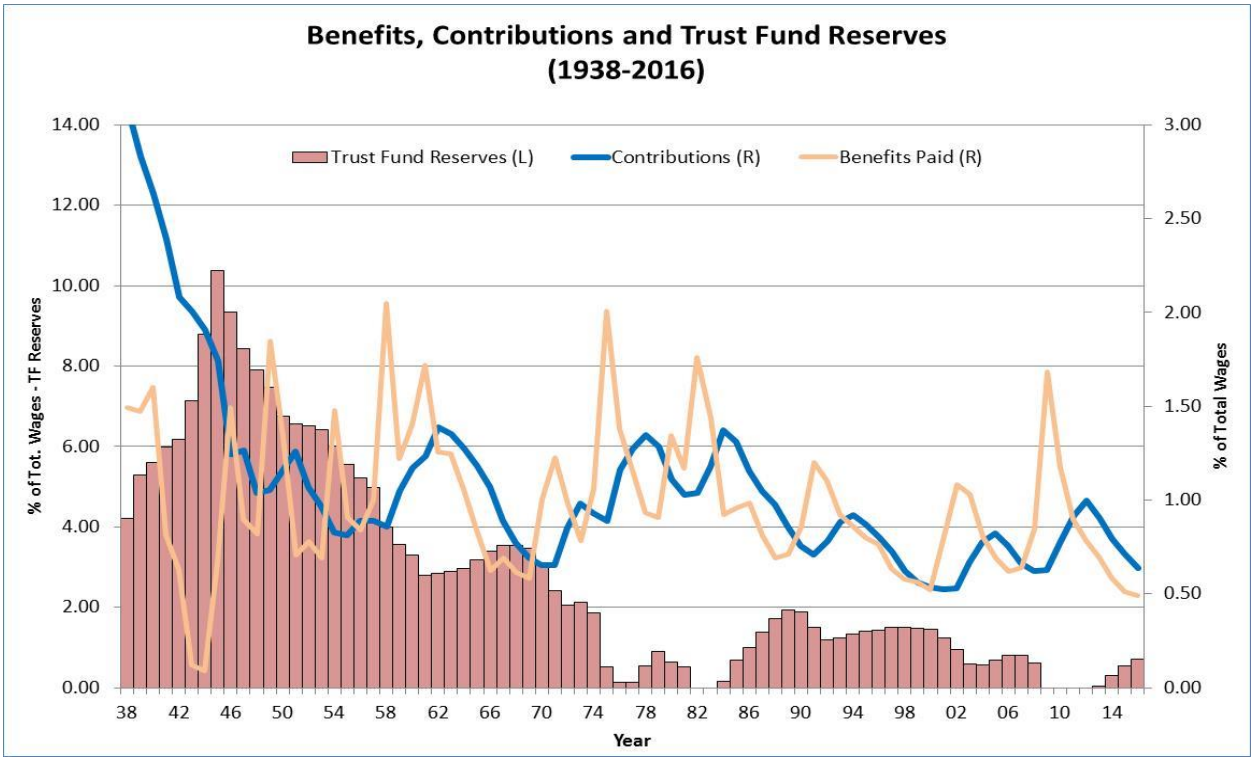
Unemployment Insurance Financing
Technical Guide

Guidelines for the Construction and Analysis of State Unemployment Insurance Financing Structures



With Accompanying Spreadsheet Assistance Tool

U.S. Department of Labor
Office of Unemployment Insurance
Division of Fiscal and Actuarial Services

This Guide was authored by Robert Pavosevich and Michael Miller (contractor) of the Division of Fiscal and Actuarial Services of the Office of Unemployment Insurance in the U.S. Department of Labor. Views and opinions expressed do not necessarily represent the official position or policy of the U.S. Department of Labor. Material contained in this publication is in the public domain and may be reproduced, fully or partially, without permission of the Federal Government. Source credit is requested but not required. Permission is required only to reproduce any copyrighted material contained herein.

Table of Contents

Introduction

While there have been numerous publications on various aspects of Unemployment Insurance (UI) financing, including solvency, experience rating, and the taxable wage base, there is no comprehensive work on evaluating or building an Unemployment Insurance tax structure. The purpose of this Technical Guide and accompanying spreadsheet model is to provide program analysts, at the state and national levels, a practical hands-on tool for constructing a UI tax system or correcting a financing imbalance in a state's existing tax structure.

This Guide is meant to address the growing problem of poorly constructed and deteriorating state tax structures, which for many years now have been unable to adequately respond to the cyclicality of UI benefit payments. In recent times, many state UI programs have experienced at least one of these serious financing issues:

1) Individual tax rates that have been set too low and do not respond to individual employers' experience with benefit costs.
2) A taxable wage base that has not been increased for many years.
3) Social taxes that recover only a small portion of socialized benefit payments.
4) Solvency tax trigger values, or tax schedule triggers, that do not adequately respond to changes in trust fund levels.
5) Experience rating methodologies that do not provide adequate response to employer layoffs.

While there are a myriad of minor factors that may have contributed to the onset of these problems, there are two primary factors: 1) many state tax structures were created and left unchanged since the origin of the program when an entirely different method of financing was in place -- one that was based on individual employers paying benefits from their own accounts rather than a pooled account, and 2) many state systems have not included any features that would allow for the automatic updating or calibrating of rates, triggers, and wage bases over time as benefit levels grow.

In the face of these structural problems many states have either ignored the problems or responded by simply increasing the taxable wage base a small amount. But each year these tax systems go unattended their responsiveness to benefit payments becomes worse and worse.

This Guide was created to assist states in responding to these structural issues. The Guide is divided into three sections. The first section consists of a step by step process on **how to build a simple UI tax structure**. Each step is described in detail and includes an example of its application to an individual state. An accompanying spreadsheet tool allows the reader to follow along. This section is provided for those interested in adopting an entirely new tax structure, one which is easy to build and understand and can ensure an adequate level of financing under any benefit conditions.

Currently only a small group of states have followed these steps in constructing and setting their yearly UI tax rates. While certainly more complex tax structures can be constructed, this step-by-step process is designed for states to build a simple pooled insurance based system that is adequately structured around their own benefit costs.

The second section is a **troubleshooting guide** for analysts who simply wish to specifically address one or more individual financing problems facing their state without building an entirely new structure. This section is divided into the five most serious financing issues and their solutions:

1. Correcting tax rates which are set too low to respond to increased benefit payments.
2. Raising and indexing the taxable wage base.
3. Addressing the uncovered benefit charges of maximum tax rate employers.
4. Adjusting unresponsive tax schedules and solvency taxes.
5. Making tax schedule solvency triggers more responsive.

The third section of the Guide covers the application of **alternative measures of experience rating**. This section is included for states, primarily those using the Reserve Ratio experience rating system, that would like to adopt a more effective means of grading employer experience or would like to include an additional factor in their formulation of individual employer tax rates.

In addition, accompanying this Guide is an **Excel spreadsheet model** that takes the user through each of the steps, described in Section A, of building a state tax system and also includes some tools to analyze a state's existing system. A description of the model can be found in Appendix C.

Section A

How to Build an Unemployment Insurance Tax Structure

Background

Many state UI tax structures were constructed when the national program first began in 1935, and have basically remained intact since that time. While the age of these systems is not necessarily a problem, certainly the fact that they were constructed to finance an entirely different type of system than we have today is a serious concern.

The Social Security Act and the Federal Unemployment Tax Act (FUTA), which established the Unemployment Insurance (UI) system in the United States, were enacted during the Great Depression. At that time, there were numerous employers with voluntary UI plans structured as individual employer-based severance plans as well as several states, notably Wisconsin, which simply facilitated the transaction of paying UI benefits from individual employer accounts. These severance-type plans 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. There was no coverage of benefit payments from other employer accounts – benefits were simply not paid. The widespread and recognized inadequacy of these private compensation arrangements to compensate individuals during deep recessions was a major factor behind enactment of UI legislation and the establishment of UI programs in the states.

In this environment the program began with financing responsibility from individual employers for their own benefits. It actually wasn't until 1949 that all state UI programs switched to operating with entirely pooled accounts that receive all employer contributions and are the source of benefit payments to the unemployed. By pooling 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. But the problem is that while the payment of UI benefits no longer came from the individual account of an employer, most states continued with a methodology that relied on attributing the benefits paid to a claimant back to the responsible employer in order to derive individual tax rates. Maintaining a system in which benefit costs are assigned to individual employers but employer payments are limited has led to numerous difficulties in state financing. A small number of states have recognized this problem and restructured their tax systems, similar to any insurance program financing plan, such that costs are attributed to a pooled fund of revenue.

Section A of this Guide was written to assist states that wish to restructure their tax systems by describing a step-by-step process of how to construct a UI tax structure, one

that provides an adequate level of financing against all expected levels of benefits. This section goes through a four-step process that is similar to what any insurance company would undertake to calculate a yearly individual premium for a participant in an insurance plan. It involves, first, calculating a yearly financing level based on the average cost (expected level of UI benefits paid) for the entire program, then deriving increases and decreases in that financing level based on the desired level of funds the state would like to keep in its trust fund, and finally, deriving individual tax rates based on a measure of experience rating. This process is divided into four specific steps in this section:

1. Calculate a base level of financing that is adequate for financing state benefits over time.

2. Set the range of the trust fund level within which the base financing level will be in effect.

3. Set the overall financing level by adding in increases and decreases from the base financing level based on changes in the level of the trust fund.

4. Derive individual tax rates for employers by ranking them against a measure of unemployment risk, dividing them into tax rate intervals, and assigning employers in each interval a tax rate based on the desired average rate.

Each step, in this section, is first described in detail and then an example is provided for its application to a single state. In addition, an accompanying spreadsheet tool is provided for the reader to follow along. Currently eleven states have followed these general steps in constructing their tax systems and in setting their yearly UI tax rates. The approach can be called total cost targeting. While certainly more complex methodologies can be constructed, following these steps will provide an analyst with the basic framework for building a UI tax structure that is adequately constructed around the state's benefit costs.

Step 1. Calculate a Base Level of Financing

An Unemployment Insurance (UI) tax structure is built to formulaically arrive at yearly tax rates for each employer[1] that are used to raise an amount of money to pay for UI benefits. The first step in building such a system, as described in the Guide, is to derive a so called base financing rate. This rate is defined as the average tax rate across all participants (employers) that will bring in an adequate level of revenue to finance an expected average level of future benefit costs. All insurance programs calculate such a rate, which is used as the starting point of tax rate assignment -- whether all employers will be charged the same rate or whether variable rates will be assigned using individual experience rating.

The methodology for calculating the base financing rate is based on using the average level of yearly benefits paid by the program over a pre-specified past number of years. This is then combined with a portion of estimated future benefit payments to derive a total financing rate.[2]

The primary difficulty for any insurance program in calculating this rate is not knowing the volume of future payments or costs. Some insured events, of course, are more predictable than others, which is why fairly definitive actuarial tables can be constructed for events like automobile accidents and even mortality. But while future UI benefit payments have some predictable cyclical properties, their level and timing is still exceptionally unpredictable. Analysts must often rely on using an average of past benefits (measured as benefit cost rates (BCR), which are defined as total benefits divided by total wages)[3] as the basis for determining the future desired level of financing.

One of the first steps in tax rate construction is evaluating state-level regular UI benefit costs (total benefits paid by the state to claimants), which can vary widely from year to year and from state to state. Over the long run, most states have experienced average BCRs that range between 0.50 and 1.50 percent (1938 - 2016). In the years from 1970 to 2015, at the national level, the aggregate cost of regular UI benefits (excluding reimbursable benefits) has averaged just under 1.0 percent of total wages of taxable employers. In reviewing the benefit cost experiences of an individual state an analyst must determine how much of the prior history to use in the determination of current and future revenue needs. In other words, will future benefit payouts reflect the past twenty years, or thirty years, or have the state economy, demographics, and UI program changed enough over time that only the past ten years of costs would be predictive of the future?

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[1] In the U.S., UI benefits are mostly financed by employers so the methodology offered in this Guide applies to an employer tax.

[2] The future portion of benefit payments is included in the tax until the trust fund (dedicated to program benefits) reaches a specified level. Then the portion of the tax dedicated to future costs is removed and the tax is based only on an average of past benefit payments. This is covered in step 3 of this Guide.

[3] Throughout this Guide, benefits and total wages refer to those of taxable employers only.

Deciding on which period to use will also entail incorporating at least one period of past high benefit payouts in order to properly gauge an average payout. The following table displays measures of state-level benefit costs for the highest and lowest six states, focusing on average benefit cost rates and the highest-ever annual benefit cost rates. While the national average for 1970 to 2015 is 0.95 percent, the moving twenty-year and ten-year averages have continued to fall during this time. For 2015 the U.S. ten-year average is 0.84 percent. The highest annual benefit cost rates over the entire 1970-2015 period are displayed in the fourth column, and the twelve-month period for which the state experienced the maximum BCR is in the last column. For quite a number of states the maximum BCR year was 1975 (20 states), whereas for others it was 1982 or 2009.

State-level UI Benefit Cost Rates, 1970 to 2015

		Average Benefit Cost Rate:			Highest Benefit Cost Rate	Highest Period
	State	**1970-2015**	**1996-2015**	**2006-2015**		
1.	PR	1.98	1.56	1.33	4.41	Dec-75
2.	RI	1.83	1.64	1.70	4.37	Dec-75
3.	AK	1.80	1.36	1.15	4.33	Aug-58
4.	WV	1.24	0.77	0.88	4.00	Dec-83
5.	WA	1.48	1.08	1.16	3.83	Dec-71
6.	MI	1.33	1.14	1.26	3.72	Dec-82
48.	NE	0.55	0.45	0.48	1.56	Dec-75
49.	OK	0.62	0.52	0.56	1.37	Dec-86
50.	VA	0.44	1.11	1.24	1.31	Dec-75
51.	CO	0.60	0.55	0.65	1.29	Dec-09
52.	TX	0.53	0.50	0.50	1.14	Dec-86
53.	SD	0.45	0.33	0.34	1.06	Jan-64

Source: All data from the Handbook of Unemployment Insurance Financial Data. Benefit Cost Rates are benefits paid as a percent of total wages. Data are annual calendar year data.

For the U.S. as a whole, the average benefit cost rates for the 10, 15, and 20-year periods ending in 2015 range from 0.80% to 0.85% of total wages, so using any of those periods for a state may give similar results. However, the shorter-term averages would vary more over time. Of the states that derive a base financing rate, five of them currently use a short-term average benefit cost rate, generally a three-year average, for this calculation (called a "Desired Financing Rate" in these states). Nebraska is the only state to use the latest 12-month benefit cost rate in calculating their base financing rate.[4] While this may be the most accurate projection of benefit costs for the upcoming year, it greatly reduces the counter-cyclicality of the tax. When there is a large increase in benefits, a large tax increase immediately follows. A 3-year average is sufficiently

[4] Nebraska refers to this rate as their "Planned Yield," which is similar to several other states.

counter-cyclical, but not as accurate in estimating next year's costs as a 20-year average, except in long expansions, so it is advisable to use the long-run average cost in tax system design.

A state analyst can calculate the state's average benefit cost rate for selected historical periods, noting both long run averages and maximum cost rates during past recessions in order to determine what level of benefit costs need to be covered by the state's tax structure. The desired level of financing upon which the tax structure will be based should equate to this selected long-run average benefit cost rate.

Conversion to Taxable Wages

The final step in determining the appropriate base financing rate is to convert the long-run average benefit cost rate into a desired financing rate that is a percentage of taxable wages. If the state is not planning to change its taxable wage base (the maximum amount of taxable wages per worker), this conversion can be done simply by dividing the average BCR by the ratio of the state's taxable wages to its total wages in the past year. The result will be referred to as the **base financing rate**.

If the state is planning to change its wage base, the ratio of taxable to total wages must be estimated. Issue 2 in Section B has a detailed discussion on how to set the taxable wage base. It is important to note that in the methodology described here, whether the wage base is set at a high level or a low level does not affect the ability of this tax system to raise an adequate level of revenues because the desired level of revenue the system needs to be solvent is first formulated on the level of total wages and then converted into the percentage of taxable wages needed based on whatever the level of current taxable wage base. This ensures that an adequate level of funds is being raised regardless of the tax base level.

If a state does not formulate a base financing rate based on total wages and instead puts in place a fixed set of tax rates on taxable wages then it becomes imperative that the wage base be indexed to growth in the average wage; otherwise the system will deteriorate over time as wages and benefits grow.

Again, ideally, the base financing rate should be based on a time period that contains at least one recessionary period but does not reach so far back that it is not a good indicator of future average costs. The base financing rate can be built into the system design but ideally the system should be structured so that the selected period for the measure of benefits is moved each year rather than being fixed, so that the base financing rate is recalculated each year. For example, a state can define in their law that the base financing rate will be calculated over the most recent twenty years.

The benefit cost rate is based on total benefits paid, which is composed of the number of people receiving benefits, the length of time they receive benefits, and the weekly benefit payment. If any of these variables has been significantly affected by recent law changes or is expected to change in the future, appropriate adjustments must be made to the long-run benefit cost rate before determining the base financing rate.

The accompanying spreadsheet model, described in Appendix C, takes the user through all of the steps in calculating the base financing rate for any state. The calculator allows the user to calculate the benefit cost rates and the base financing rate for every state for any number of years (up to twenty) and to use either the current ratio of taxable to total wages or a user-specified ratio in this calculation.

Step 1 Example:
As an example of building a state UI tax structure, California will be used to show how these steps can be practically applied.

From 2006 to 2015, California had an average benefit cost rate of approximately 1.0% of total wages. This value encompasses only one recession, however, so it seems a longer period may be warranted. Over the twenty year period ending with 2015, the average benefit cost rate was 0.88% of total wages. During that time period, the benefit payment laws covering eligibility and wage replacement have stayed relatively constant and two recessions are included, so the 20-year average of 0.88% is selected as the long-run benefit cost rate:

Calculation of California Twenty-Year Average Benefit Cost Rate

Year	Total Wages (000)	Total Benefits	Benefit Cost Rate		Year	Total Wages (000)	Total Benefits	Benefit Cost Rate
1996	330,779,232	2,806,175	0.85%		2006	596,643,970	4,063,636	0.68%
1997	369,300,678	2,447,455	0.66%		2007	626,712,142	4,858,991	0.78%
1998	397,015,517	2,438,278	0.61%		2008	625,193,444	6,654,997	1.06%
1999	438,256,753	2,491,974	0.57%		2009	579,550,507	10,645,997	1.84%
2000	500,675,621	2,267,962	0.45%		2010	593,382,798	7,971,426	1.34%
2001	498,511,229	3,217,031	0.65%		2011	625,320,806	6,429,091	1.03%
2002	485,386,821	5,820,096	1.20%		2012	671,329,076	5,981,644	0.89%
2003	496,358,601	5,761,405	1.16%		2013	697,536,194	5,725,096	0.82%
2004	529,097,763	4,699,123	0.89%		2014	743,205,396	5,595,465	0.75%
2005	560,173,939	4,199,894	0.75%		2015	805,018,433	4,892,000	0.61%

Average Benefit Cost Rate: 0.88%

To convert this rate into one that is based on taxable wages it should be divided by the ratio of the state's taxable wages to total wages for the last completed year for which data is available, in this case 2015. The ratio of taxable to total wages for 2015 (under a $7,000 wage base) was 0.149, so the average benefit cost rate on taxable wages is 0.88% / 0.149 = 5.91%.

Alternatively, if California were to increase its taxable wage base to $23,800 ($7,000 increased by average wage growth since 1983)[5], the estimated ratio of taxable to total wages would be 0.390 and the average benefit cost rate on taxable wages would be 0.88% / 0.390 = 2.26%.

	Average Benefit Cost Rate:			Highest	
	1970-2015	**1996-2015**	**2006-2015**	**Ben. Cost Rate**	**Highest Period**
CA	1.04	0.88	0.98	2.27	Dec-75

Selected Benefit Cost Rate (% of total wages): 0.88%

Base Financing Rate (% of taxable wages): 5.91% ($7,000 wage base) or 2.26% ($23,800 wage base)

[5] The suggestion of a higher taxable wage base in this example, and throughout the following steps, is made to illustrate the preference for two financing principles: 1) the higher base provides a more equitable distribution of the state tax burden between low and high wage employers, and 2) that the higher wage base would tax an amount that is close to the amount of wages considered in the state's formula for calculating a claimant's benefit entitlement. The higher wage base is not a factor in this methodology in providing a higher level of state trust fund solvency.

Step 2: Make the Base Financing Rate Effective When an Adequate Fund Balance Has Been Reached

After determining the level of benefits to be funded over time in the form of a base financing rate, the next important step is to determine when this level of financing will be in effect.

All states vary their UI tax rates from year to year based on the amount of money they have in their state trust fund, which is referred to as their trust fund solvency. So, in this step we will assign the base financing rate, without adjustment, to be in effect when the state has reached what it considers to be its desired level of trust fund solvency. This step will provide a framework for both measuring that solvency level and putting in place a trigger value for the next step of varying the level of financing under changing levels of trust fund solvency.

Although we have calculated the base financing rate to equate to the long run average benefit cost rate, the actual benefit costs will vary considerably from year to year. So to make the tax structure more responsive to these large swings it is desirable to establish a tax system in law which responds automatically to changes in benefit payments and trust fund levels by adding to or subtracting from the base financing rate.

Measuring Trust Fund Solvency

There are several ways to measure the solvency level of the trust fund (see Issue 5 in Section B). The measure most often used in reporting by the U.S. Department of Labor (USDOL) is one recommended in the mid-1990s by the Advisory Council on Unemployment Compensation (ACUC) called the Average High Cost Multiple (AHCM).

AHCM = (Trust Fund Balance[6]/Total Wages) / (Average High Cost Rate)

where: Average High Cost Rate (AHCR) = average of the three highest annual benefit cost rates in the last twenty years (or a period including three national recessions, if longer).

This measure compares the current fund balance to a measure of potential future high benefit costs based on past high benefit cost experience. It uses an average of three past high benefit cost years to minimize the impact of a single, possibly atypical recessionary year. It includes at least three recessions to ensure some diversity of cost experience, but does not reach back to the beginning of the program.

[6] Outstanding Federal loans and other loans for which the trust fund is liable should be subtracted from the actual trust fund balance. The state may also subtract Reed Act balances not available for benefit payments and add in the balances of the benefit payment and clearing accounts, but these amounts are generally small relative to the size of the trust fund.

Setting a Target Fund Balance

The next step is to determine a target trust fund balance. This target should be set explicitly and the tax system built around it. States with a strong aversion to debt-financing may have relatively high trust fund targets, while others with relatively little aversion to borrowing may have tax structures with relatively lower trust fund targets.

Borrowing under severe circumstances can be a legitimate part of a financing strategy, but there are negative consequences of borrowing to consider. First, interest on loans can be quite a significant cost and must be derived from a source outside the UI trust fund. Second, automatic loan repayment through reductions in the FUTA credit[7] is not experience-rated, can escalate quickly, and the timing is not in the state's control. Third, borrowing may lead to a crisis atmosphere in which there is pressure to cut benefits or raise taxes at inappropriate times.

The risk of borrowing can be somewhat quantified by looking at past experience. In establishing an adequate solvency level, it makes sense to establish a target range rather than just a minimum target balance. The following chart shows the historical relationship between pre-recession solvency levels, as measured by the Average High Cost Multiple (AHCM) and the subsequent need for borrowing.

Average High Cost Multiple vs. Borrowing

	Average High Cost Multiple	2.0+	1.75-1.99	1.50-1.74	1.25-1.49	1.00-1.24	0.75-0.99	0.50-0.74	<0.5	1.0+	<1.0	TOTAL
1974-76	# of States	12	7	5	6	5	6	6	4	35	16	51
	# of Loans	0	2	2	2	3	6	6	4	9	16	25
	% with Loans	0%	29%	40%	33%	60%	100%	100%	100%	26%	100%	49%
1980-84*	# of States	2	0	5	7	10	5	6	16	24	27	51
	# of Loans	0	0	1	2	6	3	6	15	9	24	33
	% with Loans	0%	0%	20%	25%	60%	60%	100%	94%	36%	89%	65%
1990-92	# of States	2	4	7	9	10	8	7	5	32	20	52
	# of Loans	0	0	0	0	0	1	2	3	0	6	6
	% with Loans	0%	0%	0%	0%	0%	13%	29%	60%	0%	30%	12%
2001-04	# of States	5	2	5	8	10	12	7	4	30	23	53
	# of Loans	0	0	0	0	1	2	2	3	1	7	8
	% with Loans	0%	0%	0%	0%	10%	17%	29%	75%	3%	30%	15%
2008-10	# of States	0	2	4	3	10	8	5	21	19	34	53
	# of Loans	0	1	0	0	5	5	5	20	6	30	36
	% with Loans	0%	50%	0%	0%	50%	63%	100%	95%	32%	88%	68%

*Includes both recessions of 1980 and 1981-82. Note: Pre-recession average high cost multiples are calculated for December 1973, December 1979, December 1989, December 2000, and December 2007.

[7] Under normal circumstances, employers receive a 5.4% credit against the 6.0% FUTA tax. When the state has an outstanding Federal loan, the credit is progressively reduced until the loan is repaid.

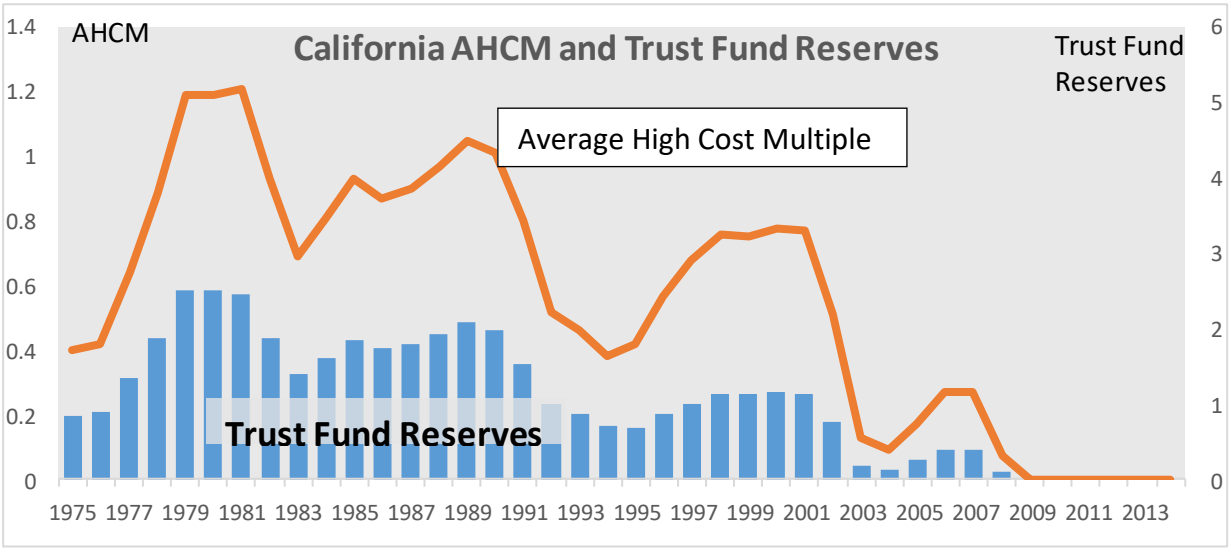
A chart like this can provide rough guidance on what constitutes an adequate trust fund balance. Note that only one state with an AHCM greater than 1.0 borrowed in either of the two relatively mild recessions of 1990-92 and 2001-03 while relatively few states with AHCMs greater than 1.0 borrowed in the deeper recessions.

USDOL does not have an official standard for trust fund adequacy, but an AHCM of 1.0 is embodied in the regulations governing the availability of interest-free Title XII advances and this was also the recommendation of the ACUC. An AHCM of 1.0 indicates that a state has reserves equivalent to one year of average recession-level benefits.

A state can do a similar analysis with its own experience to determine what an adequate trust fund level would be by comparing past trust fund solvency levels against the benefit costs and length of high benefit payout periods.

It should be noted that the above analysis is based on December 31 trust fund balances. The choice of a target balance may depend on what point in the year the balance is measured. Because of differing seasonal patterns in revenues and benefits, the fund balance also has a seasonal pattern. For the U.S. as a whole, June 30 and September 30 trust fund balances are 12-13% higher than December 31, on average. This implies that a 1.0 December 31 AHCM is equivalent to about a 1.1 AHCM for June 30 and September 30. States using these earlier dates to measure the balance and to trigger tax schedules need to set the target balance a little higher than if they were using December 31.

Step 2 Example:
California entered the 1980 and the 1990 recessions with AHCM values above 1.0 and in both instances did not need to borrow funds:



Based on the state's historical level of benefit payouts and other states' experience at various solvency levels, a range of 1.0 to 1.2 AHCM is chosen in this example as the desired funding target and the level of solvency at which the base financing rate will be in effect for California.

Step 3. Adjust the Level of Tax Rates Based on Trust Fund Solvency

After a base financing rate and a target trust fund solvency level are chosen, the next step is to establish a range of increases and decreases from the base financing rate that will be in effect in years when the trust fund is above or below the established target solvency level. The base rate plus increases or decreases will be referred to as total financing rates. The total financing rate is defined as the total revenue produced by the set of rates in place divided by total taxable wages. In this methodology, the financing rate for any particular year will be determined by adding to or subtracting from the base financing rate an amount based on the difference between the state's current trust fund solvency level and the target solvency level.

Due to the cyclical nature of unemployment, the trust fund balance will always have large swings. Though the exact levels are difficult to predict, it can be assumed there will generally be sharp increases in unemployment with high benefit payouts and large decreases in trust fund solvency followed by longer periods of low unemployment resulting in low levels of UI benefits and a potential buildup of the trust fund balance. Knowing this pattern, it is desirable to have a set of increases and decreases from the base financing rate, rather than maintaining just one rate, which will respond to various economic conditions and restore the trust fund balance to the target level in a reasonable period of time.

Establishing a Range of Financing Rates

There are two main methods for deriving financing rates above and below the base financing rate. The most effective method is to calculate the difference between the current solvency level and the target solvency level and then calculate a financing rate that attempts to partially close the gap between those two levels. The second method is to set fixed levels of financing for specified levels of trust fund solvency.

Under the first method, financing rates are not fixed but are calculated each year. First, the difference between the current trust fund solvency level and the target solvency level (the trust fund gap) is determined and converted to a percent of taxable wages. The solvency add-on rate needed to close the trust fund gap by a specified proportion (the gap-closing percentage) is then calculated and added to or subtracted from the base financing rate.

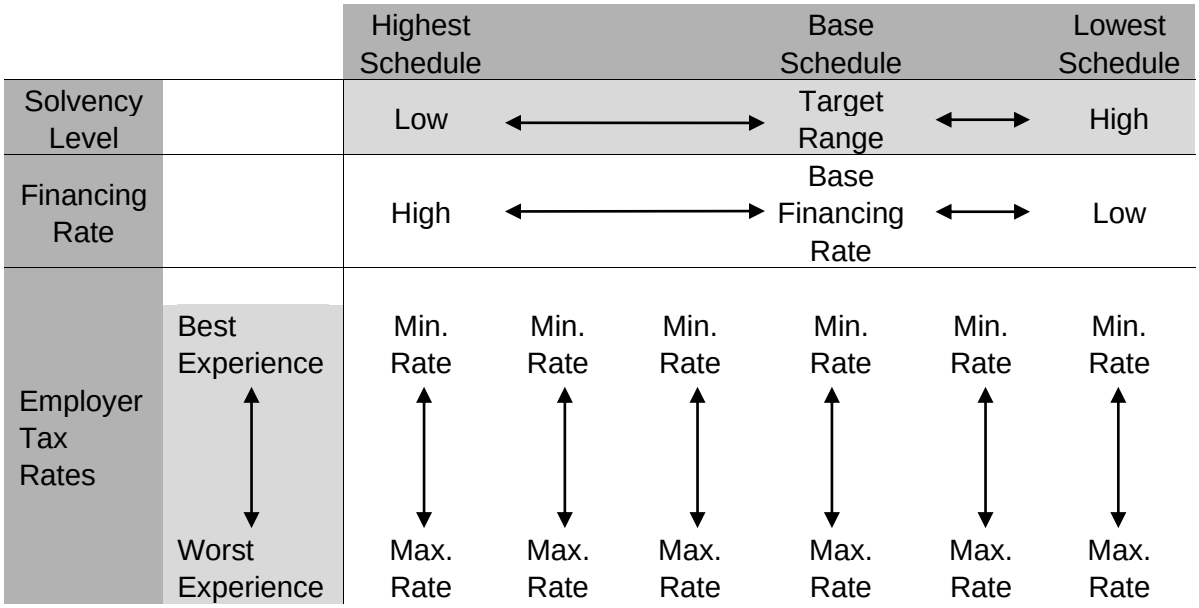
Trust Fund Gap (% of Taxable Wages) = (Target AHCM – Current AHCM) x AHCR x Total Wages/Taxable Wages

Solvency Add-on Rate = Trust Fund Gap (% of Taxable Wages) x Gap-closing Percentage

Total Financing Rate = Base Financing Rate + Solvency Add-on Rate

Using a percentage between 30% and 50% for the gap-closing percentage is a reasonable range that produces a smooth path towards building an adequate trust fund balance. Proportions that are less than 20% will slow trust fund buildup and proportions that are greater than 60% will reduce counter-cyclicality and these may produce financing rates that are too high or too low, so that minimum and maximum rates need to be applied.

Under the second method, fixed levels of financing associated with specific trust fund levels are set in law. Each financing rate corresponds to a set of tax rates to be applied to individual employers. In many states, these rates are arranged in a series of schedules which make up a tax table. Alternatively, a state may have a single tax schedule but create a variation in financing rates by adding or subtracting a solvency adjustment to the rates in the base schedule. This is equivalent to a tax table with multiple schedules. The following is a diagram of a tax table.



In applying this method, the analyst must first decide how many distinct increases and decreases from the base financing rate the tax table will have. The more schedules or financing rates there are, the smaller will be the change in rates between schedules and the smaller will be the year-to-year changes in tax rates, which contributes to counter-cyclicality. More schedules means smoother tax increases as the balance falls, but also means that the rate of trust fund buildup slows down as the balance nears the target and lower financing rates are triggered. The latter effect is mitigated by the fact that it generally occurs during low benefit payment years near the end of an economic expansion. There doesn't need to be as many decreases as increases from the base financing rate. A state could reasonably operate with three schedules or sets of rates, one above the base and one below the base, but multiple schedules allow for more smoothing of tax rates from year to year.

What level to set the total financing rate for any solvency level depends on how quickly the state wants to restore its trust fund balance to the desired solvency level. The desired solvency level should ideally be reached at the beginning of the next recession, which of course is somewhat unpredictable. The average expansion in the twelve recessions since 1945 has been five years. More recently, the average has exceeded six years, but planning to rebuild the trust fund in no more than five years is probably prudent. In states that have explicit schemes for doing this, the time to reach the desired fund level varies from seven years to as low as one year.

Under the method of setting fixed financing rates in law, a simple variation is to have a set of constant intervals between financing rates. The first step would be to select a maximum and a minimum level of financing, which are limits the system must stay within, and the number of schedules (or add-on rates). Then divide the difference between the base financing rate and the maximum rate by the number of schedules to determine the increment between financing rates. The same method is applied to the minimum financing rate.

Tax schedule triggers, which are the specific solvency levels which activate the various financing rates for a given year, can be chosen in a similar way, with roughly equal increments moving up and down from the target solvency level. In this method there can be more or less equal increments of trust fund solvency changes between schedules which should provide for smooth tax rate changes.

Another variation of the second method is to set the financing rates such that the ratio of revenue change to balance change (responsiveness rate) between schedules is equal to a specified percentage. The maximum and minimum financing rates are then determined by the number of schedules and the responsiveness rate between schedules. The responsiveness rate can vary across schedules if desired. If both the financing rates and balance trigger measures have equal increments between schedules, the responsiveness rate will also be the same across schedules.

For example, in one year the state is on a schedule that produces a financing rate of 2.50%, and then experiences a reduction in the trust fund balance of $50 million or 0.5% of taxable wages, which triggers a higher schedule. If the state wants a 50% response in contributions at each new level of trust fund solvency, then the financing rate for that higher schedule has to be 0.25% higher (or 2.75%) than the financing rate for the lower schedule. In other words, using a 50% responsiveness rate would mean that for each $1.00 decrease in the trust fund there would be a $0.50 increase in taxes.

A third variation of the second method is based on making up a portion of the difference between the current solvency level and the target level, by either applying a constant proportion of that difference to determine each financing rate or using a varying proportion if desired. The financing rate for each schedule or solvency rate is set to close a specified proportion of the gap between the current solvency level and the state's target level. Using a percentage between 30% and 50% for the gap-closing proportion or

the responsiveness rate is a reasonable range that produces a smooth path towards building an adequate trust fund reserve.

It is important that the maximum financing rate be set high enough to restore the trust fund solvency level to its target level after a recession. Two rules-of-thumb have been suggested in the past. One is that **the maximum financing rate should be at least 30-50% above the long-run average benefit cost rate**. For the US as a whole, the average of the three highest benefit cost years in the last twenty is about 60% above the 20-year average benefit cost. Another suggestion is that **the highest set of rates should cover 90% of high-cost benefits**, which may result in either higher or lower tax rates than the first rule, depending on the state. The principle is that the highest set of rates should allow restoration of the trust fund in a reasonable period of time, so that the state doesn't get stuck on the highest set of rates for a long period of time but still ensures that the state is prepared for the next recession.

If the state wants to design a system that restores the trust fund to its target balance within a certain number of years, it is difficult to calculate the appropriate trust fund gap closing percentages or responsiveness rates to achieve that result because of unpredictable benefit costs. The best approach is to simulate the operation of different tax schedule or solvency tax schemes under various benefit cost scenarios. Proposed financing rates and/or trust fund trigger ranges may then have to be adjusted in order to achieve the desired result. The accompanying spreadsheet (see Appendix C) can be used to design and test variable financing rates.

Step 3 Example:
For this example, using California, total financing rates are determined using the method of closing the trust fund gap. The AHCM is used as the measure of trust fund solvency for determining when the base financing rate will be in effect and for determining the trust fund gap at any point in time. For improved program adequacy, it was determined that the base financing rate would be in effect when the state's year ending trust fund balance was between a 1.0 and a 1.2 AHCM (target range). We illustrate the calculation of financing rates for solvency levels above and below the target range.

Remember from previous steps that the long-run average benefit cost rate of 0.88% of total wages was derived along with an assumed taxable wage base of $23,800, which makes the base financing rate 2.26% of taxable wages. Now, to calculate the additional financing rates that will be in effect when the yearly AHCM values are above and below the desired target range, we use a gap closing percentage of 30%. We first convert the AHCM values to trust fund balances as a percent of taxable wages because the financing rates will be expressed in percent of taxable wages. To do this each AHCM is multiplied by AHCR (its denominator) then converted to taxable wages by dividing by the ratio of the state's yearly taxable to total wages. For the target range we use the midpoint of a 1.10 AHCM.

For any yearly calculated AHCM, the trust fund balance gap is calculated as the difference between the corresponding trust fund balance as percent of taxable wages

and the percent of taxable wages for a 1.1 AHCM. Each balance gap is multiplied by the gap closing percentage (30%) to arrive at the amount of solvency add-on to the financing rate for that level of AHCM. The total financing rate to be in effect is just the sum of the base financing rate and the calculated solvency add-on.

The calculated total financing rate of 3.30% for the year, when there is a 0.2 AHCM, is 46% higher than the base financing rate and about 86% of the AHCR (if converted to taxable wages). Below is the illustrative financing rate derivation for California using the base financing rate derived in step 1 and using the AHCM as the measure of trust fund solvency.

California Total Financing Rates Example

		Base Financing Rate			
AHCM	1.40	1.00-1.20 (midpoint = 1.10)	0.80	0.50	0.20
AHCR	1.50%	1.50%	1.50%	1.50%	1.50%
Taxable/Total Wages	0.390	0.390	0.390	0.390	0.390
Balance/Taxable Wages	5.38%	4.23%	3.08%	1.92%	0.77%
Balance Gap (% of taxable wages)	-1.15%	---	1.15%	2.31%	3.46%
Gap Closing Proportion	30%		30%	30%	30%
Solvency Add-on (% of Taxable Wages)	-0.35%	---	0.35%	0.69%	1.04%
Base Financing Rate	2.26%	2.26%	2.26%	2.26%	2.26%
Total Financing Rate (% of taxable wages)	**1.91%**	**2.26%**	**2.61%**	**2.95%**	**3.30%**

AHCM = Average High Cost Multiple = (trust fund balance / total wages) / AHCR

AHCR = Average High Cost Rate (% of total wages) (average of 3 highest annual BCRs in the prior 20 years or 3 recessions, if longer)

BCR = Benefit Cost Rate (% of total wages)

Balance Gap = (Midpoint of target AHCM minus current AHCM) as % of taxable wages

Base Financing Rate = 20-year average BCR as % of taxable wages

Solvency Add-on = adjustment to base financing rate based on current solvency level

Step 4. Assign Tax Rates to Individual Employers

So far we have discussed how to calculate a base financing rate, making that rate effective when the trust fund solvency level is in a target range, and then how to vary the total financing rate based on variations in the state's trust fund solvency level. The next step is to derive individual tax rates for employers for each of the derived financing rates.

Experience rating in insurance programs is used to place individual participants in the various risk groups, such that participants with better experience are placed in lower risk, or expected claim frequency groups, and receive lower premiums, while participants with worse experience are placed in higher risk groups with higher premiums. In insurance financing, the practical application of experience rating refers to the reductions and increases offered to participants from a primary (average) financing rate based on the participants' individual experience with the insured event and other risk factors.

In the financing structure of most all insurance programs, the premium charged to the participant is first formulated based on the expected claim frequency rate (number of claims per period) multiplied by the estimated average claim size. But because differences in risk, and therefore expected claim frequency, exist among participants, many policies are grouped according to their general levels of various risk factors. Though experience rating is a common feature found in insurance schemes throughout the world, the United States is alone in applying this concept to UI premiums. Grading employers on their layoff experience for tax rate assignment has traditionally been done using one of several methodologies: Reserve Ratio, Benefit Ratio, Benefit Wage Ratio, or Payroll Decline. Several new alternative methodologies are offered in Section C of this Guide.

In a number of existing state tax rate formulations the individual employer's tax rate based on experience is determined first and then social and solvency taxes are added. In the methodology offered here, which is similar to most all insurance industry calculations, individual rates are derived as the last step. In a pooled insurance rate formulation, one in which benefits are paid from a single pool of funds and the liability, or rate of the worst-rated employers, is limited, experience rating calculations represent a discount or increase from the state's pre-determined financing rate.

This methodology for assigning individual employer tax rates is implemented in four steps:

1. Set the number of tax rate intervals and the percent of total taxable wages to be assigned to each interval.

2. Using the total financing rate for the year, set adequate minimum and maximum tax rates and set the intermediate rates such that the average tax rate from the rate distribution will equal the desired financing rate.

3. Compute the experience factor for each employer and rank employers from best to worst.

4. Assign the minimum tax rate to the best employers accounting for the designated percentage of taxable wages for the lowest tax rate interval. Assign the next higher rate to the next best group of employers. Continue until all employers have been assigned a tax rate. This is usually called the array method.

The choice of minimum and maximum tax rates is an important one since it can play an important role in ensuring the system provides an adequate level of financing. There exist two important guidelines to assist in setting these rates. First, the minimum tax rate when the base financing rate is in effect should be set to the average level of socialized costs in the state over a long enough period to include at least one recession. (As a reference point, FUTA actually stipulates that for all new employers the lowest rate that can be charged is 1.0%).

The maximum rate is chosen based on a trade-off between trying to keep taxes as low as possible and the need to assign higher tax rates to lower the amount of ineffectively charged benefits (the amount of charged benefits exceeding the contributions paid by maximum-rated employers). A reasonable rule-of-thumb is that states should generally keep the proportion of ineffectively charged benefits below 25% of the total benefits paid. While there are a number of factors at work in determining the level of ineffectively charged benefits, states with ineffectively charged benefits at the peak of the last recession that were less than 25% of total benefits had maximum taxes per employee (maximum tax rate times taxable wage base) of at least $800. Generally a range of between $600 and $1,000 of contributions per employee will help keep ineffective charges below 25%.

The choice of the number of intervals will be based on a judgment as to how much an employer's tax rate should change from year to year. The more intervals or number of rates in a tax schedule the smaller the year-to-year changes in tax rates as the experience of an individual employer changes. States using this type of rate assignment system typically have 20 or 21 rate intervals, but there is wide variation.

Once the minimum and maximum tax rates and the number of intervals have been determined, intermediate rates need to be determined. This may be a complicated task depending on the relationship among the total financing rate and the minimum and maximum tax rates. The analyst needs to set tax rates that vary relatively smoothly across rate intervals and at the same time produce an average tax rate equal to the desired financing rate.

Finally, employers accounting for fixed proportions of taxable wages are placed into groups both above and below the average financing rate such that the average tax rate for all employers will equate to the total financing rate. A state can either have a distribution of equally sized groups, where, for example, five percent of taxable wages

are assigned to each of twenty rate groups, or a distribution of disparate sized groups, where different proportions of taxable wages are assigned to different rate groups. The analyst should look at the clustering pattern in the distribution of employer experience factors to help make this determination. The accompanying model, described in Appendix C, will help an analyst work through the process of building a tax schedule of individual employer tax rates.

The preferred way to derive individual tax rates is to put tax rate adjustment factors (above and below 100%) in state law that will be multiplied by the total financing rate for the year to calculate tax rates for each rate group. Another option is to use factors that add or subtract percentages to the financing rate. In either case, the tax rate adjustment factors should be set so that the resulting rates combined with the proportions of taxable wages will arrive at the desired financing rate. A third option is to pre-specify the tax rates in law, based on this methodology, but this option is less flexible than the others since the rates cannot respond to changes in the long-term average BCR.

The average tax rate for any set of rates can be calculated as follows:

Average Tax Rate = (Group 1 tax rate) x (% of taxable wage in Group 1) + … + (Group N tax rate) x (% of taxable wages in Group N)

where: N = number of tax rate groups

This simple example illustrates the method of using a formula based on the financing rate to calculate rates for rate groups:

Interval Group	Tax Rate as % of Financing Rate	Tax Rate Based on a 3.0% Financing Rate	% of Total Taxable Wages
1	20%	0.60%	9.091%
2	35%	1.05%	9.091%
3	50%	1.50%	9.091%
4	65%	1.95%	9.091%
5	80%	2.40%	9.091%
6	100%	3.00%	9.091%
7	120%	3.60%	9.091%
8	135%	4.05%	9.091%
9	150%	4.50%	9.091%
10	165%	4.95%	9.091%
11	180%	5.40%	9.091%

In this method, the tax rates for each interval are calculated once the total financing rate (3.0% in this example) for the year is determined. The percentage (tax rate adjustment factor) for each interval is multiplied by the financing rate to derive the tax rate for the

interval. This method can be applied to any financing rate, so that the rates can be derived for any schedule within a tax table. In this example, the tax rate for the middle group (group 6) is set equal to the financing rate, but this rate could be assigned to any interval or none at all – just as long as the average of the percentages, above and below, are balanced, and will equal 100%.

Additionally, it may be necessary to include an extra step in the rate calculation process. In addition to the requirement that the maximum tax rate has to be at least 5.4%, a USDOL guideline also calls for a maximum 0.9% increment between tax rates for purposes of equity among employers. Very low or very high financing rates may produce rates that violate this guideline. In this case, some rates may have to be set at specific values to meet the guideline. Since the average tax rate will no longer be equal to the desired financing rate, all rates in the schedule need to be proportionally adjusted upward or downward to achieve the desired average. The spreadsheet tool calculates illustrative tax rate factors and includes this extra step in determining tax rates.

An alternative method of determining tax rates is to develop fixed schedules of rates to be used for different financing rates. This method only applies if there are a fixed number of financing rates in law, rather than the financing rate being calculated each year. Again, the individual tax rates must average to the desired total financing rate.

This simple example shows an even distribution of tax rates above and below the average so that when equal levels of taxable wages are placed at each interval the average will come out to the desired amount:

Total Financing Rate: 3.0%
Minimum Rate: 0.5%
Maximum Rate: 5.5%
No. of Intervals: 11

Interval Group	Individual Tax Rates	% of Total Taxable Wages
1	0.5%	9.091%
2	1.0%	9.091%
3	1.5%	9.091%
4	2.0%	9.091%
5	2.5%	9.091%
6	3.0%	9.091%
7	3.5%	9.091%
8	4.0%	9.091%
9	4.5%	9.091%
10	5.0%	9.091%
11	5.5%	9.091%

In this way the amount of revenues raised would equate to a 3.0% average tax rate or total financing rate. A separate schedule would have to be developed for each desired financing rate. Each schedule would have a pre-determined average tax rate, so this method does not allow for recalculation of the total financing rate each year.

Step 4 Example:

For the California example tax structure, 20 tax rate intervals are used with 5% of taxable wages in each interval. Tax rates will be calculated as percentages of the desired financing rate. The tax rates for interval groups 12 and 13 are set equal to the desired financing rate.

Interval Group	Tax Rate as % of Average Rate	% of Total Taxable Wages	Lowest Tax Rates	Base Tax Rates	Highest Tax Rates
1	22%	5.0%	0.40%	0.50%	0.72%
2	24%	5.0%	0.44%	0.54%	0.78%
3	31%	5.0%	0.57%	0.70%	1.01%
4	38%	5.0%	0.70%	0.86%	1.24%
5	45%	5.0%	0.82%	1.02%	1.47%
6	52%	5.0%	0.95%	1.18%	1.70%
7	59%	5.0%	1.08%	1.33%	1.92%
8	66%	5.0%	1.21%	1.49%	2.15%
9	73%	5.0%	1.33%	1.65%	2.38%
10	80%	5.0%	1.47%	1.81%	2.61%
11	87%	5.0%	1.59%	1.97%	2.84%
12	100%	5.0%	1.83%	2.26%	3.26%
13	100%	5.0%	1.83%	2.26%	3.26%
14	114%	5.0%	2.09%	2.58%	3.72%
15	134%	5.0%	2.45%	3.03%	4.37%
16	154%	5.0%	2.82%	3.48%	5.02%
17	174%	5.0%	3.18%	3.93%	5.67%
18	194%	5.0%	3.55%	4.38%	6.32%
19	214%	5.0%	4.50%	4.84%	6.98%
20	239%	5.0%	5.40%	5.40%	7.79%
		Financing Rate	1.91%	2.26%	3.26%

Summary

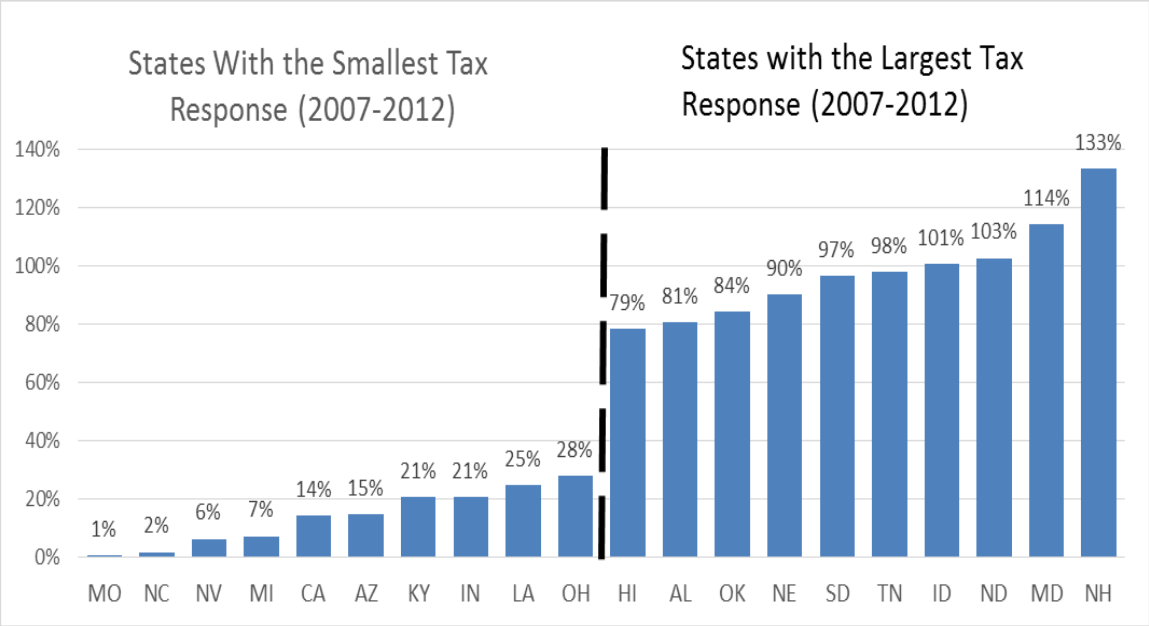
Following these steps, along with using the accompanying spreadsheet tool, provides a clear path towards constructing an entire tax structure for the financing of unemployment insurance benefits. The example for California shows the practical step-by-step process of applying a state's actual experience to arrive at an entire tax structure. The structure illustrated here would provide an adequate solvency level for facing recessionary level payments with a low probability of ever having to borrow large amounts. However each state using this methodology could select the desired solvency level that the structure would be calibrated towards, and the structure would automatically operate, without any needed adjustments, to maintain that level.

Section B

Tax Structure Troubleshooting Guide

This section is a troubleshooting guide for analysts who simply wish to address one or more individual financing problems facing their state without building an entirely new structure. It addresses the five most serious problem areas confronting states with their UI tax structures. Each issue is described as to its cause and impact, and then the most viable solutions are offered to address the issue.

State tax systems are formulated to adequately meet an average level of UI benefit payments and a specified level of future benefit payments. When benefit payments increase dramatically then tax revenue also needs to increase. When that doesn't occur, it can lead to serious issues of insolvency. In fact there are large differences among states in how much and how fast their tax rates respond to higher levels of benefit payments. For example, using the percentage increase in the amount of benefits paid from 2007 to 2012 compared to the increases in contributions received over the 2008-2013 period we can see a tremendous difference among states:



This percentage is calculated by taking the cumulative increase in state revenue for 2009-12 over the 2008 level divided by the cumulative increase in state benefits for 2008-11 over the 2007 level. Source: U.S. Dept. of Labor ET Handbook 394.

There are a number of reasons why tax rates would not rise sufficiently in the face of rising benefits. This section is meant to address the five primary reasons and provide solutions to correcting those issues.

Issue 1) Tax Rates are Too Low

Many states have tax rates that have simply been set too low to adequately fund their benefit costs over time. Often these rates were set years ago without any ability to grow with the level of benefits. Having low employer tax rates can cause serious solvency problems due to the inability to raise adequate revenue.

All UI programs assign a single tax rate to an employer for an entire calendar year.[8] For each experience-rated employer, the annual tax rate varies with the size of the state's trust fund balance as well as the experience factor. Higher tax rates are assigned to employers when they have a high level of layoffs and/or the fund is below a desired level of solvency and lower tax rates are assigned to employers with a lower level of layoffs and/or when the fund is above a desired level. The problem in many states is that tax rates have not been adequately set, and/or the rates have been set too low to respond to the level of benefit payments and to produce the revenue needed to reach the desired solvency level.

This section will provide a framework for calculating a desired or Adequate Financing Rate (AFR) in order to determine the adequacy of the state's existing level of tax rates. The AFR is a derived measure that consists of taking past benefit levels combined with a portion of estimated future benefit payments (fund solvency target) to arrive at an average tax rate that would be applied to all employers to provide what is considered to be an adequate level of financing for a particular year for the state given its current level of trust fund solvency (see Appendix A).

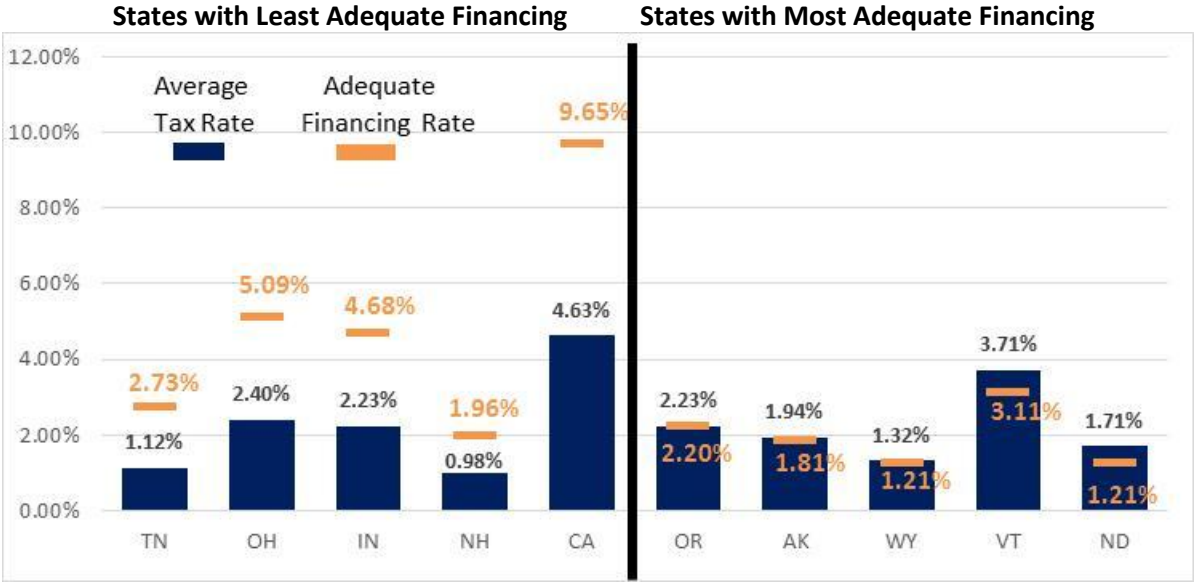
While there are several methods for calculating an AFR, in this illustration we take the average of the last ten years of benefit costs plus a solvency amount calculated by taking the difference between the program's current trust fund balance and the trust fund balance equivalent to a 1.0 AHCM and then dividing that difference by five (to represent a five-year period to reach the adequate fund level).[9]

[8] Tax rates for twelve month 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.

[9] In the event that the fund balance exceeds a 1.5 AHCM then the trust fund amount over a 1.5 AHCM is subtracted from the amount needed to cover the 10-year average benefit costs.

For example, calculating an AFR for 2016 and comparing to each state's estimated average tax rate for that period can reveal whether a state is adequately funding or underfunding its program.

Comparison of Average Tax Rate to Calculated Adequate Financing Rate (2016)



Data through CY 2015 is used to calculate the Adequate Financing Rate for 2016 which is compared to the estimated average tax rate for 2016.

The five states with the least adequate financing are those with the largest differences between their AFRs and their 2016 average tax rates. These states average over a 50% difference between the two. The states with the most adequate financing have average tax rates more than 15%, on average, above their AFRs for 2016. This measure indicates that those states with low trust fund balances and large negative differences between their AFRs and their average tax rates have tax rates that are too low to adequately fund their programs and clearly have a serious issue of underfunding their systems.

The analyst can compute the measure for the state for a number of years, including pre-recession, recession, and post-recession years, to determine whether tax rates are generally adequate or are too low.

Solutions

1) If the average tax rates in years prior to a recession are too low relative to the AFR, it is likely **that the rates in the base schedule are too low and need to be raised.** This is particularly an issue in Reserve Ratio experience rating states since it is difficult to determine the appropriate tax rate to charge at each level of employer reserves.

2) If average tax rates in recession years are too low it is likely **that rates in schedules between the base schedule and the highest schedule need to be raised**. The responsiveness of tax rates to changes in solvency is covered in more detail in Issue 4.

3) If average tax rates in post-recession years, when the trust fund has been drawn down and the highest rate schedule or solvency rate is in effect, are below the AFR, then tax capacity (the maximum contribution level as a percent of total wages) needs to be increased. Two rules-of-thumb have been suggested. One is that **the highest financing rate (as a percent of total wages) should be at least 30-50% above the long-run average benefit cost rate (as a percent of total wages)**. For the US as a whole, the average of the three highest-benefit-cost years in the last twenty is about 60% above the 20-year average benefit cost rate. Another suggestion is that **the highest set of rates should cover 90% of high-cost benefits**, which may result in either higher or lower tax rates than the first rule, depending on the state. Ideally, the highest set of tax rates should allow restoration of the trust fund in a reasonable period of time, so that the state doesn't get stuck on the highest set of rates for a long period of time but still ensures that the state is prepared for the next recession.

4) The most effective way to ensure adequate tax rates in all situations is to use the total cost targeting approach described in Section A, in which a total financing rate is determined each year based on a measure of benefit costs and the trust fund solvency level relative to an adequate solvency level. Individual employers are then assigned rates which average to the total financing rate.

Issue 2) Low Fixed Taxable Wage Base

For states without adequately responsive solvency taxes a low fixed taxable wage base can, over time, be a serious financing problem. In this case, tax rates become increasingly inadequate as benefits increase with wage levels.

The amount of annual wages per worker to which the employer's tax rate is to be applied is referred to as the taxable wage base. In order for employers in a state to receive the full 5.4 percent credit against the FUTA tax, the state must, among other things, have a taxable wage base of at least the Federal base level ($7,000 in 2017). This is not a conformity requirement, but is inherent in the calculation of the additional FUTA credit.[10] At the other extreme, a state is not required to have a taxable wage limit at all. For the first few years of the program in the 1930s, the Federal tax was payable on all covered wages. Currently, several states tax all wages for contributory governmental employers and Pennsylvania taxes all wages for its employee tax, but no state taxes all wages for private employers. For 2017, all but four states had adopted a tax base greater than $7,000, but thirty-one had a tax base of $15,000 or less, and only ten had a tax base of $30,000 or greater. Washington had the highest wage base at $45,000. If states with a $7,000 base in 1983 (the last time the FUTA base was raised), had increased their wage bases in step with average wages since then, the average wage base in those states would be about $23,000 for 2017.

Since the FUTA base was last increased, the proportion of wages taxable under state law has declined from 43 percent in 1983 to 26 percent in 2015. The overall averages mask the more significant decline in states that have never increased their taxable wage bases. For example, the taxable wage proportion for California declined from 40 percent in 1983 to 15 percent in 2015. In 2015, this ratio ranged from 14 percent in the District of Columbia to a high of 68 percent in Hawaii.

Whether a state has a high wage base or a low wage base is not the main determinant of solvency. The role of the wage base depends on other features of the state's tax structure. While states with the highest wage bases tend to have higher solvency levels than states with lower bases, these states also have indexed wage bases, which are more important than high wage bases, and many have other desirable features such as array allocation or total cost targeting. For those states without responsive solvency tax rates, a low fixed taxable wage base can cause these three problems:

[10] The 5.4 percent FUTA credit is made up of the normal credit (amounts paid in state taxes) and the additional credit. The calculation of the additional credit is such that employers will not get the full credit if the state taxable wage base is less than the FUTA wage base.

Problem 1) Declining Solvency

Declining solvency in states with low fixed wage bases and unresponsive tax systems is easy to understand. Nominal wages have increased over time which causes benefit amounts, which are based on wages, to also increase. In two-thirds of the states, the maximum weekly benefit amount adjusts automatically with increases in the average wage. Even in states that do not index their benefits, benefit adjustments are more frequent than are adjustments to either the tax base or tax rates. So, benefit costs in all states tend to grow with the level of total wages. With a fixed wage base, taxable wages grow more slowly, with most of the growth attributable to employment growth.

Also, a low fixed wage base leads to declining tax capacity, which is the maximum level of revenue a state can receive from its tax structure, relative to total wages and to benefit costs. Tax capacity determines the ability of a UI tax system to generate enough revenues to restore the trust fund balance after a drawdown. With declining tax capacity the state's tax structure will be unable to provide sufficient revenues even from its highest rates and even when the economy is good. The problem is worse if the maximum rate is set to the lowest allowable rate of 5.4%[11] and does not increase for higher schedules because the amount of revenues that can be collected from maximum-rated employers becomes extremely limited. Tax capacity may no longer be sufficient to finance the average cost, much less recessionary high costs.

Low tax capacity in several states has hindered the recovery of UI trust funds following the recession of 2007–2009. An extreme example of this is California, which has maintained a taxable wage base of $7,000 from 1983 to 2017. Going into the 2007-09 recession, California was already on its highest tax schedule. California's estimated tax capacity is less than 1% of total wages (0.90%), clearly inadequate when compared to its 20-year average benefit cost rate of 0.88% and its average high cost rate of 1.54%. Even in 2016, after several years of recovery, 39% of California's taxable wages (compared to 17% in 1987) and 81% of benefits charged were attributable to maximum-rated employers.

Similarly, Pennsylvania has only increased its wage base from $7,000 to $9,500 since 1983. Pennsylvania has a relatively high maximum tax rate but is also one of the highest-cost states. For the twelve months ending on the computation date for 2016, the amount of benefits charged exceeding the amount of contributions for maximum rated employers, were 56% of total benefits charged, indicating a serious problem of low tax capacity. Pennsylvania was one of the biggest debtor states following the 2007-09 recession.

Problem 2) Poor Distribution of UI Tax Burden

The main issue in setting the level of the tax base is how the state wants the tax burden distributed among low-wage and high-wage employers. For any given level of taxes, a lower wage base puts more of the tax burden on lower-wage employers (and workers, to

[11] In order for all employers in the state to get the full 5.4% FUTA credit, at least one employer must be assigned a state tax rate of 5.4% or higher in any year.

the extent their wages are lower than otherwise) because low-wage employers will be paying a higher proportion of their wages in taxes than a higher-wage employer. If a state were to raise the wage base and lower tax rates (a revenue-neutral tax change) this would shift a greater share of the tax burden to higher-wage employers as the wage base increases.

Comparing 2015 to 1991, two years with roughly equal overall tax burden (0.7% of total wages), the average tax rate on taxable wages increased from 1.92% to 2.70%, but the proportion of wages to which tax rates were applied declined from 37 percent to 27 percent. Clearly the UI tax overall has become more regressive over time. Whatever distribution of tax burden is desired by the state, it makes sense to maintain that distribution over time by adjusting the wage base for average wage growth.

Problem 3) Variable Taxable Wage Base

Another related problem occurs in states that have provisions to adjust the taxable wage base up or down according to a measure of the state's trust fund balance. In these states, a higher solvency level triggers a reduction in the taxable wage base while a lower solvency level triggers an increase in the tax base. Similarly, other states have temporarily increased or decreased their taxable wage bases. The most extreme example is Hawaii, which legislatively lowered its wage base from $35,300 in 2007 to $13,000 in 2008 and 2009 before increasing it again to $34,900 in 2010.

The purpose of a variable wage base seems to be to raise or lower the trust fund balance when desired. The main problem with a fluctuating base is that it disrupts experience factor calculations because taxable wages are used in the denominator of all states' experience rating formulas. For example, for a temporary wage base decrease, the lower taxable wages increase employer benefit ratios and reserve ratios without any change in actual experience and the lower taxable wages stay in the calculation for two years or longer (depending on the number of years used in the calculation) after the base returns to the higher level. Individual employer experience factors and tax rates will then fluctuate without regard to benefit charges. In addition, part of the revenue decrease is only temporary as future tax rates for employers on the slope of the tax schedule will compensate for the taxable wage and/or revenue change.

Solutions

1) Certainly the most obvious fix for a state with a low taxable wage base that also has unresponsive tax rates would be to **increase the taxable wage base**. In fact, in the wake of the heavy borrowing associated with the 2007-09 recession, at least twenty states increased their wage bases (most by relatively very small amounts). It should be recognized that this is just a short-term fix and will not solve most states' solvency problems. If the state has not increased its wage base sufficiently over time, making a one-time increase can partially correct the problem, thereby moving tax schedules into better alignment and increasing tax capacity. However, the positive impact will, in most cases, be short-lived because of the resulting experience rating impacts:

In a Benefit Ratio experience rating state, increasing the tax base without changing tax rates will initially produce more revenue from all employers. However, because taxable wages are used in the denominator of the benefit ratio, the resulting changes in employer benefit ratios will be inversely proportional to changes in taxable wages (e.g. if taxable wages increase by 25%, the benefit ratio will decrease to 80% (= 1.00/1.25) of its original value. For a state that uses three years of taxable wages, this adjustment will take three years. For employers on the slope of the benefit ratio schedule (between the minimum and maximum tax rates), the tax rates will fully adjust to the taxable wage change, so that revenues will fall back to their original levels. Employers at the maximum rate or at or near the minimum rate will have a longer-term increase in taxes because their tax rates cannot adjust for the taxable wage change. Thus, the state can get a temporary revenue boost from all employers but a longer-term revenue boost only from minimum and maximum rated employers.

In a Reserve Ratio experience rating state, the impact of a taxable wage base increase is more complicated because, in addition to increasing the denominator of the experience factor (which moves positive and negative reserve ratios in opposite directions), a base increase increases the numerator by increasing contributions. However, the results can be similar to the Benefit Ratio system. An employer on the slope of the tax schedule will end up with the same contributions level as if there were no base increase, but it is likely to take the employer longer to get there, so the initial revenue boost is larger. Some employers at the maximum rate and employers at or near the minimum rate will have longer-term increases in taxes.

It should be noted that while the experience rating effects will tend to offset a one time tax base increase in both Benefit Ratio and Reserve Ratio states, it also has the effect of extending the range of effective experience rating to higher-cost firms compared to the situation before the base increase.

2) A better solution is to **index the wage base to the changing level of average wages in the state.** Currently, twenty states (including Virgin Islands) have indexed tax bases, with two of those states adopting indexation in response to funding problems associated with the 2007-2009 recession.

   The usual method of indexing is to compute the taxable wage base as a percent of the average annual wage for some prior period (prior calendar year, twelve months ending June 30, or second prior calendar year). All but one state uses this method, with the percentage of the annual wage ranging from 40% to 100%. Vermont increases its wage base each year by the same percentage by which the average annual wage increases. Mathematically, this has the same result as the more common method without specifying the exact relationship between the wage base and the average wage. In all states, the wage base is rounded to a multiple of $100, $200, or $1,000.

The benefit of an indexed base is that it allows taxable wages to increase at a similar rate as benefits (assuming the maximum benefit amount increases with average wages) so that the distribution of taxable wages across experience rates will be more stable over time, shifting only with economic conditions, not wage growth. This makes tax yields more stable as well as easier to predict. The designed base schedule continues to be the de facto base schedule and tax capacity remains constant.

It should be noted that using the array method to assign tax rates does not exempt a state from the problems caused by a low fixed wage base. In fact, using fixed rates based on taxable wages that are assigned to fixed proportions of taxable wages makes the situation worse because the movement of employers within a schedule cannot increase the average tax rate to partially compensate for the decline in taxable wages relative to benefits. Array states with tax schedules (for example, Oregon) still need to have an indexed taxable wage base to avoid the financing problems associated with a low fixed taxable wage base.

Because the ratio of taxable to total wages remains approximately constant over time under an indexed base, the distribution of the tax burden across wage levels doesn't change over time. Whatever the state has decided is an appropriate distribution of the tax burden then remains relatively constant. This point suggests that states that calculate financing rates and tax rates each year may still want to have an indexed base even though it doesn't affect solvency.

Indexing can work with any level of the tax base, although currently the states with indexed bases also have the highest bases. Washington started to index at $4,800, but now has a base of $45,000. A state can start indexing from its current base, but if tax schedules are already inadequate and out of alignment, it is necessary to raise the wage base to a higher level before indexing and/or to fix the tax schedules.

There appears to be a close association between wage base indexing and solvency. At the beginning of the recession in December 2007, the average of the AHCMs for indexing states was 1.07, compared to an average of 0.65 for states that do not index. In 2015, the AHCMs for the 18 pre-2008 indexing states averaged 0.97, whereas for the other states the average was 0.60. Only 8 of the 18 state UI programs with pre-2008 indexation borrowed from the Federal government during the recession of 2007–2009 and its aftermath, whereas 28 of the 35 that did not index borrowed.

3) The most effective method for eliminating the financing impacts of a low fixed wage base is to **adopt a tax structure that responds to the level of total benefits paid and the trust fund balance by calculating a planned yield.** The planned yield could be determined as a percent of total wages and then

converted into a financing rate or average tax rate (by multiplying the planned yield by the ratio of total to taxable wages). Using this methodology makes the taxable wage base irrelevant to the level of contributions that are collected and a state can avoid any financing problems caused by a low or fixed taxable wage base. In 2016 five states make this calculation in their tax structures.

4) Also, in regards to a state that wants to change its wage base for short-term revenue purposes, adopting a responsive solvency add-on rate instead avoids all of the unintended experience rating impacts that are associated with increasing and decreasing the wage base. There are five states that alter their taxable wage bases based on changes in their trust fund reserves. These states could create a much simpler and more effective structure by simply adopting more responsive changes in their UI tax rates.

Issue 3) Ineffective Charges Are Too High and Are Not Recouped

Another serious financing issue is the inability to recoup an adequate portion of the benefits paid to claimants from employers at the maximum tax rate. States with unresponsive solvency taxes often find that, in recessions, benefits assigned to employers at the maximum tax rate increase dramatically and their method for covering these costs is inadequate.

In UI financing, there are three types of benefits generally considered to be "socialized" benefit costs:

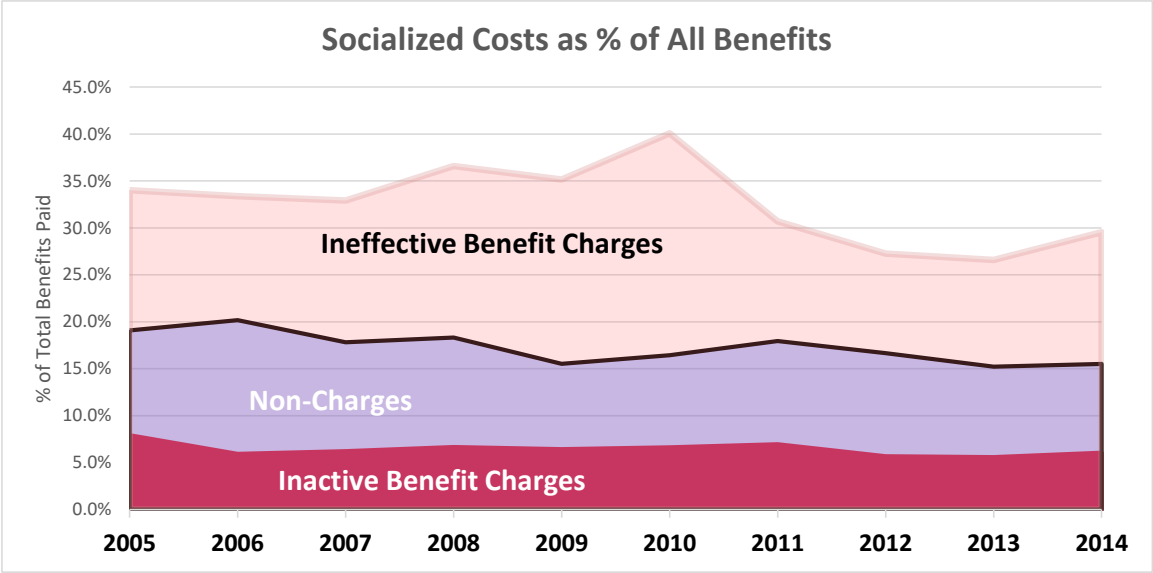
1) Non-charges**:** Benefits not assigned to individual employer experience rating computations**.**

2) Inactive Charges**:** Benefits assigned to employers that are no longer in business.

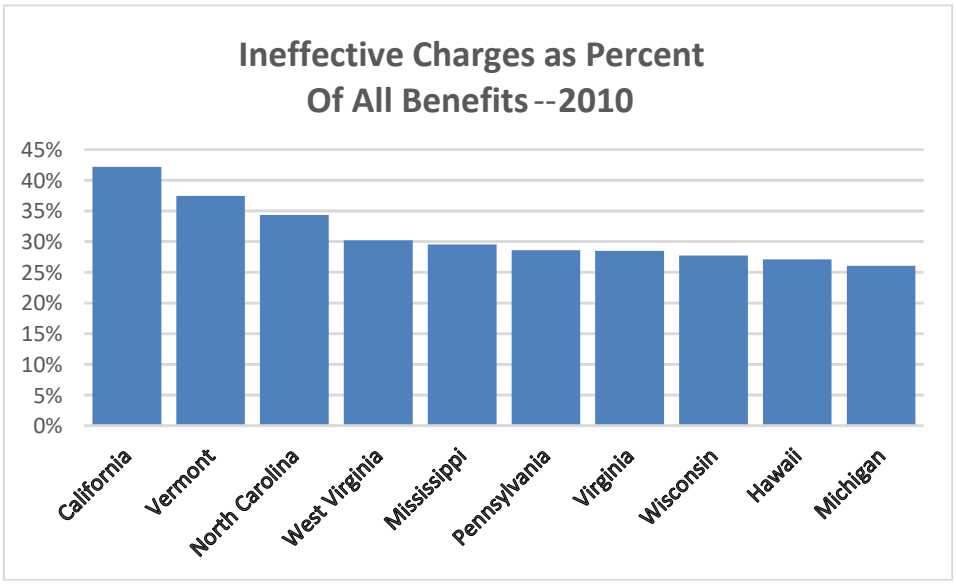
3) Ineffective Charges: Benefits assigned to employers at the maximum tax rate in excess of the amount of tax revenue from those employers.

In states with tax structures in which the level of solvency is dependent on explicitly accounting for and recouping each type of benefit payment, high socialized costs can be a serious issue.[12] Based on historical data, it appears that non-charged benefits and benefits charged to inactive accounts remain fairly constant at around 15-20% of total benefits, and do not often pose a significant financing problem. However, ineffectively charged benefits can increase by more than 50% during a recession and can be a crucial factor in states becoming insolvent. For example, in 2010, over 40% of total benefits paid across the U.S. were considered socialized costs and 24% were considered ineffective benefit charges or those benefit charges above the level of taxes paid by maximum-rated employers.

[12] For states that use a form of total cost targeting as their methodology for assigning tax rates, socialized benefit costs are not a serious issue because they cover those charges without explicitly identifying them.



For some states the level of ineffective benefit charges can be much higher. At the highest point following the Great Recession, ineffective charges were over 25% of all benefits in ten states.



Data are from the ETA 204 and are for computation years ending in 2010.

While this may not be a significant problem in states with responsive solvency taxes, it can be most serious in states with low maximum tax rates, or more precisely low maximum tax per employee, which is the maximum tax rate times the taxable wage base.

Those states that formulate tax rates by including a calculation for socialized charges do so in one of two ways, either by: 1) adding up all the socialized costs and then adding a

portion of those costs to the benefit charges of each employer before computing the employer's experience factor, or 2) computing an explicit add-on rate by adding up the total socialized costs and dividing by total taxable wages for the state.

Often following recessions the states using the first methodology (primarily Reserve Ratio experience rating states) find this method is inadequate because of its limited impact on the tax rate of any given employer. Contributions generated by using a socialized cost factor in the experience rating formula do not come anywhere close to the actual level of socialized charges.

Even states with add-on social taxes often do not adequately cover socialized costs. In one analysis, Vroman (2016) used a sample of ten states (eight with full data) over a ten-year period (2004–2013) and found that in none of the eight states did revenues from social taxes cover socialized costs, and only in four did revenues from social taxes cover as much as half of socialized costs. For the eight states as a whole, social tax revenues covered less than 45 percent of socialized costs.

Summary of Socialized Costs and Social Taxes, 2004–2013

	(1) Peak Socialized Costs as % of All Benefits		(2)	(3)	(4)	(5)	(6)	(7)
	%	Year		Socialized Costs ($millions)	Regular UI Benefits ($millions)	Socialized Costs as % of Benefits [=(3)/(4)x100]	Revenues from Social Taxes ($millions)	Social Taxes as % of Socialized Costs [=(6)/(3)x100]
Alabama	42.8	2011		1,224	3,320	36.9	754	61.6
Louisiana*	58.2	2011		1,318	2,456	53.6	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	n.a.	n.a.
Eight States				34,581	84,726	40.8	15,418	44.6

*Excludes 2006, when socialized charges were affected by Hurricane Katrina

n.a. Information not available

Sources: Data in columns (1)-(3) from ETA 204 reports. Column (4) from ETA Handbook 394, column (10). Column (6) from state agencies. Revenues from social taxes were available for eight of the ten states (all except Louisiana and Texas).

The percentages in column (7) make clear that, even in the relatively few states that levy an explicit tax to cover socialized costs, revenues from sources other than that tax must finance a significant portion of socialized costs. 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 maximums during 2004–2013.

The primary problems, in the states with low recoupment of socialized costs, are that either the amount of ineffective charges is not adequately accounted for in the social tax rate calculation or that there are strict limits on how much the social charge rate can grow.

For example, Ohio has a "Mutualized Account" which keeps track of benefits leaving the trust fund and not covered by experience-rated taxes, including non-charges and charges to inactive accounts, but not including ineffective charges. At the same time these charges to the mutualized account are offset by items that are credited to this account, including some solvency tax payments and FUTA credit reductions. The resulting Mutualized Rate, based on the mutualized account balance, is then subject to a rather low limit of 0.5% of taxable wages. The result is that very little of the measured social costs are covered by this add-on tax. For 2004-13, it was estimated that only 12 percent of socialized costs were recouped from this tax – the smallest of all the states measured. In Ohio the problem is not only the low limit but an arrangement whereby half of the state's solvency tax is used to finance socialized 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, but social taxes would still only have covered 38 percent of socialized costs.

In North Carolina total benefit charges to each employer are simply multiplied by 1.20 as a method to address the level of unassigned socialized costs, regardless of the actual level of socialized costs. It is easy to see that this method would be insufficient to meet a dramatic increase in ineffective charges. Increasing benefit charges to individual employers' experience rates (Reserve Ratio) will have an impact on revenues of much less than 20%. Many employers will have no contribution impact since they are located at the minimum or maximum tax rate intervals. In the last recession ineffective charges peaked (2010) at almost 35% of all benefits paid in North Carolina. The inability to recoup any significant portion of these benefits was a crucial factor causing the state to borrow such an extraordinarily large amount during this period.

Solutions

Reduce Ineffective Charges

1) Perhaps the most effective way to reduce ineffective charges, especially for those states that do not have a responsive solvency trigger or an adequate trust fund target mechanism, is simply to **increase the maximum effective tax per employee** (maximum tax rate times taxable wage base) by increasing the maximum rate and/or the wage base. There is a tradeoff, however, in that these increases in employer liability will somewhat reduce the insurance character of the program.

There are exceptionally large differences among state maximum effective taxes. States at the low end have per employee taxes that are one-sixth the taxes of those states at the high end.

Maximum Effective Tax per Employee by State – 2011
(Maximum Tax Rate x Taxable Wage Base)

Lowest Effective Maximum States			Highest Effective Maximum States		
1.	**FLORIDA**	$378	49.	**WYOMING**	$2,230
2.	**PUERTO RICO**	$378	50.	**IDAHO**	$2,264
3.	**ARIZONA**	$410	51.	**MINNESOTA**	$2,538
4.	**CALIFORNIA**	$434	52.	**NORTH DAKOTA**	$2,550
5.	**GEORGIA**	$459	53.	**UTAH**	$2,688

Perhaps the most dramatic example of raising the maximum effective tax rate was accomplished by Mississippi in 2013, when they doubled their taxable wage base from $7,000 to $14,000 and cut in half their add-on solvency rate so that there was no revenue impact on any employer except those at the maximum tax rate, who now had taxable wages twice as high as before. This change alone significantly increased the maximum effective tax rate and the level of contributions coming from the maximum rated employers.

2) Another method is to **assign higher rates to certain employers who qualify for the maximum rate**. One way to do this is to increase rates for employers who have been at the maximum rate for a certain number of years. This would reduce ineffective charges for the affected employers. Arkansas is a good example of this type of provision.

Arkansas -- After the second year that an employer is assigned the maximum tax rate an additional 2 percentage points is added to the employer's tax rate; after two more years at the maximum 4 percentage points are added; after two more years at the maximum 6 percentage points are added; and finally after another two years 8 percentage points are added.

Another way to do this is to make maximum-rated employers pay for a portion of what would otherwise be ineffective charges. This reduces the amount of ineffective charges to be covered by other employers. New Mexico is an example of this type of provision.

New Mexico -- Employers at the maximum rate pay an additional rate equal to 10% of the difference between an employer's adjusted benefit ratio and the maximum tax rate. For example, if an individual employer's benefit ratio is 13.4%, then the difference between 13.4% and 5.4% (the maximum tax rate) is 8.0% and the add-on tax rate is 10% of that difference (0.8%).

3) Another method is **to enact an explicit add-on social tax that is paid by all employers including those at the minimum rate.** In a Reserve Ratio experience rating state, this tax should not be credited to employer accounts because that would reduce the impact of the social tax. Wyoming is an example of a state with an add-on social tax based on a calculation of socialized costs:

   Wyoming - Each year the state calculates an adjustment factor for socialized costs by dividing the total of all benefits either noncharged or ineffectively charged during the preceding year by total taxable wages paid during the same period. This rate is then added to the employer's benefit ratio together with a solvency tax (with a cap of 1.5% of the two combined) to get the final tax rate.

   A state can make the add-on social tax even more effective by including in the rate an explicit accounting for the level of ineffective charges. Louisiana has a unique way of recouping ineffective charges:

   Louisiana - If an employer has a negative reserve balance (reserve ratio system) for a second consecutive computation date, 5% of the excess of benefits charged to that employer during the preceding year over the amount of contributions paid by the employer in the same period is charged to a negative reserve pool. The total amount in the negative reserve pool is divided by the total taxable wages of all active negative reserve balance employers and the resulting percentage is added to the tax rate of all such employers.

4) Finally, perhaps the most effective method for covering socialized costs is to use a total cost targeting approach, which sets the financing rate for the year based on some measure of total costs. Under this system, socialized costs do not need to be explicitly accounted for. Washington is an example of this approach:

   Washington - Each year the difference between the previous year's total benefits paid and contributions based only on benefits assigned to employer accounts is used to compute the overall "flat social cost factor." Employers are then assigned a "graduated social cost factor" that ranges from 40 percent of the statewide flat factor for employers with the best experience to 120 percent for employers with the worst experience.

Issue 4) Inadequate Tax Rate Adjustments for Changes in Trust Fund Solvency

All states adjust yearly tax rates based on the amount in their UI trust fund. However, many states have tax systems which implement very small yearly changes in tax rates in response to large changes in their trust fund balances which puts these states at much greater risk of insolvency.

All states vary their UI tax rates from year to year based on some measure of trust fund solvency[13] and then assign a single tax rate to an employer for an entire calendar year. Higher tax rates are assigned to employers when the state UI trust fund is below a desired level of solvency and lower tax rates are assigned to employers when the fund is above a desired level. For an effective tax system that provides an adequate level of financing, it is important that the increase or decrease in tax rates bears a reasonable relationship to the change in the solvency level of the fund.

Of prime importance in the design of a tax system is the objective of producing tax revenue over the long run sufficient to cover benefit cost rates falling within the range previously experienced by the state and maintaining a positive trust fund balance under most circumstances. It is desirable to establish a tax system in law which responds automatically to changes in benefit payments and trust fund levels. A system which relies on administrative interventions each year may be more flexible but opens the rate-setting process to subjective or political considerations.

States either use fixed sets of tax rates (referred to as schedules) with the number of schedules generally ranging between four and nine, or a single tax schedule with add-on rates (referred to as a solvency tax). Both operate in the exact same fashion -- by increasing or decreasing tax rates based on the size of the trust fund. The following table presents USDOL calculations of tax rate responsiveness for a number of states. The measure displayed is the increase in revenues as a percent of the decline in the trust fund balance between schedules or solvency rates. For example, Alaska has two levels of rates above its base schedule that increase tax rates. For the first level, we estimate that for each dollar that the trust fund falls, taxes are increased, on average, by $0.28 and for the second level for each dollar the trust fund falls taxes are increased, on average, by $0.58.

[13] Solvency, in this usage, refers to the ability of the trust fund to meet future benefit payments.

Ratio of Revenue Change to Balance Change between Schedules (Lowest to Highest) for Selected States

	Tax Schedules or Solvency Rates Above the Base Schedule										
Alaska	28%	58%									
Arizona	18%	18%	18%	18%	18%	18%	7%	5%			
California	24%	23%	22%	30%							
Florida	35%	41%									
Maryland	105%	106%	92%								
Massachusetts	54%	59%	66%								
Mississippi	27%	60%									
Montana	33%	41%	55%	49%	49%						
New York	15%	21%	12%	16%	18%	15%					
Oregon	24%	24%	22%	26%							
Pennsylvania	28%	37%	44%	35%	17%						
Texas	48%	98%									
Vermont	13%	14%									
Virginia	37%	34%	33%	34%	33%	35%	33%	35%	33%	35%	102%
Washington	43%	24%									
West Virginia	34%	16%									

The base schedule, for this derivation, is assumed to be the one in effect when the trust fund balance is in target range. For those states with calculated solvency rates, yields were estimated at appropriate points of the trust fund balance. The yields for tax schedules are based on assumed distributions of taxable wages. Tax schedule yields include all revenues available when that schedule is in effect -- total revenues include: specially-rated employers, new employers, social taxes, solvency taxes, employee taxes, governmental special schedule taxes, and interest earnings.

This table demonstrates the wide range of tax rate responsiveness across states. We would generally expect states with greater responsiveness to have higher trust fund balances in 2016, six years after the end of the recession, than states with lower responsiveness. A number of states bear out this expectation. On the high responsiveness side, Maryland, Alaska, Montana, and Mississippi have relatively responsive tax rates. For example, for Maryland, the first schedule above the base schedule has a $1.05 increase in tax revenues for every $1.00 decrease in the trust fund and for its second schedule there is a $1.06 increase for each $1.00 decrease in the fund. None of these states borrowed and all four have restored their balances to pre-recession levels. For Montana, the ratio of the 2016 average tax rate to their adequate financing rate (see Issue 1 and Appendix A) is also good.

Arizona, New York, and California are examples of states with non-responsive tax rates that borrowed significant amounts, had very low solvency levels in 2016, and have low ratios of average tax rate to adequate financing rate.

Some states do not fit the expected pattern because there are other factors besides responsiveness that contribute to solvency. For example, Vermont has the least tax rate responsiveness of the states shown in the table, but its trust fund has recovered very

well after substantial borrowing. One of the key factors in their recovery is that they doubled their taxable wage base since 2009.

Solutions

1) The most effective methodology for having taxes respond to changes in trust fund solvency is to **use a formulation for the level of desired revenue each year that is based on some level of past benefit payments and the current trust fund solvency level compared to the target level.**

   In 2016 there were eight states that used some measure of total benefit costs and the size of the trust fund in formulating their aggregate level of revenue for the year. Some of these states compute a planned yield[14] based on both the trust fund solvency level and expected benefits and then use a set of factors to calculate a schedule of tax rates. For example, Alaska starts with the most recent 3-year average benefit cost rate, calculates employer tax rates above and below the average using pre-determined factors, then adds a solvency adjustment calculated from the difference between their current state reserve ratio and their desired target reserve ratio. Several other of the eight states trigger a planned yield based only on trust fund solvency measures.[15] For example, Maine has eight planned yields which are triggered by the state reserve ratio. Employer tax rates are then calculated from the planned yield. The downside of using fixed planned yields is that they cannot adjust to changes over time in the long-run average benefit cost rate.

2) Another effective methodology that ensures that tax revenues are responsive to trust fund solvency changes is to **create a solvency add-on tax that is calculated by taking a fixed proportion of the difference between the current trust fund balance and a target balance.** This amount is then converted into a rate on taxable wages that is added to the base tax rate of each taxable employer. In 2016 five states[16] use this type of "gap closing" methodology.

   If the gap-closing proportion is the same for all schedules (e.g. a solvency add-on designed to close one-fifth of the gap), it may be difficult to fully close the gap if benefits are near the long-run average from which the base financing level is determined. This is because, as the balance gets close to the target balance, the

[14] A planned yield refers to the desired amount of revenues determined by a state before individual tax rates are calculated and assigned to employers. It is usually expressed as a percent of total wages.

[15] Some states partially adjust for benefit changes by using a measure of benefits, either high-cost rate or average-cost rate, in their tax schedule triggers, but their planned yields are not adjusted. If the long-term BCR changes, the de facto base schedule will change and the implicit target balance will change, but by less than if the BCR were not in the trigger.

[16] Connecticut, Florida, Mississippi, North Dakota, and Texas are considered to have some form of a gap closing methodology. South Carolina and Nevada also consider the difference between the projected level of the trust fund balance and the current level but these states do not use an explicit target trust fund balance.

gap gets smaller but so does the solvency add-on -- still only closing one-fifth of the smaller gap. In practice, the target balance will eventually be reached, but in a longer time than expected, because typically benefit costs are lower than average during an economic expansion when the trust fund is being built up.

At least three states have innovative features to address the possibility of not being able to fully close the trust fund gap:

North Dakota: Computes a solvency adjustment designed to close the gap in seven years, but they take account of the number of years that have elapsed. The first year, the solvency add-on is designed to close one-seventh of the gap. The second year the solvency add-on equals one-sixth of the gap, and so on.

Florida: Computes a solvency tax that is based on a balance higher than their target balance. The solvency tax triggers on when their state reserve ratio is less than 4.0%, but the solvency tax is computed to close one-fourth of the gap between the current balance and a 5.0% reserve ratio. When the fund reaches 4.0%, the solvency tax triggers off again.

Ohio: This state uses a type of ratcheting add-on solvency tax. Once a rate is in effect, they can't go to a lower rate until they reach the target balance. Thus, the gap-closing proportion increases as the balance gets closer to the target.

Another possible method is to vary the gap closing proportions across solvency rates or schedules. For the highest set of rates (triggered by the lowest fund balance), the solvency add-on might be set to close 30% of the gap. This percentage would then increase as you move across schedules or solvency rates towards the base schedule.

3) A third solution is to **redesign the tax schedules that are in effect when the trust fund is below the desired solvency level, so that the level of tax rates in each succeeding tax schedule will provide a level of revenue that replaces a reasonable proportion of the decline in the trust fund level which triggers that schedule**. Generally, using a proportion between 30% and 50% is considered a reasonable range that produces a smooth path towards building an adequate trust fund reserve. (This means that the extra revenue generated by a tax schedule relative to the previous schedule would be between 30% and 50% of the difference between the trust fund value that triggered on the schedule and the previous schedule's trust fund trigger level). Proportions that are less than 20% will slow trust fund buildup and proportions that are greater than 60% will reduce counter-cyclicality.

   A related feature, used by a small number of states[17] is to have an emergency tax that can trigger on at the beginning of any calendar quarter. This last method is certainly responsive, but it has the downside of putting the additional tax burden on lower-wage employers and workers if the emergency tax is triggered in any calendar quarter except

[17] New Hampshire and Oklahoma both have quarterly emergency taxes in place.

the first, since the taxable wage base is reached earlier in the year for higher-wage workers.

Issue 5) Unresponsive Solvency Triggers

Many states have triggers for solvency adjustments that do not adequately respond to higher or lower levels of benefit payments. These triggers were often set a long time ago and did not include features that would keep them updated.

While the previous issue concerned the level of tax rate adjustment in response to changing solvency levels this issue focuses on the trigger formulation for initiating the tax rate response. The problem in many states is that the trigger values that are meant to initiate higher tax rates have not been properly set.

One clear indication that a solvency trigger is not working properly is when a state with multiple tax schedules or solvency tax levels remains at the same tax level over many years despite having the trust fund increase or decrease dramatically. One reason for a state tax structure not to respond to an increase in benefits with higher tax rates is that the state's trigger values are improperly structured, most likely because they have not been updated for many years. Solvency triggers, which are maintained by every state, can be divided among three methodologies:

Dollar Amount – The simplest measure and easiest to understand is to use the dollar balance of the trust fund to define at which points the average tax rate will increase or decrease. This measure is the least desirable because a given dollar trust fund level becomes less adequate over time as employment growth and average wage growth increase the potential liability of the trust fund. Using this measure as a tax schedule or solvency rate trigger requires frequent legislative adjustments to the trigger values in order to maintain an adequate fund level; otherwise the trigger values become ineffective. In 2017 there were nine states that used this measure, of which eight needed to borrow during or after the 2007-09 recession.

Reserves as a Percent of Total Wages (Statewide Reserve Ratio) – The most widely used approach to measuring trust fund balances is to express the fund balance as a percent of total covered wages.

Statewide Reserve Ratio = 100% x (Fund Balance / Annual Total Wages)

Usually, wages paid by reimbursable employers are excluded from the calculation. This measure is preferable to the dollar amount approach since it automatically adjusts for employment and average wage growth over time. The implication is that the fund balance has to grow at the same rate as total wages to keep the reserve ratio constant. In 2017, twenty-five states used this measure, including seven that used taxable wages instead of total wages. Ten of the eighteen states using total wages borrowed during or after the

2007-09 recession, while all seven of the states using taxable wages were forced to borrow.

It is preferable to use a state's total wages for this measure, rather than total taxable wages, because in a state with a fixed taxable wage base, taxable wages grow more slowly than total wages and thus don't keep up with the potential liability of the trust fund (since benefits tend to grow with total wages). For a state with an indexed taxable wage base, a trigger measure based on taxable wages would have the same effect as a measure based on total wages since the relationship between taxable and total wages is almost constant.

The reserve ratio measure is somewhat deficient in that it does not include any measure of benefit payouts. If benefit costs, particularly for high-cost years, change over time relative to total wages, legislative adjustment to an adequate level of reserves and the triggers may be necessary.

Benefit Cost Multiple (or Reserve Multiple) – This measure compares the trust fund balance to some measure of past benefit costs. It puts the balance in a better perspective by showing how it relates to the state's benefit costs. The general formula is:

Benefit Cost Multiple = (Reserve Ratio) / (Benefit Cost Rate)

where: Benefit Cost Rate = 100% x (Benefits Paid) / (Annual Total Wages)

A benefit cost multiple adjusts automatically to changes in benefit cost experience. Costs can be measured in a number of ways, including: the highest-cost year ever, the highest-cost year over some recent time period, the average of several high-cost years, or average cost (not just high-cost years) over some time period. Generally, cost rates are based on benefits paid to workers from taxable employers only. In 2017, eighteen states used some variation of this measure. Ten of these states borrowed during or after the 2007-09 recession.

It is preferable to calculate this measure using high-cost years rather than an average of a specified number of consecutive previous years. First, it is the high-cost years that better measure the potential liability of the trust fund. Second, an average-cost measure changes every year whether or not the potential liability (high-cost) changes. Third, a short-term average may not even include any high-cost years, so it is misleading in terms of what the trust fund might face. An average cost rate covering at least 10 years, preferably longer, may mitigate this last concern.

The measure most often used in reporting by USDOL is one recommended by the ACUC called the Average High Cost Multiple (AHCM).

AHCM = (Reserve Ratio) / (Average High Cost Rate)

where: Average High Cost Rate = average of the three highest annual benefit cost rates in the last twenty years (or a period including three national recessions, if longer).

This measure uses an average of three high-cost years to minimize the impact of a single, possibly atypical recessionary year. It includes at least three recessions to ensure some diversity of cost experience, but does not reach back to the beginning of the program.

Another measure that has been used historically is the High Cost Multiple (HCM), sometimes referred to as the Reserve Ratio Multiple in the literature. This measure uses the highest historical one-year cost as the cost measure, so this solvency measure is always lower than the AHCM.

Measures based on past high cost are considered the most responsive type of measures since these measures put the trust fund balance in perspective relative to potential future high benefit costs.

Solutions

The most effective method of fixing unresponsive solvency triggers would be to **adopt a trigger that is formulated to be more responsive to recent changes in trust fund solvency.** If a state currently has a solvency trigger based on a dollar value of the trust fund it should look to adopting one based on either the state reserve ratio or a benefit cost multiple. If it currently has a reserve ratio trigger, modifying it to include a measure of benefit costs would be an improvement. Also, whichever trigger is used, if a target balance is determined and the variation in financing rates is based on the difference between the target and the current trust fund, then this provides a revenue response in the tax structure.

In addition, there are several other relatively smaller factors that can play a role in improving the operation of solvency triggers:

1) One method is to move the trust fund trigger date closer to the date when new rates take effect so that a drop in the fund balance late in the year can be immediately reflected in higher tax rates.

2) A state can also narrow the range of trust fund triggers for the base schedule, so that small declines in the trust fund balance immediately cause higher rates to be triggered.

All of these strategies would effectively increase the responsiveness of the state's tax structure to increases in total benefits paid. With greater responsiveness the state would also be able to maintain a lower trust fund balance than otherwise, since the faster tax response will assist the state in avoiding longer periods of insolvency. It is important to note, though, that there is a tradeoff between tax responsiveness and counter-cyclicality.

Section C

Implementing Alternative Measures of Experience Rating

The decision to use experience rating methodologies in UI financing was made in 1935, at the time the UI program was first enacted. Since that time both the program and the economy have undergone enormous changes which have now made the operation of these systems, in many states, antiquated and inefficient in their operation.

Historical Application of Experience Rating

Experience rating is an insurance principle whereby some part of the premiums vary with exposure to the risk insured against. The United States is the only country in the world that uses experience rating in its UI financing system. At the time of discussion and debate preceding passage of the Social Security Act of 1935, there was much support for the idea that employers should maintain their own UI accounts from which benefits would be paid to previous employees with no sharing between accounts. This form of financing, it was believed, would provide an incentive to stabilize employment. At that time, most existing programs followed what was called the Wisconsin model in which individual employers maintained their own UI accounts from which benefits were paid to their employees.[18] With this in mind the Committee on Economic Security recommended experience rating of employers as a basis for setting tax rates and experience rating was eventually included in the Social Security Act.[19]

The primary difficulty then became converting a system that was based on individual accounts, from which benefits were limited to the amounts in the accounts, into one that is based on a pooled account from which all benefits are paid. At first states actually constructed separate funds, one for each employer and another to cover all socialized costs. It wasn't until 1949 that all states had merged their funds into one pooled account, but even then a large number of states decided to maintain a financing structure built on

[18] Two other objectives attributed to experience rating emerged over time. First, experience rating was expected to achieve a proper allocation of UI benefit costs among employers. Second, experience rating encourages employers to police the system by challenging improper claims.

[19] Federal law allows, but does not require, states to use experience rating in assigning tax rates to individual employers. The Federal Unemployment Tax Act (FUTA) imposes a federal tax on wages paid by all UI covered employers, but allows an employer a credit of 90 percent of that tax if certain requirements are met. One federal financing requirement is that any reduction in employer UI tax rates from the standard rate (5.4% for this purpose) be based primarily on an employer's "experience with respect to unemployment or other factors bearing a direct relation to unemployment risk."

the concept of maintaining individual employer accounts even though benefits are not paid from these accounts. The desire to maintain individual responsibility in a pooled insurance type plan creates numerous difficulties which are highlighted below in order to provide the rationale for presenting alternative methods. Alternative methods of experience rating which can easily be incorporated into a pooled insurance type financing plan are then proposed as simpler and more effective means of rating employers.

Problems with the Current Methods of Experience Rating

Reserve Ratio

The so called "Wisconsin system" was based on maintaining actual individual employer accounts from which benefits paid to former employees were debited. Prior to the establishment of the national program, when an employer's account was exhausted his former workers stopped receiving benefits. Afterwards, all states paid all eligible claimants, and eventually, all states established pooled systems whereby claimants were paid from a central fund. However, the maintenance of individual employer accounts remains the basis for the Reserve Ratio experience rating systems present in the majority of state UI programs today, even though it is not a necessary feature of a pooled system.

The Reserve Ratio method of experience rating generally requires that a complete history of UI benefit charges and tax contributions be maintained for each employer.[20] The reserve balance, the difference between the tax contributions and benefits, is recorded on the computation date (usually June 30 or September 30) each year for each employer. The reserve ratio for an employer for any given tax year is the reserve balance divided by the average of annual taxable wages over some preceding period.

Employer Reserve Ratio = 100% x Employer Reserve / Average Taxable Wages

where: Employer Reserve = Sum of Contributions – Sum of Benefit Charges

Average Taxable Wages = Average over a fixed number of years (usually three)

The employer's reserve ratio is applied to the tax schedule in effect for the year to determine the rate for the upcoming year. The number of states using the Reserve Ratio system peaked at 33 states in 1958. Since then, a few states have switched to Benefit Ratio, leaving 29 states (plus two Benefit Ratio states that use Reserve Ratio elements).

[20] A small number of states use a specific number of years or a cutoff date rather than the entire length of existence for each employer.

The Reserve Ratio experience rating system was not really a plan to grade employers' experience as much as an accounting formulation for individual employer accounts, so it does have numerous drawbacks when it is applied to a pooled rating system, such as:

1) A reserve ratio is a poor measure of unemployment risk because it relies on using the amount of previous employer contributions, which has very little to do with an employer's experience with unemployment. Even more problematic is that in a pooled fund there is no longer any relationship between the individual employers' reserve amounts and the amount in the state's pooled trust fund account. So states using this method are at a loss to determine reasonable tax rates for each level of reserves that employers have accumulated.

2) A Reserve Ratio methodology provides incentives that are contrary to employment stabilization and growth. As employment grows for an individual employer so do taxable wages, so that the denominator in the reserve ratio formula 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. Also, when an employer builds a large positive reserve there will likely be no impact on the employer's tax rate when layoffs occur, which actually reduces the incentive to stabilize employment. Similarly, employers with large negative reserve balances will also have no impact on their tax rates from making additional layoffs so again there is no incentive for stabilizing employment for these employers.

3) It is difficult to apply social and solvency taxes to an individual employer's reserve ratio formula. The Reserve Ratio formulation is based on a concept of individual employer responsibility rather than pooled costs. However, a high proportion of benefits paid from the state fund are not assigned to individual employers. As a result, to generate sufficient revenue to cover all benefit costs a Reserve Ratio financing system has to develop a procedure to cover socialized costs, which often requires complex manipulations to the reserve ratio formula. This makes the assignment of UI tax rates in Reserve Ratio states a task of continual adjustment entailing the addition of new tax schedules or adjusting the taxable wage base.

Benefit Ratio

Benefit Ratio is the second most popular experience rating method. The number of states using this methodology has increased from five in 1958 to seventeen in 2017 (two of these use the reserve ratio as a secondary measure). This method also relies on assigning benefits to specific employers, but does not credit contributions to the employer. The general formula for computing an employer's UI benefit ratio is:

Benefit Ratio = 100% x (Sum of Benefit Charges over X yrs.) / (Sum of Taxable Wages over X yrs.)

where: X is the number of years in the benefit ratio computation (usually 3-5)

To derive tax rates for individual employers states start by calculating the benefit ratio for each individual employer. Then statewide ratios, to cover socialized costs and solvency adjustments, are added in to arrive at a final tax rate that is set between a desired minimum and maximum tax rate. To better allocate assigned tax rates across groups of employers, four states use the total cost targeting procedure (see Section A).[21] Since this approach focuses on the desired tax yield, there is no explicit influence of socialized costs in determining the total tax rates for individual employers.

While the Benefit Ratio methodology does have some positive attributes, such as incentives to stabilize employment and to police the system and allocation of benefit costs, there are also several drawbacks to using this methodology, such as:

1) Most importantly, this method, just like the Reserve Ratio method, relies on the process of assigning benefit charges to individual employers. States and employers bear significant administrative burdens as a result. The state must make numerous decisions on assigning ("charging") benefits to individual employers, such as: determining which employer (or employers) to charge, sending notices to employers, tracking benefit payments, maintaining employer accounts, and providing appeals procedures. Employers also have the burden of keeping detailed records on the exact type of separation and responding to notices and this system can also create an adversarial relationship between employers and employees.

   Reliance on benefit charging assumes that benefit costs can in fact be accurately and easily attributed to individual employers, when in reality there is a good deal of difficulty in this process. When a claimant has had multiple recent employers, a variety of somewhat arbitrary methods are used to charge benefits to the appropriate employer or employers. Even in the case of a single employer, there is a question as to whether that employer should be responsible for benefit duration in addition to benefit incidence. Due to changes in the working environment, employers generally have less control over the length of unemployment benefits for laid off employees than in the past. In particular, temporary layoffs are a smaller proportion of overall unemployment in recessionary periods than in the past. Also, temporary full and part-time workers have grown in importance as firms have relied on them to meet their changing labor needs.

2) Another serious concern is the clustering of employers at low tax rates in the Benefit Ratio system. Because so many employers, in many years, have such

[21] 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.

few benefits assigned to them, a large number of employers in Benefit Ratio systems have zero or very low benefit ratios. These employers are often small, paying below-average wages, and their share of all covered employers is larger than their share of statewide taxable wages. Vroman (2016) 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 has averaged about fifty-five percent since 2009 in Benefit Ratio states. This has implications for setting the minimum tax rate. The ability of state systems to finance socialized charges and to restore trust fund balances after a drawdown depends on revenues from employers at the bottom range of tax rates.

Other State Experience Rating Methods in Use

Two other experience rating methods are currently in use: the Benefit Wage Ratio approach, used by two states, and the Payroll Decline method, used by one state.

In the Benefit Wage Ratio method, for each employer a ratio is derived by dividing benefit wages, which are UI taxable wages paid in claimants' base periods, usually over three years, by the sum of taxable wages paid to all employees over the same three years. The formula for computing an employer's UI benefit wage is:

Benefit-wage Ratio = (Sum of Benefit Wages) / (Sum of Taxable Wages) (over three yrs.)

Tax rates are determined by multiplying each employer's benefit wage ratio by a statewide experience factor. The statewide experience factor is equal to total statewide benefit payments in the prior three years divided by statewide benefit wages charged over the same three year period. Solvency assessments are also imposed based on the state's trust fund balance. Benefit Wage Ratio was once more popular than Benefit Ratio, but the number of states using it has declined from nine in 1948 to two in 2017.

In the Payroll Decline methodology, an individual employer's average payroll decline quotient is measured by taking the percentage decline in total UI-covered wages from quarter to quarter over a three year period preceding the computation date. Increases in quarterly wages are treated as zero percent declines, while consecutive quarters of zero wages are treated as 100% declines. The percentage payroll declines are then averaged over the twelve quarters. The average percentage decline in total wages is computed as:

Average Payroll Decline Quotient = (Sum of Quarterly Payroll Decline Quotients) / 11

where: Quarterly Payroll Decline Quotient (t)
= (Total Wages (t) - Total Wages (t-1)) / Total Wages (t-1)

t denotes the current quarter, t-1 the prior quarter

All employers are then ranked by their average payroll decline quotient and placed into tax rate intervals with predetermined proportions of total taxable wages. Tax rates for each rate group are calculated from the desired average tax rate. The popularity of Payroll Decline has also declined over time, with the number of states dropping from seven in 1948 to just one in 2017.

The most serious drawback in both of these methods is that greater weight is given to higher-wage workers which may at times provide an incentive to lay off lower-wage workers instead of higher-wage workers to limit the impact on the individual employer's benefit wage or payroll decline experience factor. In a Benefit Wage Ratio state, this effect is mitigated if the taxable wage base is very low since taxable wages for low-wage and high-wage workers will then be similar.

Alternative Methods of UI Experience Rating

This section presents several alternative methods of experience rating that are not currently in use.[22] These methods can either be used in conjunction with the state's current method or used individually. Each of these methods provide options for emphasizing additional factors in unemployment risk as well as providing methods that would avoid the need for benefit charging or avoid the additional problems that are associated with the current methods of experience rating, primarily the Reserve Ratio method.

Problems with benefit charging were recognized early on in the program and even caused USDOL to recommend payroll variation as the preferred experience rating method in its 1950 model legislation issuance.23 While few states have been willing to adopt alternative methods, this Guide provides an outline of how a state can adopt a method that does not rely on the assignment of benefits to individual employers.

It is important to note that when properly implementing these, or any, experience rating method it is appropriate and necessary to first calculate an overall financing rate for the year from which individual or group increases and decreases are assigned based on an employer's experience rating ranking. It is not necessary for the experience factor itself to equate to a specified level of taxes.

1) Employment Variation Index

This measure would use the change in employment by quarter divided by average employment over the past three or more years. Employers with the biggest relative increases in employment would receive the largest reductions in their UI tax rates while those with the biggest relative decreases would receive the highest rates. This method is essentially an extension of the payroll decline method. The main differences are that this

[22] Each of these methods would meet the requirements of Federal law and thus would not put the employer's additional FUTA credit at risk.

[23] This recommendation was contained in the "Manual of State Employment Security Legislation," revised September 1950 and reissued August 1970.

index uses employment instead of wages and that increases are considered as well as declines.

This index would be calculated by computing an employment change percentage for each quarter over a three-year period (for example) and averaging those quarterly changes over the whole time period. The quarterly employment change percentage would be calculated as follows:

Employment Change Percentage (t)
= 100% x (Employment (t) – Employment (t-1)) / Average Employment

where: Average Employment = the average of the quarterly employment levels over 12 quarters

t denotes the current quarter, t-1 the prior quarter

The employment variation index is then:

Employment Variation Index = (Sum of Employment Change Percentages) / 12

Note that this method requires thirteen quarters of wages to compute twelve quarterly changes. This measure could be computed using any number of years. Using fewer than three years would make individual employer tax rates more responsive to changes in employer experience, but is not allowed under Federal law. Using more than three years would make employer rates more stable.

Note that the denominator for the employment change percentages is average employment rather than the prior quarter's employment. Due to seasonal shutdowns and other temporary suspensions of business operations, many active employers may show zero employment in some quarters. Zero employment in a quarter prevents computation of a growth rate from that quarter because division by zero would be required. Similarly, a small employment level may produce a very large percentage increase the next quarter.[24] To correct for this potential problem each quarterly employment change is divided by the average employment level over the chosen time period. Very small employers may still exhibit significant volatility, so the percentage increase may need to have an arbitrary limit (for example, 100%).

A primary motivation for this measure is to reward employers for employment increases, which the Reserve Ratio system initially penalizes with higher tax rates. In this method those employers with the highest rates of hiring would now receive the lowest tax rates, thereby encouraging employment increases. However, using this index would still incorporate a measure of unemployment risk into experience rating to the extent that employment declines are associated with increased layoffs and employment increases reduce the probability of layoffs occurring.

[24] Note that Alaska doesn't have this type of problem because they only use declines

To implement this method a state would first calculate a desired financing rate from which increases and decreases would be assigned to groups of employers that would be ranked by their employment variation indexes. So, rather than a tax rate being assigned for a pre-specified level of the employment variation index, the rate would depend on the employer's relative ranking of employment changes. Not only would this method provide a greater incentive for employment increases, but it also eliminates the need for individual employer benefit charging, making it extremely simple to compute and understand.

2) Weighted Employment Variation Index

One potential weakness of the employment variation measure described above is that employers with fluctuating employment, such as seasonal employers, may have a zero average employment change over time because each employment decrease is matched by an increase. These employers would have the same average employment change as employers that maintained constant employment, even though the former group likely produces more benefit costs. To improve this method's ability to reward actual employment increases, an alternative approach would be to give greater weight to employment decreases than to employment increases.

Weighted Employment Variation Index = ((sum of positive percent changes) + 2 x (sum of negative percent changes)) / 12

In this example, employment reductions are given twice the weight of employment increases. These weights can be set however the state chooses. The higher the weight on employment reductions the greater the ability of this method to reward employment increases.

Using this method would eliminate the need for benefit charging and still provide strong incentives for employment increases while penalizing those employers that have greater fluctuations in employment. Again, this method may not produce the same level of employer policing of the system that a benefit charging method provides, but it does eliminate the need for individual employer benefit charging, which makes it simple to compute and understand.

3) Payroll Variation Index

This index would be calculated in the same way as the employment variation index except that changes in total wages are used instead of changes in employment.

Payroll Change Percentage (t) = 100% x (Total Wages (t) – Total Wages (t-1)) / Average Total Wages

where: Average Total Wages = the average of the quarterly total wage levels over 12 quarters

t denotes the current quarter, t-1 the prior quarter

Payroll Variation Index = (Sum of Payroll Change Percentages) / 12

This measure is similar to the employment variation index, except that employers would also be rewarded for wage increases or for replacing lower-wage jobs with higher-wage jobs and would be penalized for the opposite behavior.

This method would still have employment stabilization effects, but would give employers an incentive to lay off lower-wage workers rather than higher-wage workers to reduce payroll change. There would be no incentive for employers to police the benefit system and allocation of costs would not be as effective as a benefit charging system.

Again this method would be simple to administer and explain. It would reward employment and wage increases. Just like the employment variation index it could also be implemented as a **Weighted Payroll Variation Index.**

A weighted payroll variation index would give greater weight to payroll decreases than to increases. For example,

Weighted Payroll Variation Index = ((sum of positive percent changes) + 2 x (sum of negative percent changes)) / 12

This would be similar to the existing Payroll Decline system, but that system goes further by giving zero weight to payroll increases.

4) UI Layoff Rate (or Compensable Separation Rate)

A more direct measure of unemployment risk is the UI Layoff Rate or Compensable Separation Rate. At the firm level, this involves counting the number of separations resulting in UI payments over a period of time. The UI Layoff Rate could use total or average employment over the period as the denominator.

In this methodology, on the computation date each year the state would compute the UI Layoff Rate by counting the number of separated workers who had received UI benefits over the previous three (for example) years and then divide that count by the employer's average employment level.

UI Layoff Rate = (total compensable separations over a 3-year period) / (average employment over the same 3-year period)

It may be desirable to only count separations resulting in a minimum number of UI weeks paid (e.g. four weeks). Claimants who drew very little in benefits because they found another job quickly would not count against the employer. On the other hand, short-term temporary layoffs (e.g. for retooling in the auto industry) have recently been as high as 16.7% of total claims, so exclusion of short-duration claims could have a significant impact on the relative distribution of individual employer tax rates.

This method has similarities to both Benefit Wage Ratio and Benefit Ratio methods. Benefit Wage Ratio reflects the number of claimants, but gives greater weight to higher wage workers. Benefit Ratio also reflects the number of claimants, but gives greater weight to higher wage workers and those who have a longer duration of benefit receipt. In contrast, the UI Layoff Rate counts all claimants equally.

Under the UI Layoff Rate method, the state would still have to make a charge/noncharge decision and determine which employer or employers to charge, so this method would be more burdensome than the employment variation or payroll variation methods. However, benefits would not need to be tracked after the initial determination was made, so there would be some administrative savings compared to benefit-charging methods.

The primary strength of this measure is that, because all claimants are counted equally, this is the purest measure of unemployment risk. There is no weighting for wage levels or benefit duration. However, because wage levels are not reflected, there would likely be a shift in the tax burden from higher-wage to lower-wage employers. Benefit payments would not have to be tracked and the method provides an incentive to minimize the length of temporary layoffs and for employers to police the system. However, in this method there would still be a charge/non-charge decision necessary, with the associated employer notices and appeals process.

5) Hybrid Experience Rating System

One potential option for assigning employer rates is to combine two or more experience rating methods that reflect unemployment risk in different ways, getting the advantages of each of the methods. For example, half of the overall desired financing rate could be assigned based on the Employment Variation Index and half on the UI Layoff Rate, or half based on the Benefit Ratio method and half on the Employment Variation Index. In fact a state could combine several different methods if it wished (a simulated example of a hybrid system appears in Appendix B).

The primary rationale for implementing a combination of experience rating methods would be to both incentivize and penalize various aspects of the risk of making layoffs. For instance, if a state combined one of the new methods with an existing method such as Benefit Ratio, this would still allow the state to take advantage of the incentives inherent in benefit charging but would also allow clusters of employers with zero benefit ratios to be broken up into multiple tax rate categories based on the second measure of unemployment risk. The downside of using multiple experience rating methods is that it adds administrative complexity and is more difficult for employers and others to understand.

Combining experience rating methodologies could be done in one of several ways. The most direct method would entail dividing the overall financing rate into two or more pieces corresponding to the experience rating methods to be used. For each piece of the financing rate, rates would be assigned to individual employers such that the average rate is equal to that piece of the financing rate. The employer's final rate would then be the sum of the rates from the different experience rating methods. The pieces of the financing rate may be equal or not equal, depending on the weight one wants to give to the experience rating methods used.

> A financing rate, for example, of 3.0% could be divided into pieces of 2.0% determined by the Employment Variation Index and 1.0% based on the UI Layoff Rate. To achieve this, the state can either adjust the rates assigned under the Employment Change Index so they would generate a 2.0% average tax rate or rates could be left to generate a 3.0% average and then simply multiplied by two-thirds. Similarly the rates under the UI Layoff Rate could be adjusted to generate a 1.0% contribution rate or simply multiplied by one-third.

Another possibility is that one method could be the primary method and the other the secondary method (Michigan and Pennsylvania currently have hybrid systems in which Benefit Ratio is the primary method and Reserve Ratio is the secondary method). In this case the primary method tax rate is first derived and then is adjusted up or down based on the secondary method.

6) Flat Tax

Finally, it should be mentioned that if a state is looking to operate the simplest rate assignment methodology -- one that does not necessitate the assigning of benefit charges to individual employers -- then another method to achieve that goal would be to simply assign a flat tax rate to all employers.

While the type of experience rating is regulated by Federal law, a state is able under certain conditions to assign a flat tax to all employers. A flat tax (which is what all other countries use) can be used in the U.S., but in order for all employers to get the full FUTA credit, a state must have a maximum tax rate of at least 5.4% of taxable wages and a taxable wage base of at least $7,000. Therefore in order to use a flat tax, the flat tax rate for any year would have to be at least 5.4%. Practically, this option is only available to states with high costs and low taxable wage bases.

In the past, three states[25] have suspended the use of experience rating for a period of time and did charge all their employers a flat rate. These states did so for solvency reasons and at the same time eliminated the need for benefit charging methods to assign tax rates during this period.

[25] Washington, Rhode Island and the District of Columbia all used a flat rate at certain times -- each did so when the standard rate was 2.7% rather than the 5.4% that is the minimum maximum rate for full FUTA credit in 2017.

Conclusion

The methods presented above provide viable options for those states wanting to operate a simpler, more efficient experience rating methodology. Besides ease of operation and understandability each method should be evaluated for its ability to provide employer incentives towards employment stability and to allocate the costs of the UI program in some equitable fashion. To assist in that evaluation a simulation analysis is provided in Appendix B which measures the quantitative impact of these methods compared to a Benefit Ratio methodology.

Appendix A

Constructing an Adequate Financing Rate

This section describes the steps necessary to construct a measure to evaluate tax rate adequacy. A state analyst can construct for any year a state tax rate (average for all employers) that would cover the average total benefit costs of the program plus an amount that would help the state reach an adequate reserve fund that would enable the state to avoid borrowing in most recessions and to avoid excessive borrowing in a severe recession. This measure may be termed an Adequate Financing Rate (AFR).

The AFR can then be used to gauge the adequacy of the state's average tax rate to determine if the state was or is underfinancing the program or if the state is more than adequately financing its level of expected benefits. An AFR can be built in the same way that a state financing rate should be, by combining the average cost rate with a rate to finance future benefit payments.

To build an AFR the analyst needs to make several assumptions. The first assumption concerns the number of prior years to use to determine the average level of benefit costs to be financed. The examples below use both five-year and ten-year averages. 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 a level in its trust fund that would provide an AHCM of at least 1.0.[26] The third assumption involves how quickly the state wants to close the gap between the current trust fund balance and the adequate trust fund balance. The example shown here uses both five and eight-year periods to close the trust fund gap. The state may also want to assume a maximum trust fund amount (e.g. an AHCM of 1.5) so that if the current trust fund balance exceeds the maximum, the AFR will be less than the average benefit cost rate.

The AFR, which is attempting to establish a rate that would, in the absence of experience rating, be applied to all employers, or be the average of all rates assigned, is derived for any year by using the average of the last five years (or a longer period chosen by the analyst) of benefit costs plus a solvency amount calculated by taking the

[26] $AHCM = \left(\frac{Reserve\ Ratio}{Avg.\ High\ Cost\ Rate}\right) = \left(\frac{\frac{Net\ trust\ fund\ balance,\ Dec31}{Total\ wages,\ calendar\ year}}{\frac{Avg.\ of\ 3\ highest\ cost\ rates\ for}{longer\ of\ 20\ years\ or\ 3\ recessions}}\right)$

difference between the program's current trust fund balance and the trust fund balance needed to achieve a 1.0 AHCM (or other chosen trust fund target). This difference is divided by the number of years chosen to reach the trust fund target and the result is then divided by taxable wages to create the solvency add-on.

The AFR is expressed as a percent of taxable wages so it can be compared to the state's average tax rate. The best way to calculate the average benefit cost rate (BCR) as a percent of taxable wages is to first calculate the average BCR on total wages, then multiply the result by the current ratio of total wages to taxable wages. The average BCR on total wages is a better measure of historical cost because it is not affected by past changes in a non-indexed tax base or by the declining ratio of taxable to total wages caused by a fixed wage base.

The AFR for any year and state can be compared to what employers actually paid or will pay for that year (state average tax rate). The percentage difference is a measure of the amount of underfunding (or possibly overfunding) relative to an adequate average tax rate.

Table A.1 displays illustrative AFR calculations for rate year 2016 for two states, Minnesota and Ohio.

Table A.1

Adequate Financing Rate (AFR) Calculations for 2016

	Minnesota		Ohio	
5 Yr. Ben. Cost Rate (2015) -- Total Wages	0.71%		0.61%	
10 Yr. Ben. Cost Rate (2015) -- Total Wages	0.90%		0.82%	
Taxable Wages ($M) (2015)	53,998		42,818	
Total Wages ($M) (2015)	113,443		190,588	
Total/Taxable Wage Ratio	2.101		4.451	
5 Yr. Ben. Cost Rate (2015) – Taxable Wages	1.49%		2.71%	
10 Yr. Ben. Cost Rate (2015) -- Taxable Wages	1.89%		3.64%	
Trust Fund Balance ($M) – 12/31/2015	1,664.6		-432.0	
	High Cost Years	**BCR (%)**	**High Cost Years**	**BCR (%)**
	2009	1.83	2009	1.88
	2010	1.25	1991	1.16
	2002	1.08	2010	1.09
Average of Three High Cost Rates (AHCR)	1.39%		1.38%	
Balance Needed for 1.0 AHCM ($M)	1,576.9		2,630.1	
Balance Needed for 1.5 AHCM ($M)	2,365.3		3,945.2	
Balance Gap ($M)(1.0 AHCM)	-87.7		3,062.1	
Solvency Add-on – Five-year Gap Closing	0.00%		1.43%	
Solvency Add-on – Eight-year Gap Closing	0.00%		0.89%	
AFR – 5-year BCR – 5-year gap closing	1.49%		4.15%	
AFR – 10-year BCR – 5-year gap closing	1.89%		5.07%	
AFR – 5-year BCR – 8-year gap closing	1.49%		3.60%	
AFR – 10-year BCR – 8-year gap closing	1.89%		4.53%	
Average Tax Rate -- 2016	1.52%		2.52%	

The illustrations show four possible AFRs for each state, with two options for the length of the average BCR and two options for the speed of closing the trust fund gap. Many other variations are possible, including using different target balances. The AFRs all use data for 2015 or for time periods ending 2015. The resulting AFRs can then be compared to the estimated average tax rate for 2016 to see if that rate is adequate based on information available at the beginning of the year.

The illustrations show that Minnesota and Ohio differ greatly in the adequacy of their current financing. Minnesota's trust fund balance already exceeds a 1.0 AHCM, so the AFRs are based only on average benefit costs with no solvency add-on. Their 2016

average tax rate is adequate using a 5-year average BCR, but not fully adequate using a 10-year average BCR, which includes high-cost years from the 2007-09 recession.

Ohio, on the other hand, is still in debt from the recession and thus has a large solvency add-on, whether using a 5-year gap closing or an 8-year gap closing. Their 2016 average tax rate is not even adequate to finance their 5-year average benefit cost, much less to finance a longer-run average cost or to make progress towards an adequate trust fund.

Appendix B

Quantitative Analysis of Alternative Methods of Experience Rating

To validate the implementation of the proposed alternative methods of experience rating a simulation analysis was run comparing these methods to an existing method. In this exercise, data from the state of Washington for 2011-14 was used.[27] Both variations of the Employment Variation Index, the UI Layoff Rate, and a hybrid system were simulated in these examples.

Washington is a Benefit Ratio experience rating state which assigns employers to 40 tax classes based on fixed experience factor intervals. In order to measure the impact on employers' tax rates of applying any one of these alternative methods it is necessary to convert Washington's existing distribution of employers' tax rates into one that would be applied in the same way as the alternative. Each of these alternative methods would first require the calculation of a base financing rate and then a set of financing rates under different solvency levels and finally a distribution of individual employers' tax rates that would average to the financing rate in effect (array allocation).

The first step in the simulation then was to rerun Washington's benefit ratios with an array allocation such that employers accounting for 2.5% of taxable wages were assigned to each of the 40 tax classes. The tax rates used were the actual Washington rates for those tax classes. The average tax rate for the simulated Benefit Ratio array allocation was 1.41% of total wages. Each of the alternative methods was also run using the same distribution of tax rates so that there would be a reasonable comparison.

For each of the simulated alternative methods, experience factors were computed for each employer, using data for the same four years as the benefit ratio calculation. Employers were ranked according to the factors, and 2.5% of taxable wages were assigned to each tax class and tax rate. Thus the taxable wage distribution was identical across experience rating methods and the average tax rate (as a percent of total wages) for each of the alternative methods was equal to the average rate for the Benefit Ratio system (1.41% of total wages). The difference between any method and the simulated Benefit Ratio system was the ranking of employers and the assignment of tax rates to individual employers.

[27] Staff of the Washington Employment Security Division, led by Jeff Robinson, ran all simulations.

Because Washington uses 16 quarters in the calculation of an employer's benefit ratio for its current system, all simulations were based on data for the 16 quarters ending June 30, 2014. The following measures were simulated:[28]

1) Benefit Ratio = Charged Benefits / Average Taxable Wages
2) Employment Variation Index = (Sum of Quarterly Employment Change Percentages) / 16
3) Weighted Employment Variation Index = (Sum of Positive Quarterly Employment Change Percentages + 2 x Sum of Negative Quarterly Employment Change Percentages) / 16
4) UI Layoff Rate = Compensable Separations / Average Employment
5) Hybrid of Weighted Employment Variation Index and UI Layoff Rate

The same charging rules that Washington currently uses for benefits were used for all simulations that involved charging. This means that only base period employers were charged and that any separation with multiple base period employers was split among those employers based on their proportion of base period wages. For the UI Layoff Rate, we used total chargeable separations without any minimum benefit receipt.

For the hybrid system, the tax rate for each tax class was divided by two. Each employer received two rate components, one by applying the 40-class array to the weighted employment variation index and one by applying the 40-class array to the UI layoff rate. The employer's final rate was the sum of the two components.

The purpose of the simulations was to find out how the distribution of tax rates changed between the Benefit Ratio methodology and the alternative methods. How do employer rankings change? Which groups of employers have higher or lower taxes compared to a Benefit Ratio system? In particular, we wanted to compare average tax rates by industry and by size-of-employer between a Benefit Ratio system and each of the other systems.

Table B.1 describes the shift in employer rankings going from Benefit Ratio to the simulated alternative measures.

[28] We did not simulate either of the payroll change measures, but we would expect the results to be very similar to those for the employment change measures

Table B.1

Cumulative Tax Class Shifts from Benefit Ratio to Alternative Methods (% of Taxable Wages)

	Employment Variation Index	Weighted Employment Variation Index	UI Layoff Rate
Same tax class	3%	3%	11%
+/- 1 class	8%	8%	30%
+/- 2 classes	14%	13%	48%
+/- 3 classes	18%	17%	58%
+/- 4 classes	23%	22%	65%
+/- 5 classes	27%	26%	71%
+/- 6 classes	33%	31%	76%
+/- 7 classes	37%	35%	80%
+/- 8 classes	42%	39%	83%
+/- 9 classes	45%	43%	86%
+/- 10 classes	49%	47%	88%

For the two employment variation measures, employers accounting for just 3% of taxable wages had approximately the same ranking (i.e. fell into the same tax class) as under the Benefit Ratio method. A significantly higher percentage stayed in the same tax class under the UI Layoff Rate. Looking at small shifts in ranking, just over one quarter of taxable wages moved five tax classes or fewer in either direction under the employment variation measures, while more than two-thirds of taxable wages did so for the UI Layoff Rate. Employers accounting for more than half of taxable wages changed their ranking by more than 10 tax classes (out of 40) under the employment variation index. Surprisingly, the weighted measure does slightly worse than the unweighted measure. For the UI Layoff Rate, by contrast, just 12% of taxable wages moved more than ten tax classes compared to Benefit Ratio.

The significance of these results is that, if benefits are considered to be the best current measure of unemployment risk, then using the UI Layoff Rate yields a ranking of employers similar to Benefit Ratio without requiring tracking of benefits. However, charging decisions, notices, appeals, etc. are still necessary. On the other hand, Employment Variation is not very well correlated with Benefit Ratio, but shows a different dimension of unemployment risk and eliminates the entire benefit charging burden.

We also looked at how the alternative methods affected different groups of employers. Table B.2 shows average effective tax rates (contributions as a % of total wages) by industry for Benefit Ratio and for each of the four simulated alternative methods.

Table B.2

Average Effective Tax Rates by Industry
Benefit Ratio vs. Alternative Methods

			Contributions as % of Total Wages			
	Share of Total Wages	Benefit Ratio	Empl. Variation	Weighted Empl. Variation	UI Layoff Rate	Hybrid
NAICS 11 - Agriculture	1.5%	3.16%	2.62%	3.66%	3.41%	2.64%
NAICS 21 - Mining	0.1%	2.98%	1.60%	1.65%	2.89%	2.27%
NAICS 23 - Construction	5.9%	3.06%	1.61%	1.93%	3.06%	2.49%
NAICS 31-33 - Manufacturing	13.1%	1.30%	1.36%	1.30%	1.41%	1.36%
NAICS 42 - Wholesale Trade	6.7%	1.45%	1.32%	1.17%	1.43%	1.30%
NAICS 44-45 - Retail Trade	10.5%	1.46%	1.89%	2.17%	1.78%	1.98%
NAICS 48-49 – Transportation and Warehousing	3.3%	1.71%	1.79%	1.49%	1.69%	1.59%
NAICS 51 - Information	20.9%	0.33%	0.45%	0.50%	0.30%	0.40%
NAICS 53 - Real Estate and Rental Leasing	1.4%	2.16%	1.77%	1.64%	1.92%	1.78%
NAICS 54 - Professional, Scientific, Technical Services	9.4%	1.30%	1.18%	1.12%	1.24%	1.18%
NAICS 55 - Management of Companies/Enterprises	0.4%	1.12%	0.90%	0.90%	0.94%	0.92%
NAICS 56 - Admin., Support, Waste Mgmt. Services	4.6%	2.73%	2.05%	2.16%	2.73%	2.44%
NAICS 61 – Education Services	0.6%	1.75%	1.92%	1.93%	1.49%	1.71%
NAICS 62 - Health Care and Social Assistance	6.9%	1.57%	1.81%	1.50%	1.43%	1.47%
NAICS 71 - Arts, Entertainment, Recreation	0.9%	1.86%	1.61%	1.76%	1.40%	1.58%
NAICS 72 – Accommodation and Food Services	4.2%	1.74%	2.49%	2.46%	1.95%	2.20%
NAICS 81 - Other Services	2.1%	1.88%	1.77%	1.56%	1.65%	1.61%
All Industries		1.41%	1.41%	1.41%	1.41%	1.41%

Data for NAICS 22 (Utilities), 52 (Finance and Insurance), and 92 (Public Administration) were not available – these industries account for 7.6% of total wages.

For employment variation, the largest average effective tax rate reductions are in Mining and Construction and the largest increases are in Accommodation and Food Services and Retail Trade. Weighting employment decreases more than increases generally does not have a large impact except for Agriculture, a highly seasonal industry, where

the weighted measure increases the average effective tax rate by more than 1.0% versus the unweighted measure. Other smaller increases occur in Construction and Retail Trade, also seasonal industries. These differences are what we would expect since the weighted measure somewhat targets seasonal industries and the unweighted measure does not. The average effective tax rates for the UI Layoff Rate are generally similar to those for the Benefit Ratio. The average effective tax rates under the hybrid system are simply the averages of the average effective tax rates under the two methods used.

Table B.3 shows average effective tax rates by size of employer (number of employees) for Benefit Ratio and for the four simulated alternative methods.

Table B.3

Average Effective Tax Rates by Size of Employer
Benefit Ratio vs. Alternative Methods

			Contributions as % of Total Wages			
Number of Employees	Share of Total Wages	Benefit Ratio	Employment Variation	Weighted Employment Variation	UI Layoff Rate	Hybrid
0	6.5%	1.54%	1.75%	1.87%	1.58%	1.72%
1-4	3.8%	1.33%	1.61%	1.59%	1.28%	1.43%
5-9	4.0%	1.88%	1.61%	1.66%	1.78%	1.72%
10-19	5.7%	2.04%	1.58%	1.59%	1.92%	1.76%
20-49	9.8%	2.11%	1.57%	1.52%	1.99%	1.76%
50-99	8.5%	2.06%	1.52%	1.43%	1.92%	1.68%
100-249	11.1%	1.98%	1.55%	1.45%	1.89%	1.67%
250-499	8.6%	1.88%	1.64%	1.56%	1.83%	1.70%
500-999	6.4%	1.58%	1.76%	1.64%	1.65%	1.65%
1000+	35.6%	0.56%	1.04%	1.12%	0.68%	0.89%
All Employers		1.41%	1.41%	1.41%	1.41%	1.41%

Firm size is measured as of the second quarter of 2015. Note that some employers had no employees at that point in time but did have employees in other quarters.

All alternative methods reduce the range between the highest and lowest average effective tax rates compared to Benefit Ratio. In particular, the Employment Variation Index reduces the range from 1.55% to 0.71%. The employment variation measures increase rates for the smallest and largest firms and reduce them for those in the middle. Giving extra weight to employment declines does not have much impact versus equal weighting of increases and decreases. The UI Layoff Rate has relatively little effect on the employer size distribution of average effective tax rates.

Appendix C

Outline of Tax System Construction Model

Accompanying this Guide is an Excel spreadsheet containing several models and calculators to allow the user to follow the steps in designing a tax structure and assist in the evaluation of an existing tax structure by formulating an Adequate Financing Rate (AFR) based on user inputs.

The first tab contains directions for working through each of the tools. The following four tabs contain the tools for working through the four steps of building a UI tax structure:

Step 1. Calculating a Base Financing Rate
This is a tool to derive the base financing rate. The user specifies the year of the base rate calculation and the number of past years to use and the model calculates long-run average benefit cost rates as a percent of both total wages and taxable wages.

Steps 2 and 3. Deriving the Solvency Financing Rates and Triggers
This model calculates financing rates for a range of tax schedules or solvency add-ons based on user inputs. The user inputs the base financing rate and the target solvency range (using the AHCM as the tax schedule trigger). The user specifies the number of tax schedules or financing rates, with a maximum of 4 below the base financing rate and 7 above.

The only option for setting tax schedule trigger intervals is to choose the triggers for the lowest and highest schedules. The model then computes equal intervals between the target trigger range and the lowest and highest triggers.

The user has three options for computing the financing rates across schedules. Option 1 is to specify the minimum and maximum financing rates. The model then calculates equidistant financing rates above and below the base financing rate.

Option 2 is to specify constant between-schedule responsiveness rates, one rate below the base and one above the base. The model then computes financing rates outward from the base rate. The minimum and maximum financing rates are determined by this calculation.

Option 3 is to specify constant gap-closing rates above and below the base schedule. Each financing rate is calculated with reference to the difference

between its trigger interval and the base interval. Options 2 and 3 generally give the same results, but are two different ways of thinking about financing rates.

Tax System Simulation
This tab simulates the operation of the tax system specified in Steps 2 and 3. The user specifies the beginning Average High Cost Multiple and the projected average benefit cost rate and the model determines the number of years to reach the target trust fund balance.

Step 4. Deriving Individual Tax Rates
This model derives tax rates to be assigned to groups of employers. The user inputs the desired average tax rate as well as the minimum and maximum rates for the base schedule. The user also inputs the average tax rates for the lowest and highest schedules. The model then calculates a set of tax rate adjustment factors that produce the desired average tax rates. The model is restricted to a 20-group array with equal percentages of taxable wages in each group.

Depending on the relationship among the average rate and the minimum and maximum rates, the average rate is assigned to one or two of the twenty groups (i.e. tax rate adjustment factor equal to 100%). The higher the average rate relative to the minimum and maximum, the lower the group (or groups) which is (or are) assigned the 100% factor and vice-versa. After that, there is a linear progression of factors between Group 1 (which is assigned a factor based on the base schedule minimum tax rate) and the 100% group and also a linear progression between the 100% group and Group 20 (which is assigned a factor based on the base schedule maximum tax rate). The factors are then adjusted so that they average to 100%.

The resulting tax rate adjustment factors are then multiplied by each of the three input average tax rates to produce three tax schedules. If the maximum rate for the low schedule calculates to less than 5.4%, Group 20 is forced to 5.4%. If any increments between tax rates are greater than 0.9%, some rates are also forced in order to meet that requirement. All rates are then adjusted again but it is possible that the final average tax rate will not equal the input desired financing rate.

Following these steps is a tab containing a tool to evaluate an existing tax structure:

Calculating an Adequate Financing Rate
This model calculates an Adequate Financing Rate based on user input. It is a tool for analysis rather than a step in the tax structure building process. The user inputs the year for which the AFR is to be calculated, the number of past years of benefits to include in the calculation, and a target trust fund balance range. The model computes an AFR as a percent of taxable wages, to be compared to the state's average tax rate.

Glossary

Adequate Financing Rate (AFR) -- A measure used to determine the extent of underfunding of a tax system, based on past average cost and desired future trust fund build-up.

Advisory Council on Unemployment Compensation (ACUC) – A 1990s study commission that made various recommendations, including some on UI financing.

Array Allocation (or Array Method) – A method of assigning tax rates to individual employers based on their experience relative to other employers rather than their own experience alone.

Average High Cost Multiple (AHCM) – A trust fund solvency measure equal to the ratio of the current balance (as a percent of total wages) to the Average High Cost Rate.

Average High Cost Rate (AHCR) – A measure of past high benefit costs. It is equal to the average of the three highest benefit cost rates in the last twenty years or a period including three national recessions, if longer.

Average Tax Rate – The average of a set of tax rates. This term is usually used interchangeably with the term Financing Rate.

Base Schedule – The tax schedule or set of tax rates in effect when the trust fund solvency measure is within its target range.

Base Financing Rate – The financing rate in effect when the trust fund solvency measure is within its target range and from which increases or decreases are applied based on solvency levels.

Benefit Cost Rate (BCR) – Benefits paid attributable to taxable employers as a percent of total wages paid by those employers.

Benefit Ratio Method – An experience rating method in which the employer's experience factor is the ratio of benefit charges to taxable wages over some recent time period.

Benefit-wage Ratio Method -- An experience rating method in which the employer's experience factor is the ratio of benefit wages (wages paid to claimants in their base periods) to taxable wages over some recent time period.

Compensable Separation Rate – An alternative term for the UI Layoff Rate

Employment Variation Method – A proposed experience rating method in which the employer's experience factor is the average of percentage employment changes over some recent time period.

Experience Rating – A UI financing system in which the employer's tax rate depends in part on his experience with unemployment or factors related to unemployment risk.

Federal Unemployment Tax Act (FUTA) – The Federal law governing various aspects of UI financing systems.

Financing Rate – Statewide revenues as a percent of taxable wages.

Gap-closing Percentage – The proportion of the gap between the current and target solvency levels to be closed by the current financing rate.

Ineffective Charges – Benefits charged to maximum-rated employers in excess of their contributions.

Maximum Financing Rate – The highest financing rate provided for in state law.

Payroll Decline Method -- An experience rating method in which the employer's experience factor is the average of percentage payroll declines over some recent time period.

Payroll Variation Method – A proposed experience rating method in which the employer's experience factor is the average of percentage payroll changes over some recent time period.

Reserve Ratio Method – An experience rating method in which the employer's experience factor is the difference between all past contributions and all past benefit charges as a percent of taxable wages.

Revenue Responsiveness Rate – The ratio of revenue change to balance change between financing rates or tax schedules.

Social Tax – An add-on tax designed to recover a portion of socialized costs.

Socialized Costs – Benefit costs not recoverable from individual employers, including non-charged benefits, benefits charged to inactive employers, and ineffectively charged benefits.

Solvency Add-on – A rate added to a Base Financing Rate, to an Adequate Financing Rate, or to employer rates based on the solvency level of the state's trust fund.

Solvency Level -- The trust fund balance measured in relation to some measure of liability.

Target Solvency Level (or Range) – The desired solvency level (or range) around which the tax system is structured.

Taxable Wage Base – The amount of wages per employee to which the UI tax is applied.

Tax Capacity – The maximum revenue generated by a tax system. This is usually expressed as a percent of total wages or as tax per employee (maximum average tax rate times taxable wage base)

Tax Rate Adjustment Factor – A factor to be multiplied by (or added to) the desired financing rate to determine the tax rate for a group of employers using the array method of assigning tax rates.

Tax Schedule – A set of tax rates associated with a specific solvency level.

Tax Schedule Trigger – A measure of the trust fund balance or solvency level used to determine which financing rate or set of rates are to be in effect for a year.

Total Cost Targeting – A tax system that bases financing rates on overall benefit costs rather than using rates based on benefit charges plus rates based on socialized costs.

Total Financing Rate – The overall financing rate including the base financing rate and any increase or decrease based on solvency.

Trust Fund Balance – The balance in the state's account in the Unemployment Trust Fund in the U.S. Treasury. For purposes of measuring solvency, outstanding Federal loans and other loans for which the trust fund is liable should be subtracted from the actual balance. The state may also subtract Reed Act balances not available for benefit payments and add in the balances of the benefit payment and clearing accounts.

Trust Fund Gap – The difference between the current solvency level and the target solvency level.

UI Layoff Rate Method – An experience rating method in which the employer's experience factor is based on the number of UI-compensable separations without regard to the amount of benefits paid.

USDOL – U.S. Department of Labor

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