this financing guide will examine factors that are contributing to the failure of UI taxes to match benefit payouts during recent decades, including: tax rates that have been set too low to meet increasing benefit payments, inability of social cost recoupment methods to meet increasing social costs, and the lack of financial sustainability that a fixed wage base brings to a system with increasing benefit levels. These and related financing questions will be addressed in later chapters.

6. State Strategies to Finance Future Benefits

The financing of state UI programs can be accomplished using one of three broad approaches. The first approach is the stock approach, and it emphasizes the need to build and maintain an "adequate" trust fund balance which is sufficient to finance benefits in both normal years and during recessions. The stock in the trust fund should be sufficient to fund a recession-related increase in the benefit outflow without the need to secure loans to make benefit payments. Associated with this approach are measures of the adequacy of the trust fund balance: the average high cost multiple (AHCM) and the reserve ratio multiple (RRM, or the equivalent HCM, high cost multiple, terms defined below). The second approach is the flow approach, which emphasizes the expected future average flow of benefits (the annual payout rate measured as a percent of total covered payroll) and the need for the state's tax system to generate sufficient revenue to match or slightly exceed the benefit outflow over the long run. The flow approach to UI financing future benefits is compatible with and largely equivalent to the "total cost targeting" method of setting tax rates discussed earlier in this chapter. States that maintain low trust fund balances for a succession of years (or low solvency states) can be described as using a third approach, the pay-go approach. States that follow a pay-go strategy do not build large trust funds and plan to rely on either ad hoc adjustments during recessions or have responsive statutory provisions (tax increases and benefit reductions) that automatically counter the increased benefit outflow during recessions and limit the size of the trust fund drawdown. One element of a pay-go strategy could be to plan to borrow in the municipal bond market during a recession if interest rates are more favorable (lower) than the interest rates on loans from the U.S. Treasury.

The high solvency states that follow the first and second approaches differ in many details (discussed previously and in chapters 2 and 3) but share a common objective of having a benefit financing system that successfully meets state long run financing needs. In practice, this means avoiding major financing adjustments (benefit reductions and tax increases) during and immediately after a recession. Both approaches involve advance

funding of future benefit payments. The first approach places primary emphasis on the level of the trust fund balance (a stock) while the second approach places primary emphasis on matching the flow of future tax revenue with the flow of expected future benefits. Although the flow approach is practiced by a minority of state UI programs, it is emphasized in this Financing Guide because of its explicit recognition of the key need to balance the flows of future benefits and taxes to have a successful strategy of UI program financing. The pay-go approach, in contrast, does not have an explicit target trust fund that the state seeks to achieve. It responds, instead, to trust fund drawdowns with automatic or ad-hoc measures that seek to avoid borrowing or limit the amount of borrowing.

The stock approach: The Reserve Ratio Multiple and the Average High Cost Multiple

Two commonly used measures of UI trust fund adequacy are the reserve ratio multiple (RRM, also termed the high cost multiple or HCM) and the average high cost multiple (AHCM). Both are actuarial measures with certain common features but with differing specific details. The RRM was first developed in the late 1950s by a benefit financing committee of the National Association of State Workforce Agencies (NASWA) whereas the AHCM was developed in the 1990s as part of a comprehensive review of the State UI program by the Advisory Council on Unemployment Compensation (ACUC) of 1994-1996.[3] Both measures can be used to assess the adequacy of a state's UI trust fund.

The RRM and the AHCM are both calculated as a ratio of two ratios. The numerator for both is the reserve ratio: the end-of-year net state trust fund balance at the U.S. Treasury measured as a percent of the total payroll of UI taxable covered employers for the same year.

The RRM and AHCM have different denominators. The denominator for the RRM is the highest-ever past benefit payout rate from the state's trust fund during twelve consecutive months, expressed as a percent of UI covered payroll during the highest payout twelve-month period.

$$RRM = \left(\frac{Reserve\ Ratio}{Highest\ Benefit\ Rate}\right) = \left(\frac{\frac{Net\ trust\ fund\ balance, December\ 31}{Total\ payroll, covered\ employment, calendar\ year}}{\frac{Highest\ ever\ 12\ month\ benefit\ outlay}{Total\ payroll\ covered\ employment, same\ 12\ months}}\right)$$

$$AHCM = \left(\frac{Reserve\ Ratio}{Avg.\ High\ Cost\ Rate}\right) = \left(\frac{\frac{Net\ trust\ fund\ balance, December\ 31}{Total\ payroll, covered\ employment, calendar\ year}}{Average\ of\ three\ highest\ cost\ rates\ for\ specific\ time\ period}\right)$$

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[3] NASWA was formerly the Interstate Conference of Employment Security Agencies (ICESA). The RRM is discussed "Report of Committee on Benefit Financing," (Washington, D.C.: Interstate Conference of Employment Security Agencies, August 1959). The AHCM is discussed in Advisory Council on Unemployment Compensation, "Collective Findings and Recommendations: 1994-1996," (Washington, D.C.: Advisory Council on Unemployment Compensation, 1996). ACUC recommendation 1995-2 was that each state should forward fund its UI program with an AHCM of 1.0.

Measures of the RRM for each state were first published in the Handbook of Unemployment Insurance Financial Data for the year 1971. The reachback period for measuring the highest-ever past payout rates in the Handbook extends back to 1958. The past highest payout periods do not necessarily coincide with full calendar years. For example, the highest cost twelve- month period for Tennessee ended in January 1958.

The denominator for the AHCM is the Average High Cost Rate (AHCR) and both the AHCM and AHCR are defined by Federal administrative regulation (20 CFR 606.3). The past period for calculating the AHCR is the longer of the following two periods: i) the past 20 calendar years including the year for which the AHCR is calculated or ii) the number of calendar years extending from the first year when the earliest of the past three recessions began until the year for which the AHCR is being calculated.[4] In 2014 this period spanned 25 years from 1990 to 2014. Within this period the AHCR is the average of the three years of highest benefit cost rates with each year measured using calendar year data. The AHCM is the ratio of the reserve ratio on December 31 to the AHCR.

The RRM and AHCM both incorporate three elements important for determining trust fund adequacy:

1. the pre-recession (or present) level of state reserves,

2. the size of the state's economy (approximated by total UI covered payroll of taxable employers) and,

3. a high cost past annual benefit payout rate (measured as a percent of covered payroll).

The RRM and AHCM differ in their method of measuring the high cost past benefit payout rate. Because the AHCM uses a three-year average and just the past 20 years (or past three recessions), the AHCR will be lower than the highest-ever past 12-month payout rate, and the AHCM will exceed the RRM in every state. The RRM and the AHCM both show the proportion of a year of benefits that reside in the state trust fund at the time when the reserve ratio is calculated.[5] When the AHCM equals 1.0, it means there are 12 months (one full year) of benefits in the trust fund when measured at the AHCM three-year average high-cost payout rate.

As noted, the RRM has been calculated each year since 1971 and estimates of the RRM appear annually in the "Unemployment Insurance Financial Handbook" (ET Handbook 394). In the past, studies of UI program financing have recommended that states achieve an RRM of 1.5 or (more recently) an AHCM of 1.0. Prior to the 2007-2009 recession, just seven state programs had an RRM of 1.0 or higher, and 18 states had an AHCM of at least 1.0, in December 2007.[6]

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[4] Recession dates are taken from the business cycle reference dates as promulgated by the Business Cycle dating Committee of the National Bureau of Economic Research (NBER).

[5] In fact, Washington judges its fund adequacy by the number of months of benefits in its trust fund.

[6] Hawaii, Maine, Mississippi, New Mexico, Oklahoma, Oregon and Utah.

Recent changes allow state UI programs that meet specific solvency criteria based on their AHCM to be eligible for interest free advances from the U.S. Treasury if they become insolvent. As a result, states will have increased financial incentives to achieve solvency targets and build future trust fund balances that meet specific AHCM levels.[7]

The flow approach

When states use the flow approach to benefit financing or a total cost targeting methodology, they emphasize the need to balance the flow of future revenue with the anticipated flow of future benefit payments. States can examine past data on benefit payouts to confirm their understanding of the average benefit cost rate and the increase in benefit costs that have occurred during past recessions. This backward looking analysis could be supplemented with considerations of future developments in benefits if statutory benefit provisions or future unemployment were projected to differ from past patterns. Tables 1.1 and 1.2 help to illustrate the diversity of past benefit cost rates in the individual states.

At the center of the flow approach is a focus on anticipated future benefit payments and the need to generate sufficient tax revenue to match or slightly exceed anticipated benefits. To provide greater certainty about future tax revenue, the twelve states that practice the flow approach to financing utilize a technique termed array allocation (AA) to set tax rates for individual employers.[8] As noted, these states rank employers by a measure of experience, place them into groups with known shares of taxable payroll and assign the same tax rate to all employers in a given group. Most commonly, the AA states have 20 tax rate intervals, each with 5.0 percent of taxable payroll. These states employ this fixed distribution of employer wages being assigned to specific tax rates in order to ensure that a specific pre-determined level of financing is met. Because the tax rates and the shares of taxable payroll for each tax rate category are both known, total cost targeting or AA states achieve greater certainty in tax yields compared to other states.

States that follow the flow approach to benefit financing also pay attention to expected future trust fund balances. They can adjust their trust funds up or down in one of two ways. Six of the twelve AA states have multiple tax rate schedules with triggers linked to the trust fund balance. (See Table 4.2 in Chapter 4) Higher schedules are activated as the trust fund balance declines. Many of the other six AA states administer a solvency tax whose rates increase as the fund balance moves to lower levels. Increased solvency adjustments are implemented following a recession to restore the trust fund to a higher balance.

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[7] Described in guidance here: http://wdr.doleta.gov/directives/attach/TEN/TEN_35-13.pdf

[8] Array allocation (AA) is discussed in more detail in Chapters 2 and 3. Chapter 3 summarizes several key features of array allocation for each of the 12 AA states.

Pay-go financing

In the past, some low solvency states have practiced funding strategies that rely upon low pre-recession reserves and a flexible policy response during a recession to avoid or minimize borrowing. These pay-as-you-go (or pay-go) strategies have taken two forms that can be described as automatic pay-go and discretionary pay-go. Automatic pay-go enacts benefit and tax statutes designed to respond in a recession in a way that automatically offsets the trust fund drawdown. The statutes restrict benefit payouts and/or increase employer (and perhaps employee) taxes during recessions. Specific automatic responses include raising the taxable wage base, imposing an emergency tax and freezing or reducing the maximum weekly benefit.

Illinois and Pennsylvania incorporated automatic pay-go features into their UI statutes in the late 1980s and operated under these statutes during the 1990s and into the 2000-2009 decade. Pennsylvania still has automatic pay-go features in its UI financing strategy. Both states, however, incurred debts to the U.S. Treasury after the recession of 2007-2009 and borrowed in the municipal bond market to repay their Treasury loans.[9] By issuing municipal bonds, both states transformed their debts from U.S. Treasury debt to municipal bond market debt, but this did not immediately change their underlying indebtedness. Recent experience among the limited number of states with automatic pay-go strategies indicates that the strategies were not sufficient to prevent large scale borrowing during a serious recession.

The second pay-go strategy can be described as discretionary (or ad-hoc) pay-go. States operate with a low trust fund balance, but cut benefits and/or raise taxes after a recession. Recent state experiences with discretionary pay-go include actions by Nebraska, New Hampshire, South Dakota, Tennessee and West Virginia to avoid borrowing or to limit the size of loans after the onset of the 2007-2009 recession. A common feature of these responses was the imposition of temporary quarterly tax increases on covered employers. The temporary taxes ended after the trust fund was restored.

Pay-go strategies are an alternative to advance funding. If a state maintains a "low" trust fund balance, it is operating a form of pay-go strategy regardless of the terms used to describe its funding strategy. Note that the exact definition of a "low" trust fund balance is ambiguous.[10]

Pay-go strategies work against the performance of UI as an automatic stabilizer of the economy. They raise taxes and/or reduce benefits early in a recession to lessen the decline in the state's trust fund balance. These

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[9] Chapter 11 discusses the pay-go strategy followed by Pennsylvania.

[10] Note this comment applies to the overall trust fund balance. A Federal administrative directive (20 CFR 606.32) specifies eligibility for interest-free advances (loans) when state UI programs borrow from the U.S. Treasury. It conditions eligibility on a specific definition of an adequate trust fund balance. This is discussed in the next section.

actions, however, reduce benefit payouts and/or increase taxes in a period when workers and employers are both experiencing economic hardship.[11]

A state that follows a pay-go strategy may not have a desired or target trust fund balance. It also may not have an anticipated future benefit payout rate. States that practice advance funding, in contrast, typically have an explicit trust fund or solvency target. When the target is achieved the state will have assurance that its reserves are adequate to fund increased benefit payments during the next recession. The common yardsticks that states use when they practice advance funding are variants of the RRM or AHCM as discussed above.

The pay-go approach, in contrast, usually does not have an explicit trust fund target that the state seeks to achieve. It responds, instead, to trust fund drawdowns with automatic or ad-hoc measures that seek to avoid or limit the amount of borrowing. As a financing strategy, pay-go is reactive, as opposed to forward looking. It invites ad-hoc and hurried responses to trust fund drawdowns.

The UI tax statutes in several states contain both advance funding and pay-go provisions making it difficult to classify many states as having just a single approach to financing UI benefits. Maintaining a low trust fund balance over a succession of years, however, is likely to identify a state as at least partially practicing pay-go.

Roughly half the states set UI taxes using multiple tax rate schedules and a trigger mechanism that shifts to schedules with higher tax rates when the trust fund balance declines and crosses predetermined thresholds. Reliance on multiple tax schedules is one example of a "secondary adjustment" to UI tax rates that states are allowed to make.[12] Appendix A discusses permissible secondary adjustments to experience rated UI tax rates. Chapters 3 and 4 examine details of tax schedules and tax schedule triggers

Several states operate with solvency taxes that automatically increase when trust fund balances fall below designated threshold levels. The 2014 edition of the *Comparison of State Unemployment Insurance Laws* (Table 2-11) identifies 25 states with solvency taxes which provide an automatic revenue response when the state's trust fund approaches zero. Solvency taxes are another form of secondary tax rate adjustment that states are permitted to make.

The preceding discussion indicates the variety of approaches used by state UI programs in setting the tax rates for individual employers that fund regular program benefits. Adequate program financing requires that the long term average tax rate must equal the long term benefit cost rate. Tax rate schedules and tax rate determination are discussed further in Chapters 3 and 4.

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[11] Profits as a share of GDP decline during recessions, especially in the early stages. For example, the profits share of GDP in 2006 was 0.119 but only 0.087 in 2008.

[12] See appendix A for a discussion of secondary adjustments.

7. Summary

Many states do not have tax structures which are sufficiently robust to adequately finance their regular UI program. This was a primary cause for the declining trust fund reserve ratios that have occurred since 1989.

Despite the lower average benefit costs during the most recent two full decades, state UI trust fund reserves have not increased as might be expected. In fact, trust fund reserve positions have generally decreased. The bottom two lines of the earlier Table 1.2 helped to explain the loss of trust fund reserves of recent years. During the first four full decades in Table 1.2 (1950s to 1980s) the average of the aggregate contribution rate was similar to the average of the benefit cost rate. However, during the 1990s the national contribution rate fell below the national benefit cost rate by 0.06 percent of payroll (0.76 versus 0.82 percent) and the gap grew to 0.22 percent of payroll during the 2000-2009 decade (0.65 versus 0.87 percent).

The difference between the average contribution rate and the average benefit cost rate during the 1990s and the 2000s decades underlies a widespread decrease in UI trust fund balances. The decrease is apparent in state-level +as well as aggregate UI program data. The aggregate reserve ratio decreased from 1.90 in 1989 to 0.80 in 2007, a reduction of more than half from its 1989 value.

Later chapters of this financing guide will examine additional factors, beyond low tax rates, that are contributing to the failure of UI tax revenue to match the levels in benefit payouts during recent decades. Some potential factors that will be discussed as possible contributors to this issue include:

- How common charge recoupment mechanisms may fail to adequately finance growing common charges (those not assigned to individual employers).

- How an unresponsive taxable wage base can hinder a tax system from adequately financing a growing level of benefits.

- How low maximum tax rates can lead to lower levels of revenue from the employers creating the highest level of benefit charges.

Chapter 2. Application of Experience Rating Methods to Employer UI Tax Rates

1. Overview

Nearly all regular UI benefits are financed by employer taxes on payrolls.[13] **In most states the majority of benefit payments are directly charged to UI tax accounts of prior employers. These charges are the basis for measuring employer experience with unemployment. The Federal Unemployment Tax Act (FUTA) levies a uniform tax on wages paid for work at all UI covered employers, and permits states to charge lower tax rates to individual employers who meet state requirements to be experience rated.**[14] **This chapter gives examples of the ways states measure employer unemployment experience, and discusses the advantages and disadvantages of these methods. Examples are based on state administrative data on employers and state reports to the U.S. Department of Labor. The examples provide an understanding of the potential and limitations of existing measures of experience rating. An appendix identifies and discusses some alternative approaches to experience rating for states to consider, approaches beyond those currently in use.**

Definition of experience rating

Experience rating is an insurance principle whereby premiums change in direct proportion with exposure to the risk insured against. For individual UI covered employers, this means employer tax rates increase after laid-off employees collect UI benefits, and tax rates fall after periods when former employees do not collect UI benefits. This practice is based on the premise that past layoff experience can be used as a proxy for future unemployment risk. The chapter discusses the four different formulas currently used by states to measure an employer's experience with unemployment and how that experience affects the employer's UI tax.

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[13] Both employers and employees pay taxes to finance UI benefits in Alaska, New Jersey and Pennsylvania. Employee UI tax contributions are discussed in Chapter 10 of this Financing Guide.

[14] Certain nonprofit employers are exempted from paying the FUTA tax. The FUTA requires all taxable covered employers to be experience rated after three years, but permits reduced rates to be charged to employers with as little as one year of chargeable experience in UI covered employment. Individual state requirements for experience rating are discussed in Chapter 8. Determination of the taxable wage base is discussed in Chapter 5.

Policy objectives of experience rating

As part of the Social Security Act of 1935 enacted during the Great Depression, President Roosevelt wanted UI to promote employment stabilization. Consequently, the Committee on Economic Security recommended experience rating of employers as a basis for setting tax rates. Experience rating was believed to be an incentive for employers to stabilize employment, to properly assign the costs of UI benefits, and to encourage employers to be involved in determining the insurability and compensability of work loss. Additionally, it was seen as a feature that allowed employers to influence their own tax rate. In reviewing UI experience rating objectives, the U.S. Department of Labor asserted that it is also desirable "that it produces the revenue needed to finance benefit costs adequately." (Dellinger 1983, p. 2)

Some members of the 1935 Committee on Economic Security were from Wisconsin which had an operating UI system with employer tax rates based on unemployment experience. The Wisconsin system had individual employer accounts and benefit charges from former employees were assigned to and debited from the individual employer accounts. Although the individual employer accounts in UI programs were later pooled at the state level, the assignment of benefit charges against individual employer accounts remains the basis for the experience rating systems present in most state UI programs today.

A second approach to experience rating, practiced by a minority of UI programs, is commonly described as total cost targeting or an array allocation system. An array allocation system starts with a recognition of the aggregate cost of the program (benefit costs as a percent of covered payroll) and the need to set tax rates that will generate enough revenue to match benefit costs. Rates are assigned to employers based on individual experience, but within a framework that generates a target level of total tax revenue. Array allocation is briefly discussed later in this chapter and more extensively in Chapter 3.

Federal conformity requirements

The FUTA imposes a Federal tax on wages paid by all UI covered employers, and allows 90 percent of FUTA tax revenue to be returned to states having UI systems in conformity with Federal requirements. One Federal financing requirement is that employer UI tax rates be based in part on employer experience with unemployment. Under Federal rules, reductions in state UI taxes may be extended to employers with 3 or more years of experience with UI covered employment. State UI tax rates not based on unemployment experience must be uniformly applied. That is, all employers must be treated equally. Consequently, many states assign the same tax

rate to all new employers, while other states—in conformity with Federal regulations—charge new employers industry-specific rates based on the average benefit charges against employers in that industry.[15]

As noted the original Wisconsin system and some other state UI financing systems established soon after FUTA enactment, maintained individual employer tax accounts from which benefit charges were paid. Now, in all state UI financing systems, employer contributions are combined into unified state UI accounts held in the unemployment trust fund at the U.S. Treasury. Benefits are paid from these accounts to claimants in the states (USDOL, 1983). Reserves for state UI systems are held in 53 separate state pooled accounts.[16] While individual employer experience records are maintained, financing adequacy is measured on a pooled basis for each state, and parameters of state UI financing systems are set to maintain fund liquidity.

The degree of fairness in UI financing has been referred to as tax equity (Vroman 1999, GAO 2006). Equity in UI financing can be measured by the extent to which benefit charges against an employer are recovered through tax payments by that employer. Consequently, the better experience rating works the more equitable is UI financing. Changes in the tax system that increase the degree of experience rating also increase tax equity, and vice versa.[17] Considerations of equity must be aligned with the desire to have a counter cyclical UI benefit financing system. That is, while full recovery of benefit charges immediately after payments are issued would achieve complete tax equity, burdening employers with full costs immediately would dampen business recovery.

Overview of UI benefit charging methods

In nearly all states, employer experience with unemployment is measured by the UI benefits charged back to that employer. Rules specified in laws and administrative procedures that determine which employer gets charged for UI benefit payments differ across states, but there are three main approaches. These are: 1) charging the most recent or principal employer, 2) charging base period employers in inverse chronological order, and 3) charging employers in proportion to the share of base period wages paid.[18] Under several different employment situations and separation conditions, all or part of benefit payments are not attributed to any individual employer; such costs must be commonly shared by all employers. For example, states that charge benefit payments to the most recent

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[15] Details of federal conformity requirements for states regarding experience rating of tax rates are provided in Appendix A and in Dellinger (1983). New employer tax rates are examined in Chapter 8.

[16] Separate accounts for the 50 states plus the District of Columbia, Puerto Rico, and the Virgin Islands.

[17] Considerations and procedures for setting tax rates are discussed in Chapter 3 while the taxable wage base is discussed in Chapter 5.

[18] Monetary eligibility for UI benefits requires claimants to have sufficient labor force attachment as demonstrated by recent prior earnings. All states examine earnings over a one-year base period of four consecutive calendar quarters—normally the first four of the last five completed calendar quarters. If earnings in the standard base period are not sufficient to qualify for UI benefits, most states alternatively consider earnings in the four most recently completed calendar quarters.

employer normally do not charge employers for whom a beneficiary worked less than a fixed number of weeks such as 5 or 10. Also, states that charge employers in proportion to base period wages will typically exempt base period employers with whom a prior job separation involved a voluntary quit or justifiable discharge. On average, states that charge UI benefits to employers assign between 50 and 90 percent of benefits to employers (USDOL 2014a, p. 6). The larger the share of benefit payments that are directly charged to employers, the lower the share of benefits that remain to be covered by common charges and/or solvency charges levied on all employers in the state.[19] However it is not necessary to use benefit charges as the measure of employer experience with unemployment. Three states do not charge benefits to employers at all: Alaska, Delaware, and Oklahoma. These states infer unemployment experience by changes in individual employer payrolls or by counting the wages paid to claimants.

Range of state experience rating systems

Four different methods are currently used to measure employer experience with unemployment. The four methods and the number of states using each method (parentheses) in 2014 were: reserve ratio (32), benefit ratio (18), benefit-wage ratio (2), and payroll decline (1).[20] The first two of these methods depend on benefit charges attributable to the employer, the third is used by Delaware and Oklahoma, and the fourth is used only in Alaska. The merits and disadvantages of each of these methods are discussed in this chapter as well as how this measure of experience can be used to impact an employer's tax rate. The text also discusses ways to assess the impact on an employer's tax rate of changes in the measure of experience so that an analyst may determine the relative effectiveness of a state's current method for measuring employer experience with unemployment.

2. Forward funding UI benefits

For a state UI system to be self-financing over the long-run, the multiyear average of revenue needs to match the multiyear average of expenditures. The accepted standard for UI benefit financing is based on the principle of forward funding. Having money in reserves when unemployment increases means states do not have to raise employer UI taxes immediately during recessions to pay for benefits. Forward funding prevents UI financing from

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[19] We discuss methods for financing common charges in chapter 7.

[20] For 2014 the reserve-ratio states are: Arizona, Arkansas, California, Colorado, District of Columbia, Georgia, Hawaii, Idaho, Indiana, Kansas, Kentucky, Louisiana, Maine, Massachusetts, Missouri, Montana, Nebraska, Nevada, New Hampshire, New Jersey, New Mexico (will switch to benefit ratio in 2015), New York, North Carolina, North Dakota, Ohio, Puerto Rico, Rhode Island, South Dakota, Tennessee, Virgin Islands, West Virginia, and Wisconsin. Benefit-ratio states for 2014 are: Alabama, Connecticut, Florida, Illinois, Iowa, Maryland, Minnesota, Mississippi, Oregon, South Carolina, Texas, Utah, Vermont, Virginia, Washington, and Wyoming. Rates in Michigan and Pennsylvania are mainly based on benefit ratios, but both states also use reserve ratios. The 2014 benefit-wage ratio states are: Delaware and Oklahoma. The only payroll variation state in 2014 is Alaska. In 2015, New Mexico changed from reserve ratio to benefit ratio.

driving the economy into a worse situation when business conditions are weak. Accumulating reserves during economic recoveries puts a slight damper on expansions, but helps to avoid severe financing crises in the depths of recessions and during subsequent economic recoveries.

To achieve adequate forward funding, state accounts in the Federal Unemployment Trust Fund (UTF) should maintain balances "sufficient to pay at least one year of unemployment insurance benefits at levels comparable to its previous high cost" (ACUC 1996, p. 11). High cost is defined as the average of the three highest annual levels of Unemployment Insurance benefits (as a percent of payroll) that a state has paid in any of the previous 20 calendar years or the period covering the most recent three recessions, whichever is longer. This cost rate is known as the average high cost rate (AHCR). The associated trust fund reserve is the AHCM (the average high cost multiple), that is, the reserve ratio as a ratio to the AHCR, and the reserve requirement is that the AHCM equal 1.0.[21] In 2010, this rule was put into place as a Federal requirement for interest free short-term cash flow loans. The final regulation on eligibility for interest-free cash flow loans was published by the U.S. Department of Labor (USDOL) in the Federal Register on September 17, 2010 as 20 CFR Part 606. While this target level of reserves is optional for states, the new requirement for interest-free cash flow loans does provide an incentive for states to establish and maintain adequate forward funding.

Measuring state UI financing requirements

To balance benefit payments with tax contributions over business cycles, states should measure benefits and revenues in proportion to wages paid in the state. States can track their adequate financing rate (AFR) and average tax rate (ATR). The AFR is benefit payments relative to total wages averaged over the past 10 years (or some other historical period set by the state) plus a solvency amount, and the ATR is tax payments relative to total wages among UI covered employers. State values for these UI program data are published annually by the U.S. Department of Labor (U.S. Department of Labor 2014a). Table 2.1 below shows the U.S. ATR for 2013 to be 0.79 and the AFR to be 0.90.[22] As a percentage of total wages of taxable employers over the ten years 2004 to 2013 tax contributions exceeded benefit payments in five years, but contributions did not adequately cover benefit payments over the whole period. Consequently, the system totals, and several state funds, faced financing shortfalls requiring borrowing from the Unemployment Trust Fund to pay regular UI benefits.

Unemployment insurance benefit payments commenced in most states by 1937 and published financing records date back to 1938. Figure 2.1 graphs a crude national AFR (ten-year average benefit payment rate with no adjustment to change the trust fund balance) and the ATR (ten-year average tax contribution rate) along with the

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[21] The AHCR and AHCM were introduced and discussed in Chapter1.

[22] The estimated AFR shown in Table 2.1 is simply the ten year (2004-2013) average benefit payment rate with no adjustment for increasing the trust fund balance to an appropriate long term level.

TABLE 2.1.
UI Tax Contributions and Benefit Payments as Percentages of Total Wages of Taxable Covered Employers, 2004-2013

Year	Contributions	Benefits
2004	0.78	0.81
2004	0.78	0.81
2005	0.82	0.69
2006	0.76	0.62
2007	0.67	0.64
2008	0.62	0.84
2009	0.63	1.68
2010	0.78	1.17
2011	0.92	0.90
2012	1.00	0.79
2013	0.90	0.70
Average	0.79	0.89

Source: USDOL (2014c), columns (15) and (16).

difference of ATR minus AFR. This graph shows that the system-wide financing of UI benefits was adequate in the early program years, but structural financing was insufficient starting in the mid-1950s. That was around the time the commonly accepted standard of UI benefit adequacy was widespread. That is, 50 percent wage replacement for up to 26 weeks of involuntary unemployment (ACUC 1996, p. 22). Since the 1950s, system-wide state UI benefit financing has been adequate in only two periods: 1968-1974 and 1985-1995. While the majority of states have had inadequate UI financing since 1996, the system perspective masks the fact that many individual state UI systems had positive reserves every year. This Financing Guide examines a range of practical ways for states to identify policy changes that can improve the balance between UI benefit payments and tax contributions over the business cycle.

FIGURE 2.1
Ten Year Moving Averages of UI Benefits and Tax Contributions Relative to Total Covered Wages, U.S., 1948-2012
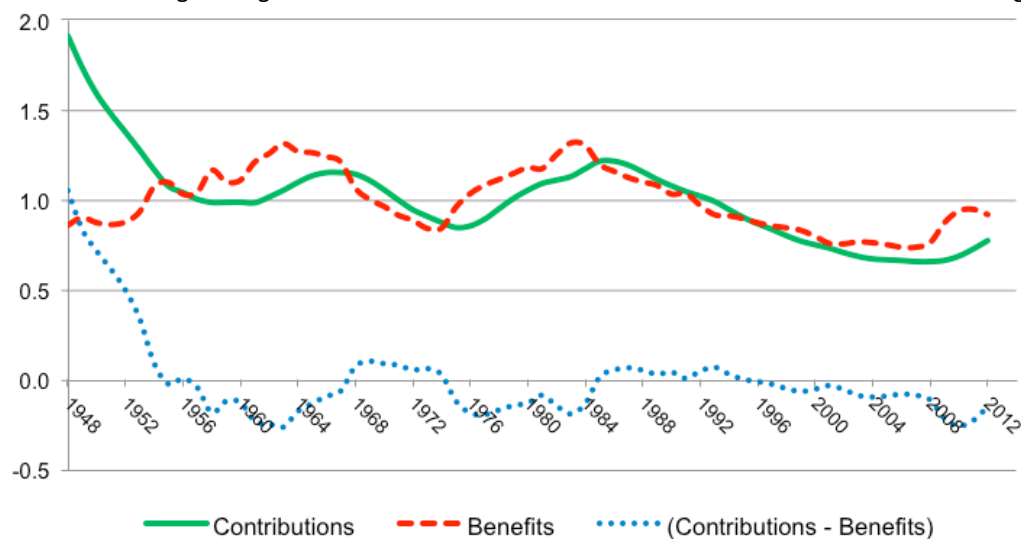
Source: Contributions and benefits are ten year averages of national data from columns (15) and (16) of USDOL(2014c).

3. Types of Experience Rating Systems

Reserve ratio

The reserve ratio method of experience rating requires that a complete history of UI benefit charges and tax contributions be maintained for each employer. The reserve balance on the fund trigger date (R_t) that summarizes the history of net UI contributions is recorded every year (t) for each employer. That is, UI tax contributions (C_t) minus UI benefit (B_t) charges are cumulated over the entire history of the enterprise (e.g., from year 1 to the current year T):

$$R_T = \Sigma_t \ (C_t - B_t); \ t = 1,\ldots,T$$

For any tax year, fund balances are calculated on the fund trigger date which in most states is June 30 or September 30 of the prior year. The reserve ratio for an employer for any given tax year is the reserve balance divided by the average of annual total payrolls (P_t) over a preceding period. Among the reserve ratio states, the great majority compute average payrolls (AP_t) over the previous three years ending on the computation date.[23] Average three-year payroll is:

$$AP_t = [P_{t-1} + P_{t-2} + P_{t-3}]/3$$

For example, in calculating the reserve ratio used to assign tax rates for the 2015 tax year, average payrolls for the three fiscal years preceding June 30, 2014 would be computed as:

$$AP_{2014} = (P_{2013} + P_{2012} + P_{2011})/3$$

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[23]Among reserve-ratio states, 19 states always compute average payrolls over 3 years, 6 states cumulate payrolls over 3 years, 2 states cumulate payrolls over the past year, 2 states average payrolls over 4 years, 1 state averages over 5 years, 1 state averages payrolls over 3 or 5 years whichever average is larger, and 1 state averages payrolls over 3 or 5 years depending on which version yields the lower reserve ratio.

TABLE 2.2

Missouri Employer Records: UI reserves, Benefits, Taxes, and Payrolls for Tax Years Ending June 30 of the Previous Calendar Year, 2005-2014. (data in dollars or ratios)

Tax year	December 31 Reserve balance	Benefit charges	Taxes paid	Total payrolls	Taxable payrolls
2005	193,276	14,446	6,106	6,574,460	1,496,593
2006	190,423	14,048	11,195	6,900,226	2,179,900
2007	209,821	11,322	30,689	7,468,221	2,222,526
2008	235,423	8,907	34,508	7,777,379	2,223,021
2009	266,959	9,800	41,336	8,440,232	2,649,733
2010	201,099	97,639	31,770	7,762,909	2,292,743
2011	27,699	212,770	39,370	5,981,236	1,833,400
2012	39,358	48,567	59,603	5,798,700	1,744,990
2013	106,506	7,274	66,512	6,249,181	1,896,429
2014	160,342	5,423	59,259	6,723,625	2,044,622
Tax year	Reserve ratio	Benefit ratio	Benefit charges (3 year total)	Taxable payrolls (3 year total)	Taxable payrolls (3 year average)
2013	0.05836	0.04906	268,611	5,474,819	1,824,940
2014	0.08460	0.01077	61,264	5,686,041	1,895,347

Note: Data for Missouri employers are tabulated for fiscal (tax) years based on data as of June 30 in the prior calendar year. For example, data for 2014 reflect values as of June 30, 2013. The 2014 values for benefit charges, taxes paid, total, and taxable payrolls are sums from 2012Q3 through 2013Q2.

Using data from a single employer, Table 2.2 (below) shows the three-year average taxable payroll for 2014 to be used in estimating the tax rate for 2015:

$$AP_{2014} = (\$2,044,622 + \$1,896,429 + \$1,744,990)/3 = \$1,895,347 \text{[24]}$$

The reserve ratio (RR) for any year T is computed as:

$$RR_T = R_T/AP_T$$

This quantity is typically expressed as a percent. Thus as of June 30, 2014, the employer's reserve ratio from Table 2.2 would be:

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[24] The state may calculate average payroll based on periods ending six months earlier than shown in this example.

$RR_T = \$160,342/\$1,895,347 = 0.08460 = 8.46$ percent

The employer's reserves are 8.46 percent of three-year average taxable wages. This would be the reserve ratio to map into the tax schedule to determine employer's UI tax rate for 2015. Most RR states (19 of 32 in 2014) operate with multiple tax schedules. Total reserves on the fund trigger date determine which schedule is operative for the upcoming year. Knowing both the employer's reserve ratio, and the operative tax schedule, individual employer tax rates can be determined. The translation from experience rates to tax rates is discussed briefly later in this chapter, and in Chapter 3.

As described in Chapter 1 state UI programs follow two approaches to set tax rates. One approach, the individual employer approach, starts with the experiences of individual employers. It builds an aggregate tax rate by summing experience measures (reserve ratios) across all employers and then makes one or more adjustments to arrive at an overall average statewide tax rate. The adjustments often explicitly recognize common charges as well as adding (or subtracting) an adjustment designed to change the state's current trust fund balance. The trust fund adjustment may be accomplished by having several rate schedules and moving to a schedule with higher (or lower) tax rates for all (or most) tax rate intervals or by levying a solvency tax whose level depends on the size of the gap between the current trust fund balance and the desired or target balance. The details of these adjustments vary widely from state to state among the reserve ratio programs that practice this approach.[25]

The second approach, the total cost targeting approach, starts with the target fund balance and the level of tax revenue needed to reach that target. It utilizes array allocation, ranking employers according to their reserve ratios into a set number of tax rate groups, often 20, and each group with a known share of statewide taxable payroll. This approach promotes tax yield certainty because both the shares of taxable payroll and the tax rates in each array group are known. Thus the aggregate tax rate is simply an average where tax rates on the schedule are weighted by each group's share of taxable payroll.

Under both approaches the state's experience rating system yields a set of tax rates that span the full range of reserve ratios. Several details of tax rate schedules such as minimum and maximum rates, rate change limiters, writeoffs of negative reserves and a tax rate discontinuity in moving from a positive to a negative reserve balance are discussed in Chapters 3 and 4.

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[25] Including Puerto Rico and the Virgin Islands, there are 24 reserve ratio programs in 2015 that start from individual employer measures of experience in constructing an overall tax rate. In 2014 there were 25 of these reserve ratio programs, but New Mexico changed to benefit ratio experience rating in 2015.

Benefit ratio

An employer's UI benefit ratio is computed from a subset of the data used for measuring the reserve ratio. The general formula for computing an employer's UI benefit ratio for year T to set the tax rate in year T+1 is:

$$BR_T = \Sigma_i\ B_{T-i}/\ \Sigma_i\ P_{T-i-1}; i = 1,...,n,$$

where, n is the number of years in the benefit-ratio computation. Among the 19 benefit-ratio states in 2015, 13 states use three years in their calculation, four states use four years in their calculation, and two states use five years in their calculation. The denominator in the benefit ratio is the sum of payrolls for the years, which differs from the average of payrolls used in the denominator for reserve ratios. For example, based on data in Table 2.2,[26] a three year (n = 3) benefit ratio for 2014 would be:

$$BR_{2014} = (B_{2014} + B_{2013} + B_{2012})/(P_{2013} + P_{2012} + P_{2011})$$

$$BR_{2014} = (5,423 + 7,274 + 48,567)/(2,044,622 + 1,896,429 + 1,744,990)$$

$$BR_{2014} = (61,264)/(5,686,041) = 0.01077$$

The three-year benefit ratio for this employer is 1.077 percent, so UI benefit payments have been 1.077 percent of taxable wages over the past three years.

Tax rates for individual employers in benefit ratio systems are set using two approaches. Most benefit ratio states (15 of 19 in 2015) start with the benefit ratio for each individual employer. Typically, the employer's benefit ratio for the relevant lag period (three, four or five years) is the starting point for the tax rate computation for all employers across successively higher benefit ratios up to the benefit ratio that equals the maximum tax rate. There may then be a tax rate addition to the basic rate to cover common charges. Also, the state may add a solvency

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[26] Note that Missouri practices reserve ratio experience rating. However, the state's details on taxes, benefit charges and payrolls in Table 2.2 can be used to illustrate the calculations of a benefit ratio system.

surcharge designed to move the current trust fund balance towards a desired or target balance. Both types of tax rate add-ons take different forms in individual states.

Four benefit ratio states in 2015 use the second approach, the total cost targeting approach, to set individual employer tax rates. Individual employers are arrayed according to their benefit ratios and divided into groups with known shares of taxable payroll. Three of these states (Iowa, Oregon and Vermont) operate with multiple tax rate schedules, and the trust fund balance on the fund trigger date determines which schedule is operative in the upcoming tax year. The fourth state (South Carolina) has a single tax schedule which changes from year to year in response to changes in both the overall trust fund balance and the anticipated volume of benefit payments. Since this approach focuses on the desired tax yield, there is no explicit influence of social charges in determining the total tax rate for individual employers.

As South Carolina only started to operate its total cost targeting (array) system based on three-year benefit ratios in 2015, it may be too soon to judge how successful it is. In June 2015 the state repaid the last of its outstanding loans, ending six years of indebtedness to the Treasury. At the same time that the state changed from program financing based on reserve ratios to financing based on benefit ratios and array allocation, it also substantially increased its taxable wage base. The tax base increased in steps from $7,000 in 2010 to $14,000 in 2015. Thus it would be challenging to estimate the separate effects of the change to total cost targeting with arrays from the effects of doubling the tax base on the state's improved financing situation.

Benefit-wage ratio

Two states measure insured unemployment experience using benefit-wage ratios: Delaware and Oklahoma. Both states compute employer benefit-wage ratios based on three years of experience prior to their computation dates of October 1st and July 31st respectively. The numerator in the ratio is the sum of benefit wages which are UI taxable wages paid to claimants starting new UI benefit years in the three years before their layoff occurred. The denominator is the sum of UI taxable wages paid to all employees over the same three years. The formula for computing an employer's UI benefit wage ratio for year t to be used to set tax rates in year t+1 is:

$$BWR_t = \Sigma_i P^b_{t-i} / \Sigma_i P^a_{t-i}; \ i = 1,...,n,$$

where n is the number of years in the benefit-ratio computation, P^b_t is the sum of UI taxable wages paid to UI beneficiaries in years t-i, and P^a_t is the sum of UI taxable wages paid to all employees in years t-i. As an example of a benefit-wage ratio computation we use the data in Table 2.2. The denominator of three years taxable wages

summed as of June 30, 2014 is provided in the bottom row of the table. For benefit wages we assume that $61,264 in benefit charges were incurred by 20 employees each of whom earned in excess of the average taxable wage base in Oklahoma of $18,700 in 2014, $20,100 in 2013 and $19,100 in 2012. Hence benefit wages totaled $1,158,000. This example yields:

$$BWR_T = \$1,158,000/\$5,686,041 = 0.2037$$

Taxable wages paid to beneficiaries of this firm over the three years ending June 30, 2014 were 20.37 percent of total taxable wages paid by the firm during the period.[27]

The benefit-wage ratio systems in Delaware and Oklahoma are designed to recover total system benefit payments. This is accomplished by multiplying each employer's benefit wage ratio by a statewide experience factor. The statewide experience factor is total statewide benefit payments in the prior three years divided by statewide benefit wages paid over the same three-year period. For example, if the state experience factor is 25 percent, that factor would be multiplied by the employer benefit-wage ratio. In the present example this yields:

$$t_T = BWR_T*(\text{state experience factor}) = 0.2037*0.25 = 0.0509 = 5.09 \text{ percent}$$

Both Delaware and Oklahoma derive their final employer tax rates starting with the BWRs of individual employers. Both states make two adjustments to the initial employer BWRs. First, as noted, they multiply each BWR by the state experience factor. This adjustment is designed to make the statewide flow of tax receipts match the flow of benefit payments. Second, they can impose a supplemental assessment designed to change (usually increase) the statewide trust fund balance to bring the balance up to a target level.[28] Both adjustments cause larger tax rate increases for employers with higher initial BWRs.

There is no active example of a BWR state that practices the total cost targeting approach for setting UI tax rates.

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[27] There is one difference between the two BWR systems. Delaware defines benefit wages as the wages of all claimants who receive one or more weeks UI benefits. Benefit wages in Oklahoma, in contrast, are the wages of persons who receive at least five weeks of UI benefits.

[28] These are termed the special assessment in Delaware and conditional factors in Oklahoma. Both make an addition to the tax rate that is larger when the employer's initial BWR is larger.

Both states also have tax bases that respond to changes in the state's trust fund balance. Balances below certain thresholds on the fund trigger date cause automatic increases in the tax base and vice versa. Delaware adopted this feature only starting in 2014 whereas Oklahoma has had this type of tax base flexibility since the mid-1980s. Following a recession, these two states make both tax rate and tax base adjustments to restore a depleted UI trust fund balance.

Payroll decline

Alaska is the only state that measures employer experience by declines in payrolls. Alaska computes percentage declines in reportable wages from quarter to quarter over a three-year period preceding the computation date of June 30.[29] Reportable wages are total payrolls for UI covered employees.[30] The percentage payroll decline is computed between every pair of quarters in the three year period, and the declines are averaged. The maximum potential number of declines is 12, and if total payrolls increase or remain unchanged between two quarters, that period is not included in the computation. A quarterly percentage decline (D_q) in total payrolls (TP_t) is computed as:

$$D_q = 100 * (TP_q - TP_{q-1})/TP_{q-1}$$

Where, q is an index for a quarter in the experience measurement period. For example, if payrolls fell from $1.5 million in third quarter 2013 to $1.2 million in fourth quarter 2013 the percentage decline would be computed as:

$$D_{2013q4} = 100 * (TP_{2013q4} - TP_{2013q3})/TP_{2013q3}$$

$$D_{2013q4} = 100 * (\$1,200,000 - \$1,500,000)/\$1,500,000 = 100 * (-\$300,000/\$1,500,000) = -20.0$$

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[29] Employers with as few as four quarters of wage payments can qualify for an experience rate in Alaska.

[30] Alaska UI reportable wages exclude bonuses, most lump sum payments, and compensation to certain corporate officers and board members but include annual wages in excess of the state's UI taxable wage base (Alaska Department of Labor and Workforce Development (ADLWD) 2014, pp. 9-13).

Reportable wages declined by 20 percent for the fourth quarter of 2013. Similar calculations are made for all 12 relevant quarters and the average for the payroll decline quarters is computed. This average is the payroll decline measure of unemployment experience for the individual employer. Alaska uses array allocation to set employer tax rates. The quarterly payroll declines are based on total payroll. Alaska ranks all employers by the average payroll decline quotient, and assigns them to one of twenty groups each containing approximately 5% of the total statewide payroll. A twenty-first group, with a tax rate of at least 5.4%, contains the final .01%. The rates for each group also depend on the balance in the Alaska UI trust fund.

Alaska calculates its average benefit cost rate in a seven step process that utilizes benefit payments of the past three computation years (net of reimbursable benefits) and total wages and taxable wages of taxable covered employers for the same period. The average benefit cost rate is the overall average tax rate and it is also the tax rate for array group 10. The other rates in the array range from 40 percent to 165 percent of the overall average tax rate. When the trust fund's reserve ratio is between 3.0 and 3.3 percent of total payroll on the fund trigger date (September 30), each employer's tax rate is simply the rate from the basic schedule. Reserve ratios above and below the 3.0-3.3 percent range cause a fund solvency adjustment tax to be added or subtracted whose size depends upon the size of the deviation of the trust fund balance from the 3.0-3.3 percent range. The solvency tax adjustments are computed with limitations on the annual increases and decreases in the tax rate.

4. Pros and Cons of Experience Rating Systems

The most widely used formulations for modifying an employer's UI tax rate based on individual experience are the reserve ratio (RR) and benefit ratio (BR) formulas. Both systems have been operational over the past 75 years, and the employer incentives for both have been studied extensively. RR and BR are relatively simple systems, well known by employers, and quite transparent. Both systems have advantages and disadvantages in terms solvency, transparency and tax responsiveness. Some observations about each system are given below.

A prime aim of experience rating is to allocate the burden of program financing towards those more directly identified as responsible for program costs. Upper limits on UI tax rates have resulted in some employers remaining at maximum rates for several years in a row. Even though such employers pay the maximum rate on taxable payrolls, their contributions might not improve their financing situation sufficiently to lower their tax rate. Consequently, some benefit charges against high-cost employers become ineffective charges that need to be covered someplace in the UI financing system. Often the associated financing burden is borne by other employers through supplemental group taxes sometimes called solvency taxes or social taxes.[31]

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[31] Solvency taxes and social taxes are discussed further in Chapters 3, 4 and 7.

Reserve ratio:

- Potential for large buildup of positive or negative reserve balances in individual employer accounts. This can make the financing system slow in responding to labor market changes. Employers operating for many years under high layoff conditions often have low or negative reserve balances. Conversely employers with long term stable employment are likely to have high positive reserve ratios.

- There is a high degree of persistence for employers at the extremes of experience to remain at those extremes in successive years. Employers with large negative balances who achieve employment stability may only slowly improve their experience rates. Similarly, employers with large positive reserves may be little affected by layoffs and a spike in benefit charges. The long history in reserve-ratio systems and the tax parameters of many states can yield taxes that adjust slowly to changes in benefit charges.

- Slow responses among employers with large negative reserve balances in reserve ratio systems are helped somewhat by the practice of allowing "writeoffs." Negative balances beyond a certain point, say a reserve ratio more negative than minus ten percent of payroll, are eliminated by outright forgiveness (written off) of the part of the negative balance that exceeds the negative balance limit. New York, West Virginia and Wisconsin are three reserve ratio systems that have writeoffs.

- The slow response of reserve ratio employers is explored further in Figures 2.2 and 2.3 later in this chapter.

- Disincentive for employment growth. Under a reserve-ratio system tax rates can increase as employment grows. As employment grows so do taxable wages, so that the denominator in the reserve ratio gets larger, and with a constant level of existing reserves the tax rate rises because the reserve ratio declines. This could be a disincentive to hiring. A tax rate based on a reserve ratio can go up if employment is increased even if no new benefit charges accrue to an employer. While employment growth means the employer has increased exposure to the risk of unemployment, it may be difficult for an employer to understand why the UI tax rate would increase despite an absence of recent UI claims and benefit payments.

- The importance of UI taxes in business hiring and location decisions was studied in the 1980s and found to be relatively insignificant among all tax costs (Wheaton (1983), Newman and Sullivan (1988)). Bartik (1991) included the studies examining UI in his survey of 34 studies measuring the effect of all state business taxes on state economic output. The estimate across these studies suggested that a ten percent reduction in state business taxes would increase gross state output by three percent, and vice versa.[32]

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[32] The average tax rate elasticity on output in these studies was -0.3.

Presumably these effects would be symmetrical so that a tax increase would lead to a decrease in employment and output. However, because UI taxes are a small share of all employer state taxes, UI taxes were found to have almost no influence on business output and location decisions.

- Reserve ratio is the original method of experience rating and was widely adopted by states in the 1930s. It is based on a concept of individual employer responsibility rather than pooled costs. As a result, to generate sufficient revenue to cover all benefit charges, a reserve ratio financing system has to develop a procedure to defray common charges and a procedure to restore trust fund balances depleted by economic downturns.

Benefit ratio:

- Accounting for only benefit charges in the past three, four or five years means measured experience more closely tracks recent labor market conditions and associated benefit payments. However, after the period measured by the benefit ratio, the system "forgets" any ineffective benefit charges due to tax rate maximums. This situation is ameliorated by the recognition that in present value terms, any lagged repayment system is already forgiving some past charges in a time value (present value) sense. However, while a fully reimbursable financing system would reduce the volume of ineffective charges, it would lose valuable aspects of risk pooling. As an insurance system, UI has limited liability for individual employers. Program financing is partly based on the premise that some compensated unemployment is beyond the control of the employer and due to general labor market conditions.

- Clustering of employers at low rates. Because of their short (three, four or five-year) memory, a large share of all employers in benefit ratio systems have zero benefit charges. These employers are often small, paying below-average wages, and their share of all covered employers is smaller than their share of statewide taxable payroll. Figure 2.3 (below) shows that among benefit-ratio states prior to the severe 2007-2009 recession, more than sixty percent of all employers were at minimum tax rates. The share at minimum tax rates averaged about fifty-five percent since 2009 in benefit-ratio states.

Benefit-wage ratio

This measure of experience does not involve the assignment of actual benefit charges to employers. Therefore it does not directly depend on the volume of compensated unemployment.[33] The unemployment experience of employers with beneficiaries during the three-year computation period is affected only by the share

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[33] A partial exception is that Oklahoma measures the benefit wages of claimants who receive four or more weeks of benefits. Those with shorter spells are not included in its measures of benefit wages.

of wages paid to those beneficiaries relative to the employer's total wage bill. Despite the fact that benefit charging is less directly linked to benefit payments than in a benefit ratio system, there are high rates of non-monetary eligibility determinations and appeals in both Delaware and Oklahoma.[34] This type of experience rating is not necessarily less contentious than other types of experience rating.

Payroll decline

This procedure penalizes employers with larger variation in quarterly payroll because they will have larger payroll declines in months when payroll decreases even if their overall average payroll growth is identical to that of an employer with the same mean but a smaller variance in payroll changes. No benefit charging is necessary under this system. However, it is interesting to note that, Alaska, the only payroll decline state, has rates of nonmonetary determinations on par with all other states, but it's rate of appeals is about one-third of the national average. Fewer appeals would be associated with lower program administrative costs.

Two questions about payroll decline experience rating can be noted. First, are above-average payroll declines a useful indicator of above-average experience with unemployment or above-average benefit costs? Second, does this system of experience rating encourage downsizing and the replacement of low-wage workers with high-wage workers?

5. Employers at the Extremes – Maximum and Minimum Tax Rates

While all experience rating systems distribute employers across a range of tax rates, substantial numbers of employers are taxed at the maximum and minimum tax rates. The following Figures 2.2 and 2.3 show the proportions of employers at the maximum and minimum tax rates for the two most common types of experience rating systems: reserve ratio and benefit ratio. The figures summarize employer level data for the reserve ratio state of Missouri (MO) along with average data from state experience rating reports to the Federal government for 29 reserve ratio (RR) states. The figures also show employer level data for the benefit ratio state of Washington (WA) along with averages for 16 benefit-ratio (BR) states.[35]

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[34] In 2013, the national determination rate on job separation issues was 0.247 of new unemployment spells and on nonseparation issues it was 0.199 per ten claimant contacts. The determination rates on both types of separation issues in both BWR states exceeded these national averages. The national rate of appeals on separation issues in 2013 (appeals as a share of separation determinations) was 0.200 while it was 0.249 in Delaware and 0.215 in Oklahoma.

[35] State experience rating is reported annually to the federal government on the Employment and Training Administration (ETA) 204 report.

Figure 2.2 shows the proportions of employers at maximum UI tax rates before, during and after the 2007-2009 recession for reserve ratio and benefit ratio systems. The shares of employers at maximum rates are lowest near the peak of a business expansion and highest soon after a recession. Among the 29 reserve-ratio states, the average shares range from 5.1 to 10.3 percent, while the average is from 6.0 to 12.8 percent for benefit-ratio states. For Missouri, the increase in the share of employers at the maximum tax rate was from 4.6 percent in 2008 to 8.6 percent in 2012.[36] The change for Washington was larger, increasing from 3.4 percent in 2009 to 11.1 percent in 2014. These patterns indicate that benefit ratio experience rating is somewhat more responsive to changes in business conditions than reserve ratio experience rating. The explanation for the contrast is that RR experience rating has a longer "memory." It utilizes data extending back in time for decades whereas experience measures from BR systems use data that extend back for only three years in most BR states.

FIGURE 2.2

Proportions of Experience-rated Employers at Maximum UI Tax Rates in Reserve Ratio and Benefit Ratio States, 2004-2014
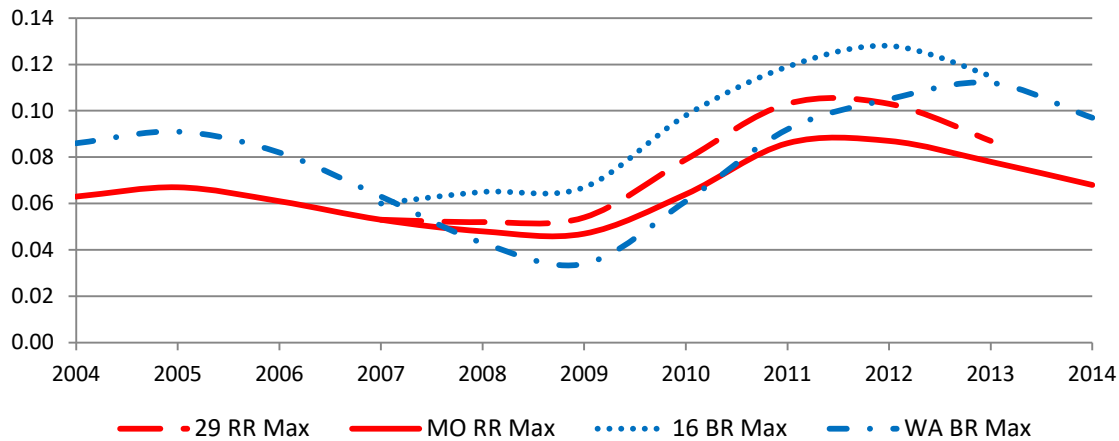
Source: Data for 29 RR states and 16 BR states from ETA-204 reports. The data are simple averages that weight each state equally. The series for Missouri (MO) and Washington (WA) are from tabulations of employer micro data from the two states.

Figure 2.3 shows the proportions of employers at minimum UI tax rates between 2004 and 2014. Despite the serious recession of 2007- 2009, the average share at minimum tax rates remained relatively unchanged in the 29 reserve ratio states. However, on average more than half of employers in benefit ratio states are at minimum rates, while only about 20 percent of employers in reserve-ratio states are at minimum rates. Our analyses of employer level data showed higher shares at minimum rates in both the benefit ratio (Washington) and the reserve-ratio (Missouri) states than the averages across states based on the ETA 204 data.

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[36] In Missouri employers with negative reserve ratios of -12.0 percent pay the maximum tax rate. In 2012 the maximum was 7.8 percent (30 percent above the maximum on the middle schedule). The 8.6 percent of employers refers to this group not to employers with even higher tax rates because of their multiyear persistence at the maximum tax rate.

FIGURE 2.3

Proportions of Experience-rated Employers at Minimum UI Tax Rates in Reserve Ratio and Benefit Ratio States, 2004-2014
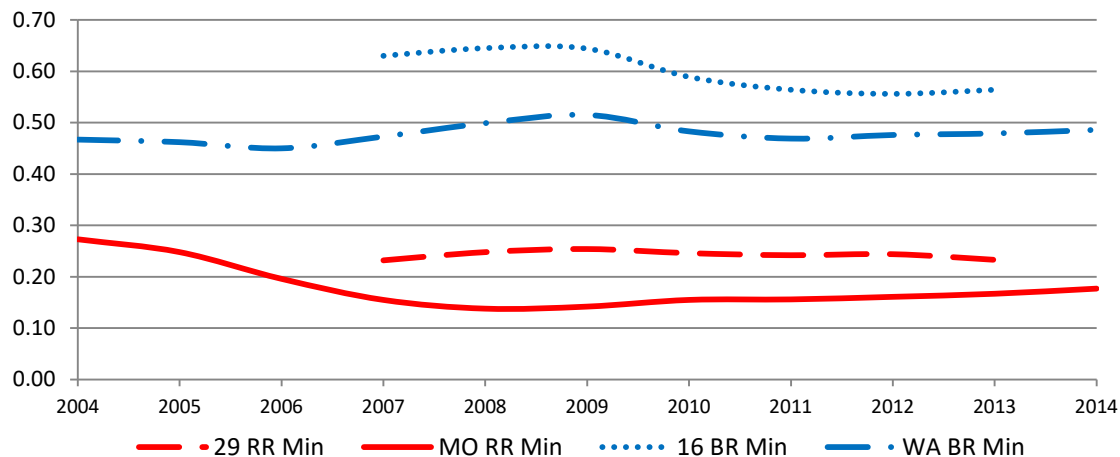
Source: Data for 29 RR states and 16 BR states from ETA-204 reports. The data are simple averages that weight each state equally. The series for Missouri (MO) and Washington (WA) are from tabulations of employer micro data from the two states.

Probably the most obvious pattern in Figure 2.3 is the contrast in the share of employers at the minimum tax rate in benefit ratio systems (both the 16-state averages and the Washington state data) relative to the share in reserve-ratio systems, i.e., more than 55 percent compared to about 25 percent. Note also the contrasts in the reduction in the share of benefit ratio versus reserve ratio employers at the minimum tax rate following the recession of 2007-2009. For the 16 BR states the proportion decreased from 0.645 in 2008 to 0.556 in 2012, a decline of 0.089. The majority of the state-level changes occurred within the 3- to 5-year window for computing benefit ratios.

We disaggregated the preceding analysis into nine AA states (six RR and three BR) and 36 non-array states (23 RR and 13 BR). The most obvious contrasting pattern was found among employers at the minimum tax rate. The states that practiced array allocation (both RR and BR states) had consistently lower shares of employers at the minimum rate compared to the other states. Averages of employer shares at the minimum for the seven-year period 2007 to 2013 for RR states were 0.184 among AA states but 0.257 among other states. Among the BR states the corresponding seven-year averages were 0.557 for AA states and 0.609 for other states.

At least for the seven-year period 2007 to 2013, AA rate-setting procedures resulted in measurably lower concentrations of employers at both the minimum and maximum tax rates compared to rate setting procedures that build rates up from initial rates calculated for individual employers. This probably indicates there is somewhat more year-to-year tax rate stability in array states compared to the other states. Presumably this means that array procedures with their variable tax rate boundaries result in fewer year-to-year movements across boundaries to different rate intervals in AA states compared to movements across rate boundaries in states with fixed tax rate

boundaries. Relative indicators of experience vis-à-vis all other employers probably change less from one year to the next than absolute indicators of experience.

6. Empirical Measures of Experience Rating

For several years, starting in the late 1980s, the U.S. Department of Labor annually published an experience rating index (ERI) score for each state. Its purpose was to indicate the share of total benefit payments effectively assigned to individual employers. The ERI is computed by subtracting three categories of noncharged and ineffectively charged benefits from the total of all benefit payments in the state. The three categories are: non-charges (NNC) which are benefit payments not charged to a particular employer because the beneficiary entitlement is independent of the job separation conditions, ineffective charges (IEC) which are benefit charges against employers at maximum tax rates in excess of their actual tax contributions, and inactive account charges (IAC) which are benefit payments charged against employers suspending business operations and no longer paying taxable wages. The remaining residual (charged benefits), expressed as a ratio to total benefits, was termed the ERI. An ERI score of 100 would mean that all benefit payments are directly chargeable to employers.

Figure 2.4 summarizes state ERI scores averaged across benefit-ratio and reserve-ratio states annually over the period 1988 to 2013. In most years the average of state ERI scores is between 55 and 70 percent, and the ERI averages for groups of benefit-ratio and reserve-ratio states track each other closely over the business cycle. The trend lines indicate gradual rates of declines in the average ERI values across states over time, but the slow rates of decline are equivalent for reserve-ratio and benefit-ratio states. In the two most recent recessions the average of state ERI scores dipped below 50 among benefit-ratio states and below 55 among reserve-ratio states. Since 2007 the average ERI scores have been nearly identical for benefit-ratio and reserve-ratio states. Over the 25-year period summarized, the general trend has been a decline in the average degree of experience rating among states, at least as measured by the ERI.

To improve a state ERI score the element that is most controllable by financing policy is ineffective charges (IEC). Inactive charges (IAC) are determined by business closures and suspensions of operations, while non-charges (NNC) are determined by benefit eligibility rules applied to the conditions of job separation, requalification, and continuing benefit eligibility.

FIGURE 2.4
Average Experience Rating Index Scores across Benefit Ratio and Reserve Ratio states, 1988-2013
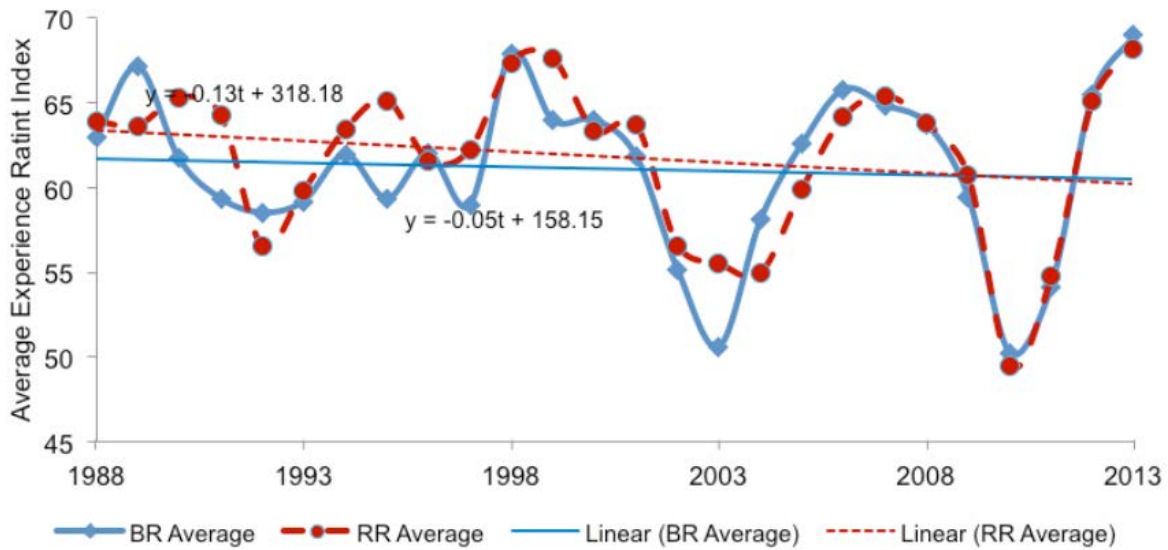
Source: Based on data published by the U.S. Department of Labor and data from ETA-204 reports.

The IEC share of total benefit payments is a measure of the effects that tax rate maximums and taxable wage base limits have on the effective degree of experience rating. Figure 2.5 shows that the average IEC score was between 10 and 35 percent of all benefit payments during 1988-2013. Maximums on tax rates and taxable wages reduce the average degree of state UI experience rating most in the first few years after a recession. The trend lines in Figure 2.5 show an increase over time in ineffective charges as a share of all benefit payments, and that the average share is rising faster in reserve-ratio states than in benefit-ratio states. Chapters 6 and 7 further examine these charges.

FIGURE 2.5
Average Percentage of UI Benefits Ineffectively Charged by Benefit Ratio and Reserve Ratio States, 1988-2013.
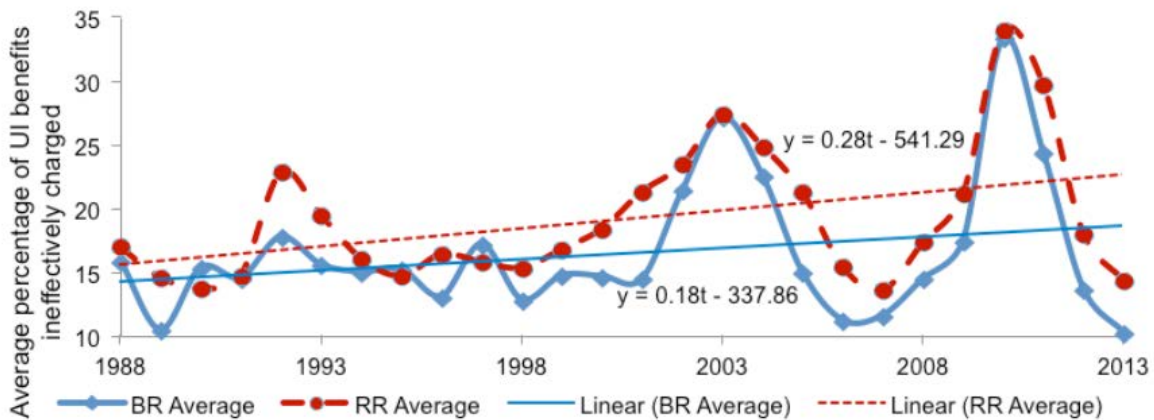
Source: Based on data published by the U.S. Department of Labor and data from ETA-204 reports.

The U.S. Department of Labor has not published ERI estimates in recent years. Analysts at USDOL did not think the ERIs provided a good summary of effective experience rating practices, helpful for making comparisons from one state to the next. More recently, attention has focused on program financing adequacy. A brief summary of the more recent measurement of experience rating and program financing is given below.

The Actuarial Division of U.S. Department of Labor's Office of Unemployment Insurance (OUI) now places strong emphasis on comparing actual average tax rates with tax rates needed for adequate financing of a state's UI system. The 2014 edition of the OUI publication "Significant Measures of State Unemployment Insurance Tax Systems" compares the average tax rate with the rate needed for a Minimum Adequate level of Financing (AFR). The latter equals "the amount needed to cover benefit payments (average level of the last ten years) plus a solvency amount (difference between trust fund (including loans) and Adequate Fund (1.0 Average High Cost Multiple)" (p.6). For each state the percentage deviation between the actual tax rate and the AFR is calculated and displayed. These state-level measures of funding adequacy show that the great majority of state UI programs had inadequate funding levels in 2014, more than six years after the trough of the 2007-2009 recession.[37]

Table 2.3 summarizes funding adequacy calculations for 2014 using the AFR approach. Note that just eight of the 53 programs had positive situations (column (1)). For 28 states the 2014 tax rate was at least 20 percent below the tax rate consistent with an adequate financing rate. The simple average of the 2014 tax rate deviations from AFR was -14.0 percent.

TABLE 2.3.
Trust Fund Adequacy using the AFR Approach, 2014

Percentage Deviation: 2014 Tax Rate from AFR	All 53 UI Programs (1)	Biggest 13 UI Programs (2)	16 States with Indexed Tax Bases in 2009 (3)	12 States with Array Allocation in 2014 (4)
Below -40.0	7	2	0	0
-30.0 - -39.9	7	2	1	1
-20.0 - -29.9	14	5	3	2
-10.0 - -19.9	11	1	3	2
-0.0 - -9.9	6	2	2	2
0.0 – +9.9	2	1	1	2
+10.0 and Above	6	0	6	3
Number of States	53	13	16	12
Simple Average	-14.0	-23.5	14.2	-3.2

Source: Data taken from line 12 in USDOL (2015a)

Table 2.3 also displays the distribution of 2014 AFR situations for three groups of state UI programs. Column (2) shows that all but one of the 13 biggest state programs (based on 2013 taxable covered employment) had a tax

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[37] See line 12 of USDOL(2015a).

rate below the AFR tax rate. For nine of these 13 states the 2014 tax rate was 20.0 percent or more below the AFR and the average was -23.5 percent.

The 2014 financing situations were much more positive for the 16 states that had indexed tax bases in 2009 and the 12 states that practiced array allocation (AA) in 2014. Seven indexed states had tax rates that exceed the AFR rate and just four had tax rates that were 20.0 percent or more below AFR. Five of the 12 AA states had 2014 tax rates that exceeded AFR and just three had tax rates 20.0 percent or more below AFR. Note the simple averages for these two groups of states: +14.2 percent for the indexed states, and -3.2 percent for the AA states. These two features have enhanced financing adequacy in several UI programs.

7. Trends in State Practices

After establishment of the Federal-state UI system during the Great Recession, the states emerged from World War II with high levels of reserves. However, in 1948 there was much more variation among states in the method chosen to measure employer unemployment experience than there is today (Table 2.4). By 2015 the reserve ratio and benefit ratio methods have become much more dominant across the states than they were in 1945.

Among the 51 states with active UI programs since 1948,[38] the number of states using reserve ratio experience rating has remained nearly constant, but the use of benefit-wage ratio and payroll decline methods has decreased dramatically. Part of the early appeal of these two methods may have been simplified record keeping requirements. Neither requires complete accounting of benefit charges against employers. The movement of states has been from these two methods toward benefit ratio. In 1948, there were actually fewer benefit ratio states than either benefit-wage ratio or payroll decline states. Significant movement among these states occurred following state UI funding crises after recessions in 1958, 1975, and 1991. Over the period two other states retained the reserve ratio element, but added a benefit ratio factor to their tax rate determination formula— Michigan and Pennsylvania. After state UI financing difficulties in 2009-2011, two other states moved from being entirely reserve ratio to entirely benefit ratio financing—New Mexico and South Carolina, the latter two states arrived at benefit ratio systems after different experiences under reserve ratio. New Mexico had built up and maintained a sizeable state reserve balance while South Carolina was deep in debt. Nonetheless, a clear trend has emerged; states have moved toward benefit ratio systems for UI experience rating during the years covered by Table 2.4. The trend might be stronger if it were not for resistance from employers with large positive balances in reserve ratio states.

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[38] Reporting from Puerto Rico and the Virgin Islands commenced in 1961 and 1978 respectively.

TABLE 2.4.
Experience Rating Systems in 51 Unemployment Insurance Programs, 1948 to 2015

	1948	1958	1968	1978	1988	1998	2008	2013	2014	2015
Reserve ratio (RR)	29	33	32	31	32	31	31	30	30	29
Benefit ratio (BR)	6	5	8	9	12	15	15	16	16	17
Mix of RR and BR	0	0	1	2	2	2	2	2	2	2
Benefit Wage Ratio (BWR)	9	7	6	5	4	2	2	2	2	2
Payroll Decline (PD)	7	6	4	4	1	1	1	1	1	1
Total	51	51	51	51	51	51	51	51	51	51

Source: U.S. Department of Labor, UI Service, "Comparison of State Unemployment Insurance Laws," various years. Connecticut classified with benefit wage ratio states before 1975.
Notes: States changing to reserve ratio experience rating (year of change): Massachusetts (pre-1958), Michigan (pre-1958), New York (pre-1958) Pennsylvania (pre-1958), Tennessee (pre-1958), Rhode Island (1959), Montana (1980). States changing to benefit-ratio experience rating (year of change): Mississippi (pre 1968), Oregon (pre 1968), Texas (1969), Connecticut (1975), Virginia (1982), Utah (1985), Washington (1985), Iowa (1988), Illinois (1989-92), Alabama (1991), South Carolina (2012), New Mexico (2015).

8. Translating Experience Measures into Tax Rates

All state UI programs use a procedure that links the experience measure for the individual experience-rated employer to their UI tax rate. In nearly all states the rate-setting procedure involves either a set of tax rate schedules or one basic schedule that can shift up or down as solvency taxes and/or taxes to cover common charges are added to (or subtracted from) the underlying basic schedule. As noted earlier, the majority of states start with an experience measure for the individual employer, aggregate across employers, and then add other factors to arrive at the final tax rate. A minority of states (those with total cost targeting) start with a desired or target tax yield and use array allocation to set rates for individual employers that will achieve their target yield. Regardless of the method used to assign tax rates, all tax-rate-setting procedures impose a unique one-to-one correspondence between the state's experience measure for the experience-rated employer and the tax rate paid by that employer.

State UI programs operate with two types of tax structures. Most states have tax rate schedules with fixed boundaries between adjacent tax rates, e.g., a benefit ratio (the experience measure) between 0.300 and 0.499 percent has a tax rate of 0.6 percent of taxable payroll but a benefit ratio between 0.500 and 0.699 percent has a tax rate of 0.7 percent, and so on.

As previously noted, however, twelve states have tax schedules where the tax rate boundaries between adjacent tax rates vary from year to year to control the share of taxable payroll that falls within each tax rate interval and hence to achieve a target tax yield. These states are said to practice total cost targeting and to administer an array allocation system of taxation. From one year to the next the individual tax rate categories have an unchanged share of total taxable payroll, but the tax rate boundaries change to keep the shares of taxable payroll constant.

Given the variability of benefit payments over the business cycle, the states have developed procedures to generate lower or higher levels of revenue. In states using multiple schedules the particular rate schedule chosen for a given year depends on the level of reserves in the state unemployment trust fund account at the U.S. Treasury on the fund trigger date. In some states the schedule chosen depends on the absolute level of reserves, while in other states the schedule chosen depends on the level of reserves relative to payrolls in the state, i.e., the reserve ratio, and in still other states the schedule chosen depends upon the ratio of the reserve ratio to a past measure of payouts, i.e., the reserve ratio multiple (RRM) or the average high cost multiple (AHCM). Chapters 3 and 4 further explore details of tax rate schedules and how tax rates on tax schedules change in response to changes in trust fund balances.

9. Summary

This chapter examined experience rating as the basis for setting UI tax rates that respond directly with the volume of UI benefits paid to unemployed recent employees. Experience rating was included as a feature of program financing when UI programs were established in the 1930s. It was believed that experience rating provides an incentive for employers to stabilize employment. Experience rating was also seen as a way to properly assign the costs of UI benefits to employers, to encourage employer involvement in eligibility determinations, and to allow employers to influence their own tax rates.

The most popular methods for experience rating are reserve ratio (RR, 31 states in 2015) and benefit ratio (BR, 19 states). This distribution of practices has evolved over seventy-five years away from alternatives to these two methods, and towards an increasing number of benefit ratio states. The number of reserve ratio states has remained relatively constant since 1948.

The states follow two methods for assigning differential or experience-rated tax rates to individual employers. Most states start with a measure of an employer's past experience with unemployment (either a reserve ratio or a benefit ratio in all but three states). The states aggregate across the experience measures for all employers to arrive at an aggregate tax yield. Then the states often make an aggregate adjustment to cover common benefit charges not assigned to individual employers and/or add a solvency tax to modify the level of the state trust fund balance. This can be termed a micro approach to experience rating since it starts with the experience measures for individual employers.

The alternative approach can be termed the total cost targeting approach where the state starts with a desired or target level of tax revenue needed to match its benefit payments and perhaps modify its trust fund balance. It then ranks employers according to a measure of experience (an array), places them into groups with known shares of taxable payroll and all members of each group pay the same tax rate. This procedure generates

accurate revenue projections because the average overall tax rate is known with high certainty. Twelve states practice this approach for assigning tax rates to employers.

The ability of state systems to recover benefit payments depends on the effective attribution of benefits to active employers and the responsiveness of taxes to changes in benefit charges. Maximums on tax rates and the taxable wage base limit the ability of states to recover benefit charges. However, both main approaches have yielded similar effects on tax rate maximums. Over the past twenty-five years an average between 5 and 11 percent of employers in reserve ratio states were at maximum tax rates, while between 3 and 13 percent of employers in benefit-ratio states were at maximum rates. The ability of state systems to finance changes in benefit payments also depends on revenues from employers at the bottom range of tax rates. Over the past twenty-five years in reserve ratio states roughly 20 percent of employers have been at minimum rates (sometimes zero rates), while in benefit ratio states the share at minimum rates has been 55 percent of employers or higher. Comparative analysis of array allocation (AA) states versus other states indicated that employers in AA states were less likely to be concentrated at the maximum and minimum tax rates compared to employers in other states. Tax rate stability appears to be somewhat greater in AA states compared to other states as fewer employers are at the two extremes of the tax rate distributions. In these states, the numbers at the extremes are controlled by the array distribution rather than being a product of the experience rating system.

This chapter explained the background and mechanics of measuring unemployment experience. The chapter ended with an overview of the ways states translate measures of employer unemployment experience into tax rates, using tax schedules with fixed tax rate intervals, or array allocation with variable tax rate intervals. The chapter briefly discussed some limits on experience rating that result from the imperfect translation of employer experience into tax rates on taxable wages. The remainder of this manual investigates diverse benefit financing issues associated with the achievement of adequate benefit financing by state UI programs.

Chapter 3. Unemployment Insurance Tax Schedules, Tax Tables and Tax Yields

While State unemployment insurance (UI) agencies follow a variety of approaches in applying experience rating to UI tax rates, generating revenue for their programs. All states vary their rates based on some measure of their trust fund solvency. The specific details of their experience rating systems and the associated tax rate schedules are highly varied. This chapter and Chapter 4 examine how states determine tax rates for individual employers and how they vary aggregate tax yields.

In assigning tax rates to individual employers, of prime importance is the objective of having aggregate tax revenue over the long run being sufficient to match benefit payments such that the state maintains a positive trust fund balance at the U.S. Treasury. To achieve this, nearly all UI programs assign a single tax rate to an employer for all twelve months of a calendar year starting on January 1st.[39] For each experience-rated employer, the annual tax rate varies with the size of the state's trust fund balance, higher tax rates are assigned to employers when the fund is below a desired level of solvency and lower tax rates are assigned to employers when the fund is above a desired level of funding.

This chapter introduces the elements of UI taxation, with a focus on the determination and adjustments to tax rates based on the solvency of the UI trust fund. It examines the tax rate schedules used by states to assign UI tax rates and on how the schedules and tax rates are adjusted from one year to the next. States adjust tax rates up and down to alter their current trust fund balances in a desired direction (e.g., to increase a trust fund balance depleted by a recession-related outflow of benefit payments). While the full set of a state's solvency-related adjustments can also include changes in the taxable wage base and modifications of benefit payments, this chapter and Chapter 4 will focus on tax rate adjustments that occur within the framework provided by the state's existing UI tax statutes and its established rate-setting procedures.[40]

The chapter has six main sections. Section 1 introduces the key features of the UI tax systems in the individual states. For each state UI program the section identifies the method of experience rating, the presence of single or

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[39] Tax rates for twelvemonth periods change on July 1st in three states (New Hampshire, New Jersey and Vermont). Tennessee sets tax rates for six-month periods with changes occurring on January 1st and July 1st. Following the 2007–2009 recession some states, such as Nebraska, New Hampshire, South Dakota and Vermont, imposed temporary quarterly taxes to help restore recession-related reductions in their state UI trust funds.

[40] In other words, ad hoc adjustments to taxes and/or benefits through legislation or administrative decisions will not be addressed in this chapter. Also, a few states (Delaware, Louisiana, Missouri and Oklahoma) institute automatic changes in their tax base in response to changes in their trust fund balance at the U.S. Treasury, raising the tax base when the balance falls below designated thresholds and lowering the tax base when the balance exceeds designated thresholds. Those and other tax base adjustments are examined in Chapter 5.

multiple tax schedules, the main types of UI taxes, the tax base and presence of array allocation. Besides taxes collected from the basic tax rate schedules, the chapter also identifies the state programs that have solvency taxes and taxes intended to defray common charges not assigned to individual employers. Solvency taxes are activated when a state's trust fund balance descends below designated threshold(s) and are intended to help restore a depleted trust fund balance. Section 2 presents and discusses the main features of tax rate schedules in reserve ratio and benefit ratio systems of taxation. Features that enhance and restrict total revenue derivable from a given tax schedule are identified and estimates of their quantitative importance are presented in Section 3. The discussions in Sections 2 and 3 are closely related. They use examples from states where specific features of tax schedules are present. Those features in reserve ratio states include having a single schedule for negative balance employers and having the same maximum tax rate for all tax schedules. Section 4 focuses on solvency taxes including an assessment of their quantitative importance. Section 5 briefly introduces taxes to defray common charges which are discussed in more detail in Chapter 6. Section 6 discusses array allocation (AA) as a technique for setting tax rates for individual employers. This section extends the brief discussion of AA from Chapter 2. In states that practice array allocation, the boundaries between adjacent tax rates on a given tax schedule change from one year to the next as the aggregate distribution of taxable payroll evolves. Section 6 describes the variability of AA details present in the twelve states that utilize array allocation.

Chapter 1 introduced the concept of an adequate financing rate (AFR). This chapter will focuses on factors that influence tax rates for individual firms and adjustments to tax rates based on the level of the state trust fund balance. Certain calculations of this chapter rely on state UI taxes and taxable wage distributions from the years 2007 to 2014.

Note that the present chapter does not place substantial emphasis on the taxable wage base. The tax base, the associated taxable wage proportion (or taxable wage share) and their relationship to tax capacity are examined in Chapter 5. In this chapter the tax base and the taxable wage proportion are taken as given in the determination of a state's tax revenue. While the tax base enters the discussion at several points, it is not the focus of the present chapter.

1. The Main UI Tax Provisions in the States

Table 3.1 summarizes key UI tax provisions operative in the states in 2014 and 2015. The purpose of the table is to assemble and display in one place the most important state-level tax features that determine state UI tax revenue, features to be examined in this Financing Guide. The table focuses on the 51 programs, including the District of Columbia but not Puerto Rico and the Virgin Islands. The states are arranged by the type of experience rating (column (1)) and alphabetically within each rating type. While all states adjust the effective UI tax rates based on the level of the state's trust fund balance, some states have specified schedules which are activated by

TABLE 3.1.

Tax details in individual states, 2014 – 2015

	Experience Rating in 2015-a	Multiple Tax Schedules?	Number Tax Rate Schedules	Solvency Tax?	Common Charge Tax?	Trigger for Tax Sched. Changes-b	Indexed Tax Base?	Tax Base 2014	Array Allocation?
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
ARIZONA	1	0	1	1	0	RR	0	7,000	0
ARKANSAS	1	0	1	1	0	RR	0	12,000	0
CALIFORNIA	1	1	8	1	0	RR	0	7,000	0
COLORADO	1	1	7	1	0	RR	1	11,700	0
DIST OF COL	1	1	6	0	0	RR	0	9,000	0
GEORGIA	1	0	1	1	0	RR	0	9,500	0
HAWAII	1	1	8	0	0	RRM	1	40,000	0
IDAHO	1	0	1	0	0	RRM	1	35,200	1
INDIANA	1	1	8	0	0	RR	0	9,500	0
KANSAS	1	0	1	0	0	RR	0	8,000	1
KENTUCKY	1	1	6	0	0	TFBal	0	9,600	0
LOUISIANA	1	0	1	1	1	C	0	7,700	0
MAINE	1	1	8	0	0	RRM	0	12,000	1
MASSACHUSETTS	1	1	7	1	0	RR	0	14,000	0
MISSOURI	1	1	6	0	0	TFBal	0	13,000	0
MONTANA	1	1	11	0	0	RR	1	29,000	1
NEBRASKA	1	1	13	1	0	RR	0	9,000	1
NEVADA	1	0	1	0	0	D	1	27,400	1
NEW HAMPSHIRE	1	1	2	1	0	TFBal	0	14,000	0
NEW JERSEY	1	1	5	1	0	RR	1	31,500	0
NEW YORK	1	1	12	1	0	RR	0	10,300	0
NORTH CAROLINA	1	0	1	1	0	RR	1	21,400	0
NORTH DAKOTA	1	0	1	0	0	E	1	33,600	1
OHIO	1	0	1	1	1	TFBal	0	9,000	0
RHODE ISLAND	1	1	9	0	0	RR	1	20,600	0
SOUTH DAKOTA	1	0	1	1	0	TFBal	0	14,000	0
TENNESSEE	1	1	6	1	0	TFBal	0	9,000	0
WEST VIRGINIA	1	1	5	0	0	RR	0	12,000	0
WISCONSIN	1	1	4	1	0	TF Bal	0	14,000	0
ALABAMA	2	1	4	0	1	RRM	0	8,000	0
CONNECTICUT	2	0	1	1	0	RR	0	15,000	0
FLORIDA	2	0	1	1	1	RR	0	8,000	0
ILLINOIS	2	0	1	1	0	TFBal	0	12,960	0
IOWA	2	1	8	0	0	RRM	1	26,800	1
MARYLAND	2	1	6	0	0	RR	0	8,500	0
MINNESOTA	2	0	1	1	0	RR	1	29,000	0
MISSISSIPPI	2	0	1	1	1	RRM	0	14,000	0
NEW MEXICO	2	1	1	0	0	RR	1	23,400	0
OREGON	2	1	8	0	0	RRM	1	35,000	1
SOUTH CAROLINA	2	0	1	1	0	F	0	12,000	1
TEXAS	2	0	1	1	1	RR	0	9,000	0
UTAH	2	0	1	1	1	RR	1	30,800	0
VERMONT	2	1	5	0	0	RR	1	16,000	1
VIRGINIA	2	1	15	1	1	RRM	0	8,000	0
WASHINGTON	2	0	1	1	1	RRM	1	41,300	0
WYOMING	2	0	1	1	1	RR	1	24,500	0
MICHIGAN	3	0	1	1	1	G	0	9,500	0
PENNSYLVANIA	3	0	1	1	1	RR	0	8,750	0
DELAWARE	4	0	1	1	0	TFBal	0	18,500	0
OKLAHOMA	4	0	1	1	0	RRM	1	18,700	0
ALASKA	5	1	2	1	0	RRM	1	37,400	1

Source: Data assembled from OUI sources such as the "Comparison of State Unemployment Insurance Laws, 2014."

Cells with 1s and 0s identify the presence or absence of the indicated tax feature, e.g., Arizona does not have multiple schedules.

a -1 = Reserve Ratio, 2 = Ben Ratio, 3 = Ben Ratio and Res Ratio, 4 = Benefit Wage Ratio, 5 = Payroll Decline

b - RR = Reserve ratio, RRM = Reserve ratio multiple, TFBal = absolute level of trust fund balance.

c - Solvency tax active when trust fund is projected to fall below $100 million.

d - Four factors related to benefits.

e - Required benefits.

f- Required benefits plus trust fund adjustment.

g - Account building (ABC), Noncharged benefits (NBC) and interest bearing Federal loans.

the state solvency while others will simply specify a single rate that is added to the UI rate based on solvency, but these two act in the exact same fashion to change tax rates. Roughly half the states (26) operate with multiple tax schedules (column (2)) and that the number of schedules ranges between four and nine in 20 of these 26 states. Virginia has the largest number of tax schedules with 15 while Montana, New York and Nebraska have 11, 12 and 13 schedules, respectively. At the bottom of the multi-schedule distribution, New Hampshire and Alaska have just two schedules. Solvency taxes are present in 32 states (column (4)) and taxes on common charges are present in 12 states (column (5)). Ten states have both solvency taxes and taxes on common charges.

Counting the number of states with solvency taxes and taxes for common charges presents challenges. Readers should note that the classification in column (4) of Table 3.1 departs from Table 2.11 of the "2014 Comparison of State UI Laws." The "2014 Comparison" identifies 22 states with solvency taxes. Ten additional states are identified as having solvency taxes in Table 3.1: Arizona, California, Georgia, Nebraska, Mississippi, Ohio, Tennessee, Utah, Florida, and South Carolina. The ten were added after reviewing details of the tax statutes as described in CCH publications for each state.[41] The classification shown in column (4) may be arbitrary, but each of the ten additions identifies a state tax activated by the balance in the state's UI trust fund. Other states could be classified with solvency taxes such as Idaho and Kansas.

Ten of the twelve states with a common charge tax (column (5)) practice benefit ratio experience rating (all but Louisiana and Ohio). Among other states, a few make adjustments to the basic tax rate using a multiplicative ratio that varies with the volume of common charges, for example Florida. For these states, however, there is not a separately identifiable revenue stream that finances common charges. As noted, Section 4 examines the details and quantitative importance of solvency taxes, but common charge taxes are examined in Chapter 6.

In all states, the schedule of tax rates can shift from one year to the next. For nearly all states, the cause for the shift is a change in the state's trust fund balance on the fund trigger date, the date when the fund balance determines the next year's tax rate schedule. With a different trust fund balance, a different schedule of tax rates can be activated. Column (6) in Table 3.1 identifies the tax triggers used by each state to shift the tax rate schedule. For nearly all states the trigger is one of three measures based on the trust fund balance as of the fund trigger date: i) the absolute level of the trust fund balance (TFBal), ii) the trust fund balance measured as a reserve ratio (RR) (i.e., as a percentage of covered payroll), or iii) the trust fund balance measured as a reserve ratio multiple (RRM) (i.e., the reserve ratio divided by a measure of high benefit payout years). These measures look

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[41] The solvency taxes in these ten states are as follows: Arizona—the required yield ratio; California—Schedule F+ with tax rates 15 percent above the rates in Schedule F; Georgia—the lagged reserve ratio adjustment, which can alter rates on the basic tax schedule +100% to −50%; Mississippi- size of fund index; Nebraska—the target yield ratio from 0.70% to 1.50% on taxable payroll; Ohio—the minimum save level (MSL) tax; Tennessee – solvency tax; Florida—the fund size ratio component of the total tax rate; South Carolina—the fund building component of the tax surcharge; and Utah- reserve factor. Note that Michigan and Pennsylvania use benefit ratios and reserve ratios.

backward at the lagged fund balance to set the tax schedule for the upcoming year. Chapter 4 discusses the details of shifts in tax schedules and changes in solvency taxes in states that operate with a single tax schedule.

A few states rely upon forward-looking measures to set the tax rate schedule for the upcoming year. Louisiana activates a solvency tax when its projection of the trust fund balance for the upcoming year falls below $100 million. Three states (Nevada, North Dakota and South Carolina) utilize projections of the next year's benefit payments in determining the next year's tax rate schedule and the desired revenue yield. As indicated by footnotes d, e and f in Table 3.1, the exact forward-looking indicator differs across the three states, but all three utilize a projection of future benefits to set the next year's tax schedule. Basing future tax rates on forecasts of benefits and trust fund balances also requires the state office to use outside independent forecasts of the state's unemployment rate, a primary determinant of UI claims and benefit payments.

Columns (7) and (8) of in Table 3.1 respectively identify the states with an indexed taxable wage base and the level of the tax base in 2014, respectively. There are now 19 states with an indexed tax base, three more than before the recession of 2007-–2009; Colorado, Rhode Island and Vermont. Column (8) shows clearly that states with indexation generally have above-average tax bases. The simple average of the 51 tax bases in 2014 was $17,159. Seventeen of the 19 states with an indexed tax base in 2014 had a base above $17,159. (Colorado and Vermont are exceptions.). Only one of the 32 non-indexed states had an above-average tax base (Delaware at $18,500). The table helps to illustrate the strong positive association between tax base indexation and the level of the tax base. All nine states with a 2014 tax base of $29,000 or higher had an indexed tax base. Chapter 5 examines the association between the tax base and UI financing.

Twelve states practice array allocation, in which the boundaries between adjacent tax rates on the tax schedule are not fixed but vary from year to year as the aggregate distribution of taxable payroll changes. The twelve states are identified in column (9) of Table 3.1. Seven states practice reserve ratio experience rating, four use benefit ratios and one (Alaska) uses payroll decline to set rates for individual employers. Thus array allocation is present in several reserve ratio and several benefit ratio states. As previously noted, Section 6 analyzes array allocation and identifies innovative features within the twelve states that use this system of financing.

2. Tax Rate Schedules

Every state UI program operates with one or more tax rate schedules that assign a tax rate to each experience-rated employer in a manner that employers with worse experience (lower reserve ratios, higher benefit ratios) pay higher UI tax rates than do employers with better experience (higher reserve ratios, lower benefit ratios). The number of schedules in each state is identified in column (3) of Table 3.1. The states with a single tax rate schedule follow procedures that cause the entire schedule to shift up or down from one year to the next, in response to changes in the state's trust fund balance on the fund trigger date. Some states with a single tax rate schedule also

consider other factors such as projections of future benefits or future trust fund balances in setting the level of the tax rate schedule for the upcoming year.

Figure 3.1 displays three illustrative tax rate schedules based on Kentucky's UI tax statute. Kentucky practices reserve ratio experience rating using six tax rate schedules. Schedule A, the second-lowest schedule, is operative when the fund balance on the fund trigger date (September 30th) equals or exceeds $500 million but is less than 1.18 percent of total covered payroll. Schedule E, the highest schedule, is operative when the trust fund balance on the computation date falls below $150 million. Each schedule has 22 tax rates. The maximum tax rate on each schedule is applied to employers whose reserve ratios (reserves as a percentage of taxable payroll for the 36 months ending on the preceding June 30th) are –8.0 percent or lower. The minimum tax rate is applied to employers whose reserve ratio is positive 8.0 percent or higher. Between 2009 and 2015 Kentucky employers have been taxed using Schedule E with a 10.0 percent maximum tax rate and a 1.0 percent minimum rate. The three schedules displayed in Figure 3.1 are simplifications of Kentucky's actual 2014 schedules.[42] The maximum and minimum rates shown in Figure 3.1 are the actual rates from the three schedules, as are the reserve ratios where the maximum and minimum rates become operative. The risers (tax rate increments) for adjacent tax rates are close approximations to the actual increments.

FIGURE 3.1
Kentucky – Three Tax Rate Schedules in 2014
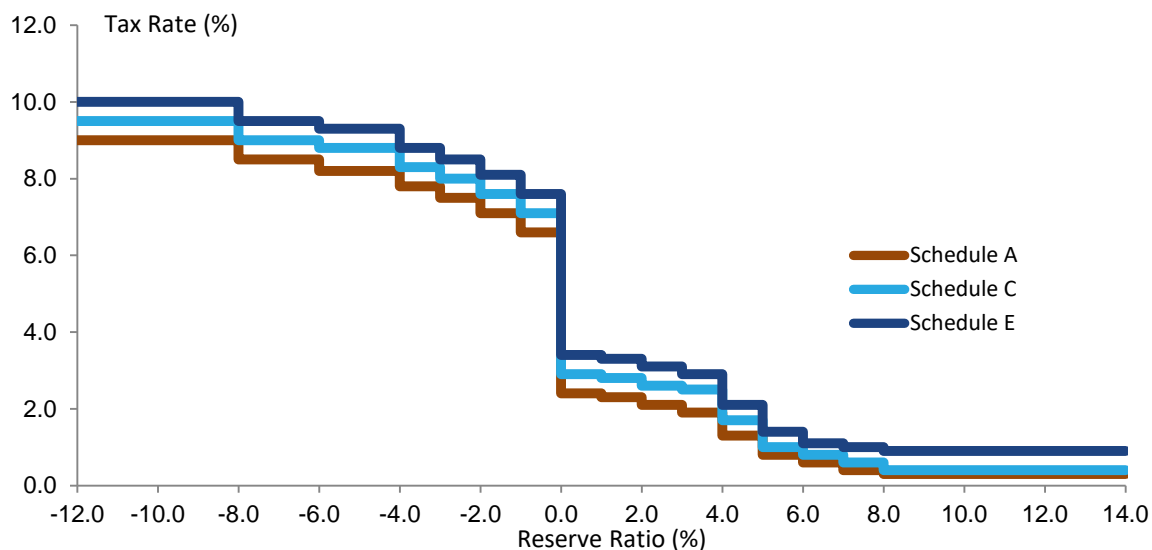
Source: ETA 204 report for Kentucky. Estimated yields in 2010 for Schedules A, C and E are 2.69, 3.07 and 3.52 percent respectively. The schedule triggers are above $500, $250-$350 and below $150 million for schedules A, C and E respectively. Calculations of tax yields done at the Urban Institute.

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[42] Figure 3.1 shows each schedule as having 16 different tax rates, whereas the actual schedules have 22 different tax rates. For reserve ratios between positive 5.0 percent and negative 3.0 percent, the actual schedules have 13 different tax rates, whereas Figure 3.1 shows eight different tax rates.

One distinctive feature of the Kentucky tax schedules is the big jump in tax rates when an employer's account balance moves from a positive to a negative reserve ratio This tax increase is 4.1 percentage points for Schedules A and C and 4.0 percentage points for Schedule E. Moving to a negative balance in Kentucky has major tax implications for an experience-rated employer.

For each of the three tax rate schedules depicted in Figure 3.1 there is a negative linkage between higher reserve ratios and the tax rate. This negative linkage holds for both the negative and positive ranges of the reserve ratios. The average slopes across Kentucky's five tax rate schedules are −0.313 for negative reserve ratios (from −8.0 to 0.0 percent) and −0.295 for positive reserve ratios (from 0.0 to 8.0 percent). The negative slopes are characteristic of all reserve ratio systems where higher reserve ratios are associated with lower UI tax rates. An unusual feature of Kentucky's tax rate schedules is that there is a bigger change in tax rates in moving from a positive to a negative reserve ratio (4.0–4.1 percentage points) than movements across both the negative and positive sloped ranges (2.50 and 2.36 percentage points, respectively). In Kentucky, the slopes across the negative and positive reserve ratio ranges are nearly identical. Worse experience in a reserve ratio state such as Kentucky is signaled by low and negative reserve ratios. Thus a movement to the left in Figure 3.1 signals worse labor market-actuarial experience. When coupled with ETA-204 data that show the distribution of taxable payroll, the analyst can gauge the response of revenues when moving to different tax rate schedules.

Figure 3.2 depicts three tax rate schedules in Connecticut, a state that uses benefit ratios to set tax rates for individual employers. The numerator of the benefit ratio is the sum of charged benefits over the 36 months prior to the computation date of June 30th, divided by covered payroll for the same period. The basic tax schedule is the lowest of the three schedules in Figure 3.2. Employers with benefit ratios up to 0.5 percent all pay the minimum tax rate of 0.5 percent. The maximum rate for charged benefits is 5.4 percent. Thus movement to the right in Figure 3.2 signals worse labor market-actuarial experience. Connecticut also levies a fund balance tax of from 0.0 to 1.4 percent designed to restore the trust fund reserve ratio to 0.8 percent of total payroll. This tax is added uniformly to the rates of all experience-rated employers. Besides the basic tax schedule, Figure 3.2 shows two combined tax rate schedules when the fund balance tax rate is 0.7 percent and 1.4 percent. The top schedule in Figure 3.2 has been operative in Connecticut since 2009 with rates between 1.9 and 6.8 percent. The yield from the top schedule in 2014 is 4.42 percent of taxable payroll compared to 3.06 percent from the basic schedule.

FIGURE 3.2
Connecticut Tax Rate Schedules in 2014
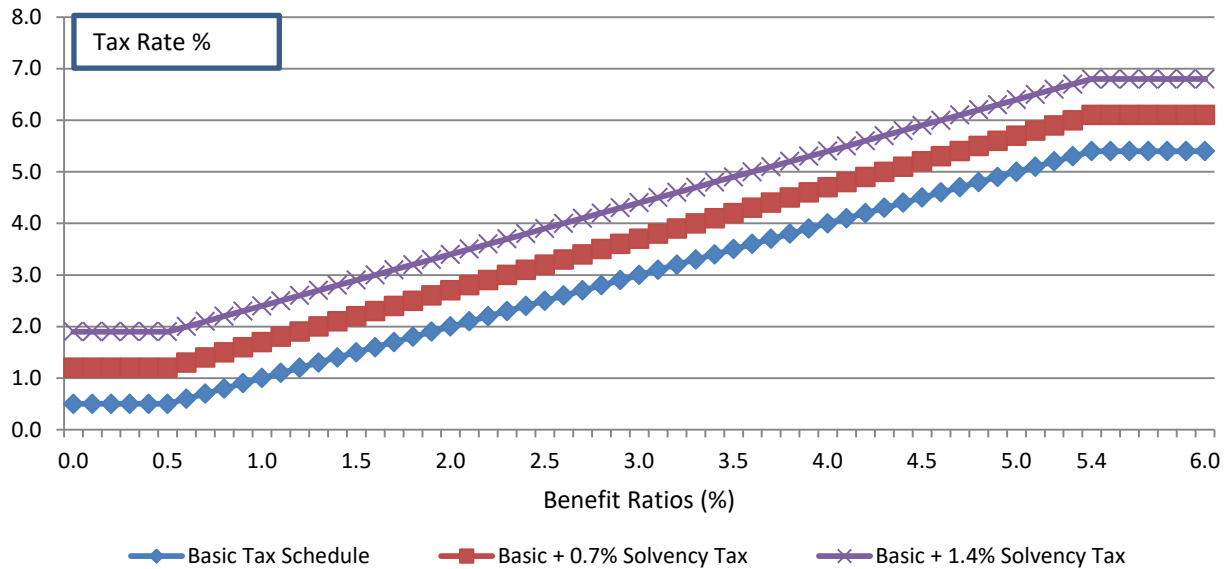
Source: ETA 204 report for Connecticut. Estimated yields in 2014 for the three schedules are 3.06, 3.76 and 4.42 percent with fund balance (solvency) tax rates of 0.0, 0.7 and 1.4 percent respectively. Calculations of tax yields done at the Urban Institute.

The experience rating systems in both Connecticut and Kentucky shift the operative tax rate schedule using different (but essentially equivalent) methods. When their respective trust funds are depleted, Connecticut activates higher levels of the fund balance tax (a solvency tax) whereas Kentucky moves to a higher tax rate schedule. In both states a lower aggregate trust fund balance subjects experience-rated employers to higher UI taxes, whether it is the employer's reserve ratio in Kentucky or the benefit ratio in Connecticut.

The tax rate schedules depicted in Figures 3.1 and 3.2 have several common features, such as a minimum tax rate, a maximum tax rate, the points where these extreme rates become operative and a sloped range between the minimum and the maximum tax rate. The Kentucky schedules have the added feature of a discontinuity (break) between positive and negative reserves. That discontinuity is present in many (but not all) reserve ratio systems. Note in both experience rating systems, however, that a movement toward worse experience over the sloped range of the schedules can be described as having a negative slope; that is, worse experience is associated with higher tax rates.

Figures 3.1 and 3.2 provide just a partial flavor of the diversity of tax rate schedules present across the UI programs in the states. Table 3.2 helps provide a fuller picture of tax diversity in state UI programs. As in Table 3.1, Table 3.2 has the states arranged by type of experience rating and then alphabetically within each type (column (1)). The remaining columns display ten details of UI tax rates that vary widely across the states. Readers should

TABLE 3.2.
Details of tax rate schedules in individual states in 2014 - 2015

State	Type of Exp. Rating-a	Max Rate 2007 to 2014	Max Rate Interval Starts, RR or BR	Min Rate Interval Starts, RR or BR	Width of Sloped Range, RR or BR	Number Tax Rate Intervals	Avg. Slope Positive Range	Avg. Slope Negative Range	Flat Top Max Tax Rate?	One Schedule Negative Balances	Solvency Tax with Reductions
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
ARIZONA	1	7.17	<=-13	13+	26	24	-0.215	-0.196	0	0	0
ARKANSAS	1	7.10-d	<0	9.95	9.95	13	-0.492	f	0	0	1
CALIFORNIA	1	6.2	<=-20	20+	40	38	-0.181	-0.043	1	0	0
COLORADO	1	11.02	<=-26	20+	46	25	-0.145	-0.144	0	0	0
DIST OF COL	1	7.2	<-=10	8+	18	17	-0.338	-0.12	0	0	0
GEORGIA	1	8.1	-15.5	8.95	24.45	45	-0.237	-0.21	0	0	1
HAWAII	1	5.4	<=-0-200	>= 11-15	211	20	-0.167	g	1	0	0
IDAHO	1	6.8	b	b	b	13	b	b	0	0	0
INDIANA	1	9.5	<=-16	3.0	19	26	-1.031	-0.183	0	0	0
KANSAS	1	9.4	b	b	b	71	b	-0.113	0	0	0
KENTUCKY	1	10	<-8.0%	>=8.0%	16	22	-0.295	-0.313	0	0	0
LOUISIANA	1	6.2	<=-999	>=9.5	1008.5	63	-0.185	g	0	0	0
MAINE	1	8.21	b	b	b	20	b	b	0	0	0
MASSACHUSETTS	1	12.27	<=-15	16+	31	40	-0.279	-0.308	0	0	0
MISSOURI	1	9.75	<=-12	15+	27	38	-0.192	-0.214	0	0	0
MONTANA	1	6.12-d	b	b	b	20	b	b	1	0	0
NEBRASKA	1	8.66	b	b	b	20	b	b	0	0	0
NEVADA	1	5.4	b	b	b	18	b	b	0	0	0
NEW HAMPSHIRE	1	9.5	<=-100	+26	126	48	-0.098	g	0	0	0
NEW JERSEY	1	7	<=-35	17+	52	28	-0.168	-0.031	0	0	0
NEW YORK	1	8.9	<=-21	12+	33	68	-0.212	-0.171	0	0	0
NORTH CAROLINA	1	6.84	<=-4.2	4	8.2	36	-0.592	-0.667	0	0	0
NORTH DAKOTA	1	10	b	b	b	20	-1.070	-0.173	0	0	0
OHIO	1	9.6	<=-20	14+	34	40	-0.421	-0.11	0	0	0
RHODE ISLAND	1	9.79	<-24	17+	41	25	-0.150	-0.183	0	0	0
SOUTH DAKOTA	1	10.05	<=-6.5	1.6+	8.1	24	-0.938	-1.154	0	0	0
TENNESSEE	1	10	<=-20	20+	40	23	-0.148	-0.25	0	1	0
WEST VIRGINIA	1	8.5	<=-10	+18	28	18	-0.156	-0.2	0	1	0
WISCONSIN	1	9.8	<=-6	15+	21	24	-0.281	-0.533	0	1	0
ALABAMA	2	8.34	7.2+	0-0.39	7.2	26	-0.764	NA	0	NA	0
CONNECTICUT	2	6.8	5.40+	0-0.5	5.4	50	-0.907	NA	0	NA	0
FLORIDA	2	5.4	5.4	0	5.4	22-39	-1.354	NA	0	NA	1
ILLINOIS	2	9.45	6.4+	0.0	6.4	65	-1.000	NA	0	NA	0
IOWA	2	9	b	b	b	21	-1.734	NA	0	NA	0
MARYLAND	2	13.5	9.46+	0.0	9.46	39	-1.020	NA	0	NA	0
MINNESOTA	2	10.81	8.5+	0.0	8.5	75	-1.092	NA	0	NA	0
MISSISSIPPI	2	5.4	>=4.7	0	4.7	51	-1.002	NA	1	NA	1
NEW MEXICO	2	5.4						NA	1	NA	0
OREGON	2	5.4	b	b	b	26-39	b	NA	0	NA	0
SOUTH CAROLINA	2	8.18	b	b	b	20	b	NA	0	NA	0
TEXAS	2	8.6	7	0.0	7	71	-1.464	NA	0	NA	1
UTAH	2	9.4	8	0	8	63-84	-1.012	NA	0	NA	1
VERMONT	2	8.4	b	0	b	21	-0.399	NA	0	NA	0
VIRGINIA	2	6.93	6.2	0.1	6.1	43	-0.851	NA	1	NA	0
WASHINGTON	2	6	5.75+	0.0	5.75	40	-0.939	NA	0	NA	0
WYOMING	2	10	8.5	0	8.5	81	-0.476	NA	0	NA	1
MICHIGAN	3	12.55	c	c	c	c	c	NA	0	NA	0
PENNSYLVANIA	3	10.89	c	c	c	c	c	NA	0	NA	1
DELAWARE	4	8.2	14.9+	<0.2	14.7	80	-5.369	NA	0	NA	0
OKLAHOMA	4	9.2	13.2+	<0.2	13	54	-4.091	NA	0	NA	0
ALASKA	5	5.98	b	b	b	21		NA	0	NA	1

TABLE 3.2. (CONTINUED)
a - 1 = Res. Ratio, 2 = Benefit Ratio, 3 = Benefit Ratio and Res. Ratio, 4 = Benefit Wage Ratio, 5 = Payroll Decline
b - Minimum and maximum rate intervals and slopes of schedules between minimum and maximum rates not defined because the state uses array allocation. c - Minimum and maximum rate intervals and number of rate intervals not defined because state uses both reserve ratios and benefit ratios to set tax rates.
d - Maximum 2008 to 2014, higher schedule in 2007.
e - Single tax rate for all negative balance employers.
f - One tax rate for all negative balance employers.
g - Slope not well defined because of very wide intervals for some tax rate categories. NA - Not applicable as all experience indicators are positive.

note that Table 3.2 omits several other tax features that exhibit wide interstate diversity.[43] Some of these other features that have implications for total tax revenue are discussed below.

Column (2) displays the maximum tax rate in each state in 2014 and shows wide diversity. The simple average across 51 programs is 8.4 percent, but eleven states had a maximum rate of 10.0 percent or higher and seven states had a maximum of 5.4 percent, the lowest permissible rate that can satisfy the Federal conformity requirement.

Columns (3)-(5) identify the experience points where the maximum and minimum tax rates become operative as well as the range of the experience indicator where each state's tax schedules are sloped. Thus Arizona employers reach the maximum rate when their reserve ratio is −13.0 percent or lower and the minimum rate when their reserve ratio is 13.0 percent or higher. The width of the sloped range of the tax rate schedules in Arizona is 26.0 percent (column (5)). Note in these same columns that the maximum and minimum tax rate points are not defined in two groups of states: the twelve that practice array allocation experience rating (footnote b) and the two that use both benefit ratios and reserve ratios to set tax rates (footnote c). In both situations, the location of the two extreme points can change from year to year and are not fixed as in the other 37 states, where these extreme points are well defined.

Note also in column (5) that the width of the sloped range is extremely wide in three reserve ratio states (reserve ratios sloped intervals of more than 100 percentage points in Hawaii, Louisiana and New Hampshire). For the other reserve ratio states the sloped range of the schedules varies between 8.1 and 52.0, with five above 35.0, six below 20.0 and an average of 27.5. The sloped range between zero and the maximum tax rate in benefit ratio states is much smaller. For the benefit ratio states, the sloped range of benefit ratios in column (5) is from 4.7 to 9.5 with an average of 6.9. The average sloped range in reserve ratio states is about four times the sloped range in benefit ratio states.[44]

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[43] The table omits the following: i) the break (if any) in tax rates between positive and negative reserve balances in reserve ratio states, ii) the presence tax rate limiters that limit the annual change in tax rates for individual employers, and iii) the payment of voluntary contributions that permit employers to "buy down" an initial tax rate to a lower rate.

[44] Readers should note that the ranges refer to different experience indicators, i.e., reserve ratios versus benefit ratios.

Column (6) shows the number of different tax rates that are present for individual tax schedules. For the 29 reserve ratio states, the number of intervals varies between 71 and 13 with an average of 31. For 17 benefit ratio states, the range is from 21 to 81 with an average of 46. On average, benefit ratio states set rates for individual employers using about 50 percent more intervals than reserve ratio states (i.e., 46 versus 31). Five benefit ratio states utilize more than 60 detailed rate intervals compared with only three reserve ratio states.

The information in columns (5) and (6) can be combined to describe tax rate variability. Columns (7) and (8) show estimates of the average slopes of tax rate schedules. For reserve ratio states, the slopes were calculated for both the positive and negative ranges (i.e., between zero and the minimum rate and between zero and the maximum rate, respectively). It also should be noted that the slopes displayed in columns (7) and (8) should be described as average slopes over the full range between zero and the minimum rate and between zero and the maximum rate.

The average slope over the positive range for 23 reserve ratio states is −0.347 and just four have slopes more negative than −0.50. The average slope over the negative range for 20 reserve ratio states is −0.266 and just three states have slopes more negative than −0.50.[45] For 14 benefit ratio states, the average slope is −1.001, and 12 states have slopes more negative than −0.50. Moving to an adjacent tax rate interval causes a much larger change in the tax rate in a benefit ratio state than in a reserve ratio state. On average, the change in the tax rate associated with moving to an adjacent rate interval is three or four times larger in a benefit ratio state than in a reserve ratio state. The situation holds for both positive balance and negative balance employers in reserve ratio states. The preceding observation strongly suggests that when the experience indicator changes and an employer moves to an adjacent tax rate interval, the response of the tax rate is much larger in benefit ratio states than in reserve ratio states.

The final three columns of Table 3.2 identify states with specific features that operate to restrict UI tax revenue. Six states operate with what can be termed "flat-top" tax rate schedules (column (9)). These states have a sloped schedule with a maximum rate at a specific level (often 5.4 percent). Then when higher schedules are activated, tax rates increase for most tax rate intervals but the top rate does not change. The unchanged maximum tax rate then applies to a wider experience interval than on the lowest tax rate schedule. The "flat top" restricts total revenue by preventing the maximum rate from increasing. California is one such state with "flat top" tax schedules. The quantitative effect of that feature is examined later in this chapter.

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[45] The difference in counts between positive balance and negative balance range is caused by two factors. The average slope in the positive balance range is not defined in Kansas because the state uses array allocation to set rates for positive balance employers. The average slope is not defined in the negative balance range in Arkansas because the maximum rate is applied to all negative balance employers. For three other reserve ratio states (Hawaii, Louisiana and New Hampshire) the negative balance range is extremely wide near the maximum tax rate.

At least three reserve ratio states that operate with multiple tax rate schedules use only a single set of tax rates for employers with negative reserve ratios. In effect, those employers are partially shielded from paying higher tax rates when the UI trust fund is depleted and higher tax schedules are invoked. The three states are identified in column (10) of Table 3.2. Later in the chapter the quantitative effect of this arrangement is examined.

At least nine states have a solvency tax that can have negative tax rates. The states are identified in column (11) of Table 3.2. The solvency tax is a positive assessment when the fund balance on fund trigger date falls below a specified threshold. However, if the balance exceeds a second (higher) threshold, the tax has negative rates intended to reduce the fund back to the range where the solvency tax is not active. In Texas, for example, the replenishment tax is levied at a positive rate when the fund balance falls below 1.0 percent of taxable payroll but at a negative rate when the fund balance exceeds 2.0 percent of taxable payroll. The purpose of this arrangement is to restrict the long-run balance between 1.0 and 2.0 percent of taxable payroll.

3. Statutory Factors that Limit or Enhance the Average UI Tax Rate on Taxable Payroll

Several features of state UI tax statutes limit either the average tax rate on taxable payroll or the responsiveness (year-to-year changes) of the statewide average tax rate. The following paragraphs note several tax rate limiters, identify states where they are present and show estimates of the quantitative importance of selected limiters. The limiters are divided into two groups: limits on the maximum tax rate and limits on year-to-year tax rate changes. This section also identifies and discusses factors that enhance the average tax rate on taxable payroll. The examples are presented as illustrative of common situations but not as an exhaustive list since tax provisions vary widely across individual UI programs. The combined net effect of the various tax limiters reduces the responsiveness of the average UI tax rate to UI trust fund drawdowns in most states. Thus the tax limiters weaken the ability of a state's UI tax system to finance benefits and restore its trust fund balance after a recession.

Upper limits on tax rates

The four structural features of UI tax schedules identified below can limit the yield of UI taxes due to limitations on the maximum tax rate.

LOW MAXIMUM UI TAX RATE. To be eligible to charge employers experience-rated state UI tax rates below 5.4 percent of taxable payroll, a state must satisfy Federal experience rating requirements that include having a maximum tax rate of at least 5.4 percent of taxable payroll. The UI tax statutes in several states operate with a maximum rate of 5.4 percent regardless of the balance in the state's trust fund account at the U.S. Treasury (six states in 2014). In 2014 the maximum tax rates on the top tax schedule in fifteen states fell below 7.0 percent of

taxable wages, and four of these states (California, Florida, Louisiana and Virginia) had a 2014 tax base of $10,000 or less. In short, low maximum tax rates and the associated low maximum potential to generate tax revenue are present in a number of UI programs.

Having a low maximum tax rate, however, does not necessarily mean a state has low potential UI tax revenue. Of the fifteen states with a 2014 maximum tax rate below 7.0 percent, nine have an indexed tax base and five of the nine (Alaska, Montana, New Mexico, Oregon and Washington) did not require loans from the U.S. Treasury during or after the 2007–2009 recession. Two other states from this group with low maximum tax rates (Louisiana and Mississippi) also avoided borrowing during the recent recession. To fully assess tax capacity and the ability of a state to avoid borrowing requires knowledge of other financing factors such as the level of the tax base and the pre-recession trust fund balance, in addition to knowledge about the maximum tax rate.

FLAT TOPS ON TAX RATE SCHEDULES. Tax rate schedules in most states with multiple schedules (or states with some other mechanism such as a solvency tax to shift the entire schedule) have successively higher maximum rates when moving from one schedule to the next higher schedule. However, several states with multiple schedules have what can be termed "flat top" schedules, where the top rate for maximum-rated employers across all schedules is the same even though there is a progression of rates for employers at lower tax rate intervals. Column (9) in Table 3.2 identified six states with these schedules, including California, Hawaii, Montana and Virginia.

In California, for example, the top rate of 5.4 percent on the lowest rate schedule (Schedule AA) is paid only after reaching or falling below a reserve ratio of −20.0 percent. On Schedule F, the highest schedule, the 5.4 percent rate is paid by all employers with a negative reserve ratio. Additionally, California has schedule F+ where all rates are 15 percent higher than those on schedule F.

Figure 3.3 displays four of California's eight tax rate schedules (AA, C, F and F+). As previously noted, California also has a low taxable wage base, which has remained at $7,000 since 1983. The combined effects of the low tax base and the presence of flat top tax schedules (yielding low average tax rates) severely restrict the capacity of the UI tax system in California to generate tax revenue.

One consequence of the state's low tax capacity under low levels of solvency is that many employers have cumulative benefit charges that exceed cumulative past UI contributions, resulting in negative reserves. In 2012, for example, all employers with negative reserves paid at the maximum rate of 6.2 percent on Schedule F+ and accounted for 60 percent of taxable payroll. However, employers with a negative reserve ratio of −20.0 percent or lower accounted for only 24 percent of taxable payroll. The other 36 percent of taxable payroll was for employers in the −0.01 to −019.9 percent range.

If the tax rates on schedule F+ and the other high rate schedules continued to increase as reserve ratios below zero became successively more negative between −0.0 and −19.9 percent, total tax revenue would be substantially higher. A calculation with California data from the state's ETA 204 report suggested revenue in 2012 would have been $6.845 million rather than the $5.625 million recorded in the 204 report, an increase of $1,220 million or 21.7 percent.[46] For employers at the maximum rate, the top rate for schedule F+ in the simulation would have been 9.3 percent rather than 6.2 percent and rates below 9.3 percent but above 5.4 percent would have applied to those with negative reserve ratios but less negative than −20.0 percent.

California employers were taxed on schedule F+ in all years between 2005 and 2014. Had schedule F+ been operative with a sloped schedule in the negative reserve ratio range between −0.0 and −19.9 rather than its flat top schedule during these ten years, total tax revenue would have been much higher. Revenue between 2005 and 2014 totaled $50.6 billion. If the sloped schedule increased revenue by 10 percent per year (a very conservative estimate given the calculation with 2012 data as described previously), schedule F+ still would likely have been operative during these ten years. With, say, $5.0 billion in added revenue, the debt to the U.S. Treasury at the end of 2014 would have been less than half of the actual debt of $8.9 billion.

FIGURE 3.3
California Tax Schedules in 2014
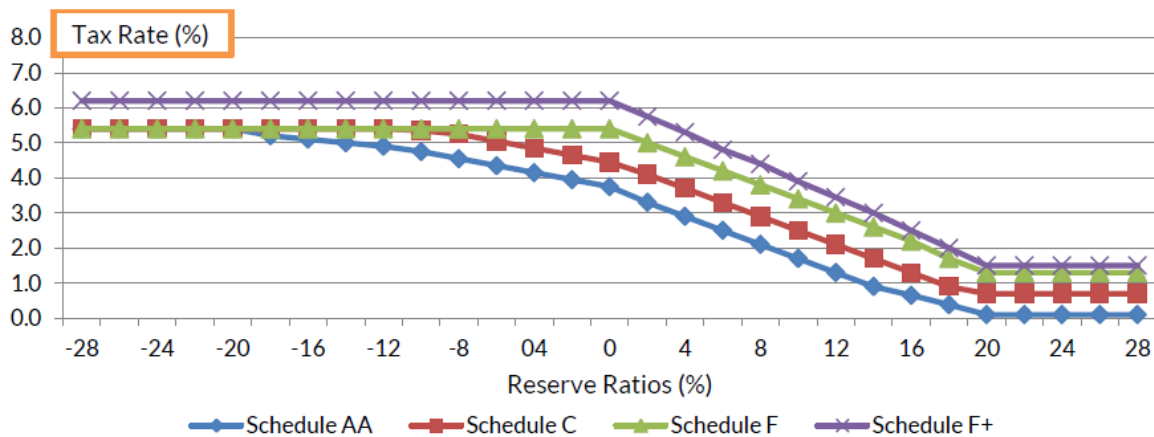
Among states with a single basic tax rate schedule that achieve a higher average tax rate using progressively higher solvency taxes, Florida and Mississippi have flat-top schedules. In those states the maximum rate is reached at a lower benefit ratio when higher solvency tax rates are operative. In effect, the flat top is extended further down the benefit ratio distribution when the fund balance is lower. For example, in Mississippi the benefit ratio where the maximum rate became operative was 5.0 percent of taxable wages in 2010 but 4.5 percent in 2011 and

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[46] The simulation increased tax rates by 50 percent above those from Schedule AA for all employers with negative reserve ratios between 0.0 and −19.9 percent and taxed employers with negative reserve ratios of -20.0 percent and below at the maximum rate. A solvency surcharge of 15 percent was also assumed to apply to all employers.

2012 under a higher schedule of solvency taxes. One consequence of flat-top tax schedules is that the maximum yield of successively higher rate schedules increases but at a decreasing rate as higher tax schedules are implemented.

The quantitative importance of flat-top tax schedules may be large or small depending upon other details of the tax statute in a given state. Two important factors would be the range of experience rates over which the flat top extends and the slope of the schedule before reaching the flat-top range. The preceding example from California shows that the revenue enhancement from eliminating flat-top tax schedules can be substantial.

SINGLE TAX SCHEDULE FOR NEGATIVE BALANCE EMPLOYERS. At least three reserve ratio states have tax statutes with multiple schedules for positive balance employers but just a single schedule for negative balance employers (Tennessee, West Virginia and Wisconsin). As the trust fund balance decreases, employers with positive balances face higher tax schedules and pay higher contribution rates while those with negative balances face an unchanging tax schedule. Their contribution to improved solvency is due only to movement along a tax schedule (to lower reserve ratios and higher tax rates). Positive balance employers, in contrast, pay higher taxes due to both moving to a higher tax rate schedule and facing tax increases caused by movement to a lower reserve ratio. That circumstance places a larger burden for trust fund restoration on employers with better past experience, that is, with positive reserve ratios as opposed to employers with negative reserve ratios.

Figure 3.4 displays three tax schedules for West Virginia in 2014. The state operates with five schedules, with C as the top schedule and G as the bottom schedule. For negative balance employers the maximum tax rate is 7.5 percent at reserve ratios of negative 10 percent or lower. There are two other negative balance rates of 6.5 and 5.5 percent for negative reserve ratios above −10.0 percent but below zero. All five schedules in West Virginia have the identical structures with rates of 7.5, 6.5 and 5.5 percent for negative balance employers.

FIGURE 3.4
West Virginia Tax Schedules in 2014
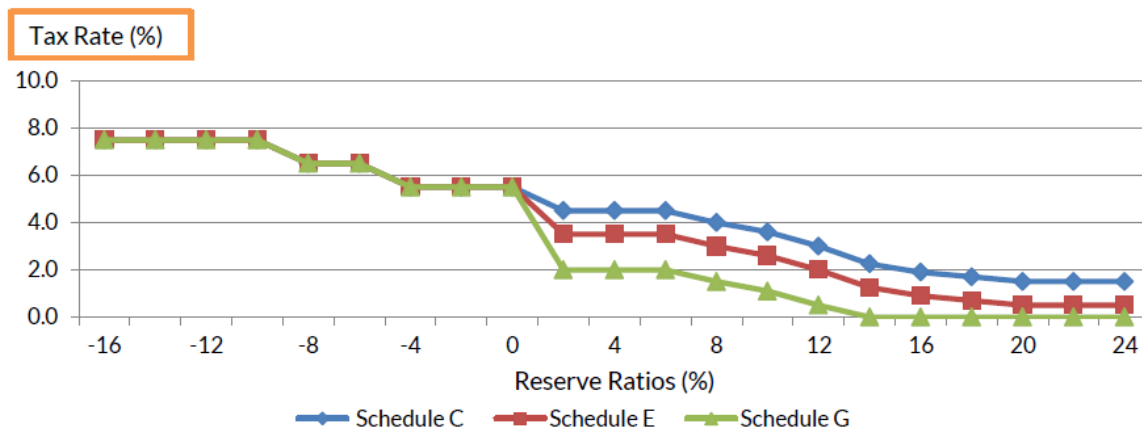
During 2011–2013 employers with positive balances in West Virginia paid UI taxes at the average rate of 2.48 percent of taxable payroll, which was 12.2 percent higher than their average rate of 2.21 percent during 2007–2009. For negative balance employers during the same two periods, the tax rate averages were 7.79 and 7.72 percent, respectively, or a decrease of 0.9 percent during 2011–2013. Had the negative balance employers also experienced a 12.2 percent increase in their total contributions during these three years, they would have contributed $186.6 million rather than their actual contributions of $166.3 million. With the added $20.3 million in contributions the state would have ended 2013 with a trust fund balance of $122.1 million rather than the actual balance of $101.8 million.[47]

Limits on Annual Tax Rate Changes

Two tax features act to reduce year-to-year variation in tax rates.

ANNUAL TAX RATE LIMITERS. Several states limit the size of the change in an employer's tax rate from one year to the next (e.g., Alaska, Oklahoma and Wyoming). The tax statute specifies the maximum annual change in the tax rate. This feature allows an employer to avoid sharp increases in tax rates, but it also limits the aggregate immediate response of a state's tax system when there is a recession and increases the decline in the state's UI trust fund.

PARTIAL CLOSING OF A TRUST FUND SHORTFALL. Florida has a target trust fund balance range of from 4 to 5 percent of taxable payroll. When the actual fund balance on the computation date falls below this level, it triggers an increase in the employer tax. However, the tax increase in this situation restores only part of the shortfall. Starting in 2015 the fraction is one-fourth of the shortfall. While this feature helps to stabilize annual changes in tax rates, it also slows the pace of trust fund restoration following a recession.

Factors that Enhance Tax Revenue and Revenue Responsiveness

Three procedures present in selected states enhance total revenue or revenue responsiveness through increased UI taxes.

HIGHER TAX BASE FOR EMPLOYERS WITH PERSISTENTLY LARGE NEGATIVE BALANCES. Rhode Island had an indexed taxable wage base between 1980 and 1998 that it reinitiated in 2012. The tax base in 2014 was $20,600. For employers at the maximum tax rate, however, the base is $1,500 higher, or $22,100 in 2014. That $1,500

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[47] This calculation is based on ETA-204 data for the rate years from 2007 to 2013. It assumes that the average tax rate for negative balance employers during 2011–2013 matched the percentage increase experienced by positive balance employers, or 12.2 percent above the average for 2007–2009. The calculation does not include an estimate of added interest earnings associated with a higher trust fund balance during 2011–2013.

differential has been in place since 2012. It increases total tax revenue somewhat and helps to reduce ineffective charges among those employers.

EMERGENCY QUARTERLY TAXES. State UI programs almost universally set tax rates once per year and do not change them for 12 months. However, two exceptional situations should be noted. Between 2009 and 2011 three states that were facing trust fund deficits instituted emergency quarterly taxes to avoid or reduce borrowing from the U.S. Treasury. The emergency quarterly taxes in Nebraska, New Hampshire and South Dakota raised substantial revenue and did so more quickly than with tax rates that change only once every twelve months. Nebraska did not engage in any borrowing from the Treasury while New Hampshire and South Dakota borrowed only small amounts for short periods.[48] Massachusetts also has statutory authority to levy emergency quarterly taxes, but to date it has not exercised this authority.

A related phenomenon is Tennessee's standard procedure for setting tax rates. Unlike the other states, Tennessee has statutory authority to set employer tax rates for six-month periods, not twelve-month periods.[49] Thus it changed tax rates more quickly than other states in response to the trust fund drawdowns of the 2007–2009 recession. As a result of both this shorter lag in changing rates and legislation in 2009 that increased the taxable wage base from $7,000 to $9,000, the state was able to avoid large and sustained borrowing from the Treasury.

4. Solvency Taxes

Earlier parts of this chapter documented variation in the details of tax rate schedules and shifts in schedules. The present section focuses on solvency taxes. Because state-level tax statutes are so highly varied, the present discussion cannot hope to identify all aspects of variation of solvency taxes, but it will pinpoint the most important types of variation.

Table 3.3 displays certain features of solvency taxes operative in 32 state UI programs in 2014. These 32 programs include all five types of experience rating systems currently practiced in the United States (column (1)): reserve ratio (RR), benefit ratio (BR), mixed benefit ratio- reserve ratio (BR-RR), benefit wage ratio (BWR) and payroll decline (PD). For each type of experience rating the states are listed alphabetically in in Table 3.3.[50]

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[48] New Hampshire's loans were taken during March and April 2010 and repaid in May 2010. South Dakota had loans between October 2009 and April 2010 that were repaid in May 2010.

[49] In describing this situation Tennessee says it set tax rates for twelve-month periods but can review and change the operative schedule during the final six months of a twelve-month tax year. Note in Table 3.1 that Tennessee has six tax rate schedules.

[50] Readers are reminded that the count of 32 programs in Table 3.3 exceeds the 22 shown in Table 2.11of the "2014 Comparison of State Unemployment Insurance Laws." The number 32 is not necessarily a definitive count. It represents the

TABLE 3.3.
Details of Solvency Taxes in 2014

	Type of Exp. Rating-a (1)	Max Rate Regular Schedule-b (2)	Solvency Tax Trigger - TF, RR, or RRM-c (3)	Solvency, Add-on Proportion (4)	Solvency, Add-on Schedule (5)	Solvency, Flat Rate Add-on (6)
Arizona	1	5.4	RR<=3.0	1	0	0
Arkansas	1	6.0	RR<=0.4	0	0	1
California	1	5.4	RR<=0.6	1	0	0
Colorado	1	10.39	RR<=0	0	1	0
Georgia	1	5.4	RR<0.75	1	0	0
Louisiana	1	6.0	PTF<100-d	0	0	1
Massachusetts	1	15.4	RR<=0.50	0	0	1
Nebraska	1	5.4	RR<=0.3	1	0	0
New Hampshire	1	7.0	TF<=250M	0	0	1
New Jersey	1	7.0	RR<=0.5	1	0	0
New York	1	8.9	TF<=0	0	1	0
North Carolina	1	5.7	RR<=2.0	1	0	0
Ohio	1	6.5	TF<MSL-e	0	1	0
South Dakota	1	9.5	TF<=5.5M	0	0	1
Tennessee	1	10.0	TF<=650M	0	0	1
Wisconsin	1	8.5	TF<=300M	0	1	0
Connecticut	2	5.4	RR<0.8	0	0	1
Florida	2	5.4	RR<4.0	1	0	0
Illinois	2	6.4	TF<=-1250 M	0	1	0
Minnesota	2	8.9	RR<0.55	1-f	0	1-g
Mississippi	2	5.4	RRM<1.0	1	0	0
South Carolina	2	8.2	RRM<1.0	0	1	0
Texas	2	6.0	RR<1.0	0	0	1
Utah	2	7.4	RRM<1.0	1	0	0
Virginia	2	6.2	RRM<=0.5	0	0	1
Washington	2	5.4	RRM<0.58-h	0	0	1
Wyoming	2	8.5	RR<=3.5	1	0	0
Michigan	3	6.3	RRM<=0.0	0	0	1
Pennsylvania	3	5.4	RR<1.5	1-i	0	1-j
Delaware	4	8.0	TF<=90M	0	1	0
Oklahoma	4	5.5	3.0 - RR	0	1	0
Alaska	5	5.4	RR<3.0	0	0	1
Total				12	8	14

a - 1 = Reserve Ratio-RR, 2 = Benefit Ratio-BR, 3 = Benefit Ratio and Reserve Ratio-BR-RR.
4 = Benefit Wage Ratio-BWR, 5 = Payroll Decline-PD.
b - Maximum rate on top schedule in states with multiple schedules.
c - TF = Trust fund balance (in $millions M), RR - Reserve ratio, RRM - Reserve ratio multiple.
d - Projected trust fund (PTF) below $100 million.
e - Trust fund below minimum safe level (MSL)
f - 14% Additional assessment.
g - 0.1% Falling fund adjustment.
h - Reserves below 7 months.
i - Employer surcharge.
 j - Flat rate employer tax.

Column (2) shows the maximum rate on the highest regular tax rate schedule in states with multiple schedules

or the basic schedule in states with just a single schedule. The maxima exclude the maximum rate for common

judgment of project researchers of the number of states in which a decline in the trust fund below a specific threshold (or thresholds) activates a tax that would not be levied if the fund balance exceeded the threshold.

charges. As noted previously in Table 3.2, these maxima display a wide range of variation. Three exceed 9.9 percent while nine are 5.4 percent.

The triggers that activate solvency taxes are identified in column (3). For nearly all the states listed, the trigger is an indicator of the state trust fund balance on the computation date with the trigger being the absolute fund balance (TF, nine states), the reserve ratio (RR, 17 states) or the reserve ratio multiple (RRM, four states). For seven of the nine states that use the absolute fund balance as the trigger, the trigger does not change from year to year except through legislation. Unchanging triggers based on fixed dollar values in growing state economies could create problems in the long run as the liabilities of the program in terms of claimants and benefits paid increases while the fixed dollar values remain the same. Note that the trigger in Louisiana is based on an agency projection of the next year's fund balance falling below $100 million, not on the fund balance as of the fund trigger date.[51] The evolution of tax triggers is discussed in Section 1 of Chapter 4.

Solvency taxes are levied either at a flat rate applied to all subject employers or at rates that vary with employers' past experience in paying benefits. Variable rates can be either proportional to an indicator of employer experience or taken from a separate solvency tax rate schedule set by state statute. Columns (4), (5) and (6) identify which of the three arrangements are used by the individual states. Twelve solvency taxes are levied as proportional to the rate from the tax schedule, eight are levied using a special solvency tax rate schedule and 14 are levied as flat-rate taxes. Note also that the 32 states levy 34 solvency taxes. Minnesota and Pennsylvania levy two solvency taxes, both a proportional tax and a flat-rate tax.

Columns (4), (5) and (6) show that a state considering a solvency tax has a wide range of choices. Another aspect of a state's options is to consider how many levels (average yields) of the solvency tax to impose—one or several. The state could change the solvency tax rate at different trust fund levels with higher rates invoked as the trust fund decreased and crossed successively lower trigger thresholds. Figure 3.2 showed that the solvency tax in Connecticut is a flat-rate tax with a range of rates from 0.1 to 1.4 percent, rates that depend on the size of the downward deviation of the trust fund below 0.8 percent of payroll.

With the exception of one state, all employers with a given level of past experience pay the solvency tax at the same rate. In Wisconsin, however, employers with positive reserve ratios at a given reserve ratio and with payrolls of less than $500 million pay solvency taxes at a lower rate than employers at the same reserve ratio but with payrolls above $500 million. Employers with negative reserve ratios pay solvency taxes under the same schedule regardless of size.

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[51] Note also that Ohio's trigger (the minimum safe level tax or MSL tax) changes annually with changes in the mean and standard deviation of cumulative past benefit payouts. While this measure responds to changes in benefit payments, the state has not used the full solvency-improving potential of the MSL tax by diverting half of the MSL receipts to defray common charges.

Table 3.4 presents information on the tax rates for solvency taxes in the 30 states. Column (1) identifies the experience rating system in each state. Columns (2) and (3) display the maximum solvency tax rate for employers at the maximum tax rate and the average tax rate, respectively. For some states the estimate of the maximum rate involved a review of CCH publications, the "Comparison of State Unemployment Insurance Laws, 2014," ETA-204 data and other data from the UI tax reporting system. Judgment was exercised in several instances when solvency tax details were not easy to separate from other tax rate information. The column (2) tax rates are estimates of how much the tax rate for maximum-rated employers would increase under the 2014 statutes when the solvency tax was operative at its maximum tax rate.

TABLE 3.4.
Effective Tax Rates for Solvency Taxes in 2013

	Type of Exp. Rating-a (1)	Max Rate Solvency Tax % (2)	Max Yield on Taxable Payroll % (3)	Tax Wage Proportion 2013 (4)	Max Yield on Total Payroll % (5)
Arizona	1	2.59	0.77-b	0.196	0.15
Arkansas	1	0.8	0.8	0.336	0.27
California	1	0.8	0.5-b	0.157	0.08
Colorado	1	2.7	0.77-b	0.265	0.20
Georgia	1	5.4	1.9-b	0.236	0.45
Louisiana	1	3.0	3.0	0.217	0.65
Massachusetts	1	0.9	0.9	0.275	0.25
Nebraska	1	3.26	1.6-c	0.259	0.41
New Hampshire	1	1.5	1.5	0.292	0.44
New Jersey	1	0.7	0.4-b	0.437	0.17
New York	1	0.92	0.5-b	0.154	0.08
North Carolina	1	1.14	0.324	0.419	0.14
Ohio	1	2.7	1.01	0.233	0.24
South Dakota	1	1.5	1.5	0.368	0.55
Tennessee	1	0.6	0.6	0.238	0.14
Wisconsin	1	1.3	0.90	0.332	0.30
Connecticut	2	1.4	1.4	0.246	0.34
Florida	2	1.75	1.05	0.226	0.24
Illinois	2	3.11	1.52-d	0.259	0.39
Minnesota	2	1.47	0.46	0.480	0.22
Mississippi	2	e	e	0.406	e
South Carolina	2	0.44	0.3-b	0.327	0.10
Texas	2	2.0	.56-f	0.207	0.12
Utah	2	1.0	0.3-b	0.576	0.17
Virginia	2	0.2	0.2	0.185	0.04
Washington	2	0.2	0.2	0.576	0.12
Wyoming	2	1.0	0.32	0.491	0.16
Michigan	3	3.0	3.0	0.233	0.70
Pennsylvania	3	0.78	0.78	0.201	0.16
Delaware	4	2.5	1.98	0.224	0.44
Oklahoma	4	3.7	1.64-g	0.454	0.74
Alaska	5	0.8	0.8	0.616	0.49

a - 1 = Reserve Ratio-RR, 2 = Benefit Ratio-BR, 3 = Benefit Ratio and Reserve Ratio-BR-RR.
4 = Benefit Wage Ratio-BWR, 5 = Payroll Decline-PD.
b- Project estimate. Calculation uses the taxable payroll distribution from the state's ETA 204 report in the year of lowest reserves between 2007 and 2013.
c - Emergency quarterly surcharge of 1.0 percent is also allowed.
d - Assumes TF = -$1,250 million, state experience factor = 1.40 and fund balance tax = 0.55%.
e - Not defined
f - Replenishment tax rate in 2010.
g - Calculation based on increase in tax rate between 2008-2009 and 2012-2013.

The maximum solvency tax rates in column (2) are highly varied. Georgia has statutory authority to raise its maximum rate from 5.4 to 10.8 percent of taxable payroll or by 5.4 percentage points. Georgia has the highest of all the maxima in column (2), but five other states have maximum solvency tax rate of at least 3.0 percent.[52] At the opposite end of this distribution, Virginia and Washington have maximum solvency tax rates of just 0.2 percent. Virginia operated with its fund balance (solvency) tax of 0.2 percent in every year between 2010 and 2015.

When a state uses a flat-rate solvency tax it is simple to know the effective tax rate on taxable wages because the effective rate and the statutory rate are identical. For states that have proportional solvency taxes or special solvency tax schedules (columns (4) and (5) in Table 3.3), the effective tax rate on taxable payroll must be estimated. Column (3) in Table 3.4 displays estimates of effective tax rates for each of the 30 states. For several states the maximum yield was estimated using data from ETA-204 reports. The year with the lowest reserves between 2007 and 2013 was selected and that year's distribution of taxable payroll was used in conjunction with the appropriate solvency tax rates to estimate an overall average effective tax rate.

The yields on taxable payroll shown in column (3) display a wide range of variation. Twelve yields are 1.0 percent or higher, topped by 3.0 percent yields in Louisiana and Michigan. At the opposite extreme, nine states have maximum yields of 0.50 percent or lower. The average across the 30 states is 1.04 percent of taxable payroll.

The individual states have differing attitudes toward the highest tax rate and associated yield of the solvency tax. Virginia has a low maximum on its solvency tax, a situation which effectively means the tax with its low maximum would be operative for several years following a major drawdown of the trust fund. Virginia has had a 0.2 percent solvency tax in place every year since 2010. A second way to spread out solvency tax adjustments over multiple years is to recognize the full size of a trust fund shortfall but plan to close only part of the shortfall each year. Florida, for example, annually closes one-fourth of the total shortfall of its reserve ratio below 4.0 percent.

The effectiveness of solvency taxes in closing a perceived trust fund shortfall depends on a state's tax base and associated taxable wage proportion (TWP) as well as its effective tax rate on taxable payroll. Column (4) in Table 3.4 displays TWPs in 2013 for each of the 30 states. Fourteen fall below 0.25 while seven were 0.40 or higher. Of the latter group, all seven had an indexed taxable wage base.

Because most states in Table 3.4 have quite low tax bases, the effective tax rates on total payroll (column (5)) are generally modest. Only four states have effective rates that exceed 0.50 percent of total payroll while 16 fall below 0.25 percent of total payroll. The three states with the lowest effective rates in column (5) are California, New York, and Virginia. Their low solvency tax rates reflect both a low tax rate on taxable payroll and a low taxable wage proportion. For these three states the solvency tax falls below 0.10 percent of total payroll.

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[52] The Georgia Commissioner of Labor has the authority to double tax rates when the reserve ratio on the computation date falls below 0.75 percent of payroll. In fact, the largest solvency tax levy after 2007 was a 50 percent increase in both 2012 and 2013.

Since solvency taxes are present in the majority of state UI programs, it is interesting to assess their place in the overall structure of UI taxes. An estimate of annual revenue from solvency taxes in 2013 was made by multiplying the effective tax rates on total payroll (column (5) in Table 3.4) by total payroll in each state. Total revenue from this estimation was $2.45 billion. Across the 51 combined UI programs in 2013 total revenue from taxable covered employers was $46.7 billion. Of this, $38.5 billion (82 percent) was paid by employers in the 30 states with solvency taxes. Among those states the $2.45 billion of solvency taxes represented 6.4 percent of their taxes and 5.2 percent of total taxes paid by all 51 programs during 2013. In the aggregate, the calculation suggests that solvency taxes in 2013 were a measurable share of total UI taxes but considerably less than 10 percent of the total.

5. Social Taxes to Cover Common Charges

A minority of state UI programs levy so-called social taxes to cover common charges that arise from three types of benefit payments: ineffective charges (assigned charges that exceed tax payments, mostly against maximum rate employers), charges against inactive accounts and noncharged benefits (usually for quits and misconduct). In the aggregate, common charges often represent from 25 to 40 percent of total benefits and even higher percentages in certain years.[53]

At least twelve state UI programs had tax statutes with provisions for social taxes in 2014. Column (5) of Table 3.1 identifies these states. Benefit ratio experience rating systems are much more likely to have social taxes. For example, only 2 of 29 reserve ratio systems had social taxes in 2014 compared with 10 of 19 benefit ratio systems (including Pennsylvania and Michigan, the two combined benefit ratio-reserve ratio states).

Social taxes in the twelve states are quite diverse in their state-level provisions. Chapter 6 examines social taxes in more detail including key aspects of their rate structures, recent tax rates and their yield relative to social charges in recent years.

As one element of a state's UI tax structure, social taxes contribute to total program revenue. Their yield as a share of total UI taxes varies from state to state and it varies over the business cycle. Section 5 of Chapter 4, for example, examines the yield of social taxes in Alabama between 2007 and 2011. In response to the recession of 2007-2009 the yield of Alabama's social tax increased sharply as the social tax rate increased from 0.1 to 1.6 percent of taxable payroll.

As noted, social taxes are examined in Chapters 6 and 7.

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[53] One situation of high social charges is early in a recession when ineffective charges grow rapidly.

6. Array Allocation: State-level Details

Array allocation (AA), briefly introduced in Chapter 2, is a technique for setting unemployment insurance (UI) tax rates that provides greater certainty about anticipated revenue than does the process where revenue is derived from tax schedules with fixed boundaries that separate the tax rate intervals. When employers move across tax rate boundaries the average tax rate can change even if the tax rate schedule is unchanged, causing uncertainty in the yield from a given tax schedule. With AA, the tax rate boundaries for the tax rate schedule change each year, but the average effective tax rate (taxes as a percentage of taxable payroll) from a given tax schedule does not change.

Array allocation is central element in an approach to UI financing commonly termed "total cost targeting," one of the two main approaches used by states to set UI tax rates for individual employers. This can be described as a macro approach to UI financing since it first establishes an overall revenue objective and then assigns tax rates to individual employers. The alternative approach which is used by the majority of state UI programs starts with individual employer experiences in setting tax rates and generates aggregate revenue from the sum of individual employer taxes.

All state UI programs experience uncertainty in the annual yield of their tax statutes. The biggest source of yield uncertainty is the macro environment. Macro forecasts make errors, and unexpected changes (increases or decreases) in macro performance alter tax revenue. However, states that practice AA achieve greater certainty in tax yields because the average tax rate on taxable payroll is known with greater certainty than in states with fixed boundaries for their tax rate intervals.

Under AA, employers are ranked according to a measure of experience, (either a reserve ratio or a benefit ratio in eleven of the twelve states that practiced AA in 2014) and placed into groups where each group's share of taxable payroll is known. In several array states, there are 20 groups and each has 5 percent of taxable payroll. Because the tax rate and the share of taxable payroll are both known for each tax rate group, the average overall tax rate is also known. Compared with non-array states, there is greater certainty in UI tax yields due to the greater certainty in determining the average tax rate.

Overview

The twelve states that practice AA exhibit wide diversity in their array arrangements. Lines 1 through 6 in Table 3.5 summarize certain overall details for these states while lines 7 to 13 provide details of their tax rate

TABLE 3.5.

Details of Array Allocation Systems in Individual States

	Idaho	Kansas	Maine	Montana	Nebraska	Nevada	North Dakota	Iowa	Oregon	South Carolina	Vermont	Alaska
1. Type of Experience Rating – a	RR	RR	RR	RR	RR	RR	RR	BR	BR	BR	BR	PD
2. Number of Tax Rate Schedules	1	1	8	11	13	1	1	8	8	1	5	1
3. Tax Trigger/Desired Yield –b	RRM	R Ratio	RRM	R Ratio	R Ratio	4BF	RB	RRM	RRM	RBT	RRM	R Ratio
4. Indexed Taxable Wage Base?	Yes	No	No	Yes	No	Yes	Yes	Yes	Yes	No	No	Yes
5. Taxable Wage Proportion – c	0.674	0.317	0.339	0.66	0.259	0.559	0.576	0.537	0.6	0.327	0.392	0.616
6. State Size - Rank Among 51 States - c	39	30	42	44	36	32	46	31	27	24	50	49
7. Number of Tax Rate Intervals	13	71	20	20	20	18	20	21	26-38	20	21	21
8. Equal Wage Shares per Rate Intervals	No	Yes	Yes	Yes	Yes	No	Yes	Yes	No	Yes	No	No
9. Rate Increase at Zero Balance - % - d	1.1	3.4	No	1.3	No	No	4.8	NA	NA	NA	NA	NA
10. Minimum Rate Bottom Schedule - %	0.26	0.03	0.53	0	0	0.25	0.1	0	0.5	0	0.4	1
11. Maximum Rate Top Schedule - %	6.8	9.4	9.9	6.12	8.66	5.4	10	9	5.4	7.85	8.4	6.5
12. Yield on Taxable Payroll - Top Tax Schedule - % - f	3.36	4.27	3.81	3.12	5.79	2.25	1.37	3.5	3.08	e	4.74	3.36
13. Yield on Total Payroll - Top Tax Schedule - % - f	2.26	1.35	1.29	2.06	1.5	1.26	0.79	1.88	1.85	e	1.86	2.07

Source. Information assembled at the Urban Institute was derived mainly from OUI publications and CCH summaries of state UI laws.
a- RR- reserve ratio, BR- benefit ratio, PD- payroll decline.
b- RRM -reserve ratio multiple, RRatio- Reserve ratio, 4BF- Four benefit-related factors, RB-Required benefits and RBT-required benefits plus trust fund adjustment.
c - Taxable wage proportions and employment in 2013.
d- Increase in tax rate when moving from a positive to negative reserves in a reserve ratio state.
e- 2014 is first year of current tax system.
f- For Idaho, Kansas, Nevada, North Dakota and Alaska the highest yields are based on ETA 204 reports for rate years between 2007 and 2013.

schedules and tax yields. Seven of the twelve use reserve ratios (RR) to set UI tax rates while four use benefit ratios (BR) and Alaska uses payroll decline (PD) experience rating (line 1). Line 2 shows the number of tax rate schedules used in each state. Six states use multiple schedules and six have a single schedule that shifts from year to year in response to calculations that determine the tax yield for the upcoming year.

The expected yield of taxes in these twelve states as in all other states is determined by the tax rates on the next year's operative tax schedule. Nine of the twelve states determine their tax schedule on the basis of their trust fund balance as of the fund trigger date. The fund balance in the nine (line 3) is measured either as a reserve ratio (reserves as a percentage of covered payroll—four states) or as a reserve ratio multiple (the reserve ratio divided by a measure of a high-cost payout rate—five states). The other three states (Nevada, North Dakota and South Carolina) determine their desired tax yield from a calculation that explicitly considers benefit payouts anticipated during the upcoming tax year.[54]

The states with multiple schedules have predetermined intervals for the state's trust fund indicator and select the operative schedule when the trust fund falls within a designated interval. For example, Maine has eight tax rate schedules. The reserve ratio multiple on its October 31, 2013, computation date was 1.36. Hence, the operative schedule in 2014 was Schedule D, operative when the reserve ratio multiple on the computation date is between 1.33 and 1.41.

Array allocation has become somewhat more prevalent in state UI programs in recent years. Arrays were used to set tax rates in eleven states in 2013, and a twelfth state (South Carolina) started using the array method in 2014.

Lines 4 and 5 of Table 3.5 show that seven array states operate with indexed taxable wage bases and five operate with fixed tax bases. While the indexed states draw tax revenue from a much higher proportion of covered payroll compared with the non-indexed states (simple average proportions from line 5 of 0.603 and 0.327, respectively), both tax base arrangements can be used in AA procedures without difficulty.

Adoption of AA has been concentrated among smaller states. Line 6 shows rankings of the array states based on their level of taxable employment in 2012. The largest states are South Carolina and Oregon (ranked 24 and 27, respectively) while the remaining ten states rank between 30 and 50 out of 51. Among the states ranked 24 and higher, just below half (12 of 28) practice AA. It should also be noted that western states are much more likely to practice AA compared with eastern states (i.e., 9 of 24 west of the Mississippi River compared with 3 of 27 east of the Mississippi).

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[54] Footnote b in Table 3.5 identifies the benefit-related calculations used by those three states.

Three states have adopted AA since 2000 (Maine, Nebraska and most recently, South Carolina). As noted, the only state to discontinue AA was Washington, which discontinued AA in 2005.

Details of Tax Schedules and Tax Yields

For the majority of array states (nine of twelve), the tax rate schedules have between 18 and 21 tax rate categories (line 7 in Table 3.5). The typical schedule has 20 intervals, and each interval has 5 percent of taxable payroll. However, the share of taxable payroll in individual intervals varies in five states.[55]

The three states where the number of tax rate categories falls outside the 18–21 range present strong contrasts. Idaho operates with just 13 categories, 7 for employers with positive reserve balances and 6 for those with negative balances. Kansas has the largest number of categories with 71. Kansas has 51 array intervals for positive balance employers, each with 1.96 percent of the taxable payroll. In earlier years, Kansas operated with 10 tax rate categories for negative balance employers, but to increase revenue it started using 20 categories in 2012. Array allocation is not used to set rates for negative balance employers in Kansas. The increases in the tax base slated for 2015 and 2016 have been a consideration in returning to ten negative balance tax rate categories after 2014. Oregon is unique in that it has between 26 and 38 tax rate categories depending on the trust fund reserve ratio multiple (RRM) on the computation date. The tax schedules active with lower RRMs have larger numbers of tax rate categories.

Individual array states use different approaches in setting the progression of tax rates within a given tax schedule. There is one distinction between reserve ratio states and benefit ratio states in determining the progression of rates across adjacent tax rate categories. All reserve ratio states have employers with both positive and negative trust fund balances. Several states structure their rate progression with a sharp increase in the tax rate when an employer's balance becomes negative. (Recall the Kentucky schedules in Figure 3.1.) Line 9 in Table 3.5 shows the size of the discontinuity (if any) for the seven RR states in moving to a negative balance.[56] Note that four states have a discontinuity and the largest increases are found in Kansas and North Dakota. Three reserve ratio states do not have a discontinuity.

Having a tax rate discontinuity for negative balances poses a challenge for setting rates in an array system because the share of taxable payroll of negative balance employers changes from one year to the next. In particular, the wage share of negative balance employers increases during and after recessions and then declines as the overall trust fund balance recovers. Thus states with a discontinuity, like Montana, simulate alternative

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[55] Alaska is interesting in that its 19 lowest categories all have 5 percent of taxable payroll, category 20 has 4.9 percent and category 21 has 0.1 percent. Category 21 has a tax rate of 5.4 percent.

[56] The increase in the tax rate is measured as the size of the increase in moving to a negative balance less the average progression moving across tax rates in the tax categories just above the first negative balance category.

weightings of positive balance rates and negative balance rates to arrive at the overall tax rate across all employers. In setting tax rates for 2014, for example, Montana examined four sets of weights in choosing the schedule that had the yield closest to the desired overall yield as specified in its tax statute.

North Dakota sets tax rates using ten rate categories for positive balance employers and ten for negative balance employers. Employers are sorted into positive balance and negative balance groups on the basis of their total past history of tax revenue versus charged benefits. However, only the most recent six years of taxes and charged benefits are used to set the tax rates for each employer. For example, an employer in the positive balance group could have six-year cumulative benefits exceed six-year cumulative taxes and be placed in the highest tax rate category for positive balance employers. In making its revenue projection for the upcoming year, North Dakota projects the shares of taxable payroll in the positive balance and negative balance groups as well as the average yields for both groups.

While equal shares of taxable wages in individual tax rate intervals is the most common arrangement,[57] the deviations from equal shares are noteworthy. Note that Vermont (a benefit ratio state) operates with 21 array intervals, placing all employers with zero benefit charges into the lowest rate category and taxing them at the minimum tax rate. Between 2007 and 2013 their share of taxable payroll varied between a low of 0.18 and a high of 0.27. Vermont then divides the remaining employers into 20 equal groups and assigns rates to all 21 rate categories from its set of five tax rate schedules. This process produces some variation in the average tax rate, but the variation is small since the minimum rate employers by definition pay taxes at the lowest rates.

Idaho has differing shares of taxable payroll for its seven positive balance groups and its six negative balance groups. The lowest six rates in the positive balance group each have 12 percent of positive balance taxable payroll while the seventh group has 28 percent. The shares for the six negative balance groups vary between 5 percent and 30 percent of taxable payroll. The 5 percent is in the highest tax rate category, which by law must contribute at a tax rate of at least 5.4 percent of taxable payroll. Oregon also has differing shares of taxable payroll in individual rate categories. The highest tax rate groups have very small shares of taxable payroll.

The array states also exhibit varied shapes in the tax rate progressions of their tax schedules. Montana has constant increments in moving to adjacent tax rate intervals and constant increments for a given interval in moving to higher and lower schedules. There are exceptions: a larger increase in moving from a positive to a negative reserve ratio and the imposition of a maximum rate of 6.12 percent as the top rate on all eleven of Montana's tax schedules. Kansas, Nevada and Oregon also have constant increments between adjacent tax rate intervals. Tax rates in Idaho, Maine, North Dakota and South Carolina increase at constant proportional rates in moving across adjacent tax rate intervals.

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[57] Having equal shares is a goal, but when an employer straddles two rates all states assign that employer to one rate category and the assignment affects (reduces) the share of taxable payroll in the adjacent category.

A final observation about the progression of tax rates is that the schedule may be structured such that the average rate across all rate categories may also be the rate for a particular category. In Maine, rate category 13 equals the overall average tax rate while in South Carolina rate category 12 equals the overall average.

Each of the six states that operate with a single basic tax rate schedule has a procedure for adjusting the schedule up or down to obtain a desired yield. Note in row 3 of Table 3.5 that the desired yield in these states has different determinants. For two (Idaho and Alaska), the target yield is intended to achieve a desire trust fund balance (an RRM and R Ratio, respectively). For the other three (Nevada, North Dakota and South Carolina) the target yield explicitly considers a target flow of revenue adequate to finance expected benefit payments[58] and calculated to move the existing trust fund balance to a target balance. For example, Nevada's single schedule shifts in response to changes in the product of four separate factors important in determining potential benefit payments. The factors include first payments, weeks compensated and average weekly benefits as well as total benefit payments.

In contrast, the six states that operate with multiple schedules use the actual balance (and the associated reserve ratio or reserve ratio multiple) on the fund trigger date to determine which rate schedule will apply for the upcoming year. These states move to higher and lower schedules in response to a changing trust fund balance. Like the states with a single but variable schedule, the objective of states with multiple schedules is to achieve a target trust fund balance (or a yield to finance expected benefit payouts), but the target balance in those states is measured over a range rather than as a single numeric target.

Lines 12 and 13 in Table 3.5 summarize maximum tax yields in the twelve states. Line 12 display yields measured as a percentage of taxable payroll while line 13 shows yields as a percentage of total payroll. In eight states (North Dakota, Vermont and Alaska are exceptions) the top tax schedule has a yield that is more than twice the yield of the bottom schedule.[59] Three states (Idaho, Montana and Iowa) have top-to-bottom tax revenue ratios of 2.7 or higher. In short, the array states have tax statutes that can respond strongly to recession-related trust fund drawdowns.

A three-way comparison of revenue growth, 2005 to 2013

Figure 3.5 displays indices of actual tax revenue for the period 2005 to 2013 for three groups of states: i) the 13 biggest states (based on taxable employment in 2012). ii) 11 array states (all but South Carolina) and iii) the other 26 states (out of 50). The figure also shows revenue growth over this period for the 51 UI programs

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[58] The target yield in South Carolina considers both anticipated benefits and a target trust fund balance.

[59] The bottom yields are not displayed in Table 3.7 but for eight states the yields range between 2.08 and 5.33. In North Dakota, Vermont and Alaska, the top-to-bottom ratios are 1.46, 1.85 and 1.61, respectively.

combined. Three points should be made in reference to the figure. First, the big states which accounted for 61 percent of total employment and 65 percent of covered payroll in 2012, display measurably slower revenue growth after 2007 compared with the national average, compared with the 11 array states and compared with the 26 "other" states. During 2011–2013 tax revenue of the big states never exceeded the 2005–2007 average by as much as 40 percent. Second, during 2012 and 2013 the 11 array states and the 26 "other" states had revenue totals that exceeded their 2005–2007 averages by at least 55 percent. Third, there was roughly comparable revenue growth for the 26 "other" states and for the 11 array states during 2009–2013.

FIGURE 3.5
Revenue Growth After 2005-2007
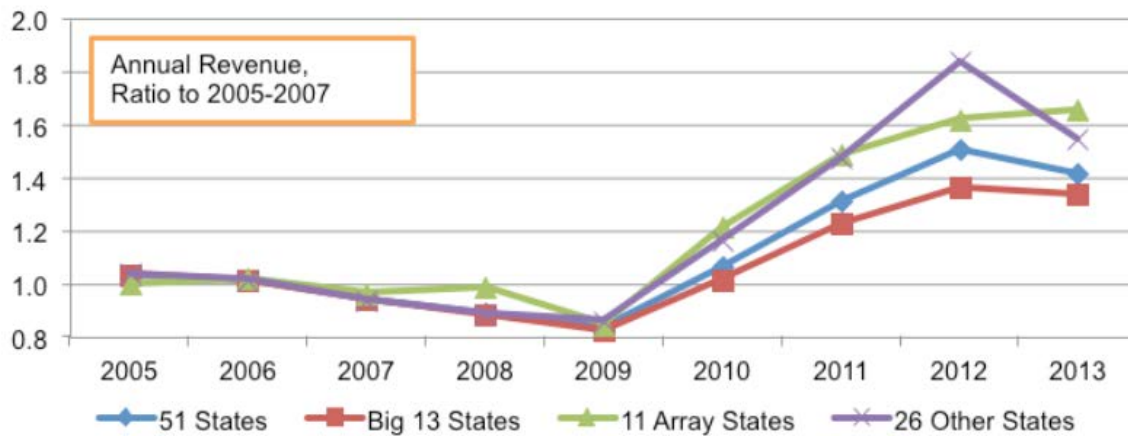
Source: Total revenue for each series measured as a ratio to its three-year average during 2005–2007.

This section has discussed several details of array allocation as practiced in twelve states. The UI tax revenue in the array states, as a group, demonstrated above-average responsiveness when compared with national tax revenue growth and much higher revenue growth than in the 13 largest states following the Great Recession of 2007–2009.

7. Summary and Conclusions

The determination of tax rates for individual employers across the UI programs in the United States involves a huge number of state-specific tax details. This chapter has introduced and discussed many such details with emphasis on tax rate schedules, solvency taxes, taxes to cover common charges and array allocation. It has emphasized the most important features that influence average UI tax rates and annual tax yields in individual states.

The initial section introduced key state-level tax features of 51 UI programs (the 50 states plus the District of Columbia). This included the type of experience rating practiced, the presence and number of tax rate schedules, the presence of solvency taxes and taxes to defray common charges. It identified the three mechanisms (triggers)

that shift tax rate schedules; absolute trust fund balances, reserve ratios and reserve ratio multiples. The section also identified the 19 states that operate with an indexed taxable wage base and the 12 states that practice array allocation to set tax rates. The material in this section provides a flavor for the wide diversity of UI tax arrangements across the individual state programs.

Section 2 focused upon tax rate schedules, providing an overview of their characteristics in individual states. This included the maximum tax rate in 2014, the width of the sloped range of the schedules, the number of detailed tax rates in schedules and the average slopes of schedules in different experience rating systems (principally reserve ratio and benefit ratio).

After introducing illustrative tax schedules for both reserve ratio (Kentucky) and benefit ratio (Connecticut) systems, Section 3 then presented an analysis of key features of tax schedules that influence the average tax rate and volume of tax revenue. Several detailed features of schedules that limit tax revenue and features that enhance tax revenue were identified. Estimates of the effects of these features on tax revenue were presented.

Section 4 analyzed solvency taxes which are present in more than half the state UI programs. They are activated when trust fund reserves fall below designated thresholds. Solvency taxes are levied either at a flat rate, at rates proportional to experience rated charges or by using a specific schedule. Estimates of their yields were presented. Solvency taxes are further examined in Chapter 4. Section 5 briefly introduced taxes to defray common charges. The primary analysis of these taxes, however, is reserved for Chapter 6.

Section 6 examined details of array allocation procedures currently practiced in twelve states. The diversity of array arrangements is wide in both the seven reserve ratio array states and the four benefit ratio states. The twelfth array state is Alaska which practices payroll decline experience rating. A brief analysis found that array states demonstrated above-average revenue responsiveness following the recession of 2007-2009. This could indicate that use of array allocation may help states to maintain solvent UI trust funds.

The analysis of the chapter has illustrated the wide diversity of tax arrangements across the individual state UI programs. If a state wished to review and/or modify its current tax arrangements it could consider a wide variety of approaches for structuring its tax rate schedules. Although only twelve states currently practice array allocation, it seems that the states that use AA in the practice of "total cost targeting" have established robust systems to generate UI tax revenue. This macro approach to UI program financing may warrant exploration by other states, particularly states that have experienced prolonged periods of insolvency.

Chapter 4. Tax Schedule Triggers and Tax Responsiveness

Because unemployment and the associated UI claims vary widely from one year to the next, outflows from state trust funds can change substantially. Faced with this uncertainty states maintain trust funds balances to meet short-term drawdowns. To limit trust fund drawdowns and potential insolvency during and after recessions, state programs need mechanisms that automatically cause total revenue to increase following reductions in trust fund balances.

This chapter examines the mechanisms that states use to achieve revenue responsiveness. It emphasizes three explicit adjustment mechanisms: i) shifting across tax rate schedules, ii) altering solvency taxes,[60] and iii) understanding the impact of modifying the time lag between setting future taxes and implementing future taxes. States rely heavily on the first two adjustment mechanisms: changes to higher and lower tax rate schedules and changes (increases and decreases) in solvency taxes. These adjustments occur in response to changes in the statewide trust fund balance measured on the fund trigger date.[61]

A fourth type of revenue adjustment is also examined: changes in effective tax rates caused by changes in the state's aggregate UI trust fund balance and the associated change in the distribution of taxable payroll across detailed tax rate intervals. Using data from the most recent recession, the importance of this fourth mechanism is examined in two states.

The chapter is organized as follows. It first introduces the main types of tax schedule triggers used by the states to shift from one tax schedule to another. The remainder of the chapter then focuses on mechanisms of tax responsiveness currently practiced by the states. Two elements of tax revenue responsiveness: ad-hoc tax rate adjustments and changes in the taxable wage base are not emphasized in this chapter.[62]

1. The Evolution of Tax Schedule Triggers, 1982 to 2014

To achieve revenue responsiveness state UI programs utilize a set of trigger thresholds to activate the specific tax rate schedules to be used in the upcoming tax year. As noted, this date is termed the fund trigger date. Most states use one of three types of triggers: i) the absolute trust fund balance, ii) the trust fund balance as a percent of

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[60] Taxes to cover social charges also vary over the business cycle but are not emphasized in this chapter.

[61] The fund trigger date is discussed later in this chapter. It is the date set by statute when the state's trust fund balance is measured for purposes of establishing the schedule of tax rates to be used in the upcoming tax year.

[62] Changes in the taxable wage base are examined in Chapter 5.

statewide payroll (the reserve ratio, RR) or iii) the reserve ratio as a ratio to past benefit payouts during a high payout period (the reserve ratio multiple or RRM).[63] Across 51 UI programs in 2014, absolute fund balances were used as triggers by eight states, while RRs were used by 26 states, and RRMs were used by 11 states.[64]

To lessen the chances of experiencing a financing problem in a recession, the trigger thresholds have to be set high enough to allow the revenue system to respond in a timely manner when benefit payouts increase and the fund balance declines. Table 4.1 displays summary data on the trigger thresholds for 32 states between 1982 and 2014. The states were selected because it was possible to track the evolution of the triggers across these 33 years. The table focuses on two trigger thresholds: the one that activates the lowest tax rate schedule and the one that activates the highest tax rate schedule.

TABLE 4.1.
Trends in tax schedule trigger thresholds, 1982 to 2014

	Trigger for Lowest Schedule				Trigger for Highest Schedule			
	1982	1992	2002	2014	1982	1992	2002	2014
Average Reserve Ratio - 16 States with Reserve Ratio Triggers-a	6.45	5.52	4.65	3.85	2.68	2.15	2.03	1.65
Average Implied Reserve Ratio - Nine States with Absolute Triggers-b	1.35	1.15	1.05	1.07	0.58	0.55	0.50	0.46
Average Reserve Ratio Multiple - Seven States with Reserve Multiple Triggers-c	2.00	2.21	2.42	2.19	1.02	1.09	0.99	0.96

Source: Data from issues of the "Comparison of State Unemployment Insurance Laws" for 2002 and 2014 and "Highlights of State Unemployment Compensation Laws" for 1982 and 1992. All data are simple averages which weight each state equally. Reserve ratios measured as a percent of total payroll.
a – Arizona, Arkansas, California, Florida, Georgia, Indiana, Maryland, Massachusetts, Montana, New Jersey, New Mexico, New York, North Carolina, Rhode Island, Virginia, and Wyoming.
b – Colorado, Kentucky, Minnesota, Missouri, New Hampshire, South Dakota, Tennessee, Texas, Wisconsin.
c – Alabama, District of Columbia, Hawaii, Maine, Oklahoma, Oregon, and West Virginia.

Table 4.1 focuses on four years: 1982, 1992, 2002, and 2014. The averages shown for these four years are simple averages which treat equally each state within a given group; 16 that use reserve ratios, nine that use absolute trust fund balances and seven that use some form of RRM. Because of growth in state economies over this period, the use of absolute trust fund levels is not appropriate for assessing trends in trigger thresholds. More appropriate are trust fund measures that reflect trust fund balances that change with the growth in the state's economy. The entries for these nine states were converted to reserve ratios, i.e., dividing the absolute balances by

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[63] This measure is highly varied and states use a variety of measures of the past high-payout period. The terms used in individual states also include the average high cost multiple and the reserve multiple.

[64] Other triggers were used by a few states.

lagged statewide payroll for the indicated years. Table 4.1 refers to these ratios and their averages as "implied" reserve ratios.

One feature stands out in Table 4.1, the decrease in the triggers for both the lowest and the highest tax rate schedules among states that use reserve ratio triggers. The average reserve ratio for the highest schedule decreased from 2.68 in 1982 to 1.65 in 2014, a reduction of 38.4 percent. To activate the highest tax rate schedule the average reserve ratio was almost 40 percent lower in 2014 than it had been in 1982. The 1982-2014 reduction in the average reserve ratio for the highest tax schedule understates the size of the reduction for many of these states. For 11 of the 16, the trigger reserve ratio in 2014 was less than half of the 1982 trigger. The fund balance triggers for these states in 2014 were much lower than in earlier years and the declines appear to have been gradual during the 33 years.

States using the other two types of triggers were more successful in maintaining their tax laws and the reserve balances needed to activate the highest tax rate schedule. The states that use absolute balances in trigger calculations had average implied reserve ratios in 2014 for both the highest and lowest schedules that were 79 percent of the implied reserve ratios of 1982. When the 2014/1982 threshold ratios in the states are examined, four of the nine ratios in 2014 were less than half of their 1982 values.

The states that most successfully maintained the relative levels of their thresholds were those that use RRMs to activate their highest tax schedules. The overall average RRM across the seven states in 2014 (0.96) was almost the same as in 1982 (1.02). Not one of these seven states had a 2014/1982 ratio as low as 0.50. Use of a RRM-type measure was associated with the most successful maintenance of the thresholds that activate the top tax rate schedules. The successful maintenance of trust fund threshold levels may reflect a combination of proactive policy changes in some states and automatic formula responses of fund thresholds in other states. Automatic formula responses probably account for most of the successful maintenance of trust fund thresholds in the RRM states.

In summary, the overall averages and the ratios for individual states in the three categories showed that states using reserve ratios were the least successful in maintaining the reserve balances that activate the highest tax rate schedules. The states that use RRM-type measures were most successful in preserving the thresholds for the highest tax rate schedules.

2. State Programs with Target Tax Schedule Yields

The tax yields easiest to describe and predict are present in states that have a series of tax rate schedules each activated when the trust fund balance falls into a specified range and each schedule has a target tax yield. Table 4.2 identifies six states that operate with target yields for each of a succession of tax rate schedules. Three practice reserve ratio (RR) experience rating while three practice benefit ratio (BR) experience rating. These are six of the

twelve total cost targeting states that practice array allocation (AA) to place known shares of taxable payroll into each tax rate category. The other six AA states are not included in Table 4.2 for one of two reasons. i) Anticipated benefit payments enter the determination of the next year's the target tax yield, hence there are no predetermined schedules of tax rates (Nevada, North Dakota and South Carolina) ii) The tax rates on the tax schedule are intended to achieve a specific target trust fund balance, again meaning there are no predetermined tax schedules (Alaska, Idaho and Kansas). The latter two conditions cause the entire tax rate schedule to shift from year to year but by differing amounts. This contrasts with the states in Table 4.2 where the trust fund balance activates predetermined rate schedules.

The six states included in Table 4.2 select the operative tax schedule based on the fund balance on the fund trigger date. Column (2) shows the number of tax rate schedules present in these states while column (3) identifies the triggers that activate the different tax rate schedules. The number of schedules varies between five and 13. The triggers that activate the individual schedules are either reserve ratios (RR) or reserve ratio multiples (RRM).

Columns (4) and (5) respectively show the yields on total payroll of the lowest and highest tax schedules for each state. Across the six states there is a wide range of yields. The top-to-bottom ratio of tax yields exceeds 2.0 in five states (column (6)), and for the sixth state (Vermont) the ratio is 1.90. For all of these states the revenue system is capable of generating a large increase in tax yields (at least 90 percent) after a recession reduces the trust fund balance.

TABLE 4.2.
Tax Responsiveness in Six States with Target Tax Yields, 2014

State	Experience Rating System[a] (1)	Number of Tax Rate Schedules (2)	Tax Schedule Trigger[a] (3)	Lowest Schedule Target Yield % (4)	Highest Schedule Target Yield % (5)	Highest/Lowest Yield Ratio = (5)/(4) (6)
Iowa	BR	8	RR	0.48	1.88	3.90
Maine	RR	8	RRM	0.60	1.30	2.17
Montana	RR	11	RR	0.75	2.06	2.75
Nebraska	RR	13	RR	0.70	1.50	2.14
Oregon	BR	8	RRM	0.88	1.85	2.10
Vermont	BR	5	RRM	0.82	1.56	1.90

Source: Data from "Comparison of State Unemployment Insurance Laws 2014" and CCH publications for the individual states. Tax yields in columns (4) and (5) are measured as a percent of total payroll.
a – RR – Reserve Ratio, BR – Benefit Ratio, AA – Array Allocation, RRM – Reserve Ratio Multiple.

The range of potential yields for the other six AA states is uncertain because anticipated benefits (for three) or the desired increase in the fund balance (for three) are not known in advance. Based on the highest and lowest actual yields (percent of total payroll) between 2007 and 2013, however, the high-to-low revenue ratio exceeded 1.90 for four while the much lower ratio for the fifth (North Dakota at 1.35) undoubtedly reflects the energy extraction boom in that state. Since South Carolina implemented its current AA system in 2014 it was excluded.

In short, the states that practice total cost targeting and array allocation all have high-to-low tax yield ratios of at least 1.90. A state wanting to have a more responsive revenue system might review the tax features present in Iowa and Idaho in particular where the high-to-low tax yield ratios exceed 3.0.

3. Tax Responsiveness in States with Fixed Tax Rate Intervals

The majority of states operate with fixed tax rate intervals, meaning that the number of employers and taxable payroll in each rate interval are not known in advance. Because the share of taxable payroll in each rate interval changes from year to year, this causes variability in the average tax rate from a given tax rate schedule even if the aggregate trust fund balance is stable.

Table 4.3 helps to illustrate the variability in tax yields across the full range of tax schedules in seventeen reserve ratio states that have tax schedules with fixed tax rate intervals. The table also compares the yields from the top tax schedule with the average benefit payout rate from regular UI program for the three years 2009 to 2011. Readers should note that the comparison of average tax rates shown in columns (1), (2) and (3) understate the full extent of tax rate responses because they are fixed weight calculations that do not incorporate changes in the distribution of taxable payroll when the trust fund declines and the state moves to higher tax rate schedules. The average tax rates for the lowest and highest tax schedules shown in columns (1) and (2) of Table 4.3 are fixed-weight averages based on six specific points along the statutory tax rate schedules. They provide information on how much the average statutory tax rates change in moving across the entire range of tax rate schedules.

Column (3) shows there is wide variation in the top-to-bottom ratios of average tax rates. The top schedule's rates are at least twice the bottom schedule's rates for five states and the ratio is less than 1.5 for only four states. The median ratio across this set of 17 states is 1.86. Movement across the full range of rate schedules generates a large increase in tax revenue even without factoring in the effects of employers moving to the left (to higher tax rates) because their reserve ratios decrease when the overall trust fund declines. Later paragraphs show that changes in the distribution of employer reserve ratios has important effects on the average yield of taxes.

To assess the capacity of the tax system to generate tax revenue, it is also important to know the share of covered payroll that is taxable. Column (4) shows the taxable wage proportion (TWP) for each state in 2013. For the three high wage economies of California, the District of Columbia and New York, the TWP falls below 0.20. Note also that TWP is 0.33 or lower for 13 of the 17 programs. Three of the four programs with a TWP above 0.33 have indexed tax bases (Hawaii, New Jersey and Rhode Island). South Dakota is the only non-indexed state of this group of 17 with a TWP above 0.33.

TABLE 4.3.
Constructed Average Tax Rates: Highest and Lowest Tax Schedules, 17 Reserve Ratio States with Fixed Tax Rate Boundaries, 2013

	Lowest Schedule Avg. Tax Rate % (1)	Highest Schedule Avg. Tax Rate % (2)	Ratio = (2)/(1) (3)	Taxable Wage Proportion (4)	Tax Capacity %Payroll = (2)*(4) (5)	Benefits % Payroll Average 2009-11 (6)	Benefits/Tax Capacity = (6)/(5) (7)
ARKANSAS	2.99	3.89	1.30	0.34	1.31	1.42	1.08
CALIFORNIA	2.70	5.00	1.85	0.16	0.78	1.44	1.83
COLORADO	1.85	3.00	1.62	0.27	0.80	1.05	1.32
DIS of COLUMBIA	1.96	3.63	1.85	0.14	0.51	0.61	1.19
HAWAII	1.28	4.44	3.48	0.69	3.06	1.86	0.61
INDIANA	0.13	2.78	20.83	0.26	0.72	1.41	1.96
KENTUCKY	1.43	2.66	1.86	0.26	0.70	1.48	2.13
MASSACHUSETTS	3.18	6.27	1.97	0.28	1.72	1.41	0.82
MISSOURI	2.07	3.05	1.48	0.31	0.95	1.05	1.11
NEW HAMPSHIRE	1.36	1.43	1.05	0.29	0.42	0.89	2.13
NEW JERSEY	1.90	3.41	1.79	0.44	1.49	1.71	1.15
NEW YORK	1.11	3.42	3.07	0.15	0.53	1.00	1.90
RHODE ISLAND	2.26	4.23	1.87	0.42	1.77	2.41	1.36
SOUTH DAKOTA	0.82	2.32	2.82	0.37	0.85	0.53	0.62
TENNESSEE	1.94	3.74	1.93	0.24	0.88	0.92	1.04
WEST VIRGINIA	2.09	4.34	2.08	0.33	1.43	1.36	0.95
WISCONSIN	3.03	3.81	1.26	0.33	1.26	1.76	1.39

Source: Columns (1) and (2) based on tax schedule data taken from CCH publications for individual states. The entries are averages based on six tax rates: three at positive reserve ratios of 10, 5 and 0 and three at negative reserve ratios of 10, 5 and 0. The tax rates for positive reserve ratios have 90 percent of the weight and those for negative reserve ratios have 10 percent. Columns (4) and (6) were taken from column (05) and (16) of the UI Financial Handbook (ET Handbook 394) and refer to total payroll. Columns (3), (5) and (7) were derived from other entries in the table.

Column (5) of Table 4.3 displays estimates of tax capacity in 2013 for these 17 states, the product of TWP times the average statutory rate for the highest tax schedule. By calculating tax capacity, a state analyst could estimate the maximum annual flow of tax revenue and judge the adequacy of that flow for restoring the state's UI trust fund balance to a desired higher level. Seven states have tax capacity that exceeds 1.0 percent of payroll. Note that six of the seven (all but Massachusetts) have a TWP of 0.33 or higher. Across these 17 states there is a strong linkage between tax capacity and TWP. The correlation between columns (4) and (5) in Table 4.3 is 0.87, a high TWP is strongly associated with high tax capacity. Knowledge of the TWP-tax capacity correlation would show how increasing the taxable wage base could increase tax capacity and enhance a state's capacity to generate increased UI tax revenue.

Column (6) then shows the average annual benefit payout rate during 2009-2011, the three years of highest payouts associated with the 2007-2009 recession. Finally, column (7) compares tax capacity in 2013 (column (5)) with the average payout rate during 2009-2011 (column (6)). The three-year payout rate in five states exceeded tax capacity in 2013 by at least 50 percent. Four of these states (California, Indiana, Kentucky, and New York) have experienced large and prolonged indebtedness to the Treasury following the 2007-2009 recession. All four had outstanding Treasury loans during every month between January 2009 and April 2015.

Table 4.4 shows a similar set of calculations for six benefit ratio states. Again, the first three columns display estimates of the average tax rates from the lowest and highest tax rate schedules and the high/low ratio of the average tax rates. The average of the high/low estimates (column (3)) is 1.62, and four of the six fall into the range between 1.48 and 1.83. For these states the increase in the average tax rate between the lowest and the highest schedule is modest.

Note also that four of the six states in Table 4.4 have low taxable wage proportions (TWP), below 0.30. The two with TWPs above 0.30 are Washington and Wyoming, states with indexed taxable wage bases.

TABLE 4.4.
Constructed Average Tax Rates: Highest and Lowest Tax Schedules, Six Benefit Ratio States with Fixed Tax Rate Boundaries, 2013

	Lowest Schedule Avg. Tax Rate % (1)	Highest Schedule Avg. Tax Rate % (2)	Ratio Highest/Lowest = (2)/(1) (3)	Taxable Wage Proportion (4)	Tax Capacity % Payroll = (2)*(4) (5)	Benefits % Payroll Average 2009-11 (6)	Benefits/Tax Capacity = (6)/(5) (7)
ALABAMA	2.15	4.67	2.17	0.23	1.06	0.85	0.80
CONNECTICUT	2.54	3.94	1.55	0.25	0.97	1.34	1.39
MARYLAND	3.26	5.98	1.83	0.20	1.18	0.99	0.84
VIRGINIA	2.05	3.04	1.48	0.18	0.56	0.59	1.05
WASHINGTON	2.55	3.06	1.20	0.58	1.77	1.78	1.01
WYOMING	2.94	4.44	1.51	0.49	2.18	1.46	0.67

Source: Columns (1) and (2) based on tax schedule data taken from CCH publications for individual states. The entries are averages based on five tax rates: benefit ratios of 10.0, 7.5, 5.0, 2.5 and 0.0. The tax rates for each of the four positive benefit ratios have weights of 0.125 for the zero benefit ratios have a weight of 0.50. Columns (4) and (6) were taken from column (05) and (16) of the UI Financial Handbook (ET Handbook 394). Columns (3), (5) and (7) were derived from other data in the table.

Column (5) shows that five states (all but Virginia) have tax capacity of about 1.0 percent of payroll or higher, and that the highest tax capacity is found in Washington and Wyoming, the two states with indexed taxable wage bases.[65] Note also that three states achieve tax capacity of 1.0 percent or higher despite having low TWPs. Alabama, Connecticut and Maryland achieve their tax capacity by having high average tax rates on their top tax schedules.

Column (7) of Table 4.4 displays the ratio of the 2009-2011 benefit payout rate (column (6)) to tax capacity (column (5)). The only state of the six where the column (7) ratio is substantially above 1.0 is Connecticut. Among the four states in this group that borrowed from the Treasury during and after the 2007-2009 recession Connecticut is the only state where its indebtedness to the Treasury persisted into 2015. Through April 2015 Connecticut has experienced 67 consecutive months of indebtedness. The other three states that borrowed from the treasury completed their loan repayments in 2010 (Maryland) and 2012 (Alabama and Virginia). These latter

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[65] The correlation between TWP and Tax Capacity across the six benefit ratio states is 0.83, similar to the correlation across the 17 reserve ratio states in Table 4.3.

three states all display benefits/tax capacity ratios (column (7)) in the 0.80-1.05 range, much lower than the 1.39 ratio displayed by Connecticut. Among the six benefit ratio states included in Table 4.4, Connecticut stands out in having by far the highest ratio of cyclical benefit payouts to tax capacity. This helps explain why its period of trust fund indebtedness has been longer than for other states in the table.

Three conclusions seem clear the information on tax responsiveness in Tables 4.3 and 4.4. 1) Based on the ratio of the tax rates in the highest and lowest rate schedules, the experience rating systems in these states have tax schedules that can generate a strong response of taxes when trust fund balances are depleted due to recessions. Seventeen of 23 ratios in column (3) of the two tables are 1.50 or higher. 2) As a group, the reserve ratio systems display a wider range of average tax rate responsiveness than the benefit ratio systems. The simple average of highest/lowest responsiveness ratios was 1.96 for 16 reserve ratio states[66] and 1.62 for six benefit ratio states. 3) The comparisons of tax responsiveness in Tables 4.3 and 4.4 understate the full responsiveness of the average tax rate because the comparisons did not control for changes in the distribution of taxable payroll across tax rate categories. When a state's aggregate trust fund balance decreases, an increased share of taxable payroll moves to the tax rate intervals with higher tax rates. The quantitative importance of this movement is examined in section 5.

4. Solvency Taxes

The majority of state UI programs have a solvency tax as part of their tax statute. Table 3.1 of Chapter 3 identified 32 states with solvency taxes.[67] These taxes provide variable tax revenue in response to a change in the trust fund balance. A solvency tax generates an automatic increase in total tax revenue when a recession-related increase in benefit payments reduces the trust fund balance. The response of solvency taxes to a trust fund drawdown is similar to movement to a higher tax rate schedule in states with multiple tax schedules.

Solvency taxes display wide variation across state UI programs. Several states such as California, Louisiana and Mississippi levy a solvency tax that increases tax rates for some but not all subject employers. Some employers, those already at the maximum tax rate, do not experience an increase in their tax rates when the solvency tax rate increases. Thus the solvency tax in California increased tax rates for only about half of all employers in 2011 and 2012 because half were already at the maximum 6.2 percent tax rate. When the solvency tax does apply to all employers, it typically has a maximum rate such as 1.4 percent in Connecticut or (combined with a social charge

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[66] Indiana was excluded from the reserve ratio average because its top/bottom ratio of 20.83 would exert too large an influence on the 17-state average.

[67] Table 3.1 in Chapter 3 identified 32 UI programs with solvency taxes. The present discussion is based on these states. In some instances the solvency tax has a different name in the state such as New York's subsidiary tax which is treated as a solvency tax since the active schedule (of 11) is determined by the balance in the UI general account.

tax) 1.5 percent in Wyoming. Several states employ their solvency tax to restrain their trust fund balance within a certain band (Florida, Mississippi and Texas). Texas, for example, levies a positive solvency tax (termed deficit tax) when its fund balance falls below 1.0 percent of taxable payroll on the fund trigger date but a negative solvency tax (a tax rebate) when the fund balance exceeds 2.0 percent of taxable payroll. The preceding examples illustrate the variety of solvency taxes paid by employers across the states.

The three state UI programs with employee taxes all have variable employee tax rates that respond to changes in the trust fund balance. In each state all employees are taxed at a single rate in a given year, but the rate is higher when the trust fund balance is low. The employee taxes, in other words, respond like the solvency taxes paid by employers.

Table 4.5 shows a four-way breakdown of 29 states with solvency taxes classified by type of experience rating system and number of tax rate schedules (single or multiple). For three of the four groupings, substantial numbers of states are identified. The largest numbers among the four groups of states are the twelve benefit ratio states with a single tax rate schedule. Perhaps surprising, however. is that nine states with multiple tax rate schedules also have solvency taxes.[68] Note that only one benefit ratio state with multiple tax rate schedules (Virginia) has a solvency tax.

TABLE 4.5.
Presence of Solvency Taxes in Four Groups of States, 2014

Reserve Ratio, Single Schedule	Reserve Ratio, Multiple Schedules	Benefit Ratio, Single Schedule	Benefit Ratio, Multiple Schedules
Arizona	California	Connecticut	Virginia
Arkansas	Colorado	Florida	
Georgia	Massachusetts	Illinois	
Louisiana	Nebraska	Minnesota	
North Carolina	New Hampshire	Mississippi	
Ohio	New Jersey	South Carolina	
South Dakota	New York	Texas	
	Tennessee	Utah	
	Wisconsin	Washington	
		Wyoming	
		Michigan	
		Pennsylvania	

Source: Data assembled at the Urban Institute. Source information from the "Comparison of State Unemployment Insurance Laws 2014" and CCH summaries for individual states.

Table 4.5 identifies the presence of solvency taxes but not their yields. The range of potential yields is wide as illustrated by Table 3.4 of Chapter 3 and by the following discussion. Two states with potentially high solvency tax

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[68] Note that Alaska, Delaware and Oklahoma are not included in Table 4.5 because they do not use reserve ratio or benefit ratio experience rating systems. Because all three states have solvency taxes the count in Table 4.5 is 29 not 32 as shown earlier in Table 3.1. Note also that Michigan and Pennsylvania are included with benefit ratio states.

yields are Georgia and Alaska. The tax statute in Georgia encompasses a wide range of potential solvency tax yields. The solvency add-on can range from a high of 100 percent above the rates on the state's basic schedule to 50 percent below that schedule's rates. For 2013, this implies an average tax rate on total payroll ranging from 1.11 percent down to 0.28 percent, or a top tax yield four times larger than that of the bottom yield. Alaska's solvency tax rate can vary between 0.4 and 1.1 percent of taxable payroll or between 0.24 and 0.67 percent of total payroll. Table 3.4 of Chapter 3 showed that Georgia and Alaska are two of six states where solvency taxes in 2013 exceeded 0.45 percent of total payroll. Also relevant in Alaska is the variable employee tax and the state's tax rate limiter. The annual change in the solvency tax rate cannot exceed 0.30 percent of taxable payroll. In both Georgia and Alaska, the solvency tax can potentially generate substantial tax revenue.

New York and Virginia have solvency taxes with low yields. The yield in 2013 of New York's top subsidiary tax schedule was roughly 0.10 percent of total payroll (a tax rate of 0.67 percent on taxable payroll and a taxable wage proportion of 0.15). Virginia's flat rate solvency tax is capped at 0.20 percent of taxable payroll which implies a yield of 0.04 percent of total payroll in 2013. In both states, the solvency tax operates only slowly to increase a depleted trust fund balance. Along with California, New York and Virginia have very low solvency tax yields.

The preceding descriptions show that state UI solvency taxes vary widely in their potential yields, hence their ability to restore depleted trust fund balances to high levels. Some states have solvency taxes whose potential yield can exceed 0.45 percent of total payroll while in other states the potential yield falls below 0.10 percent of total payroll.

5. Tax Responsiveness in Indiana and Alabama

A change in the distribution of taxable payroll across tax rate intervals can influence the average UI tax rate. The following paragraphs help to illustrate this variability using recent ETA-204 data from Indiana and Alabama.

Indiana sets employer tax rates using reserve ratio experience rating. Its tax statute has nine tax rate schedules (from A to I), but under legislation enacted in 2010 the state is slated to operate under an intermediate tax schedule (Schedule E) for each year between 2011 and 2019. The schedule used in both 2012 and 2013 was Schedule E but with all rates increased by 7.0 percent. The rates on modified Schedule E ranged from a minimum of 0.54 percent to a maximum of 7.92 percent. For the highest tax rate schedule (Schedule A) the range of tax rates is from a minimum of 0.75 percent to a maximum of 10.2 percent. For Schedule H (the second-lowest)[69] the range of rates is from 0.30 to 5.4 percent.

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[69] The very lowest tax rate schedule (Schedule I) has tax rates below 0.6 percent of taxable payroll for all tax rate intervals except for the highest tax rate interval (reserve ratios below -16.0 percent) which has a 5.4 percent rate. Schedule I might be described as aspirational.

For the period between 2007 and 2013 the years with the highest and lowest trust fund reserve ratios were 2007 and 2012 respectively. Table 4.6 displays average tax rates as a percent of taxable payroll for these years. In 2007 the average tax rate for Schedule H was 1.71 percent, and for Schedule A it was nearly double at 3.46 percent. For rate year 2012 the same two tax schedules yielded average tax rates of 2.16 percent and 4.31 percent. Again the tax rate from Schedule A was about twice the tax rate from Schedule H.

TABLE 4.6.
Tax Yields from Lowest and Highest Tax Schedules, Indiana and Alabama

Tax Years	Lowest Schedule	Highest Schedule	Absolute Change
	Indiana		
2007	1.71	3.46	1.75
2012	2.16	4.31	2.15
Lowest 2007 to Highest 2012	1.71	4.31	2.60
	Alabama		
2007	0.78	1.44	0.66
2011	1.04	3.44	2.40
Lowest 2007 to Highest 2011	0.78	3.44	2.66

Source: Data on tax schedules taken CCH reports. Data on the distribution of taxable payroll by tax rate intervals taken from ETA-204 reports. The table shows average tax rates as a percent of taxable payroll.

The third data line for Indiana in Table 4.6 shows the effect on the tax rate of both moving from Schedule H to Schedule A, and the change in the distribution of taxable payroll between 2007 and 2012. The total change is from 1.71 percent to 4.31 percent or an increase of 152 percent. More than one third of the increase is due to the 2007-2012 change in the taxable payroll distribution. With a stable taxable payroll distribution, the tax rate in 2012 would have been 3.46 percent. However, because of the shift to higher tax rate intervals, the projected tax rate was 4.31 percent. The increase from the tax rate of 3.46 percent to 4.31 percent is caused by reductions in reserve ratios experienced by many Indiana employers between 2007 and 2012.

The bottom three lines of Table 4.6 show results of similar tax rate calculations for Alabama, a benefit ratio UI program. For the 2007-2013 period Alabama's trust fund balance was highest for tax rate year 2007 and lowest for rate year 2011. Alabama has four tax rate schedules, and it can add a flat rate tax to cover social charges. For rate year 2011 the state operated on its highest rate schedule (Schedule D), and it levied a social charge tax of 1.6 percent. Note in Table 4.4 the projected tax rates in 2007 for the lowest and highest tax schedules were 0.78 percent and 1.44 percent respectively.

With the addition of the social charge tax in 2011, the tax rate for the highest rate schedule was 3.44 percent. Because Alabama's social charge tax had a tax rate of 1.6 percent for all experience-rated employers the increase in the tax rate for the highest tax schedule can be separated into two elements. Absent the social charge tax in 2011 the tax rate on the highest schedule would have been 1.84 percent (3.44 – 1.60). The tax rate on the top schedule in 2007 was 1.44 percent. Thus the change in the distribution of taxable payroll between 2007 and 2011

would have increased the tax rate on the top tax schedule by 0.40 percentage points (from 1.44 to 1.84) apart from the effects of the tax on common charges.

The full decomposition of the increase in Alabama's tax rate between 2007 and 2011 has three elements: i) movement from the bottom to the top tax schedule (0.78 to 1.44 or 0.66), ii) the shift in the distribution of benefit ratios towards higher benefit ratios (1.44 to 1.84 or 0.40 and iii) the imposition of the social tax of 1.6 percent (1.84 to 3.44). Of the total change, the change in the distribution of benefit ratios accounted for about 15 percent of the total.

Of the two examples studied in Table 4.6, the contribution of the change in the distribution of taxable payroll was much more modest in Alabama (15 percent of the total) than in Indiana (33 percent). In both states, however, the contribution of the shift in the distribution of taxable payroll was clearly measurable. The smaller contribution in Alabama largely reflects the effect of the large increase in the social charge tax between 2007 and 2011. The absolute effect of the changed distribution of taxable payroll on the tax rate was actually larger in Alabama (0.66 percentage points) than in Indiana (0.40 percentage points).

It has been noted that twelve states UI programs practice the total cost targeting approach to rate setting with array allocation. When tax schedules change in these states (in response to a change in the trust fund balance on the fund trigger date) there is no change in the average tax rate caused by a change in the distribution of taxable payroll across the detailed tax rate categories. The shares of taxable payroll in the individual array categories (often 20 categories, each with five percent of taxable payroll) are the same in the different tax rate schedules. Thus the change in the average tax rate arises solely from differences in the tax rates in the individual tax schedules. Because the shares of taxable payroll are unchanged in moving to a different tax schedule, these states achieve greater certainty in projecting the change in total tax revenue associated with moving to a different tax schedule. The increased certainty regarding tax yields occurs because the tax rates and shares of taxable payroll are both known for each tax rate interval in the total cost targeting states.

Indiana, Alabama and 39 other UI programs operate with fixed tax rate boundaries. In these states the effect of the change in the distribution of taxable payroll on the response of the overall tax rate to a trust fund drawdown depends of two characteristics of the state's tax schedules: the width of the tax schedules' sloped section and the slope of the sloped section. As the width is wider and as the slope is steeper there can be a larger effect on the average tax rate from the change in the distribution of taxable payroll. Recall that Table 3.2 from Chapter 3 displayed the width of the sloped sections in column (5) and the slopes of the schedules in columns (7) and (8). Among reserve ratio states, however, the widest ranges of sloped intervals are observed in Louisiana, Hawaii, New Hampshire and New Jersey. It appears, however, that the slopes of their schedules are low. Thus sloped rate schedules with wide ranges may not provide much additional tax responsiveness if the slopes of the rate schedules

are low. The combined effects of wide sloped intervals and large slopes determine the quantitative importance of changes in the distribution of taxable payroll in moving across fixed tax rate intervals.

To develop an improved understanding of the tax responsiveness of its current set of tax rate schedules, a state might conduct an analysis of ETA-204 data from earlier years. Examining historic data from past years with high and low reserves (but the current set of tax schedules) it could assess the importance of this compositional consideration on the responsiveness of its present set of tax schedules. If a state wanted to change either the slope of its tax schedules or the width of the sloped section of its tax schedules it might consider examining ETA-204 data from another state (or states) to develop an understanding of how changes in the shape of its tax schedules could potentially affect the responsiveness of its tax schedules. This might find an analysis like that of Table 4.6 useful in better understanding the responsiveness of currant and/or potential alternative sets of tax rate schedules.

6. Computation Date, Fund Trigger Date and Effective Date

As noted in Chapter 3 nearly all state UI programs set tax rates for individual employers once each year, and the tax year for all but four programs is the calendar year from January 1st to December 31st.[70] To set tax rates for individual experience-rated employers, each state program utilizes information that depends on two dates: the computation date and the fund trigger date.

The computation date is the end point of the historical period used by states to measure the experience of individual employers in making tax rate determinations. The fund trigger date is the date when the statewide trust fund balance is measured for purposes of determining the applicable tax rate schedule to be used during the upcoming tax year. Employer-specific experience indicators such as the account balance (in reserve ratio states) and the flows of charged benefits and taxable payroll for a recent time period (often 36 months) enter computation date calculations. The most common computation dates for a tax year that commences on January 1st are June 30th and July 1st of the previous year (37 of 51 states for 2014 tax rates). Several states also use computation dates later than July 1st. For the 2014 tax year, for example, twelve states had computation dates between July 31st and December 31st and three states (Hawaii, Nebraska and New York) plus the Virgin Islands used December 31st.

The bunching of computation dates on June 30th and July 1st reflects a Federal experience rating requirement that the computation date cannot be more than 27 weeks prior to the date when new tax rates go into effect. In the early years of UI programs this rather long lead time between the computation date and the date when new taxes became effective was influenced by time lags associated with collecting information on charged benefits and

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[70] The tax year in New Hampshire, New Jersey, Tennessee and Vermont covers the period from July 1st to June 30th.

covered payroll needed in tax rate calculations for individual employers. In recent years, states could operate with later computation dates since lags in data reporting are now shorter. However, during the 33 years between rate years 1982 and 2014 there was no discernable movement by state programs to adopt computation dates later than June 30th -July 1st. In fact, more states used a December 31st computation date for rate year 1982 (six) than for rate year 2014 (three).[71]

States have some leeway in setting their trust fund trigger dates. Since a fundamental component of the trigger date calculation is the end-of-month trust fund balance, this date can be months later than the computation date. For tax rate year 2014, 19 states used a fund trigger date that was later than the computation date. When these two dates differed for purposes of setting tax rates in 2014, the most common situation was for the computation date to be either June 30th or July 1st and the fund trigger date to be September 30th (11 states).

Operating with a fund trigger date that is later in the year than the computation date gives a state somewhat greater potential tax responsiveness compared to using an earlier fund trigger date. The typical pattern for a state's end-of-month UI trust fund balance within the year is for the balance to decrease during January-March, to recover during April-May and then to be quite stable from June to the end of the year. However, if a recession commences during the second half of the year, calculations of the decline in the trust fund balance will show a larger decrease if based on a fund trigger date from a later month in the second half of the year.

For example, the aggregate trust fund balance across all 53 UI programs at the end of June 2008 was $39.7 billion, but by the end of December it had declined to $29.0, or by about one fourth. Because most fund trigger dates were closer to June than to December, the tax rate schedules operative during 2009 had lower rates than they would have had under November 30th or December 31st fund trigger dates. This would have raised 2009 tax revenue above what was actually collected and lessened the decline in trust fund balances in many states during 2009. In short, if a state used a later fund trigger date, it would help to increase tax responsiveness in situations where a recession's onset occurs during the last half of the calendar year.

Moving the 2008 fund trigger date to a later month would have had even larger effects on 2009 taxes for some of the largest states. Seven of the 13 largest states[72] use June30th – July1st for both their computation date and their fund trigger date. The sum of their trust fund balances on June 30th 2008 was $8.2 billion. Six months later on December 31st the seven-state total was $4.6 billion, a six-month decline of 44 percent. With a December 31st computation date several of these states would have used a tax rate schedule in 2009 with higher rates than the schedule actually used. As a consequence, these states would have entered 2010 with larger net reserves

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[71] For the 51 programs of the 50 states plus the District of Columbia there were only two changes in the tax rate year between 1982 and 2014. Alabama moved to a January 1st start date for its rate year in 1983 and Maryland changed to a January 1st start date in 1993.

[72] Florida, Georgia, Illinois, Michigan, Ohio, Pennsylvania and Virginia.

because of using a later computation date. Note that this effect is specific to situations when the increase in claims and benefits occurs in the second half of the year as in 2008.

Arguments for and against having a later fund trigger date can be made. If a state wanted a slow initial response to a trust fund drawdown, it would favor use of an earlier date such as June 30th. If, on the other hand, the state wanted its revenue system to be more responsive (to help limit the size of recession-related trust fund drawdowns), the fund trigger date would be set in the final months of the year. The importance of this dating obviously depends on the timing of recessions. Also, if a state wanted to increase the automatic responsiveness of its UI revenues, it would set both the computation date and the fund trigger date in the last months of the year.

7. Summary

State UI programs employ a variety of revenue response mechanisms in the face of benefit payouts that vary widely over the business cycle. Responsiveness is achieved through statutes that automatically shift tax levels with changes in trust fund balances. For many states these mechanisms can double annual tax revenue in response to a recession-related trust fund drawdown. Two elements of responsiveness are shifts to different schedules and solvency taxes.

During the past three decades the trigger mechanisms that activate higher tax rate schedules decreased for many of the 32 state programs examined in Table 4.1 and the associated text. The declines in the triggers mean that the fund balances that activate the highest tax schedules are now relatively lower in many states than in the past. These declines in the triggers will increase to some degree the probability of insolvency during future recessions when compared to the past. The declines were most obvious in the states that use reserve ratios to shift to higher and lower tax rate schedules. For 11 of 17 states the reserve ratio trigger that activated the top tax rate schedule in 2014 was less than half of the top schedule's reserve ratio trigger in 1982. The states that were most successful in maintaining the levels of their tax schedule triggers were those that used some form of reserve ratio multiple to shift their tax schedules.

The chapter examined the effects on average effective tax rates not only of shifts across tax rate schedules and imposing varied solvency taxes but also of changes in the distribution of taxable payroll across tax rate categories (experience rating intervals). Quantitative estimates of size of these distributional changes were derived in two states that have schedules with fixed tax rate intervals, Indiana and Alabama. Individual states can examine the quantitative importance of these distributional shifts on their effective tax rates by analyzing their ETA-204 reports from earlier years, years with differing levels of state trust fund reserves. States can also examine the effects of changing the shape of their tax rate schedules such as modifying the slope of the tax schedules and/or changing the total width of the sloped section between the minimum and the maximum tax rate. Historic ETA-204 data from other states could be used for such analysis.

The final section explored the potential consequences of changing the computation date and the fund trigger date. States could achieve increased revenue responsiveness by moving these dates closer to the end of the preceding calendar for purposes of setting employer tax rates for the upcoming year. The increase in revenue responsiveness would be greatest for recessions that commence during the second half of the calendar year. The largest change in revenue responsiveness would be achieved if both dates were moved to December 31st.

Chapter 5. Setting and Evaluating the Tax Base

Adjusting the taxable wage base has long been considered a powerful tool for advancing the policy goals and improving the solvency of a state's UI system. Changes in the taxable wage base directly affect both the revenues available to states to pay benefits and the level of trust fund reserves. Increased UI payroll tax rates (discussed in Chapters 3 and 4 of this report) also have the potential to improve UI trust fund solvency, but for two reasons, the taxable wage base may be the more important policy lever, at least in certain situations. First, no direct mechanism is currently available to the Federal government for influencing the average employer tax rate in the states on a broad scale. In contrast, the Federal Unemployment Tax Act (FUTA) tax credit virtually ensures that changes in the Federal taxable wage base will directly affect taxable wage bases in states whose wage base is currently at the minimum. This makes the taxable wage base important from the standpoint of Federal policy as well as from the states' standpoint. Second, if earnings increase over time, providing UI benefits with a 50 percent replacement rate tax requires that revenues increase in proportion to earnings. Indexing the tax base to wage levels is a direct way to accomplish this. Third, simulations reported in section 6 below show that substantial increases in UI payroll tax revenues result from increases in the taxable wage base in Missouri, which uses a reserve ratio system of experience rating. Under the same system, relatively modest revenue increases result from large changes in the UI payroll tax schedule (such as eliminating the maximum payroll tax rate).

This chapter begins by reviewing the legal background of the taxable wage base (section 1), then offers a brief history of the wage base and a description of interstate differences in the wage base (section 2). Section 3 discusses the relationship between the tax base and trust fund solvency, and section 4 examines how the tax base may influence benefit amounts and benefits paid. Section 5 returns to the idea of tax capacity and shows how the taxable wage base is linked to tax capacity across a sample of 22 UI programs in 2013. Section 6 reports the results of simulations using data on employers in Missouri and Washington State, and section 7 reviews the importance of the tax base to trust fund solvency and offers recommendations.

1. Legal Background

Description and role of the taxable wage base in the UI system

The taxable wage base is one of the two essential parts of a state's UI payroll tax, the other being the tax schedule. The legal impetus for the taxable wage base is the FUTA, under which the first $7,000 of each covered

employee's annual earnings are taxed at 6 percent. Employers in a state with an approved UI program receive a 5.4 percent credit on this 6-percent tax, so the effective FUTA payroll tax is 0.6 percent on the first $7,000 earned annually by an employee, or $42 per employee. The revenues from the FUTA tax are used primarily to fund the administrative costs of the UI system, the federal portion of the federal-state Extended Compensation program, advances (or "loans") to states lacking the funds to pay UI benefits, and labor exchange services under the Wagner-Peyser Act.

As described in Appendix A, in order for employers in a state to receive the 5.4 percent credit against the FUTA tax, the state must conduct an approved UI system with a taxable wage base of at least $7,000, on which taxes are collected in order to pay UI benefits under the regular UI program in the state. By 2015, all but three states had adopted a tax base greater than $7,000, but 32 had a tax base of $15,000 or less, and only nine had a tax base of $30,000 or greater—see Table 5.1, which shows the taxable wage base of each state in 1980, 1990, 2000, 2010, and 2015.

Role of the taxable wage base in the UI system

The structure of the UI payroll tax implies that the taxable wage base plays a dual role in the UI system. First, the $7,000 FUTA base is central to collecting revenues for the federal accounts. Second, each state's taxable wage base (which is usually greater than the FUTA base) is the base on which the state raises revenues to pay benefits under its regular state UI program.

Federal leverage with respect to the tax base

The effective requirement under FUTA that a state's taxable wage base must be at least $7,000 is the only direct link between the federal tax base and each state's UI taxable wage base. Nevertheless, it is an important link because it gives the federal government an immediate policy tool to raise (or possibly lower) the taxable wage base of any state whose state tax base is at the Federal level. In fact, most states' laws provide for the state taxable wage base to increase automatically if the FUTA taxable wage base increases and is set above the existing state tax base.

TABLE 5.1.
State Taxable Wage Bases, 1980, 1990, 2000, 2010, and 2015 ($ current)

State	1980	1990	2000	2010	2015
United States	6,000	7,000	7,000	7,000	7,000
Alabama	6,600	8,000	8,000	8,000	8,000
Alaska	10,000	21,300*	24,800*	34,100*	38,700*
Arizona	6,000	7,000	7,000	7,000	7,000
Arkansas	6,000	7,800	9,000	12,000	12,000
California	6,000**	7,000	7,000	7,000	7,000
Colorado	6,000	10,000	10,000	10,000	11,800*
Connecticut	6,000	7,100	15,000	15,000	15,000
Delaware	6,000	8,500	8,500	10,500	18,500**
District of Columbia	6,000	8,000	9,000	9,000	9,000
Florida	6,000	7,000	7,000	7,000	7,000
Georgia	6,000	8,500	8,500	8,500	9,500
Hawaii	11,200*	19,900*	27,500*	38,800*	40,900*
Idaho	10,800*	17,400*	24,500*	33,300*	36,000*
Illinois	6,500	9,000	9,000	12,520	12,960
Indiana	6,000	7,000	7,000	9,500	9,500
Iowa	7,400*	11,900*	17,300*	24,500*	27,300*
Kansas	6,000	8,000	8,000	8,000	12,000
Kentucky	6,000	8,000	8,000	8,000	9,900
Louisiana	6,000	8,500**	7,000	7,700**	7,700**
Maine	6,000	7,000	12,000	12,000	12,000
Maryland	6,000	7,000	8,500	8,500	8,500
Massachusetts	6,000	7,000	10,800	14,000	15,000
Michigan	6,000	9,500	9,500	9,000	9,500
Minnesota	8,000	12,900*	19,000*	27,000*	30,000*
Mississippi	6,000	7,000	7,000	7,000	14,000
Missouri	6,000	7,000	7,500	13,000**	13,000**
Montana	7,600	13,200*	17,700*	26,000*	29,500*
Nebraska	6,000	7,000	7,000	9,000	9,000
Nevada	7,900*	13,300*	18,600*	27,000*	27,800*
New Hampshire	6,000	7,000	8,000	10,000	14,000
New Jersey	6,900*	13,900*	20,200*	29,700*	32,000*
New Mexico	7,200*	11,500*	14,800*	20,800*	23,400*
New York	6,000	7,000	8,500	8,500	10,500
North Carolina	6,000	11,100*	13,900*	19,700*	21,700*
North Dakota	7,600*	11,500*	16,100*	24,700*	35,600*
Ohio	6,000	8,000	9,000	9,000	9,000
Oklahoma	6,000	9,500*	9,800*	14,900†	17,000†
Oregon	10,000*	16,000*	23,000*	32,100*	35,700*
Pennsylvania	6,000	8,000	8,000	8,000	9,000
Rhode Island[1]	7,200*	13,800*	12,000	19,000*	21,200*
South Carolina	6,000	7,000	7,000	7,000	14,000
South Dakota	6,000	7,000	7,000	10,000	15,000
Tennessee	6,000	7,000	7,000	9,000**	9,000**
Texas	6,000	9,000	9,000	9,000	9,000
Utah	11,000	14,000*	20,200*	28,300*	31,300*
Vermont	6,000	8,000	8,000	10,000	16,400*
Virginia	6,000	7,000	8,000	8,000	8,000
Washington	9,600	16,200*	26,500*	36,800*	42,100*
West Virginia	6,000	8,000	8,000	12,000**	12,000**
Wisconsin	6,000	10,500	10,500	12,000	14,000
Wyoming	6,000	10,400*	13,600*	22,800*	24,700*

*State indexed its taxable wage base. ** State had a variable tax base.
† State both indexed its taxable wage base and had a variable tax base.
1. Rhode Island indexed its tax base between 1980 and 1999, had a variable tax base between 2000 and 2010, and resumed tax base indexation in 2011. Effective 2012, it adopted a two-tier taxable wage base, in which employers paying the highest tax rate also face a tax base $1,500 greater than the base shown.
Source: Unemployment Insurance Financial Data Handbook 394 <http://workforcesecurity.doleta.gov/unemploy/hb394.asp>.

2. The Taxable Wage Base: History and Inter-State Differences

Evolution of the FUTA taxable wage base

The Social Security Act of 1935 set a federal tax on total payroll of 1 percent starting in 1936, increasing to 2 percent in 1937 and 3 percent in 1938 (Blaustein 1993). Employers could be credited up to 90 percent of their Federal tax obligation for taxes paid to an approved state UI program. The Federal Unemployment Tax Act of 1939 changed the taxable wage base from total payroll to the first $3,000 of annual payroll per worker, effective in 1940. This was a simplification designed to match the Federal UI tax base with the tax base for the Social Security old-age insurance program. Few workers at the time had annual wages greater than $3,000, so the vast majority of total UI-covered wages remained taxable (93 percent in 1940).

With the growth of annual wages, the proportion of UI-covered wages that was taxable under FUTA eroded from 93 percent in 1940 to just 45 percent in 1971. This erosion of the tax base can be seen clearly in Figure 5.1. In 1971 Congress raised the FUTA taxable wage base to $4,200 (for 1972), which increased the ratio of taxable to total wages to 52 percent. Congress has since raised the taxable wage base only twice: to $6,000 in 1978, and to the current $7,000 in 1983. This contrasts with the Social Security contribution base, which was indexed to wages as of 1972 and stood at $118,500 in 2015.

The modest increases in the FUTA taxable wage base, combined with the continued growth of nominal annual wages over the decades, have resulted in the continued erosion of the proportion of total UI-covered wages that are subject to the FUTA payroll tax. By 1987 only 40 percent of total UI-covered wages were taxable, and by 2002 just 30 percent were taxable. After 2002, the ratio of taxable to total wages continued to drift downward and stood at about 27 percent during 2007–2013.

FIGURE 5.1.
Proportion of Total UI-covered Payroll Subject to the FUTA Tax, 1938–2013
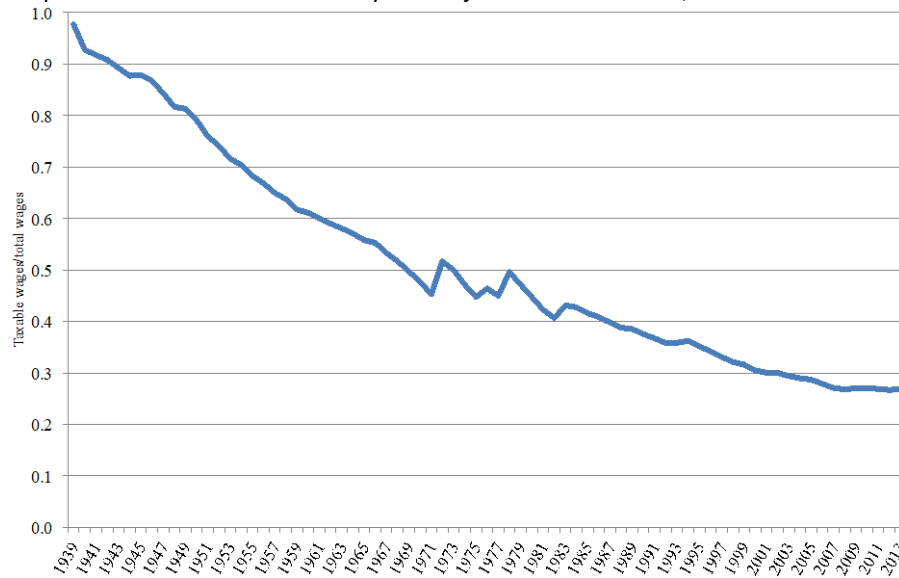
Source: Source: Unemployment Insurance Financial Data Handbook 394
<http://workforcesecurity.doleta.gov/unemploy/hb394.asp>.

Diversity of tax bases across the states

States can set their taxable wage base above the FUTA base, and as Table 5.1 showed, the diversity of tax bases among states is dramatic. Table 5.2 shows that, for 2013, this diversity implied substantial interstate differences in (i) the proportion of total UI-covered wages that are subject to a state's UI payroll tax (the ratio of taxable to total wages, or "taxable wage proportion") and (ii) the ratio of each state's taxable wage base to its average annual wage.

For the United States as a whole, the taxable wage proportion was 0.269, but this proportion ranged from lows of less than 0.16 in the District of Columbia, New York, and California, to highs above 0.60 in Hawaii, Idaho, Montana, and Alaska (see Table 5.2). Larger states tend to have smaller taxable wage proportions: of the 15 largest states by covered employment, ten had proportions below 0.269 (the national average), whereas only three (North Carolina, New Jersey, and Washington) had taxable wage proportions in excess of 0.40.

TABLE 5.2.

State Taxable Wage Bases, Ratios of Taxable to Total Wages, and Ratios of Taxable Wage Bases to Average Annual Wages, 2013
(states sorted from lowest to highest taxable wage base)

State	(1) Taxable wage base ($)	(2) Ratio of taxable to total wages	(3) Ratio of wage base to average annual wage[1]	(4) Reserve ratio (percentage terms)[2]
Arizona	7,000	0.196	0.155	-0.192
California	7,000	0.157	0.124	-1.393
Louisiana	7,700**	0.217	0.174	1.228
Alabama	8,000	0.227	0.194	0.372
Florida	8,000	0.226	0.164	0.304
Kansas	8,000	0.317	0.292	0.201
Virginia	8,000	0.185	0.155	0.150
Maryland	8,500	0.198	0.164	0.906
New York	8,500	0.154	0.158	-0.733
Pennsylvania	8,500	0.201	0.185	-1.116
District of Columbia	9,000	0.141	0.114	0.907
Nebraska	9,000	0.259	0.232	1.298
Ohio	9,000	0.232	0.204	-0.859
Tennessee	9,000**	0.236	0.205	0.806
Texas	9,000	0.207	0.173	0.050
Kentucky	9,300	0.262	0.246	-1.154
Georgia	9,500	0.235	0.201	-0.080
Indiana	9,500	0.259	0.229	-1.469
Michigan	9,500	0.233	0.203	-0.656
Delaware	10,500**	0.224	0.355	-0.282
Colorado	11,300*	0.265	0.232	0.046
Arkansas	12,000	0.336	0.314	-0.058
Maine	12,000	0.339	0.322	1.848
South Carolina	12,000	0.327	0.360	-0.485
West Virginia	12,000**	0.330	0.308	0.502
Illinois	12,900	0.259	0.245	-0.094
Missouri	13,000**	0.311	0.303	-0.293
South Dakota	13,000	0.368	0.424	0.613
Massachusetts	14,000	0.275	0.241	0.444
Mississippi	14,000	0.406	0.394	1.709
New Hampshire	14,000	0.292	0.286	1.043
Wisconsin	14,000	0.332	0.335	-0.446
Connecticut	15,000	0.246	0.234	-0.544
Vermont	16,000*	0.392	0.405	0.998
Oklahoma	20,100†	0.454	0.404	1.973
Rhode Island	20,200*	0.419	0.469	-0.704
North Carolina	20,900*	0.419	0.501	-1.088
New Mexico	22,900*	0.528	0.600	0.243
Wyoming	23,800*	0.491	0.553	3.074
Iowa	26,000*	0.537	0.673	1.835
Nevada	26,900*	0.559	0.650	-1.056
Montana	27,900*	0.660	0.817	1.622
Minnesota	29,000*	0.480	0.595	1.093
Utah	30,300*	0.576	0.758	1.606
New Jersey	30,900*	0.437	0.539	-0.062
North Dakota	31,800*	0.576	0.723	1.043
Oregon	34,100*	0.600	0.815	3.229
Idaho	34,800*	0.674	0.999	1.716
Alaska	36,900*	0.616	0.771	2.853
Hawaii	39,600*	0.690	1.008	1.644
Washington	39,800*	0.576	0.800	2.514
United States	7,000	0.269	0.142	-0.205

*State indexed its taxable wage base. ** State had a variable tax base.
† State both indexed its taxable wage base and had a variable tax base.
1. Calculated as the state's taxable wage base divided by the annualized state average weekly wage (average weekly wage multiplied by 52).
2. Reserve ratios shown account for private loans taken by Arizona, Colorado, Idaho, Illinois, Michigan, Nevada, Pennsylvania, and Texas have to finance benefit payments.
Source: Unemployment Insurance Financial Data Handbook 394 <http://workforcesecurity.doleta.gov/unemploy/hb394.asp>.

More important is the positive correlation between the level at which a state sets its tax base and the taxable wage proportion. Only three of the states that set their tax base at $11,000 or less in 2013 had a taxable wage proportion as high at 0.25 (Kansas, Kentucky, and Nebraska—see again Table 5.2). In contrast, all 17 states that set their tax base at $19,000 or more had a taxable wage proportion greater than 0.40. Not by coincidence, the 17 states with tax bases at or above $19,000 are the same 17 states that have operated with a tax base linked to average annual wages in the state for more than 20 years, a point we return to below.[73] It is not surprising that states with higher taxable wage bases also have greater taxable wage proportions, but we emphasize this observation because it is of central importance to UI tax policy.

Similar patterns are clear from an examination of the ratios of each state's taxable wage base to its annualized average weekly wage. This measure is an attempt to illustrate the relationship of the wage base to the annual earnings of a typical worker in the state. For example, for California, it equals $7,000 (California's wage base) divided by California's average weekly wage ($1,083), annualized by multiplying by 52. The denominator of this ratio overstates the average annual earnings of workers in the state because many do not work full-time and because the distribution of earnings is skewed right, but these ratios tend to confirm the conclusions drawn from examining taxable wage proportions.

Methods of adjusting the tax base

The 47 states that have adopted a tax base greater than $7,000 have done so in one of three ways. The majority of these states (25) have done so exclusively by legislation, which implies that most have rarely adjusted their UI taxable wage base. This is apparent from Table 5.1, as is the fact that only one of these states (Delaware) has a taxable wage base greater than $15,000. Vroman (2011) has shown that it is rare for a state to pass legislation raising its taxable wage base except when the state's trust fund is insolvent.

In 2015, nineteen states (those shown with an asterisk in Table 5.1) adjusted their wage base automatically (and annually) by indexing the base to the level of wages in the state, lagged between 1 and 2 years. Most states with indexed taxable wage bases calculate the tax base as a percentage of the state average weekly wage (usually between 50 and 80 percent), but some use slightly different methods; for example, New Jersey calculates its wage base as 28 times the average weekly wage (rounded up to the next $100).

Indexation of the taxable wage base in 2015 was more prevalent than it was prior to the recession of 2007-2009. Rhode Island returned to indexation in 2011 after a decade of operating with a variable tax base (see the following paragraphs). Colorado adopted indexation in 2012, first effective in 2013, but with a tax base much lower

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[73] Included in the 17 is Rhode Island, which operated with an indexed tax base between 1980 and 1999, with a variable tax base between 2000 and 2010, and then resumed tax base indexation in 2011.

than for other indexed states. Vermont raised its tax base to $16,000 in 2012 and instituted indexation in 2015. All three states adopted indexation in response to funding problems caused by the 2007–2009 recession.

Six other states—Delaware, Louisiana, Missouri, Oklahoma, Tennessee, and West Virginia—had so-called variable taxable wage bases in 2015. These states, identified with two asterisks in Table 5.1, have tax provisions that link their taxable wage base to a measure of the states' trust fund balance on the fund trigger date. Higher balances cause a reduction in the taxable wage base while lower balances increase the tax base. However, for two of these states—Tennessee and West Virginia—the variable tax base was implemented as a temporary solvency measure in response to the 2007–2009 recession. These states raised the tax base temporarily, and the tax base will revert to an earlier (lower) level after the trust fund balance exceeds a specified threshold.[74]

The remaining four states with variable taxable wage bases specify multiple levels of the taxable wage base in their law, with the level depending on the trust fund balance. Selected features of these variable taxable wage systems are displayed in Table 5.3. Columns (2) and (3) display the range of each states's tax bases (the highest and lowest), and columns (4) and (5) then show the ratio of each state's highest and lowest tax base to the statewide average annual wage in 2013 [column (6)]. Oklahoma differs from the other three states shown in Table 5.3 because it operates with a tax base indexed to statewide average earnings. The indexation percentage is 40 percent when the trust fund balance is high and 50 percent when it is low. Oklahoma also differs from the other states in that its potential tax base increases annually with wage growth. In 2013, with a 50 percent indexation percentage, the tax base was $20,100.

The four states in Table 5.3 present a number of contrasts, two of particular importance. The potential range of tax base changes is much wider in Delaware and Missouri than in Louisiana and Oklahoma. It follows that a change from the lowest to the highest tax base has potentially larger effects on tax revenues in the former two states. The ratio of the tax base to average earnings is substantially higher in Oklahoma (for both the lowest and highest tax bases) than in the other three states. This probably helps explain why Oklahoma is one of only four UI programs (along with Mississippi, Nebraska and New Mexico) that has never borrowed from the Treasury during past recessions.

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[74] Illinois also has a variable tax base in its statute, but the tax base will not vary from its current $12,960 until after 2019.

TABLE 5.3.

Variable Taxable Wage Bases in Four States, 2013

	Number of taxable wage bases specified (1)	Lowest taxable wage base ($) (2)	Highest taxable wage base ($) (3)	Ratio of lowest wage base to annual wage (4) = (2)/(6)	Ratio of highest wage base to annual wage (5) = (3)/(6)	Average annual wage ($) (6)
Delaware	5	10,500	18,500	0.202	0.355	52,101
Louisiana	3	7,000	8,500	0.158	0.192	44,167
Missouri	13	7,000	13,000	0.163	0.303	42,865
Oklahoma	2	16,080	20,100	0.4	0.5	42,077[a]

Source: Data from CCH publications and conversations with professional staff in the individual states. The annual average wage in column (6) is calculated as 52 times the average weekly wage in 2013 [column (6) of the Unemployment Insurance Financial Handbook 394].
[a] Lagged annual wage that determined the tax base in 2013.

Reasons for the states' behavior in setting the tax base

In general, the states have been reluctant to raise their UI taxable wage bases and have opposed increases in the Federal taxable wage base. Reasons for resisting increases in the state taxable wage base appear to be twofold. First, states are concerned that if they raise their UI taxable wage base, they may be perceived as a high-tax state or a state that is unfriendly to business (Bassi and McMurrer 1996).

The second reason for opposition to increases in the state tax base is somewhat more involved. Economists long maintained that, although UI payroll taxes are collected from employers, the long-run burden of those taxes falls on workers in the form of lower wages (Hamermesh 1977). To the extent that opposition to state-level increases in the tax base originates with employers, this makes states' opposition to increases in the tax base puzzling because it suggests that employers themselves have little to lose from increases in the tax base. But the empirical evidence tells a story somewhat at odds with the view that UI payroll taxes are shifted back to workers in the form of lower wages. Anderson and Meyer's (2000) careful examination of Washington State's move to experience rating in 1985 suggests that, although employers are able to shift the industry-average portion of the UI payroll tax to workers, any difference between the industry-average rate and the rate paid by a specific employer is borne largely by that employer.[75] Ultimately, employer resistance to increases in the state tax base can be attributed the fact that employers do bear a significant portion of the UI payroll tax.

The states have resisted increases in the Federal taxable wage base for somewhat difference reasons. Grundman (1996) has argued that, although the bulk of FUTA tax revenues are in principle earmarked for administering the UI program (at both the state and Federal levels), the FUTA revenues contributed by most states in fact exceed the administrative funding that is returned to them. As a result, the states may view increases in UI payroll taxes as de facto increases in Federal taxes. (FUTA revenues also fund the Extended Unemployment

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[75] An earlier paper by Anderson and Meyer (1997) comes to a similar conclusion after examining observational data from eight states.

Compensation Account and the Federal Unemployment Account, but payments to these accounts are far smaller than the state UI administrative grants.)

3. Relationship between the Tax Base and Trust Fund Solvency

The data in Table 5.2 show that states with higher taxable wage bases in 2012 tended to have higher ratios of taxable to total wages [again, compare columns (1) and (2)]. It stands to reason that the positive relationship between the tax base and the ratio of taxable to total wages should have implications for the funding adequacy and solvency of a state's UI tax system.

Column (4) of Table 5.2 displays the reserve ratio in each state as of December 31, 2013. The reserve ratios shown are in percentage terms; that is, the state's net trust fund reserves as a percentage of total wages in covered employment. We include states with negative net reserves; that is, whose Federal loans exceeded the funds on deposit in the state's account on December 31. [The reserve ratios in column (4) reflect the private loans that eight states have taken to finance UI benefit payments. Including these municipal bond debts reduces the reserve ratios for these states, and worsens the picture presented in column (4).]

Column (4) of Table 5.2 shows that reserve ratios were negative in 20 states at the end of 2013, and six of these states had loans that equaled or exceeded 1 percent of total wages in the state in 2013. Ten of the states with negative net reserves were also among the 15 largest in terms of covered employment in 2013. In contrast, 18 states had positive reserve ratios equal to or exceeding 1 percent of total covered payrolls, and only one of these positive reserve ratio states (Washington) was among the 15 largest states.

A comparison of columns (1) and (4) of Table 5.2 shows that states with higher tax bases also tended to have healthier trust funds, as measured by the reserve ratio. Of the 17 states that set their tax base at $20,000 or more, only 4 had a negative reserve ratio at the end of 2013. In contrast, of the 20 states that set their tax base at $11,000 or less, ten had a negative reserve ratio at the end of 2013.

Indexing the tax base and trust fund solvency

Again, it is no coincidence that the 17 states with tax bases at or above $20,000 are the same 17 states that have indexed their tax base since the mid-1980s or earlier. Figure 5.2 illustrates the connection between indexing and the level of the tax base by plotting three time series for the period 1970–2015. The first is the

FIGURE 5.2
Federal and State UI Tax Bases, 1970–2015
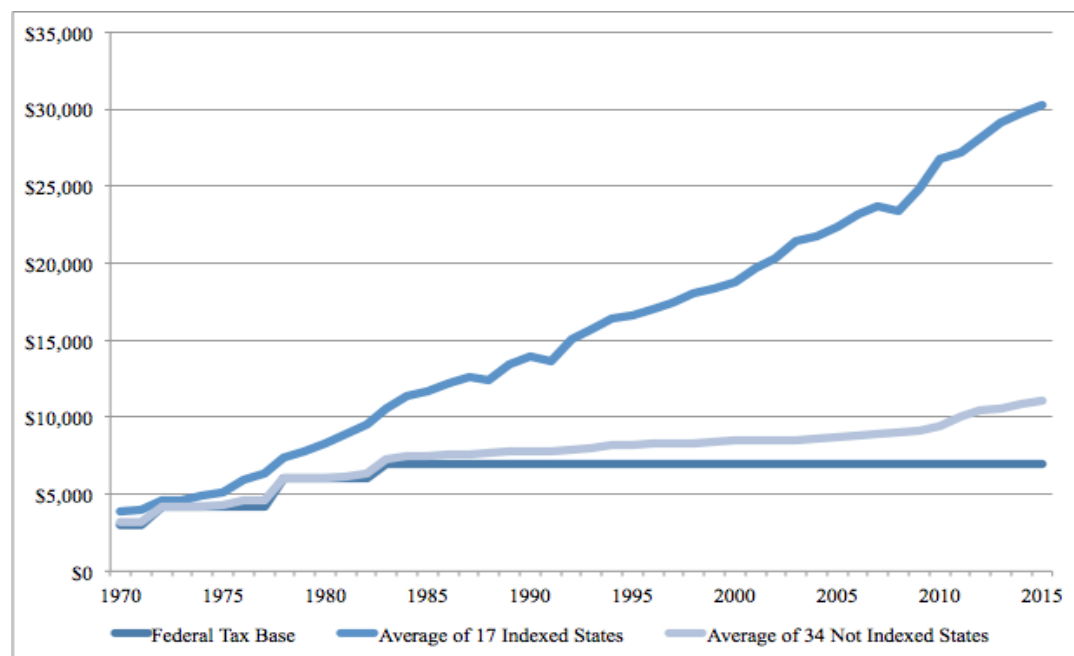
Federal taxable wage base, which was $3,000 in 1970 and increased in three steps to $7,000 in 1983, where it has remained. The other two series are (1) the simple average of the taxable wage bases of the 17 states that indexed their taxable wage bases (the medium-dark line with the steep slope)[76] and (2) the simple average of the wage bases of the 34 states that are not indexed (the lightest line).

The average tax base for the 17 states that indexed their tax base was $30,288 in 2015. In contrast, the average tax base for the 34 non-indexed states in 2015 was $11,111, about $4,000 above the $7,000 Federal tax base. Moreover, the UI trust funds of the indexing states were far healthier than those of the non-indexing states. In 2013, the average reserve ratio for the 17 long-term indexing states was 1.266, whereas for the other 34 states it was 0.110. The average indexing state had a reasonably healthy trust fund, whereas the average non-indexing state was close to insolvent. The links from indexing the taxable wage base to UI trust fund solvency seem clear.

States that do not index have funding problems for a simple reason. Nominal wages have increased over time, and in most states, the maximum weekly benefit amount adjusts automatically to maintain a given replacement rate. (Even in states that do not index their benefits, benefit adjustments are more frequent and less controversial than are adjustments to either the tax base or tax rates.) The failure to provide for revenue growth in the face of increasing benefit costs is an obvious flaw in the funding mechanism of many state UI systems. Unless benefit costs decline over time due to falling unemployment, revenue growth is necessary to keep up with gradually increasing

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[76] Rhode Island is included among the 17.

weekly benefit amounts that follow from normal wage growth. Tax-rate adjustment and indexing of the wage base are the two available choices, and indexing of the tax base may be the simpler and more direct option.

4. The Tax Base, Tax Contributions, Benefits, and the Trust Fund

This section examines the relationships among key aspects of every state UI financing system. As illustrated in Figure 5.3, these components include the taxable wage base and tax rates, tax contributions, benefit payments, and the trust fund balance. Figure 5.3 also shows the causal linkages among these components of the UI system, some of which are straightforward, others of which are complex and difficult to estimate. The tax base (along with tax rates) directly influences tax contributions—for a given tax rate, revenues increase with the tax base (in a way that will be analyzed using employer-level data in section 5.6 below), and conversely. Tax contributions in turn feed into the trust fund, and along with benefit payments, determine the health of the trust fund. These connections, denoted in Figure 5.3 by solid lines with arrows, are straightforward.

In many states, the health of the trust fund influences the tax base, tax rates, or both, so the state of the trust fund feeds back to the tax base and tax rates (denoted in Figure 5.3 by dashed lines with arrows). Moreover, from a policy standpoint, trust fund adequacy may influence benefits and benefit adequacy: an adequate trust fund allows a state to maintain its weekly benefit amounts and benefit durations; and conversely, an insolvent trust fund may motivate a state to reduced benefit amounts and durations. For this reason a dashed line connects the trust fund and benefit payments in Figure 5.3 (in addition to the solid line indicating the direct effect of benefit payments on the state of the trust fund).

There may also be feedback from benefits levels and perceived benefit adequacy to the taxable wage base and tax rates. As UI trust funds became insolvent during and after the 2007–2009 recession, some states reduced benefit durations or restrained increases in benefit amounts rather than raising the tax base or tax rates to finance a previous level and duration of benefits. Others, however, increased the tax base or tax rates enough both to repay loans taken to finance benefits paid during the recession and to maintain benefits at their established levels. That is, a desired level of benefits motivated some states to increase the tax base in step with wage levels to preserve the adequacy of UI. These influences are shown in Figure 5.3 by the dashed lines with arrows from benefit amounts to the tax base and tax rates.

FIGURE 5.3.
Relationships among Key Components of State UI Financing Systems
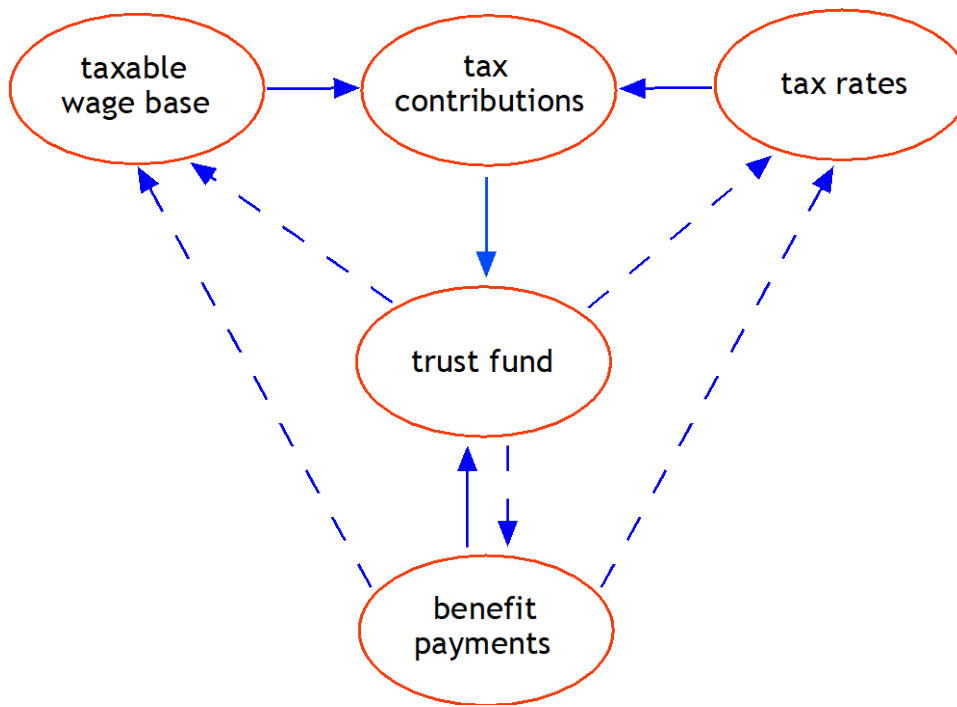
Empirical model

The difficulty of identifying each of the above influences in the data are obvious. The problem is one of simultaneous determination of several outcomes, and the econometric methods for dealing with such issues are not straightforward and are convincing only under certain conditions. Although it may be possible to make some headway using dynamic panel methods (using a panel of states over time), in this section we discuss some descriptive regressions that may give some preliminary insight into the issues.

The analysis is performed with an annual panel of the 50 states plus the District of Columbia for 1976–2013. The data come from the familiar UI Financial Handbook 394, available online at <http://workforcesecurity.doleta.gov/unemploy/hb394.asp>. Tables 5.1 and 5.2 show data for the taxable wage base, the ratio of taxable to total wages, and the reserve ratio.

Models estimated all take the following form:

$$Y_{st} = \alpha_s + \gamma_t + \beta_1 X_{1,st} + \beta_2 X_{2,st} + \ldots + \beta_k X_{k,st} + u_{st} \qquad (5.1)$$

where Y_{st} denotes an outcome for state s in year t, α_s denotes state fixed effects (an indicator for each state in the panel), γ_t denotes time fixed effects (an indicator for each year in the panel), X_1, X_2, ..., X_k denote k explanatory variables that are related to the outcome of interest (Y), and u_{st} denotes unobservable factors and measurement error associated with each observation.

Figure 5.3 and the accompanying discussion suggest the usefulness of modeling two key outcomes: a state's tax contributions and its trust fund balance. Both are central features of the health of a state's UI system, and both can be modeled in light of the linkages shown in Figure 5.3.

Tax contributions

To model tax contributions, we estimate a model of the form shown in equation (5.1) where the outcome variable is total UI tax contributions[77] in state s and year t, and the key explanatory variables are:

- the taxable wage base (in $1,000s) in state s and year t

- a measure of the average tax rate paid by employers in state s and year t, specifically, average employer contributions as a percent of total wages in the state

The model also includes the change in the natural logarithm of employment between the previous year (t–1) and the current year (t) (in effect, the percentage change in covered employment over the preceding year) as a control for possible labor market effects on the ratio of taxable to total wages.

Estimates of this model are displayed in column (2) of Table 5.4. [For reference, column (1) of Table 5.4 displays sample means of the independent variables.] The estimated coefficient on the taxable wage base (0.0157) suggest that a $1,000 increase in the taxable wage base can be expected to increase UI tax contributions by about 1.6 percent (the tax base is scaled to $1,000s, and the estimated coefficient of 0.0157 is interpreted as a proportion because tax contributions are in logarithmic terms). A $1,000 increase in the taxable wage base is modest, in that it represents an increase of one-sixth of a standard deviation. The estimate implies that increasing the taxable wage base by $5,000 could be expected to increase tax contributions by about 8 percent. For example, if a state with annual tax contributions of about $200 million (the sample mean) raised its tax base by $5,000, its tax contributions could be expected to increase to about $216 million.

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[77] We use the natural logarithm of tax contributions as the dependent variable, so that β_k in equation (5.1) can be interpreted as the proportional change in contributions resulting from a unit change in X_k.

TABLE 5.4.
Estimated Models of Tax Contributions, Trust Fund Reserves, and the Tradeoff between the Wage Base and Tax Rates

Independent variables	(1) Sample mean (standard deviation)	Dependent variables		
		(2) Total tax contributions (natural log)	(3) Reserve ratio[1]	(4) Average employer tax rate (% terms)
Tax base ($1,000s)	10.68	0.0157**	0.0193	−0.0136*
	(6.08)	(0.0038)	(0.0207)	(0.0055)
Average employer tax rate (% terms)	0.920	0.889**	−0.9373**	—
	(0.478)	(0.058)	(0.1857)	
Change in log of covered employment	0.0160	0.384	9.605**	—
	(0.0316)	(0.311)	(1.535)	
Ratio of taxable to total wages	0.414	—	—	1.282**
	(0.132)			(0.372)
State fixed effects	—	included	included	included
Year fixed effects	—	included	included	included
Sample size[2]	1,938	1,887	1,887	1,938

1 The sample mean of the log of tax contributions is 19.1 (standard deviation = 1.23), and the sample mean of the reserve ratio is 1.219 (standard deviation = 1.424). In column (3), the tax base and the average employer tax rate are lagged one year.
2 Sample sizes in columns (2) and (3) are less than 1,938 as a result of including change in log of covered employment.
* Coefficient is statistically different from 0 at the 5-percent level.
** Coefficient is statistically different from 0 at the 1-percent level.
Source: Authors' estimates using data from the Unemployment Insurance Financial Data Handbook 394 <http://workforcesecurity.doleta.gov/unemploy/hb394.asp>. See the text for discussion.

The estimated coefficient on the average tax rate (0.889) suggests that a 1 percentage point increase in the average employer tax rate increases the tax contributions by about 89 percent (because the tax rate is in percentage terms). A 1 percentage point increase in the average employer tax rate is very substantial—the average employer tax rate in the sample is less than 1 percent, so a 1 percentage-point increase would more than double the average tax rate paid by employers. Accordingly, it makes sense that tax contributions are estimated to approximately double in response to a 1 percentage point increase in the average tax rate. The implication is that an increase in the average tax rate of 0.1 percentage point (which is more likely to be observed in practice) would be expected to increase tax contributions by about 9 percent.

The conclusion seems clear that increases in either the taxable wage base or the average tax rate that are within reason are capable of substantially increasing UI tax contributions.

The reserve ratio

To model the health of a state's trust fund balance, we estimate a second model, again along the lines of equation (5.1), where the outcome is the reserve ratio for state *s* in year *t*. The explanatory variables are again the wage base, the average employer tax rate in the state, and the change in the natural logarithm of employment between the current and previous years.

Estimates of this model are displayed in column (3) of Table 5.4. The point estimate of the coefficient on the tax base suggests that a $1,000 increase in the taxable wage base increases the ratio of taxable to total wages by about 0.019 point on average (the tax base is scaled to $1,000s, and the estimated coefficient on the tax base variable is 0.019). This estimate is not statistically different from zero, but if it were, it would imply that a $10,000 increase in a state's tax base would be expected to increase its reserve ratio by less than 0.2 point (or 16 percent on the sample mean of 1.219), which is a relatively modest increase.

The estimates also suggest that a 1 percentage point increase in the average employer tax rate decreases the reserve ratio by nearly 1 point (the estimated coefficient on the tax rate is negative 0.937). This suggests that, by increasing its average tax rate, a state substantially harms its trust fund balance, which is counterintuitive and nonsensical.

The estimates in column (3) of Table 5.4 are similar to estimates reported by Grundman (1995), and they are essentially unsatisfactory because they offer a textbook example of bias arising from simultaneity. Because changes in most states' reserve ratios feed back to tax rates (and in some states to the tax base as well), the tax rate (and tax base) are correlated with the error term in equation (5.1). This results in simultaneity between the reserve ratio and both the tax rate and taxable wage base. For example, when a state's reserve ratio falls, the average tax rate rises by design to help restore the trust fund. As a result, the estimate in column (3) of Table 5.4 suggests a negative relationship between tax rates and the reserve ratio (lower taxes appear to increase the reserve ratio and vice versa), but this reflects the feedback built into the system rather than the effect of raising tax rate on the trust fund, which is of course positive.

The problem can be addressed in either of two ways. An econometric solution would be to find an instrumental variable for the change in the maximum payroll tax rate—that is, a variable that is relevant to the determination of the maximum payroll tax rate, but is exogenous in the sense of being unrelated to UI payroll tax revenues. Even if a possible instrument could be found, it would be subject to debate over its validity, and techniques that are subject to such academic debate are not likely to be credible from the standpoint of making policy.[78]

The second approach would be to simulate changes in the tax schedule and tax base using a panel of employer-level micro data. The advantage of this approach is that it allows an analyst to start at a baseline, change either the tax schedule or the tax base, then follow the effects of the change through time. Each simulation provides a separate time path and history of the UI system under a given policy regime. The results of different simulations can then be compared so as to understand how the outcomes under one regime differ from those under another. Such comparisons are "clean" in that one simulation differs from another only as a result of the

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[78] For example, dynamic models using first-differences with lags as instrumental variables (for example, the Arellano-Bond estimator) a one possibility, but this approach requires strong assumptions.

pre-specified policies that are set at the baseline. This approach is described further in Appendix D, and results from simulations using data from Missouri (2004–2012) and Washington (2005–2013) are summarized in Section 5.6 below.

Tradeoff between the wage base and tax rates

Figure 5.3 suggests another relationship that is of interest: the tradeoff between the taxable wage base and tax rates in generating tax contributions. Total revenues (*revenues*) are the product of the average tax rate (τ) and taxable wages (*taxable wages*):

revenues = (τ)(taxable wages)

To achieve a given level of revenues, then, a state can in principle choose any combination of τ and *taxable wages* and that satisfies the above identity.

A state can choose an average tax rate fairly directly by appropriate choice of a tax schedule, but a state does not choose the level of taxable wages directly. Rather, the available policy instrument is the taxable wage base, which then translates into a level of taxable wages.[79] Figure 5.4 shows the two policy instruments available to a state—the average tax rate and the taxable wage base—along with two hypothetical iso-revenue curves, each giving the locus of combinations of average tax rate and the taxable wage base that yield a specified level of tax revenue. For example, revenues equal to R_1 can be raised using any combination shown by iso-revenue curve R_1— point A does so with a tax base of $7,000 and an average tax rate of 3.0 percent, whereas point B raises does so with a tax base of $16,000 and an average tax rate of 1.5 percent. Cutting the tax rate in half requires more than doubling the tax base, as would be the case whenever the tax base is raised above the level of some workers' annual wages.

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[79] The correlation between the taxable wage base and taxable wages is nevertheless very high, as suggested by the simulations discussed below in section 6.

FIGURE 5.4.
Iso-revenue Curves Showing the Tradeoff between the Average Employer Tax Rate and the Taxable Wage Base Needed to Raise a Given Level of Tax Revenue
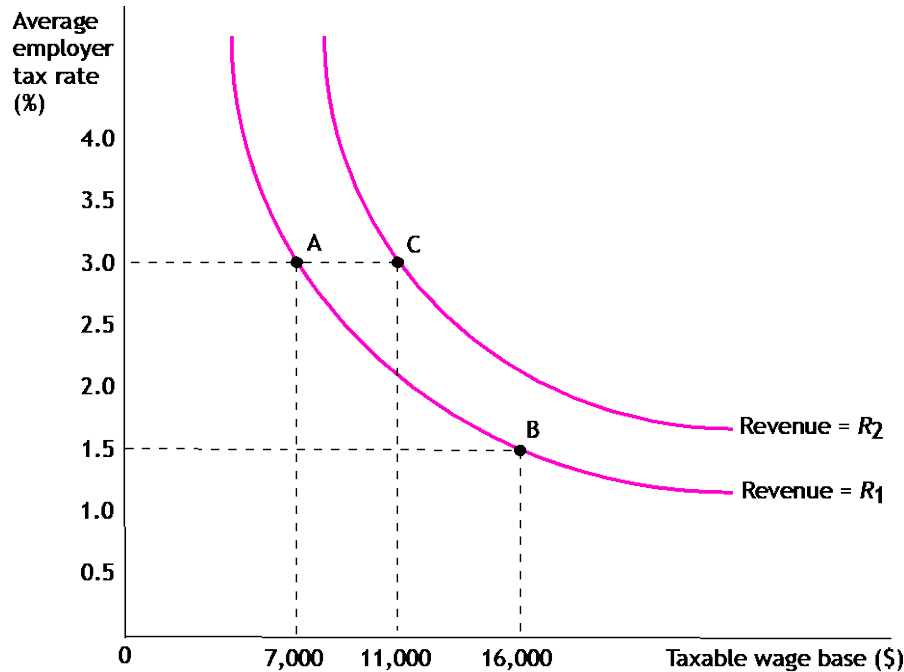
Estimating this tradeoff is important because it may give further insight into whether changing the average tax rate or changing the taxable wage base is more effective in generating revenue for the UI system. One approach is to estimate a model of the average tax rate as a function of the tax base, holding constant revenues in a state:

$$\tau_{st} = \alpha_s + \gamma_t + \beta_1(\text{taxbase})_{st} + \beta_2(\text{revenues})_{st} + u_{st}$$

(5.2)

The coefficient of interest here is β_1—which can be interpreted as the change in the tax rate associated with a unit change in the tax base, holding constant the level of tax revenues.

The results of estimating equation (5.2) with the 1976–2013 state panel are shown in column (4) of Table 5.4. (The ratio of taxable to total wages is used to control for the desired level of revenues because actual revenues are volatile and influenced by factors other than tax policy.) The estimated coefficient on the tax base (–0.0136) suggests that the typical state can reduce its average tax rate by about 0.014 point for every $1,000 increase in the taxable wage base, and hold its revenues constant. This is a modest but significant decrease, and it is consistent with the estimates in column (2) for the effect of a tax increase on tax contributions. For example, it suggests that if a state started with an average tax rate of 1.0 percent, and then increased its tax base by $10,000, it would be able to reduce its average tax rate to about 0.86 without seeing a revenue reduction.

5. The Tax Base and Tax Capacity

As discussed in Chapter 4, tax capacity is an important concept in UI financing. Tax capacity determines the ability of a UI tax statute to generate enough revenues to restore the trust fund balance following a recession. In the majority of states, potential UI tax revenue (as a ratio of covered payroll) is lower now than it was 20–30 years ago. Low tax capacity in several states has hindered the recovery of UI trust funds following the recession of 2007–2009.

Tax capacity can be defined in either of two ways. First, it can be defined as the maximum possible revenue that can be generated under the tax statute currently operative in a state. This is the product of three factors: 1) total payroll of taxable covered employers, 2) the taxable wage proportion [TWP, the ratio of taxable wages to total covered wages, column (2) in Table 5.2] and 3) the maximum potential effective tax rate on taxable wages. The product of the three factors determines total potential UI revenue implied by the current tax law.[80]

Alternatively, tax capacity can be expressed as a percent of total covered payroll. In this ratio formulation, tax capacity is the product of the taxable wage proportion and the maximum potential effective tax rate, recognizing all aspects of UI taxes including solvency taxes and social taxes as well as standard experience-rated taxes. Expressing tax capacity as a proportion of total covered payroll is convenient for gauging developments in potential UI taxes relative to the size of a state's economy, approximated by total covered payroll.

The taxable wage base in a state is closely related to the state's tax capacity. This can be shown with a regression analysis using 2013 data from 22 UI programs[81] including the 13 largest programs based on covered employment in 2013. Tax capacity across these states ranged from less than 0.70 percent of payroll (Georgia, Texas and Virginia) to more than 2.0 percent of payroll (Hawaii and Montana). A simple regression of 2013 tax capacity (potential revenue as a percent of covered payroll) on the ratio of the taxable wage base to average annual wages in 2013 explains nearly two-thirds of the variation in tax capacity across the 22 states.[82] On average, states with high tax bases have substantially higher tax capacity than states with low tax bases.

The link between the taxable wage base and tax capacity is important to recognize. If a state wishes to avoid experiencing a prolonged period of low trust fund balances following a recession, having high tax capacity will help to achieve this objective.

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[80] The discussion will focus on experience rated employers. While there are also revenues from new employers and employers subject to penalty tax rates, they are generally of small importance.

[81] California, Georgia, Hawaii, Kentucky, Maine, Massachusetts, Missouri, Montana, New Jersey, New York, North Carolina, Ohio, Alabama, Connecticut, Florida, Illinois, Michigan, Pennsylvania, Texas, Virginia, Washington, and Wyoming.

[82] TaxCapacity = 0.606 +1.787*(TaxBase/AverageWages)
         (5.4)   (6.5)
Beneath the coefficients are the absolute values of their t-ratios. The regression had an adjusted R^2 of 0.661 and a standard error of 0.300. Mean tax capacity = 1.203 percent of wages.

6. Simulated Effects of Increasing the Tax Base on Taxable Wages and Revenues: Analysis of Employer-Level Micro Data

This section summarizes simulations of how increases in the taxable wage base would have affected taxable wages and UI payroll tax contributions in Missouri (a reserve ratio state) and Washington (a benefit ratio state) during roughly a decade starting in the mid-2000s. The structure of these simulations and the data they use are described more fully in Appendix D. Briefly, these simulations use employer-level micro data from Missouri (2004–2012) and Washington (2005–2013) to trace the effects of given policy changes, such as increasing the taxable wage base and eliminating the cap on the payroll tax rate, on key outcomes, such as taxable wages and tax revenues. In all cases, the simulations impose a policy change at the beginning of the time period for which we have data (2004 in Missouri, 2005 in Washington) and trace the impact of that change over the subsequent eight years for which data are available.

Missouri simulations

Until 2005, Missouri was among the majority of states whose taxable wage base was within $2,000 of the minimum stipulated by Federal law. In 2005, Missouri raised its tax base to $11,000, then gradually to $13,000 in 2010, where it remained in 2015. Accordingly, during 2004–2012 (the years used in the simulations), the taxable wage proportion in Missouri increased from 25.1 percent in 2004, to a high of 32.7 percent in 2010, then fell somewhat to 31.3 percent in 2012. Missouri uses the reserve ratio method of experience rating.

Table 5.5 shows the simulated effects on taxable wages of increasing the taxable wage base in Missouri by 10 percent, 20 percent, or 50 percent in each year from 2004 through 2012. Two main points are clear. First, a given percentage increase in the tax base results in a smaller percentage increase in taxable wages. For example, a 50 percent increase in the taxable wage base increases taxable wages by 34.3 percent over the nine-year period considered in the simulations. This makes sense because, when the tax base increases, the new (higher) base will move above the annual wages of some workers, and for those workers, the increase does not cover any additional wages.

TABLE 5.5.
Simulated Effects Increasing the Taxable Wage Base on Taxable Wages in Missouri, 2004–2012

	Baseline		Percentage change in taxable wages with taxable wage base increase of:		
Year	Total wages ($ billion)	Taxable wages ($ billion)	10%	20%	50%
2004	76.70	19.27	7.64	15.06	36.02
2005	80.01	24.89	7.35	14.44	34.23
2006	83.45	25.38	7.35	14.43	34.24
2007	86.70	25.68	7.41	14.54	34.51

2008	89.29	27.17	7.40	14.51	34.33
2009	81.41	25.89	7.47	14.66	34.64
2010	78.72	25.72	7.33	14.37	33.80
2011	80.67	25.93	7.30	14.29	33.61
2012	84.28	26.38	7.32	14.34	33.78
2004-2012	741.23	226.30	7.39	14.50	34.30

Source: Authors' calculations from Missouri employer UI payroll tax records. See Appendix D for details.

Second, the larger the increase in the taxable wage base, the greater is the gap between the percentage change in the tax base and the percentage change in taxable wages. For example, a 10 percent increase in the wage base increases taxable wages by 7.4 percent (on average over the nine-year period), whereas a 50 percent increase in the tax base increases taxable wages by 34.3 percent (again over the nine-year period). The latter gap is larger in both absolute and proportional terms. This also makes sense because, with a larger increase in the tax base, the new (higher) tax base will exceed the annual earnings of more workers. The simulations suggest that, even in a state that starts from a relatively low tax base, the difference between the percentage increase in the tax base and the percentage increase in taxable wages can be significant, and this appears to be true even with a relatively small increase in the taxable wage base (e.g., 10 percent).

Table 5.6 shows that a given percentage increase in the taxable wage base also leads to a smaller percentage increase in UI payroll tax revenues. Two types of simulation are shown. The first are "static" simulations, in which the new (higher) tax base is applied to employers in each year, without regard to how changes in the tax base in one year might affect an employer's reserve ratio and hence affect subsequent years' tax rates and tax contributions. The second are "dynamic" simulations, which take account of the effect of an increase in tax contributions in year t on the employer's reserves, reserve ratio, and tax rates paid in subsequent years. For example, if an employer pays more taxes in year t, the employer's reserve ratio should increase (other things equal), and the employer's tax rate and tax contributions in subsequent years will be less than otherwise. (See Appendix D for further discussion.)

The effects of this dynamic "feedback" are not insubstantial, but neither are they dramatic. For example, with feedback taken into account, a 50 percent increase in the tax base results in a cumulative revenue increase of 30.7 percent over the full nine years of the simulation, in contrast to 34.1 percent without accounting for feedback. With feedback, annual revenue increases are largest in the three years following the tax base increase, reflecting the increased tax base before tax rates have started to adjust downward as reserves increase. As employers'

TABLE 5.6.
Simulated Effects of Increasing the Taxable Wage Base on Payroll Tax Revenues, Missouri, 2004–2012

Year	Baseline tax contributions ($ millions)	Percentage change in revenues with base increase of:					
		10 percent		20 percent		50 percent	
		Static	Dynamic	Static	Dynamic	Static	Dynamic
2004	372.3	7.55	7.55	14.87	14.87	35.45	35.45
2005	506.0	7.26	8.64	14.24	16.73	33.63	40.49
2006	547.6	7.33	8.62	14.38	17.11	34.05	40.60

Year							
2007	573.4	7.41	9.00	14.55	17.08	34.49	38.72
2008	592.6	7.39	7.13	14.49	13.48	34.18	32.16
2009	507.8	7.38	5.94	14.47	12.82	34.08	29.08
2010	542.5	7.32	5.81	14.35	10.32	33.80	24.38
2011	595.4	7.33	4.87	14.36	9.16	33.80	20.86
2012	612.3	7.31	4.12	14.32	8.14	33.75	18.73
2004-2012	4,850.0	7.36	6.78	14.43	13.13	34.09	30.73

Source: Authors' calculations from Missouri employer UI payroll tax records. See Appendix D for details.

reserves accumulate, tax rates and hence tax revenues start to fall, so that by the end of the nine-year simulation a 50-percent increase in the tax base yields only a 30.7 percent increase in tax revenues.

Table 5.7 shows simulated effects of uncapping the UI payroll tax schedule on the average tax rate and payroll tax revenues. These simulations are also dynamic—that is, they incorporate feedback from a policy-induced change in each employer's year-t reserves on that employer's subsequent reserves, reserve ratio, and taxes paid. This feedback tends to dampen the effects of uncapping the tax schedule over time: because employers at the maximum base tax rate now face higher rates, they pay more into their reserve accounts. As a result, their reserve ratios rise, and their tax rates fall. So with uncapping, fewer employers stay at the maximum base rate than would otherwise be the case.

The main outcome shown in Table 5.7 is that uncapping the payroll tax schedule results in a revenue increase of 3.2 percent over the nine-year period. The effect of uncapping falls during 2005–2009, then recovers, suggesting that payrolls recovered more for those at or above the maximum tax rate than for other employers. Also, increases from uncapping are smaller during recession years, in part because employers moved up to the maximum base rate during these years.

As described further in Chapter 7, uncapping the payroll tax schedule leads to relatively modest revenue increases because a relatively small share of employers and taxable payrolls are affected by the change. For example, the simulations suggest that, in 2012 (the last year of the simulation), 5.2 percent of employers with taxable wages (7,266 out of 139,364) would have experienced a tax increase as a result of uncapping the tax schedule. These employers accounted for 4.1 percent of all taxable wages in 2012 ($1.09 billion out of $26.36 billion). Although not insubstantial, this is not a large enough share of all employers or of taxable wages for uncapping to yield dramatic revenue gains.

TABLE 5.7.
Simulated Effects of Uncapping the UI Payroll Tax Schedule on Average Tax Rates and Tax Contributions, Missouri, 2004–2012

Year	Employers with taxable wages		Taxable wages		Average tax rate[2]		Total tax contributions		
	Number	% impacted by uncapping[1]	($ billion)	% impacted by uncapping	Existing	Uncapped[3]	Existing ($ million)	Increase with uncapping[3]	
								$ million	as % of existing
2004	135,394	3.8	19.27	3.7	1.93	2.05	372.3	22.2	6.0

2005	137,439	3.9	24.89	3.8	2.03	2.15	506.0	28.8	5.7
2006	138,293	3.6	25.38	3.4	2.16	2.24	547.6	21.2	3.9
2007	138,756	3.1	25.68	2.9	2.23	2.29	573.4	13.8	2.4
2008	138,003	2.8	27.17	2.6	2.18	2.21	592.6	9.4	1.6
2009	135,745	2.8	25.89	2.1	1.96	1.98	507.8	4.6	0.9
2010	136,036	3.7	25.72	2.9	2.11	2.15	542.5	11.6	2.1
2011	137,377	5.0	25.93	4.1	2.30	2.37	595.4	20.3	3.4
2012	139,364	5.2	26.38	4.1	2.32	2.40	612.3	21.7	3.5
2004-2012	n/a	n/a	n/a	n/a	2.14	2.21	4,850.0	153.6	3.2

[1] This is the number of employers at the maximum base rate (6.0 percent) before any simulated change in the maximum tax rate. During 2004-2012, 18,785 unique employers were at the maximum base rate, and these employers averaged 2.82 years at the maximum. With the tax rate uncapped (under the simulation), the reserve ratios of 1,900 of these employers improve enough for their base rate to fall below 6.0 percent. As a result, mean (simulated) years at the maximum base rate is to 2.70 over the 18,785 employers.

[2] Contributions divided by taxable wages for all employers with taxable wages, weighted by taxable wages.

[3] Simulations of the alternative tax schedule are dynamic (i.e., take account of feedbacks).

Source: Authors' calculations from Missouri employer UI payroll tax records. See Appendix D for details.

To summarize, the Missouri simulations suggest that increasing the tax base is an effective way to increase UI payroll tax revenues in a reserve-ratio state with a relatively low taxable wage base: increases of 10, 20, and 50 percent increase revenues over a nine-year period by about 6.8, 13.1, and 30.7 percent, respectively. Raising the maximum payroll tax rate also increases revenues, but it is less effective than increasing the tax base: even a relatively radical change—eliminating the cap altogether—increases revenues by less than 4 percent over a nine-year period.

Washington simulations

Washington has indexed its taxable wage base since 1988, and since that time it has had one of the five highest tax bases (and in some years the highest) among the states (see Table 5.1).[83] Washington's taxable wage base increased from $30,500 in 2005 (the first year used in the simulations) to $39,800 in 2013 (the last year used). Washington's taxable wage proportion has been correspondingly higher than the national average: over the years used in the simulations, it ranged between 0.58 and 0.62. Washington uses the benefit ratio method of experience rating.

Table 5.8 shows the simulated effects on taxable wages of increasing the taxable wage base in Washington by 10 percent, 20 percent, and 50 percent, in each year from 2005 through 2013. Two points are clear from the simulations. First, as in Missouri, a given percentage increase in the tax base leads to a smaller percentage increase in taxable wages; however, in Washington the gap between the percentage change in the tax base and the percentage change in taxable wages is significantly greater than was observed in Missouri. This makes sense because Washington starts from a relatively high tax base, so a new (higher) base will exceed the annual wages of relatively more workers.

[83] Even before it adopted indexation, between 1974 and 1985, Washington increased its taxable wage base in most years by $600. As a result, at the time it adopted indexation, Washington already had a relatively high taxable wage base.

Second, it is again true that the larger the increase in the taxable wage base, the greater is the gap between the percentage change in the tax base and the percentage change in taxable wages. For Washington, a 10 percent increase in the wage base increases taxable wages by 5.2 percent (accumulated over the nine-year period), whereas a 50 percent increase in the tax base increases taxable wages by 21.7 percent (again over the nine-year period). Because Washington starts from a relatively high tax base, further increases lead to relatively smaller increases in taxable wages.

TABLE 5.8.
Simulated Effects of Changing the Taxable Wage Base on Taxable Wages, Washington, 2005–2013

| Year | Baseline | | Percentage change in taxable wages with taxable wage base increase of: | | |
	Total wages ($ billion)	Taxable wages ($ billion)	10 percent	20 percent	50 percent
2005	80.70	50.09	5.19	9.90	21.45
2006	90.15	53.98	5.24	9.98	21.58
2007	97.73	56.93	5.28	10.08	21.95
2008	103.46	60.31	5.23	9.98	21.74
2009	102.33	60.28	5.32	10.14	22.02
2010	99.15	58.49	5.26	10.01	21.77
2011	104.13	61.18	5.27	10.05	21.89
2012	111.03	64.28	5.21	9.94	21.75
2013	116.80	67.65	5.14	9.80	21.42
2005-2013	905.48	533.20	5.24	9.98	21.73

Source: Authors' calculations from Washington employer UI payroll tax records. See Appendix D for details.

Table 5.9 shows the simulated effects on tax contributions of increasing Washington's taxable wage base by 10, 20, and 50 percent. The results are striking. They suggest that, over the nine years of the simulations, a 10 percent increase in the tax base would generate no additional tax revenues (other things equal, including tax rates). Tax base increases of 20 percent and 50 percent would generate added revenues, but the revenue increases would be far less than the tax base increases in proportional terms: over the nine-year period, tax base increases of 20 and 50 percent are estimated to generate cumulative revenue increases of 2.7 percent and 9.4 percent, respectively. The reasons for these surprisingly small impacts are discussed further in Appendix D, but briefly, they occur because under the benefit ratio system of experience rating used in Washington, an increase in the taxable wage rate automatically reduces employers' tax rates. This tax rate reduction offsets part or all of the effect on tax contributions of the increase in employers' taxable payrolls. As a result, the revenue effects of increasing the taxable wage base differ strikingly from those found for Missouri, a reserve ratio state.

TABLE 5.9.
Simulated Effects of Changing the Tax Base on Payroll Tax Revenues, Washington, 2005–2013

| Year | Baseline tax contributions ($ millions) | Percentage change in revenues with taxable wage base increase of: | | |
		10 percent	20 percent	50 percent
2005	1,378.4	5.43	10.38	22.67
2006	1,256.2	0.20	4.27	14.07
2007	1,094.7	0.52	3.94	11.29
2008	982.0	-0.78	1.51	7.71
2009	831.9	1.27	3.56	8.57
2010	1,301.9	-0.64	2.12	8.71
2011	1,339.0	-1.13	0.85	5.78

2012	1,113.3		-3.53	-1.96	1.32	
2013	1,220.1		-3.12	-1.71	1.99	
2005–2013	10,517.5		-0.14	2.67	9.41	

Source: Authors' calculations from Washington employer UI payroll tax records. See Appendix D for details.

Table 5.10 shows simulated effects of uncapping the UI payroll tax schedule on the average tax rate and payroll tax revenues. These simulations suggest that uncapping the tax rate would increase the overall average tax rate by at most 0.17 percentage point (from 1.83 percent to 2.00 percent in 2013)—a 9 percent increase. Annual increases in tax revenues range from less than 2 percent (in 2009) to 9.5 percent (in 2013), and the cumulative revenue increase for the full 2005–2013 period is 4.8 percent. These increases are less substantial than might be expected in light of such a significant change in the tax schedule.

TABLE 5.10.
Simulated Effects of Uncapping the UI Payroll Tax Schedule Tax Contributions, Washington, 2005–2013

	Employers with taxable wages		Taxable wages		Average tax rate[2]		Total tax contributions		
		% impacted		% impacted			Existing	Increase with uncapping[3]	
Year	Number	by uncapping[1]	($ billion)	by uncapping	Existing	Uncapped[3]	($ million)	$ million	as % of existing
2005	190,952	5.3	50.09	5.0	2.80	2.92	1,378	58.9	4.3
2006	193,403	5.0	53.98	5.1	2.38	2.50	1,256	67.8	5.4
2007	195,511	3.7	56.93	3.6	1.96	2.04	1,095	43.8	4.0
2008	199,131	2.5	60.31	0.2	1.66	1.70	982	25.7	2.6
2009	198,610	1.9	60.28	1.3	1.41	1.43	832	14.8	1.8
2010	201,379	3.4	58.49	2.2	2.25	2.30	1,302	28.6	2.2
2011	202,268	5.3	61.18	4.5	2.22	2.32	1,339	57.0	4.3
2012	200,880	6.5	64.28	6.0	1.75	1.89	1,113	87.3	7.8
2013	200,958	7.2	67.65	6.8	1.83	2.00	1,220	116.3	9.5
2005-2013	n/a	n/a	n/a	n/a	n/a	n/a	10,517	500.0	4.8

[1] This is the number of employers at the maximum tax rate (rate class 40) before any simulated change in the maximum tax rate. During 2005-2013, 36,030 unique employers were at the maximum tax rate. These employers averaged 2.35 years at the maximum rate.
[2] Contributions divided by taxable wages, weighted by taxable wages.
Source: Authors' calculations from Washington employer UI payroll tax records. See Appendix D for details.

As was true in Missouri, uncapping the payroll tax schedule leads to relatively modest revenue increases because a relatively small share of Washington employers are affected by the change. The simulations suggest that, in 2013 (the year in which the simulated effects of uncapping are greatest), 7.2 percent of employers with taxable wages (14,429 out of 200,958) would have experienced a tax increase as a result of uncapping the tax schedule. These employers accounted for 6.8 percent of all taxable wages in 2013 ($4.60 billion out of $67.65 billion). As was true in the case of Missouri, these percentages are insubstantial, but neither are they large enough to yield dramatic increases in revenues.

Discussion and conclusions

Overall, the Missouri and Washington simulations suggest that increasing the taxable wage base is a more effective method of increasing UI payroll tax revenues under a reserve ratio system like Missouri's than under a benefit ratio system like Washington's. This is true only partly because Missouri starts from a significantly lower taxable wage base than does Washington. The difference results mainly from the fact that, under Washington's

benefit ratio system of experience rating, an increase in the taxable wage base automatically reduces employers' tax rates. In Missouri, tax base increases of 10, 20, and 50 percent increase revenues over a nine-year period by about 7, 13.5, and 31 percent, respectively. In Washington, even a 50-percent increase in the taxable wage base leads to a revenue gain of only 9.4 percent (see Table 5.9).

The simulations also suggest that raising the maximum payroll tax rate increases revenues. Specifically, in both Missouri and Washington, uncapping the payroll tax schedule would increase revenues by about 3–5 percent over the nine-year periods considered. The similarity of the estimated effects for Missouri and Washington is striking in light of the different methods of experience rating used in the two states.

The conclusions to be drawn from the simulations seem clear: increases in the taxable wage base and raising the maximum UI payroll tax rate both generate increased tax revenue; however, under a reserve ratio system of experience rating, relatively modest increases in the tax base yield substantial revenue increases compared with increases in the maximum tax rate.

7. Setting the Tax Base

Restoring solvency

Increasing the taxable wage base and indexing the base to some measure of earnings has been the most widely discussed policy for improving the UI system's finances (Woodbury and Simms 2011, 21–33). This could be done by states individually, or by Congressional action to increase and index the Federal taxable wage base.

Increasing and indexing the taxable wage base is central to the long-term health of financing UI for two reasons. First, if earnings increase over time, then tax revenues must increase in proportion to earnings to fund benefits with a 50 percent replacement rate (unless the unemployment rate were to show a long-term downward trend, which it has not). Indexing the tax base to wage levels is the most direct way to accomplish this. Second, as Vroman (2012) has shown, the correlation between indexing the tax base and trust fund solvency is quite high: only 7 of the 17 state UI programs with long-term indexation had to borrow from the Federal government during the 2007–2009 recession, whereas 28 of the 34 that did not index needed to borrow.

Since the mid-1980s, 17 states have set the taxable wage base as a specified percentage of the state average annual wage. The percentages have ranged from 50 percent (in North Carolina and Oklahoma) to 100 percent (in Hawaii and Idaho). The importance of automating the process of increasing the tax base stems from states' reluctance to enact increases except during financial crises. Figure 5.2 illustrates the situation using data from 1970 to 2015. During these years, the Federal UI tax base increased from $3,000 in 1970 to $7,000 in 1983, where it has remained since. The figure also shows the simple average of the taxable wage base for the 17 states that index and

for the 34 that do not. In 2015, the average tax base for the indexed states was $30,288. In contrast, the average for the 34 non-indexing states was $11,111, only $4,000 above the $7,000 Federal tax base.

Because states that index their wage base have higher ratios of taxable wages to average wages, they also have higher reserve ratios than states that do not index. On the eve of the recession in December 2007, the simple mean of the average reserve ratio multiple for indexing states was 0.83, whereas it was 0.41 for non-indexing states. As already noted, indexing states were far less likely to require U.S. Treasury loans during the recession of 2007–2009 than were non-indexing states. This link between indexing and long-run state trust fund solvency is too obvious to overlook.

Recommendations

Of the findings reported in this chapter, one stands out: Indexation of a state's taxable wage base has a direct and positive effect on the finances of a state's UI program. States that index have a much higher ratio of taxable to total wages, tax contributions, and trust fund adequacy as measured by the reserve ratio. In December 2013, the simple average of the reserve ratio in states that indexed their taxable wage base was 1.266, whereas the average reserve ratio in states that did not was 0.110. During the recession of 2007–2009, only 7 of the 17 indexing states needed Treasury loans, compared with 28 of the 34 non-indexing states. It would be hard to dispute the efficacy of indexation for improving the solvency of a state's UI trust fund.

Chapter 6. Covering Socialized Costs: Methods and Implications

1. Background

If the UI payroll tax were "perfectly" experience-rated, each employer would pay for each dollar of benefits paid to each UI-eligible former employee. Such a perfectly experience-rated system would not in fact be insurance because, by definition, insurance spreads the costs associated with a risky event over a large pool of agents (in this case, employers), only some of whom experience the risky event (layoff of workers who receive UI benefits).[84]

As a result, it has long been recognized that perfect experience rating of UI, even if it were possible, would not be desirable. Rather, some portion of the system's benefit costs will be "socialized" — that is, not assigned to a UI recipient's former employer in such a way that future tax contributions will be affected. It follows that socialized costs are benefit costs that are subsidized by employers other than those who incur them.

Typology of socialized costs

Socialized costs are of three kinds — see the typology in Figure 6.1. First, some benefit costs are not charged to any employer based on the view that they are beyond the control of employers (Blaustein 1993). Examples of such "noncharged" benefits include benefits paid to workers who have quit for good cause, the Federal share (50 percent) of standby extended benefits, emergency extended benefits, and dependents' allowances. These non-charging practices vary from state to state and will be discussed further in the next section.

Second, benefit costs may be charged to an employer who has gone out of business. These charges cannot affect future tax contributions — they can only be charged to the account of an inactive employer. Such charges are referred to as "inactive" charges.

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[84] Reimbursable employers in the UI system are in effect perfectly experience rated because they fully repay the benefits received by their UI-eligible former employees.

FIGURE 6.1.
Typology of Benefit Costs by Charging Status
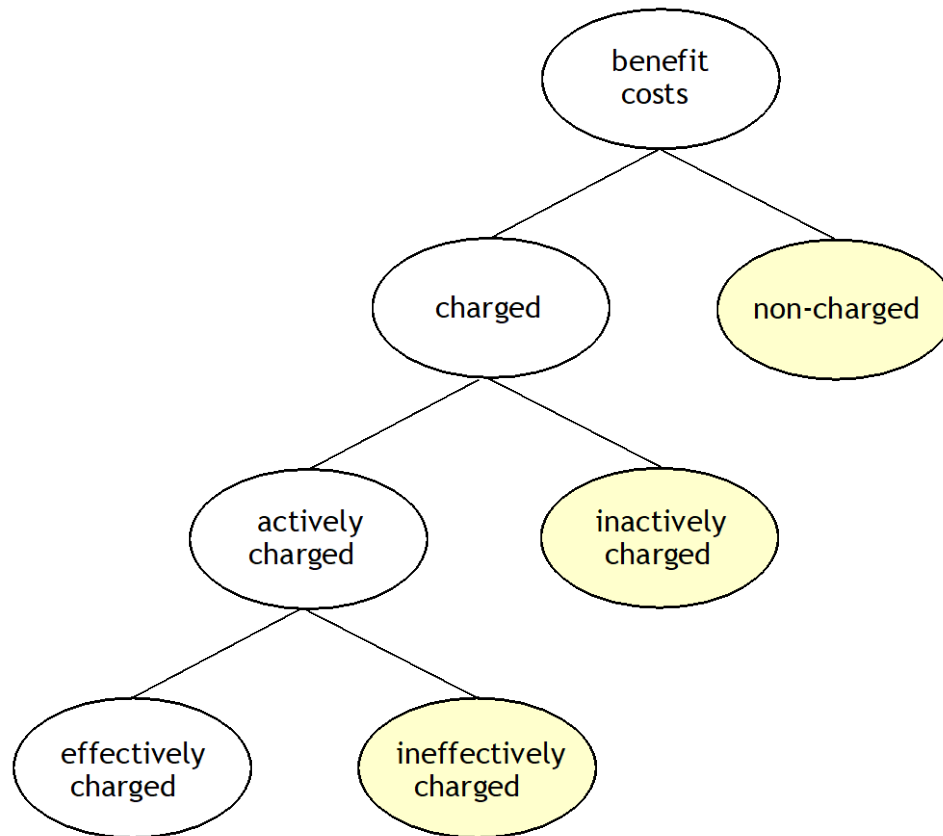
Note: Socialized benefit costs are represented by the three shaded ovals to the right: noncharged benefit costs, inactively charged benefit costs, and ineffectively charged costs.

Third, some fraction of benefit costs is charged to employers who are already paying the maximum payroll tax rate. Further charges against such an employer's account do not alter the tax rate or future contributions of these employers because they are already paying the maximum rate. Accordingly, such charges are referred to as "ineffective."

The states report non-charged and inactively charged benefit costs annually in the ETA 204 Experience Rating Report, so tracking the first two types of socialized costs by state and over time is relatively straightforward.[85] In the ETA 204 report, total benefits paid to former employees of taxable employers are the sum of:

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[85] We say "relatively" straightforward because several states have faced challenges in filing their ETA 204 report in some years, as inspection of the data reveals. The ETA 204 data used in this chapter have been cleaned the extent possible. Also, we have averaged the data over five-year intervals (1995–1999, 2000–2004, 2005–2009, and 2010–2014) for reasons described in the text.

- noncharged benefits attributable (but not charged) to taxable employer accounts (whether active or inactive) — noncharged benefits

- benefits charged to inactive employer accounts — inactively charged benefits

- benefits charged to active employer accounts — actively charged benefits

Ineffectively charged benefits are subsumed in actively charged benefits, as indicated in Figure 6.1. Ineffective charges are more difficult to track than are noncharged and inactively charged benefits, for reasons discussed in the next chapter, which focusses on ineffective charges. Accordingly, as a lower-bound estimate of socialized costs in a state, we start with the sum of noncharged and inactively charged benefits as a percentage of total benefits paid to former employees of taxable employers.

Magnitude of socialized costs

Table 6.1 shows five-year averages of this lower-bound measure of socialized costs — noncharged and inactively charged benefits as a percentage of benefits attributable to taxable employer accounts, which we refer to as the lower-bound percentage of socialized costs. The data are averaged over five-year intervals (1995–1999, 2000–2004, 2005–2009, and 2010–2014) to eliminate the effects of (i) unexplained volatility in the year-to-year reports of a few states and (ii) a few cases in which a state did not file an ETA 204 report in a single year. (In the latter case, the average is the four observed years) Table 6.1 also shows the lower-bound percentages of socialized costs averaged over all states in each five-year interval (top row), the 20-year average of the lower-bound percentage for each state (the far right column),[86] and the 20-year nationwide average of the lower-bound percentage (21.6 percent).

Over the full 20-year period, at least 21.6 percent of benefit costs were socialized over the 50 UI jurisdictions shown. However, the lower-bound on socialized costs appears to have trended downward nationally over the 1995–2014 period: during 1995–2004 (the first two five-year intervals), this lower-bound was about 24 percent of all benefit costs; but during 2005–2009 it fell to 20.3 percent, and during 2010–2014 to 18.3 percent. We will examine possible reasons for this trend below.

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[86] Alaska does not appear in Table 6.1 because it uses the payroll decline method of experience rating, so it does not file an ETA 204 report. Puerto Rico and the Virgin Islands are also omitted, as elsewhere in this report.

TABLE 6.1.

Noncharged Plus Inactively Charged Benefits as a Percentage of Benefits Attributable to Taxable Employer
Accounts, by State and Five-year Time Period, 1995–2014

State	Five-year period				20-year average
	1995-1999	2000-2004	2005-2009	2010-2014	
Average of all states	24.3	23.4	20.3	18.3	21.6
Alabama	21.2	19.6	19.9	17.1	19.4
Arizona	22.7	19.5	12.2	11.9	16.6
Arkansas	31.6	28.4	29.1	26.0	28.8
California	19.9	18.5	14.1	11.0	15.9
Colorado	13.9	13.3	10.5	11.6	12.3
Connecticut	16.9	17.7	14.8	11.3	15.2
Delaware	28.0	30.2	31.2	25.0	28.6
District of Columbia	15.1	n/a	7.8	6.4	9.8
Florida	24.8	27.6	29.5	22.4	26.1
Georgia	17.4	14.5	14.6	12.6	14.8
Hawaii	26.8	27.4	23.8	18.7	24.2
Idaho	21.4	20.6	17.1	16.4	18.8
Illinois	11.2	8.6	7.6	16.7	11.1
Indiana	24.6	25.3	24.7	17.3	23.0
Iowa	24.3	24.4	20.4	17.6	21.7
Kansas	25.4	23.6	22.4	18.4	22.4
Kentucky	12.1	11.8	10.1	17.0	12.8
Louisiana	28.5	20.4	35.9	19.1	26.0
Maine	25.5	35.4	25.9	20.4	26.8
Maryland	25.9	32.1	27.0	30.1	28.8
Massachusetts	20.8	11.4	10.7	13.2	14.1
Michigan	10.8	24.5	13.2	10.5	14.8
Minnesota	20.0	23.4	12.8	13.8	17.3
Mississippi	34.7	30.7	24.7	28.5	29.6
Missouri	21.7	20.4	14.0	9.2	16.3
Montana	24.3	34.1	21.9	22.2	25.7
Nebraska	36.7	35.9	32.5	28.9	33.5
Nevada	14.9	16.7	17.1	18.0	16.7
New Hampshire	19.9	27.7	15.3	21.9	21.2
New Jersey	17.9	23.6	21.0	18.2	20.4
New Mexico	28.0	28.0	22.1	18.1	24.0
New York	9.0	9.9	7.9	7.3	8.5
North Carolina	32.9	55.4	30.0	n/a	45.1
North Dakota	19.5	16.9	17.1	16.7	17.6
Ohio	18.1	24.8	17.5	14.8	18.8
Oklahoma	32.9	31.0	29.8	26.0	29.9
Oregon	29.4	28.8	20.6	22.3	25.3
Pennsylvania	22.1	19.5	18.4	16.7	19.2
Rhode Island	18.1	17.9	15.8	15.6	16.8
South Carolina	29.0	25.6	24.6	21.5	25.2
South Dakota	23.4	21.4	18.7	18.3	20.5
Tennessee	30.6	26.3	24.8	22.2	26.2
Texas	31.1	29.1	30.4	22.7	28.3
Utah	29.9	27.5	28.8	25.4	27.9
Vermont	76.7	32.2	26.0	24.4	40.7
Virginia	17.1	14.8	14.6	12.9	14.8
Washington	33.1	27.4	27.8	23.6	28.2
West Virginia	21.8	21.5	22.3	19.6	21.3
Wisconsin	21.5	21.2	18.5	18.2	19.8
Wyoming	35.0	19.6	20.0	23.0	24.4

Source: Authors' tabulations of data from the ETA 204 Experience Rating Report
<http://workforcesecurity.doleta.gov/unemploy/DataDownloads.asp>. See the text for discussion.

Interstate differences and trends in socialized costs, 1995–2014

Table 6.1 also shows that most states, but not all, tended to follow the overall downward trend in the lower-bound percentage of socialized costs. The table also suggests that within-state variation is less pronounced than interstate variation, which is considerable, but there is no strong or obvious pattern to the interstate variation. The District of Columbia (8.4 percent), New York (8.5 percent), Illinois (11.1 percent), and Kentucky (12.8 percent) reported the lowest percentages of socialized costs over the 1995–2014 period, whereas North Carolina (45.1 percent), Nebraska (33.5 percent) Oklahoma (29.9 percent), Mississippi (29.6 percent), reported the highest.[87] A simple regression of the 20-year average of the percentage of socialized costs on the size of the state (measured by covered employment) suggests a statistically significant but small relationship between the size of a state and the percentage of socialized costs — larger states tend to report slightly lower socialized charges. But the relationship is very small: an increase of 100,000 in covered employment is related to a reduction in the percentage of social costs of 0.1 percentage point.

Similar regression analyses uncovered essentially no relationship between the 20-year average of socialized costs in a state and the state's benefit cost rate (total benefit costs as a proportion of total wages paid), taxable wage base, ratio of taxable to total wages, or average contribution rate (tax contributions as a percentage of total wages paid). Once the size of a state is controlled for, the percentage of socialized costs reported by a state over the long term appears to have no clear pattern. This apparent randomness (or near-randomness) is the main challenge facing attempts to characterize the determinants of socialized costs and to formulate recommendations about how to influence them.

2. State Practices Affecting Non-Charges

This section discusses different state UI practices that may affect the percentage of benefit costs that are not charged to any employer account. State practices affecting ineffective charges are discussed in the next chapter. Inactive charges result mainly from business conditions and are largely beyond the reach of UI policy, so although we analyze variation inactive charges over time and among states in the next section, we make no attempt to link state practices to inactive charges.

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[87] In some cases, a high percentage of socialized costs reflects administrative activity, such as a high rate of adjudication.

Factors affecting non-charges

The extent of noncharged benefit costs in a state depends mainly on three factors:[88]

- official state policy as set out in law and administrative regulation

- the characteristics of claims — that is, the volume of claims that potentially meets one or more of the criteria for payment of noncharged benefits

- the interpretation of state policy and the decisions about certifying and denying claims made by employment security personnel

The first and third factors can be affected by the state legislature and the UI agency, whereas the second depends on variables largely beyond the control of the state, such as labor market conditions.

Noncharged benefit costs arise because all states specify circumstances under which benefits paid to a claimant are not charged to any employer. Non-charging provisions arise because a state's policy may provide for payment of benefits after a separation over which the employer had little or no control. Without the non-charging provision, employers would likely object to paying benefits under the specified circumstances. For example, employers could reasonably argue that they have no control over the separation of a worker who quits for compelling family reasons; or they may object to the charging of benefits paid to a claimant who is in approved training, on the grounds that such a claimant is not available for and seeking work (Advisory Council on Unemployment Compensation 1995).

Many states exclude from charging: (i) the benefits paid under a combined wage claim; (ii) benefits paid after a disqualification period for a voluntary quit, discharge for cause, or refusal of suitable work; (iii) the Federal share (50 percent) of Federal-state extended benefits; and (iv) dependents' allowances (see Table 2-9 and the accompanying discussion in U.S. Department of Labor (2013).

Quantifying states' policies and practices with respect to charging

Characterizing and summarizing a state's policies and practices toward non-charging is not straightforward. One way of understanding non-charging policy would be to investigate the formal non-charging provisions of each state, as written in state laws and administrative regulations. However informative, this approach poses at least two difficulties. First, although it addresses the first determinant of the volume of non-charges (law and regulation regarding benefits excluded from charging), it necessarily neglects the other two (claim characteristics and actual

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[88] A fourth factor that might be included is the decision-making of administrative law judges who hear appeals of benefit denials.

decisions of employment security personnel). Second, it would be difficult to quantify a state's non-charging practices based on a list of the types of benefits that are excluded from charging. For example, how would we compare the stringency or liberality of two states with different policies toward charging of benefits paid after voluntary leaving?

An alternative is to examine state-level data from the ETA 207 Nonmonetary Determination Activities reports. These reports provide information on the extent to which states adjudicate and deny claims for reasons of separation. As a result, they offer insight into how stringent each state's policies and practices are with respect to raising separation issues and denying claims. In addition, they may offer indirect evidence about how stringent or liberal each state's policies and practices are with respect to excluding benefits from charging. The rationale here is that if a state has few exclusions from charging and strictly enforces its non-charging provisions, that state is likely to raise relatively more separation issues and deny a relatively high percentage of claims, compared with a state that has many exclusions from charging or is relatively lax in enforcing its non-charging provisions.

Table 6.2 tabulates data on separation issues and denials for each state in 2014, along with the unweighted mean for all states. On average, the states raised separation issues on just under 29.5 percent of initial claims; however, variation among the states was considerable: 7 states (Colorado, the District of Columbia, Kansas, Nebraska, Oklahoma, Texas, and Utah), raised separation issues on more than 40 percent of initial claims, whereas 10 states (California, Hawaii, Indiana, Massachusetts, New York, Oregon, Pennsylvania, Rhode Island, Vermont, and Washington) raised separation issues on less than 20 percent of initial claims. There was also substantial variation in the percentage of separation issues due to voluntary leaving as opposed to discharge: across all states, roughly one-third (33.8 percent) of separation issues were due to voluntary leaving, whereas nearly two-thirds (65.5 percent) were due to a discharge; however, the percentage due to voluntary leaving ranged from a low of less than 17 percent (District of Columbia) to a high of more than 63 percent (Nebraska).

The five rightmost columns of Table 6.2 show whether and how separation issues translate into denials in each state. Across all states, just over half of all separation issues resulted in a denial, so close to 16 percent of all initial claims were denied due to a separation issue. Interstate differences are again substantial: in 10 states, fewer than 10 percent of initial claims were denied due to a separation issue, whereas in 11, more than 20 percent of initial claims were denied due to a separation issue.

Again, the tabulations in Table 6.2 provide only indirect evidence on the stringency of states' policies and practices with respect to charging, based on the assumption that states with restrictive charging rules (excluding relatively few benefits from charging) adjudicate a relatively high percentage of initial claims. Evidence on the link between the percentage of claims adjudicated (and/or denied) and the percentage of benefit costs non-charge and inactively charged is shown below.

TABLE 6.2.

Separation Issues and Denials by Type and State, 2014

State	Number of initial claims	Separation issues				Separation denials				
		Number	As % of initial claims	Percentage due to:		Number	As percentage of:		Percentage due to:	
				Voluntary leaving	Discharge		Separation issues	Initial claims	Voluntary leaving	Discharge
Unweighted mean			29.5	33.8	65.5		52.0	15.7	52.4	47.3
Alabama	207,978	60,483	29.1	29.6	69.9	39,953	66.1	19.2	41.2	58.2
Alaska	72,002	18,439	25.6	59.8	40.2	12,269	66.5	17.0	73.7	26.3
Arizona	159,334	42,573	26.7	29.7	70.3	27,207	63.9	17.1	41.1	58.9
Arkansas	248,822	71,660	28.8	29.9	70.1	25,801	36.0	10.4	51.1	48.9
California	2,880,575	462,722	16.1	39.0	60.7	198,336	42.9	6.9	56.7	43.1
Colorado	148,384	96,528	65.1	45.2	24.9	54,878	56.9	37.0	67.3	31.2
Connecticut	228,413	53,736	23.5	23.2	76.3	14,655	27.3	6.4	60.0	38.5
Delaware	45,455	11,392	25.1	20.1	76.9	5,626	49.4	12.4	36.5	57.3
Dist. of Columbia	20,345	10,596	52.1	16.8	83.2	3,097	29.2	15.2	47.1	52.9
Florida	651,071	244,719	37.6	33.2	66.8	85,270	34.8	13.1	64.0	36.0
Georgia	456,749	110,747	24.2	22.9	77.1	72,404	65.4	15.9	32.1	67.9
Hawaii	82,769	11,871	14.3	37.1	62.9	6,372	53.7	7.7	51.6	48.4
Idaho	81,881	19,017	23.2	39.4	60.6	9,606	50.5	11.7	59.8	40.2
Illinois	630,594	159,575	25.3	30.1	69.9	69,163	43.3	11.0	49.9	50.1
Indiana	251,149	33,169	13.2	24.1	75.9	14,445	43.5	5.8	37.4	62.6
Iowa	164,981	39,537	24.0	35.4	64.6	22,369	56.6	13.6	54.7	45.3
Kansas	134,687	54,844	40.7	30.4	69.6	29,147	53.1	21.6	48.3	51.7
Kentucky	211,186	52,636	24.9	25.8	74.2	28,983	55.1	13.7	40.7	59.3
Louisiana	121,663	48,341	39.7	24.5	75.5	26,582	55.0	21.8	41.3	58.7
Maine	70,147	14,274	20.3	40.7	59.3	6,963	48.8	9.9	57.0	43.0
Maryland	229,492	83,193	36.3	32.3	67.7	46,632	56.1	20.3	54.3	45.7
Massachusetts	352,642	66,466	18.8	43.1	56.9	32,014	48.2	9.1	65.7	34.3
Michigan	583,161	165,597	28.4	42.7	57.3	87,310	52.7	15.0	62.3	37.7
Minnesota	243,496	62,555	25.7	37.5	62.5	25,680	41.1	10.5	53.1	46.9
Mississippi	111,039	34,320	30.9	35.0	65.0	24,509	71.4	22.1	43.7	56.3
Missouri	333,393	86,409	25.9	30.0	70.0	41,594	48.1	12.5	51.7	48.3
Montana	59,586	13,964	23.4	47.2	52.8	7,893	56.5	13.2	74.3	25.7
Nebraska	71,806	53,498	74.5	63.4	35.6	41,792	78.1	58.2	77.4	21.3
Nevada	175,232	58,125	33.2	31.2	68.8	27,722	47.7	15.8	45.2	54.8
New Hampshire	52,058	12,467	23.9	33.3	66.7	4,432	35.5	8.5	57.1	42.9
New Jersey	548,646	113,699	20.7	33.8	66.0	64,821	57.0	11.8	53.0	47.0
New Mexico	63,287	18,063	28.5	36.5	63.5	10,293	57.0	16.3	59.6	40.3
New York	1,094,347	164,835	15.1	34.9	65.1	81,519	49.5	7.4	54.5	45.5
North Carolina	281,976	105,395	37.4	26.2	73.8	66,342	62.9	23.5	40.5	59.5
North Dakota	24,148	9,069	37.6	41.9	58.1	5,328	58.7	22.1	64.5	35.5
Ohio	450,523	97,063	21.5	20.4	79.6	46,327	47.7	10.3	39.7	60.3
Oklahoma	95,186	43,316	45.5	24.0	76.0	23,946	55.3	25.2	38.6	61.4
Oregon	303,456	59,725	19.7	32.5	67.5	24,392	40.8	8.0	57.9	42.1
Pennsylvania	1,077,330	187,885	17.4	34.3	65.7	75,236	40.0	7.0	51.2	48.8
Rhode Island1	76,357	12,840	16.8	42.1	57.9	5,534	43.1	7.2	62.1	37.9
South Carolina	196,654	58,593	29.8	27.1	72.7	47,944	81.8	24.4	31.9	67.9
South Dakota	15,083	5,927	39.3	28.0	72.0	3,456	58.3	22.9	45.1	54.9
Tennessee	244,056	75,786	31.1	29.3	70.7	44,899	59.2	18.4	45.8	54.2
Texas	805,533	348,230	43.2	32.0	68.0	179,638	51.6	22.3	49.7	50.3
Utah	78,045	33,004	42.3	37.8	62.2	13,400	40.6	17.2	48.8	51.2
Vermont	37,420	7,274	19.4	39.1	60.4	3,941	54.2	10.5	64.6	34.5
Virginia	234,898	86,373	36.8	26.6	73.4	45,010	52.1	19.2	43.4	56.6
Washington	420,751	82,291	19.6	39.3	60.7	38,313	46.6	9.1	67.0	33.0
West Virginia	70,534	20,221	28.7	31.8	68.2	11,100	54.9	15.7	52.6	47.4
Wisconsin	496,994	87,463	17.6	40.5	59.5	47,458	54.3	9.5	57.1	42.9
Wyoming	21,501	7812	36.3	30.7	69.3	3,991	51.1	18.6	50.5	49.5

Source: Authors' tabulations of data from the ETA 207 Nonmonetary Determinations Activities Report (separation issues and denials) and ETA 5159 Claims and Payment Activities report (initial claims) <http://workforcesecurity.doleta.gov/unemploy/DataDownloads.asp>. See the text for discussion.

3. Interstate Differences and Determinants of Socialized Costs

Interstate differences in noncharged and inactively charged benefits

Table 6.1 provided an overview of interstate differences in the sum of noncharged and inactively charged benefit costs. Tables 6.3 and 6.4 display data on noncharged and inactively charged benefit costs separately. The tables are patterned on Table 6.1, so they show averages of noncharged benefits as a percentage of all benefit costs (Table 6.3), and inactively charged benefits as a percentage of benefit costs (Table 6.4). In both tables, the data are averaged over five-year intervals (1995–1999, 2000–2004, 2005–2009, and 2010–2014) for reasons described above. The tables also show the percentages of noncharged and inactively charged benefits averaged over all states for each five-year interval (top row), the 20-year average for each state (the far right column), and the 20-year nationwide average (the entry in the upper-right).

A comparison of Tables 6.3 and 6.4 shows that, nationwide during 1995–2014, non-charges were about twice as important as inactive charges as a percentage of all benefit costs: non-charges were 14.5 percent of all benefit costs, whereas inactive charges were 7.2 percent. This pattern — non-charges being a larger share of total benefit costs than inactive charges — tends to hold across most states, but it is by no means universal: in 8 states, including three of the 10 largest (California, New York, and Michigan), inactive charges outweighed non-charges.

Interstate differences in both non-charges and inactive charges were substantial. Eight states had non-charges less than 10 percent of total benefit costs, whereas five had non-charges in excess of 25 percent. Inactive charges varied somewhat less: six states had inactive charges of 10–12 percent (inactive charges were highest in Tennessee, at 14 percent), whereas 6 had inactive charges of 3.5 percent or less of total benefit charges.

Non-charges and inactive charges both trended downward nationally over the 1995–2014 period, from 16.3 percent of total benefit costs during 1995–1999 to 12.4 percent in 2010–2014, and inactive charges trended from 8.0 percent to 5.9 percent over the same period. Both trends are puzzling. If anything, states have moved in the direction of broadening eligibility requirements and adding non-charging provisions, as occurred following the UI Modernization incentives. Even more puzzling is the downward trend of inactive charges: the 1995–2014 period started with one of the most robust labor markets of the last 70 years, and ended with the most severe recession of the post-war period. That inactive charges would shrink relative to all benefit costs during this period seems implausible. Moreover, it does not accord with our analyses of employer tax records from Missouri and Washington that we have used for microsimulations reported in Chapters 5 and 7. The downward trends of both non-charges and inactive charges raise further questions about the reliability of the ETA 204 Experience Rating reports submitted annually by the states.

TABLE 6.3.
Annual Average Percentage of Benefit Costs Noncharged, by State and Five-year Time Period, 1995–2014

State	Five-year period				20-year Average
	1995-1999	2000-2004	2005-2009	2010-2014	
Average of all states	16.3	14.9	14.1	12.4	14.5
Alabama	16.7	15.1	16.2	13.1	15.3
Arizona	17.4	14.4	8.4	7.3	11.9
Arkansas	27.5	26.7	27.6	21.7	25.9
California	7.2	6.8	6.7	4.7	6.4
Colorado	4.8	3.8	3.6	5.1	4.3
Connecticut	12.6	7.0	6.0	7.2	8.2
Delaware	19.9	24.6	25.8	20.3	22.7
District of Columbia	1.3	n/a	1.8	2.8	2.0
Florida	17.8	15.6	17.6	11.2	15.5
Georgia	9.7	6.4	7.0	10.4	8.4
Hawaii	15.3	17.0	16.4	10.3	14.8
Idaho	19.2	18.5	15.5	13.6	16.6
Illinois	9.4	6.4	5.3	10.0	7.9
Indiana	12.4	13.3	13.9	8.6	12.1
Iowa	18.3	17.4	15.4	13.2	16.1
Kansas	18.3	15.8	15.2	13.1	15.6
Kentucky	4.8	5.5	5.2	9.9	6.4
Louisiana	20.9	17.8	33.6	17.4	22.4
Maine	23.9	34.5	24.9	19.6	25.7
Maryland	19.2	25.6	21.2	25.8	23.0
Massachusetts	18.0	11.2	10.5	9.6	12.5
Michigan	2.6	6.2	3.3	2.2	3.6
Minnesota	9.7	9.9	10.6	9.8	10.0
Mississippi	21.1	18.2	20.8	20.1	20.0
Missouri	21.1	19.9	13.6	8.5	15.8
Montana	12.4	13.2	15.2	15.0	14.0
Nebraska	28.5	29.6	24.8	20.8	25.9
Nevada	13.0	12.5	12.6	9.1	11.8
New Hampshire	9.8	15.4	4.7	10.8	10.1
New Jersey	10.2	13.8	14.1	10.6	12.4
New Mexico	20.8	21.6	16.1	7.8	16.6
New York	2.8	3.4	2.8	2.9	3.0
North Carolina	24.3	27.7	20.9	n/a	25.8
North Dakota	14.7	11.8	11.6	14.0	13.0
Ohio	13.9	12.1	9.3	7.2	10.6
Oklahoma	18.2	17.5	18.7	16.4	17.7
Oregon	18.7	20.5	14.7	17.4	17.8
Pennsylvania	12.7	11.5	12.0	10.6	11.7
Rhode Island	10.3	11.1	9.3	9.2	10.0
South Carolina	22.0	13.4	13.8	17.7	16.7
South Dakota	16.2	15.7	14.0	13.2	14.8
Tennessee	12.6	12.6	12.7	10.5	12.2
Texas	21.4	20.1	23.7	17.6	20.7
Utah	25.3	20.8	22.5	16.7	21.3
Vermont	68.0	21.3	19.7	18.0	32.5
Virginia	10.9	8.8	9.7	7.9	9.3
Washington	21.1	15.9	17.8	15.4	17.7
West Virginia	5.7	7.3	8.3	9.4	7.7
Wisconsin	17.5	17.2	15.7	16.0	16.6
Wyoming	16.2	17.0	18.6	17.3	17.3

Source: Authors' tabulations of data from the ETA 204 Experience Rating Report
<http://workforcesecurity.doleta.gov/unemploy/DataDownloads.asp>. See the text for discussion.

TABLE 6.4.

Annual Average Percentage of Benefit Costs Inactively Charged, by State and Five-year Time Period, 1995–2014

State	Five-year period				20-year average
	1995-1999	2000-2004	2005-2009	2010-2014	
Average of all states	8.0	8.5	6.1	5.9	7.2
Alabama	4.4	4.5	3.6	4.0	4.1
Arizona	5.2	5.0	3.8	4.6	4.7
Arkansas	4.0	1.7	1.5	4.4	2.9
California	12.7	11.6	7.4	6.2	9.5
Colorado	9.0	9.5	6.8	6.5	8.0
Connecticut	4.3	10.7	8.8	4.0	7.0
Delaware	8.2	5.6	5.4	4.7	6.0
District of Columbia	13.8	n/a	6.0	3.6	7.8
Florida	7.0	12.0	11.9	11.2	10.5
Georgia	7.8	8.2	7.7	2.1	6.4
Hawaii	11.4	10.4	7.3	8.5	9.4
Idaho	2.3	2.1	1.6	2.8	2.2
Illinois	1.7	2.2	2.3	6.7	3.2
Indiana	12.3	12.1	10.7	8.7	10.9
Iowa	6.1	7.0	5.1	4.4	5.6
Kansas	7.1	7.7	7.2	5.3	6.8
Kentucky	7.3	6.3	4.9	7.1	6.4
Louisiana	7.6	2.5	2.3	1.7	3.5
Maine	1.7	0.9	1.1	0.8	1.1
Maryland	6.7	6.5	5.7	4.3	5.8
Massachusetts	2.8	0.2	0.1	3.6	1.6
Michigan	8.2	18.3	10.0	8.3	11.2
Minnesota	10.4	13.5	2.2	4.0	7.3
Mississippi	13.6	12.5	3.8	8.4	9.6
Missouri	0.6	0.5	0.4	0.6	0.5
Montana	11.9	20.9	6.7	7.2	11.7
Nebraska	8.3	6.2	7.7	8.0	7.6
Nevada	1.8	4.2	4.5	8.9	4.8
New Hampshire	10.1	12.3	10.6	11.1	11.0
New Jersey	7.8	9.8	6.8	7.6	8.0
New Mexico	7.2	6.4	5.9	10.2	7.4
New York	6.2	6.5	5.1	4.4	5.6
North Carolina	8.6	27.7	9.1	n/a	19.3
North Dakota	4.7	5.1	5.6	2.7	4.5
Ohio	4.2	12.7	8.2	7.6	8.2
Oklahoma	14.7	13.6	11.1	9.5	12.2
Oregon	10.8	8.2	5.9	4.9	7.5
Pennsylvania	9.4	8.0	6.3	6.1	7.4
Rhode Island	7.7	6.8	6.5	6.4	6.9
South Carolina	7.0	12.1	10.8	3.8	8.4
South Dakota	7.2	5.7	4.7	5.2	5.7
Tennessee	18.0	13.7	12.1	11.7	14.0
Texas	9.7	9.0	6.8	5.1	7.6
Utah	4.6	6.7	6.3	8.7	6.6
Vermont	8.8	10.9	6.3	6.4	8.2
Virginia	6.2	6.0	4.9	5.1	5.5
Washington	12.0	11.4	9.9	8.2	10.5
West Virginia	16.1	14.2	14.1	10.2	13.6
Wisconsin	4.0	4.0	2.8	2.1	3.2
Wyoming	18.8	2.6	1.4	5.6	7.1

Source: Authors' tabulations of data from the ETA 204 Experience Rating Report
<http://workforcesecurity.doleta.gov/unemploy/DataDownloads.asp>. See the text for discussion.

There is no clear pattern to the interstate variation in either non-charges or inactive charges. A simple regression similar to the one described at the end of section 6.1 shows a statistically significant but weak relationship between the size of a state and the percentage of non-charges in that state. (This is the source of the weak relationship between the size of a state and the sum of non-charges and inactive charges, noted at the end of section 6.1.) But non-charges appear to be essentially unrelated to a state's benefit cost rate, taxable wage base, ratio of taxable to total wages, or its contribution rate.

Inactive charges are not related even to the size of a state, and as was true with non-charges, inactive charges are unrelated to a state's benefit cost rate, taxable wage base, ratio of taxable to total wages, or average contribution rate. Very little of the variation in non-charges or inactive charges appears to be systematic from an across-state perspective.

Correlates of Socialized Costs

Although very little of the across-state variation in socialized costs appears to be systematically related to the characteristics of a state or its UI system, it is possible that *within*-state changes over time may influence socialized costs. To examine this possibility, we use an annual panel of 37 states for 1991–2013.[89] The data come from various UI program reports submitted to ETA by the states: the UI Financial Data Handbook 394, ETA 204 Experience Rating reports, ETA 207 Nonmonetary Determination Activities reports, and ETA 5159 Claims and Payment Activities reports. The modeling approach is similar to that described in Chapter 5 (see section 4 and Table 5.4).

Columns 2 and 3 of Table 6.5 show the results of estimating two models that attempt to explain noncharged and inactive charges as a percentage of all benefit costs. The key independent variables in these regressions are the percentage of claims adjudicated in a given state and year, and the percentage of claims denied in a given state and year. The models also include changes in covered employment (current year and lagged one year) to control for the effect of changes in a state's labor market conditions on the composition of benefit costs. Finally, the second model includes year fixed effects (a dummy variable for each year) to control for economy-wide trends and factors affecting all states in a given year.

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[89] Arizona, the District of Columbia, Georgia, Illinois, Maine, Massachusetts, Minnesota, Mississippi, Missouri, Nevada, North Carolina, Texas, and Wyoming were dropped from the analysis because inspection of the ETA 204 data suggested these states had experienced difficulties in reporting non-charges or inactive charges in various years. The analysis relies on year-to-year within-state changes in the variables, and this was an attempt to reduce measurement error.

TABLE 6.5.
Models of the Percentage of Benefit Costs Noncharged and Inactively Charged, and the Relationship of Noncharged and Inactively Charged Benefits to Trust Fund Solvency

	(1)	(2)	(3)	(4)
		Dependent variables		
	Sample mean	Percentage of benefit costs noncharged		
Independent variables	(std. dev.)	and inactively charged[1]		Reserve ratio[2]
% of claims adjudicated	24.0	−0.0966	−0.0215	—
	(15.6)	(0.0553)	(0.0664)	
% of claims denied	13.2	0.2020	−0.0230	—
	(11.4)	(0.1202)	(0.1303)	
Δ log of covered employment	0.0095	5.94	3.76	7.722**
	(0.0245)	(13.03)	(28.41)	(2.840)
Δ log of covered employment (lagged)	0.0092	31.57**	19.39	—
	(0.0253)	(9.25)	(25.64)	
lagged % of claims non-charged	14.5	—	—	0.0041
	(10.9)			(0.0024)
lagged % of claims inactively charged	7.9	—	—	0.0089
	(4.2)			(0.0105)
Taxable wage base ($1,000s)	12.6	—	—	0.041
	(7.2)			(0.023)
Average employer contributions rate (%)	0.747	—	—	−0.546*
	(0.321)			(0.225)
State fixed effects	—	included	included	included
Year fixed effects	—	not included	included	included
Sample size	840	840	840	840

[1] The sample mean of the percentage of benefit costs non-charged and inactively charged is 22.0 (standard deviation = 11.0).
[2] The sample mean of the reserve ratio is 1.320 (standard deviation = 1.285).
* Coefficient is statistically different from 0 at the 5-percent level.
** Coefficient is statistically different from 0 at the 1-percent level.
***Source**: Authors' estimates using data from the Unemployment Insurance Financial Data Handbook 394 <http://workforcesecurity.doleta.gov/unemploy/hb394.asp>, ETA 204 Experience Rating reports, ETA 207 Nonmonetary Determination Activities reports, and ETA 5159 Claims and Payment Activities reports. See the text for discussion.

The results of this exercise are inconclusive: the estimated coefficients on the percentages of claims adjudicated and denied are very imprecise and are statistically insignificant. When year fixed effects are included (in column 3), the estimated coefficients are very small as well as statistically insignificant — precisely estimated zeros. The estimates suggest that little variation in socialized costs is systematic.

4. Methods of Covering Socialized Costs

Ten states explicitly address socialized costs by levying a tax to cover those costs.[90] The taxes go by various names, such as "shared cost assessment" (Alabama), "nonchargeable benefit component" (Michigan), and "social cost factor" (Washington), but all are intended to cover socialized costs.

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[90] Table 3.1 in Chapter 4 identifies two additional states — Florida and Mississippi — that levy a social tax as an adjustment to the basic benefit ratio.

Key features of social taxes

Table 6.6 lists the 10 states and displays some key features of their social taxes for 2014. Eight of these states use benefit ratio experience rating (including Pennsylvania and Michigan, the two states that use both benefit ratio and reserve ratio experience rating). It follows that

Seven of the 10 states levy social taxes as a flat-rate tax — see column (2) of Table 6.6. The exceptions are Louisiana, Texas and Washington. Louisiana's "social cost tax" is a proportional add-on linked to the employer's experience-rated tax, but the combined rate is limited by the overall state maximum rate of 6.2 percent. Half of Texas's "replenishment rate" is levied as a flat-rate tax, and half as a proportional add-on to the basic experience-rated tax. Washington's "social cost factor" is determined by first gauging the average statewide social charge that needs to be collected, then assigning graduated proportions of this overall average that range from 40 percent of the average for employers in the lowest of its 40 rate categories to 120 percent for employers in the maximum-rated category.

TABLE 6.6.
Social Taxes in Ten States, 2014

State	(1) Experience rating system	(2) Flat rate social tax?	(3) Maximum social cost tax rate	(4) Highest tax rate during 2004–2013	(5) Year(s) of highest tax rate (2004–2013)
Alabama	BR	Yes	None	1.60	2011
Louisiana	RR	No[1]	None	n/a	2004
Michigan	BR–RR	Yes	1.00	1.00	2004–14
Ohio	RR	Yes	0.50	0.40	2009, 2011, 2012
Pennsylvania	BR-RR	Yes	1.00[3]	1.50	2004–12
Texas	BR	No	None	n/a	n/a
Utah	BR	Yes	None	0.50	2013
Virginia	BR	Yes	None	0.53	2012
Washington	BR	No	1.22	1.22	2010, 2011
Wyoming	BR	Yes	1.50[2]	n/a	2011

Source: Data developed from a review of the "Comparison of State Unemployment Insurance Laws, 2011" (Table 2.11), and CCH publications for individual states.
[1] Louisiana's social tax is limited in that it cannot push an employer's tax rate above the state maximum of 6.2 percent.
[2] Maximum combined rate for social tax plus solvency tax.
[3] Maximum social tax rate of 1.0 percent from 2013 to 2016, but 1.5 percent from 1984 to 2012.
n/a: Information not available.

Five states (Ohio, Washington, Wyoming, Michigan, and Pennsylvania) set a statutory maximum on their social tax rate.[91] These maxima are between 1.0 and 1.5 percent in four of the five states (the exception is Ohio, where it is 0.5 percent — see column (3) of Table 6.6). The other five states do not set a maximum, so the applicable rate in a given year can in principle reflect recent social costs. For example, Alabama had a social cost rate of 1.6 percent in 2011.

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[91] The maximum in Wyoming is 1.5 percent for the social tax and the solvency combined. The maximum in Pennsylvania is 1.0 percent from 2013 to 2016, down from 1.5 percent between 2004 and 2012.

Column (4) of Table 6.6 shows the highest social tax rate levied in each state during 2004–2013, and column (5) gives the tax year in which that rate applied. Ohio never reached its maximum of 0.5 percent during these years, but it did reach 0.4 percent in three separate years. Washington, Michigan and Pennsylvania all reached their statutory maxima during 2004–2013.

Social taxes in relation to socialized costs

Table 6.7 displays data on the relationship between socialized costs and social taxes in the 10 states with social taxes for the period 2004–2013.[92] Column (1) shows peak annual socialized costs (defined as the sum of noncharged, inactively charged, and ineffectively charged benefits) as a percentage of all benefit costs during 2004–2013, and column (2) gives the year in which that peak was reached. In 8 of the 10 states, socialized costs as a percentage of all benefit costs peaked at 50 percent or more during these years.

Columns (3), (4), and (5) of Table 6.7 display total socialized costs, regular benefit costs, and the socialized cost percentage for the full 2004–2013 period. Ten-state totals appear at the bottom of the table, along with totals for the eight states in which data on revenues from social taxes were available.[93] The columns show that socialized

TABLE 6.7.
Summary of Socialized Costs and Social Taxes, 2004–2013

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Peak socialized costs as % of all benefit costs		Socialized costs ($ millions)	Regular UI benefit costs ($ millions)	Socialized costs as % of benefit costs [(3)/(4)•100]	Revenues from social taxes ($ millions)	Social taxes as % of socialized costs [(6)/(3)•100]
State	Peak %	Year					
Alabama	42.8	2011	1,224	3,320	36.9	754	61.6
Louisiana	58.2-a	2011	1,318	2,456	53.6[a]	n/a	n/a
Michigan	55.9	2011	7,748	20,256	38.2	3,203	41.3
Ohio	50.0	2004	5,725	14,013	40.9	702	12.3
Pennsylvania	53.5	2010	11,563	26,379	43.8	5,596	48.4
Texas	43.0	2007	6,923	18,733	37.0	n/a	n/a
Utah	64.2	2010	789	2,040	38.7	620	78.6
Virginia	51.9	2010	1,873	5,232	35.8	617	32.9
Washington	53.9	2011	5,389	12,836	42.0	3,691	68.5
Wyoming	53.5	2010	270	651	41.4	236	87.4
Ten States			42,822	105,915	40.4	INA	INA
Eight States			34,581	84,726	40.8	15,418	44.6

Source: Data in columns (1) to (4) from ETA 204 reports. Column (6) from the UI Financial Handbook 394, column (10). Columns (5) and (7) derived from other data in Table 3.6. Data in $ millions and refer to the years 2004–2013.
[a] Excludes 2006, when social charges were affected by Hurricane Katrina.
n/a: Information not available.

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[92] In Table 6.7, socialized costs include ineffective charges, as well as inactive charges and non-charges.

[93] Complete data were not available for Louisiana and Texas.

costs were a major share of total benefit costs in all ten states, representing at least 35 percent of total benefit costs in each state over the period. Averaged over the 10 states and 10 years, socialized costs were slightly more than 40 percent of all benefit costs.

Data on revenues from social taxes were available for 8 of the 10 states (all except Louisiana and Texas). Column (6) of Table 6.7 shows ten-year revenues from social taxes in dollar terms ($ millions), and column (7) shows these revenues as a percentage of socialized costs for the 2004–2013 period. In none of the 8 states did revenues from social taxes cover socialized costs, and only in 4 did revenues from social taxes cover as much as half of socialized costs. For the 8 states as a whole, social tax revenues covered less than 45 percent of socialized costs (see the bottom row of Table 6.7).

Ohio's "mutualized contributions" tax covered the smallest percentage of socialized costs (about 12 percent) among the 8 states for which social tax revenue data were available. This reflects an arrangement whereby half of the state's solvency tax (the "minimum safe level" tax) is routinely diverted to finance social charges rather than restoring the overall trust fund balance. The diversions during 2004–2013 totaled $1,453 million. If these diversions were counted as social tax revenues, then social tax revenues for 2004–2013 would total $2,154 million, and social taxes would cover 38 percent of socialized costs. So even taking account of the diversion of "minimum safe level" funds, social tax revenues covered less than half of socialized costs in Ohio during 2004–2013.

More broadly, the percentages in column (7) of Table 6.7 make clear that, even in the relatively few states that explicitly levy a tax to cover socialized costs, revenues from sources other than that tax finance a significant portion of socialized costs. Available data suggest that only four states — Alabama, Utah, Washington and Wyoming — levy social taxes that succeed in covering more than one-half of socialized costs.

5. Socialized Costs and Trust Fund Solvency

How important are socialized costs to the solvency of state UI trust funds? Socialized costs could be related to total benefit costs in either of two ways. First, broader eligibility provisions — for example, not disqualifying claimants who quit for compelling family reasons, or who enroll in approved training — are likely to lead directly to a higher percentage of noncharged benefit costs in a state. Given that broader eligibility provisions, by definition, result in benefit payments to claimants who otherwise would be denied, it follows that states with broader eligibility provisions are likely both to pay more benefits and to have a higher percentage of socialized costs. In this case, socialized costs are not in fact a cause of higher benefit costs and whatever strain they my place on the state's UI trust fund; rather they are correlates of the broadened eligibility provisions adopted by the state. Any estimated relationship between socialized costs and trust fund solvency will more likely reflect the broadened overall eligibility criteria rather than the larger socialized costs per se.

Second, if a high percentage of a state's benefit costs are socialized, then we would expect employer involvement in the UI system to be less active, and this could in turn lead to less stringent enforcement of eligibility criteria and larger UI benefit costs. Although this chain of causation is not implausible, it is somewhat indirect, and we would not expect the effect of a higher percentage of socialized costs on trust fund solvency to be especially strong.

In any event, it seems clear that the relationship between a higher volume of socialized costs and trust fund solvency is an empirical question. To estimate that relationship, we use the model estimated in Chapter 5 (Table 5.4, column 3), in which the reserve ratio is regressed on the change in the log of covered employment, the taxable wage base (in $1,000s), and the average employer contributions tax (in percentage terms), augmented by two variables that are intended to capture the influence of socialized costs on the health of the UI trust fund:

1. the percentage of claims noncharged in a given state and year (lagged one year)

2. the percentage of claims inactively charged in a given state and year (lagged one year)

Lagging the percentages of claims noncharged and inactively charged is an attempt to avoid simultaneity between these variables and the reserve ratio. (Recall from the discussion of Figure 5.3 in Chapter 5 that the reserve ratio and the average employer contributions rate are determined simultaneously, implying that the estimated coefficient on the contributions rate cannot be interpreted as the effect of changes in the tax rate on the reserve ratio.) We use the same annual panel of 37 states for 1991–2013 used in section 3 above to examine the relationship between claims adjudication and claims denials on socialized costs as a percentage of all benefit costs.

Column 4 of Table 6.5 displays the findings. Coefficient estimates for the variables included in the reserve ratio model estimated in Chapter 5 (change in the log of covered employment, the taxable wage base, and the average contributions rate) are similar to those seen in Table 5.4 (column 3). Estimates of the coefficients on the key variables — the percentage of claims noncharged and the percentage of claims inactively charged — are very small, have the "wrong" sign, and are statistically insignificant. The larger of the two point estimates (0.0089 on the percentage of claims inactively charged) suggests that the reserve ratio is higher by less than 0.01 when the percentage of inactively charged is higher by 1 percentage point. For example, at the sample mean, an increase in the percentage of inactively charged benefits from 12.6 (the mean) to 13.6 would be related to an increase in the reserve ratio from 1.32 (the mean) to 1.33.

In short, the estimated relationship between socialized costs and the reserve ratio is neither statistically significant nor substantial from the standpoint of policy. We again have an empirical analysis that suggests little or no systematic relationship between socialized costs and other outcomes that are important to the UI program.

6. Summary and Recommendations

In the first section of this chapter, we posed the main challenge to analyzing socialized charges: performing simple analyses of data from the states' ETA 204 Experience Rating reports, we found the only clear correlate of socialized costs to be the size of a state, and even the relationship between socialized charges and state size is not large (although it is statistically significant). This finding suggested that, to a large extent, the variation across states in socialized charges is not determined by well-defined or easily measured covariates.

The lack of significant relationships between socialized costs and other UI program outcomes tended to be confirmed by findings reported in section 3's analysis of the correlates of socialized costs (Table 6.5, columns 2 and 3). Moreover, section 5 found evidence that socialized costs play little role in determining the health of the trust fund (as measured by the reserve ratio).

Our inability to find clear correlates of socialized costs, or to estimate a significant relationship between socialized costs and the reserve ratio, could stem from either (or both) of two issues. First, inspection of the data from the ETA 204 reports reveals that several states have had challenges over the years in reporting the information requested by that report. This calls into question the consistency and reliability of the underlying data. In fact, it would be difficult for any analyst to work with the ETA 204 report data for long without becoming concerned that some (possibly many) states have difficulty compiling the information required for the report, and perhaps interpreting the meaning of the information being requested.

Second, it is possible that we are not looking at the right correlates of socialized costs. Although we have pointed out the potential problems associated with coding the non-charging provisions of the states, further work along these lines could reveal one or more correlates of socialized costs that might be useful from a policy standpoint. Nevertheless, research on the effects of adopting UI Modernization provisions by O'Leary (2011) and Lindner and Nichols (2012) suggests that the costs of broadened eligibility requirements are relatively modest, so it would perhaps be naive to be too hopeful about the fruitfulness of this route.

Ultimately, it should perhaps not be surprising that correlates of socialized costs fail to jump out of the data. Neither should it be surprising that socialized costs play little or no role in determining the health of state UI trust funds. After all, the states reported average socialized costs of less than 22 percent over the 1995–2014 period, and within-state variation in socialized costs as a percentage of total benefit costs was rarely greater than 6 percentage points over the 1995–2014 period (see Table 6.1). The upshot is that variation in socialized costs represents a small part of the variation in total benefit costs.

The implication is that changes in state UI policy that are intended to influence socialized costs are unlikely to influence more than about 6 percent of total benefit costs. And because socialized costs are a relatively small portion of total benefit costs, there is relatively little scope for changes in socialized costs to have an impact on UI

program outcomes such as trust fund solvency. Socialized costs within a state over time simply do not vary greatly, and the variations that do occur appear to be largely unsystematic.

We conclude that, although socialized costs are not an insignificant part of total benefit costs, most of their variation is unconnected with other program policies and variables. And because they are a relatively small part of all benefit costs they are unlikely to be a significant driver of total benefit costs or trust fund solvency.

Chapter 7. Reducing Ineffective Charges

1. Background

Ineffective charges are charges against the account of an employer who is paying the maximum payroll tax rate. Although these charges enter the employer's benefit ratio or reserve ratio, they do not alter the tax rate of the employer—the employer is already paying the maximum rate. It follows that ineffective charges are "ineffective" because they do not affect current tax contributions of the employer who incurs them.[94]

It is clear from this definition that ineffective charges arise because states set a maximum rate (or cap) on their UI payroll tax schedules. Ineffective charges and the tax caps that give rise to them have been among the most widely researched aspects of the UI system during the last 40 years. Starting with Martin Feldstein (1976, 1978), economists have raised concerns that the incomplete experience rating resulting from the maximum UI payroll tax rate may lead to a subsidy that has a "potentially very large impact on the rate of unemployment, causing layoffs when they would not otherwise happen and substantially magnifying the size of the layoffs that do occur" (Feldstein 1976, p. 965). Empirical studies have consistently found the impact of imperfect experience rating on layoffs to be both statistically significant and quite large. For example, Topel's estimates suggest that full experience rating would reduce temporary layoff unemployment by between 20 and 30 percent (Topel 1983, 1984a, 1985). Similarly, Card and Levine (1994) estimate that complete experience rating would reduce the temporary layoff rate by 50 percent in the trough of a recession. Although these studies do not bear directly on the impact of maximum tax rates and the resulting ineffective charges on trust fund solvency, they do suggest that the maximum tax rate is a key feature of UI financing that can be expected to have an important impact on a state's ability to finance benefits.

Chapter 6 largely omitted ineffective charges from its treatment of socialized costs, in order to focus on non-charges and inactive charges. This chapter offers a fuller discussion of ineffective charges. Section 2 examines the

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[94] With respect to reserve ratio experience rating, this definition is the same as the definition given by Becker (1972, p. 37), who defines ineffective charges as "those which are charged against an employer whose reserve account is exhausted and who is already paying the maximum tax." However, Becker's definition applies only to reserve ratio experience rating, whereas the definition we use extends to benefit ratio experience rating as well. This extension is consistent with Becker's view that an ineffective charge is "ineffective in the sense that it neither draws on past accumulated taxes (reserves) nor triggers additional current taxes." In that charges against maximum-rate employers in benefit ratio states do not trigger additional taxes, they too are ineffective.

It is worth noting that the definition of ineffective charges given by Haber and Murray (1966) is broader than the one we (or Becker) use: "When the total amount of benefits that would be 'chargeable' to an employer exceeds his tax payment, which usually occurs when he is paying the maximum rate, the excess results in what technicians call an 'ineffective charge'" (Haber and Murray 1966, p. 353). This definition appears to be based on whether benefit costs incurred by an employer exceed that employer's current tax contributions, rather than whether the benefit costs incurred by an employer are capable of triggering additional taxes.

extent of ineffective charges and offers a cautionary note on the problems faced in estimating them. Section 2 also describes the sensitivity of ineffective charges to economic conditions and reviews states' policies with respect to ineffective charges. Section 3 uses employer-level data from Missouri and Washington to simulate the effects of raising the maximum UI payroll tax rate on average employer tax rates and aggregate tax contributions. Section 4 reviews the findings of those simulations in a broader policy context, discussing the efficacy of uncapping the UI payroll tax rate for trust fund solvency. Section 5 summarizes and offers recommendations based on the findings.

2. Extent of Ineffective Charges and State Policies toward Maximum-Rate Employers

Extent of ineffective charges

Tracking ineffective charges is more difficult than tracking non-charges and inactive charges, primarily because of data constraints. The main difficulty in estimating ineffective charges is that the ETA 204 Experience Rating reports provide only grouped data—that is, data on benefit charges for groups of employers based on their experience factor. This practice by definition aggregates employers so that benefits ineffectively charged to one employer may be offset by tax contributions in excess of benefit charges incurred by another employer in the same experience-factor group. The likely result is an understatement of ineffectively charged benefit costs.[95]

Notwithstanding this drawback, Table 7.1 attempts to quantify ineffectively charged benefit costs using the ETA 204 Experience Rating reports. For each state, the table shows annualized five-year averages of ineffectively charged benefits (as defined in the next paragraph) as a percentage of all benefit benefit costs, along with the percentage of ineffectively charged benefits averaged over all states for each five-year interval (top row), the 20-year average percentage for each state (the far right column), and the 20-year nationwide average percentage (the entry in the upper-right).[96]

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[95] In addition, there is the definitional issue raised in the previous footnote. It appears that neither Haber and Murray (1966) nor Becker (1972) would include any charges as ineffective under a benefit ratio system. Further, Haber and Murray's (1966) definition would examine each employer's benefit charges and tax contributions in a given year and count charges in excess of tax contributions as ineffective for each employer, regardless of whether that employer is at the maximum tax rate or whether those charges in excess of contributions will influence the employer's future tax rate or tax contributions.

[96] As was true for Tables 6.1, 6.3, and 6.4, Alaska does not appear in Table 7.1 because it uses the payroll decline method of experience rating, so it does not file an ETA 204 report. Puerto Rico and the Virgin Islands are also omitted, as elsewhere in this report.

TABLE 7.1
Annual Average Percentage of Benefit Costs Ineffectively Charged, by State and Five-year Time Period, 1995–2014

State	Five-year period				20-year average
	1995-1999	2000-2004	2005-2009	2010-2014	
Average of all states	16.2	22.6	19.5	19.4	19.5
Alabama	19.6	17.6	14.9	17.3	17.4
Arizona	0.6	29.4	25.6	32.6	24.0
Arkansas	7.8	8.8	11.1	8.8	9.2
California	20.8	30.7	28.8	39.1	29.0
Colorado	21.7	27.3	13.2	23.0	21.1
Connecticut	16.5	18.9	22.9	28.4	21.5
Delaware	n/a	n/a	n/a	n/a	n/a
District of Columbia	5.6	n/a	14.7	21.2	13.0
Florida	8.7	14.5	15.0	15.3	14.0
Georgia	29.8	48.6	18.0	16.8	29.5
Hawaii	24.0	16.6	29.7	25.5	23.8
Idaho	25.4	27.7	25.7	17.6	24.8
Illinois	4.3	29.8	7.6	n/a	13.6
Indiana	12.7	26.2	28.0	20.9	22.1
Iowa	11.1	12.4	11.4	12.0	11.7
Kansas	22.3	19.0	18.4	24.8	20.6
Kentucky	19.3	25.3	25.9	20.8	23.3
Louisiana	3.7	23.9	15.3	32.5	16.9
Maine	16.6	15.1	21.1	22.4	18.4
Maryland	n/a	15.5	18.4	20.8	18.3
Massachusetts	20.0	32.5	24.5	20.1	25.0
Michigan	18.9	21.2	25.4	15.0	20.8
Minnesota	12.5	23.8	16.1	13.6	16.4
Mississippi	19.0	23.5	23.1	16.7	21.0
Missouri	12.6	26.3	18.0	24.6	20.3
Montana	15.6	19.3	20.8	20.0	19.8
Nebraska	16.2	19.3	12.9	16.4	16.2
Nevada	9.3	21.5	22.7	27.9	19.8
New Hampshire	5.5	45.0	33.1	7.8	21.5
New Jersey	22.5	25.3	22.5	17.3	22.4
New Mexico	13.7	22.0	18.0	23.1	18.4
New York	11.6	16.6	12.2	9.0	12.7
North Carolina	38.9	33.3	23.4	34.9	32.6
North Dakota	18.8	3.2	7.1	6.0	7.9
Ohio	16.8	30.2	20.5	21.8	21.5
Oklahoma	25.0	36.0	n/a	n/a	29.9
Oregon	13.7	20.9	20.0	25.5	19.1
Pennsylvania	18.6	22.1	24.2	24.3	22.1
Rhode Island	12.3	15.5	19.5	16.9	16.5
South Carolina	13.6	23.4	26.2	11.8	19.5
South Dakota	28.6	30.5	18.7	14.1	23.7
Tennessee	10.3	17.2	14.4	10.7	13.2
Texas	15.5	10.9	7.7	10.9	10.8
Utah	0.8	3.7	10.2	8.0	7.9
Vermont	20.6	29.2	33.6	22.5	27.3
Virginia	15.3	28.6	17.8	18.1	20.2
Washington	10.8	13.5	3.5	14.5	10.6
West Virginia	23.8	24.0	25.0	26.2	24.7
Wisconsin	14.3	22.2	23.5	25.3	21.3
Wyoming	31.9	22.8	16.5	15.8	21.2

Source: Authors' tabulations of data from the ETA 204 Experience Rating Report
<http://workforcesecurity.doleta.gov/unemploy/DataDownloads.asp>. See the text for discussion.

Ineffectively charged benefits are first obtained for each state and year by taking the difference between benefits charged and estimated contributions for each "experience factor" class in the ETA 204 report (section C), then summing over the differences for experience factor classes where charges exceed contributions. The data are averaged over five-year intervals (1995–1999, 2000–2004, 2005–2009, and 2010–2014) to eliminate the effects of (i) unexplained volatility in the year-to-year reports of a few states and (ii) cases in which a state did not file an ETA 204 report in a single year. In the latter case, the annualized five-year average is taken over the remaining observed years in the five-year interval. The data needed to calculate ineffectively charged benefits are missing for more states and years than is the case for non-charged or inactively charge benefits. That is, states appear to have greater difficulty completing part C of the ETA 204 report than in completing parts A and B.

The averages in Table 7.1 suggests that, over the full 20-year period, nearly 20 percent of benefit costs were ineffectively charged in the 50 UI jurisdictions shown. Unlike non-charged and inactively charged benefits, however, ineffective charges show no overall trend during the 20-year period. Rather, ineffective charges (averaged over all states) were relatively low during 1995–1999 (about 16 percent), when the labor market was unusually robust. Ineffective charges were relatively high (more than 22 percent) during 2000–2004, when the labor market was relatively weak. In both of the last two five-year periods (2005–2009 and 2010–2014), ineffective charges were about 19.5 percent. In the first period, the labor market started strong and deteriorated with the onset of the 2007–2009 recession. The latter period started with an unemployment rate close to its recessionary peak, then slowly improved. These mixes of years in which labor markets were relatively weak and strong appear to have resulted in similar percentages of ineffectively charged benefits.

Table 7.1 suggests that interstate variation in the percentage of ineffectively charged benefits was substantial: ineffective charges were 25 percent or more of benefit charges in five states; whereas they were less than 15 percent in nine states. (We include in these counts only states for which data were adequate to calculate 5-year averages in all four periods.)

Cyclicality of ineffective charges

Table 7.1 also suggests that, within state, ineffectively charged benefits are more volatile than are non-charged or inactively charged benefits (refer to Tables 6.1, 6.3, and 6.4). For example, the three states with the highest percentages of ineffective charges during 1995–2014 were North Carolina (nearly 32.6 percent), Georgia (29.5 percent), and California (29.0 percent).[97] In all three, the volatility of ineffective charges was striking: between 23.4 and 38.9 percent in North Carolina, between 18.0 and 48.6 percent in Georgia, and between 20.8 and 39.1 percent in California.

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[97] Data for Oklahoma are unavailable for two of the four five-year periods, so we exclude Oklahoma from the top states for ineffective charges.

Table 7.2 examines further the link between the health of the labor market and the three types of socialized benefit costs—non-charges, inactive charges, and ineffective charges—using a straightforward regression analysis. Specifically, column (2) displays estimates from a regression of the percentage of benefit costs that were non-charged in state s and year t on the unemployment rate in that state and in the current year, the unemployment rate in that state in the preceding year (state s and year t–1), state fixed effects (a dummy variable for each state in the panel), and year fixed effects (an indicator for each year in the panel). The remaining columns display estimates from regressions of the percentage of inactively charged benefit costs (column 3) and ineffectively charged benefit costs (column 4) on the same independent variables.

TABLE 7.2
Cyclical Sensitivity of Non-charges, Inactive Charges, and Ineffective charges, 1995–2013

	(1)	Dependent variables[1]		
		(2)	(3)	(4)
		Percentage of benefit costs:		
Independent variables	Sample mean (std. dev.)	Non-charged	Inactively charged	Ineffectively charged
Unemployment rate	5.34	0.178	0.831	1.819*
(state-level, current)	(1.88)	(0.364)	(0.567)	(0.793)
Unemployment rate	5.15	−0.435	−0.300	−2.613*
(state-level, lagged)	(1.70)	(0.376)	(0.272)	(0.770)
State fixed effects	—	included	included	included
Year fixed effects	—	included	included	included
Sample size[2]	672	776	772	672

[1] The sample mean percentage of benefit costs non-charged =14.54 (standard deviation = 7.54); percentage inactively charged =7.22 (standard deviation = 5.16); percentage ineffectively charged = 19.48 (standard deviation = 11.00).
[2] Sample sizes differ in columns (2), (3), and (4) because the number of missing observations in the ETA 204 reports differs by type for some states in certain years.
* Coefficient is statistically different from 0 at the 5-percent level.
Source: Authors' estimates using data from the ETA 204 Experience Rating reports and Unemployment Insurance Financial Data Handbook 394. See the text for discussion.

The key independent variables in these regressions are the current and lagged state-level unemployment rates. In all three cases, the estimated coefficients on the current state-level unemployment rate are positive, and the estimated coefficients on the lagged state-level unemployment rate are negative. But only the estimated coefficients in the regression for ineffectively charged benefits are statistically significant at the 5-percent level, suggesting that ineffective charges are sensitive to changes in the labor market, whereas non-charges and inactive charges are not. (The coefficients on the unemployment rate in the regressions for non-charges and inactive charges are not statistically significant at even the 10-percent level.)

Specifically, the estimates for ineffective charges suggest that a 1 percentage point increase in a state's unemployment rate is related to a 1.8 percentage point increase in the percentage of benefit costs ineffectively charged in the current year, followed by a 2.6 percentage point decrease in the percentage of benefit costs ineffectively charged in the next year. This pattern is consistent with expectations. In the year a recession sets in,

layoffs and benefit charges increase, an increasing number of employers move up to the maximum UI payroll tax rate, and an increasing percentage of benefit costs are ineffectively charged as a result. The negative relationship between the lagged unemployment rate and ineffective charges (–2.61 in column 4 of Table 7.2) suggests that, in the year following the onset of a recession, ineffective charges as a percentage of all benefit costs tend to return to their earlier level. This is consistent with a reduction in layoff activity and benefit charges in the year following the onset of the recession, particularly among employers who laid off many workers early in the recession. In any event, ineffective benefit charges are clearly more volatile and sensitive to changes in the labor market than are non-charges and inactive charges.[98]

State policies toward maximum-rate employers

Every state specifies a maximum tax rate for each of its UI payroll tax schedules, and the level of that maximum is the first and most important feature of state UI policy bearing on ineffective charges in the state. That is, other things equal, the higher is the maximum payroll tax rate in a state, the lower will be the volume of ineffective charges. In addition, two reserve ratio states—Arkansas and Missouri—levy a surcharge on employers who persist at the maximum experience rate in successive years, increasing the tax rate on these employers by some increment. (See the following section for a full description and analysis of Missouri's surcharge.) We consider these penalties less important partly because they are so rare and partly because, as microsimulations in the next section show, they increase the UI payroll tax rates of a relatively small number of employers, and do so only when those employers' reserves fall well below the specified threshold.

Setting the maximum payroll tax rate and levying a surcharge to penalize employers with persistently very negative reserve ratios are two policies available to states to address ineffective charges. By definition, ineffective charges occur because employers whose layoff experience exceeds some specified level do not incur any further increases in their UI payroll tax rate. The options available to a state to reduce ineffective charges are to raise the maximum rate or to penalize employers in some other way, as in Arkansas and Missouri. In the next section, we examine both of these methods of reducing benefit charges using microsimulation.

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[98] This point is also shown in Chapter 2, Figure 2.5.

3. Effects of Raising the Maximum UI Payroll Tax Rate on Trust Fund Solvency: Simulations Using Employer-Level Data

Why simulate?

Convincing estimates of the effects of changing the maximum payroll tax rate on UI payroll tax revenues are virtually impossible to obtain from observational data (that is, actual UI program data generated by the system over time). As discussed more fully in section 4 of Chapter 5, this is because pinning down (or identifying) the effect of a change in a state's maximum payroll tax rate requires that we observe a change in the maximum rate in isolation—that is, without any other changes in the state's UI system occurring at the same time. But in most states, changes in the maximum tax rate occur because of changes in the health of a state's UI trust fund—that is, changes in many states' UI tax schedules (including the maximum) are triggered by changes in the state's trust fund balance, reserve ratio, or reserve ratio multiple. (Missouri provides an example of this, as discussed further below.) As a result, changes in the maximum tax rate are correlated with other factors that change simultaneously, and what appears to be the effect of a change in the maximum UI payroll tax rate will include the effects of all the factors that caused the change in the maximum tax rate, not just the change in the maximum.[99]

A solution to this difficulty is to use microsimulation—that is, starting with a sample (or the population) of employers in one or more states, change a single parameter of the UI system, then track the evolution of the system over time. This approach is described more fully in Appendix D, where we use use employer tax records from Missouri (2004–2012) and Washington (2005–2013) to simulate the effects of given policy changes—in this case, eliminating the cap on the payroll tax rate—on key outcomes, such as taxable wages and tax revenues. In all cases, the simulations impose a policy change at the beginning of the time period for which we have data (2004 in Missouri, 2005 in Washington) and trace the impact of that change—*with other factors fixed*—over the subsequent eight years for which data are available.

This section focusses mainly on the maximum UI payroll tax rate and how raising that rate would have affected UI payroll tax revenues in Missouri and Washington over the years for which we have data. Because Missouri levies a surcharge on employers who are persistently at the maximum tax rate, we also examine the effects of that surcharge and contrast its effects with the alternative of uncapping the payroll tax schedule.

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[99] For example, we are likely to obtain estimates suggesting that an increase in the maximum payroll tax rate is related to a decrease in tax revenues because increases in maximum tax rates are triggered by recessions—i.e., when payroll tax revenues fall. An example of this can be seen in the regression estimates displayed in column (3) of Table 5.4, where a 1 percentage point increase in the average employer tax rate is estimated to be related to a decrease of about 0.94 in a state's reserve ratio. As discussed in Chapter 5, that estimated relationship should not be interpreted as the effect of a tax increase on a state's reserve ratio.

Missouri's UI payroll tax

Missouri's UI payroll tax is experience rated using the reserve ratio method under which each employer's reserve ratio maps into a "base" payroll tax rate. The base rate ranges from 0 percent for an employer with a reserve ratio of 15 or greater, to 6 percent for an employer with a reserve ratio of –12 or less. The light gray line in Figure 7.1 (labeled "Base Schedule") illustrates this base rate schedule, showing the employer's reserve ratio on the x-axis, and the consequent tax rate paid by the employer on the y-axis.

Missouri adjusts an employer's base rate in two ways. First, a "contribution rate adjustment" increases or decreases the base rate depending on the balance in Missouri's UI trust fund. The base rate is *increased* by 10 percent when the trust fund balance falls below $450 million, by 20 percent when the trust fund falls below $400 million, and by 30 percent when the trust fund falls below $350 million. (In addition, during 2005, 2006, and 2007, the base rate of employers paying the maximum base rate was increased by 40 percent.) Also, the base rate is *reduced* by 7 percent when the trust fund rises to $720 million, and by 12 percent when the trust fund rises to $870 million. When one of these adjustments is in effect, the base tax schedule pivots, becoming steeper when base rates are increased, or flatter when base rates are reduced. The black line in Figure 7.1 (labeled "2012 Actual Tax Rates") illustrates the tax schedule for 2012, a year in which base rates were adjusted upward by 30 percent.

Second, starting in 2006, Missouri has added a surcharge to the base rate of employers who remain at the maximum tax rate in successive years. Specifically, a surcharge of 0.25 percent is added to the tax rate of any employer who is at the maximum rate for two consecutive years. Further, if the employer remains at the maximum rate for a third, fourth, or fifth consecutive year, an additional 0.25 percent is added to the employer's base rate in each year. If the employer remains at the maximum rate for a sixth consecutive year, an additional 0.5 percent is added to the employer's base rate, for a maximum surcharge of 1.5 percent.[100]

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[100] Note that the surcharge is added to the base rate before the contribution rate adjustment is made.

FIGURE 7.1

Missouri Tax Schedules for 2012
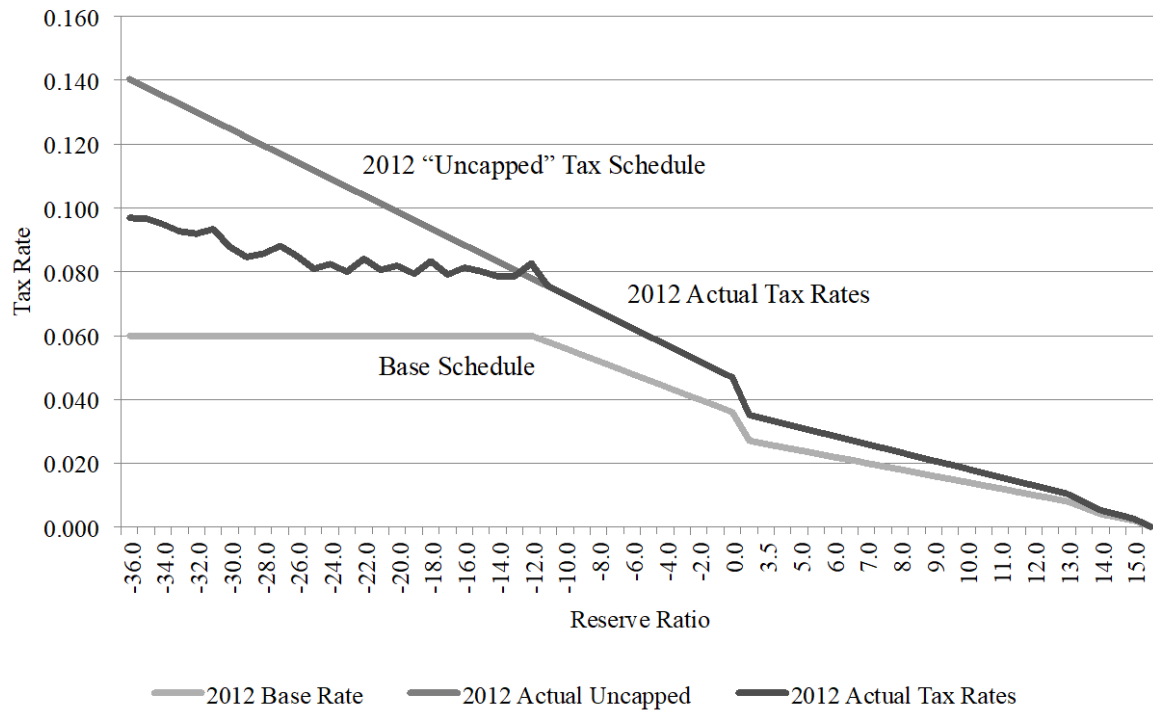
Note: The Missouri base tax schedule is the lower line (in light gray). The actual 2012 schedule is the upper line (in black), with the jagged portion indicating observed average tax rates for employers in each reserve ratio interval when the reserve ratio is less than –12. These averages reflect the effects of the surcharge on persistently maximum-rate employers. The gray extension indicates the 2012 tax schedule after "uncapping," the effects of which are simulated in Tables 7.4 and 7.5. See the text for further discussion.
Source: Authors' calculations from Missouri employer tax records.

Impact of Missouri's surcharge on persistently maximum-rated employers

The effects of the surcharge can be seen in Figure 7.1. The straight portion of the black "2012 Actual Tax Rates" line depicts the tax schedule that mapped reserve ratios into payroll tax rates in 2012—that is, the base rate schedule adjusted upward by 30 percent. Under this schedule, the maximum tax rate is 7.8 percent (the 6.0 percent maximum base rate, adjusted upward by 30 percent). However, maximum-rated employers—those with a reserve ratio less than –12—are subject to the surcharge described above if they remain at the maximum rate for two or more successive years. As a result, the tax rate paid by an employer with a reserve ratio less than –12 does not necessarily map directly into a tax rate; rather, it depends on both the employer's base rate and whether the employer has been at the maximum rate for two or more consecutive years.

The consequences of the surcharge on persistently maximum-rated employers can be seen in Figure 7.1 in the jagged left-hand portion of the black "Actual Tax Rates" line, which indicates average tax rates for employers with reserve ratios less than –12. To be clear, each point of this jagged left-hand portion of the line indicates the *average* tax rate paid by employers within a given one-unit reserve-ratio interval. For example, the average tax

rate paid by employers with reserve ratios between –16.0 and –15.0 was 8.0 percent, and the average rate paid by employers with a reserve ratio between –27.0 and –26.0 was 8.5 percent. These are averages because, again, once an employer's reserve ratio was less than –12, that employer's tax rate reflected both his or her reserve ratio and (possibly) a surcharge. As a result, employers within a given reserve-ratio interval paid not a single tax rate, but a range of tax rates.

For employers with reserve ratios between –12 and –26, the payroll tax rate actually paid averaged 8.1 percent—0.3 percentage point more than the 7.8 percent they would have paid if the tax schedule simply flattened to 7.8 percent when the reserve ratio reached –12 and no surcharge existed at all. Only for employers whose reserve ratios fell to less than –26 did the average tax rate paid reach 8.5 percent or more, and only for employers whose reserve ratio fell to –34 did the average tax rate reach 9.5 percent.[101]

Missouri simulations

An alternative to levying a surcharge on employers at the maximum experience rate would be to raise (or "uncap") the maximum payroll tax rate. Such a system is shown in Figure 7.1. The base rate tax schedule in light gray, instead of flattening out at 6.0 percent when the reserve ratio reaches –12, would continue to rise to the left at the same rate. (To keep the graph uncluttered, this extension of the base schedule is not drawn in Figure 7.1.) Similarly, the black "2012 Actual Tax Rates" schedule (the base rate adjusted upward by 30 percent), instead of being capped at 7.8 percent, would continue to rise when the reserve ratio falls below –12. (The rate of increase shown would be 1 percentage point for every 4-point decrease in the reserve ratio.) This is shown by the straight, sloped gray line extending upward to the left (labelled "2012 Uncapped Tax Schedule").

Table 7.3 shows the simulated effects of uncapping Missouri's UI payroll tax schedule—that is, progressively increasing the tax rate facing employers whose reserve ratio falls below –12—on the overall average tax rate and on payroll tax revenues. As was true in Chapter 5's simulations, these are "dynamic" in that they account for the effect of the increased tax contributions paid by each maximum-rate employer on that employer's subsequent reserve account, reserve ratio, tax rate, and tax contributions. This feedback tends to dampen the effects of uncapping the tax schedule over time: because employers at the maximum base rate face higher rates than before, they pay more into their reserve accounts, their reserve ratios rise, and their tax rates fall. As a result, fewer employers stay at the maximum base rate than would otherwise be the case.

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[101] The maximum possible payroll tax rate under the system was 9.75 percent—the maximum base rate of 6.0 percent plus the 1.5 surcharge (7.5 percent) adjusted upward by 30 percent.

TABLE 7.3.
Simulated Effects of Uncapping the UI Payroll Tax Schedule on Average Tax Rates and Tax Contributions, Missouri, 2004–2012

Year	Employers with taxable wages		Taxable wages		Average tax rate[2]		Total tax contributions		
	Number	% impacted by uncapping[1]	($ billion)	% impacted by uncapping	Existing	Uncapped[3]	Existing ($ million)	Increase with uncapping[3]	
								$ million	as % of existing
2004	135,394	3.8	19.27	3.7	1.93	2.05	372.3	22.2	6.0
2005	137,439	3.9	24.89	3.8	2.03	2.15	506.0	28.8	5.7
2006	138,293	3.6	25.38	3.4	2.16	2.24	547.6	21.2	3.9
2007	138,756	3.1	25.68	2.9	2.23	2.29	573.4	13.8	2.4
2008	138,003	2.8	27.17	2.6	2.18	2.21	592.6	9.4	1.6
2009	135,745	2.8	25.89	2.1	1.96	1.98	507.8	4.6	0.9
2010	136,036	3.7	25.72	2.9	2.11	2.15	542.5	11.6	2.1
2011	137,377	5.0	25.93	4.1	2.30	2.37	595.4	20.3	3.4
2012	139,364	5.2	26.38	4.1	2.32	2.40	612.3	21.7	3.5
2004-2012	n/a	n/a	n/a	n/a	2.14	2.21	4,850.0	153.6	3.2

[1] This is the number of employers at the maximum tax rate (6.0 percent) before any simulated change in the maximum tax rate. During 2004-2012, 18,785 unique employers were at the maximum tax rate, and these employers averaged 2.82 years at the maximum. With the tax rate uncapped (under the simulation), the reserve ratios of 1,900 of these employers improve enough for their base rate to fall below 6.0 percent. As a result, mean (simulated) years at the maximum base rate is to 2.70 over the 18,785 employers.
[2] Contributions divided by taxable wages for all employers with taxable wages, weighted by taxable wages.
[3] Simulations of the alternative tax schedule are dynamic (i.e., take account of feedback).
Source: Authors' calculations from Missouri employer UI payroll tax records. See Appendix D for details.

The main outcome shown in Table 7.3 is that uncapping the payroll tax schedule would have resulted in a revenue increase of about $154 million, or 3.2 percent, over the full nine-year period examined (see the figure at the bottom right of Table 7.3). The increase in revenues that results from uncapping varies from year to year, in both dollar and percentage terms. Those increases were relatively large in years following a recession; that is, when employers' reserves had been depleted following a period of layoffs, and their reserve ratios were relatively low. For example, in 2004, 2005, and 2006, the simulated revenue increases from uncapping are between $21.2 million (nearly 4 percent) and $28.8 million (nearly 6 percent). And in 2011 and 2012, the simulated revenue increases from uncapping amount to about $20.3 million and $21.7 million (about 3.5 percent in both cases). Although 2004–2006 and 2011–2012 were both periods of economic recovery, they were also periods when a relatively large number of employers were at the maximum tax rate due to the recession from which the economy was recovering. The revenue increases from uncapping are smallest in 2008 and 2009 because these years were preceded by years in which there had been relatively few layoffs, so relatively few employers were at the maximum payroll tax rate. As a result, in 2009, uncapping increases revenues by only $4.6 million (0.9 percent).

From the standpoint of Missouri's trust fund solvency, these revenue increases are not insubstantial, but neither can they be characterized as large. Following the 2007–2009 recession, Federal loans to Missouri's reserve fund reached more than $725 million (at the end of 2011). How large are the simulated revenues from uncapping the payroll tax schedule relative to this borrowing? The first year following the 2001 recession in which Missouri had no outstanding Federal loans was 2007, and if we aggregate the 2007–2012 simulated revenue increases from

uncapping shown in Table 7.3, we obtain a figure of $81.4 million. It follows that uncapping the payroll tax schedule would have reduced Missouri's need to borrow from the Federal government by about 11 percent ($81.4 million out of the total $725.6 million borrowed) in the aftermath of the 2007–2009 recession. Although not trivial, uncapping the payroll tax schedule does not appear to be a cure for trust fund solvency, at least in the case of Missouri following the 2007–2009 recession.

Table 7.3 reveals three additional points. First, compared with the existing average tax rate (the counterfactual), uncapping has the largest impact on increasing average tax rates in the first two years of the simulation: in 2004 uncapping increased the average tax rate from 1.93 percent to 2.05 percent (a 6.0 percent increase), and in 2005 uncapping increased the average tax rate from 2.03 percent to 2.15 percent (a 5.7 percent increase). Thereafter, increases in the average tax rate that result from uncapping are smaller both in absolute and percentage terms. That is, the effect of uncapping on increasing the reserves (and lowering the tax rates) of employers with reserve ratios less than –12 is greatest when uncapping first occurs. This makes sense because the bulk of employers with a reserve ratio less than –12 have reserve ratios not far below the –12 threshold. As a result, the greatest effect of uncapping the tax rate occurs shortly after uncapping takes place, when those employers close to the –12 threshold experience a tax rate increase. Thereafter, those employers have increased reserves (compared with the counterfactual), moving them down the tax schedule. Although the average tax rate is higher throughout the nine-year period of the simulation under an uncapped tax schedule, the impact is largest at the outset, then fades somewhat over time.

Second, the annual effect of uncapping on tax contributions tapers off from 2006 to 2009, then recovers. This pattern is similar to that just described for average tax rates, and the reason is similar. In addition, the resurgence of the effect of uncapping coincides with the aftermath of the 2007–2009 recession, which resulted in depleted employer reserves that moved many employers up to the maximum payroll tax rate.

Finally, Table 7.3 shows why uncapping the payroll tax schedule has only a modest impact on tax contributions: the percentage of employers whose tax rate would be affected each year by uncapping is rather small. A total of 18,785 employers were at the maximum base rate (6.0 percent) at some time during the 2004–2012 period, but in any given year the number never exceeded 7,300, or 5.2 percent (this occurred in 2012). Further, these maximum-rate employers accounted for at most 4.1 percent of all taxable wages in Missouri (again in 2012, when maximum-rate employers accounted for $1.09 billion of taxable wages, out of aggregate taxable wages of $26.4 billion). It follows that maximum-rate employers in Missouri are somewhat smaller than average (that is, in 2012 they were 5.2 percent of all employers with taxable wages, but accounted for only 4.1 percent of taxable wages). [102]

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[102] This finding is specific to Missouri. Examination of ETA 204 Experience Rating reports shows that, in other states, it is often the case that maximum-rate employers are on average larger than other employers in the state.

To summarize, the Missouri simulations suggest that raising the maximum payroll tax rate would have increased tax contributions by about $154 million (3.2 percent) over the 2004–2012 period. Although not insubstantial, the expected revenue increases from uncapping cannot be considered large from the standpoint of Missouri's trust fund solvency. Federal loans to the Missouri trust fund reached about $725 million at the end of 2011, but the simulated increases from uncapping the tax schedule following the recession (that is, summed over just the post-recession years of 2007–2012), amount to about $81.4 million. The implication is that uncapping the payroll tax schedule would have reduced Missouri's need to borrow from the Federal government by about 11 percent ($81.4 million/$725.6 million) in the aftermath of the 2007–2009 recession. Given that eliminating the cap would be a relatively dramatic change in UI tax policy, this is a rather modest improvement in trust fund solvency.

Washington's UI payroll tax

Washington uses a benefit ratio method to experience rate its UI payroll tax. Before 2005, the state used an array allocation procedure, but since 2005 (the first year we examine), an employer's tax rate has been determined as the sum of two components, both of which depend on the employer's benefit ratio.[103] The first is an experience-rated tax rate, which throughout the 2005–2013 period ranged from 0 for an employer with a benefit ratio of 0, to 5.4 percent for an employer with a benefit ratio of 0.0575 or greater. The second is a "social cost factor," which varied during the 2005–2013 period. For example, in 2013 (the last year we examine), the social cost factor, ranged from 0.14 percent for employers with a benefit ratio of 0, to 0.42 percent for employers with benefit ratios of (approximately) 0.024 or greater. (In 2010, the minimum social cost factor reached a high of 0.95 percent for employers with a benefit ratio of 0, and the maximum reached a high of 1.46 percent for employers with benefit ratios between 0.0125 and 0.045.)

As a result of the social tax factor, the maximum payroll tax in Washington fell from a high of 6.5 percent in 2005, to 6.00 during 2006–2011, to 5.82 during 2012–2013. The full tax schedules for 2011 and 2013 are shown in Figure 7.2, with the employer's benefit ratio (or assignment class) on the x-axis, and the implied tax rate on the y-axis. The light gray lines indicate the actual tax schedules in each year. In 2011, employers with a benefit ratio of 0.045 or greater (rate class 35 and above) were at the maximum tax rate (6.0 percent), whereas in 2013, employers did not pay the maximum tax rate (5.82 percent) until their benefit ratio reached 0.0575. As a result, the 2011 tax schedule is somewhat steeper than the 2013 schedule; an employer would reach the maximum tax rate at a lower benefit ratio in 2011 than in 2013.

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[103] Washington's UI statute also provides for a solvency surcharge when the state's UI trust fund is determined to be adequate to finance fewer than seven months of benefits, but this provision was not in effect during the years we examine.

FIGURE 7.2
Existing and Uncapped Washington Tax Schedules for 2011 (above) and 2013 (below)
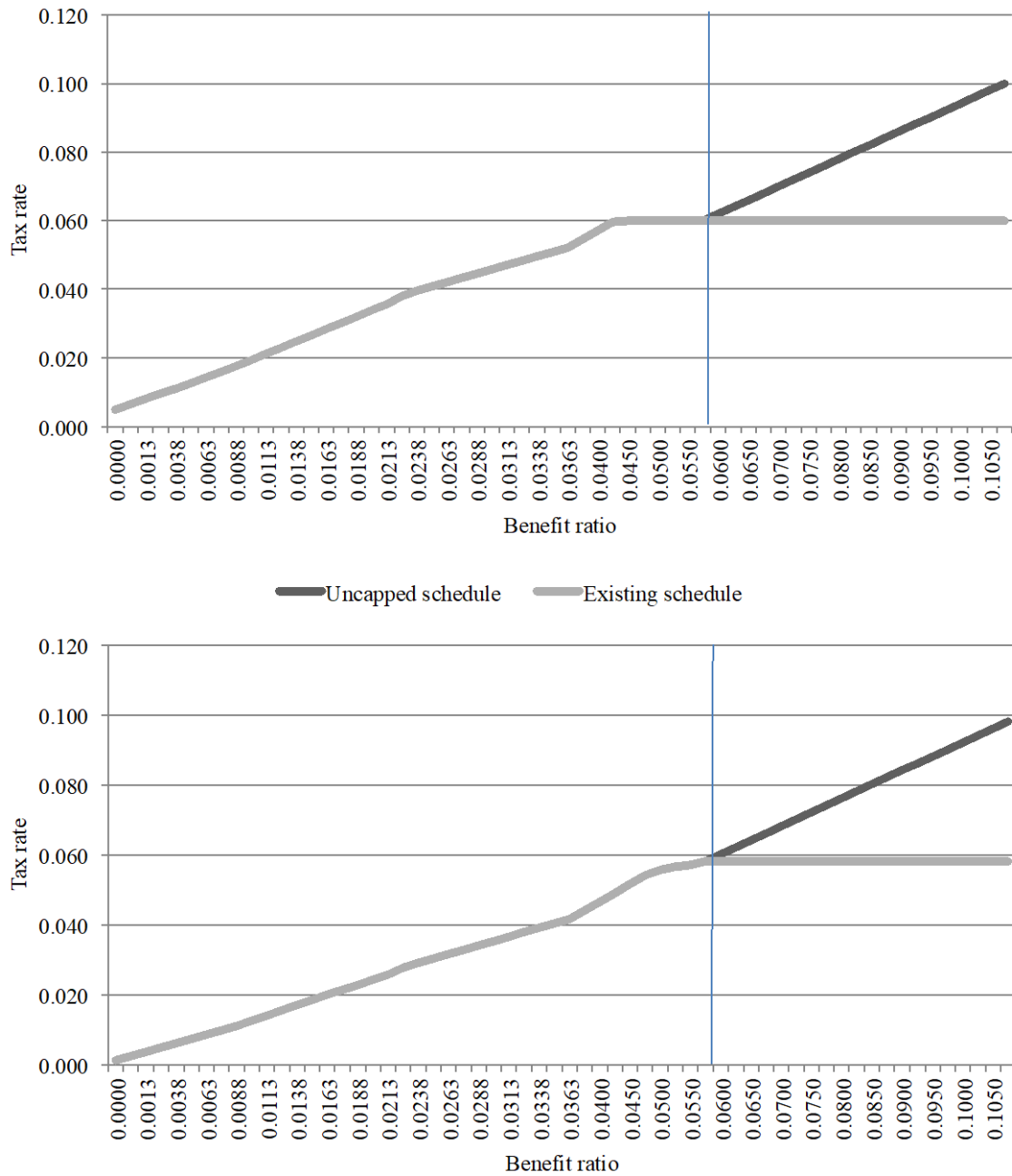
Source: Revised Code of Washington, Chapter 50.29 and information supplied by the Washington Department of Employment Security.

Figure 7.2 also shows representative "uncapped" tax schedules that we simulate for Washington. For 2011 and 2013 (as in other years), we replace the flat portion of the tax schedule for benefit ratios exceeding 0.054 with a tax schedule that continues to rise. (Note that we leave the tax schedule unchanged for benefit ratios less than 0.054, even if the tax schedule flattens out at a benefit ratio less than 0.054.) In both figures, these simulated

"uncapped" portions, shown in dark gray, have a slope of 0.80—that is, a 1 percentage point increase in the benefit ratio (for example, from 0.07 to 0.08) leads to a 0.8 percentage point increase in the payroll tax rate (from 0.070 to 0.078).

Washington simulations

Table 7.4 shows simulated effects of uncapping the UI payroll tax schedule in Washington on the average tax rate and payroll tax revenues during 2005–2013. Unlike the simulations for Missouri, these are not "dynamic" because, under the benefit ratio system, increasing the tax rate does not feed back to the benefit ratio.

The simulations summarized in Table 7.4 suggest that uncapping the payroll tax schedule in Washington during 2005–2013 would have increased tax contributions by $500 million, or nearly 5 percent of total tax contributions in those years (see the bottom right of Table 7.4). The year-by-year increases in revenue show a pattern similar to that seen in the Missouri simulations—the increases are relatively large in years that follow a contraction (2005–2007 and 2012–2013), and relatively small in years that follow an expansion (2008–2010). For example, in 2005, 2006, and 2007, the simulated revenue increases from uncapping are between $43.8 million (4.0 percent) and nearly $67.8 million (5.4 percent). And in 2012 and 2013, revenue increases from uncapping amount to $87.3 million (7.8 percent) and $116.3 million (9.5 percent). As in Missouri, the simulated increases from uncapping are smallest in 2008, 2009, and 2010 (1.8 to 2.6 percent).

TABLE 7.4.
Simulated Effects of Uncapping the UI Payroll Tax Schedule on Average Tax Rates and Tax Contributions, Washington, 2005–2013

| | Employers with taxable wages | | Taxable wages | | Average tax rate[2] | | Total tax contributions | | |
| | | % impacted by | | % impacted by | | | Existing | Increase with uncapping[3] | |
Year	Number	uncapping[1]	($ billion)	uncapping	Existing	Uncapped[3]	($ million)	$ million	as % of existing
2005	190,952	5.3	50.09	5.0	2.80	2.92	1,378	58.9	4.3
2006	193,403	5.0	53.98	5.1	2.38	2.50	1,256	67.8	5.4
2007	195,511	3.7	56.93	3.6	1.96	2.04	1,095	43.8	4.0
2008	199,131	2.5	60.31	0.2	1.66	1.70	982	25.7	2.6
2009	198,610	1.9	60.28	1.3	1.41	1.43	832	14.8	1.8
2010	201,379	3.4	58.49	2.2	2.25	2.30	1,302	28.6	2.2
2011	202,268	5.3	61.18	4.5	2.22	2.32	1,339	57.0	4.3
2012	200,880	6.5	64.28	6.0	1.75	1.89	1,113	87.3	7.8
2013	200,958	7.2	67.65	6.8	1.83	2.00	1,220	116.3	9.5
2005-2013	n/a	n/a	n/a	n/a	n/a	n/a	10,517	500.0	4.8

[1]This is the number of employers at the maximum tax rate (rate class 40) before any simulated change in the maximum tax rate. During 2005-2013, 36,030 unique employers were at the maximum tax rate. These employers averaged 2.35 years at the maximum rate.
[2] Contributions divided by taxable wages, weighted by taxable wages.
Source: Authors' calculations from Washington employer UI payroll tax records. See Appendix D for details.

Washington never borrowed to finance UI benefits during 2005-2013, so the revenues from uncapping the payroll tax were not needed to maintain solvency during the 2007--2009 recession and its aftermath. But it seems clear that, as was true for Missouri, the added revenues from uncapping would be modest in relation to total

revenues. The simulations show that uncapping the tax rate would increase the average tax rate by at most 0.17 percentage point (from 1.83 percent to 2.00 percent in 2013)—a 9 percent increase.

Table 7.4 also shows the main reason uncapping the tax rate has a rather modest impact: a relatively small share of employers and taxable wages would have been affected by the change. In any given year during 2005–2013, at most 7.2 percent of Washington employers with taxable wages would have been impacted by uncapping in any given year (this maximum occurred in 2013), and the payroll affected by uncapping would never have exceeded 6.8 of all taxable wages (also in 2005). These percentages are somewhat higher than the analogous percentages for Missouri. Inevitably, a tax increase on a relatively small share of taxable wages has a modest impact on tax revenues.

In sum, the Washington simulations suggest that raising the maximum payroll tax rate would have increased tax contributions by about $500 million (4.8 percent) over the 2004– 2012 period. Although this is hardly an insubstantial increase, it seems fair to conclude that the expected revenue increases from uncapping are small in relation to total payroll tax revenues. As was the case with the Missouri simulations, given the sweeping nature of eliminating the cap, the corresponding gains in revenue appear to be modest.

4. Summary and Recommendations: Setting the Maximum Tax Rate

In his 1972 work, *Experience Rating in Unemployment Insurance*, Joseph Becker defined a solvent UI trust fund as one that is "adequate to pay the benefits specified in the state law" (Becker 1972, p. 29), by which he meant a fund that avoids borrowing to meet the obligations of the UI system. Ideally, the goal of keeping a UI financing system solvent (at least by this definition), can be achieved by projecting the benefit cost rate over a period of time, expressing that rate as the average tax rate on taxable payroll needed to finance benefit costs over that period, and ensuring that the necessary average tax rate is levied on employers in the state by means of an experience-rated tax that nets the required revenue.[104]

This chapter has addressed whether (and to what degree) ineffective charges jeopardize the ability of a state's UI financing system to maintain solvency. The answer, based on simulations using employer tax records from Missouri and Washington, appears to be that ineffective charges are not as great a threat to solvency as one might expect based on a reading of the existing literature. Overall, the Missouri and Washington simulations show that raising the maximum payroll tax rate increases revenues, but the revenue increases appear to be modest: 3.2 percent over the 2004–2012 period in Missouri, and 4.8 percent over the 2005–2013 period in Washington. The reason is that relatively few employers in either of these states reached the maximum tax rate: in Missouri over

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[104] This perspective on trust fund solvency informs the analysis of Chapter1, Appendix B, and Chapter 2.

the years examined, at most 5.2 percent of employers with taxable wages, and at most 4.1 percent of taxable payrolls, would have been impacted by uncapping in any given year; in Washington, at most 7.2 percent of employers with taxable wages, and at most 6.8 percent of taxable payrolls, would have been impacted in any given year. As a result, doubling or even tripling the tax rate on these employers would result in a relatively modest improvement in the position of a state's UI trust fund.

These findings suggest that, for Missouri and Washington during the years we are examining, ineffectively charged benefits resulting from a capped payroll tax schedule are not insubstantial, but neither are they a crucial drain on UI payroll tax revenues or a serious threat to trust fund solvency. That is, uncapping the payroll tax rate would not unleash a large flow of new revenues that would solve future UI funding problems.

The similarity of the estimated effects of uncapping the payroll tax schedules in Missouri and Washington is striking in light of the differences between the two states, but the states do have a key feature in common: during the years examined, the proportion of taxable payrolls accounted for by employers at the maximum tax rate ranged from 2.1 percent to 4.1 percent in Missouri, and from 0.2 percent to 6.8 percent in Washington. Accordingly, an important caveat needs to accompany the conclusion that ineffective charges are not a serious threat to trust fund solvency: the conclusion holds only if the proportion of employers at the maximum payroll tax rate—and the taxable wages they account for—are below some "reasonable" threshold.[105] Whether this threshold is 10 percent or 15 percent is a matter of judgement, and it depends on the proportion of employers in the state who are close to the maximum rate, as well as the proportion already at the maximum. However, we would suggest that 15 percent is an upper bound—that is, any state in which more than 15 percent of employers are paying the maximum payroll tax rate is at risk of losing a substantial percentage of tax contributions due to ineffective charges.

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[105] As discussed in Chapter 3, California provides an example of a state in which one-half or more of employers are at the maximum rate.

Chapter 8. New Employer Tax Rates

Births and deaths of business enterprises is a pervasive feature of the U.S. economy. Each year more than half a million new businesses are created and nearly as many cease operations. Most new businesses are covered by state UI programs. Because new businesses do not have a history of paying benefits, UI programs need procedures for assigning tax rates to new employers. This chapter examines new employer tax rates in state UI programs.

The chapter has six sections and a summary. Section 1 describes the Federal and state requirement employers must meet in order to pay experience-rated UI taxes. Section 2 briefly discusses the importance of new employers in UI program financing. Section 3 describes how states assign tax rates to new employers. Section 4 discusses new employer tax rates in the construction industry. Section 5 examines important economic characteristics of new employers. Section 6 discusses SUTA dumping, a form of UI tax rate manipulation. Section 7 summarizes.

1. Qualification for Experience Rating

After three years of being subject to benefit charges (termed the period of chargeability) Federal law requires that an employer's UI tax rate must be to be based on experience with unemployment.[106] However, after one year of chargeable experience, Federal law also allows state UI tax laws to assign reduced rates based on the employer's experience with unemployment or other factors bearing a direct relation to unemployment risk, or a reduced rate (not less than one percent) on some other reasonable basis.[107] This possibility of "early" experience rating means that many states have rules in place for setting UI tax rates before three years of chargeability have lapsed. Federal law allows states to assign new employer tax rates on a reasonable basis, but in no case may the new employer rate be less than 1 percent of taxable wages. Three methods are commonly used by states to assign tax rates to new employers: (1) a single uniform rate applied to all new employers, (2) a single rate for most employers except those in the construction industry are taxed at a different rate, and (3) rates based on average tax rates for industry groups. The three methods are discussed in a later Section 3.

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[106] The Federal Unemployment Tax Act (FUTA) section 3033 establishes this requirement. The wording in FUTA-3303 is that state law must require that no reduced rate of contributions is permitted "except on the basis of [the employer's] experience with respect to unemployment or other factors bearing a direct relation to unemployment risk during not less than the 3 consecutive years immediately preceding the computation date."

[107] The exact state-level requirements can vary. For example, a state may require the new employer rate until the employer is chargeable for benefits for one year, and then assign a rate for most new employers based on available experience but require employers in certain industries to be rated based on the average rate assigned to such employers in that industry until the employer acquires the requisite three years of experience.

Once state law specifies when experience-based tax rates are to be imposed, for-profit employers must be experience rated at that time. The only potential element of employer choice involves certain not-for-profit employers (state and local governments, designated Indian tribes and non-profit entities) who may choose the reimbursement method of financing (as opposed to experience rating) whereby they reimburse the state trust fund for benefit charges against their accounts. Otherwise, being experience rated is strictly a matter of law. It may commence as soon as four quarters of chargeability, and it must be applied after three years of chargeability.

States differ as to when an employer will become experience rated. As noted, states have an option to assign a reduced tax rate (not less than one percent) to new employers after one year of experience based on factors used in the state's experience rating system to measure unemployment risk. After three years of chargeable experience, the employer must be experience rated. Tax rates typically apply during a full calendar year, but the employer experience that determines the tax rate ends on the prior year's computation date, June 30th in most states.[108] Among UI programs in 2014 and 2015, 24 require a minimum of one year of chargeable experience, two require at least 1.5 years, eight require 2.0 years, two require 2.5 years, and 17 require 3.0 full years of chargeable experience paying wages to employees.[109]

2. The Importance of New Employers in UI Financing

It is generally recognized that small businesses start-ups are linked to job creation in the U.S. economy. An early study by Birch (1979) suggested that small businesses were the main source of new job growth in America. A more recent study by Haltiwanger, Jarmin, and Miranda (2010) found that the majority of net new job creation was attributable to small young businesses.[110] While past research has reached different conclusions about the contribution of small businesses to overall employment growth, the linkage is widely acknowledged.

The potential influence of the UI program on employer location decisions is important to recognize. Business start-ups can be a prime target of state economic development efforts, and new employer UI tax rates are one consideration in business location decisions. For example, Wheaton (1983, p. 85) estimated that UI taxes are the second most important factor influencing business location. More broadly, the potential effects of low new employer tax rates must be balanced against the prospect of potential future benefit charges against new employers.

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[108] In January 2015 thirty-nine states have computation dates of either June 30 or July 1, seven use December 31, six use September 30 or October 1. North Carolina uses August 1. The effective date for new tax rates is January 1 in all states except New Hampshire, New Jersey, Tennessee, and Vermont where it is July 1.

[109] These minimum durations of experience are listed in Table 2-12 of the U.S. Department of Labor's *Comparison of State Unemployment Insurance Laws - 2014*. The 53 UI programs include the District of Columbia, Puerto Rico, and the Virgin Islands.

[110] This summary relies on Brunet (2014).

While new small businesses may create many new jobs, less than half of new businesses survive more than five years. That means new businesses are responsible for large numbers of layoffs, and state UI tax programs must finance the associated UI benefit payments. Based on data from the U.S. Census Bureau, Business Dynamics Statistics, Shane (2012) estimated the five-year survival rates (percentages) by industry for new companies started in 2005. The ranking for eight broad industries from highest to lowest was as follows: mining (51.3); manufacturing (48.4); services (47.6); wholesaling and agriculture (47.4); retailing (41.1); finance, insurance, and real estate (39.6 percent); transportation, communications and utilities (39.4 percent); and construction (36.4 percent). New employers in all industries experience high failure rates, but new construction employers experience the highest rates.

Figure 8.1 illustrates business failure rates using employer micro data from Missouri. New employer start-ups and their survival rates were identified for the ten years 2002 to 2011. Figure 8.1 then shows one to five-year survival rates. Since the data end in 2012 the five-year survival rates extend only from 2002 to 2007 for new firms that started in 2007. Note that every one of the five-year survival rates falls below 0.45. Figure 8.1 reinforces the point that fewer than half of new start-ups survive for five years. These failures generate UI claims that must be adequately financed.

FIGURE 8.1
Missouri employer survival rates among start-ups, 2002-2011
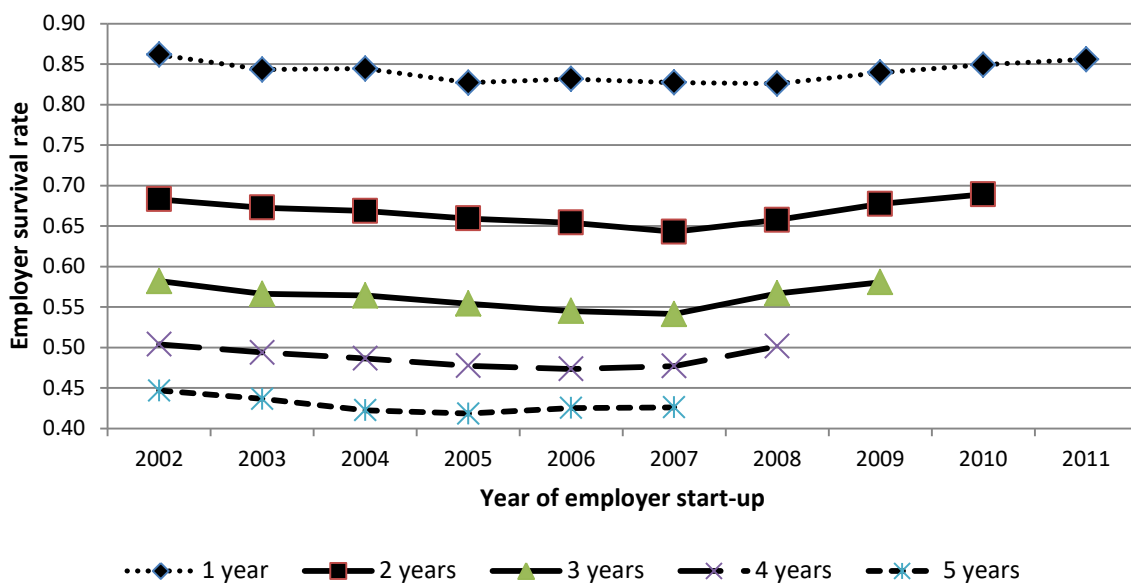
Source: Calculations based on UI program employer micro data for the years 2002 to 2012.

3. Assigning New Employer Tax Rates

Most states assign new employer rates in one of three ways: (1) a single uniform rate is assigned to all new employers, (2) a single uniform rate is assigned to all employers except those in the construction industry who are assigned a separate (higher) rate, and (3) rates are assigned based on the average tax rates for defined industry groups. Table 8.1 lists the rules for assigning new employer tax rates in the 53 UI jurisdictions in 1985 and 2015. During the 1985-2015 period several states changed their assignment method or their new employer tax rate(s) or both. In 1985 36 states assigned the same rate to all new employers while three states assigned a single rate to all except construction industry employers who were assigned the industry average rate. Eleven other programs assigned industry average tax rates to the employers from specified industries. In both periods states that assigned differential industry tax rates defined the industries with differing levels of industry detail. By 2015 Table 8.1 shows that only 29 states still assigned a uniform rate to all new employers, and in most states the 2015 rate is lower than the 1985 rate. Among the programs that can be directly compared in Table 8.1, the 2015 new employer rate was lower than the 1985 rate in 24 of 31 states.

The change in totals among the three types of new employer rate setting has involved one state adopting the uniform new employer rate approach—Alaska which switched from an industry average rate. North Dakota switched from industry average to uniform plus construction average. Fourteen states switched away from the uniform single rate with four adopting uniform-plus-construction average rates and four moving to industry average rates. The trends in new employer tax rates between 1985 and 2015 have been towards increased tax rate diversity and towards lower overall averages.

SINGLE UNIFORM RATE. The most common level of the uniform rate in 1985 was 2.7 percent, and it applied in 11 states. The second most common uniform new employer rate in 1985 was 3.0 percent, present in five states.

A practical uniform rate is the five-year ratio of statewide benefit charges to taxable wages paid. This ratio is part of the new employer tax rate assignment rule currently used in Rhode Island, and used previously in Connecticut, Maryland, and Minnesota. For Missouri a tabulation of micro data from new employers in their second year of operation indicated that charged benefits averaged 1.3 percent of taxable payroll during the ten years 2002 to 2011. Imposing a uniform new employer rate of 1.3 percent during these years would have matched the cost rate of charged benefits and would support the financial integrity of the Missouri program.

UNIFORM PLUS CONSTRUCTION INDUSTRY RATES. Thirteen states in 2015 assign the construction industry average tax rate to new construction employers and a different uniform rate to new employers in all other industries. Only three states used this method in 1985.

TABLE 8.1

New Employer UI Tax Rates by State, 1985 and 2015

State	New employer rates in 1985	New employer rates in 2015
AL	2.70%	2.70%
AK	Avg. industry rate	1.96%
AZ	2.70%	2.00%
AR	3.50% but 6.00% with negative balance	2.90%
CA	3.40%	3.40%
CO	Greater of 2.70% or average industry rate	Greater of 1.7%, actual rate, or, construction industry average
CT	2.60%	Greater of 1.00% or 5 year benefit cost rate
DE	Greater of avg. industry rate or 1.00%	2.10%
DC	3.00%	2.7% or average rate for all ERs if higher
FL	2.70%	2.70%
GA	2.70%	2.62%
HI	3.60%	3.00%
ID	3.70%	3.36%
IL	2.7% or 2.7% times state exp. or avg. industry rate	4.35% or average industry rate if greater
IN	2.70%	2.5%; 1.6% for government employers
IA	2.3% but construction pays 9.00%	1.5%; construction ERs receive 9.0%
KS	Ind. avg rate: 3.79% - 5.21%	2.7%; construction ERs receive 6.0%
KY	3.00%	2.7%; foreign and domestic construction firms receive maximum rate
LA	Greater of avg. ind. rate or 5.40%	Up to 6.2% based on average industry rate
ME	3.00%	Greater of predetermined yield or 1%
MD	2.80%	2.6%; foreign contractors assigned average industry rate
MA	3.00%	2.83%; construction ERs receive 8.62%
MI	2.70% (first 2 years)	2.7%; construction ERs receive average industry rate
MN	2.90%	3.03% ; 9.40% for high experience rated industries
MS	2.70%	1.0% - 1.2% depending on years of liability
MO	Greater of 2.70% or avg. ind. rate	Greater of 3.51% or avg. ind. rate
MT	3.80%	Ranges from 1.7% - 4.10% based on average industry rate
NE	3.50%	2.49%; construction ERs receive 6.49%
NV	3.00%	2.95%
NH	2.70%	2.20%
NJ	3.70%	3.40%
NM	2.70%	2.00%
NY	3.70%	Lower of 3.4% or max rate on positive balance employers
NC	3.51%	1.20%
ND	Lesser of Avg. industry rate or 3.00%	1.25%; except construction ERs pay industry average rate
OH	Greater of avg. rate or 3%	2.7%, except construction ERs pay industry average rate
OK	3.10%	2.00%
OR	3.50%	3.30%
PA	3.5% except construction is 9.4%	3.6785%; construction employers pay 10.19%
PR	2.95%	3.30%
RI	3.80%	Higher of 1.0% or the 5-year benefit cost rate up to 4.2%
SC	2.70%	1.55%
SD	3.50%	1.2% for first year; 1.0% for second if positive balance
TN	2.70%	2.7%, or avg. industry rate if industry reserve ratio is 0.0% or less
TX	2.70%	Greater of 2.7% or industry rate
UT	Ind. Rate, 1.00 to 8.00 %	Average industry rate up to 9.5%
VT	4.80%	Lower of avg. industry rate or rate class eleven, but not less than 1%
VA	2.80%	2.52%
VI	5.40%	1.00%
WA	Industry average but not less than 1%	90, 100, or 115% of industry average rate depending upon benefits charged and taxes collected during the previous three years
WV	3.7% but out of state construction firms pay higher	2.7%, construction and foreign entities pay 7.5%
WI	3.60% but add 1.30% under certain circumstances	3.60% or 4.10%; except construction employers pay 7.10%
WY	Average industry rate, but not less than 1%	Average industry rate

Source: "Comparison of State Unemployment Insurance Laws" 1985 and 2015 issues.

Micro data on benefit charges and taxable payroll across detailed industries in Missouri help to illustrate the size of UI cost differential that arises from the construction industry. Eleven years of micro data from 2002 to 2012 were tabulated for 21 detailed industries. While the all-industry cost rate (benefit charges as a percent of taxable

payroll) ranged between 1.3 percent in 2006 and 3.9 percent in 2009 the comparable cost rates for construction were 2.9 percent in 2006 and 11.2 percent in 2009. In every one of these eleven years the cost rate in construction was more than twice the all-industry cost rate. Summing across these 11 years, construction accounted for $1.005 billion of $3.491 billion of UI benefits or 28.8 percent of the total. However, the taxable payroll in construction during 2002-2012 was just 10.6 percent of the all-industry total.

The preceding calculation illustrates why it is logical to have a separate and higher tax rate for new employers in the construction industry. Later paragraphs return to this topic and show construction tax rates in several states.

INDUSTRY-SPECIFIC NEW EMPLOYER RATES. Following the logic of the preceding construction industry example, about one fifth of states assign the industry-specific average tax rates as the new employer rates. Fourteen states used this approach in 2015, up from eleven in 1985. But it should also be noted that two states (Alaska and North Dakota) have discontinued this practice.

The states that assign varying industry tax rates set their rates using different levels of industry detail. At one extreme, Missouri applies just three differing industry tax rates to its new for-profit employers (plus an optional rate for non-profit employers). At the opposite extreme, Washington recognizes 312 different industries in setting tax rates for its new employers. At intermediate levels of industry detail are Illinois (seven industries), Montana (10), Wyoming (12) and Utah (100). In short, the states differ widely in the degree of industrial disaggregation used to set their industry-specific new employer tax rates.

Another variant for assigning industry-specific new employer tax rates is to establish a basic statewide average rate. However, if an industry's average benefit cost rate exceeds this basic rate, new employers in that industry are assigned the (higher) industry-specific rate. Colorado, Illinois and Texas are three states that follow this procedure.

The states also follow different approaches in assigning tax rates to new employers in their second and third years of liability before they become experience rated. The majority use the same new employer rate in all three years. In Missouri, however, the tax rates in the second and third years are set as averages of the first-year new employer rate and the benefit cost rate from the succeeding year (or years) of liability. Mississippi and South Dakota also vary their new employer rates depending upon the employer's year of liability.

Louisiana requires three years of activity for employers to be experience rated. During the first year the industry average rate is assigned to new employers. Average rates are set for twenty-four two-digit NAICS industry groups, but no rate exceeds the statewide maximum tax rate (6.2 percent in recent years). New employer rates usually change in the second and third years of activity, unless employers are already at the maximum rate. If the industry average reserve ratio deteriorates (improves) the new employer rate will increase (decrease) in the second and/or third year of activity since new employer rates are calculated as averages of the rates for the relevant years.

4. New Employer Tax Rates in Construction

Unemployment Insurance (UI) claims and benefit payments (as a percent of payroll) in the construction industry are consistently higher than all-industry averages. This differential also characterizes new employers in construction as well as employers who are experience-rated. In recognition of this "fact" of UI claims, many states apply higher tax rates to new construction employers than to employers in other industries.

Tables 8.2 and 8.3 document the new construction employer tax rate differential for two groups of states in 2014. Table 8.2 displays 2014 tax rates for new employers in eight states where there is one rate for construction (column (1)) and a second rate for "all other" industries (column (2)). The states included in Table 8.2 were chosen because the two tax rates appear in the 2014 edition of the "Comparison of State Unemployment Insurance Laws" (Table 2-12). Note that the new construction employer tax rate exceeded 6.0 percent in six of the eight states and the average among the eight states was 8.11 percent. Among non-construction employers the tax rate fell below 3.0 percent in six of eight states and the eight-state average was 2.84 percent.

TABLE 8.2.

New Employer Tax Rates in Eight States: Construction and "All Other"- 2014

State	Construction (1)	All Other Industries (2)	Construction/All Other (3)
Iowa	9.0	1.5	6.00
Kansas	6.0	2.7	2.22
Kentucky	10.0	2.7	3.70
Massachusetts	8.62	2.83	3.05
Nebraska	6.49	2.49	2.61
Pennsylvania	10.19	3.68	2.77
West Virginia	7.5	2.7	2.78
Wisconsin	7.1	4.1	1.73
Average	8.11	2.84	2.86

Source: Comparison of State Unemployment Insurance Laws, 2014," Table 2-12.

Column (3) in Table 8.2 shows the ratio of the construction tax rate to the "all other" tax rate. In seven states this ratio exceeds 2.0 and in three it exceeds 3.0. On average, new construction employers pay UI taxes at much higher tax rates than other new employers.

Table 8.3 makes a similar comparison for five states that set industry-specific new employer tax rates for several detailed industries.[111] The number of industries varies from three in Missouri to 312 in Washington. All five states use industry codes from the North American Industry Classification System (NAICS) but with differing levels of industrial detail (column (2)). Two digit NAICS codes are used most often but with differing industry aggregations of two-digit codes. Louisiana uses all 24 two-digit NAICS codes while Missouri, Montana and

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[111] State practices in setting detailed industry rates are similar. Montana, for example, uses an annual tabulation of benefit cost rates for its 10 detailed industries over the twelve months preceding its computation date (September 30th). The states in Table 8.3 review their industry-specific new employer rates annually and make changes that reflect recent industry-specific experiences.

Wyoming use aggregations of two-digit industries. Washington uses finer industry detail (four-digit NAICS codes). Its new employers are taxed using 312 different tax rates.[112]

States with Several Industry-specific New Employer Tax Rates – 2014

State	NAICS Industry Detail (1)	Number of Industries (2)	Construction Average Tax Rate (3)	Overall Average Tax Rate (4)	Construction/Overall Average =(3)/(4) (5)
Louisiana	2 Digit	24	3.23-b	2.35-b	1.37
Missouri	a	3	4.92	3.67	1.34
Montana	2 Digit	10	3.78	2.07	1.83
Washington	4 Digit	312	3.85	1.75	2.20
Wyoming	2 Digit	12	4.69	3.00	1.56
Average	-	-	4.09	2.54	1.61

Source: Columns (1), (2) and (3) from the UI tax agencies in these states and column (4) from ETA 204 reports.
a – Different rates for construction, mining and "all other" among for-profit employers.
b – Fiscal year 2011.

Columns (3) and (4) display average new employer tax rates in 2014 for construction and the overall average for all industries respectively. As in Table 8.2, new construction employers in Table 8.3 pay noticeably above-average tax rates. The ratio of the construction tax rate to the all-employer tax rate appears explicitly in column (5) of Table 8.3. For these states the average new employer tax rate was taken from ETA-204 reports which identify the statewide average tax rate for new employers.

The ratios in column (5) of Table 8.3 are noticeably lower than the ratios in column (3) of Table 8.2 with respective multi-state average ratios of 1.61 and 2.86. Part of the explanation for the contrast in these ratios is that construction employers are included in column (3) of Table 8.3 but excluded from column (2) of Table 8.2. Note that in every state in these two tables new construction employers face UI tax rates that exceed the statewide all-industry average.

When new employer tax rates in other non-construction industries were examined in Missouri, Montana, Washington and Wyoming a consistent pattern was observed. Three industries, (Agriculture, Mining and "Not Classified") also exhibit above-average tax rates. But all three of these industries have much smaller employment totals when compared to construction. Most of the added revenue obtained from new employers in states that have tax rates that differ by industry (as opposed to having a single statewide new employer tax rate) is derived from new employers in construction.

To summarize, Tables 8.2 and 8.3 show tax rate details for new construction industry employers in 13 different states. In all 13 states the new employer rate for construction exceeded the all-industry average. Compared to new

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[112] Utah also uses detailed industry codes to set tax rates for new employers. It uses 3-digit NAICS codes with 100 industry-specific tax rates. Utah was not included in Table 8.3 because it does not publish information on detailed tax rates for new employers by 3-digit industry.

employers in other industries, those in construction experience above-average business failure rates. By charging above-average rates to new construction employers these states are guarding against potential drawdowns in their UI trust fund caused by new employers in this high-benefit industry.

5. New Employer Characteristics

New employers make up a measurable share of covered employers in all state UI programs. In 2014, for example, the new employer share ranged between 7.1 and 33.4 percent of all taxable covered employers in individual states and averaged 18.5 percent. Their share exceeded 20 percent in 20 of 47 states where data for 2014 were available.

The following section summarizes selected new employer data and compares them with experience-rated employers using ETA 204 reports submitted annually by the states to the national OUI office. These reports show the number employers, total and taxable payroll and charged benefits for employers arrayed into groups according to standardized tax rate intervals. New employers display certain obvious characteristics that distinguish them from experience-rated employers. As a group, new employers are much smaller than average and they pay below-average wages. Their average tax rate as a percent of taxable payroll, however, is above-average in the majority (about two thirds) of state programs. The comparisons in the following paragraphs utilize ETA-204 data from the tax rate years 2007, 2010, 2013 and 2014. The comparisons emphasize the effects of years-to-experience-rating, the number of years a new employer must be active before being eligible to be experience rated. This number reflects state policies and ranges between one and three years across the individual programs.

NEW EMPLOYER SHARE OF ALL EMPLOYERS. Regressions (1) and (2) in Table 8.4 link the new employer share of all employers to the number of years in covered employment required before an employer can become experience rated. As noted previously, years-to-experience varies between 1.0 and 3.0 years across the states. In 2014 16 of 51 programs required three years of experience while 22 states required just one year.[113]

Both regressions show a strong, positive association between years-to-experience-rating and the new employer as a share of all employers. Each added year between 1.0 and 3.0 is associated with an increase in the new employer share of about 0.05. For example, the projected proportion in states with a one-year requirement in 2014 is 0.134 compared to 0.246 in states with a three-year requirement. The new employer proportion is nearly double for states with the three-year requirement. Not surprisingly, states with a shorter requirement have a noticeably smaller proportion of new employers in their pool of covered employers.

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[113] The ETA 204 data identify three groups of employers: eligible to be regularly rated, eligible for special rates and those ineligible for experience rating. New employers in this analysis are employers ineligible for experience rating.

TABLE 8.4.
Selected Characteristics of New Employers in 2007 and 2014

Equation and Year	Constant	Years to Experience Rating	Adjusted R^2	Standard Error	Mean	Number of Programs
New Employers as a Proportion of All Employers						
(1) 2007	0.075 (3.4)	0.055 (5.3)	0.372	0.061	0.183	47
(2) 2014	0.078 (4.5)	0.056 (6.8)	0.495	0.050	0.185	47
Relative Size of New Employers – a						
(3) 2007	0.069 (2.8)	0.050 (4.4)	0.293	0.066	0.169	45
(4) 2014	0.011 (0.4)	0.073 (5.8)	0.413	0.077	0.151	47
New Employer Relative Wage Levels – b						
(5) 2007	0.600 (11.5)	0.050 (2.1)	0.070	0.138	0.700	45
(6) 2014	0.549 (10.7)	0.069 (2.9)	0.144	0.141	0.683	44

Source: ETA 204 reports for tax rate years 2007 and 2014. Data not available for Alaska, Arizona, Delaware and Oklahoma. Puerto Rico and the Virgin Islands not included in the analysis. In parentheses beneath each regression coefficient is the absolute value of its t ratio. T ratios of 2.0 or larger are usually considered statistically significant.
a – Estimated as the ratio of the new employer share of total payroll to the new employer share of all employers.
b – Estimated as the ratio of the new employer statewide share of total payroll to their share of taxable payroll.

The ETA-204 data also show that the new employer share of all employers changes over the business cycle. Note in Table 8.4 that the average new employer proportions in rate years 2007 and 2014 were respectively 0.183 and 0.185. The average proportion in 2010 was roughly two percentage points lower at 0.163. These recent data show that starting a new firm in a year of weak labor markets like 2010 is more difficult than during years of strong demand and sales.

NEW EMPLOYER SIZE. A proxy measure for new employer size relative to experience-rated employers can be derived from the ETA-204 data as the ratio of their share of total covered payroll to their share of all covered employers. If, on average, new employers were the same size as experience rated employers, the new employer share total covered payroll would equal their share of all covered employers. In fact, their share covered payroll is consistently much the smaller of the two proportions. In 2007 and 2014 the new employer relative size ratios across all programs averaged 0.169 and 0.151 respectively. Using the share of total payroll as an indicator of relative size, new employers on average were consistently less than one-fifth the average size of experience-rated employers in the four years 2007, 2010, 2013 and 2014.

Equations (3) and (4) in Table 8.4 show that the relative size of new employers is closely related to the required number of years to experience rating. Both regressions show a strong positive association between the years-to-experience-rating requirement and relative size. In 2014, for example, the regression projections of average size were 0.084, 0.157 and 0.230 for 1.0, 2.0 and 3.0 years-to-experience-rating respectively. New

employers in states with a three-year requirement on average were nearly three times the relative size of new employers in states with a one-year requirement. A strong years-size gradient was also present in equation (3).

WAGE LEVELS OF NEW EMPLOYERS. The ETA-204 data also can show the average wage level of new employers relative to experience-rated employers. If new employers paid the same average wages as their experience-rated counterparts, the new employer share of total payroll would equal their share of taxable payroll. If their share of taxable payroll exceeds their share of total payroll, their average wages are lower than the average for experience-rated employers.

Thus a proxy measure for the average relative wage level of new employers is the ratio of their share of total payroll to their share of taxable payroll. In nearly all states during the four years 2007, 2010, 2013 and 2014 this ratio fell below unity, indicating below-average wages. Regressions (5) and (6) in Table 8.4 link years-to-experience-rating to the relative wages of new employers. Both slope coefficients are positive and significant indicating that new employers in states with three year requirements pay higher relative wages than new employers in states with shorter requirements. Compared to earlier results in Tables 8.4, however, regressions (5) and (6) have much lower explanatory power with adjusted R^2s of 0.070 and 0.144. The means (0.700 and 0.683) show that the relative pay levels of new employers average about two-thirds of the levels of experience-rated employers. In both years there was wide variation in the relative wage ratios, but the vast majority of new employer relative wages ranged between 0.40 and 0.89.

NEW EMPLOYER TAXES. Earlier in the chapter it was noted that states follow three main approaches in setting tax rates for new employers: a single tax rate, two tax rates (construction and all other), and industry specific rates. Across the states in the third group, the number of separate industries varies but construction employers consistently pay above-average tax rates.

Because new employers are small relative to experience-rated employers, their contribution to annual UI tax revenue is modest. In rate year 2014, for example, the new employer share of aggregate taxes in ETA-204 data averaged 0.052 while their share of UI covered employers was 0.185. The highest share of total revenue paid by new employers in 2014 was 0.196 in Arkansas, and the share exceeded 0.100 in only four other states (North Dakota, Tennessee, New Mexico and Nevada). The new employer share exceeded 0.100 in four states in 2013, in four states in 2010 and in 12 states in 2007.

One interesting question about new employer taxes is how their average tax rate compares with the average for experience-rated employers. Insight into this question can be obtained by comparing of the new employer share of taxable payroll with their share of UI taxes. If new employers pay the same average rate as experience-rated employers, their share of taxes paid would match their share of taxable payroll. If their average tax rate is higher their share of taxes will exceed their share of taxable payroll and the ratio of the two shares will exceed 1.0.

For the four rate years 2007, 2010, 2013 and 2014 the ratio of the new employer tax share to the new employer taxable payroll share averaged 1.448, 1.307, 1.113 and 1.214 respectively. The average tax rate for new employers was above-average in all four years, but the differential decreased substantially after 2007. During these eight years the average new employer tax rate evolved to became more similar to the average tax rate for experience-rated employers.

The ETA-204 data also show the comparative size of the benefits charged against new employers relative to their UI tax payments. In 2007, 2013 and 2014 new employers in every state paid more UI taxes than their benefit charges. Charged benefits exceeded taxes in two states (Georgia and Rhode Island) in 2010 and in one state (Rhode Island) in 2011. Thus for 227 of 230 state-year observations from these five years new employers paid more UI taxes than the benefit charges they incurred.

The aggregate differentials between new employer total tax payments and total charged benefits during 2007, 2010, 2011, 2013 and 2014 were $1.148, $0.605, $0.554, $0.904 and $1.000 billion respectively. This aggregate differential shows an obvious response to overall unemployment (the 2010 and 2011 differentials were the smallest), but the tax-benefit differential among new employers helps to increase the UI trust fund balances in nearly all states in nearly all years. During the three non-recession years examined here (2007, 2013 and 2014) the annual differential averaged $1.017 billion. During the years of higher unemployment the differential was much smaller, in the $0.550-0.600 billion range. Based on these data, the aggregate contribution of new employers to increasing the all-state trust fund balance during recent non-recession years has been to increase the balance by about $1.0 billion per year.

Nearly all states in the five rate years 2007, 2010, 2011, 2013 and 2014 (227 of 230 state-year observations) set their average new employer tax rates to exceed new employer benefit charges. An obvious way for a state to ensure the adequacy of its average new employer tax rate would be to do an annual tabulation comparing tax payments against benefit charges for new employers. An excess of taxes over benefit charges for the past year or for several recent years would assure the state that its average new employer tax rate (however derived) was contributing to the solvency of its UI trust fund.

Micro data for individual new employers in Missouri also show an excess of UI taxes over charged benefits. Recall from Table 8.3 that Missouri has three industry-specific new employer tax rates: for mining, construction and "all other" industries. While the number of new employers in mining has been small (26 or fewer) and variable in recent years, the average numbers in construction and "all other" were 2,491 and 18,525 respectively during 2003-2012. The ten annual ratios of taxes to charged benefits averaged 2.2 in construction and 5.1 in "all other" industries. For construction, the ten tax/benefit ratios ranged between 5.1 (2006) and 1.0 (2010). For "all other" industries, the ten ratios ranged between 7.8 (2007) and 3.4 (2009). Thus the micro data show a consistent pattern

of taxes exceeding charged benefits for both industry groups in Missouri over ten years of widely differing macroeconomic conditions.

6. SUTA Dumping

SUTA dumping is an acronym used to describe State Unemployment Tax (SUTA) manipulation by employers intended to reduce state UI taxes. It was an important issue before Federal legislation in 2004 made it against Federal law to strategically avoid responsibility for unemployment experience (and associated state UI taxes) under state UI tax laws.[114]

The SUTA Dumping Prevention Act of 2004 addressed the problem of tax rate manipulation by addressing two types of employer activities: prohibited transfers and mandatory transfers. The Act prohibited the transfer of experience when a person who was not an employer acquired a business solely to obtain a lower rate of contributions. UIPL 30-04, and UIPL 30-04, Change 1 provide information on how this type of acquisition can occur and how states can evaluate such transactions to determine the intent to evade the new employer rate. The Act also addressed the affiliated transfer problem by mandating the transfer of experience when an employer, including an employer subject to the new employer rate, transfers, as part of a transfer of trade or business, to another business with which it shares substantially common ownership, management or control. The law required states to transfer the experience and assign a new rate to that account. In UIPL 30-04, Change 1, states were encouraged to review these mandatory transfers for manipulation of experience rates, and if found, to collapse accounts and assign a single tax rate to the combined account.

The Act requires states to develop procedures to identify SUTA Dumping and requires state law to provide civil and criminal penalties to individuals, advisors and employer who engage in such actions.

UI program letter 34-02 described the two main approaches used for SUTA dumping:

- By acquisition – a new employer purchases an existing business that has a low UI tax rate. That low rate is transferred to the new business under state laws governing employer succession and transfer of experience. Once the experience is transferred and a low rate established the company begins operations.

- By creating affiliated companies – an existing company starts several new companies and gets UI account numbers for each, then reports wages for a small number of employees and pays state UI taxes until each new company qualifies for low tax rate. The principal company then transfers a major

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[114] Public law 108-295: SUTA Dumping Prevention Act of 2004.

portion of employees to the new companies with lower tax rates allowing it to effectively "dump" the higher state unemployment tax rate.

SUTA dumping was a growing problem before 2004. It influenced states to move away from uniform new employer rates toward industry specific rates to reduce the incentive for employer strategic SUTA dumping behavior. Despite the Federal legislation, certain industries such as construction which have both low employer survival rates and high employment turnover rates will continue to merit special attention in setting new employer UI tax rates.

7. Summary

Employer UI tax rates must be based on experience with unemployment after three years of benefit payment liability. Many states permit employers to apply for experience-based tax rates sooner than three years, but in no case can an experience rate be assigned with less than one year of exposure to benefit payment liability.

As noted earlier, the states follow three main approaches in assigning UI tax rates to new employers: i) all employers pay the same rate; ii) employers in construction pay one rate while all other employers pay a second rate; and iii) employers pay industry-specific rates. States in the latter group set tax rates for differing numbers of detailed industries that range from three industries in Missouri to 312 in Washington. The states also follow differing practices in adjusting new employer tax rates in years two and three before qualifying for an experience-based tax rate.

The preceding summary shows that states follow many approaches in setting new employer tax rates. If a state found its present rate setting procedures to be unsatisfactory it could consider a wide variety of alternatives. The frequency of setting different rates for detailed industries has increased over the past 30 years. The number of different industry-specific rates varies widely across the states with differential industry rates.

The new employer tax rate level can depend on the history of new employer benefit charges. Some states set a rate equal to the average ratio of benefit charges to taxable wages over the past five years; others set the rate at the Federal maximum or at the state maximum. Still other states set the new employer rate at the average for next year's tax rate schedule.

ETA-204 data showed that annual taxes paid by new employers exceeded annual benefits charged in nearly all states in nearly all years. In the non-recession years 2007, 2013 and 2014 new employer taxes exceeded new employer charged benefits in all states. The aggregate excess in these three years averaged about $1.0 billion per year. In 2010, a year of weak labor markets, new employer taxes exceeded charged benefits in all but two states, and the net excess was about $0.6 billion. Taxes on new employers relative to their charged benefits are helping to raise statewide UI trust fund balances in nearly all situations.

In recent years interstate competition for employers and jobs has induced many states to lower their rates for new employers. Also, more states now are assigning industry specific average rates to new employers rather than a single tax rate for all new employers. This practice can be seen as a way to balance revenue requirements with economic development objectives. States want to encourage business formation and job creation, but at the same time they need to assure that the cost of business entry appropriately reflects the expected costs of job loss associated with new firm dynamics in state economic development. Having industry-specific new employer rates helps to achieve both objectives.

Chapter 9. State UI Reserve Funds

Covered employers in every state pay two UI-related payroll taxes – Federal Unemployment Tax Act (FUTA) taxes and state UI taxes. FUTA taxes are paid into the Employment Security Administration Account (ESAA), one of three Federally-administered accounts linked to the State UI program activities. The two related Federal trust funds are the Extended Unemployment Compensation Account (EUCA) and the Federal Unemployment Account (FUA). The ESAA account finances administrative grants to states to pay the Federal share of the costs of administering the Unemployment Insurance (UI) and Employment Service (ES) programs in every state. The ESAA account also finances certain administrative activities by the Bureau of Labor Statistics and Veterans Employment and Training Services. Transfers from ESAA to EUCA finance one-half of the cost of Federal-State Extended Benefits during periods of high unemployment. Transfers from ESAA to FUA provide loans to states when state trust funds are insufficient to pay regular UI benefits.

The State UI taxes finance regular unemployment insurance (UI) benefits. Each state has its own UI Trust Fund account in the U. S. Treasury to pay regular UI benefits. The state UI Trust Fund accounts earn interest on their deposits, which help to build reserves during good economic times. Per Federal law, this interest must be retained in the state UI Trust Fund account (42 USC Sec. 1104, part d).[115] In addition, the Federal "withdrawal standard" for the funds held in these Treasury accounts mandates that all money in these accounts (including interest earnings) go to pay UI benefits[116] (US Department of Labor, n.d.).

1. Reserve Fund Background

Because of the strict withdrawal standard that governs state UI Trust Fund accounts at the U. S. Treasury, some states have devised ways to gain flexibility in the use of state UI taxes in order to pay for certain costs related to UI and ES administrative activities and labor market services. If a state decides it has a sufficient balance in its account at the U. S. Treasury, it may choose to reduce state UI tax rates and create a separate tax that will go into a state reserve fund. A state cannot simply remove funds from its UI Trust Fund account at the U. S. Treasury for uses not permitted in law. In order for its employers to receive a credit on their FUTA taxes, states must meet certain conformity standards with their state reserve fund accounts. The immediate deposit standard (or deposit standard) requires that all money collected for UC be deposited immediately and that all money withdrawn from the state reserve fund must be used to pay benefits – just as it would be if it were being held in the Treasury

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[115] In 2012, a year when accounts in many states are quite low due to the 2007-2009 recession, state UI accounts held at the Treasury earned $107 million in interest. During 2000, a year when balances in Treasury accounts were much higher, the state trust fund accounts at the Treasury earned over $3.4 billion in interest. (U.S. Department of Labor USDOL 2014c, column (9).)

[116] Limited exceptions to this exist, for example, the refunding of errant deposits.

account. However, unlike monies held at the Treasury, no Federal law requires that interest earned by state reserve funds be deposited into the state reserve fund account. States may exploit this different treatment of interest between the state UI Trust Fund account at the U.S. Treasury and the state reserve fund to gain flexibility in using the interest income generated by the reserve fund. They may divert this interest income into a related state account (hereafter termed a derivative account).

Some states use additional state-level taxes to augment Federal payments to finance administrative costs or to finance employment related services offered by state UI offices.[117] States do not have the authority to simply request larger payments from the Federal government to cover the costs of the UI administration and employment related services. Instead, some states impose additional taxes or use general revenue to pay for UI operations that the Federal government does not cover with its administrative allocations. The states have also used interest income generated by state reserve funds to support administrative services (e.g. to help create one-stop systems, now termed American Job Centers) and pay for related services such as job training and placement services. Because Federal FUTA funds may not be used to administer programs other than the UI and ES programs, interest diverted from the state reserve fund (or revenue from some other state source) must cover the administrative costs of the reserve fund as well. This requirement to finance administrative costs is mandated for all state reserve funds, and is not discussed further in this chapter.

Figure 9.1 provides a schematic summary of the financial flows associated with state reserve funds. State UI taxes in reserve fund states flow into two funds: the state account at the U.S. Treasury and the state reserve fund. The principal in these two accounts is dedicated to paying state UI benefits as shown in the figure by the flows (arrows) to the right from the two funds to UI Benefits.

The key difference between the two funds is their treatment of interest income. Interest earned by the State Account at the U.S. Treasury is retained in the State Account where it is used to pay UI benefits. Interest earned by the State Reserve Fund flows into the Derivative State Fund where it can be used in several different ways. Three uses are identified in the figure, but other uses are also possible such as paying UI benefits or repaying the principal and/or interest on Treasury loans to the State Account at the U.S. Treasury. The important point is that the state controls the use of the funds withdrawn from the Derivative State Fund.

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[117] Table 2-17 of the "Comparison of State Unemployment Insurance Laws, 2014" shows a state-by-state summary of these state taxes.

FIGURE 9.1.
Financial Flows Related to State UI Trust Funds and State Reserve Funds
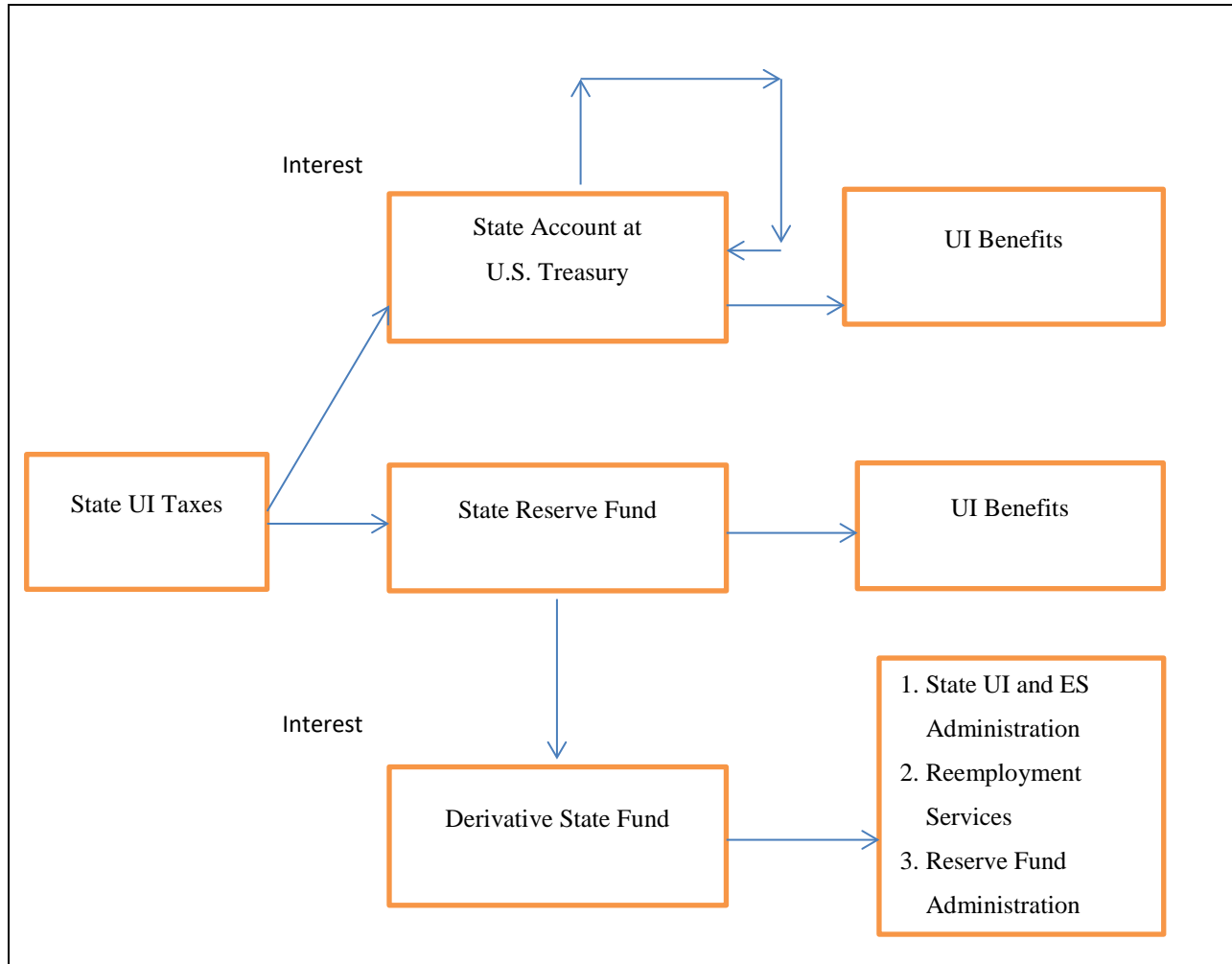
Source: Figure developed at the Urban Institute.

North Carolina created the nation's first state reserve fund in 1986. The fund was established by implementing a 20% surtax on contributions due that would be in effect whenever the reserve fund balance was below a defined level. At the same time this surtax was implemented, there was an equal reduction in the taxes into the state's UI trust fund account at the U.S. Treasury. The net effect was to leave unchanged total state UI taxes. Since 1986, five additional states – Idaho, Iowa, Nebraska, New Mexico, and Oregon — have created reserve funds, all modeled on North Carolina's fund. As of 2015, Idaho, Iowa, and Nebraska, have active state reserve funds. Between July 2013 and June 2015 the reserve fund in North Carolina has been used only to collect revenue to repay borrowing from the U.S. Treasury, a use much different than the original uses of its reserve fund between 1989 and 2005.[118]

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[118] Wyoming and Texas appeared to establish reserve funds, based on the annual U.S. Department of Labor Publication "Comparison of State Unemployment Laws". The Wyoming reserve fund was financed with adjustments made for benefits that were ineffectively charged or noncharged applied to employers electing contributions (as opposed to electing reimbursing

The following section summarizes the use and history of state reserve funds, including how the funds fared during and after the 2007-2009 recession.

2. Active State Reserve Funds

NORTH CAROLINA 1986 TO PRESENT. The North Carolina reserve fund, officially known as the "Special Employment Security Administration Fund," started to collect taxes in 1986. Its revenue was derived from a surtax of 20 percent added to North Carolina employer contributions. At the same time the state reduced the employer state UI tax rate by 20 percent, leaving total receipts from the two taxes unchanged. Rather than depositing the surtax proceeds into the State UI Trust Fund account at the U.S. Treasury, the surtax receipts were deposited into the state-administered Special Employment Security Administration Fund (hereafter the reserve fund). This surtax was activated when the reserve fund needed to be replenished.

Rather than re-depositing the interest earned by the reserve fund back into the reserve fund, North Carolina diverted the interest into the Worker Training Trust Fund (WTTF). The WTTF was officially abolished in July 2013, but the 20 percent surtax was retained. Between July 2013 and April 2015 all surtax revenue and associated interest earnings was used to repay the Treasury loans to the state UI trust fund. The repayments continued until North Carolina's debt to the Treasury was fully repaid in June 2015. As of mid-2015, it is unclear if and when a fund similar to the WTTF will be reestablished. Although the WTTF no longer exists, it provided the model for reserve funds in other states, and it is described below.

Under its original authorization the WTTF had a purpose much broader in scope than either the reserve fund or the state's UI trust fund account held at the U.S. Treasury. From 1989 until 2005, money from the WTTF was used for a variety of purposes which included:

1. Fund programs, specifically for the benefit of unemployed workers or workers who have received notice of long-term layoff or permanent unemployment, which will enhance the employability of workers, including, but not limited to, adult basic education, adult high school or equivalency programs, occupational skills training programs, assessment, job counseling and placement programs;

2. Support the operation of local Employment Security Commission offices throughout the State; or

3. Provide tax refunds to employers. (North Carolina General Statutes S. 96-5 Employment Security Administration Fund)

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payments). This is distinct from reserve funds which apply an explicit reserve fund tax paid into a state-administered reserve fund. In Texas, the listed reserve fund was simply a fund where money at the end of the year was transferred to the state's UI trust fund account at the U.S. Treasury. The Texas fund did not accumulate reserves for purposes of financing a state-level activity such as supporting UI-ES administrative activities.

An analysis of the WTTF showed that, between 1989 and 2005, the fund spent an average of $13.5 million annually. About half of these monies supported the administration of the statewide network of local unemployment offices.[119] From 2006 to 2013, when the fund was finally abolished, the legislature did not allocate any money from the WTTF, though it technically still existed. Essentially the WTTF was empty, due to the recession of 2001, and by 2003 the state's trust fund account at the Treasury was exhausted.[120] Taxes for the reserve fund continued to be collected, but no money was diverted to or from the WTTF.

In July 2013, North Carolina abolished the WTTF. The Special Employment Security Administration Fund in North Carolina continues to exist – and continues to be funded with the 20 percent diversion enacted in 1986. Rather than diverting interest income to finance related services, all money paid into the reserve fund – and any interest earned— is used to pay benefits, interest on Federal loans, and principal on outstanding loans from the Treasury. In mid-2015 the future of the Special Employment Security Administration Fund (the reserve fund) is highly uncertain.

IDAHO. The Idaho reserve fund, termed the Employment Security Reserve Fund, became active in 1991. When the reserve fund balance is less than one percent of state taxable wages as of September 30 (the fund trigger date) and the reserve fund balance is less than 49 percent of the state's UI trust fund account balance at the Treasury, a reserve fund tax is charged to all covered employers. The last time the special calculation was used was in 2006. This special calculation method was not used during the 2007-2009 recession, although the state's trust fund balance at the Treasury did decline (See Figure 9.2 below) and the two conditions for applying the alternate (higher) tax rate appeared to be met in 2010.

Mathematically, the reserve fund tax should have been triggered in 2010 based on the reserve fund balance being less than one percent of state taxable wages (it was 0.641 percent of state taxable wages) and the reserve fund was less than 49 percent of the state's UI account at the Treasury (it was -110.81 percent of that account). The negative percentage is calculated because the Employment Security Fund balance was negative while the reserve fund balance was positive. The state legal department interpreted the intent of the law to mean the trigger that should increase taxes only applied if the state's Treasury account was positive and larger than the Employment Security Reserve Fund.[121]

Interest earned by the Employment Security Reserve Fund is transferred to the Department of Commerce and Labor Special Administration Fund (the derivative state fund). The legislature appropriates money in the derivative state fund for specific purposes, including

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[119] (Quinterno 2007)

[120] Ibid.

[121] Personal communication with Salvador Vazquez, Idaho Department of Labor, August 5, 2013.

(1) making loans to the state's UI account at the Treasury – which occurred following the 2007-2009 recession, and

(2) repaying interest bearing advances from the U.S. Treasury.

If the legislature does not appropriate money in the derivative state fund, the director of the state Treasurer's office can allocate the money – with approval from an advisory council, for the purpose of

(1) administrative costs for UI, ES, and related offices in excess of those covered by the Federal administrative allocations, and

(2) investments in UI, ES, and related offices such as automation and facilities.

The primary expenditures from the derivative state fund have supported UI and ES administrative costs. Monies from the derivative fund have also been used to enhance workforce services, improve automation services related to unemployment, to improve facilities, to supplement Federal funding for the workforce investment act, and to cover workforce development costs beyond those covered by the Federal government. The derivative fund has been used for various other smaller purposes as well. (Madsen 2011) Total expenditures by the derivative fund during state fiscal years 2012 to 2014 were $14.9 million.

Between January 2007 and December 2014, the balance in the Idaho reserve fund varied from a high of $118 million in the spring and summer of 2011 to a low of $43 million in May 2009. The reserve fund balance exceeded $109 million between January 2007 and February 2009. At that point, money was loaned to the state's UI trust fund account at the Treasury to help pay UI benefits. The reserve fund then had about $75 million from June 2009 through April 2011. Between mid-2013 and mid-2015 the reserve fund balance varied between $63 million and $117 million with annual drawdowns occurring in August when repayments of municipal bond installments take place. The municipal bonds will be fully repaid in August 2015. At that time, it is anticipated that the reserve fund balance will stabilize at about $110 million.

After the state reserve fund reached its all-time low in May 2009, Idaho borrowed more than $202 million from the Treasury (Title XII loan) to pay unemployment benefit claims. The state could have paid back part of those loans with its reserve fund balance, but opted instead to fully repay the Treasury loans in August 2011 by issuing municipal bonds. Issuing municipal bonds allowed the state to avoid a higher FUTA tax on employers. The annual interest rate on the municipal bonds was about a 1.0 percent, substantially lower than the interest rate charged by the Federal government (2.97 percent in the third calendar quarter of 2011), likely saving Idaho interest charges. Because the reserve fund (more than $100 million) during 2011-2015, Idaho was able to continue funding its derivative state fund (the Special Administration Fund) with interest income generated by the reserve fund.

It is difficult to quantify any problems that the reduced reserve fund balance might have caused during the recession because, according to staff in the Idaho Department of Labor, other policies were implemented to keep the local UI and ES offices operating. For example, during this period, Idaho (like other states) administered the Federal Emergency Unemployment Compensation Program of 2008. This resulted in increased workload and hiring new personnel, which might have partially masked any declines in regular staffing due to reduced monies from the Special Administration Fund.

NEBRASKA. In 1996, Nebraska enacted a reserve fund that remains active today. This state fund, the State Unemployment Insurance Trust Fund, is supported by the State Unemployment Insurance Tax (SUIT). The SUIT is set between 0 percent and 20 percent of combined tax (the tax paid to the Nebraska UI trust fund account at the Treasury plus the SUIT) as determined by the Nebraska Commissioner of Labor. Employers pay the combined tax assessment and the Nebraska Department of Labor and Unemployment allocates the combined tax, deciding what share is contributed to the state's UI account at the U.S. Treasury, and what share is SUIT to be deposited into the state reserve fund. By paying a single combined tax, the administrative burden of the tax for Nebraska employers is reduced.

The Nebraska reserve fund serves two purposes. First, it holds funds in reserve in case they are needed to pay unemployment benefits. Second, it generates interest income which funds grants to employers through Nebraska's Worker Training program. This interest income, held in the Nebraska Training and Support Trust Fund (the derivative state fund) may be used for:

(1) Providing support for public and private job training programs designed to train, retrain, or upgrade work skills of existing Nebraska workers

(2) Recruitment of workers and businesses to Nebraska

(3) Training new employees of Nebraska businesses

(4) Payment of UI benefits if the Unemployment Trust Fund held at the U.S. Treasury or the state reserve fund are unable to cover benefits[122]

Monthly balances for Nebraska's reserve fund grew substantially between December 2006 and December 2010 (Figure 9.2 below). The balance during 2007 was near $30.0 million, but it has averaged about $50 million since mid-2010. Investment of the reserve fund assets is directed by the State Investment Officer whose office is separate from the State Treasurer's office.

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[122] This use is especially important as Nebraska's UI program is prohibited from borrowing from the U.S. Treasury.

Interest income from the reserve fund finances training programs for incumbent workers. During the three completed fiscal years 2012, 2013 and 2014 the reserve fund generated roughly $1.0 million of interest income per year. The money has been used to fund competitive grants for a variety of training initiatives. Grant applications are reviewed by the Commissioner's staff. Their recommendations are submitted to the Worker Training Board, a body with appointed representatives from business, labor and the public along with the Commissioner of Labor and the Director of Economic Development. With advice from the Worker Training Board, the Commissioner makes written recommendations to the Governor for awarding training grants.

On July 1, 2015 the Nebraska Training and Support Fund Cash Fund was created. At the same time, the Nebraska Training and Support Trust Fund was abolished and all its monies transferred into the Nebraska Training and Support Cash Fund. Like its predecessor, the new fund derives its revenue from the interest earnings of the State Unemployment Insurance Trust Fund (the state's reserve fund). Decisions regarding the use of monies from the Nebraska Training and Support Fund Cash Fund require the written authorization by the governor of a recommendation by the state Commissioner of Labor. The uses of monies by the Nebraska Training and Support Fund Cash Fund remain the same as uses by the predecessor fund. Training incumbent workers is the principal activity financed by this new fund.

IOWA. In 2003, Iowa created a state reserve fund that remains active today. This fund, the Unemployment Compensation Reserve Fund, can be used to pay unemployment benefits, should insufficient funds exist in the Iowa's UI account at the Treasury. The Iowa reserve fund came into existence to replace an unpopular 0.7 percent state payroll tax surtax that was used to partially finance the administration of local employment offices. This surtax required payments by many employers with zero charged benefits (hence not owing state UI taxes) who were accustomed to paying no state UI payroll tax. The reserve fund replaced this unpopular tax.[123]

Iowa Workforce Development seeks to have $150 million in the reserve fund at all times. Up to $50 million can be deposited into the reserve fund in any given year. In 2004, an initial deposit of $47.5 million was made, in 2005, the fund increased to $105.6 million, and in 2006, the fund reached a balance of $145.4. (Iowa Legislative Service Agency, 2012) Since then, the reserve fund balance has remained at just under $150 million.

Each year, the Director of Iowa Workforce Development determines which among eight tax rate schedules in the tax rate table (Table 2.5 in Chapter 2) will be used for state UI contributions and what share of that tax (up to 50 percent) will be allocated to the reserve fund. Between 2011 and 2015 the reserve fund share has been either 3 percent (2011 and 2013) or zero percent (2012, 2014 and 2015), as the state UI trust fund account at the Treasury has been restored. The Iowa UI Trust Fund at the Treasury remained solvent during and after the recession of 2007-2009, and the reserve fund was not utilized to pay UI benefits.

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[123] Personal communication with Joseph Bervid, Iowa Workforce Development, 2013.

Unlike other reserve funds, the interest earned by the state reserve fund in Iowa is not diverted into a separate derivative trust fund. Instead, interest accruals are tracked by the workforce development office and the general assembly appropriates it for use in administering local field offices. (Iowa Code 96.9)[124]

The interest from the UI reserve fund is used to fund a portion of local field office costs (both UI and ES) in Iowa. Reserve fund interest earnings have varied from a high of $7.835 million (when the fund was started and the interest was not spent for a year) to $0.134 million in July 2013. Low interest rates on reserve fund assets have meant that in FY2012, interest from the reserve fund was about $600 thousand. These amounts did not cover all of the expenses the reserve fund interest was originally designed to cover, so Iowa has had to supplement reserve fund interest with state general revenue. In fiscal years 2015 and 2016 $400 thousand of reserve fund interest was allocated to cover the expenses of four UI-ES satellite offices. The amount has been reduced to $200 thousand for fiscal year 2017, but this may be increased to $400 thousand by future legislation. The low interest rates of recent years have limited the interest income accruing to the reserve fund.

3. Balances in State Reserve Funds and Treasury Accounts, 2006 to 2014

Figure 9.2 displays quarterly time series of reserve fund balances and Treasury account balances for the three states with active reserve funds in 2015. The reserve fund balance for each state is of measurable size compared to its Treasury balance. At the end of 2014, for example, the three ratios (reserve fund balance/Treasury balance) were 0.18, 0.16 and 0.15 for Idaho, Iowa and Nebraska respectively. During a future recession the reserve fund could make a significant addition to the amount available for benefit payments in all three states.

Perhaps the most interesting feature of Figure 9.2 is the relative stability of the reserve fund balances compared to the Treasury balances over these nine years. Between December 2006 and March 2010 the Treasury balances for all three states declined by half or more with Idaho having a negative balance for nine consecutive quarters. As a ratio to the reserve fund balances in December 2006, the March 2010 reserve fund balances were as follows: Idaho – 0.69, Iowa – 1.00, and Nebraska – 1.48. In short, all three states were much more successful in maintaining their reserve fund balances than their Treasury balances. Note also how the Treasury balances increased sharply after the 2009-2010. By the end of 2014 all three Treasury balances were noticeably higher than at the end of 2006, both the absolute levels and the reserve ratios.[125]

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[124] http://coolice.legis.iowa.gov/Cool-ICE/default.asp?category=billinfo&service=IowaCode&input=96.9

[125] The reserve ratios (reserves as a percent of covered payroll) increased as follows between December 2006 and December 2014: Idaho, from 1.08 to 2.61; Iowa, from 1.78 to 1.93, and Nebraska, from 1.02 to 1.27.

FIGURE 9.2.

Reserve Fund and Treasury Balances: Three States - 2006 to 2014
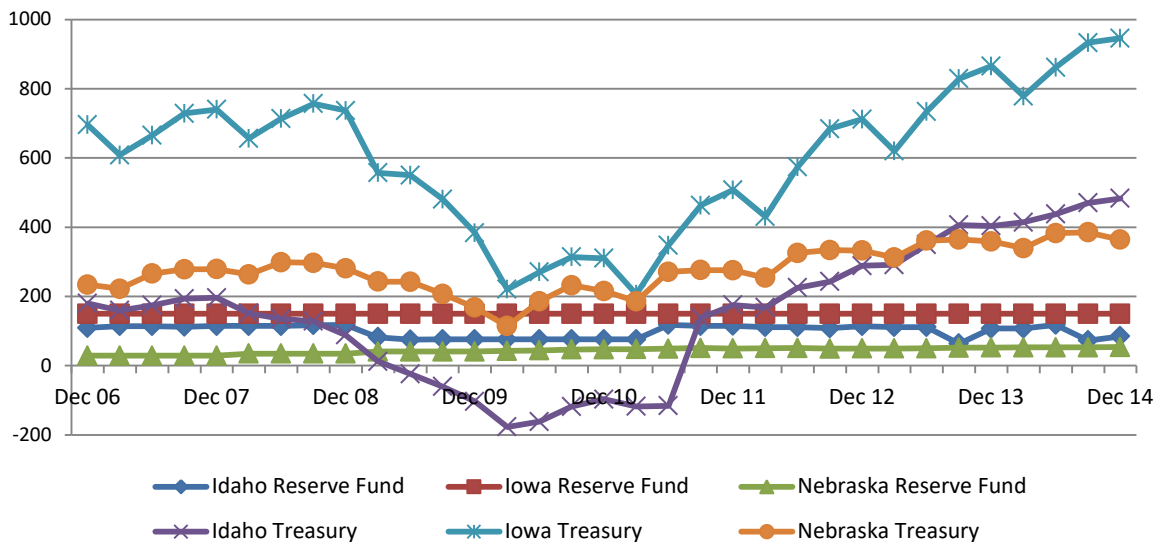
Source: Treasury balances from Department of the Treasury trust fund reports. State reserve fund balances from staff in the individual states. All data are end-of-quarter balances measured in $millions.

The interpretation of these contrasting patterns is clear: the states maintained their reserve fund balances during the economic downturn in order to sustain the flow of reserve fund interest income that supported state-level activities. In effect, the reserve fund was given preferred treatment because the associated interest income could support activities other than paying UI benefits. Note also that two of the three states (Iowa and Nebraska) did not need any Treasury loans while all three states had fully rebuilt their trust funds by 2013-2014. Thus all three states were able to successfully administer their reserve funds during and after the recession of 2007-2009 while rebuilding their post-recession Treasury account balances to substantial levels.

4. Abolished Reserve Funds: New Mexico and Oregon

Two states, New Mexico and Oregon, had reserve funds in the past that have since been abolished. The New Mexico fund existed from 2008 to 2010 and the Oregon fund existed from 1992 – 2006. Both were used to pay UI and Employment Service (ES) administrative costs that were not covered by the Federal allocations for program administration.

The Oregon reserve fund had the same objective as other reserve funds – supplementing Federal administrative payments. However, as the fund grew more slowly than needed and interest income from the reserve fund became insufficient to fund desired activities, support for the reserve fund waned. In response, the

Oregon reserve fund was discontinued and instead, Oregon moved to a direct payroll tax to fund these activities. (Vroman 2006)

New Mexico's very short lived reserve fund came into existence in 2008. Legislation directed that in 2008, 50 percent of employer contributions originally to be paid into the UI trust fund account at the U.S. Treasury would be diverted to the state reserve fund. In 2009, 40 percent of contributions due would be diverted and 35 percent of contributions in 2010 would be diverted. The interest income from the reserve fund was intended to be used for UI and ES administrative costs. However, by 2010, the reserve fund had been depleted through recession-related regular UI benefit payments, and it was deemed no longer necessary. New legislation to extend the reserve fund was not passed and the fund lapsed.

5. Common Features of Reserve Funds

Reserve funds can provide a state with access to monies that would otherwise be inaccessible because they reside in state UI trust fund accounts at the Treasury. The process to establish state reserve funds has been essentially the same in all states, involving two actions by states. First, the state lowers the tax rate on the state UI taxes to be directed into the state's UI account at the U.S. Treasury. Second, the state creates a new state UI tax whose proceeds are directed into a state-administered reserve fund. The reduction in the state UI tax paid to the U.S. Treasury matches the amount of the state tax directed into the state reserve fund such that the two taxes generate the same as the total revenue as the unreduced tax paid into the state's Treasury account would have generated.

The principal in the state reserve fund is dedicated to paying regular UI benefits. Thus all the taxes collected conform to the Federal withdrawal standard that all money collected for UI benefit payments be used to pay benefits, not for administrative costs or other program-related costs. However, the Federal withdrawal standard does not require that interest earned by a state reserve fund be used to pay benefits, hence the importance of state reserve funds to some states.

The states that have established reserve funds have done so mainly because the Federal allocations for UI administrative costs were felt by the states to be insufficient to finance their desired level of UI and ES administrative activities or to fund other workforce activities. In response to this situation, states have four basic options. States can scale back services, states can pay for the services with other non-UI state taxes and fees, states can add a surtax or states can find a way to use already collected UI taxes to pay for these services, or a portion of these services – as they have done with the interest earnings generated by reserve funds.

Reserve funds can only be successful in states where total reserves held at the Treasury are relatively high. If the Treasury balance is inadequate, then the principle in the reserve fund is at risk of being needed to pay benefits,

reducing potential interest earned by the fund – ultimately limiting the fund's usefulness. The collapse of North Carolina's trust fund balance held at the Treasury in 2002-2003 precipitated the collapse of its reserve fund. Since 2007 North Carolina's reserve fund tax has been used only to pay regular UI benefits and to repay the principal and interest on loans from Treasury. All other activities funded by the interest income from the reserve fund were halted.

It's difficult to say that reserve funds helped the states much in the recent recession. Just four states had active reserve funds and three of the four are small states. Certainly having money in a reserve fund meant that states had larger reserves for paying benefits than was available just from their Treasury accounts. Absent the reserve fund, however, the reserves would likely have already resided at the Treasury and would have been available to pay benefits. In addition, the interest that had been diverted for other purposes would also have been available in the Treasury accounts. On the other hand, had the money resided at the Treasury, the higher balances might have created more pressure to reduce UI taxes and might have made the state fund balances lower than they ultimately were. Either way, the aggregate effect of reserve funds has been small. What they have accomplished has been to enhance resources for UI and US administration and resources devoted to other employment services. The opportunity cost of reserve funds has been the unavailability of monies that would otherwise have resided in the state accounts at the Treasury where they would have been available for UI benefit payments.

6. Summary

An overall assessment of state reserve funds can make four points. 1) By creating a state-administered reserve fund, a state can gain access to interest earnings not available if all its state UI taxes were paid directly into the state's account at the Treasury. 2) The interest earnings from a reserve fund can finance important UI-ES administrative and workforce activities without increasing total state UI taxes. 3) If a state does not build a robust trust fund account at the Treasury, however, it will have to use much of the principal in the reserve fund to pay UI benefits during and after a recession. The associated decrease in the reserve fund balance will reduce total interest earnings from the reserve fund and reduce support for the activities to be financed by those interest earnings. 4) Reserve funds and their intended uses face uncertainties and two deserve explicit recognition. First, because the severity of future recessions is not known, this implies uncertainty about the reserve fund's future balance and associated interest income. Second, a second uncertainty is the level of future interest rates. Interest rates following the recession of 2007-2009 have been low for a prolonged period, and this has reduced the amount of interest income earned by state reserve funds. In Iowa, this meant the state had to supplement reserve fund interest income with an appropriation of general revenue to finance UI-ES operations in satellite offices that the state planned to fully finance with interest income from the reserve fund.

COMPARATIVE ANALYSIS OF UNEMPLOYMENT INSURANCE FINANCING METHODS

Chapter 10. Employee UI Taxes

The financing basis for regular state UI programs is a payroll tax levied on covered employers. A minor exception to this statement is that the UI programs in Alaska, New Jersey and Pennsylvania also levy a payroll tax on covered employees. In all three states employee taxes add to state trust fund receipts and help to finance benefit payments. All three states, however, have also used employee taxes for other purposes. This chapter discusses state experiences with employee payroll taxes. Because employee payroll taxes are utilized by nearly all foreign UI programs, the chapter also discusses their role in other developed economies.

1. Overview

In addition to funding benefit payments employee UI payroll taxes in the three states (Alaska, New Jersey and Pennsylvania) have also helped to fund a variety of other UI-related activities. The activities include worker training, reemployment programs and the administrative costs associated with collecting employee taxes. In New Jersey, they have also been used to fund activities beyond the UI, ES and labor market programs.

Unlike employer taxes, employee UI taxes are not subject to the Federal withdrawal standard. As noted in Chapter 1, the withdrawal standard requires that all revenue collected from employer payroll taxes must be deposited into the state's trust fund account at the U.S. Treasury and used to pay benefits. These deposit and withdrawal activities are subject to strict timeliness deadlines. Not being subject to the Federal withdrawal standard gives states flexibility in using employee taxes. One possible use of employee taxes is to supplement the Federal allocations that fund the administration of the state UI and ES programs. Depending on how they are structured, employee taxes can reflect employer past experiences in paying benefits, as with employer UI taxes, which might appeal to some state policymakers and stakeholders.

State decision makers might favor implementing an employee tax in preference to increasing employer taxes for two distinct reasons. First, employers might prefer an employee tax to avoid (or lessen) an increase in labor costs implied by higher employer payroll taxes.[126] Second, employees and advocates for workers (e.g., unions) may favor employee taxes because they give the employees and worker advocates a recognized role in UI program financing. This could lead to more aggressive advocacy of higher UI benefits through increased weekly benefits

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[126] There is a question of the ultimate incidence or burden of employer payroll taxes. Nearly all economists believe the incidence of employer payroll taxes ultimately rests on employees and is accomplished by backward shifting, i.e. reducing nominal wages paid employees. From this perspective there is little or no real difference in the burden of a payroll tax whether it is paid by the employer or by the employee, i.e., it reduces the real wage of the employee. See, for example, Patricia Anderson and Bruce Meyer (2000).

and/or through longer potential benefit duration. In the past, employee taxes have been used to stave off or help to avoid benefit cuts that can happen when a UI programs is insolvent.[127]

Selected data on employee UI taxes in 2012 for the three states appear in Table 10.1. The table illustrates the importance of employee taxes relative to combined UI taxes (column (4)) and relative to UI taxes deposited into the state's trust fund at the Treasury (column (5)). Employee taxes as a share of the total and as a share of trust fund tax receipts are modest in all three states with Alaska's 2012 shares the largest at 0.197 and 0.132 respectively. Pennsylvania also directs some employee taxes to uses besides paying benefits. Because all employee taxes in New Jersey were deposited into the UI trust fund in 2012 the proportions in columns (4) and (5) were identical at 0.097. As will be noted below, the two proportions will diverge more widely in Pennsylvania during 2014-2016 as roughly $30-$40 million per year of employee taxes will be allocated to help pay for the costs of UI program administration. In these three years, employee taxes as a share of trust fund tax receipts, already the lowest across the three states, will decline to about 2.8-3.0 percent. In sum, employee UI taxes represent a modest share of both total UI taxes and of trust fund tax receipts in the three states.

TABLE 10.1

Employee UI Taxes in Three States in 2012

	Employer UI Taxes	Employee UI Taxes: Total	Employee UI Taxes: to UI Trust Fund	Employee Share of Combined UI Taxes = (2)/((1)+(2))	Employee Share of Trust Fund Taxes = (3)/((1)+(3))
	(1)	(2)	(3)	(4)	(5)
Alaska	197.162	48.353	30.038	0.197	0.132
New Jersey	2748.854	294.736	294.736	0.097	0.097
Pennsylvania	3135.389	142.301	132.331	0.043	0.041

Source: Data in column (1) from the USDOL (2014c). Estimates of employee taxes developed at the Urban Institute based on information from the three states. Columns (1), (2) and (3) show values in millions of dollars.

One characteristic of employee taxes as levied in the three states is that all three have high taxable wage bases. As a consequence, all three states have a high taxable wage proportion. Table 10.2 summarizes tax base and tax rate details in the three states. Column (1) shows that employee taxes have been present in all three states for three or more decades. Note in column (2) that the tax base exceeded $30,000 in both Alaska and New Jersey while total employee wages are taxed in Pennsylvania. To appreciate the high level of these tax bases, it should be noted that the simple average of tax bases for 51 state UI programs in 2013 was $16,737 and that the national average taxable wage proportion in 2012 (the most recent available year) was 0.267. In Alaska and New Jersey the high tax base reflects indexation of the tax base. Both states have operated with an indexed tax base for more than

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[127] See the discussion of employee taxes in Pennsylvania later in this chapter.

three decades, so that the base increases automatically when statewide average weekly wages increase. The high tax base in Pennsylvania reflects a decision to tax all employee wages when the tax was instituted in 1983.[128]

Overview of Employee UI Taxes in 2013

	Year of Enactment (1)	Taxable Wage Base (2)	Taxable Wage Proportion (3)	Employee Tax Rate – Pct. (4)
Alaska	1955	36,900	0.611	0.68
New Jersey	1936	30,900	0.437	0.38
Pennsylvania[b]	1983	Total Wages	1.000	0.07

Source: Columns (1) and (4) based on conversations with state officials. Columns (2) and (3) based on data from the Office of Unemployment Insurance, Employment and Training Administration.
a – The data on taxable wage proportions refer to 2012, the latest available year as of June 2014.
b – The table shows the employee tax base for Pennsylvania. The tax base for employer UI taxes was $8,500 in 2013 and the taxable wage proportion for employers was 0.192.

One consequence of having a high tax base is that it reduces the regressivity of employee taxes. A frequent criticism of UI program financing is that with low taxable wage bases, state UI programs impose a greater economic burden on low-wage than on high-wage workers because a lower percent of the annual wages of the latter group is subject to UI payroll taxes.[129] This argument carries less weight for employee UI taxes in the three states because their tax bases are much higher than the tax bases for employer UI payroll taxes in most states.

The following section summarizes state experiences with employee taxes.

2. Experiences in Three States

New Jersey

In 1936, as part of its original UI state legislation, New Jersey became the first state to enact a state UI tax with an employee assessment. Employees pay UI taxes on the same earnings base as employers. In 2013, the employee tax rate was 0.3825 percent of the first $30,900 of earnings.[130] The employee tax rate has varied from a high of 1% (between 1936 and 1948) to a low of 0.25% (between 1949 and 1974). Because these taxes are levied on the employee, not the job, in cases where an employee has more than one job, she or he may request a refund on

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[128] The employee tax in Pennsylvania is discussed later in this chapter.

[129] This argument assumes that the bulk of employer UI payroll taxes are shifted backward and lower the money wages of covered employees. Under backward shifting the tax is regressive since a higher share of wages among low-wage workers are subject to the payroll tax.

[130] http://www.wpunj.edu/human-resources/payrollandEmployeeBenefits/payroll-services/new-jersey-unemployment,-disability,-workforce-development-and-family-leave-insurance-taxes-.dot

employee taxes paid on annual wages that exceed the taxable wage base, $30,900 in 2013 and $32,000 in 2015. The employee tax is collected by employers and submitted in the same manner as employer UI taxes.

In the past New Jersey's employee UI tax has been used to cover a variety of activities. Though most have been directly related to the operation of UI, some or all of the employee tax in certain years was diverted to fund indigent health care. Other uses of the tax include funding workforce training grants to disadvantaged workers, displaced workers, and employers and providing state matching grants for Federal Welfare to Work programs.

Since 2002, the employee payroll tax rate has been 0.3825%. Part of that amount was diverted toward indigent health care until July 2004, when the diversions were halted. No additional employee tax was imposed when the New Jersey UI trust became insolvent during the recession of 2007-2009.

Alaska

Alaska implemented an employee payroll tax in January 1955. The tax has the same wage base as the employer tax, the first $36,900 of earnings in 2013. The employee tax rate can vary annually between 0.5 percent and 1.0 percent. For most years between 2002 and 2010 the rate was 0.5 percent, but the rate reached 0.68 percent in 2013. Since 2010, it has accounted for slightly more than a quarter (27 percent) of total tax revenue each year.[131] In years when an employee holds more than one job, the tax paid on wages in excess of the tax base ($36,900 in 2013 and $38,700 in 2015), can be refunded to the employee. The employee tax is collected by employers and submitted to the Treasury in the same manner as other UI taxes.

Employee taxes typically contribute to the solvency of the state's UI trust fund as illustrated by Table 10.1. Annual contributions exceed the amounts allocated for other programs. In Alaska, the employee tax rate varies between 0.5 percent and 1.0 percent. Already allocated from the annual total is 0.25 percent to training programs while the rest flows into the trust fund. During January-June 2014 the 0.25 percent was divided, 0.15 percent to the Technical and Vocational Educational Program (TVEP) and 0.10 percent to the State Training and Employment Program (STEP). In 2012 and 2013, employee tax collections directed to the trust fund were 0.41 percent and 0.43 percent of taxable payroll respectively.

As in other UI programs with employee taxes, these taxes are perceived by some as giving employees more influence in shaping and making changes to the UI program. Thus it might be more difficult to reduce benefits in Alaska than in states where only employer taxes finance the UI program.

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[131] http://labor.alaska.gov/research/uiprog/Tax_Cookbook.pdf

Pennsylvania

The employee tax in Pennsylvania differs from employee taxes in New Jersey and Alaska in that it is levied on total annual wages, not wages up to a fixed taxable wage base. This has been true in all years since the employee tax was first implemented in 1983. The impetus for the tax was mainly a multiyear deficit in the state UI trust fund which grew to more than $2.0 billion at the end of 1982. Business and labor leaders joined other stakeholders to try to remedy a seriously underfunded UI program. Facing a large and growing trust fund debt in 1982 and the prospect of continuing future revenue shortfalls, Governor Thornburg led an effort to craft a long-term funding solution. One element of the resulting legislation was the imposition of an employee tax.

In exchange for lower than initially proposed benefit cuts, Pennsylvania labor leaders supported the employee surtax. The governor had proposed a benefit cut of 15 percent but the legislation that ultimately passed cut benefits by only 5 percent. After the initial level of needed funding was agreed upon by the negotiating group, negotiators determined that a tax covering total wages, not just wages up to a limit, would be fairer. Ultimately, a 1 percent tax on total wages was enacted. The employee tax remained in effect through 1988 as the trust fund was gradually restored. When the state's UI program was deemed solvent in 1988, the employee tax was suspended.

Between 1989 and 2012 the employee tax was one element of a state trust fund financing strategy that is commonly termed flexible financing. Legislation passed in 1988 established the details of this strategy. Rather than rely on high pre-recession reserves to ensure fund solvency, proponents of flexible financing have argued that a state could operate with low reserves but with a financing system that responds strongly and automatically to recession-related trust fund drawdowns. In a responsive financing system tax increases and benefit reductions occur automatically and these responses obviate or reduce borrowing.[132]

Pennsylvania's 1988 financing legislation included four explicit flexible financing features: two employer taxes, an employee tax and benefit reductions. All four automatic adjustments were activated by a single trigger. The trigger was calculated as the ratio of the fund balance at the end of the current fiscal year (June 30th) to the average annual benefit volume paid during the current and the two preceding fiscal years (measured as a percentage). All adjustments take place in January of the following year. As the trust fund balance decreases the automatic responses become stronger and operate at maximum strength when the trust fund balance turns negative.

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[132] This description is not an endorsement of flexible financing as it has inappropriate timing of both tax increases and benefit reductions, i.e., during and immediately following a recession. Both claimants and employers would be experiencing increased economic hardship (respectively increased unemployment and reduced profits) in the same period that benefits were reduced and taxes were increased. The timing of the flexible financing actions would reduce the effectiveness of UI as an automatic stabilizer of the economy.

Between 1989 and 2012 the employee tax was active during 1992-1996 and again during 2003-2015 or for 15 of the 24 years. During these 15 years the employee tax as a share of the total automatic adjustment ranged between 0.30 and 0.57. The $2.37 billion of employee taxes for these years represented 0.38 of the $6.24 billion in total solvency adjustments. During the same 27 years total UI tax receipts in Pennsylvania were $42.49 billion. Employee taxes represented just 0.056 of total UI tax revenue for the 27 years.[133]

While the bulk of employee taxes are deposited into the state's UI account at the U.S. Treasury and support UI benefit payments, a share of the tax also supports other activities of the Pennsylvania Department of Labor and Industry (DLI). Five percent of the tax is deposited into a state-administered Reemployment Fund that supports employment programs. This support is currently scheduled to extend through 2017. A small share is also allocated to the Service and Infrastructure Improvement Fund, a fund that helps support DLI administrative activities. Finally, legislation enacted in June 2013 allocated $30-40 million per year for the three fiscal years to support administration of the UI program.[134]

A few summary comments about Pennsylvania's experiment in flexible financing seem appropriate. The scale of the flexible financing adjustments was small relative to increase in benefit payments during and after the serious recession of 2007-2009. Between 2008 and 2012 the cumulative flow of added benefit payments above their 2007 level totaled $6.32 billion while the five-year total for all four flexible financing adjustments was $2.63 billion. During 2010-2012 when all four flexible financing adjustments were operating at their maximum strength, their combined contribution to improved solvency totaled $1.95 billion, an average of just $0.65 billion per year. In short, flexible financing as structured in Pennsylvania, did not have enough responsive capacity to prevent large scale borrowing during and after a major recession.

In 2012 Pennsylvania issued about $3.0 billion in municipal bonds to repay its outstanding Title XII loans from the Treasury. This was an acknowledgement that the flexible financing features did not operate with enough strength to restore the trust fund in a relatively short period. Employee taxes were a very small component of total UI taxes between 1989 and 2012 when Pennsylvania relied on flexible financing to help assure program solvency.

During 2013-2015 the state has continued to operate its flexible financing system with the four adjustment elements (two employer taxes, an employee tax and benefit reductions). The employee tax continues to be based on each employee's total annual payroll, and the tax rate has been 0.07 percent since 2013.[135]

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[133] Total UI tax revenue between 1989 and 2012 was taken from column (11) of U.S. Department of Labor (2014c). Details of this financing system and estimates of revenue by component of the system are found in issues of Pennsylvania Department of Labor and Industry (2015).

[134] Pennsylvania House Bill 26 from the 2013 legislative session.

[135] See Pennsylvania Department of Labor and Industry (2015).

3. Employee Taxes in Foreign UI Programs

Employee UI payroll taxes are present in most foreign UI programs, and typically they account for a substantial share of total UI program revenue. The financing arrangements in foreign programs are highly varied, but the most rely upon payroll taxes to finance UI benefits.

A recent summary of UI financing in a group of high-income economies is given in Annex B of Vroman (2012). This annex summarizes key benefit and financing features of 22 economies, all members of the Organization for Economic Cooperation and Development (OECD). The 22 countries are mainly Western European and English speaking but also include Japan and Korea. The group has six countries from Western Europe, four from Southern Europe, four from Scandinavia and six English speaking countries.[136]

Relative to the other 21 countries, the UI program in the United States stands out as exceptional in several ways. i) The other countries all administer a national UI program with one set of statutes and administrative procedures operative in all geographic areas. Our UI programs' degree of reliance on state laws related to benefits and taxes is unique. ii) We are the only country among the 22 that practices experience rating in setting employer tax rates. iii) The United States' programs have very low tax bases relative to foreign programs with payroll taxes. iv) Among the 20 UI programs financed with payroll taxes, reliance upon both employee and employer payroll taxes is nearly universal. Italy is the only other country besides the United States that does not have an employee payroll tax.[137]

As noted, the 22 countries use a variety of methods to finance their UI programs, but 20 use payroll taxes. Of the 20, public information is readily available for 15 on the average rates paid by employers and by employees.[138] In 2012 the employee share for the United States and Italy was zero while for five of the 15 countries employers and employees shared the burden equally. In the other eight, the employee share ranged from 22 percent to 42 percent of the combined rate. The median employee share for the 15 countries in 2012 was 35 percent.

The other relevant detail about employee taxes in foreign UI programs is that the taxable wage base is uniformly much higher than in the United States. As a result, UI taxes are collected from a much higher share of

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[136] Western Europe (Austria, Belgium, France, Germany, the Netherlands and Switzerland); Southern Europe (Greece, Italy, Portugal and Spain); Scandinavia (Denmark, Finland, Norway and Sweden); and English speaking (Australia, Canada, Ireland, New Zealand, United Kingdom and the United States).

[137] The three US states with employee payroll taxes represent a small exception to this statement. In 2012 employee payroll taxes in the three states were 0.95 percent of combined employer and employee payroll taxes nationwide.

[138] Australia and New Zealand finance their programs with general revenue. For Denmark, Ireland, Norway, Sweden and the United Kingdom, the employer and employee tax rates for UI are not both available. Two reasons account for the unavailability, either the rates vary (and no average is shown) or UI taxes are part of a broader payroll tax that funds UI plus several other social insurance programs. Information on UI tax rates and taxable wages appears in various issues of Social Security Administration (2014). Since 2005, the publication of *Social Security Programs Throughout the World* has been issued every two years for four separate geographic areas of the world.

total wages than in the U.S. For 19 of the 20 OECD countries that use payroll taxes, the taxable wage proportion during the 2000-2009 decade ranged from 0.72 to 1.00 with a median of 0.86. Eight of the 19 tax all of covered wages. The average taxable wage proportion in the U.S for the same period was 0.28. The United States has by far the lowest taxable wage proportion among the 20 high-income countries that finance UI with payroll taxes.

The UI programs in foreign economies generally have higher recipiency rates (beneficiaries as a ratio to total unemployment) than in the United States. Foreign programs exhibit wide diversity in statutes and administrative practices that influence the recipiency rate such as maximum potential benefit duration, the replacement rate, eligibility among job leavers and job search requirements. During the past three decades many countries, with active encouragement from the OECD, have placed increased emphasis on "mutual obligation," i.e., the need for the claimant/beneficiary to undertake actions to speed reemployment as a condition for continuing benefit eligibility. Two specific mutual obligation requirements are to provide evidence of active work search and to develop an individualized reemployment plan.

Other recent changes since the mid-1990s in the 21 foreign UI programs identified previously have reduced recipiency rates. The changes have included reductions in maximum potential duration (Austria, Canada, Denmark, Germany, Japan, the Netherlands, and Norway), lowering the benefit replacement rate (Canada, Japan, the Netherlands, Spain and Sweden) and restrictions on eligibility among job leavers (Canada). Not one of these countries, however, has reduced its reliance on employee payroll taxes to finance its UI program. Despite a large number of changes, these various policy initiatives have not provided evidence on the possible effect of employee UI taxes on worker attitudes about their entitlement to benefits and a possible effect in raising the recipiency rate.

The preceding summary indicates that employee UI payroll taxes levied on most of total payroll are the norm across the other high-income OECD countries. Only the U.S. and Italy do not have an employee payroll tax and only the U.S. levies UI payroll taxes on less than 72 percent of total payroll.

During the past 25 years, foreign programs have made several changes that affect benefit recipiency, generally reducing recipiency. Because the foreign programs have not changed their reliance on employee taxes, they have not provided evidence on the possible linkage between employee UI taxes and the UI recipiency rate.

4. Employee Taxes: Summary

Three points should be made in summarizing state experiences with employee UI payroll taxes.

1) Compared to employer UI payroll taxes, levying an employee payroll tax has one obvious advantage to states: it is not subject to the trust fund withdrawal standard. While receipts from the employee tax can be deposited directly into the state trust fund account at the Treasury (where it can be used to pay UI benefits), several other uses for the employee tax revenue are also possible. The three states with employee payroll taxes

have all utilized this flexibility. The alternative uses have mainly been to finance labor market programs such as employee training and to help support the administration of state UI and ES programs. New Jersey even used the tax to fund activities unrelated to the labor market. A recent example of this flexibility was Pennsylvania's decision in 2013 to allocate some $30-40 million of employee taxes per year for three years to UI program administration.

2) Does the employee payroll tax help a state to achieve or maintain trust fund solvency? Drawing revenue from employees, a group not usually part of UI financing arrangements, could raise more total program revenue and improve solvency. However, at least two cautionary observations should be made. First, if employee contributions provide an enhanced perception of an entitlement to UI benefits, this tax could increase the recipiency rate and partially or totally offset any positive effect of the employee tax on total revenue and the trust fund balance. This possible effect of employee taxes can be noted, but its practical importance is not obvious. All three states with an employee tax have above-average UI recipiency rates and have had high recipiency rates for decades. [139] Second, the UI trust funds in two of the three states (New Jersey and Pennsylvania) needed Treasury loans during and after the recession of 2007-2009. In short, the argument that employee taxes improve program solvency is not compelling.

3) The importance of employee UI payroll taxes in the three states is lower than in other high-income economies with employee taxes. Only the United States and Italy do not have a broad-based employee payroll tax. Of 15 economies that levy an employee payroll tax (where employer and employee tax rates are both easily determined) their share of total UI payroll taxes ranged between 0.22 and 0.50 for thirteen and for five the share was 0.50. Recall from Table 10.1 that the shares in 2012 in Alaska, New Jersey and Pennsylvania were respectively 0.197, 0.097 and 0.043. Even in the three states with employee taxes, their share of total UI payroll taxes is less than in 13 foreign programs with an employee payroll as tax noted previously.

This chapter identified two other issues related to employee taxes. The Federal allocation the finances UI program administration includes an element to cover the costs of collecting employer payroll taxes but not the administrative costs of employee taxes. States need to finance these added administrative costs, and the source can be receipts from the employee UI payroll tax. Second, persons who change jobs in Alaska and New Jersey whose combined annual earnings exceed the state's UI tax base are eligible for a refund of the employee taxes levied on the part of annual earnings that exceeds the UI tax base.

From the preceding it appears employee UI payroll taxes may be appealing because of the flexibility a state might realize in using the revenue from the tax. However, it is not clear that levying an employee payroll tax would improve the solvency of a state's UI trust fund.

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[139] Between 2000 and 2009 the national recipiency rate (weekly beneficiaries as a proportion of weekly unemployment) averaged 0.302. The averages for the three states were as follows: Alaska – 0.495, New Jersey – 0.484 and Pennsylvania – 0.481. Pennsylvania already had an above-average recipiency rate before it instituted employee taxes in 1983. Its average between 1973 and 1982 was 0.458.

COMPARATIVE ANALYSIS OF UNEMPLOYMENT INSURANCE FINANCING METHODS

Chapter 11. Trust Fund Loans and Loan Repayment Strategies

State UI programs are required to pay benefits in a timely manner to all eligible claimants. When a state's trust fund reserves are inadequate to finance benefits, the US Treasury provides advances (loans) to ensure timely payments. Since 2007 the majority of state UI programs have been inadequately financed, which necessitated borrowing from the US Treasury to finance a part of regular UI benefit payments. This chapter reviews past borrowing experiences and examines state borrowing and loan repayment options. In addition to analyzing the traditional borrowing-repayment mechanisms governed by Title XII of the Social Security Act and the Federal Unemployment Tax Act (FUTA), the chapter also examines borrowing in the private securities market. Between December 2010 and October 2013 eight state UI programs secured loans in the municipal bond market as part of their policy response to funding problems.

The chapter has three main sections. Section 1 summarizes the history of past state unemployment insurance borrowing activities. Section 2 describes borrowing from the Treasury through the Title XII loan mechanism. This includes a description of short-term cash flow loans, loans for long periods and the automatic repayment mechanism of FUTA tax credit reductions. Section 3 examines loans secured in the private municipal bond market. These loans have become more frequent in recent recessions with eight states securing such loans following the 2007-2009 recession.

1. An Overview of Past Borrowing by the States

Borrowing by state UI programs to finance benefit payments has a long history, starting with loans secured by Alaska in the mid-1950s. However, borrowing was infrequent before the mid-1970s because the state trust fund reserves were maintained at high levels prior to the 1970s. During the decade of the 1950s, for example, the simple average of year-end reserve ratios (reserves as a percent of covered payroll) across 51 UI programs was 6.11 percent.[140] Since the annual state payout rate for the 1950s decade averaged 1.09 percent of payroll, reserves in nearly all states were fully sufficient for program needs. During the 1960s and the first half of the 1970s state reserve ratios respectively averaged 3.45 percent and 2.55 percent, again more than adequate for program financing.

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[140] The text refers to 51 programs, the fifty states plus the District of Columbia. Puerto Rico and the Virgin Islands are not included in this discussion. Also, the text does not explore borrowing from other units of state government.

Prior to 1975 just five state programs needed Treasury loans to help finance benefits. The loans secured by these states were of varying size with Alaska's debt being the largest (3.3 percent of 1960 payroll) followed by Michigan (1.3 percent of 1958 payroll), Pennsylvania (0.8 percent of 1961 payroll), Connecticut (0.6 percent of 1973 payroll) and Washington (0.5 percent of 1972 payroll). All five states borrowed for multiyear periods that ranged from six years to more than a decade. Multiyear indebtedness was a consistent pattern even in situations where the loans totaled less than one percent of payroll.[141] In each of these five situations, high state unemployment lasting several years was a major factor contributing to the trust fund borrowing and subsequent indebtedness. For both Connecticut and Washington, Federal cutbacks on defense spending in the early 1970s contributed to a sharp increase in benefit payments, a loss of trust fund reserves and a need for loans.

Starting with the recession of 1974, the frequency and scale of borrowing by state UI programs increased sharply. There have been three major episodes of state borrowing, starting with the 1974 recession. The three episodes spanned the years 1975-78, 1980-85 and 2009-12. State indebtedness to the Treasury first exceeded $1.0 billion in 1975 when 14 state programs had end-of-year debts. Between 1976 and 1979 end-of-year debts averaged $4.1 billion and 11 states ended the decade with outstanding Treasury loans.[142]

During the recovery from the 1974 recession the individual debtor states followed differing repayment strategies. Nine states with debts at the end of 1976 had completed their repayments by the end of 1979.[143] Nine other states, however, actually had larger debts at the end of 1979 than in 1976.[144] The latter group delayed loan repayment for differing reasons, but a common hope was for outright debt forgiveness. Following the election of 1980, new debt repayment provisions were instituted that included charging interest on outstanding loans. As documented in the next section, the new debt repayment terms caused a noticeable increase in the pace of debt repayment after 1980.

The incomplete economic recovery of the late 1970s was followed by back-to-back recessions in 1980 and 1982. Altogether 34 different UI programs secured Treasury loans between 1980 and 1983. End-of-year state indebtedness peaked in 1983 with 21 states owing a combined $13.3 billion. During the remainder of the 1980s these debts were mostly repaid with just Michigan having an outstanding Treasury loan at the end of the decade. Between 1983 and 1989 rapid debt repayment was accompanied by a rapid pace of trust fund building. Net trust

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[141] Loans were originally interest-free and states had four years before automatic increases in federal UI taxes (FUTA credit reductions) commenced (PL 83-567). The pace of debt repayments was addressed several times: in the 1960s and 1970s including bills in 1975 (PL 94-45) and 1977 (PL95-19) that deferred for five years the automatic FUTA rate increases until 1981. The so called FUTA tax credit reductions are discussed in Appendix A and below.

[142] Table B1 of Appendix B summarizes state borrowing during the five most recent recessions starting with the 1974 recession.

[143] Alabama, Arkansas, Hawaii, Maryland, Michigan, Minnesota, Nevada, Oregon and Washington

[144] Connecticut, Delaware, District of Columbia, Illinois, Maine, New Jersey, Pennsylvania, Rhode Island and Vermont.

fund reserves which totaled -$5.8 billion at the end of 1983 increased to $36.3 billion at the end of 1989, an average increase of $7.0 billion per year during these six years.

Figure 11.1 traces the evolution of the national reserve ratio (net reserves as a percent of payroll) from 1960 to the end of 2014. Note that in each year between 1960 and 1973 the reserve ratio was between 2.0 and 3.5 percent. In all years after 1974, however, the reserve ratio was consistently less than 2.0 percent of payroll. The highest post-1974 reserve ratios were achieved in 1989 and 1990, respectively 1.92 and 1.88 percent of payroll.

FIGURE 11.1.
National Reserve Ratio, 1960 to 2014

Reserve Ratio - Net Reserves as Percent of Payroll, December 31
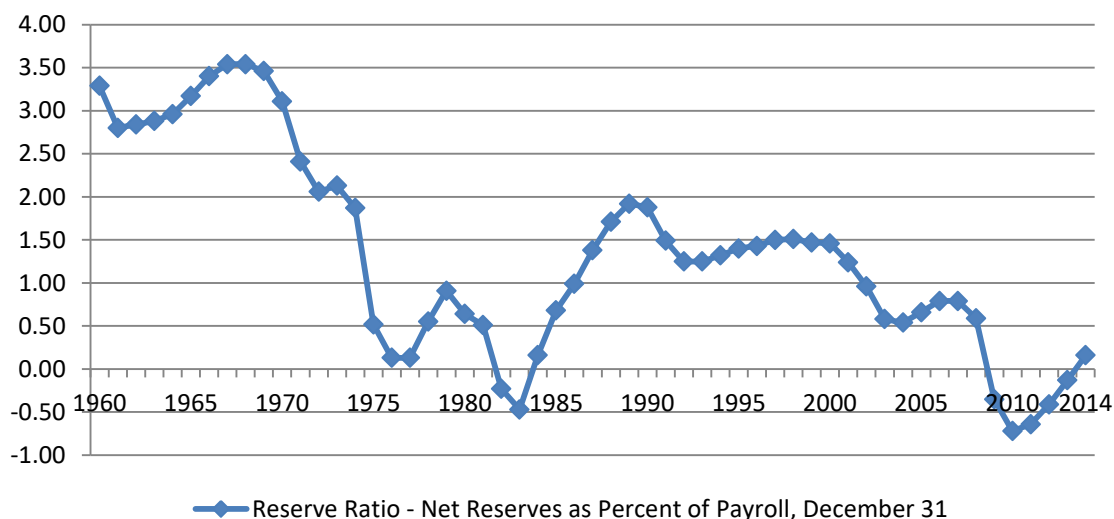
Source: Data on total payroll and net reserves refer to taxable covered employers as reported in columns (3) and (13) of the Unemployment Insurance Financial Handbook. Net reserves measured as gross reserves at the U.S. Treasury less loans from the Treasury and loans owed in the municipal bond market.

The figure vividly illustrates the trust fund drawdowns associated with the recessions of 1970-72, 1973-75 and 1980-83. It also shows that net reserves were negative at the end of 1982 and 1983, just before the reserve buildup of 1983-1989. While the recessions of 1991 and 2001 were mild by historic terms, noticeable decreases in the reserve ratio are apparent for both.

Figure 11.1 also illustrates the slow pace of trust fund building that occurred following the recessions of 1991 and 2001. The maximum post-1991 reserve ratio was 1.51 percent, reached in 1998, and the maximum post-2001 ratio was 0.79 percent reached at the end of both 2006 and 2007. Because the recessions of 1991 and 2001 were mild, few states needed Treasury loans. Just seven states borrowed between 1992 and 1994[145] and nine borrowed

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[145] Connecticut, District of Columbia, Maine, Massachusetts, Michigan, Missouri and New York.

between 2002 and 2004.[146] Total loans outstanding never reached $2.0 billion during or after these downturns and many loans were short-term with repayment occurring in the year of the loan. However, the absence of substantial fund building following these recessions meant that aggregate reserves represented a very modest cushion for the UI system prior to the recession of 2007-2009. The end-of-2007 net balance of $37.6 billion represented only 0.79 percent of payroll.

Because the recession of 2007-2009 was so severe and pre-recession reserves were so modest, the scale of borrowing during 2009-2012 (absolute end-of-year loans) was the largest ever and of similar magnitude to the early 1980s when measured as a percent of covered payroll. Thirty-five of 51 states have borrowed since 2007 with outstanding Treasury loans exceeding $40 billion at the end of 2010 and $36 billion at the end of 2011. As shown in Figure 11.1 the state UI system had negative net reserves at the end of each year between 2009 and 2013.

Another significant financing development of the 2007-2009 recession has been increased debtor state utilization of loans from the municipal bond market. The eight states that issued municipal bonds after December 2010 borrowed a total of $11.1 billion, and repayment dates in four states extended to 2020 or later. At the end of December 2014 outstanding municipal bonds totaled roughly $7.1 billion. The number of states borrowing and duration of net indebtedness since 2009 have been unprecedented in the history of state UI programs.

2. Borrowing from the U.S. Treasury

State UI programs have a long history of borrowing from the Treasury, and the terms of the loans are well understood. Loan eligibility and repayment requirements are specified in Title XII of the Social Security Act and Sections 3302-3304 of FUTA. The process begins with a request from the Governor (or designee) to borrow from the Federal Unemployment Account (FUA) at the US Treasury. The request specifies the amounts needed for an upcoming three-month period and must be made at least one month prior to the start of the period. Terms and requirements for borrowing and repayment are governed by Federal law and associated Unemployment Insurance Program Letters (UIPLs).

Two broad categories of Treasury loans are commonly described as Title XII loans. Cash flow loans are loans secured between January 1 of the year and September 30th that are fully repaid by September 30th of the same year, with no new borrowing between October 1st and December 31st of the same year. These loans do not accrue interest charges. Starting in 2014, however, states need to meet two specific funding criteria (described below) in order to qualify for interest-free cash flow loans.

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[146] California, Illinois, Massachusetts, Minnesota, Missouri, New York, North Carolina, Pennsylvania and Texas. In Pennsylvania the UI program borrowed from another state-administered fund (the Motor License Fund), not from the U.S. Treasury.

All other Title XII loans carry interest charges. The Treasury sets the loan interest rate annually (the interest rate paid on positive trust fund balances from the preceding October-December period), and this rate is applied to the average daily loan balance. State borrowing and repayment can occur on a daily basis. Usually the best state strategy for minimizing the interest costs of Title XII loans is to borrow or repay daily an amount that causes the end-of-day gross trust fund balance to be zero. Days when there are benefit payments but no inflow, the state borrows, but days when tax receipts exceed benefit payments part of the loan principal is repaid. This strategy minimizes the average daily balance, hence interest on the loan, and states usually follow this strategy. The Treasury does not charge fees for these transactions.

States with Title XII loans outstanding on January 1st of two or more consecutive years are subject to an automatic loan repayment process accomplished through the FUTA tax. FUTA has a tax rate of 6.0 percent of taxable payroll, but employers in states with a conforming law and an acceptable system of experience rating can receive a credit of up to 5.4 percent (termed a FUTA credit) against this 6.0 percent rate, leaving an effective FUTA rate of 0.6 percent of taxable payroll. To receive the 5.4 percent offset credit on the first $7,000 of each worker's payroll, the state's UI tax must satisfy certain requirements, e.g., the per-worker base for the state UI tax must be at least $7,000 and the maximum tax rate must be at least 5.4 percent of taxable payroll.[147]

When a state has had outstanding loans on January 1st of two consecutive years and the debt is not fully repaid by November 10th of the second year, the effective Federal UI tax rate of 0.6 percent increases to 0.9 percent (the FUTA credit decreases by 0.3 percent from 5.4 percent to 5.1 percent). The effective Federal UI tax will then increase further if loans remain outstanding for additional years. The higher effective tax rate will continue to be levied (and at an increasing annual tax rate) until the loan is completely repaid. Nearly half the state UI programs had increased FUTA tax rates (reduced FUTA credits) during 2012 and 2013.

The year-to-year progression of increased Federal UI tax rates (reduced FUTA credits) starts at 0.3 percentage points per year and can increase by 0.3 per percentage points per year for a succession of years if the state does not make financing changes that reduce solvency. Actions that reduce solvency (benefit increases and/or tax reductions), however, could accelerate the annual increases in the Federal UI tax rate. After two years of FUTA credit reductions, the FUTA rate may be subject to additional increases. The accelerated increases in the FUTA rate cause the pace of debt repayment to accelerate.

Accelerated increases in FUTA tax rates can occur under two sets of calculations.[148] First, states in their third consecutive year of indebtedness may be subject to a higher FUTA rate under a 2.7 percent Federal add-on calculation. This compares the state's average effective tax rate on taxable wages with a 2.7 percent rate adjusted

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[147] See Appendix A.

[148] Details of the two calculations are given in sections 3302(c)(2)(B) and 3302(c)(2)(C) of FUTA.

by the national taxable wage proportion.[149] Second, states in their fifth consecutive year of indebtedness may be subject to a higher tax rate under a comparison between their average UI tax rate and their five-year average benefit cost rate (BCR). The BCR add-on is the difference between the BCR (or 2.7 percent if it exceeds the BCR) and the average tax rate. Both calculations can imply big increases in Federal UI taxes.[150]

Also relevant to debt repayment by UI programs are the interest charges on trust fund indebtedness. The Treasury started to charge interest on Title XII loans in 1982. Following this change, the pace of loan repayments increased sharply. Between 1975 and 1982 the states received $10.36 billion in interest-free loans of which $7.47 billion was still outstanding at the end of 1982. During 1983-1989 $6.97 billion of the $7.47 billion was repaid, $4.97 billion (71 percent) through increased Federal UI taxes (reduced FUTA offset credits) and $2.00 billion (29 percent) through voluntary repayments by the states. Most of the loan repayments were made with increased Federal UI taxes meaning the states repaid the bulk of these loans very slowly.

Once interest charges began to be levied, the states demonstrated extreme responsiveness to avoid or minimize interest payments.[151] The ratio of repayments to outstanding debt is a useful indicator of this change in state repayment behavior. Between 1983 and 1987 the ratio of loan repayments to start-of-year debt averaged 0.252 for interest-free loans but 0.627 for interest-bearing loans. Part of the reason for the strong sensitivity to interest costs is that the money to pay interest charges must come from a source outside the UI trust fund.[152] The two most common sources are state legislative appropriations and special taxes on employers collected through the UI tax collection apparatus. Legislators and employers are both reluctant to pay added taxes to cover UI interest charges.

Interest payments for a given Federal fiscal year (October 1st to September 30th) are due by September 30th. Debtor state repayments of principal are subject to timeliness requirements specified in Title XII and Section 3304 of the Internal Revenue Code. The American Recovery and Reinvestment Act of 2009 had a provision that waived interest payments due in September 2009 and 2010. Following that recession interest charges only started to accrue on January 1, 2011. Annual interest charges during 2011 and 2012 totaled about $1.0 billion each year.

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[149] No state was subject to the 2.7 percent add-on in 2014 or 2015.

[150] States can request a waiver of the BCR add-on. The five states potentially subject to this add-on as of September 2015 (California, Indiana, Kentucky, Ohio and the Virgin Islands) have all requested a waiver.

[151] Details of the changes in loan repayment patterns are given in Chapter 1 of Vroman (1990). This discussion focuses upon the change in repayment behavior between the late 1970s and the 1980s motivated by the interest sensitivity of the states. Interest sensitivity by the states is ongoing and has contributed to decisions by several states to issue municipal bonds following the recession of 2007-2009. The interest rates on municipal bonds have been consistently lower than the interest rate on Treasury loans. The issuance of municipal bonds is discussed below.

[152] FUTA 3304(a)(17).

While most states have shown an aversion to paying interest charges on UI debts, they have also shown a reluctance to build trust funds to sufficient levels to avoid the need for borrowing during recessions. If one counts the back-to-back recessions of 1980 and 1982 as a single episode, the U.S. economy has experienced five recessionary periods since 1974. In the 40 years between 1974 and 2013 only five of 51 UI programs did not borrow at least once from the Treasury.[153] More seriously, 18 separate UI programs have borrowed during at least three of these five downturns.[154] Many of the frequent borrowers are among the very largest states.[155]

Frequent borrowing is a problem if it causes restrictions in UI benefits or restrictions on UI eligibility. Reductions in payment levels and potential benefit duration weaken the performance of UI as an income replacement program and as an automatic countercyclical stabilizer of the economy. Legislative actions by debtor states to improve program solvency typically include two elements: tax increases and benefit reductions. Thus frequent borrowing followed by benefit restrictions weakens the ability of the UI system to effectively stabilize the economy during recessions.

Other Factors in Title XII Loans

In addition to the general loan repayment requirements just described, several other Federal provisions can affect repayments by individual debtor states.

1. Interest—May to September delay. Interest on new loans received between May and September may be delayed until December 31st of the following calendar year. Interest continues to accrue on these delayed interest payments. Delays were granted to California and New Jersey in 2011 and to New Jersey again in 2012 and 2013.

2. Interest—High IUR deferral. A debtor state may defer interest payments if its IUR equals or exceeds 7.5 percent for the first six months of the previous calendar year. States receiving deferrals must pay one-fourth of the interest due on September 30th and the remaining three-fourths must be paid during the next three years (in three equal installments or at a faster pace). States receiving the deferral are not subject to added interest charges during the deferral period. This deferral option has not been used since the early 1980s.

3. Interest—High TUR delay. A state may request to delay interest payments for nine months after the September 30th due date if the state TUR averaged 13.5 percent or higher during the twelve months ending August 31. Nevada utilized this provision in 2011.

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[153] Alaska, Mississippi, Nebraska, New Mexico and Oklahoma.

[154] Alabama, Arkansas, Connecticut, Delaware, the District of Columbia, Illinois, Maine, Massachusetts, Michigan, Minnesota, Missouri, New Jersey, New York, Ohio, Pennsylvania, Rhode Island, Texas and Vermont.

[155] Eight of the 13 largest states (based on employment in 2013): Illinois, Massachusetts, Michigan, New Jersey, New York, Ohio, Pennsylvania and Texas.

4. Avoidance of FUTA credit reduction. Debtor states can avoid increased Federal UI taxes by making voluntary debt repayments. The voluntary repayments must meet three conditions: i) The voluntary payment must equal the amount that would have been paid through the FUTA credit reduction. ii) The state must legislatively increase solvency by an amount equal to the increased Federal UI taxes that would have occurred. iii) The state must repay any advances received during the year ending November 9th and not borrow between November 1st and January 31st of the following year. Missouri exercised this rarely used repayment option during 2005 and 2006 as did South Carolina in 2011-13.

5. Cap on FUTA credit reduction. A debtor state can also cap the FUTA credit reduction beginning with the second year of such reductions if it meets three criteria. i) No action is taken during the previous Federal fiscal year that reduces tax effort or decreases solvency. ii) The state average tax on total payroll exceeds the most recent five-year average benefit cost rate on total payroll. iii) The September 30 Title XII loan balance is not greater than the loan balance three years earlier. A state that meets these criteria will have its FUTA credit reduction rate set at 0.6 percent or (if higher) the prior year's credit reduction rate. States that qualify for the cap do not have the current year counted in the number of consecutive years of indebtedness on January 1st.

Recent Changes in the Interest-free Provisions of Title XII Loans

A recent change in eligibility for Title XII cash flow loans will soon affect all debtor states. Prior to 2014 eligibility to receive interest-free cash flow loans for a given year required that all loans received between January 1 and September 30 be fully repaid by the latter date and no new borrowing occur between October 1 and December 31 of that year. In the future, however, eligibility will also depend on earlier trust fund balances and a comparison of previous UI tax rates with benefit cost rates.

Two new eligibility conditions become effective in 2014. i) As of December 31st of any of the five years prior to the year of borrowing, the state must have had an Average High Cost Multiple (ACHM) meeting a specified target, a target that progressively increases after 2014.[156] For 2019 and later years, eligibility requires that the state have achieved an AHCM of at least 1.0 in one of the five years preceding the year of the loan application. Between 2014 and 2019 the AHCM requirement is being phased in gradually. To be interest-free, cash flow loans in 2014 require an AHCM of at least 0.50 during the past five years, and the required AHCM then increases by 0.10 per year in successive years until it reaches 1.0 in 2019. ii) For each year between when the solvency target was last met and the year of the loan, the state's UI tax rate must be at least 80 percent of the previous year's tax rate and at least 75 percent of the state's five-year average benefit cost rate.

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[156] The ACHM was introduced in Chapter 1. The AHCM criterion for 2014 is an ACHM of 0.50. This increases by 0.10 in each subsequent year, reaching an ACHM of 1.0 starting in 2019.

Enforcement of these two eligibility conditions will sharply decrease debtor state access to cash flow loans after 2013. The desired effect of these new conditions is to encourage states to build adequate trust fund balances and to discourage the abuse of the cash flow loan provisions through yearly repeated use in combination with short-term non-Title XII borrowing. Many states that need to borrow during later years of the present decade will need to increase their trust fund balances substantially to satisfy the new AHCM requirement.

3. The Municipal Bond Option

One response by state UI programs to the financing challenges posed by the recession of 2007-2009 has been to issue debt instruments in the private bond market, using the proceeds to repay Title XII loans from the Treasury. States are attracted to this option partly because interest rates on municipal bonds are usually lower than the interest rates on Title XII loans. In the past, the interest rate differential between municipal bonds and Title XII loans has usually exceeded 100 basis points (one full annual percent) and often 200 basis points.[157]

In contrast to Title XII loans where there is a single debt instrument with a single associated interest rate, the municipal bond option offers a variety of both debt instruments and interest rates. To date the states issuing municipal bonds have mainly issued longer term instruments, while other options have not been explored. However, this form of borrowing involves several uncertainties, reflected in provisions of the debt issuances. Should the state economy perform worse than expected during the repayment period, there could be a need for additional borrowing. One way to address this possibility is to authorize a loan amount that exceeds the initial issuance. This arrangement allows for additional borrowing without the need for new legislation. On the other hand, better-than-expected economic performance could allow a state to complete debt repayment faster than originally expected. This contingency can be addressed by having call (early redemption) features in the issuance that allows the state to make early repayment of the bonds. There are also uncertainties about future interest rates. In short, issuing municipal bonds entails economic uncertainties that can be partially addressed by state decisions about the structure of the issuance.[158]

Since December 2010 eight UI programs have issued private bonds. Other debtor states have also considered this option for addressing funding problems. Starting with Louisiana and West Virginia in 1987, twelve states to

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[157] Interest rate differentials between Title XII loans and municipal bonds appear in Table 4 of Vroman (2005).

[158] Most state UI municipal bond issuances have involved tax-free bonds and have been used mainly to repay loans from the Treasury and to finance the associated costs of municipal bond administration. If however some part of a municipal bond issuance is deposited into a state's UI account at the Treasury, the interest earnings from that deposit are subject to Treasury rules on interest arbitrage. These rules prevent states from borrowing at a lower interest rate, depositing the proceeds into the state's UI trust fund account at the Treasury and realizing a net yield arising from the interest rate differential. The Treasury requires reimbursement by states for any arbitrage amounts.

date have secured loans from the private capital market to cover UI funding deficits. Two states, Illinois and Texas, have borrowed on two separate occasions, following the recession of 2001 and the recession of 2007-2009.

Table 11-1 summarizes key details of the municipal bond issuances made by the eight states since December 2010. The states, arranged by issuance date, vary in size with four being among the largest (Texas, Illinois, Michigan and Pennsylvania), two medium (Colorado and Arizona) and two small (Idaho and Nevada). These eight states represent more than half of the 14 UI-related bond issuances since Louisiana and West Virginia first issued municipal bonds in 1987. The other four early issuance states and associated issuance dates were Connecticut (1993), Texas (2003), North Carolina (2003) and Illinois (2004).[159]

TABLE 11.1
Recent State UI Municipal Bond Issuances

State	Issuance Date (1)	Final Maturity Date (2)	Principal ($ millions) (3)	(Principal/Payroll) Percent (4)	Interim Bank Loan? (5)	Partly Callable? (6)
Texas	December 2010	June 2020	1,960	0.47	No	Yes
Idaho	September 2011	August 2015	188	1.14	No	No
Michigan	December 2011	June 2020	3,278	2.42	Yes	Yes
Colorado	June 2012	July 2017	625	0.72	No	No
Illinois	July 2012	June 2020	1,470	0.66	No	Yes
Pennsylvania	July 2012	July 2024	2,829	1.46	Yes	Yes
Arizona	September 2013	May 2014	200	0.22	No	No
Nevada	October 2013	June 2018	549	1.29	No	No

Source: Information derived mainly from documentation provided by state bond issuance authorities.

Columns (3) and (4) of Table 11.1 respectively show the absolute size of the recent issuances and their size relative to covered payroll. Michigan and Pennsylvania, states with substantial past experiences with UI funding problems, had the relatively largest issuances while those of Texas, Colorado and Illinois were small, each less than 1.0 percent of covered payroll.

Perhaps the most surprising feature of these issuances is the distant final maturity dates (column (2)). For three of the four large states the final maturity date is 2020 while it is 2024 for Pennsylvania. Among the four large states, note that some of their bonds are callable. Thus depending upon subsequent economic performance, the bonds may be fully repaid prior to their final maturity dates. For Texas, with the earliest issuance date in Table 11.1, about 40 percent ($760 million) of its bonds had been repaid by July 1, 2013, with about half ($388 million) in scheduled repayments and half ($379 million) in early repayments. The early repayments included all $320 million of its Series C bonds with a maturity date of 2020. In fact, these longest maturity bonds were fully repaid at the start of 2013.

For two states the Title XII loans were repaid before their municipal bonds were issued. Column (5) shows that Michigan and Pennsylvania both received interim bank loans that allowed full repayment of the Title XII advances

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[159] Selected details of the earlier bond issuances are given in Table 3 of Vroman (2005).

some months before their municipal bonds were issued. This arrangement allowed both states to complete the Title XII repayments while the details (timing and amount) of their bond issuances were still being decided. During this interim period they paid very low daily interest rates on the principal of the bank loans. In both cases delaying the issuance of the municipal bonds allowed the state to develop a better estimate of the needed size of the issuance. It also reduced the interest due on the Title XII loans,

Table 11.1 provides only a partial picture of the variety of private instruments that a state might choose to issue. The table illustrates variability in the scale of the issuance, bond duration and possible early redemption (or callability). Seven of eight states issued bonds with multiyear maturities. The shortest multiyear final maturity date was four years (Idaho, 2015) and the longest was 12 years (Pennsylvania). A state could also decide to issue short term notes, e.g., 90 days or 180 days, and plan to refinance at these maturities until the loan was fully repaid. North Carolina followed a strategy of issuing short term instruments during 2003, 2004 and 2005 and repaying them in the spring of the following years.[160] Arizona issued short-term notes in September 2013 that were repaid in the spring of 2014. States could also explore issuing instruments that are convertible from variable-rate to fixed-rate and select a mix of taxable or tax-free instruments. In short, issuing instruments in the private market is a generic descriptor of this option, but there are many different possibilities as to the specific details of the issuance.

State UI programs have only limited experience issuing private debt instruments. One pattern in recent issuances is the involvement of state housing authorities in the issuances. These agencies have a long history and rich experience in issuing municipal bonds. In Colorado and Idaho they were the agency that actually issued the bonds on behalf of the UI program. Their financial expertise undoubtedly helped the UI agencies in deciding on the exact type of instruments to issue. The Pennsylvania and Texas UI agencies also issued municipal bonds through another state agency.

It should be noted that the issuance of private debt instruments does not address the fundamental funding problem of UI programs and associated indebtedness. By issuing bonds a state will likely save on the interest charges. However, by issuing municipal bonds, a state is merely exchanging one form of debt for another. Six of the eight states that have issued municipal bonds since December 2010 (all but Arizona and Idaho) still had substantial amounts of debt to repay at the end of December 2014 ($7.1 billion) despite having repaid all their loans from the Treasury. At the end of December 2014, the UI system as a whole owed the Treasury $13.9 billion in addition to the $7.1 billion of outstanding municipal bonds. Considering all debts, the UI system as a whole had net reserves (gross reserves less debts) of only $9.3 billion at the end of 2014, more than five full years after the trough of the 2007-2009 recession.

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[160] Following this strategy will be more difficult in future years because of the changes in eligibility for interest-free cash flow loans as discussed earlier in this chapter.

Issuing private debt instruments has changed the appearance of UI program indebtedness by reducing the volume of loans from the Treasury, but it has not substantially improved the net trust fund situation of the UI system as a whole. With net reserves totaling only $9.3 billion at the end of 2014, it will require four more years with annual net accumulations of $10.0 billion per year for the aggregate reserve ratio to approach its level of 0.79 at the end of 2007.

The following example helps illustrate the seriousness of the trust fund situation in 2015. The highest past payout rate over 12 months for the regular UI program was 2.22 percent of payroll, the cost rate during calendar year 1975. The cost rate during 2009, the highest cost year of the 2007-2009 recession, was 1.69 percent of payroll. The UI system in 2014 had a total payroll of roughly $5.5 trillion.[161] To achieve a reserve ratio multiple (RRM)[162] of 0.50 based on the high cost year of 1975 would imply positive net reserves for the UI system of $55.5 billion. With an annual reserve accumulation of $10.0 billion per year starting in 2014, this modest RRM of 0.50 would not be achieved until the end of 2019. If the next recession started at the end of 2019, this would be 12 full years after the onset of the 2007-2009 recession. There has never been a twelve-year interval between successive recessions during the entire post-World War II period. Thus the chances seem slight of entering the next recession with large trust fund reserves.

4. A Comparison of Borrowing Costs

One interesting issue in a discussion of financing alternatives, i.e., Title XII versus municipal bonds, is the question of comparative borrowing costs. The following paragraphs discuss this issue but note that the analysis cannot be definitive. As part of the discussion, an earlier analysis of comparative interest costs will also be cited.

Except for Title XII interest-free cash flow loans, all forms of UI-related borrowing entail costs. For a state trying to minimize UI borrowing costs, the basic contrast between Title XII advances and other forms of borrowing is straightforward. Because borrowing and repaying under Title XII can be executed on a daily basis, a state can minimize the average daily balance of its outstanding loans through appropriate debt management. It simply retires debt on days when revenues exceed benefit payments and borrows on days when payments exceed revenues. Thus the cost of borrowing under Title XII is the product of this minimum average daily balance times the Title XII interest rate. The flexibility of being able to borrow or repay on a daily basis is a great advantage of

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[161] Total payroll of taxable covered employers in 2013 was $5.24 trillion.

[162] As discussed in Chapter 1 the RRM is a measure of fund adequacy that recognizes the fund balance, total payroll and the highest past twelve- month benefit cost rate. Specifically, it is a ratio of two ratios where the numerator ratio is the reserve ratio (as shown in Chart 11.1) and the denominator ratio is the highest past twelve-month payout rate (benefits as a percent of payroll). One measure of reserve adequacy is an RRM of 1.0 or twelve months of benefits in the trust fund measured at the highest past benefit cost rate.

borrowing from the Treasury. Interest costs on Treasury loans accrue as long as there is outstanding debt, but there are no other borrowing costs.

The Title XII interest rate is set annually by the U.S. Treasury and is capped at 10.0 percent. The annual interest rate for loans is the interest rate paid by the Treasury on positive trust fund reserves during the fourth quarter of the previous calendar year. For the years 2011 to 2015 the Treasury interest rates were respectively 4.09, 2.94, 2.58, 2.39 and 2.34 percent.

Borrowing in the private bond market involves several considerations. Two are: the type of debt to issue and the size of the issuance. Compared to Title XII loans, this form of borrowing will almost certainly carry a lower nominal interest rate, but the amount of borrowing will exceed the average daily balance of optimally managed Title XII loans. At the time of the municipal bond issuance future economic developments, hence loan requirements, cannot be accurately forecasted, meaning the total bond issuance will be larger than needed even recognizing the presence of call features on some of the bonds. Also, other borrowing costs need to be considered. These include:

1) Underwriting fees charged by the companies that issue bonds at the time of issuance.

2) Insurance and other issuance costs, (that is bonds need to be insured against default risk and other incidental costs also arise).

3) Costs associated with exercising the call features of municipal bonds (that is the principal must be redeemed at a price above the bond's face value if the bond is called).

The sum of the additional cost components discussed above can be combined and expressed as a number of basis points (100 times the interest rate) to be added to the interest rate costs of private debt issuance. An earlier analysis of these added costs (Vroman 2005) suggested that the increment would be equivalent to between 25 and 75 basis points. In financial markets where the spread between Title XII interest rates and municipal bonds have generally exceeded 100 basis points, recognition of these added costs still implies a lower overall interest rate from issuing municipal bonds. The interest rate cost advantage favoring municipal bonds becomes even larger when the comparison with Title XII loans involves short-term debt instruments because short-term interest rates are generally lower than long-term rates.

Although municipal bonds have the added cost components just identified, they may also realize a premium (or discount) in their selling price. Because of very low interest rates in the private bond markets during 2010-2013 the municipal bonds from the eight states in Table 11.1 sold at a premium, i.e., their selling price exceeded the face value of the bonds. In considering the costs of private bonds issued during 2010-2013 these premiums should be subtracted from the scheduled interest charges. Because interest rates were so low during 2010-2013 these issuance premiums were large relative to scheduled interest costs. For example, Idaho's $188 million bond

issuance sold at a premium of $14.8 million while the scheduled interest costs totaled $19.9 million. Adding other costs of issuance of $1.2 million implies that the issuance premiums reduced the cost of Idaho's bond issuance from $21.1 million to $6.3 million.

The current project conducted a simulation of Idaho's costs of borrowing under Title XII using the same pattern of repaying the principal as the scheduled repayment of the private bonds. These repayments occurred on August 15th of each year between 2012 and 2015 with about $47 million repaid each year. Using the actual Title XII interest rates for debt between 2011 and 2015 yielded an estimate of Title XII interest costs of $13.8 million. The calculation suggests that the bond issuance saved Idaho $7.5 million of the $13.8 million had the loan been repaid with the same time pattern as the scheduled bond redemptions of 2012-2015. The savings represented 54 percent of the costs implied by the $13.8 million Title XII cost estimate.

Comparing the costs of alternative debt repayment strategies involves several uncertainties. In the preceding comparison, for example, the timing and size of debt repayments under the Title XII alternative was assumed to be the same as the scheduled repayments of the municipal bonds. But it is known that the average daily balance of debt under Title XII would be lower than this average. Thus the estimate of Title XII interest costs ($13.8 million) exceeds what Idaho would actually have incurred if repayments were made under Title XII. Specifically, the annual repayment of principal would, on average, occur earlier in each year under Title XII.[163]

To summarize, a generic comparison of Title XII borrowing versus borrowing in the bond market suggests three conclusions. 1) The principal upon which interest is charged is always lower for Title XII loans. 2) The effective interest rate under a bond issuance (including the added costs discussed above) will almost always be lower than the Title XII interest rate. 3) The difference in costs under the two forms of borrowing is ambiguous because the comparison has a lower principal under Title XII but a lower interest rate under municipal bonds. However, as the interest rate differential favoring private bonds is larger, it becomes increasingly likely that issuing municipal debt will be the less expensive of the two options.

Using data from Idaho, this section simulated interest costs under two alternatives: Title XII and municipal bonds. When identical amounts and patterns of repaying the principal were applied to the two interest rate series (Title XII versus municipal bonds) the municipal bond option had lower interest charges. The private bond issuance was estimated to save Idaho $7.5 million or 54 percent of the cost of borrowing using the Title XII interest rates. Since the interest costs of UI loans have to be financed from a source outside the UI trust fund, the amount of revenue required to finance the borrowing was less than half under the private bond issuance option compared to a Title XII loan.

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[163] First quarter UI tax accruals are received in April-May. The largest share of annual debt repayment would occur shortly after these receipts. The repayments would occur three months earlier under Title XII, with simulated saving of $1.4 million of the $13.8 million. Even this comparison may overstate the interest cost differential since it likely understates the reduction in the average daily balance of debt achievable by optimal Title XII debt management.

5. Summary

In deciding how to borrow to partially finance benefit payments, states have several options. Borrowing from the Treasury under Title XII or with private sector debt instruments is a basic choice. The latter includes a wide variety of options including borrowing with short-term (90 day or 180 day notes) followed by frequent refinancing until the debt is fully repaid. Recent experiences of states issuing private debt (mainly tax-free municipal bonds) are but a small subset of the full range of borrowing options.

Irrespective of the borrowing option selected, borrowing does nothing to address the need to rebuild state trust funds prior to the onset of the next recession. Aggregate net UI trust fund reserves in mid-2013 were close to zero and net reserves at the end of 2014 only totaled $9.3 billion. Loans from the Treasury and the private loans of debtor states totaled roughly $21.0 billion. Reserves must be rebuilt prior to the next recession to avoid a repetition of the borrowing and other recent adjustments such as benefit reductions and restrictions on eligibility that have followed the recession of 2007-2009.

Besides the need to rebuild adequate pre-recession reserves to avoid future borrowing, the states face reduced access to cash flow loans in the future. Starting in 2014 the eligibility requirements for interest-free cash flow loans became more stringent than in the past. Failure to achieve large trust fund balances will make the likelihood of receiving these interest-free loans much lower in the future, especially in 2019 and later years when the new requirements are fully in place. In short, the new requirements will give the states an added reason to rebuild their UI trust funds before the next recession.

Chapter 12. Key Features that Promote and Hinder Solvency

In our Federal-state system all aspects of UI program financing exhibit wide diversity across jurisdictions. This research project examined the important elements of program financing with an eye to identifying those features associated with successful funding experiences. While there is no single universally-accepted definition of successful funding, we have taken it to mean maintenance of a healthy trust fund balance and avoidance of prolonged and large-scale indebtedness to the U.S. Treasury following a recession.

The research of the preceding eleven chapters was quantitative, examining UI tax schedules, tax rates, tax bases and more specialized topics. The latter included employee taxes, state reserve funds, and borrowing in the municipal bond market as an alternative to borrowing from the U.S. Treasury when state trust fund balances have been exhausted.

Two approaches to tax rate determination for individual employers were identified and examined. The majority of states set tax rates for individual employers starting with individual employer experiences with charged benefits and aggregating from the micro (individual employer) level to reach statewide totals. These states augment (in a variety of ways) the employer experience-related tax rate with adjustments to cover social charges and taxes designed to move the current trust fund balance towards a sustainable long run balance.

In contrast, twelve UI programs practice total cost targeting to set rates. This second approach includes the use of array allocation (AA) to set employer tax rates in such a way that the total yield of taxes is known with great certainty because the average tax rate is controlled by the rate-setting procedure. Because it focuses on the aggregate desired flow of tax receipts, this macro approach does not explicitly address social costs since total costs already include social costs. Section 6 of Chapter 3 explores key elements of the AA systems. A review of Table 3.5 shows the diversity of tax-determining provisions in the twelve AA states.

Two analytic findings of the project stand out. 1. Indexation of the taxable wage base has strongly positive effects on state-level financing experiences. 2. The practice of total cost targeting of tax revenue and associated array allocation has strongly positive effects on state-level financing experiences. Both findings emerged in several ways during the project.

Figure 5.2 in Chapter 5 documented the differential growth in the taxable wage base in 17 indexed states versus the 34 non-indexed states. In 2015 their respective averages were $30,288 and $11,399. Thus while non-indexed states could periodically raise their UI tax base, in practice most have not moved much above the $7,000 Federal tax base. The contrast in performance for the two groups has been vivid. During and after the recession of

2007-2009 29 of 36 non-indexed programs (including Puerto Rico in the 36) borrowed from the U.S. Treasury to meet their regular UI benefit payment obligations. In contrast, only seven of 17 indexed programs (including the Virgin Islands in the seven and 17) required Treasury loans over the same period. Chapter 5 documented the evolution of the tax base in the UI system and examined the determinants of tax revenue with employer micro data from Missouri and Washington. One conclusion from that analysis is that changing the tax base has much more effective in enhancing program revenue than changing the maximum tax rate. This finding was obtained in both states.

Other findings reinforced the conclusion that the tax base plays a key role in solvency. Table 2.3 in Chapter 2 illustrated the contrast in the trust fund positions at the end of 2014 between all state UI programs and the 16 that had been continuously indexed since the mid-1980s. Tax capacity is the maximum tax revenue that can be generated by a state's tax statutes. The analysis of tax capacity in in Section 3 of Chapter 4 and Section 5 of Chapter 5 showed that the tax base is a key determinant of tax capacity. On average, states with high tax bases can generate a greater volume of tax revenue compared to states with low tax bases. This contributes to long run solvency.

The twelve states that practice total cost targeting use array allocation in determine total tax revenue from their tax rate schedules. As a group, these states have had more successful financing experiences compared to non-array states. This was shown in Table 2.3 and the related discussion in Section 6 of Chapter 2. Many states have found array allocation to be useful in setting tax rates and determining total anticipated revenue.

The 12 states that practice total cost targeting and array allocation are highly diverse along several dimensions: type of experience rating, tax base indexation, number of tax rate schedules, the number of tax rate intervals per schedule and the maximum tax rate. Section 6 of Chapter 3 discusses these and other aspects of array allocation. States that consider adopting array allocation would find useful the discussion in Section 6 of Chapter 3.

The tax rate schedules present in the states are highly diverse. Chapters 3 and 4 examined several aspects of tax rate schedules and tax revenue responsiveness. Chapter 3 identified several features of tax rate schedules that limit the total revenue derived from the schedules. Flat-top schedules, present in at least six states, limit tax revenue by reducing the sloped range of schedules when a state moves to a higher tax rate schedule. An analysis of California's schedules estimated that the yield of its highest schedule would be 21.7 percent higher if the sloped portion of the top schedule (F+) extended over the same range of negative reserves as the bottom rate schedule. The associated enhancement to total annual revenue would have substantially reduced California's Treasury loan volume following the recession of 2007-2009.

Other tax-limiting features examined in Chapter 3 include having a single tax rate schedule for negative balance employers while having several schedules for positive balance employers. Tax rate limiters restrain the year-to-year increases in tax rates even when state trust funds are low or have substantial debts. Chapter 3 also

identified tax features that enhance total tax revenue. For some tax limiters and tax enhancers, Chapter 3 provides estimates of their quantitative importance.

Chapter 4 examined several aspects of tax responsiveness. Following a recession and the associated drawdown of trust fund balances, several features of state tax systems influence the response of tax revenue, hence the speed of trust fund restoration. Chapter 4 examined the evolution of the triggers that influence when a state moves to different tax schedules. States using reserve ratio multiples as triggers were found to most successfully maintain their triggers undiminished over the 1982-2014 period. The chapter examined the range of 2013 tax yields in moving from the lowest to the highest tax rate schedule in 17 reserve ratio and 6 benefit ratio states. The chapter also compared tax capacity in these states (maximum revenue as a percent of covered payroll) with the average benefit payout rate during 2009-2011, the three recent years of highest payouts in most states. Wide diversity across states was found in both their top-to-bottom yield ratios and in size of tax capacity relative to the 2009-2011 average benefit payout rate.

Chapter 4 also examined the automatic response of taxes when the trust fund balance changes. Taxes respond when a trust fund drawdown causes employers and taxable payroll shift to higher tax rate intervals. The importance of these shifts was studied in Indiana and Alabama. Finally, Chapter 4 discussed the potential effect on tax responsiveness of moving the fund trigger date (the date when the trust fund balance determines the next year's operative tax schedule) from customary dates at the end of June and September to dates closer to the end of the year. In short, Chapter 4 explored several aspects of tax responsiveness that influence the change in tax revenue for the upcoming calendar year.

Chapters 6 and 7 studied social charges using data from required reports submitted by the states and micro data from Missouri and Washington. Trends and the linkage to initial claims were documented. The analysis, however, did not identify strong statistical linkages to state labor market variables or to program-related variables such as the UI benefit cost rate, the taxable wage base or the average tax rate. The analysis did conclude that social charges play a very small role in determining the level of state trust fund balances. An analysis of ten states with explicit social taxes concluded that these taxes were small relative to their states' social charges. In only half of these states were total social taxes during 2004-2013 as much as half of social charges.

Chapter 9 examined state reserve funds, state-administered trust funds whose principal is dedicated to paying UI benefits, but whose interest earnings can be used to meet state-level needs. Most often state reserve fund interest earnings are used to support labor market programs and the state-level administrative costs of UI, labor exchange and labor market programs. Six states have established state reserve funds since the mid-1980s, and three currently operate active reserve funds (Idaho, Iowa, and Nebraska). The chapter briefly reviews the history and experiences of these funds. State reserve funds have made useful additions to state-level funding of labor market programs and program administrative activities. For the three states with active reserve funds, the

payment of regular UI benefits was fully maintained during the recent recession. The states were able to make regular program benefit payment without problems. These states illustrate that for states with healthy UI trust fund balances, the creation of a state reserve fund can be a successful policy initiative that helps to fund state-level labor market activities without impairing program solvency.

Following the recession of 2007-2009, eight states borrowed in the municipal bond market to support UI benefit payments and repay loans from the U.S. Treasury. One motivating factor was the desire to incur low interest costs of borrowing. Chapter 11 reviewed and compared borrowing from the Treasury and borrowing in the municipal bond market. The chapter examined several considerations relevant to this choice. While the interest rate on Treasury loans is likely to be higher than municipal bond interest rate, Treasury loans have advantages in low administrative costs and great flexibility in patterns of borrowing and loan repayment. States with trust fund debts should weigh several considerations in deciding what type of borrowing best suits their needs. A simulation of borrowing by Idaho suggested that the state did reduce interest costs by issuing municipal bonds.

Access to employer micro data enriched the project's analysis in a number of ways. Analyses using the micro data from Missouri and Washington are reported in Chapters 2, 5, 6, 7, 8, and Appendix C. In Chapter 2 these data help describe experience rating calculations for all four types of experience rating currently practiced by the states (reserve ratio, benefit ratio, benefit wage ratio and payroll decline). The micro data support the descriptions and simulation analyses of Chapters 5, 6 and 7 which respectively examine the taxable wage base (Chapter 5), non-charges and inactive charges (Chapter 6) and ineffective charges (Chapter 7). The tax bases in Missouri and Washington are very different, much higher in Washington. The simulations in Chapter 5 provide estimates of the differing impacts on taxable wages of increasing the tax bases in each state. In Chapter 8 the micro data from Missouri are able to document the rate of turnover of new employers showing employer survival rates for up to five years after starting new businesses. These micro data helped to demonstrate the high rate of turnover among new employers. In Appendix C the micro data from Washington were used to examine four alternative experience rating systems (systems not currently present in the states) which states might wish to consider for future adoption. In short the micro data provided key support for many of the project's investigations. These data could be useful in future research on UI program financing.

Appendix A. Federal Conformity Requirements

The Federal-state UI program is a cooperative arrangement between the Federal government and the individual states. Federal laws pertaining to UI specify broad requirements that state UI laws must satisfy. Within those broad requirements, states can determine their statutory and administrative provisions related to UI financing. The requirements for state UI programs are delineated in two Federal laws: the Social Security Act of 1935 (SSA) and the Federal Unemployment Tax Act (FUTA). These Federal laws specify the requirements related to UI coverage, benefits, the Federal UI tax base and tax rate, and program administration. The states must meet these requirements to operate in conformity with Federal law.

These Federal statutes allow for the state UI taxes paid by covered employers in all states to be experience rated, that is, state UI tax obligations are directly linked to each eligible[164] employer's past experiences in paying benefits to current and former employees. These state UI experience-rated taxes are generally lower than the taxes that would be imposed by FUTA, the Federal UI tax statute. To charge state employers these reduced state taxes, the Federal partner must certify that the state's UI program satisfies all Federal conformity requirements.

The following paragraphs summarize the Federal conformity requirements that states must meet in order for state employers to receive full credit on their FUTA tax. This appendix is not presented as covering every detail of the Federal financing requirements but rather as identifying the important requirements states should be aware of as they consider modifying their tax and other UI-related statutes. State UI programs can entertain many options when contemplating a revision of their system of UI financing, but the Federal financing requirements place limits on the options available to states. In a new or revised financing system, a state would still need to satisfy all the Federal conformity requirements identified and discussed in this appendix.

Coverage

Nearly all wage and salary employees[165] are covered by the UI program in their state. Coverage extends to employees of for-profit companies (corporations, sole proprietorships and partnerships) with exceptions made for

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[164] Eligible employers satisfy state requirements as to their length of active operations to be experience rated. Often this period is three years, but many states allow shorter periods (but at least one year) to be experience rated.

[165] The definition of employee is someone who has employee status under usual common law rules. See Section 3306(i) of FUTA and Section 3121(d) of the Internal Revenue Code.

very small firms and situations of very intermittent employment.[166] Coverage also extends to most employees of state and local governments, non-profit organizations and Federally recognized Indian tribes. Employers in the latter three situations account for about 20 percent of aggregate covered employment. Nearly all reimbursable employers pay UI contributions under different rules than for-profit employers. Most elect to make periodic (most often quarterly) payments into the state's UI trust fund that match the benefit charges against their accounts arising from benefit payments to current and former employees. In contrast to employees where UI coverage is nearly universal, nearly all the self-employed including independent contractors are not covered by the UI system, in most situations, and in most states.

Over the history of UI programs, the Federal requirement for FUTA coverage has been extended to smaller and smaller firms. The minimum size for FUTA coverage was originally companies employing 8 or more workers for at least one day during 20 or more weeks in a calendar year. This minimum size was reduced to 4 workers in 1956 and to 1 worker in 1972.

In 2012, UI covered employment of 129.8 million represented 97.7 percent of total wage and salary employment as measured by the Bureau of Labor Statistics' survey of business establishments.

FUTA Tax Credit System

The employer payroll taxes that finance UI benefits, program administration and other labor market activities are levied by both Federal and state governments. The state taxes finance regular UI program benefits while the Federal taxes finance the administration of both the UI and portions of the Employment Service and labor market information programs in the states, half of the benefit costs of the Federal-State Extended Benefit (EB) program and Title XII advances from the U.S. Treasury when state UI trust funds are depleted.

Federal and state UI taxes are linked. State coverage provisions, in general, are influenced by the taxing provisions of FUTA because employers who pay contributions under an approved state law may credit their state contributions against the Federal tax.

Three aspects of Federal UI taxes are important to note.

Section 3301 of FUTA sets a Federal payroll tax on covered employers equal to a set percentage of Federal taxable payroll. This Federal tax rate in 2014 is 6.0 percent of taxable payroll.

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[166] Federal and state laws both contribute in defining the small firms and intermittent employment that fall below UI coverage requirements. The definitions differ by state and industry. In selected states special coverage provisions can apply to employers in agriculture and domestic services. See Chapter 1 of the "Comparison of State Unemployment Insurance Laws, 2014" for state-specific coverage details and the different definitions of employee used in individual states.

Wages subject to the Federal payroll tax are defined in Section 3306(a) of FUTA. The Federal UI tax base in 2015 is the first $7,000 of each employee's annual wages yielding a maximum annual per-employee tax of $42. The Federal tax base has been $7,000 since 1983.

The Federal UI tax can be reduced by two tax credits linked to the state UI taxes paid by the employer: the normal and the additional tax credit.

The normal tax credit allows employers to take a credit against their FUTA tax obligation equal to their contributions into the state's UI trust fund account up to a maximum of 5.4%. To qualify for the normal credit the state's UI law must be certified under FUTA.[167] The additional tax credit may be allowed employers who pay reduced state contributions using state experience rating formula. The additional credit is the amount below the state maximum tax rate under state law, again up to a maximum of 5.4%. This can be as large as 5.4 percent of Federal taxable payroll in states with a minimum tax rate of 0.0 percent.[168] To be eligible for the maximum additional credit, the state must have a maximum tax rate on taxable wages of at least 5.4 percent. An employer that is assigned a 0.0% tax rate would not pay any amount into the state UI fund and therefore there is no normal credit against the FUTA tax. However, based on the low experience tax rate, the amount of the additional credit is 5.4% in 2014, the sum of the two tax credits can be as large as (but not larger than) 5.4 percent of Federal taxable wages. When a state is in conformity and substantial compliance with Federal law and employers pay their state UI taxes, the effective FUTA tax rate is 0.6 percent. The combined normal and additional credit may not exceed 5.4% of the FUTA tax, leaving a net FUTA tax of 0.6% when the maximum credit is obtained.

To receive the maximum sum for the two tax credits an employer must operate in a state that satisfies two conditions. 1) The state's UI laws must meet all Federal conformity requirements. 2) The state's UI trust fund must not have an outstanding loan balance on January 1st of two consecutive years and no unpaid balance at the beginning of November 10th of the second year. If the second condition is not met, the amount of the credit that may be taken against the FUTA tax is reduced. The reduction schedule starts at 0.3 percent of Federal taxable payroll in the first applicable year and increases at a rate of at least 0.3 percent per year in each successive year that the state account remains in debt. These additional credit reductions have been operative in several states since 2011. In 2015 as many as nine state programs could be subject to the additional credit reductions, and for many the additional reduction will be 2.1 percent or more of Federal taxable payroll. The total Federal UI tax rate in 2015 in many of these nine states (all but New York) will be at least 2.7 percent of Federal taxable payroll.

The two FUTA tax credits provide strong financial incentives for states to insure that state UC law conforms to requirements in Federal UC law and for individual employers to be responsive to requests for information from

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[167] Authorization for the normal credit is found in Section 3302(a)(1) of FUTA (Credits against tax). The state law must meet certification requirement as specified in Section 3304 of FUTA (Approval of State Laws).

[168] See Section 3302(b) of FUTA.

state UC agencies so the employer obtains the lowest tax rate commensurate with its experience in the state experience rating system. Since employers have a financial interest in insuring the accuracy of benefit payments to current and former employees they are more likely to provide information to the UI program administrators about the reason(s) and circumstances of applicant job separations.

Experience Rating

The regular state UI program is financed by employer payroll taxes that are experience rated. While the details of UI tax statutes differ considerably from state to state, all states practice a method of experience rating that has been certified by the U.S. Department of Labor. This means that payouts of regular UI benefits are charged to individual employer accounts and higher payouts generally lead to higher future UI taxes.

Experience rating UI taxes is unique to the United States and has been practiced since state UI programs were established in the 1930s. Experience rating has three purposes: to equitably assign UI tax rates based on factors that reasonably measure unemployment risk, to provide an incentive to stabilize employment since benefit charges to an employer's experience rating account usually results in higher tax rates, and to encourage active employer participation in program administration since benefit charges affect their UI taxes.

Two limitations on experience rating should be noted. 1) An employer must have sufficient experience in the state experience rating system to qualify for a reduced rate. Experience rating is applied only after a covered employer has been operating for an initial period whose duration differs by state but ranges from one to three years. Before qualifying for an experience rate, new employers are subject to a new employer UI tax rate (not less than 1.0 percent)[169] that may vary by industry but does not change as a result of benefits charged to their accounts. Experience-rated employers have all been operating for at least one year and in many states for at least three years. 2) Experience rating is said to be partial, meaning that some benefit payouts are not effectively assigned to individual employers but rather are financed as common charges paid by all covered employers. Ineffectively assigned benefit charges arise from three situations: i) charges that exceed the taxes paid by employers taxed at the maximum tax rate (termed ineffective charges), ii) charges against employers who have ceased operations, i.e., against inactive accounts and iii) noncharged benefits that arise from compensable job separations that are not charged to a specific employer experience rating account. In most states, ineffectively assigned benefit charges represent from 25 to 40 percent of total benefit payments. Thus not all employers are experience rated, and among rated employers not all benefit payments affect employer tax rates.

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[169] See Section 3303(a)(3)(D) of FUTA.

Important Federal Experience Rating Statutory Provisions

Most experience rating requirements are found in FUTA but some are also in SSA. Among the important requirements in FUTA and SSA that all state systems must conform with are six that can be briefly summarized along with the identification of their exact statutory sources in FUTA and SSA.

1. Reduced UI tax rates must be based on the employer's "experience with respect to unemployment or other factors bearing a direct relation to unemployment risk." Originally the required minimum years of experience to obtain a reduced rate was the three consecutive years immediately preceding the computation date (the date when state UI tax rates for the upcoming year are decided). However, a state may reduce the minimum time requirement to span as little as one full year of experience prior to the computation date to determine experience rated tax rates. (See FUTA Section 3303(a)(1).) In setting tax rates for individual employers, the state experience rating account must be rated over the same time period using the same factor(s) which bear a direct relation to the employers' experience with unemployment. When this happens, employers with the same experience should pay at the same tax rates so that the cost of UC is equitably allocated to employers in the state.

FUTA does not require a state to use any particular experience rating system in measuring factors that bear a direct relation to unemployment risk. The interpretation of "other factors bearing a direct relation to unemployment risk" is potentially broad, including factors not presently used by any state to judge experience. States have been afforded latitude in developing experience rating systems and the factors used to measure the experience. In "Experience Rating Principles" an attachment to an Unemployment Insurance Program Letter (UIPL) 29-83 the Department of Labor identified "benefit payments, separations, compensable separations, benefit wages and payroll variations, or a combination of such factors" as possible measures of unemployment risk. This UIPL also identifies "weeks or other periods of unemployment" as other measures of unemployment risk.

Presently state UI programs use one of four experience rating plans to measure employer experience: i) reserve ratios (cumulative taxes less cumulative charged benefits as a ratio to average annual payroll), ii) benefit ratios (charged benefits for a recent 3, 4 or 5 year period as a ratio to average annual payroll), iii) benefit-wage ratios (base period wages of recipients as a ratio to the employer's total taxable payroll) and iv) payroll variation (proportionate changes in taxable payroll). These four methods do not exhaust the possible ways that states might measure "unemployment risk."

2. The computation date used in setting tax rates for the upcoming tax year has to fall within the 27-week interval prior to the effective date of new tax rates. This requirement is necessary to insure recent experience is used in the assignment of a rate as opposed to the possible use of experience so remote as to have little validity in relation to the experience of the employer at the time the rate is computed. In states whose UI tax years commence on January 1st, the most common computation dates are June 30th and July 1st of the preceding year (See FUTA Section 3303(c)(7)).

3. Each state is to establish a standard tax rate from which downward deviations for individual employers based upon experience are permitted. (See FUTA Section 3303(c)(8)). The standard rate is influenced by the FUTA credit provisions. Since the maximum amount of the credit under Section 3302(c), FUTA, is 90% of the 6.0 FUTA tax, most states set the standard rate at 5.4%. If a state were to set a rate at less than 5.4% no conformity issue would be raised but the employers in that state would lose credit against the FUTA tax.

4. States are allowed to make "secondary adjustments" to UI tax rates. Secondary adjustments are not related to employer experience and cause rates to deviate from the rates that would apply if based solely on experience with unemployment risk. Secondary adjustments can be used only to further the attainment of certain UI program-related objectives. Three such objectives are: to protect trust fund balances, to cover the costs of benefit charges not assignable to individual employers and to reduce tax rates for employers near the boundary of a tax rate interval. While secondary adjustments are permitted, they are not to be so large that "the employer's own experience is no longer the basic determinant of his reduced rate."

Permissible secondary adjustments include: i) shifts to alternative tax rate schedules caused by variation in the state's UI trust fund balance, ii) solvency taxes designed to replenish depleted trust fund balances, iii) flat rate taxes designed to defray ineffectively assigned benefit charges and iv) voluntary contributions which allow an employer to move to an adjacent lower tax rate interval. (See FUTA Section 3303(d) and UIPL 29-83 and UIPL 29-83 Change 2).

5. The reimbursement option must be given to state and local governmental entities, federally recognized Indian tribes, and nonprofit organizations to finance benefit charges. That is, rather than making contributions under a system of employer experience rating, they can make periodic reimbursements to the state UI trust fund for the UI benefits charged against their employer accounts by current and former employees. The reimbursement option is only available to these entities and not available to for profit employers.

Employment for reimbursable employers represents about one fifth of total employment covered by state UI programs. On average, these employers experience lower rates of employee turnover and associated benefit charges in comparison to taxable experience-rated employers. In 2012, for example, employment among reimbursable employers was 20 percent of both covered employment and total payroll nationally but only 6.7 percent of regular UI benefit payments.

Section 3303(e) of FUTA allows certain non-profit organizations[170] to elect reimbursement financing of charged benefits. Section 3309(a)(2) of FUTA permits state and local governmental entities, federally recognized Indian tribes and certain non-profit entities to finance charged benefits by the reimbursement method. As noted earlier, nearly all of these entities elect reimbursement financing. Since, on average, they represent almost 20

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[170] These are 501(c)(3) organizations as defined by the Internal Revenue Code.

percent of covered wages and employment, this segment of covered employment will not be part of a state's contributory, experience-rated system. States may establish certain safeguards on those employers who choose the reimbursement method of financing.

6. When there is a transfer of trade or business from a predecessor to a successor, state UC law shall provide whether the experience must also be transferred. In most states, when there is a total acquisition then the transfer of experience is mandatory. For partial transfers, the states vary in their treatment of the experience. Some require the transfer, some do not, or some permit the transfer upon request of the successor.

Federal UC law requires state UC law to mandate, or prohibit, the transfer of experience in two situations. i) A mandatory transfer of experience is required when an employer transfers trade or business to another employer, and, at the time of transfer, there is substantially common ownership, management or control between the employers. The combined entity needs to be taxed using the combined experience of the acquiring firm and the acquired firm. This is termed a mandatory transfer of unemployment experience. ii) The transfer of experience to the acquiring business is prohibited if the acquiring business was not a covered employer at the time of the acquisition and if the purpose of the acquisition was solely or mainly to obtain a lower UI tax rate. States use objective factors in deciding whether the acquisition was made primarily to obtain the lower tax rate. This is termed a prohibited transfer of unemployment experience.

State UI programs must employ procedures to identify the transfer or acquisition of a business to determine whether the mandatory or prohibited transfer of experience is required. An acquisition decision motivated solely or mainly to achieve a lower UI tax rate is termed SUTA dumping,[171] i.e., dumping a higher tax rate to acquire a lower tax rate through a change in corporate structure. The mandatory transfer of experience applies when the two firms have essentially the same ownership, management and/or control, regardless of their respective tax rates. Prohibited transfers frequently arise in situations where the two firms operate in substantially different economic areas with substantially different risks of unemployment. A person may attempt to avoid a new employer rate or a high industry tax rate by acquiring an employer with a lower tax rate but that operates a different type of business. For example, a person intends to operate a construction company, buys a low rated flower shop account, and ceases performing the flower shop business shortly after acquisition.

SUTA dumping was addressed by PL 108-295, the SUTA Dumping Prevention Act of 2004. This law amended SSA by adding two sections that explicitly prohibit the two types of attempted tax rate manipulation. Section 303(k)(1)(A) addresses situations of mandatory transfer of experience and Section 303(k)(1)(B) addresses situations of prohibited transfer of experience. Details of the 2004 SUTA dumping amendments are given in UIPL No. 30-04 and attachments.

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[171] SUTA refers to state unemployment tax acts, but in this context, the term is used as shorthand for State Unemployment Tax Avoidance.

Benefit Standards

In administering UI benefit payments, state UI programs are subject to a number of requirements which USDOL monitors for conformity under FUTA. While these requirements pertain to the administration of benefit payments, all must be met by the states and failure to adhere to them would put at risk eligibility for FUTA tax credits.

The US Department of Labor, Office of Unemployment Insurance (OUI) web site identifies twelve separate benefit standards that states must meet.[172] These standards cover a very broad range of UI administrative activities. Selected examples are the following six situations.

1. Labor standards. These requirements address situations of claimants' refusal to accept new work when there is a labor dispute; when an offer of new work where the wages, hours or other conditions of work are substantially less favorable than those prevailing in the locality; or when joining or refraining from union membership is a condition of the offer. The UI agency is to maintain a neutral position, not favoring or opposing the claimant.

2. Equal treatment for employees of state and local governments and nonprofit organizations. In general, they are to have the same access to UI benefits as all other applicants. One important exception is made for school employees with a reasonable assurance of return to their jobs in the upcoming academic year. (See FUTA Section 3304(a)(6)(A)(i-iv).)

3. Claimants and recipients are not to be denied UI benefits based on state law provisions relating to being available for work, actively seeking work or refusing to accept work if enrolled in training approved by the state UI agency and satisfying other eligibility requirements. (See FUTA Section 3304(a)(8) and UIPL 2-96).

4. Claims for benefits by pregnant women are not to be denied solely on the basis of their pregnancy. (See FUTA Section 3304(a)(12)).

5. Professional athletes whose claims for benefits are based substantially all on such services generally are prohibited from collecting benefits if they are between seasons and have a reasonable assurance of returning to their profession in the next season. (See FUTA Section 3304(a)(13)).

6. Aliens resident in the United States illegally are prevented from collecting UI benefits. This prohibition does not apply to aliens legally resident during their pre-unemployment base period and while claiming UI benefits (See FUTA Section 3304(a)(14)).[173]

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[172] See http://www.ows.doleta.gov/unemploy/conformity-benefits.asp

[173] Alien claimants must present documentation of alien status when filing a claim.

The Withdrawal Standard

The payment of UI taxes by employers and the payment of UI benefits to eligible unemployed workers are financial flows that involve state accounts that are part of the UI trust fund maintained at the U.S. Treasury. Both financial flows are subject to strict Federal requirements as to their timing so states do not profit from the float of funds at the cost of transactional timeliness.

SSA established a trust fund at the U.S. Treasury with the Secretary of the Treasury designated as the trustee and the state agencies that administer the UI programs as beneficiaries of the trust. The immediate deposit standard requires that all state UI tax receipts shall immediately upon receipt be deposited into their state's account in the UI trust fund at the Treasury. Federal UC law requires that any amounts withdrawn from these state accounts shall be used solely for the payment of state UI benefits (but subject to a few exceptions provided in Federal law). This limitation on the use of trust fund monies by the states to pay benefits is commonly referred to as the withdrawal standard. The immediate deposit standard and the withdrawal standard are intended to ensure that all state UI tax receipts are immediately available for the payment of regular UI benefits.

The establishment of the UI trust fund at the Treasury is authorized in Section 904 of SSA. The statutory authorization for the deposit standard and the withdrawal standard are in FUTA, Section 3304(a)(3) and Section 3304(a)(4) respectively. Meeting the deposit standard and the withdrawal standard are also required by SSA (section 303(a)(4) for the deposit standard and section 303(a)(5) for the withdrawal standard). Meeting these standards is also required for the disbursement of administrative grants to state UI agencies.

State UI Program Administration

The administration of state UI is financed primarily by Federal grants to state programs that meet several administrative requirements set by the U.S. Secretary of Labor. Ten separate administrative requirements are delineated in Section 303(a) of SSA.

Paramount among these requirements is the "methods of administration" requirement. States are to use methods of administration including a state merit system which the Secretary of Labor finds to be "reasonably calculated to insure full payment of unemployment compensation when due." (Section 303(a)(1)). Federal requirements include a Claims Filing Standard, a Claims Determination Standard and a Standard for Fraud and Overpayment Detection.

In their administration of UI programs state agencies must operate personnel systems that adhere to generally recognized merit principles. This includes recruiting and promoting employees on the basis of relative ability, knowledge and performance, retaining and disciplining employees on the basis of their performance, protecting

employees against coercion from partisan political purposes, paying adequate compensation, providing adequate employee training and nondiscrimination in personnel administration.

To help ensure that benefit payments are made promptly and accurately, the states are required to submit reports on both the distribution of time lapses between applications and the receipt of benefits, the time lapses in other administrative determinations (nonmonetary determinations and appeals) and the accuracy of benefit payments. These BAM (benefit accuracy measurement) reports are submitted by each state quarterly based on random samples of UI claims.

Other administrative requirements include, i) an opportunity for a fair hearing before an impartial tribunal following a denial of a claim, ii) adherence to the immediate deposit and withdrawal standards (as discussed above), iii) submission of periodic reports on program activities as required by the Secretary of Labor, iv) prudent use of administrative monies in program administration, v) provision of information about claimants to other Federal agencies administering public work and public employment programs and vi) administering a program with mandatory participation in reemployment services of certain claimants identified ("profiled") as likely to exhaust (use up) UI benefits.   The various administrative requirements are identified in Section 303 of SSA in its detailed subsections 303(a)(1) through 303(a)(12), 303(b), 303(c) and 303(g).

Confidentiality and Disclosure of State UI Information

The states are required to maintain the confidentiality of UI program information as part of the "methods of administration reasonably calculated to unsure full payment of UC when due" requirement of SSA (SSA Section 303(a)(1)). Information obtained by the state UI agencies in the course of program administration, e.g., employer, claim and wage information, is generally not subject to disclosure. Exceptions to this confidentiality requirement may occur under terms of a Federal law or state law with a written agreement between a UI agency and another government agency with specified administrative responsibilities.[174] Other exceptional situations may also arise in disclosures to public officials (or their agents) in the performance of public duties, to court orders or in situations of informed consent. (See UIPL No. 21-99, Attachment B and 20 CFR Part 603: Confidentiality and Disclosure of State UC Information).

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[174] Examples include the Department of Agriculture and state SNAP (Supplemental Nutritional Assistance Program) agencies, State Child Support Enforcement Agencies and the Department of Health and Human Services (National Directory of New Hires and Temporary Assistance for Needy Families).

Conformity Requirements: Summary

The preceding paragraphs show that UI conformity requirements set by the Federal partner are wide-ranging and touch on aspects of taxation, benefits and program administration. Failure to meet these requirements can disadvantage the employers and UI program administrators in a state. Not satisfying conformity requirements results in higher FUTA taxes for employers. Rather than paying the 0.60 percent FUTA tax plus the applicable state experience-rated tax, state employers would pay the FUTA tax of 6.0 percent levied on the first $7,000 of annual earnings per worker plus the applicable state experience-rated tax. In other words, there would be no FUTA additional credit. Also, the state UI administration would be penalized because the state would not qualify for the Federal grant for UI program administration. The state would need to generate alternative revenue sources to pay for program administration. In short, the conformity requirements provide strong financial incentives for states to operate their UI programs in conformity and compliance with Federal UI laws.

Appendix B. Solvency of State UI Systems

The UI data reporting system has all the information needed to calculate RRMs and ACHMs for the entire U.S. economy and for individual states. Figure B.1 traces developments in the national RRM for the 55 years 1960 to 2014.[175] The denominator used for the RRMs in Figure B.1 is the highest-ever past annual payout rate. Prior to the recession of 1974-1975 note how the RRMs generally exceed 1.0 and even reached 1.5 in selected years. After 1974, however, the national RRM never achieves a level of 1.0, and in the past 25 years, the national RRM has clearly been trending downward. In all years after 2001 the national RRM consistently fell below 0.50. Finally, note that negative year-end RRMs have occurred just seven times in the 55 years spanned by Figure B.1. Unfortunately, 2009-2013 accounted for five of the seven years.

Figure B.1 vividly depicts periods of reserve drawdowns as well as post-recession trust fund buildups. Large drawdowns are observed in the early 1970s, 1974-1976, 1979-1983, 1990-1993, 2000-2004 and 2007-2010. The 2007-2010 drawdown is similar in scale to the drawdown of 1979-1983, respectively decreases of 0.68 and 0.62. Substantial trust fund build-ups are also apparent in Figure B.1 during 1961-1969, 1977-1979 and 1983-1989. Note however that the pace of the trust fund build-ups was very modest after the recessions of 1991 and 2001.

FIGURE B.1
National Net Reserve Ratio Multiple 1960-2014

■ RRM - Reserve Ratio Multiple
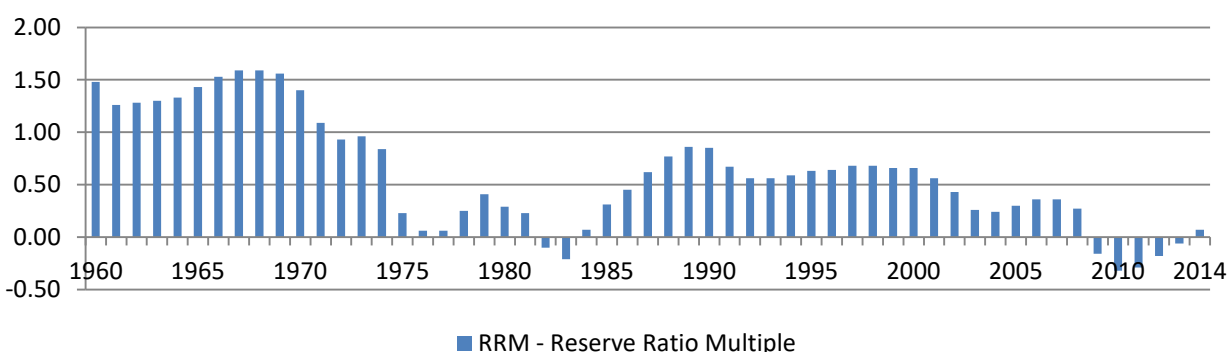
Source: Data primarily from the *Unemployment Insurance Financial Data ET Report 394* but using negative reserves including municipal bond indebtedness in states that have issued municipal bonds.

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[175] Figure B.1 uses the RRM rather than the AHCM as the measure of aggregate reserves due to greater availability of historic data.

Patterns of State Borrowing in Past Recessions

There is no single level of the RRM or AHCM that will always assure adequate reserves for a state. Yet states with an RRM of 1.0 or above prior to recessions have almost always avoided trust fund insolvency.[176] Conversely, as state pre-recession RRMs have fallen below 1.0, they have been accompanied by funding problems which were larger in states with larger downward deviations below 1.0.

Widespread borrowing by states has occurred only since the 1973-1975 recession. Prior to 1975, no more than three states finished any calendar year with outstanding Title XII loans, and just seven states secured loans before 1975.[177] In 1975, however, 15 states ended the year with outstanding loans. The 1973-1975 recession inaugurated a period when recession-related borrowing became more prevalent. In every recession since the mid-1970s, at least seven state UI programs have needed Title XII loans.

Table B.1 summarizes state borrowing across five recessions. The columns show categories based on the pre-recession RRM as a measure of solvency. The rows correspond to the recessions since 1970, with each group of rows in the table showing the distribution of states according to their pre-recession RRM, the number needing loans during or after the recession and the percent of states borrowing in each RRM range. Totals and the U.S RRM appear in the right-hand columns. The bottom lines of Table 1.3 summarize across the five recessions.

Arranging the state programs into five RRM intervals clearly illustrates an important pattern. States with RRMs below 0.26 almost always need to borrow during a recession while those with an RRM of 1.00 or larger rarely need loans. This point is most vividly illustrated in the bottom three lines of Table 1.3 that summarize experiences across the five recessions. Of the 39 situations in which pre-recession RRMs fell below 0.26, loans were needed in 37 of those instances, for a loan frequency of 95%. Of the 83 situations in which the pre-recession RRM was 1.00 or larger, loans were needed just nine times for a frequency of 11%. Note further that seven of the nine programs needing loans despite having pre-recession RRM of 1.00 borrowed during 1974-1978 while just two of 50 situations in later periods needed loans. The table's three intermediate RRM ranges validate this by showing a continuum: there is clearly an increasing frequency of insolvency and loans as states move from higher pre-recession RRMs towards lower pre-recession RRMs.

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[176] The term insolvency is used here to mean a state totally exhausts its trust fund balance at the Treasury.

[177] States with insolvent trust funds borrow to make benefit payments under legislative authorization in Title XII, sections 1201-1204, of the Social Security Act, hence the shorthand reference to Title XII loans. Arizona, Alaska, Michigan, Pennsylvania, Connecticut, Vermont and Washington.

Pre-recession Reserve Ratio Multiples and Percent of States Borrowing

Recessionary Period	RRM <0.26	RRM 0.26-0.50	RRM 0.51-0.75	RRM 0.76-1.00	RRM >1.00	U.S. Total	U.S. RRM
Dec. 1973 RRM	3	1	10	4	33	51	0.96
Loan 1974-1978	3	1	10	2	7	23	
% Taking Loans	100	100	100	50	21	45	
Dec. 1979 RRM	16	7	7	9	12	51	0.42
Loan 1980-1987	14	7	6	3	1	31	
% Taking Loans	88	100	86	33	8	61	
Dec. 1989 RRM	2	8	10	11	20	51	0.86
Loan 1990-1993	2	3	0	2	0	7	
% Taking Loans	100	38	0	18	0	14	
Dec. 2000 RRM	2	10	20	8	11	51	0.65
Loan 2001-2004	2	4	2	0	0	8	
% Taking Loans	100	40	10	0	00	16	
Dec. 2007 RRM	16	14	8	6	7	51	0.36
Loan 2008-2011	16	13	5	0	1	35	
% Taking Loans	100	93	63	0	14	67	
Five Recessions	39	40	55	38	83	255	0.65
Loans	37	28	23	7	9	104	
% Taking Loans	95	70	42	18	11	41	

Source: Based on data from the UI Financial Handbook with calculations made at the Urban Institute. Data refer to 51 programs, the 50 states plus the District of Columbia. Note that the table treats the back-to-back recessions of 1980 and 1982 as a single recessionary episode.

The experiences summarized in Table B.1 strongly support the desirability of having an RRM of at least 1.0. Based on the five most recent recessions, there have been just nine instances in 83 where a state needed to borrow when its pre-recession RRM was 1.00 or larger. As noted above, of the nine states that borrowed with an RRM of 1.0 or higher, seven borrowed during 1974-1978. At the opposite extreme, 37 of 39 programs that entered these recessions with RRMs below 0.26 needed loans. This analysis of 45 years of data, covering 5 recessions, clearly shows that low reserves and borrowing are closely connected.

Table B.1 is also helpful for making a few additional points. First, note the generally low level of reserves prior to the recession of 2007-2009. Thirty of 51 programs had an RRM of 0.50 or less. Across the five downturns, this is the largest number with such low pre-recession reserves. Second, states with pre-recession RRMs between 0.51 and 1.00 have been learning how to avoid borrowing. During 1974-1978 and 1980-1987 more than half of these states borrowed (12 of 14 and nine of 16 respectively). The percent taking loans during 2008-2011, in contrast, was 36% (5 of 14). This "fact" may be surprising since the 2007-2009 recession was so severe.

Note that Table B.1 identifies the presence of state borrowing but does not show the scale of the loans. This was also examined in a later paragraph with unsurprising results. On average, the states that borrowed needed larger loans when their pre-recession RRMs were lower.

Does borrowing have bad consequences in debtor states? Two points are important here. First, having outstanding Title XII loans does not diminish state responsibility for prompt and accurate payment of UI benefits. Debtor states must continue to meet Federal promptness standards and standards for the accuracy and quality of administrative decisions affecting benefits. Second, indebtedness often provokes a legislative response to improve fund solvency. In formulating their response, states typically craft solvency legislation that includes a mix of tax increases and benefit reductions.[178] The benefit reductions adversely affect claimants from debtor states. Benefit reductions are an important consequence of incurring UI trust fund debts.

The Scale of Borrowing in the 2007-2009 Recession

The pre-recession RRM is also a useful predictor of the size of Title XII loans. To measure state borrowing on an appropriate scale, an effective tool is the debt ratio: the outstanding debt of each state on December 31st, 2010, measured as a share of the state's total covered payroll in 2010. On that date, debt ratios among the 35 states that had borrowed ranged from 0.0 percent, i.e., loans fully repaid, in five states (Maryland, Massachusetts, New Hampshire, South Dakota and Tennessee) to 2.96 percent in Michigan, 2.34 percent in Indiana and 2.10 percent in North Carolina. The latter three were the only states where loans exceeded 2.0 percent of payroll. On that date, 14 states had an outstanding debt of 1.0 percent of 2010 payroll or larger. Another 12 states had a debt of less than 0.50 percent of 2010 payroll including the five that had already repaid their loans. Aggregate indebtedness for the 35 states totaled $42.1 billion or 0.92 percent of 2010 payroll.

To further explore the link between the scale of borrowing across the 35 states and pre-recession reserves, we performed regression analysis. The analysis indicates that debt percentage was systematically larger in states with lower pre-recession RRMs.[179] On average, states that entered the 2007-2009 recession with lower RRMs needed larger loans from the Treasury compared to states with larger reserves.

For each of the 35 states that borrowed, the regression equation in footnote 28 projected a scale of debt at the end of 2010. Certain errors from these projections are instructive. Large errors can potentially provide

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[178] One summary of state legislative responses to the widespread borrowing of the 1980-1987 period is given in Chapter 2 of Vroman (1986). Of the 10 states with the largest loans, all increased UI taxes and all but one (Texas) also reduced UI benefits. This pattern was repeated in most debtor states following the 1991 and 2001 recessions.

[179] The regression equation was as follows.   Summary statistics
 Debt percentage =1.406 − 2.306*RRM07   Adjusted R^2 = 0.233
                      (7.6)   (3.4)   Standard Error = 0.670
Beneath each coefficient is the absolute value of its t ratio. T ratios of 2.0 or larger are statistically significant.

information about policy actions taken by states. In four states the regression over-projected the scale of indebtedness by at least 0.670 percentage points (the average error of the regression). Three states this group (New Hampshire, South Dakota and Tennessee) enacted measures in 2009 and 2010 to minimize borrowing and restore their trust funds. For six other states the regression under-projected the scale of borrowing by at least 0.670 percentage points. One of the six (Hawaii) enacted a major tax reduction in 2007 with provisions first effective in 2008, just as the recession was starting. Hawaii borrowed in late 2010 and in 2011. In 2010 it reversed the earlier tax reductions enacted in 2007. Each of the other five states (Indiana, Michigan, Nevada, North Carolina and Wisconsin) still had a UI debt at the end of 2013.[180] Four of the five (all but Nevada) had pre-recession RRMs at the end of 2007 that fell below 0.26, i.e., the RRM group most consistently likely to borrow as shown above in Table 1.3.

Recommended Trust Fund Solvency Standards

As noted, there is no Federal solvency standard that state UI trust fund balances must satisfy. States can and have operated for lengthy periods with RRMs and AHCMs that fall substantially below 1.0 and even below more modest standards. However, there is a substantial history of recommendations about trust fund adequacy and the RRM and AHCM have figured prominently in earlier proposed solvency standards. Originally developed by actuaries at the U.S. Department of Labor, the RRM was examined and (as noted above) recommended by a benefit financing committee of the Interstate Conference of Employment Security Agencies (ICESA) in the late 1950s.[181] The ICESA committee recommended that states achieve an RRM of from 1.5 to 3.0 to assure solvency. This standard is very conservative and has been achieved by few states in the past. One critique of this standard is given in Chapter 2 of Vroman (1990).

The National Commission on Unemployment Compensation (NCUC) of 1978-1979 and the Advisory Council on Unemployment Compensation (ACUC) of 1993-1995 both made recommendations related to trust fund solvency.[182] The NCUC recommendations did not include an explicit numeric trust fund target but encouraged states to establish reserve balances "based on a careful examination of past and prospective benefit-cost ratios and future revenue-generating capacity." The ACUC recommended that the national UI program administration establish an explicit goal to forward fund the state programs. Their recommendation was that the goal be an

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[180] Michigan and Nevada have repaid their Treasury loans but issued municipal bonds, respectively in late 2011 and late 2013, to repay their Treasury debt.

[181] See Interstate Conference of Employment Security Agencies (ICESA), op.cit.

[182] See Chapter 1 of National Commission on Unemployment Compensation, "Unemployment Compensation: Final Report," (Washington, D.C.: US Government Printing Office, July 1980) and Chapter 2 of Advisory Council on Unemployment Compensation, "Collected Findings and Recommendations: 1994-1996," (Washington, D.C.: Advisory Council on Unemployment Compensation, 1996).

AHCM of 1.0 with the high cost rate (AHCR, the denominator of the AHCM) measured as the average cost rate from the three highest-cost years of the past twenty years. To encourage states to achieve this goal, the ACUC also recommended that the interest yield on fund balances be augmented in states with an RRM above 1.0 with funds derived from an interest rate reduction on trust funds held by states with an RRM below 1.0.

There has never been a Federal UI solvency standard regarding a minimum level of reserves to be achieved and maintained in the long run. The one major change in requiring a minimum trust fund balance in the states is the progression of AHCM levels from 2014 to 2019 that will affect eligibility for interest-free cash flow loans for states needing loans. Under the AHCM level of 0.50 in 2014 only 24 of 53 UI programs (including Puerto Rico and the Virgin Islands) would be eligible for zero-interest cash flow loans in 2014 (assuming all other cash flow requirements are met). More significantly, not one of the ten largest states (measured by their level of taxable covered employment in 2012) and just three of the 20 largest states in 2014 had an AHCM of at least 0.50 during the previous five years. Even before the increases in the AHCM requirement slated to take place between 2014 and 2019, most covered employment is already located in states with UI programs not eligible for interest-free cash flow loans.[183]

Summary of Recent UI Financing Experiences

Trends in state UI financing since the mid-1970s as illustrated by Tables 1.1, 1.2 and B.1 and Figure B.1 can be summarized with five observations.

1. Regular UI benefit costs, the responsibility of the experience-rated state financing systems, have not increased when compared to total covered payrolls of state economies. In fact, average benefit ratios (benefits as a percent of covered payrolls) during the past two fully completed decades (the 1990s and 2000s) were significantly lower than averages in the four earlier decades (the 1950s to the 1980s).

2. While state UI tax rates roughly matched benefit payout rates during the first four full decades after World War II, average tax rates lagged behind benefit payout rates during the 1990s and by an even larger margin during the 2000s. As a consequence, trust fund balances in recent decades have declined broadly relative to the size of state economies. Increasing numbers of states have been operating with reserve ratio multiples (RRMs) and average high cost multiples (AHCMs) below 0.50 and very few with RRMs and AHCMs at or above 1.0.

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[183] See U.S. Department of Labor, Office of Unemployment Insurance,"2014 State Unemployment Insurance Trust Fund Solvency Report," Table 2, page 57. This table shows state by state eligibility detail for 2014.

3. Having an RRM or an AHCM of at least 1.0 is prudent for a state that wants to avoid borrowing from the Treasury during a recession. This is supported by analysis of solvency levels and borrowing activity from the most recent five recessions as summarized in Table B.1.

4. Increasing numbers of states, however, are operating as if the AHCM = 1.0 solvency standard is an undesirable actuarial standard. If trends of the recent decades continue, the state financing regimes will act increasingly like pay-go systems and less as advance funded or pre-funded systems. With smaller cushions of reserves, states will increasingly need to rely on loans from the Treasury and loans in the municipal bond market during future recessions. Given the change in cash flow loan eligibility starting in 2014 future borrowing from the U.S. Treasury is slated to become more expensive, especially short term borrowing with cash flow loans. Following the 2007-2009 recession 35 of 51 state UI programs borrowed from the Treasury. Additionally, between December 2010 and August 2014 eight states borrowed in the municipal bond market and other states may follow.

5. State borrowing threatens the performance of UI as an automatic stabilizer because state legislation to improve trust fund solvency frequently includes reductions in UI benefits as well as tax increases as elements of a "balanced" solvency package that imposes financial pain on both employers and claimants. Thus the downtrend in UI trust fund reserves poses a threat to the performance of UI during future recessions. [184] To avoid this threat, improvements in UI program financing and increases in trust fund balances are needed.

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[184] It should also be noted that borrowing can be a cost to state employers in the form of reduced FUTA credits.

Appendix C. Alternative Methods for UI Experience Rating

Chapter 2 examined the four currently-used methods of UI experience rating: reserve ratio, benefit ratio, benefit-wage ratio and payroll decline. The advantages and disadvantages of these methods are discussed. Alternative methods have been suggested that might have more appealing features. This appendix provides brief descriptions and analyses of four alternative methods of experience rating.

EMPLOYER CHANGE FORMULATION. This measure would use the change in employment by quarter (or possibly by month) divided by total employment in the previous quarter (or month) and average the ratios over the past two or three years. Employers with the biggest increases in employment ratios would receive the largest reductions in their UI tax rates, those with the smallest increases (and decreases) in employment ratios would receive higher rates.

PAYROLL CHANGE FORMULATION. A payroll increase ratio could be calculated by taking the change in payroll from one quarter to the next and dividing it by the previous quarter's total payroll, then the quarterly changes would be averaged over two or more years.

UI LAYOFF RATE (OR COMPENSABLE SEPARATIONS). In this methodology, on the computation date each year, each state would compute the UI layoff rate by debiting an individual employer's record with one tally for each UI recipient who had received at least four weeks of benefits over the previous year, then divide that number by the employer's level of employment. This rate would be calculated over three years and averaged.

HIGH-COST ADD-ON FORMULA. Employers would all pay a flat amount equal to the average of the last ten years of benefit costs in the state plus a solvency amount and those employers with benefit charges over 5.4% of their taxable payroll for three consecutive years would pay an Excess Benefit Charge equal to an increasing proportion of the difference between the amount of benefits they were charged in the last one to three years and 5.4% of their taxable payroll.

In this Appendix we use micro employer data from Washington State to investigate the practicality of the above four concepts as the following four methods: (1) quarterly employment growth, (2) quarterly payroll growth, (3) compensable layoff (or separation) rate, and (4) a high-cost add-on method.

1. Quarterly Employment Growth

To measure employment growth we examine quarterly percentage changes in reported employment among firms over a two or three-year period. For firms with positive employment levels in each of the years plus the preceding quarter, we compute quarter-to-quarter employment growth rates as:

$$G_t = 100*(E_t − E_{t-1})/E_{t-1}$$

where, E_t is employment in quarter t. Due to seasonality and temporary suspension of business operations, data on many firms show zero employment in some quarters. For such firms we can compute fewer than 12 growth rates. Zero employment in a quarter prevents computation of a growth rate from that quarter because division by zero would be required. Additional rules could be inserted to average over zero quarters, but in this appendix we assess the practicality of the rule as proposed. Quarterly employment data are routinely available for all states. Employer quarterly wage record reports to state employment agencies must include monthly counts of employment during the week including the 12th of the month. These data are used both for UI program administration, and for the Bureau of Labor Statistics (BLS) Quarterly Census of Employment and Wages (QCEW). Oregon and Washington use hours worked data for UI monetary eligibility determinations. We use the Washington data to illuminate the prospects and problems with using employment change as a measure of unemployment experience.[185]

PROBLEM: QUARTERS WITH ZERO EMPLOYMENT YIELD UNDEFINED EMPLOYMENT GROWTH RATES. Washington's existing benefit ratio methodology calculates tax rates for a given tax (calendar) year based on firm experience over 4 years (48 months) ending on June 30 in the prior year. Therefore, our employment growth computations are similarly applied on June 30. Table C.1 lists the number of experience rated firms that had at least one quarter of non-zero employment in the 13 quarters ending the preceding June 30 for each year from 2003 to 2013. About 200,000 such employers are listed for each year. These employers averaged nine to ten quarters with positive employment in the 13 quarters preceding June 30th over the eleven-year period 2003 to 2013. This indicates that a large number of quarterly employment changes would be discarded in a quarterly employment growth computation.[186]

Also as shown in Table C.1, each year about 20 percent of firms had no employment in the four quarters ending June 30 (column (4)), and about 11 percent had no employment in the two-year window ending June 30 (column (6)). These patterns do not affect computation of benefit ratios under the current Washington experience

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[185] For employment growth rates to be calculated in each quarter of the three-year period requires 13 quarters of employment. Therefore, the window we will use to observe employment for all firms is 13 quarters.

[186] Special rules could be inserted to accommodate changes from zero-to-positive or zero-to-zero quarterly transitions, but such possibilities were not explored in this analysis.

TABLE C.1.
Washington State Experience Rated Firms with at Least One Non-zero Quarter of Employment in the 13 Quarters Ending June 30 of the Indicated Experience Rating Year that would determine tax rates for the subsequent tax (calendar) year

Experience rating year as of June 30	Total firms	Average qtrs. with non-zero employment (max 13)	No employment past 4 qtrs.		No employment past 8 qtrs.	
			Number of firms	Share	Number of firms	Share
(1)	(2)	(3)	(4)	(5)	(6)	
2003	201,514	9.1	37,599	0.187	22,143	0.110
2004	205,469	9.0	44,066	0.214	24,168	0.118
2005	206,199	9.0	44,309	0.215	26,542	0.129
2006	207,604	9.1	43,379	0.209	26,472	0.128
2007	207,597	9.2	40,440	0.195	25,220	0.121
2008	209,477	9.3	39,243	0.187	23,534	0.112
2009	210,136	9.4	39,483	0.188	22,788	0.108
2010	214,824	9.4	39,737	0.185	24,026	0.112
2011	216,510	9.5	40,096	0.185	23,954	0.111
2012	201,780	10.3	38,348	0.190	23,114	0.115
2013	190,251	10.6	41,286	0.217	25,152	0.132

rating methodology, but they complicate computation of an employment growth measure.[187] It may be the case that many of the zero employment firms identified in Table C.1 are temporarily or permanently inactive. In our analysis of quarterly payroll changes below, Table C.6 (column (2)) reports that in the three years preceding June 30 from 2003 to 2013 between 20.3 and 27.7 percent of active experience rated employers had at least one calendar quarter with zero total payrolls. This indicates that the scale of the zero employment quarter issue is not trivial.

PROBLEM: HUGE PERCENTGE CHANGES AT SMALL EMPLOYERS—MICRO EXAMPLE. Table C.2 presents data on two Washington employers with operations between the years 2000 and 2013. The employer summarized in Example 1 (columns (1) to (5)) is relatively large with quarterly employment in the 600 to 800 range, and the employer Example 2 (columns (6) to (10)) is very small with employment being 0, 1, or 2 each quarter. There is an obvious problem for the small employer, in that the quarter to quarter percentage change in employment is not defined when the base for the change is zero. Furthermore, across quarters when it can be computed, the percentage change varies by large amounts. For all quarterly changes over the period the employment growth percentage is either, 0, 50, 100, 200, -50, -67, or -100. This is a very volatile pattern. Table C.3 illustrates that

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[187] Data errors can also cause problems with employment based computations. For example, if an employer accidentally reports wages in the employment field, then employment growth rates could appear to be enormous. Naturally, such data entry errors would need manual correction even in current experience rating systems. We mention this because it was observed in micro-simulations of employment growth measures with actual state employer data.

TABLE C.2.

Actual Quarterly Employment Data for Two Washington Firms, 2000 to 2013

Year and Quarter	Example 1					Example 2				
	Month of Quarter			Average for Quarter	Percent Change	Month of Quarter			Average for Quarter	Percent Change
	1	2	3			1	2	3		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
20001	742	723	726	730.3		0	0	2	0.7	
20002	738	729	739	735.3	0.7	2	2	2	2.0	200.0
20003	722	725	733	726.7	−1.2	2	2	2	2.0	0.0
20004	721	723	717	720.3	−0.9	0	0	2	0.7	−66.7
20011	730	733	736	733.0	1.8	0	0	2	0.7	0.0
20012	736	740	753	743.0	1.4	2	2	2	2.0	200.0
20013	760	772	768	766.7	3.2	2	2	2	2.0	0.0
20014	758	763	757	759.3	−1.0	2	2	2	2.0	0.0
20021	747	757	766	756.7	−0.4	0	0	0	0.0	−100.0
20022	777	775	792	781.3	3.3	0	0	0	0.0	na
20023	810	810	800	806.7	3.2	2	2	2	2.0	na
20024	802	778	774	784.7	−2.7	0	0	0	0.0	−100.0
20031	764	771	777	770.7	−1.8	0	0	0	0.0	na
20032	791	804	805	800.0	3.8	2	2	2	2.0	na
20033	803	930	1043	925.3	15.7	0	0	0	0.0	−100.0
20034	928	885	898	903.7	−2.3	0	0	0	0.0	na
20041	738	804	813	785.0	−13.1	2	2	2	2.0	na
20042	890	909	898	899.0	14.5	0	0	0	0.0	−100.0
20043	697	697	696	696.7	−22.5	2	2	2	2.0	na
20044	668	654	632	651.3	−6.5	2	2	2	2.0	0.0
20051	626	617	622	621.7	−4.6	0	0	0	0.0	−100.0
20052	620	624	630	624.7	0.5	2	2	2	2.0	na
20053	626	628	619	624.3	−0.1	2	2	2	2.0	0.0
20054	626	626	607	619.7	−0.7	2	2	2	2.0	0.0
20061	602	598	610	603.3	−2.6	2	2	2	2.0	0.0
20062	611	618	632	620.3	2.8	2	2	2	2.0	0.0
20063	629	633	642	634.7	2.3	2	2	2	2.0	0.0
20064	642	654	673	656.3	3.4	0	0	0	0.0	−100.0
20071	660	660	659	659.7	0.5	2	2	2	2.0	na
20072	659	655	671	661.7	0.3	0	0	0	0.0	−100.0
20073	672	676	699	682.3	3.1	2	2	2	2.0	na
20074	691	700	706	699.0	2.4	2	2	2	2.0	0.0
20081	708	716	724	716.0	2.4	0	0	0	0.0	−100.0
20082	716	727	727	723.3	1.0	0	0	0	0.0	na
20083	725	725	730	726.7	0.5	2	2	2	2.0	na
20084	846	850	856	850.7	17.1	0	0	0	0.0	−100.0
20091	860	863	863	862.0	1.3	0	0	0	0.0	na
20092	862	865	863	863.3	0.2	2	1	1	1.3	na
20093	863	861	844	856.0	−0.8	2	2	2	2.0	50.0
20094	853	859	859	857.0	0.1	0	0	0	0.0	−100.0
20101	858	864	871	864.3	0.9	0	0	0	0.0	na
20102	865	862	865	864.0	−0.0	0	0	0	0.0	na
20103	866	873	877	872.0	0.9	0	0	0	0.0	na
20104	882	884	882	882.7	1.2	0	0	2	0.7	na
20111	877	880	887	881.3	−0.2	0	0	0	0.0	−100.0
20112	886	882	885	884.3	0.3	0	0	0	0.0	na
20113	877	884	859	873.3	−1.2	2	2	2	2.0	na
20114	864	870	865	866.3	−0.8	0	0	0	0.0	−100.0
20121	866	858	850	858.0	−1.0	0	0	0	0.0	na
20122	835	834	835	834.7	−2.7	0	0	0	0.0	na
20123	832	826	831	829.7	−0.6	0	0	0	0.0	na
20124	821	823	831	825.0	−0.6	0	0	0	0.0	na
20131	834	833	836	834.3	1.1	0	0	0	0.0	na
20132	837	837	835	836.3	0.2	0	0	0	0.0	na
20133	833	829	834	832.0	−0.5	2	2	2	2.0	na
20134	832	827	825	828.0	−0.5	1	1	1	1.0	−50.0

averaging employment growth across either two or three years does not appreciably reduce volatility.[188]

TABLE C.3.
Employment Growth Computations for Two Washington Firms as of June 30, 2002 to 2013

Year and Quarter	Example 1		Example 2	
	Simple Average	Weighted Average	Simple Average	Weighted Average
	(1)	(2)	(3)	(4)
	Employment growth over the prior two years			
20022	0.766	0.764	29.167	−5.556
20032	1.004	0.971	0.000	−30.769
20042	2.279	1.946	−100.000	−100.000
20052	−1.618	−2.070	−75.000	−75.000
20062	−2.131	−2.688	−28.571	−28.571
20072	0.711	0.706	−28.571	−28.571
20082	2.042	2.022	−50.000	−50.000
20092	3.149	3.095	−75.000	−75.000
20102	2.236	2.022	−50.000	−62.500
20112	0.286	0.286	−50.000	−50.000
20122	−0.381	−0.378	−100.000	−100.000
20132	−0.575	−0.585	−100.000	−100.000
	Employment growth over the prior three years			
	3 yr	3 yr	3 yr	3 yr
20032	0.7255	0.7098	14.8148	−19.0476
20042	1.8273	1.6092	−28.5714	−52.6316
20052	−0.9672	−1.2963	−80.0000	−80.0000
20062	−1.1679	−1.5782	−37.5000	−37.5000
20072	−0.9728	−1.4182	−40.0000	−40.0000
20082	1.1863	1.2069	−33.3333	−33.3333
20092	2.8760	2.8584	−57.1429	−57.1429
20102	2.1863	2.0388	−58.3333	−64.7059
20112	1.7276	1.5559	−62.5000	−66.6667
20122	−0.2422	−0.2422	−62.5000	−66.6667
20132	−0.2475	−0.2507	−100.0000	−100.0000

2. Quarterly Payroll Growth

Another alternative measure of unemployment experience is payroll growth. Table C.4 presents quarter-to-quarter percentage change computations based on actual quarterly total payrolls for a Washington firm over the period 2000Q3 to 2013Q2. Column (2) shows quarter-to-quarter percentage changes in total wages paid by the firm is quite volatile and includes several extreme values. For example, after declining 100 percent in the 2nd quarter of 2004, total payroll bounced back to a little over $11,000 in the third quarter. However, with a base of zero, no percentage change can be calculated. Furthermore, the $15,000 payroll change in the first quarter of

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[188] It has been suggested that employment growth would be a more stable measure of experience if it were calculated over a longer time period such as 5, 7, or 9 years. That is true arithmetically, but such a measure with a longer view would reduce the responsiveness of financing to layoff experience for setting tax rates.

TABLE C.4.

Actual Washington Employer's Total Payroll Data Used to Highlight Issues with a Payroll Based Experience Rating Systems

Year and quarter	Total payroll	Quarter-to-quarter Percentage change	Quarter-to-quarter Absolute change
	(1)	(2)	(3)
20003	15,197.50	0.0	0.00
20004	39,867.50	162.3	24,670.00
20011	10,950.00	−72.5	−28,917.50
20012	25,675.00	134.5	14,725.00
20013	29,630.00	15.4	3,955.00
20014	13,982.50	−52.8	−15,647.50
20021	20,710.00	48.1	6,727.50
20022	29,825.00	44.0	9,115.00
20023	44,010.00	47.6	14,185.00
20024	22,175.00	−49.6	−21,835.00
20031	32,809.98	48.0	10,634.98
20032	47,945.50	46.1	15,135.52
20033	12,072.50	−74.8	−35,873.00
20034	10,030.02	−16.9	−2,042.48
20041	23,625.00	135.5	13,594.98
20042	0.00	−100.0	−23,625.00
20043	11,137.50	u	11,137.50
20044	90.00	−99.2	−11047.50
20051	15,121.00	16,701.1	15,031.00
20052	8,867.50	−41.4	−6,253.50
20053	26,141.00	194.8	17,273.50
20054	7,346.00	−71.9	−18,795.00
20061	20,371.00	177.3	13,025.00
20062	3,000.00	−85.3	−17,371.00
20063	5,000.00	66.7	2,000.00
20064	15,593.00	211.9	10,593.00
20071	47,793.38	206.5	32,200.38
20072	37,420.88	−21.7	−10,372.50
20073	63,872.63	70.7	26,451.75
20074	12,857.51	−79.9	−51,015.12
20081	14,005.63	8.9	1,148.12
20082	33,061.13	136.1	19,055.50
20083	44,560.13	34.8	11,499.00
20084	3,324.57	−92.5	−41,235.56
20091	27,763.49	735.1	24,438.92
20092	33,226.77	19.7	5,463.28
20093	22,482.77	−32.3	−10,744.00
20094	44,418.31	97.6	21,935.54
20101	14,580.96	−67.2	−29,837.35
20102	1,368.50	−90.6	−13212.46
20103	1,079.50	−21.1	−289.00
20104	21,626.69	1,903.4	20,547.19
20111	33,102.39	53.1	11,475.70
20112	25,623.06	−22.6	−7,479.33
20113	14,998.55	−41.5	−10,624.51
20114	13,957.88	−6.9	−1,040.67
20121	33,269.80	138.4	19,311.92
20122	57,344.02	72.4	24,074.22
20123	19,915.64	−65.3	−37,428.38
20124	6,812.80	−65.8	−13,102.84
20131	34,733.29	409.8	27,920.49
20132	42,114.45	21.3	7,381.16

TABLE C.5.
Summary Payroll-based Computations Based on Actual Washington State Employer Data

12 Quarters Ending 6/30 (base period)	Alaska Rule: Average of negative pct. changes	Sum of 11 qtr.-to – qtr. changes	Average of 11 base period quarters (*1)	Ratio of sum of changes to average of base period values	Simple average of qtr.-to-qtr. pct. changes	Average weighted by 11 share of payroll in base (*2)
	(1)	(2)	(3)	(4)	(5)	(6)
2003	−58.3	32,748.00	25,893.86	1.3	33.7	11.5
2004	−58.8	−29,630.00	26,074.14	−1.1	6.8	−10.3
2005	−63.7	−35,142.50	19,910.59	−1.8	1,654.9	−21.1
2006	−69.9	−9,072.50	12,254.68	−0.7	1,679.4	−15.0
2007	−63.9	26,283.38	14,587.31	1.8	1,567.2	16.4
2008	−64.7	6,920.13	23,036.46	0.3	67.8	9.2
2009	−70.3	28,226.77	27,750.21	1.0	108.0	9.8
2010	−72.5	−62,504.13	28,559.45	−2.2	61.7	−10.3
2011	−54.4	−18,937.07	22,503.10	−0.8	209.8	−2.7
2012	−55.1	34,861.25	20,591.67	1.7	165.2	9.3
2013	−40.4	41,034.95	23,860.33	1.7	197.9	15.4

NOTE: (*1) The average of wages in the 11 quarters in the base is $\text{Sum}(W_{t-j} ; j = 1,..., 11)/11$.
(*2) Each percentage change is computed as $\Delta W_t = (W_t - W_{t-1})/W_{t-1}$ and weighted by $W_{t-1}/(\text{Sum}(W_{t-j}); j = 1,..., 11)$.

2005 (from $90 in 2004Q4) yields an extreme percentage change value. Such volatility would require rules for smoothing changes to avoid wild swings in the tax rate assigned to such firms.

Table C.5 presents data from Table C.4 that have been smoothed and summarized with a computation date of June 30 and a twelve quarter look-back. The smoothing involves taking the average of quarterly changes over a period. For example, the firm data for the period ending June 30, 2003, uses data from 2000Q3 through 2003Q2. Twelve quarters of data yield a maximum of 11 percentage change values for calculating the average percentage change in total payroll. The sum of the 11 changes for 2003 is 32,748 (column (2)).

Also reported in Table C.5 (column (1)) is a summary measure opposite to payroll growth and is called payroll decline. The payroll decline method is used by Alaska for experience rating. Over three year periods, quarterly percentage changes in payroll are calculated, and the negative changes are averaged as declines. Quarters with constant or increasing payrolls do not enter the computation. In Alaska, based on averages of percentage declines in total payrolls, firms are ranked and assigned to one of 20 experience factor groups with each group containing roughly 5 percent of total state-wide taxable payrolls. A twenty-first group is used to assign the highest rate to employers with the largest declines.[189]

Alaska is the only state with an experience rating system even close to the employment growth idea discussed here. The Alaska method could be criticized for not accounting for the number of quarters with lower payrolls. For example, one or two quarters with large layoffs could dramatically increase the firm's UI tax rate for up to three future years, even if employment and payrolls recovered quickly and began steady employment gains. A problem in any UI financing system based on taxable wages is that regardless of the increase in tax rates, if taxable wages fall dramatically, or even to zero, then contributions will fall too. Furthermore, the rise in the tax rate could have a dampening effect on employers returning employment and payrolls to pre-layoff levels. This particularly affects the hiring of low wage workers who earn below the taxable wage threshold for a longer period of time in any given year.

Table C.5 includes additional alternative ways of summarizing the payroll change experience of this firm that could lead to different experience rankings. For example, summing the quarter-to-quarter changes in earnings over the preceding three-year period could show a net increase in payrolls even when some of the quarterly changes are negative over the period. For ranking purposes, the sum of these changes could be normalized to account for the big variation in the size of payrolls across firms. A natural normalization would be to divide by the average of quarterly wages over the three year period.[190] For fiscal year ending June 30, 2003, this ratio yields a

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[189] Actually the 20th group in Alaska is set to include 4.9 percent of taxable wages and group 21 includes 0.1 percent. Employers have recourse to appeal and obtain more favorable tax rates if declines are artificial because of bonus or lump-sum payments or the timing of bi-weekly payrolls across quarters.

[190] The divisor is the average of employer wages paid in the eleven quarters preceding quarter t which would be the last calendar quarter in a fiscal year. The average would be $\text{Sum}(W_{t-j}; j = 1, ..., 11)/11$.

value of 1.3 (column (4)) and indicates a 30 percent gain in payrolls over the prior three years. For six of the eleven reference years considered, this employer had positive net payroll growth over the preceding 12 quarters.

A simple average of quarter-to-quarter percentage changes is reported in column (5) of Table C.5. For the 12 quarters ending June 30, 2004, this simple average indicates 6.8 percent average wage growth. This can be a misleading way to infer unemployment changes. It's clear from the sum of quarterly changes in total payroll that there was a net decline. Furthermore, outliers in the data series can greatly distort these simple averages. The percentage change of 16,701.1 in the first quarter of 2005 for this firm (column (5)) greatly affects the outcome of this computation for three consecutive years.

A more stable measure would be weighted average quarterly growth rates. Natural weights are quarterly wages as shares of the firm's total wage bill over the three-year period. With the proportionate change defined by $[(W_t - W_{t-1})/W_{t-1}]$, the weight for an individual change would be W_{t-1} divided by the sum of the eleven values preceding W_t., meaning the divisor is, $Sum(W_{t-j}; j = 2,…,12)$. This normalization yields a much more stable measure of the firm's experience. The result is summarized in column (6) of Table C.5. Even with weighting the data note that the percentage changes exceed 10 percent in seven of the eleven years in these data.

Our analysis of quarterly payroll growth has relied on a single employer example. We pointed to the potential volatility in experience measured by the formula, and suggested a relative measure that could be more stable over time. Table C.6 suggests the extent of possible problems with a payroll growth measure of unemployment experience. Every year from 2003 to 2013, between 96.9 and 98.6 percent of all Washington employers had at least one quarter-to-quarter decline in total payrolls (column (3)). While the average of annual quarterly changes in payrolls was large and positive over the period, the simple average of changes relative to the average annual payroll was negative in all but two years in the period. The weighted annual average across all employers shows less volatility, but was negative for all years. Table C.6 suggests that a payroll change measure of unemployment experience could seriously exaggerate the extent of compensable unemployment. Care would be needed to prevent the payroll change measure from generating very high UI tax rates.

TABLE C.6.

Washington Quarterly Growth Rates in Total Payroll Based on All Firms in the 12 Quarters Ending June 30, 2003–2013

12 calendar quarters ending 6/30	Number of Firms	Share of firms with at least one zero payroll quarter	Share of firms with at least one negative percentage change	Simple Averages Over All Firms		Mean of weighted average of qtr-to-qtr percentage changes (*3)
				Average of quarter-to-quarter percentage changes (*1)	Weighted average of qtr-to-qtr pct changes (*2)	
	(1)	(2)	(3)	(4)	(5)	(6)
2003	133,166	0.277	0.980	135.3	−5.6	−0.1
2004	130,566	0.248	0.978	101.4	−4.6	−0.7
2005	128,747	0.220	0.976	33.9	−3.7	0.0
2006	130,516	0.212	0.977	91.7	−3.2	0.5
2007	131,968	0.203	0.978	20.8	−3.0	1.4
2008	135,467	0.205	0.976	20.7	−3.2	0.6
2009	140,350	0.222	0.984	22.3	−3.8	−0.3
2010	145,127	0.240	0.986	20.9	−5.2	−0.9
2011	145,164	0.227	0.985	166.3	−5.4	−0.9
2012	148,495	0.234	0.985	167.1	−5.0	0.0
2013	160,632	0.270	0.969	153.1	−6.6	0.1

NOTE: (*1) For each firm, 11 quarter-to-quarter percentage changes in total payroll were calculated and then averaged. The number shown for each year is the simple average of those averages. (*2) The quarter-to-quarter percentage changes are weighted by the share of payrolls across the 12 quarters ending June 30. For each firm, weighted change over the period is calculated. For each year the simple average is reported in this column. (*3) Mean weights are the average of the 12 quarters of total wages as a share of the sum of averages for all firms for each 12 quarter period ending June 30.

3. Rate of Compensable Separations

Perhaps the best direct measure of unemployment experience is the compensable separation rate. At the firm level, this involves counting the number of separations resulting in UI payments over a period of time. The compensable separation rate could use total employment over the period as the divisor. The Washington data illustrate this methodology. Washington measures unemployment experience by a benefit ratio—which is a type of separation rate measure. The benefit ratio responds quickly to changes in compensated separations.

Table C.7 presents a summary of the distribution of regular UI claims over time in Washington. Benefit ratio and reserve ratio states base experience rating on UI benefits charged to employers, however, compensable separations are simply those regular UI claims for which applicants' received some regular UI compensation after working for an employer. The table summarizes claims that received any UI compensation along with those that involved regular UI durations of four weeks or longer. An argument for using the latter to define a separation rate measure might include examples such as the temporary separations that occur during "retooling" in the auto industry for new model years. These are seasonal, very short-duration and could be regarded as part of the regular operations of an ongoing healthy firm. Therefore, having a four-week threshold would identify separations that lead to significant periods of UI compensation.

TABLE C.7.
Washington Regular UI Claims Distribution Over Time

Fiscal Year Ending 6/30	All Claims with Benefits Paid		Four or More Weeks of UI (*1)		Difference in UI Benefits		Difference in UI Claims	
	Claims	Benefits Paid	Claims	Benefits Paid	Difference	Share	Difference	Share
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
2001	239,546	1,136,791,040	202,539	1,114,555,264	22,235,776	0.020	37,007	0.123
2002	295,205	1,625,903,872	254,827	1,601,073,792	24,830,080	0.015	40,378	0.111
2003	265,021	1,399,019,392	224,996	1,374,873,600	24,145,792	0.017	40,025	0.122
2004	213,766	1,026,187,200	177,108	1,004,080,896	22,106,304	0.022	36,658	0.137
2005	187,114	750,088,448	149,775	728,836,480	21,251,968	0.028	37,339	0.149
2006	170,219	715,621,120	135,709	694,042,816	21,578,304	0.030	34,510	0.148
2007	166,111	685,995,584	127,862	661,105,024	24,890,560	0.036	38,249	0.167
2008	193,213	937,847,552	156,888	912,438,592	25,408,960	0.027	36,325	0.143
2009	341,463	2,313,750,016	294,879	2,276,340,736	37,409,280	0.016	46,584	0.111
2010	292,524	1,892,632,320	249,876	1,860,534,656	32,097,664	0.017	42,648	0.118
2011	238,216	1,320,902,400	197,575	1,292,449,408	28,452,992	0.022	40,641	0.135
2012	220,378	1,243,017,344	182,378	1,215,905,536	27,111,808	0.022	38,000	0.136
2013	202,708	1,124,931,968	165,695	1,098,273,920	26,658,048	0.024	37,013	0.140

NOTE: (*1) Weekly payment data are unavailable. Therefore, we used a full-time equivalent measure by taking total regular UI compensation received divided by the weekly benefit amount.

All benefit payments must be covered by system revenues. By considering only UI spells 4 weeks or longer, liability is not assigned to employers using short term furloughs. These rules might even encourage "work sharing"

to spread the unemployment around among all employees of the company, thereby reducing the number with compensation exceeding four weeks in a benefit year. Short term UI benefit payments end up being a pooled cost shared by all employers in the system. Social charges are a big problem for state UI systems, and adding to pooled costs by changing the experience rating system only increases the financing challenges posed by pooled costs.

Table C.7 highlights this issue. The difference between total dollars of benefits paid and the total dollars paid on claims involving four or more weeks of compensation is quite small, because most claims involve longer durations. It is not surprising to see that the short duration share of all benefits paid is greatest during times of economic growth (column (6)). It peaks at 3.6 percent of total benefits paid in fiscal year 2007. If compensated claims with durations less than four weeks are in fact part of normal operations of "healthy" firms, why increase the subsidy to these firms during times when they would likely be most able to cover their charges?

An examination of the number of claims with short durations could tell a different story. Among all UI compensated claims, the share with durations less than four weeks is considerable (at least 11.1 percent in every year) and it peaked at 16.7 percent in fiscal year 2007 (column (8) in Table C.7). Therefore, inclusion of short duration claims in the calculation of separation rates could greatly, and perhaps disproportionately shift tax rates upward for the firms with short benefit durations.

4. High Cost Add-on Method

Under this method an additional amount is added to the tax rate for employers who remain at the state maximum tax rate for three consecutive years. A suggested version of this plan would make all employers subject to a standard tax rate equal to the state's average cost rate (benefit payments/taxable wages) over the prior 10 years plus a solvency rate. The solvency rate would be zero when system reserves are adequate (average high cost multiple = 1.0), and would increase with the size of any reserve deficiency. Employers with a benefit cost rate above 5.4% of taxable payroll for three consecutive years or more would pay an add-on charge, C_t. The charge would equal a proportion of the difference between their average benefit-to-taxable-payroll ratio (over the period when they are excess), R, and 5.4% of their average taxable payroll, P, over the same period. The add-on rate, b_t, would increase with the number of consecutive years, t, that R > 5.4 percent after three years. For an employer exceeding 5.4 percent for t consecutive years beyond 3 the add-on charge would be: $C_t = b_t*T$, where T is taxable payrolls, $b_t = Sum(R_t - 5.4)/t$; $(R_t > 5.4)$ and t >= 3 consecutive years.

Could such a high cost add-on formula be easily implemented? The system is simple in concept since it requires only an arithmetic computation, but it would be very politically difficult to implement. Many employers have very high levels of built up system reserves, or very low levels of recent benefit charges relative to taxable wages. Such employers consequently have very low tax rates and low annual tax contributions. The high-cost add-on scheme as described above is essentially a uniform tax with a penalty added to the tax rate for high users. As a

complete basis for financing UI benefits it would likely not be a system in conformity with current Federal requirements. High cost add-on taxes currently operate as an adjunct to UI tax systems in some states—including Missouri, but in all cases this is an extra tax feature on top of a basic experience-rated employer UI tax system, not the prime basis for setting tax rates. No states with add-on taxes currently start with a uniform rate for all employers not subject to the add-on. The basic uniform tax rate could easily be computed using historic state benefit and payroll data, but strong resistance to such a plan could be expected from some employers.

There could also be problems with the suggested system in states where few employers have benefit ratios greater than 5.4 percent. Presumably the suggested 5.4 percent is drawn from the Federal Unemployment Tax Act (FUTA) maximum rate that is paid on the $7,000 Federal taxable wage base. In low benefit level states like Alabama, Arizona, Florida, and Tennessee, the probability of R > 5.4 is very low for employers, and in high benefit level states like Connecticut, Massachusetts, New Jersey, Washington, the probability of R > 5.4 could still be low because many high benefit states also have relatively high taxable wage bases. Exceptions would be California and New York that provide adequate benefit levels, but maintain low taxable wage bases.

The add-on formula provides little reward for employers with few or no benefit charges. There would be little or no incentive to manage employment, avoid unemployment, and minimize layoffs. In many current benefit ratio systems, more than half the employers pay the minimum tax rate. The add-on formula would be likely to raise the tax rate for all minimum rate employers, making an add-on plan politically difficult to adopt. Resistance to an add-on plan can be expected both because of the 5.4% threshold is arbitrary, and because of the extreme difference in treatment of employers above and below the threshold (regardless of its level).

As a basis for setting the socialized uniform tax rate we rely on the benefit charge and tax contribution history reported for Washington State in the *UI Financial Handbook (ET 394)* (USDOL, 2014c). Tables C.8 to C.10 summarize the consequences of the uniform and add-on rates based on Washington micro data. Table C.8 takes experience rated firms that did *not* have three consecutive years of benefit charges greater than 5.4 percent of taxable wages and assigns them a tax rate equal to the ten-year UI benefit cost rate from the *Handbook* history. For this group of employers over the 2004 to 2013 period, the estimated gain in revenue compared with the existing tax structure is rather modest. The scheme would add $817 million to the trust fund or a gain of just over seven percent (column (5) and assuming no behavioral response). The 10-year benefit cost rate averaged 2.18 percent while the actual average tax rate was 2.03 over that period for this group. A weakness illustrated in the year-to-year detail is that this uniform rate system tends to be more pro-cyclical. The ten-year average cost rate adjusts too slowly to economic conditions, and during these ten years would have led to substantially higher tax rates relative to the existing system in 2009 and 2010 (column (4)) which were years the heart of the recent deep recession.

TABLE C.8.
Washington Experience Rated Firms with Taxable Wages that Did Not Have Three Consecutive Years of UI Benefit Charges Above 5.4%

Fiscal year ending 6/30	Experience rated firms not at 5.4 percent	Taxable wages	Actual average tax rate	ETA 394 10 year benefit cost rate (*1)	ETA 394 rate imputed taxes minus actuals
	(1)	(2)	(3)	(4)	(5)
2004	172,765	45,661,347,840	0.0256	0.0246	−46,273,741
2005	172,041	47,990,693,888	0.0275	0.0231	−212,310,052
2006	176,154	52,152,524,800	0.0249	0.0215	−173,110,708
2007	180,367	55,510,990,848	0.0209	0.0204	−24,097,935
2008	182,588	58,800,443,392	0.0173	0.0200	158,007,738
2009	181,107	57,936,900,096	0.0144	0.0224	464,039,619
2010	185,952	56,635,101,184	0.0191	0.0234	240,916,963
2011	184,579	58,174,685,184	0.0214	0.0226	69,482,289
2012	184,703	61,517,893,632	0.0182	0.0211	180,986,142
2013	186,012	65,211,752,448	0.0174	0.0198	159,682,911
Mean/Total			0.0203	0.0218	817,323,227

NOTE: (*1) ETA 394 is calendar year data and the 10-year benefit cost rate is the sum of UI benefits paid over ten years divided by the sum of taxable wages over the same period.

TABLE C.9.
Washington Experience Rated Firms with Benefit Charges as a Percent of Taxable Wages Greater than 5.4% for Three Consecutive Years

Fiscal year ending 6/30	All experience rated firms	Three years charges > 5.4 percent of taxable wages				
		Number of firms at 5.4% for 3 years	Share of all firms	Taxable wages	Actual charged benefit rates	5.4% rate contributions less charges
	(1)	(2)	(3)	(4)	(5)	(6)
2004	176,130	3,365	0.019	1,457,176,704	0.063	−13,662,437
2005	174,406	2,365	0.014	1,024,414,016	0.078	−24,419,726
2006	177,814	1,660	0.009	608,540,864	0.097	−26,030,115
2007	181,550	1,183	0.007	469,925,632	0.100	−21,686,709
2008	183,717	1,129	0.006	466,510,784	0.096	−19,731,226
2009	182,674	1,567	0.009	588,045,120	0.085	−17,965,252
2010	188,517	2,565	0.014	920,479,168	0.078	−21,826,278
2011	189,452	4,873	0.026	2,102,431,488	0.069	−31,594,599
2012	188,870	4,167	0.022	1,989,511,168	0.072	−35,117,493
2013	188,841	2,829	0.015	1,435,252,608	0.076	−31,094,294
Mean/Total			0.014		0.076	−243,128,129

TABLE C.10.

Tax Rates to Recover Non−charged Benefit Costs from High Tax Rate Washington State Employers

Fiscal year ending 6/30	UI benefit payments and charge ($1,000s)			Rate class 40		Rate classes 37−40	
	ETA 394 UI payments (*1)	UI benefit charges	Non−charged benefits	Taxable wages ($1,000s)	Tax rate add−on	Taxable wages top 4 rate groups	Tax rate top 4 add−on
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
2005−2013	10,621,220	8,372,733	2,248,486	23,357,637	0.096	29,020,567	0.077
2013	1,116,550	905,933	210,617	4,827,725	0.044	5,846,962	0.036
2012	1,176,473	1,042,376	134,097	4,064,239	0.033	4,958,186	0.027
2011	1,446,452	1,155,984	290,467	3,003,567	0.097	3,699,091	0.079
2010	2,095,051	1,690,424	404,627	1,411,972	0.287	1,825,672	0.222
2009	1,746,275	1,373,246	373,029	857,230	0.435	1,092,142	0.342
2008	839,933	592,441	247,491	1,416,761	0.175	1,830,707	0.135
2007	668,415	505,156	163,259	2,206,476	0.074	2,727,531	0.060
2006	685,926	481,822	204,104	2,897,131	0.070	3,706,060	0.055
2005	846,147	625,350	220,797	2,672,537	0.083	3,334,216	0.066

NOTE: (*1) Since ETA 394 data are calendar and the micro UI benefit charges are based on fiscal year data, the ETA 394 values summarized in this table are the annual averages computed over two-year periods. For example, the ETA 394 value for the fiscal year ending June 30, 2013 is an average of the 2012 and 2013 calendar year data.

Table C.9 summarizes firms that have three consecutive years of UI benefit charges greater than 5.4 percent of taxable wages. Throughout the period, there were relatively few such firms. Just 1.4 percent of all experience rated firms were in this category, though they tend to have much larger than average levels of employment. These firms average $430,000 in taxable wages compared to $310,000 for the firms not having three-year benefit charge rates above 5.4 percent. Table C.9 also shows that these firms on average already had rates of charged benefits higher than the 5.4 percent threshold used in this example. If these firms were assigned a uniform tax rate of 5.4 percent, they would receive a large 29 percent tax cut (a reduction from$840.6 million to $597.5 million). If the criterion for an add-on rate remains three consecutive years of benefit charges greater than 5.4 percent of taxable wages, the flat tax rate would need to average 7.6 percent for these firms to be revenue neutral over the period.

An alternative add-on tax approach is to levy the additional tax so as to recover ineffective benefit charges. Such an approach could let an existing UI tax system operate as it does, then compute additional taxes that are add factors onto the tax rates of employers who are recent high users of the system. We illustrate such an approach using data from Washington State. Based on summary data from the *Handbook*, Table C.10 shows that over the years 2005-2013 benefit payments exceeded benefit charges to employers by a total of $2.248 billion. Dividing these system wide ineffective charges by taxable wages for employers in the highest (40th) Washington tax rate group yields a rate of 0.096. That means a tax add-on of 9.6 percentage points added to rates of employers in the 40th rate would approximately cover ineffectively charged UI benefit payments for an average recent year.

It may be more reasonable to spread the add-on tax over more than just the group already paying the highest tax rate. Column (7) of Table C.10 shows that ineffectively charged benefits amount to about 7.7 percent of taxable wages paid by employers in the top four Washington rate groups over the period 2005-2013. This means that an add-on tax of 7.7 percent charged to these groups would approximately cover ineffectively charged benefits in the system.

Table C.10 identifies just two ways of spreading ineffective charges to employers with high usage. Various combinations of i) the number of rate groups to pay the add-on rates and ii) the size of the add-ons for each of these groups can be explored. Each of various decisions would identify a way to cover these charges.

5. Summary and Conclusions

Practical implementation of the quarterly employment growth measure encountered problems due to zero employment quarters and errors in data. These problems were particularly pronounced for small employers who could see enormous swings in year-to-year tax rate changes under the employment growth systems examined. Using taxable wages as a proxy for employment does not eliminate the volatility problem for small employers who

constitute a large share of all employers in most states. Averaging employment growth over longer periods can reduce but not eliminate volatility in this measure.

Payroll growth was considered as a metric with reference to the Alaska methodology that uses the average of payroll declines over the prior three years. Improvements to that system were examined by considering all quarter-to-quarter changes in payroll (both positive and negative), and by cumulating the changes or averaging them over three years. Employers with gaps in their payroll series, and small employers with similarly small payrolls, were shown to experience large year-to-year changes in their rating. Volatility can be reduced by using a weighted average of changes, but it cannot be eliminated, particularly for employers with small payrolls.

The compensable layoff rate is a direct measure of unemployment experience, but it is a binary measure and does not capture the extent of financing burden generated by layoffs. The variant simulated is based on the suggested rule that a minimum of four weeks must be paid for a claim to be counted as a compensable unemployment event. This scheme could increase short term layoffs and pooled system costs. As a share of all dollars paid in benefits and as a share of all claims, short duration claims peak in good economic times—when employers are best positioned to pay for the benefit charges.

The first high-cost add-on method considered would result in lower system revenues for Washington State compared to the existing system. Even with the suggested add-on, revenues are still lower. Also, with the majority of employers paying a uniform tax, and differences from the flat rate are increases rather than decreases based on experience. The second set of high-cost add-on computations maintain the existing revenue structure, but add a mechanism for funding ineffectively charged benefit payments. Two ways of computing tax add-on factors for the highest rated groups of employers were examined and several others could be considered. Depending on the objectives of the state, many other ways of assigning add-on taxes could be applied following the general approach demonstrated in this appendix.

In recent years some states have changed their UI experience rating methods. Such change does not come easily, or without political controversy. The trend in states has been from reserve ratio to benefit-ratio measurement of unemployment experience, with several states also adopting tax array systems in place of fixed interval tax tables. Benefit ratios respond up and down relatively quickly to changes in benefit charges, and the array systems improve the predictability of tax revenues for state tax managers. The alternative experience rating methods examined in this Appendix considered additional possibilities for tax system reform. However, none of these alternative methods appear to be superior to the existing benefit-ratio measurement of unemployment experience combined with an array method for setting rates. In fact, to the extent that experience-rated employers oppose large year-to-year tax rate changes, the alternatives examined in this Appendix appear to be inferior to existing experience rating systems.

Appendix D. Simulating the Effects of Changes in UI Tax Policy Using UI Administrative Payroll Tax Records

Chapters 5 and 7 reported the results of simulations showing the effects of given policy changes, such as changing the taxable wage base and raising the maximum UI payroll tax rate, on key outcomes, such as taxable wages and payroll tax contributions. In the interest of brevity, details of the data and models underlying the simulations were omitted from Chapters 5 and 7. This appendix returns to the simulations and presents those details, along with some additional simulations that were not included in the body of the report.

Section 1 begins by reviewing the rationale for the simulations and describing their structure using a few equations. Section 2 then describes the Missouri and Washington administrative payroll tax records used in the simulations, discusses how the raw data were prepared for the analysis, and presents descriptive statistics (overall and by major industry) of the samples used in the simulations. Section 3 briefly reviews the UI payroll tax systems used in Missouri and Washington. Sections 4 and 5 present two policy simulations that were not included in the body of the report: section 4 presents simulations of the effects of proportionally increasing payroll tax rates in Missouri and Washington by 10 percent, and section 5 shows the effects of imposing a low but positive minimum tax rate (0.1 percent or 0.2 percent rather than 0.0 percent) in Missouri. Section 6 summarizes and offers concluding observations.

1. Structure of the Simulation Models

Rationale for the simulations

Each simulation is intended to show how the tax contributions generated by a state's UI system would have differed from those actually observed if a given policy change had been adopted starting at a baseline. That is, we introduce a policy change—such as an increase in the taxable wage base or raising the maximum payroll tax rate— and model the time-path of revenue generated under that policy regime. A comparison of this simulated time-path of revenues with the revenues observed under the policy regime in effect during the years of the simulation provides us with an estimate of the impact of the policy change.

The simulations make use of employer-level tax records from Missouri (2004–2012) and Washington (2001– 2013). In all cases, the simulations impose a policy change at the beginning of the time period for which simulation

is possible given the available data (2004 in Missouri, 2005 in Washington) and trace the revenue effects of that change over the subsequent years for which we have data.[191]

Simulation is not the only way to obtain estimates of how changing one or more features of a UI system would affect UI financing. The main alternative is an econometric approach using observational data; that is, actual UI program data generated by the system over time. Such analyses and the difficulties they pose were illustrated in Chapter 5 (section 5). For example, one of the analyses in Table 5.4 produced estimates suggesting that increasing payroll tax rates would *reduce* a state's reserve ratio. Such nonsensical estimates can be obtained from econometric analyses because, in a complex system like UI, a change in one part of the system (such as UI payroll tax rates) rarely if ever occurs in isolation. In the case of payroll tax rates, changes occur because of changes in the health of a state's UI trust fund. In particular, reductions in the state's trust fund balance, reserve ratio, or reserve ratio multiple trigger increases in UI tax schedules in many states. As a result, tax rates and measures of the health of a state trust fund will be negatively correlated in the data (higher tax rates will be correlated with lower trust fund balances, and vice versa). Such difficulties make alternatives to econometric analysis attractive, and in this case we pursue simulation using employer-level micro data.

Structure of the Missouri (reserve ratio) simulations

To illustrate the structure of the Missouri simulations, we describe the process used to simulate an increase in the payroll tax schedule (i.e., tax rates) under a reserve ratio system of experience rating. (The results of this simulation are shown in section 4 below.) The measure of primary interest is the reserve ratio (RR_{it}) of each employer (i) in each year (t) of the simulation. For Missouri, the reserve ratio can be written:

$$RR_{it} = balance_{i,t-1} / \left(\sum_{r=1}^{3} \left(payroll_{i,t-r} \right) / 3 \right) \tag{D.1}$$

In equation (D.1), $balance_{i,t-1}$ is employer i's observed reserve balance in the computation year (which precedes the year for which the reserve ratio is computed, and which we denote by t–1), and $payroll_{i,t-r}$ is employer i's observed taxable payroll in year r before the reserve ratio computation. This is a standard reserve ratio formula, obtained by dividing the employer's reserve balance by the employer's average taxable payroll over the three

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[191] The first year for which we have complete Missouri payroll tax records is 2004. For Washington, performing a simulation for a given year t requires data on taxable payroll and benefit charges from the previous four years, as will be clear from the benefit ratio formula described below. The first year of data for which we have Washington payroll and benefit charge data is 2001, so 2005 is the first year we can perform simulations.

years preceding the computation.[192] This observed reserve ratio provides the benchmark that is used in the simulations.

To a first approximation, we can simulate the effect on tax contributions of an increase in payroll tax rates by applying the observed reserve ratio of each employer in each year [(equation (D.1)] to a modified payroll tax schedule that reflects the new payroll tax rates. This results in a new (simulated) payroll tax rate for each employer. We then compute the change in tax contributions implied for each employer in each year:

$$\Delta contrib_{it}^{sim} = \left(\tau_t^{sim} - \tau_t \right) \left(payroll_{it} \right) \tag{D.2}$$

In equation (D.2), the simulated change in the tax contributions of employer i in year t is calculated as the product of (i) the difference between the simulated payroll tax rate implied by that employer's reserve ratio applied to the modified payroll tax schedule (τ^{sim}) and the *observed* tax rate (τ, the tax rate paid under the actual payroll tax schedule) and (ii) the observed taxable payroll ($payroll_{it}$) of employer i in year t, which we take as given. (Simulated variables are denoted with a superscript "*sim*" to contrast them with variables observed in the administrative data.) These changes in employer tax contributions are summed over all employers in a given year to obtain the simulated aggregate change in tax contributions in year t due to the increased payroll tax rates.

We refer to simulations performed in this way as "static" because they do not take account of the fact that a change in an employer's tax contributions in year t will affect that employer's reserve ratio and payroll tax rate in future years. Taking account of this feedback will result in "dynamic" simulations that may differ from the static simulations, as shown in Chapters 5 and 7.

The dynamic simulation proceeds as follows:

STEP 1. For year 1 of the simulation (t=1), compute the change in tax contributions of each employer as shown in equation (D.2).

STEP 2. For year 2 (t=2) and subsequent years, recompute each employer's reserve ratio using the simulated change(s) in tax contributions from the previous year(s), computed from equation (D.2). That is, substitute the simulated change(s) in tax contributions into the reserve ratio formula to obtain a *simulated* reserve ratio for each employer in the year:

$$RR_{it}^{sim} = \left(balance_{i,t-1} + \sum_{r=1}^{t} \Delta contrib_{i,t-r}^{sim} \right) / \left(\sum_{r=1}^{3} \left(payroll_{i,t-r} \right) / 3 \right) \tag{D.3}$$

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[192] Most reserve-ratio states use average taxable payroll in the three years preceding computation, but a few states average over the preceding four or five years, and one (Wisconsin) uses just the preceding year's payroll. See U.S. Department of Labor (2013).

- NOTE 1. In computing employer *i*'s simulated reserve ratio for year *t*, we take as given that employer's observed reserve balance in year *t*–1, then perturb it by the simulated change(s) in tax contributions from the previous year(s) in the simulation. In year 1 of the simulation (*t*=1), only one simulated contribution change is used (from year *t*–1); in year 2 (*t*=2), simulated contribution changes from the past two years (*t*–1 and *t*–2) are included; and so on.

- NOTE 2. The payroll of employer *i* in year *t* is taken as given; that is, we make no attempt to model and simulate possible effects of the changed payroll tax rates on payrolls and earnings. This is an important assumption; relaxing it is possible, although doing so would require further assumptions about labor supply and demand elasticities.

STEP 3. Apply this *dynamically simulated* reserve ratio of employer *i* in year *t* to the modified payroll tax schedule to obtain a dynamically simulated payroll tax rate.

STEP 4. Recompute the change in tax contributions for year 2 (or later year) using this dynamically simulated tax rate.

STEP 5. Repeat the process for each subsequent year, starting with Step 2.

STEP 6. Within each year simulated, sum the changes in employer tax contributions over all employers to obtain the simulated aggregate change in tax contributions in year *t*.

Other changes in Missouri tax rates (increasing the maximum the tax or imposing a minimum tax rate) are simulated using steps analogous to those described above. For example, to simulate an increased maximum tax rate, we modify the tax schedule to which each employer's simulated reserve ratios are applied.[193]

Simulating an increase in the Missouri taxable wage base differs somewhat from the process just described for changes in payroll tax rates. To simulate an increase in the tax base, the "static" simulation proceeds by first calculating a simulated taxable payroll (*payroll^sim*) for each employer in each year under the modified taxable wage base. This requires an algorithm that examines the annual earnings of each worker associated with each employer *i* in each year *t*, and determines the amount by which the taxable wages of that worker would increase as a result of a change in the taxable wage base. (For workers whose annual earnings are less than the original taxable wage base, there is no change in taxable wages. For workers whose annual earnings are between the original wage base and the increased wage base, taxable wages increase by the difference between the worker's annual earnings and the original wage base. For workers whose annual earnings exceed the new taxable wage base, taxable wages

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[193] Both the simulations for Missouri and those for Washington (described next) assume that employers' layoff behavior does not change in response to changes in UI payroll tax policy—the benefit charges incurred by each employer are taken as given and fixed. This is another assumption that could be modified if we were willing to make further assumptions; see Topel (1983, 1984, 1985).

increase by the amount of the increase in the taxable wage base.) After determining the change in taxable wages of each worker under the modified tax base, the algorithm sums over each employer's workers by year to obtain the change in each employer's taxable payroll in each year.

The simulated change in tax contributions implied for each employer i in each year t can then be calculated as the product of (i) the observed payroll tax rate of employer i in year t, which we take as given, and (ii) the difference between the simulated taxable payroll under the new tax base ($payroll^{sim}$) and the observed taxable payroll ($payroll_{it}$):

$$\Delta contrib_{it}^{sim} = (\tau_{it})(payroll_{it}^{sim} - payroll_{it}) \tag{D.4}$$

These changes in employer tax contributions are summed over all employers in a given year to obtain the simulated aggregate change in tax contributions in year t due to the increased taxable wage base.

The process just described is again "static" because it does not account for the way changes in an employer's tax contributions in year t will affect that employer's reserve ratio and payroll tax rate in future years. Accounting for this feedback will again result in "dynamic" simulations. The dynamic simulations for changes in the taxable wage base proceed by the same steps as those listed above for simulating changes in tax rates. The only difference is that simulating the effects of changes in the taxable wage base require the somewhat involved process of first simulating changes in each employer's taxable payroll, as described above.

Structure of the Washington (benefit ratio) simulations

The benefit ratio method of experience rating is somewhat simpler than the reserve ratio method because it does not involve dynamics. Accordingly, the Washington simulations are more straightforward than those for Missouri. The measure of primary interest in Washington is the benefit ratio (BR_{it}) of each employer (i) in each year (t), which we observe in the administrative tax records. For Washington, the benefit ratio can be written:

$$BR_{it} = \sum_{r=1}^{4}(benchg_{i,t-r}) \Big/ \sum_{r=1}^{4}(payroll_{i,t-r}) \tag{D.5}$$

where $benchg_{i,t-r}$ is employer i's observed benefit charges in year $t–r$, and $payroll_{i,t-r}$ is employer i's observed taxable payroll in year $t–r$.

With benefit ratio experience rating, an employer's tax rate depends on the benefit ratio, which in turn depends only on observed benefit charges and observed taxable payrolls, both of which are taken as given in the simulations. Accordingly, to simulate the effects of a change in tax rates, we apply the observed benefit ratio of each employer in each year to the modified tax schedule to obtain a new (simulated) payroll tax rate. We then

compute the simulated change in each employer's tax contributions in each year exactly as shown by equation (D.2) above.

Simulating the effects of an increase in the taxable wage base under the benefit ratio system requires two steps in addition to those just described for simulating an increase in tax rates. First, it requires simulating the taxable payroll of each employer in each year under the modified taxable wage base [the denominator of equation (D.5)]. As already discussed in the context of the Missouri simulations, this requires examining each worker's annual earnings to determine the amount by which the taxable wages of that worker would increase as a result of a change in the taxable wage base. Second, it requires simulating each employer's tax rate because an increase in the tax base increases the denominator of equation (D.5), reducing the benefit ratio and hence *reducing* the employer's tax rate. As a result, the change in tax contributions of each employer in each year must be calculated as the following difference:

$$\Delta contrib_{it}^{sim} = (\tau_{it}^{sim} \bullet payroll_{it}^{sim}) - (\tau_{it} \bullet payroll_{it})$$

(D.6)

In (D.6), the simulated contributions of each employer are calculated as the product of a tax rate and a taxable payroll, both of which have been simulated ($\tau^{sim} \bullet payroll^{sim}$). Note that the employer's simulated tax rate will be *smaller* than otherwise ($\tau^{sim} < \tau$), and the simulated taxable payroll will be *larger* ($payroll^{sim} > payroll$). As a result, each employer's simulated tax contributions ($\tau^{sim} \bullet payroll^{sim}$) could be either greater than or less than initial tax contributions ($\tau \bullet payroll$), and the direction of change (increase or decrease) of an employer's tax contributions ($\Delta contrib^{sim}$) will depend on the relative sizes of the offsetting decrease in the tax rate and increase in taxable payroll.

To summarize, increasing the taxable wage base under the benefit ratio system leads to offsetting changes in each employer's tax rate (negative) and taxable payroll (positive). As a result, increasing the taxable wage base under the benefit ratio system could either increase or decrease tax contributions, other things equal. (Also note that it will take four years from the initial point of the modeled increase in the tax base before the full effect of the increase is realized. This is because the denominator of the benefit ratio in Washington includes the four previous years of taxable payroll.)

2. Employer-level Administrative Tax Data from Missouri and Washington

UI payroll tax records

The data used in the simulations are annual payroll tax records of each UI-covered employer in Missouri (2001–2012) and Washington (2001–2013). Because Missouri is a reserve ratio state and Washington is a benefit ratio state, somewhat different information is included in the records for each state, but the records include the following information on each employer that is essential to performing the simulations:

- the employer's taxable and total wages

- UI benefit charges to the employer

- UI payroll tax contributions paid by the employer

- UI payroll tax rate(s) and tax classification of the employer

- the employer's detailed industry (NAICS code)

- the employer's reserve balance and reserve ratio (for Missouri)

- the employer's benefit ratio (for Washington)

These data allow us to compute the variables outlined in the previous section and to simulate the effects of changes in the taxable wage base and the payroll tax schedule on each employer's tax contributions over a period of years.

A principal advantage of these data is that they can be organized into longitudinal files spanning a sufficiently long period of time to allow for analysis of the effects of tax policy changes before, during, and after the 2007–2009 recession. A weakness worth noting with these data is that they cover only two states. While both states are of reasonable size and diverse in their industrial and demographic composition, they are clearly not nationally representative. One state uses reserve ratio financing and the other uses benefit ratio financing, which is important; however, in the absence of data from additional states it is impossible to analyze differences among reserve ratio states or among benefit ratio states, which could be significant. Nevertheless, the basic approach described here can be readily implemented for any state, and comparison between their results and the results presented in this report may be helpful in evaluating the relative impacts of potential policy changes.

Selection of employers used in the simulations

The simulations use annual longitudinal (or panel) data on employers, so the unit of observation is the employer in a given year. An employer does not need to be observed in all years of the simulation to be included in the analysis; that is, the panel is "unbalanced." Including only employers who appeared in all years of the panel could also be informative, but such a "balanced" panel would clearly be a selected subset of all employers and would have different characteristics than the unbalanced panel we use.

In both Missouri and Washington, reimbursable employers are not included in the analysis because they are not taxable. With the exceptions noted in the next two paragraphs for Missouri, all other employer-year observations (both for experience rated and new employers) are included in the analysis if the record for the employer shows (i) taxable wages in the year or (ii) UI benefit charges in the year (even if there are no taxable wages in that year).

In the Missouri data, we drop employers who participated in short-time compensation because they face a different set of tax schedules than other employers. (Only 471 Missouri employers participated in short-time compensation during 2004–2012, and including them would have added substantially to the complexity of the simulations.) In contrast, the Washington simulations do include employers who participated in short-time compensation, both because these employers face the same tax rates as other employers, and because the administrative records available to us do not identify short-time compensation participants.

For the Missouri taxable wage base simulations, we further exclude 2,113 employers who were assigned a tax rate of 5.4 percent due to lack of activity (meaning absence of taxable wages during four consecutive quarters). When Missouri assigns a tax rate in this way, it also sets the employer's average annual payroll to zero. As a result, no reserve ratio can be calculated, and the dynamic version of the simulation cannot be carried out. Although some of these employers return to rated status, it takes at least three years for the reserve balance to reappear and for the employer to be reassigned an experience rated tax rate. These cases were dropped because they are unusually difficult to handle in the simulations.

The handling of employers that become inactive is fairly straightforward. When an employer is observed with a year of inactivity (no taxable wages or benefit charges), the year of inactivity is not immediately dropped from the data. Rather, we examine subsequent years of data to see whether the employer "returns" in a subsequent year. Only if the employer has no taxable wages or benefit charges in any subsequent year are the years of inactivity dropped. This amounts to a kind of accounting of "active or potentially active" employer-years.[194]

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[194] In both the Missouri and Washington administrative data, records for inactive employers (those with no additional taxable wages or benefit charges) typically remain in the administrative records for two to three years before they disappear. These inactive years are dropped from the data if we do not observe the employer returning, but they are included if they do return.

The Missouri records we received were structured in such a way that we needed to process them further to handle mergers and acquisitions. For example, if employers A and B merged to form a new employer, a record for the new employer C would appear in the data. However, because the complete history of wages, tax contributions, and charges for employers A and B were combined and included in the record for the new employer C, employer C appeared to have a long history even though it was "born" only recently. Including all three employers in the analysis dataset would have resulted in double-counting wages, tax contributions, and benefit charges for these employers. (A similar situation arose when an existing employer acquired one or more employers.) The Missouri Division of Employment Security provided us with a "successor file" that allowed us to preserve the historical data for employers A and B, while ensuring that data for employer C did not begin until the year employer C actually formed. (The successor file also allowed us to handle acquisitions where, for example, an existing employer D acquired employers E and F.)

The effort just described for Missouri was not necessary for Washington because the data provided to us by the Washington State Employment Security Department included the processing of the merger and acquisition information.

Summary statistics for Missouri and Washington employers in the simulations

Table D.1 displays summary statistics for the employers included in the Missouri simulations. The number of employers grew from about 141,000 in 2004 to nearly 145,000 in 2012, with a dip during the recession-related years of 2008–2009. Total wages show a somewhat different pattern, growing from $76.8 billion in 2004 to a high of $89.4 billion in 2008. Total wages then fell by nearly 12 percent, to $78.8 billion in 2010. Although total wages resumed their growth after 2010, they had not recovered to their 2008 peak by 2012.

Taxable wages similarly peaked in 2008, fell in 2009–2010, and had only partly recovered by 2012. The taxable wage proportion jumped by 6 percentage points between 2004 and 2005 (from 25.1 to 31.1 percent), when Missouri raised its taxable wage base from $8,000 to $11,000. The taxable wage proportion thereafter remained in the range of (approximately) 30–32 percent, except in 2010, the year in which wages (both taxable and total) fell to their post-recession low.

Tax contributions jumped by $136 million (36 percent) between 2004 and 2005, reflecting the 2005 increase in the taxable wage base. Thereafter, year-to-year changes in tax contributions reflect mainly changes in taxable wages and changes in the average payroll tax rate. Changes in the average payroll tax rate reflect in turn shifts in the payroll tax schedule triggered by changes in the health of Missouri's UI trust fund (see section 3 below). The rightmost column of Table D.1 displays annual benefit charges (rather than the state UI trust fund balance) in order to highlight the lag between changes in benefit charges incurred by employers and changes in the average UI payroll tax rate. For example, relatively low benefit charges during 2005–2007 led to a decline in the average

payroll tax rate to 0.020 in 2009, the last year of the 2007–2009 recession. Conversely, the unusually high benefit charges during 2009 and 2010 led to an increase in the average payroll tax rate to 0.023 in 20011 and 2012. These lags can be a beneficial feature of the reserve ratio system. Increases in payroll tax rates lag increases in charges, so employers are faced with increased payroll taxes after a recession has ended.

TABLE D.1
Summary Statistics for Employers Included in the Missouri Simulations, 2004–2012

Year	Taxable wage base ($)[1]	Number of employers[2]	Wages Total ($ billion)	Taxable ($ billion)	Taxable as % of total	Tax contributions ($ million)	Average tax rate	Benefit charges ($ million)
2004	8,000	141,012	76.8	19.3	25.1	373	0.019	416
2005	11,000	142,759	80.3	25.0	31.1	509	0.020	356
2006	11,000	143,338	83.6	25.4	30.4	549	0.022	340
2007	11,000	143,803	86.8	25.7	29.6	575	0.022	367
2008	12,000	143,453	89.4	27.2	30.4	594	0.022	514
2009	12,500	143,051	81.5	25.9	31.8	509	0.020	1,005
2010	13,000	143,117	78.8	25.8	32.7	544	0.021	737
2011	13,000	143,539	80.9	26.0	32.1	598	0.023	563
2012	13,000	144,845	84.4	26.4	31.3	614	0.023	445
2004-2012	n/a	n/a	742.5	226.7	30.5	4,865	0.021	4,742

[1] The taxable wage base in Missouri can vary between $7,000 and $13,000, depending on the status of the state UI trust fund.
[2] The analysis sample includes experience rated and new (not yet rated) employers who either paid taxable wages or incurred UI benefit charges in a given year. Reimbursable employers are excluded because they are not taxed. The panel is unbalanced; that is, an employer does not need to appear in every year during 2004-2012 to be included. Employers who participated in short-time compensation (471 during this period) are dropped because they face a different tax schedule than other employers. We further exclude 2,113 employers who were assigned a tax rate of 5.4 percent due to lack of activity (absence of taxable wages) in four consecutive quarters (see the text for further discussion).
Source: Authors' calculations from Missouri employer UI payroll tax records.

Table D.2 displays 2012 summary statistics by major industry of the employers included in the Missouri simulations. Inter-industry differences are evident along several dimensions. First, the largest sectors of the Missouri economy are manufacturing; professional, scientific, and technical; retail trade; finance and insurance; and health care and social assistance. Second, although "other services" and construction have the largest number of employers, neither is in the top six industries by total wages paid, reflecting the small average size of employers in these industries. Third, the taxable wage proportion varies greatly by industry. High-wage industries—company and enterprise management; utilities; and professional, scientific, and technical—have taxable wage proportions less than 20 percent, whereas one low-wage industry—accommodation and food services—has a taxable wage proportion in excess of two-thirds. This illustrates how the incidence of the UI payroll tax falls more heavily on low-wage workers in states with a low taxable wage base. Fourth, two industries—mining and construction—have substantially higher average payroll tax rates than any other industry, reflecting their higher layoff rates and benefit charges incurred. In contrast, utilities have the lowest average payroll tax rate, reflecting their unusually low layoff rates.

TABLE D.2

Industry-Specific Summary Statistics for Employers Included in the Missouri Simulations, 2012

Industry	Number of employers[1]	Total ($ billion)	Taxable ($ billion)	Taxable as % of total	Tax contributions ($ millions)	Average tax rate[2]	Benefit charges ($ million)
		Wages					
Agriculture, forestry, fishing	1,194	0.3	0.2	46.9	3.9	0.026	3.2
Mining	190	0.4	0.1	20.9	2.9	0.039	2.5
Utilities	288	1.4	0.2	16.6	2.0	0.008	0.6
Construction	13,472	5.0	1.6	32.4	84.5	0.052	97.7
Manufacturing	5,660	11.4	3.1	27.1	80.6	0.026	61.4
Wholesale trade	10,501	6.5	1.6	23.9	32.2	0.021	20.6
Retail trade	11,654	8.1	3.7	45.1	58.4	0.016	36.6
Transportation, warehousing	3,877	3.0	1.1	36.2	28.5	0.026	21.9
Information	1,476	3.3	0.6	19.1	13.9	0.022	9.1
Finance and insurance	5,828	7.9	1.8	22.3	31.1	0.018	15.5
Real estate, rental, leasing	4,272	1.3	0.4	35.0	10.9	0.024	8.5
Professional, scientific, technical	13,055	9.9	2.0	19.9	38.6	0.020	21.0
Company/enterprise management	508	2.2	0.3	14.6	8.0	0.025	3.5
Administration, support, waste management	7,520	4.7	2.2	46.2	58.0	0.027	47.9
Educational services	1,131	0.5	0.2	38.0	4.5	0.022	4.0
Health care/social assistance	10,087	7.2	2.5	34.3	44.9	0.018	27.2
Art, Entertainment, recreation	1,727	1.1	0.4	32.3	9.0	0.025	7.7
Accommodation and food services	8,180	3.4	2.3	67.9	41.9	0.018	27.0
Other services (except public administration)	21,461	1.9	0.9	43.8	16.9	0.020	11.9
Public administration	1,057	0.3	0.1	46.1	2.2	0.018	1.2
Unclassifiable	49	0.1	0.0	32.0	0.7	0.030	0.2
Missing	21,658	4.4	1.3	29.0	40.0	0.031	15.9
All industries	144,845	84.4	26.4	31.3	613.6	0.023	445.0

[1] See Table D.1, note 2.
[2] Contributions divided by taxable wages, weighted by taxable wages.
Source: Authors' calculations from Washington employer UI payroll tax records.

Table D.3 displays summary statistics for employers included in the Washington simulations, similar to those just discussed for Missouri. The number of employers started at about 192,500 in 2005, peaked just short of 204,500 in 2011, then drifted down to about 203,000 in 2013. Total wages show a somewhat different pattern, growing from $80.7 billion in 2005 to a high of $116.8 billion in 2013, with drops during the recession and post-recession years of 2009 and 2010. Unlike Missouri, total wages in Washington recovered relatively quickly from the recession and exceeded their pre-recession (2008) peak by 2011. Taxable wages peaked in 2008–2009, fell in 2010, and then recovered quickly.

Washington's taxable wage proportion of 58–60 percent in most years was substantially higher than Missouri's (in the 30–32 percent range). This reflects Washington's relatively high taxable wage base.

Average tax rates and tax contributions in Washington fell steadily from 2005 through 2009, reflecting an improving state trust fund balance. The average tax rate quickly jumped from 0.014 in 2009 to 0.023 in 2010, following the increased benefit charges induced by the recession. The rapid increase in tax rates and tax

contributions following the recession illustrates the relatively shorter lag between changes in benefit charges and changes in the average UI payroll tax rate under the benefit ratio method of experience rating.

TABLE D.3

Summary Statistics for Employers Included in the Washington Simulations, 2005–2013

Year	Taxable wage base ($)	Number of employers[1]	Wages Total ($ billion)	Wages Taxable ($ billion)	Wages Taxable as % of total	Tax contributions ($ million)	Average tax rate	Benefit charges ($ million)
2005	30,500	192,509	80.7	50.1	62.1	1,378	0.028	625
2006	30,900	194,730	90.1	54.0	59.9	1,256	0.024	482
2007	31,400	196,864	97.7	56.9	58.3	1,095	0.020	505
2008	34,000	200,409	103.5	60.3	58.3	982	0.017	592
2009	35,700	200,359	102.3	60.3	58.9	832	0.014	1,373
2010	36,800	204,257	99.1	58.5	59.0	1,302	0.023	1,690
2011	37,300	204,455	104.1	61.2	58.8	1,339	0.022	1,156
2012	38,200	203,513	111.0	64.3	57.9	1,113	0.018	1,042
2013	39,800	203,249	116.8	67.6	57.9	1,220	0.018	906
2005-2013	n/a	n/a	905.5	533.2	58.9	10,517	0.020	8,373

[1] The taxable wage base in Washington is indexed to the average annual wage in Washington.

[2] The analysis sample includes all experience rate and new (not yet rated) employers who either paid taxable wages or incurred UI benefit charges in a given year. Reimbursable employers are excluded because they are not taxed. The panel is unbalanced; that is, an employer does not need to appear in every year during 2005-2013 to be included. Employers who participated in short-time compensation are included in the Washington analysis (unlike Missouri) because they are taxed in the same way as rated employers who do not participate in short-time compensation.

Source: Authors' calculations from Washington employer UI payroll tax records described in the text.

Table D.4 displays 2012 summary statistics by major industry of the employers included in the Washington simulations. The table shows both similarities and differences between Washington and Missouri. Four of Washington's five largest industries are the same as in Missouri: manufacturing; professional, scientific, and technical; retail trade; and health care and social assistance. But information is Washington's second-largest industry, and finance and insurance is not among Washington's top five (as in Missouri). Also, manufacturing is a larger "number one" industry in Washington than in Missouri—in 2012, manufacturing wages represented 17.7 percent of total wages in Washington, compared with 13.5 percent of total wages in Missouri.

Given Washington's relatively high taxable wage base, the inter-industry variation in the taxable wage proportion is somewhat surprising. High-wage industries like information and enterprise management have taxable wage proportions less than 40 percent, whereas six industries (agriculture, retail trade, education, accommodation and food services, other services, and public administration) have taxable wage proportions in excess of 70 percent. Even in a state with a relatively high taxable wage base, there may be significant variation among industries in the share of total wages subject to the UI payroll tax.

TABLE D.4

Industry-Specific Summary Statistics for Employers Included in the Washington Simulations, 2012

Industry	Number of employers[1]	Wages Total ($ billion)	Wages Taxable ($ billion)	Wages Taxable as % of total	Tax contributions ($ millions)	Average tax rate[2]	Benefit charges ($ million)

Agriculture, forestry, fishing	7,054	2.3	2.0	87.6	44.6	0.025	44.1
Mining	155	0.1	0.1	64.1	3.4	0.042	5.5
Utilities	334	0.8	0.3	43.8	2.8	0.009	2.9
Construction	19,708	6.7	4.6	68.2	201.1	0.046	271.5
Manufacturing	6,820	19.6	10.2	52.2	188.5	0.020	127.8
Wholesale trade	12,958	8.1	4.3	53.6	69.9	0.018	51.7
Retail trade	14,554	11.3	8.2	72.6	94.1	0.013	77.6
Transportation, warehousing	4,050	3.9	2.6	66.1	41.5	0.018	31.9
Information	2,611	13.0	4.0	31.1	49.7	0.013	33.8
Finance and insurance	5,476	6.9	3.4	49.0	49.2	0.016	39.9
Real estate, rental, leasing	6,193	1.8	1.2	68.2	24.1	0.022	19.1
Professional, scientific, technical	18,871	11.9	5.7	48.0	93.8	0.018	82.9
Company/enterprise management	224	0.6	0.2	35.6	3.5	0.018	1.7
Administration, support, waste management	9,842	5.8	3.9	67.0	94.8	0.027	103.1
Educational services	2,460	0.7	0.5	73.2	5.9	0.013	7.8
Health care/social assistance	58,270	8.7	5.8	66.2	54.5	0.011	59.3
Art, Entertainment, recreation	2,483	1.1	0.7	68.3	12.2	0.019	15.1
Accommodation and food services	14,016	4.6	4.0	88.2	44.1	0.013	35.9
Other services (except public administration)	17,044	2.6	1.9	73.7	28.8	0.017	24.9
Public administration	390	0.5	0.5	88.9	6.7	0.014	6.1
All industries	203,513	111.0	64.3	57.9	1,113.3	0.019	1,042.4

[1] See Table D.3, note 2.
[2] Contributions divided by taxable wages, weighted by taxable wages.
Source: Authors' calculations from Washington employer UI payroll tax records.

Finally, the variation in average payroll tax rates across industries in Washington is similar to that seen in Missouri. In Washington, as in Missouri, two industries—mining and construction—have substantially higher average payroll tax rates than any other industry, whereas the average payroll tax rate in the utilities industry is far lower than in any other industry.

3. UI Financing in Missouri and Washington

Missouri and reserve ratio experience rating

Missouri's UI payroll tax is experience rated using the reserve ratio method, under which each employer's reserve ratio maps into a "base" payroll tax rate. The base rate ranges from 0 percent for an employer with a reserve ratio of 15 or greater, to 6 percent for an employer with a reserve ratio of –12 or less. The light gray line in Figure 7.1 of Chapter 7 (labeled "Base Schedule") illustrates this base rate schedule, showing the employer's reserve ratio on the x-axis, and the consequent tax rate paid by the employer on the y-axis.

Missouri adjusts an employer's base rate in two ways. First, a "contribution rate adjustment" increases or decreases the base rate depending on the average balance in Missouri's UI trust fund. The base rate is *increased* by 10 percent when the trust fund balance falls below $450 million, by 20 percent when the trust fund falls below $400 million, and by 30 percent when the trust fund falls below $350 million. (In addition, during 2005, 2006, and

2007, the base rate of employers paying the maximum base rate was increased by 40 percent.) Also, the base rate is *reduced* by 7 percent when the trust fund rises to $720 million, and by 12 percent when the trust fund rises to $870 million. When one of these adjustments is in effect, the base tax schedule pivots, becoming steeper when base rates are increased, or flatter when base rates are reduced. The black line in Figure 7.1 (labeled "2012 Actual Tax Rates") illustrates the tax schedule for 2012, a year in which base rates were adjusted upward by 30 percent.

Second, starting in 2006, Missouri has added a surcharge to the base rate of employers who remain at the maximum tax rate in successive years. Specifically, a surcharge of 0.25 percent is added to the tax rate of any employer who is at the maximum rate for two consecutive years. Further, if the employer remains at the maximum rate for a third, fourth, or fifth consecutive year, an additional 0.25 percent is added to the employer's base rate in each year. If the employer remains at the maximum rate for a sixth consecutive year, an additional 0.5 percent is added to the employer's base rate, for a maximum surcharge of 1.5 percent.[195]

Until 2005, Missouri was among the majority of states whose taxable wage base was within $2,000 of the minimum stipulated in Federal law ($7,000). In 2005, Missouri raised its tax base to $11,000, then gradually to $13,000 in 2010. Accordingly, during 2004–2012 (the years used in the simulations), the ratio of taxable to total wages in Missouri increased from 25.1 percent in 2004, to a high of 32.7 percent in 2010, then fell somewhat to 31.3 percent in 2012.

Washington and benefit ratio experience rating

Washington uses a benefit ratio method to experience rate the UI payroll tax rates assigned to employers. Before 2005, the state used an array allocation procedure, but since 2005 (the first year we examine), an employer's tax rate has been determined as the sum of two components, both of which depend on the employer's benefit ratio.[196] The first is an experience-rated tax rate, which throughout the 2005–2013 period ranged from 0 for an employer with a benefit ratio of 0, to 5.4 percent for an employer with a benefit ratio of 0.0575 or greater. The second is a "social cost factor," which varied during the 2005–2013 period. For example, in 2013 (the last year we examine), the social cost factor ranged from 0.14 percent for employers with a benefit ratio of 0, to 0.42 percent for employers with benefit ratios of (approximately) 0.024 or greater. (In 2010, the minimum social cost factor reached a high of 0.95 percent for employers with a benefit ratio of 0, and the maximum reached a high of 1.46 percent for employers with benefit ratios between 0.0125 and 0.045.)

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[195] Note that the surcharge is added to the base rate *before* the contribution rate adjustment is made.

[196] Washington's UI statute also provides for a solvency surcharge when the state's UI trust fund is determined to be adequate to finance fewer than seven months of benefits, but this provision was not in effect during the years we examine.

As a result of the social cost factor, the maximum payroll tax rate in Washington fell from a high of 6.5 percent in 2005, to 6.00 during 2006–2011, to 5.82 during 2012–2013. The full tax schedules for 2011 and 2013 are shown in Figure 7.2, with the employer's benefit ratio (or assignment class) on the x-axis, and the implied tax rate on the y-axis. The light gray lines indicate the actual tax schedules in each year. In 2011, employers with a benefit ratio of 0.045 or greater (rate class 35 and above) were at the maximum tax rate (6.0 percent), whereas in 2013, employers did not pay the maximum tax rate (5.82 percent) until their benefit ratio reached 0.0575. As a result, the 2011 tax schedule is somewhat steeper than the 2013 schedule; an employer would reach the maximum tax rate at a lower benefit ratio in 2011 than in 2013.

Washington has indexed its taxable wage base since 1988, and since that time it has had one of the five highest tax bases (and in some years the highest) among the states (refer to Table 5.1 in the body of the report).[197] Washington's taxable wage base increased from $30,500 in 2005 (the first year used in the simulations) to $39,800 in 2013 (the last year used). Washington's ratio of taxable to total wages has been correspondingly higher than the national average: over the years used in the simulations, it ranged between 58 percent and 62 percent.

4. Simulated Effects of Increased Payroll Tax Rates

The main body of the report presented the results of several simulations using employer-level micro data from Missouri and Washington. Chapter 5 (section 6) analyzed the effects of increasing the taxable wage base on taxable wages and tax contributions, and Chapter 7 (section 3) analyzed the effects of raising the maximum payroll tax rate ("uncapping") on average tax rates and tax contributions. This section and the next offer analyses of two additional changes in the UI payroll tax: first, a proportional (percentage) increase in the payroll tax rates facing all employers, and second, imposing a positive minimum tax rate under a reserve ratio system.

Increasing payroll tax rates is a common method used by states to increase UI tax contributions when trust funds become depleted. As described in Chapter 4, the payroll tax rates of many states adjust automatically in response to the health of the state's UI trust fund. Accordingly, it is important to gauge the effectiveness of changes in the UI payroll tax schedule in raising tax contributions, particularly in relation to the other methods of raising revenue, such as increasing the taxable wage base and uncapping the payroll tax schedule.

Missouri simulations

Table D.5 shows the results of three simulated policy changes in Missouri during the 2004–2012 years:

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[197] Even before it adopted indexation, between 1974 and 1985, Washington increased its taxable wage base in most years by $600. As a result, at the time it adopted indexation, Washington already had a relatively high taxable wage base.

- a 10 percent increase in the UI payroll tax rate facing all employers

- a 10 percent increase in the taxable wage base (repeated from Table 5.6)

- a 10 percent increase in tax rate facing all employers in combination with a 10 percent increase in the taxable wage base

The rationale for the combined tax policy change is to help understand any interactions between increases in payroll tax rates and increases in the taxable wage base.

The 10 percent increase in payroll tax rates (in isolation) increases tax contributions by nearly 10 percent in the initial year of the increase (2004). But in subsequent years, the effects of the payroll tax increase are smaller: about 6–7 percent in the second and third years following the increase (2005–2006), and roughly 3–4 percent thereafter. Cumulatively, over the nine years of the simulated policy change, the 10 percent increase in payroll tax rates leads to an increase in tax contributions of 4.8 percent.

The 10 percent increase in tax rates increases tax contributions by less than 10 percent because, under the reserve ratio system, when an employer pays more taxes in year t, that employer's reserve ratio will increase (other things equal). This leads, in turn, to a lower tax rate and tax contributions in subsequent years. The simulations shown in Table D.5 are dynamic and account for these feedbacks, as described in section 1 above.

In contrast, a 10 percent increase in Missouri's taxable wage base is predicted to increase tax contributions by 6.8 percent over the nine years of the simulation (see Table 5.6 and the accompanying discussion).[198] This is approximately 40 percent greater than the net increase generated by a 10 percent increase in tax rates (which increases tax contributions by 4.8 percent, as just described). Why does a 10 percent increase in the *taxable wage base* lead to a 6.8 percent increase in tax contributions, whereas a 10 percent increase in *tax rates* leads to a 4.8 percent increase?

The reason is that an upward shift of the tax schedule affects only the numerator of the reserve ratio formula [that is, the reserve balance—see equation (D.1)], whereas a change in the taxable wage base affects both the numerator and the denominator of the reserve ratio formula. For example, consider an employer whose tax rate increases by 10 percent as a result of a general tax rate increase. That employer's tax contributions will rise, so the reserve ratio will also rise, and the employer will move down the new (higher) tax schedule and face lower tax rates in subsequent years. In principle, the employer could move down the tax schedule enough to reach the tax rate paid before the tax schedule shifted up.

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[198] Recall that a given percentage increase in the tax base leads to a smaller percentage increase in taxable wages because, when the tax base increases, the new (higher) base will move above the annual wage of some workers. For these workers, the increase does not "capture" additional taxable wages.

In contrast, an increase in the taxable wage base increases both the numerator and the denominator of the reserve ratio formula [equation (D.1)]. The numerator increases because taxable payroll has increased, which increases an employer's tax contributions [equation (D.2)] and in turn the employer's reserves. The denominator increases because the denominator is taxable payroll, which the policy has increased directly. The increase in the denominator prevents the reserve ratio from increasing by as much as it would otherwise and impedes the movement of employers down the tax schedule (to lower tax rates).

Table D.5 also shows the simulated effects of a 10 percent increase in payroll tax rates *combined* with a 10 percent increase in the taxable wage base. The effects of these two policies combined are slightly (but only slightly) greater than additive. That is, for the full nine years of the simulation, the 10 percent increases in both payroll tax rates and the taxable wage base increase tax contributions by 11.8 percent, very close to the sum of the increases resulting from the two changes individually (4.8 percent + 6.8 percent = 11.6 percent). It follows that, although there is some interaction between changes in payroll tax rates and changes in the taxable wage base, the interaction is quite minor.

TABLE D.5
Simulated Effects of Shifting the UI Payroll Tax Schedule (alone and combined with increasing the taxable wage base) on Revenues in Missouri, 2004–2012

| | | Simulated revenue changes resulting from: | | | | | |
| | | 10% increase in tax schedule | | 10% increase in taxable wage base | | 10% increase in tax schedule plus 10% increase in wage base | |
Year	Baseline tax contributions ($ million)	$ million	%	$ million	%	$ million	% change
2004	372.3	37.0	9.9	28.1	7.6	68.2	18.3
2005	506.0	33.2	6.6	43.7	8.6	80.0	15.8
2006	547.6	33.9	6.2	47.2	8.6	84.4	15.4
2007	573.4	25.0	4.4	51.6	9.0	76.3	13.3
2008	592.6	24.0	4.1	42.3	7.1	66.0	11.1
2009	507.8	13.9	2.7	30.2	5.9	47.1	9.3
2010	542.5	22.0	4.0	31.5	5.8	50.1	9.2
2011	595.4	24.6	4.1	29.0	4.9	52.7	8.9
2012	612.3	19.6	3.2	25.2	4.1	45.7	7.5
2004-2012	4,850.0	233.3	4.8	328.9	6.8	570.5	11.8

Source: Authors' calculations from Missouri employer UI payroll tax records.

Washington simulations

Table D.6 has the same format as Table D.5: it shows for Washington the results of simulating the same three policy changes as Table D.5 showed for Missouri.

The differences between Washington (a benefit ratio state) and Missouri (a reserve ratio state) in the results of increasing payroll tax rates by 10 percent (in isolation) are striking. In Washington, the 10 percent tax rate increase leads to increased tax contributions of 10 percent in each year following the increase (2004). In contrast,

the 10 percent tax rate increase in Missouri leads to only a 4.8 percent increase over the nine years of the simulation, as discussed above and shown in Table D.5. Under Washington's benefit ratio system, the 10 percent tax rate increase leads to a direct 10 percent increase in tax contributions over the nine years following the change in tax rates because the benefit ratio system has no feedbacks, and with no change in employers' payrolls, a proportional increase in tax rates leads to an equiproportional increase in tax contributions.[199]

TABLE D.6

Simulated Effects of Shifting the UI Payroll Tax Schedule (alone and combined with increasing the taxable wage base) on Revenues in Washington, 2005–2013

		Simulated revenue changes resulting from:					
	Baseline tax contributions	10% increase in tax schedule		10% increase in taxable wage base		10% increase in tax schedule plus 10% increase in wage base	
Year	($ million)	$ million	%	$ million	%	$ million	% change
2005	1,378.5	137.8	10.0	74.8	5.43	220.1	16.0
2006	1,256.2	125.6	10.0	2.5	0.20	138.3	11.0
2007	1,094.7	109.5	10.0	5.7	0.52	124.5	11.4
2008	982.0	98.2	10.0	-7.7	-0.78	96.0	9.8
2009	831.9	83.2	10.0	10.6	1.27	100.8	12.1
2010	1,301.9	130.2	10.0	-8.4	-0.64	128.2	9.8
2011	1,339.0	133.9	10.0	-15.1	-1.13	124.3	9.3
2012	1,113.3	111.3	10.0	-39.3	-3.53	73.2	6.6
2013	1,220.1	122.0	10.0	-38.0	-3.12	86.2	7.1
2005-2013	10,517.5	1,051.7	10.0	-15.0	-0.14	1,091.7	10.4

Source: Authors' calculations from Washington employer UI payroll tax records.

Table D.6 also shows the simulated effects of increasing the taxable wage base in Washington by 10 percent (repeated from Table 5.6). Recall that increasing the taxable wage base by a given percentage will result in a smaller percentage increase in taxable wages whenever the increase moves the wage base above the annual wages of some workers. In addition (and even more importantly), under a benefit ratio system, an increase in the taxable wage base could have either a positive or negative effect on tax contributions because, although it increases taxable payroll, it reduces the tax rate facing an employer [see equations (D.5), (D.6), and the discussion at the end of section 1 above]. In the Washington simulation, increasing the taxable wage base by 10 percent increases tax contributions in the year of the increase (2005) by 5.4 percent, but thereafter, the annual increases in tax contributions never exceed 1.3 percent, and in the last two years of the simulation, tax contributions are lower than they would have been otherwise by about 3 percent. [In these years, the reduced tax rates caused by the higher taxable wage base outweigh the increased taxable payrolls—see again the tax contribution equation (D.6)]. As a result, over the nine years of the simulation, the 10 percent increase in the taxable wage base has virtually no effect on tax contributions in Washington. This contrast with the nine-year increase in tax contributions of 6.8 percent increase following a similar tax base increase in Missouri, under a reserve ratio system.

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[199] Recall again that the simulations impose the assumption that employers do not change their layoff or employment behavior in response to changes in UI payroll tax policy.

Finally, Table D.6 shows the simulated effects of a 10 percent increase in payroll tax rates *combined* with a 10 percent increase in the taxable wage base. As was the case for Missouri, the effects of these two policies combined are slightly (but only slightly) greater than additive. As a result, for the full nine years of the simulation, the 10 percent increases in both payroll tax rates and the taxable wage base increase tax contributions by 10.4 percent, close to the sum of the increases resulting from the two changes individually (10.0 percent – 0.1 percent = 9.9 percent). As was true for Missouri, interactions between changes in payroll tax rates and changes in the taxable wage base appear to be minor.

5. Simulated effects of imposing a positive minimum tax rate

In 16 of the 33 states that use the reserve ratio method of experience rating, employers with a reserve ratio greater than some threshold are assigned a tax rate of 0 percent under the state's most favorable tax schedule (U.S. Department of Labor, 2013, Table 2-10). Missouri is one of these states, so in this section, we simulate the effects of imposing a small positive tax rate on all employers, regardless of how high their reserve ratio may be. The rationale for a positive minimum rate is that a state's system of financing UI must cover socialized costs, and that these costs should be spread at least partially among all employers in the state.

Of the 16 reserve ratio states that impose a positive (non-zero) minimum payroll tax rate, all but two have a minimum of 0.3 percent or less. (Six have a minimum less than 0.1 percent, three have a minimum of 0.1 percent, and four have a minimum between 0.1 percent and 0.3 percent.[200]) This suggests that simulating minimum tax rates of 0.1 percent and 0.2 percent will give a reasonable picture of how Missouri's tax contributions would fare if it imposed a minimum tax rate near the median of existing positive minimum tax rates.

Table D.7 shows the results of the simulations. Note first that during the 2004–2012 period, the percentage of employers at the zero rate varied from a high of nearly 23 percent (in 2004) to a low of 11 percent (in 2008). These employers accounted for a disproportionately small percentage of all taxable wages: in 2004, zero rate employers accounted for about 14 percent of all taxable wages, and this percentage fell sharply to between 3 and 4 percent during 2008–2012. The drop occurred because Missouri's taxable wage base increased from $8,000 in 2004 to $11,000 in 2005, where it remained through 2007 (see Table D.1). Thereafter, the wage base increased to $12,000 (in 2008), $12,500 (in 2009), and $13,000 (2010 through 2012). These increases in the wage base (and especially the first, which was a 37.5 percent increase) reduced employers' reserve ratios by increasing employers' taxable payrolls (the denominator of each employer's reserve ratio). The reduced reserve ratios translated into higher tax rates and evidently moved many employers who had been at the minimum (zero) tax rate up to a positive rate.

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[200] The two states with minimum payroll tax rates greater than 0.3 percent are Rhode Island (0.6 percent) and Massachusetts (0.8 percent).

Simulated Effects of Imposing a Positive Minimum Tax Rate on Revenues in Missouri, 2004–2012

Year	All employer tax contributions ($ million)	Employers with zero tax rate at baseline				Percentage change in total tax contributions with minimum tax rate of:	
		Number	As % of employers with taxable wages	Taxable wages ($ billion)	As % of all taxable wages	0.1 percent	0.2 percent
2004	372.3	30,705	22.7	2.775	14.4	0.97	1.94
2005	506.0	28,179	20.5	3.276	13.2	0.75	1.53
2006	547.6	22,071	16.0	1.831	7.2	0.17	0.43
2007	573.4	17,306	12.5	1.076	4.2	-0.02	0.04
2008	592.6	15,225	11.0	0.838	3.1	0.00	-0.04
2009	507.8	15,690	11.6	0.920	3.6	-0.12	-0.02
2010	542.5	17,423	12.8	0.899	3.5	0.06	0.10
2011	595.4	17,540	12.8	0.927	3.6	0.07	0.14
2012	612.3	18,213	13.1	0.992	3.8	0.02	0.07
2004-2012	4850.0	n/a	14.7	13.534	6.0	0.18	0.39

Source: Authors' calculations from Missouri employer UI payroll tax records.

The main findings suggest that a small positive minimum tax rate has an immediate but small (in relative terms) impact on tax contributions. Specifically, a minimum tax rate of 0.1 percent in Missouri increases tax contributions by about 1.0 percent in the year it is imposed and by 0.75 percent in the following year; and a minimum tax rate of 0.2 percent increases tax contributions by 1.9 percent in the year it is imposed and by 1.5 percent in the following year. However, the dynamics of the reserve ratio system quickly erode these increased tax revenues: over the nine years of the simulation, minimum tax rates of 0.1 percent and 0.2 percent increase tax contributions by only 0.18 percent and 0.39 percent.

Under reserve ratio experience rating, the gains in tax contributions from a small positive minimum tax rate erode for a simple reason. With a small positive minimum tax rate, even employers who face the minimum tax rate continue to pay into their reserve accounts. When a recession occurs and these employers do lay off workers, they start from a more favorable reserve position than they would otherwise. As a result, the tax rate they face may not increase, and if it does, the increase occurs after additional layoffs or a longer period of time. As can be seen in Table D.7, tax contributions in subsequent years may even be reduced compared with what they otherwise would be (see the negative percentage changes in tax contributions for 2007–2009, in the rightmost two columns of Table D.7). Over the full nine-year period, tax contributions increase only slightly as a result of the non-zero minimum rate, and significant increases occur only immediately following adoption of positive minimum tax rates.

6. Summary and conclusions

The main goals of this appendix have been to describe the structure of the micro-simulations presented in the body of the report and to present some additional simulations. In the process, we have tried to offer additional

details of why the simulations behave as they do, including discussions of the dynamics of reserve ratio experience rating and the mechanics of benefit ratio experience rating.

Table D.8 brings together and summarizes the simulations for both Missouri and Washington that appear in Chapters 5 and 7, as well as those appearing in this appendix:

- increasing the taxable wage base

- increasing payroll tax rates by 10 percent (both in isolation and in combination with a 10 percent increase in the taxable wage base)

- uncapping the payroll tax schedule

- levying a small positive minimum payroll tax rate under the reserve ratio system

TABLE D.8
Summary of Microsimulation Findings

| | Simulated nine-year change in tax contributions | |
	Missouri (2004–2012) (reserve ratio)	Washington (2005–2-13) (benefit ratio)
Policy change		
Increase taxable wage base:		
10 percent	6.8	0.1
20 percent	13.1	2.7
50 percent	30.7	9.4
Tax rate increase of 10 percent		
in isolation	4.8	10.0
with 10 percent increase in wage base	11.8	10.4
Uncap the payroll tax schedule	3.2	4.8
Positive minimum tax rate		
0.1 percent	0.2	--
0.2 percent	0.4	--

Source: Authors' calculations from Missouri and Washington employer UI payroll tax records. See Tables 5.6, 5.7, 5.9, 5.10, 7.3, 7.4, D.5, D.6, and D.7.

Table D.8 highlights a striking difference between Missouri (with reserve ratio experience rating) and Washington (with benefit ratio experience rating): increases in the taxable wage base are substantially more effective in raising tax contributions under reserve ratio experience rating than under benefit ratio experience rating. And conversely, increases in payroll tax rates are substantially more effective in raising tax contributions under a benefit ratio system than under a reserve ratio system. That is, under the benefit ratio system, increases in the tax base are hampered by the fact that those increases automatically reduce tax rates; whereas under the reserve ratio system, increases in payroll tax rates are hampered by the dynamics of the reserve ratio formula, with increases in tax rates leading automatically to reduced tax rates. (See sections 1 and 4 for further discussion.)

To our knowledge, these aspects of reserve ratio and benefit ratio financing have not been carefully examined and compared.

Taken at face value, the findings from the simulations suggest that the relative effectiveness of increasing the taxable wage base and increasing tax rates depends on the method of experience rating used by a state. Increases in the taxable wage base appear more effective under a reserve ratio system, whereas increases in tax rates appear more effective under a benefit ratio system.

We would be cautious about generalizing these findings to other states. They are based on simulations from only two states (one a reserve ratio state with a relatively low taxable wage base, the other a benefit ratio state with a relatively high wage base), and they make use of data from a specific period (2004–2012 in the case of Missouri; 2005–2013 in the case of Washington). The differences between these two states and other states are substantial—they include the mix of industries, the size distribution of employers, the distribution of wages and work hours, the mix of occupations and worker skills, and the sensitivity of the state's economy to cyclical fluctuations, to name a few. For this reason, it would be highly informative to replicate the simulations reported here using data from additional states and from different time periods, and we hope others will pursue such research.

Nevertheless, we suspect that the broad conclusions described above—that increases in the taxable wage base tend to be relatively effective in raising tax contributions in a reserve ratio state, whereas increased tax rate tend to be relatively effective in a benefit ratio state—are likely to carry over to other states. The reason is that these conclusions are consistent with the mechanics and underlying dynamics of the reserve ratio and benefit ratio methods of experience rating, as we have tried to explain. Unfortunately, this conjecture (and these hypotheses) cannot be confirmed or rejected without evidence from additional states.

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