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The Finance of Unemployment Compensation and its Consequence for the Labor Market

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DISCUSSION PAPER SERIES

IZA DP No. 13330

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Compensation and its Consequence for
the Labor Market**

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JUNE 2020

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ABSTRACT

The Finance of Unemployment Compensation and its Consequence for the Labor Market*

For every payment, there is an equal and opposite tax. In the study of unemployment insurance, economists have developed a substantial literature considering the impact of payments on labor supply. In contrast, they have usually left unexamined the influence on labor demand of the unique tax that finances it. Experience rating in unemployment insurance presents several fascinating questions for economists. This paper marks some of those questions and helps analysts engage them by explaining the unique institutions at play.

JEL Classification: D22, H22, H25, H71, J23, J32, J38, J65

Keywords: unemployment insurance, payroll taxation, experience rating

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“Another reason for the diversity of views [on UI taxation] is inadequate knowledge...Perhaps in no other field has economic analysis shed so little clear and guiding light, largely because it has not been applied extensively and carefully, with attention to practical and institutional details.”

— Richard A. Lester, Professor of Economics at Princeton

1 Introduction

Unemployment compensation is a core institution of social insurance. As one of the largest social insurance programs in the country, Americans file over 1 million new claims each month. During the Great Recession and its aftermath, there were a total of 116 million initial claims for Unemployment Insurance (UI) benefits.¹ In the United States, the taxes that finance benefits are “experience rated,” meaning states assign *individualized* tax rates to firms and those rates reflect the cost of benefits paid to former employees. Because of experience rating, some \$520 billion in benefits paid during the recession transformed to sizeable tax increases while the labor market was recovering (CBO (2012), Johnston (2020)). Did the penalties produced by experience rating reduce layoffs amid the recession? What impact did tax increases have on hiring and recovery? We have little empirical evidence on which to rely.

The vast majority of work on UI investigates the response of labor supply to UI benefits. Left largely unknown is the influence UI taxes have in shaping the labor market. Does experience rating contribute to the rise of jobless recoveries or erode macro stabilization? Does it discourage firms from hiring risky workers? Potentially impeding the study of these questions is the unfamiliar nature of the institutions at their center. In this paper, we provide a handrail for analysts to understanding the program while highlighting several interesting questions which remain outstanding.

When a worker claims unemployment benefits, those payments are charged to the account of their former employer, operated by the state’s department of labor. The firm

¹At the time of this writing, claims have skyrocketed from 282,000 during the week ending March 14 to 3,341,000 the next week and 6,648,000 the week ending March 28—leaping by over an order of magnitude and surpassing historical records by several times (Department of Labor News Release, April 2, 2020). The Bureau of Labor Statistics reported an unemployment rate of 14.7 percent in April 2020, the highest since the Great Depression.

pays a variable payroll tax that is designed, approximately, to recover the cost of benefits paid. The greater the total amount of payments to a firm's workers, the greater the resulting tax for the firm. Since takeup and duration vary widely, the firm's tax rate is uncertain from year to year and may experience sharp changes.

Moreover, because rates are differentiated, the taxes levied on employers vary widely by industry, among firms within them, and even over time for individual firms. Experience rating traces back to the earliest days of unemployment insurance in the U.S. when states implemented unemployment compensation programs in response to a federal mandate in the Social Security Act in 1935. At the time, states had discretion whether to implement variegated taxes or uniform ones to finance benefits.

As states made policy, a contentious debate among economists erupted over the merits and risks of experience rating. Their arguments still expose fertile ground for empirical work. On one side, John Commons and his colleagues argued that experience rating would reduce the catastrophic unemployment of the Great Depression, internalize the costs of unemployment to firms, and discourage collusion between firms and employers to finance leave at the public expense. These were classic Pigouvian arguments in a time of Pigou, and they reflect the natural view of economists still.

On the other side, Richard Lester and his allies argued that experience rating would lead to a "hard core" of unemployment by penalizing hiring that was not likely to be permanent, leaving some workers idle and gradually unfit for work. These economists rebutted their opposition, moreover, that unemployment was largely the result of *exogenous* market forces which employers could neither avoid nor reduce by sound management. Measuring the tradeoffs of experience rating (and making those tradeoffs commensurable) is a key unanswered task awaiting the profession.

By 1945, all states had adopted UI and all but six had implemented a variable tax system to finance benefits (Arnold (1945)). Each state governs the shape of its own program: the formula determining rates, the range over which rates may vary, and what portion of payroll is exposed to taxation. In practice, identical firms in different states will face tax burdens that differ substantially. Although experience rating was eventually instituted by

each of the 50 states, no other countries have adopted it. The remainder of the world employs uniform payroll taxes to finance unemployment compensation (Fath and Fuest (2005)). If the benefits of experience rating are substantial, much of the world would benefit from clear evidence. If its costs outweigh, millions of workers in the U.S. could be spared the consequences.

In what follows, we provide a history of the program in section 2, making the institutions and stakes clearer. We then discuss the common programs of experience rating in unemployment compensation in section 3 and demonstrate the tax variation it produces in section 4, showing for instance how experience rating changes the distribution of UI taxation across industries and over the business cycle. Though we remark on outstanding questions throughout, we conclude by highlighting several questions that are ripe for empirical work in section 5.

2 A Brief History and the Inaugural Debate

During the Great Depression, policymakers aimed to expand social insurance to cover the unemployed who, at the time, made up a quarter of American workers. A proponent of UI, John Commons, argued that benefits should be financed by an *experience-rated* tax instrument, in which employers would pay greater rates should their former employees rely more heavily on unemployment compensation. This proposal departed from established UI programs in Europe which collected revenue through a flat payroll tax or drew on general funds to finance benefits.² Commons and his colleagues argued that “merit rating” in workman’s compensation had led to reductions in workplace injuries in the 1910s, and they believed high unemployment could be equally dispelled by experience rating.³ As service to his vision, Commons volunteered to draft UI bills for any state willing to employ experience rating.

²England and Germany had both experimented with experience rating before this time, but both had been abandoned at any scale because, depending on the iteration, implementation was unwieldy, rates were assigned at industry or geography levels that became crushing, or financial need for additional revenue made experience rating difficult to raise funds and cross-subsidize firms.

³Progressives at the time seemed to believe that unemployment was a reflection of the government “mismanaging” industry. Unemployment was a technical problem with a scientific solution.

Commons' philosophy first took form in a bill he helped compose for his home state of Wisconsin in the Unemployment Compensation and Reserves Act of 1932, the first unemployment-insurance bill to become law in the United States. The Social Security Act was passed shortly after, in 1935, inducing all states to institute UI and select a finance mechanism. A ferocious debate broke out among economists. That debate was so contentious one participant noted, "differences of opinion among the champions of [UI] are so extreme as to disrupt lifelong friendships" (Witte (1945)).

The proponents of experience rating believed that unemployment itself was unnecessary and could be "eliminated" by the "scientific management of industry," including experience rating (Feldman and Smith (1939), Baicker et al. (1998)). Even if unemployment could not be reduced fully, experience rating would produce an added incentive for employers to "stabilize their workforce," or reduce turnover (Arnold (1945)).⁴ They argued, moreover, attributing rates to firms in proportion to the costs they imposed on the system was the way of basic equity: why should a school be required to pay for layoffs in manufacturing?⁵ And finally, experience rating would discourage firms from exploiting UI as paid vacation for workers at the expense of the community. The case on behalf of experience rating is in many ways the natural view of economists in which experience rating acts as a Pigouvian tax to curb a fiscal externality.

Two Princetonians, Richard Lester and Charles Kidd, disagreed with the prevailing view. Instead of reducing unemployment, they argued, experience rating would enlarge it. When layoffs are costly, firms would maintain a minimal workforce and avoid hiring anyone they might not be able to provide continual employment. Since total employment would decline, they predicted the labor market would segregate into two groups, "one continuously

⁴The exact meaning of "stabilization" is unclear, even to the early advocates of experience rating (Myers (1939)). For some, it meant a firm employed more of the same workforce throughout the year. For others, it implied that the workers could change but total employment should remain constant. For still others, it was clear that experience rating meant more regular work for a smaller number of people. Because rates are assessed on benefit costs and not employment changes, experience rating as constructed is most successful, in theory, at stabilizing the flow of individual workers.

⁵Paul Raushenbush made the following argument in this vein: "That plant or that industry which requires an idle reserve army of labor should in turn be required to pay the costs of thus conducting its business, and to reflect such costs in its prices to consumers. Irregular employment should be recognized as part of the true cost of producing specific commodities, instead of being made an overhead of the entire economic system" (Raushenbush (1933)).

working and the other continuously idle.” Those out of work would gradually lose their employable skills and slowly become unfit for the labor market, creating a “hard core” of irreducible unemployment.

They also found troubling the timing of tax incidence. “Experience rating,” they wrote, “will tend to check economic expansion through heavier taxes at the bottom of depression or the start of an upswing,” as well as “placing the heaviest tax rate upon the capital-goods and construction industries,” which they viewed as central to a healthy national economy and labor market (Lester and Kidd (1939)). Proponents of experience rating relied on the lessons of workman’s compensation, but did the lessons carry? Lester and Kidd argued that industrial accidents arise from conditions *within* the plant; by contrast, unemployment was largely the result of market forces *outside* the plant’s control in their view (e.g. new technology, trade displacement, supply shocks, consumer preferences, seasonal demand, business cycles, etc.). Finally, they worried that experience rating would cause employers to avoid workers prone to layoff or those likely to remain unemployed for a long time, like those with sparse work histories.⁶

Some 80 years later, these claims have been hardly examined. Theoretical predictions have been insightful but often rely on strong assumptions, are often inconclusive, and are sometimes at odds. Layoff taxes are optimal in some static models (Blanchard and Tirole 2008) but welfare reducing in some general equilibrium ones (Hopenhayn and Rogerson (1993)). We agree with one contemporary commentator of the inaugural debate who wrote, “economic theory alone can never lead to settled conclusions on questions of economic policy” (Meriam (1933)).

Because Wisconsin was at the epicenter of the progressive labor movement, many of Commons’ students and associates worked in the Roosevelt White House. Commons’ proteges, Edwin Witte and Paul Raushenbush, were tasked by FDR to develop legislation structuring social insurance in 1934 which passed in 1935 as the Social Security Act. Up

⁶There was also concern that the operating a differentiated tax was administratively burdensome and expensive. A member of the Social Security Board at the time said “the complexities of the proposal and the tremendous expense involved convince me that it has no place in a system of unemployment insurance” (Bigge (1938)). The rapid expansion of computing has likely diminished the clerical cost and complexity of measuring payroll, contributions, and benefits for entering, exiting, splitting, and merging firms as well as calculating and distributing rates.

until that point, states had refused to introduce UI for fear of chasing employers to neighboring jurisdictions. The new law raised taxes on all employers unless the state adopted UI legislation, a structure advised by Raushenbush's father-in-law, Justice Brandeis, to avoid censure by using a federal incentive that had supportive precedent before the court (Schlesinger (1958), Blaustein (1993)). Experience rating and its details were contested in the Senate, so the law imposed few explicit requirements on financing other than that the state fund must be fully financed in order for states to qualify for tax credits made available to state programs by the federal government (Arnold (1945)).⁷

By the summer of 1937, every state and territory in the U.S. had passed an unemployment compensation program (Lester and Kidd (1939)). By 1939, most states had implemented experience-rated financing schemes, following the blueprint provided by Wisconsin (Becker (1981), Blaustein (1993));⁸ eleven states had initially instituted systems with uniform rates and three others (Idaho, Montana, and Washington) had abandoned experience rating. Over time, most states adopted a variegated tax so that, by 1945, only six had uniform rates (Arnold (1945)). Eventually, the Tax Equity and Financial Responsibility Act of 1982 induced experience rating in all states, prompting adoption among the last holdouts (Anderson and Meyer (2000)).⁹

Advocates of experience rating differed in their preferred administration of the program. The most dedicated to the principal of experience rating preferred a system in which each firm had an individualized account, from which benefits were paid. When the reserve was low on funds, the firm's tax would rise. In this way, firms experienced a tight relationship between their contributions and payments to former employees. This view evolved into what are now known as *reserve-ratio* systems, described in the next section.

Adjacent to this group was a class of proponents who wanted experience rating but believed individual accounts were too risky. What should happen if the employer closes

⁷Baicker et al. (1998) seem to believe that the final bill *required* experience rating. This conflicts with the view of contemporary legal analysis (Arnold (1945)), and we can find no mention of experience or merit rating in the text of the bill. Finally, it seems unlikely that it was required since several states implemented uniform-rate taxes or abandoned experience rating soon after.

⁸Initially, the president's committee wanted to provide additional tax credits to states implementing experience rating.

⁹TEFRA did not require experience rating *per se*, but it required the maximum tax to be 5.4 percent, which would have made a uniform tax very high.

or has insufficient funds—do their workers lose coverage? States where this view prevailed implemented variable rates where contributions were paid into a shared fund. Rates were connected to costs, but not contributions. This policy became known as a *benefit-ratio* system.¹⁰

3 The Financing of Unemployment Compensation

The U.S. federal government induces each state administer a UI program, under which separated workers receive weekly benefits.¹¹ Once unemployed, workers receive a weekly payment that replaces approximately half of their earnings for up to six months in normal times. While workers receive unemployment compensation, they are required to check in with the state agency each week to confirm their employment status (that they have not found a job) and some states require claimants to report their job-search activities also. In 2009 during the Great Recession, over 14 million Americans (9 percent of the labor force) drew UI benefits, for whom the average weekly benefit was \$308.¹²

Variation in benefit generosity largely stems from the maximum weekly benefit set by each state. Workers whose earnings fall below the maximum insurable income have a replacement rate of 50–65 percent, while workers whose earnings exceed the maximum have a declining replacement rate as a function of earnings. During the Great Recession, the median state had a maximum benefit of \$390 a week, equivalent to a \$19.50-per-hour

¹⁰Other insightful histories of the program can be found in Becker (1981) and Baicker et al. (1998). Arnold (1945) and Lester and Kidd (1939) provide a lively contemporary view. Otherwise, Lester (1960) provides an insightful discussion of many of the features of UI finance.

¹¹The federal law does not mandate state UI programs, but would levy a 5.4 percent tax on all employers in states that had not instituted a UI program. It is commonly claimed that UI only covers those who lose their job “through no fault of their own” (for example, Lester and Kidd (1939), Anderson and Meyer (1993), Simonetta (2017)). This is true in law but not in practice. A large number of workers who admit in their claim to having been fired for cause or voluntarily quit their jobs claim and then receive benefits. This is usually true even in cases where payments are contested by employers who provide evidence that the employee quit freely or was fired for theft or violence. In disputes, courts typically side with the claimant, even when employers have clear evidence available that the separation was not the result of a layoff. The public data describing the cause of unemployment of each UI claim is available at <https://oui.doleta.gov/unemploy/DataDownloads.asp>. See Hagedorn et al. (2016) (appendix 6) and Lusher et al. (2020) for more discussion.

¹²Quarterly data on First Payments from the US Department of Labor (https://oui.doleta.gov/unemploy/data_summary/DataSum.asp) There is a distinction between First Payments (what programs use to count beneficiaries) and Initial Claims, which are almost twice as large. Initial Claims also include denied claims and applications for extended benefits.

wage. Workers earning up to \$780 a week had just over half of their earnings replaced by unemployment insurance, while workers earning more than that would receive no more than the maximum weekly benefit of \$390. Effectively, yearly income over \$40,560 was not insured by unemployment compensation in most states.

To finance these benefits, firms pay a dynamic payroll tax which is rated under two common systems. In each, rates are updated annually, and they increase when a firm generates greater costs for the UI system and falls for firms that generate fewer unemployment costs.

Nineteen states subscribe to a *benefit-ratio* system (Figure 1). There, the state calculates the total cost of benefits generated by each firm over the past n years, where n ranges from 3 to 5.¹³ To account for cost differences arising from firm size, the state divides total benefit costs by the sum of the taxable wages paid by the firm, the result of which is a “benefit-ratio” (that is, *benefit* costs over taxable wages).¹⁴

$$\text{benefit ratio}_t = \frac{\text{benefits}_{t-3} + \text{benefits}_{t-2} + \text{benefits}_{t-1}}{\text{taxablepayroll}_{t-3} + \text{taxablepayroll}_{t-2} + \text{taxablepayroll}_{t-1}} \quad \text{if } n = 3$$

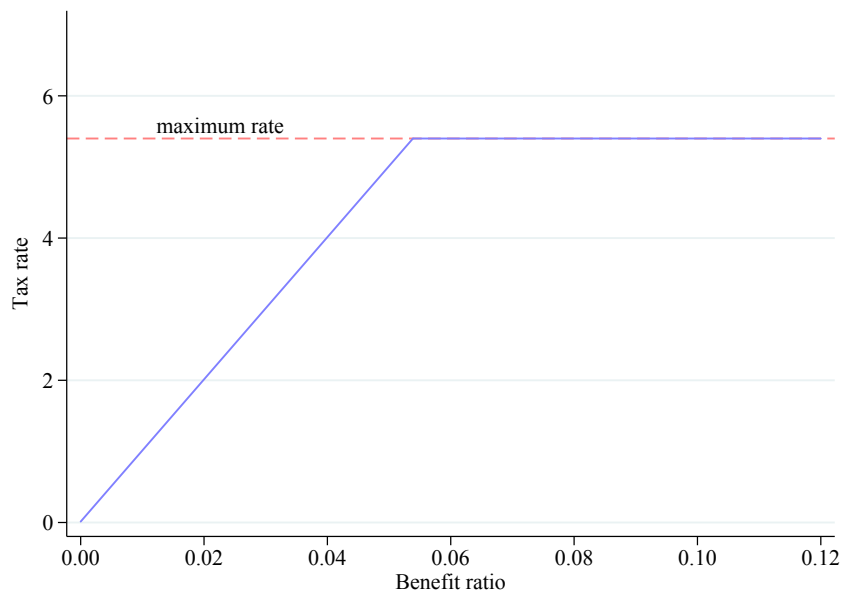
The state assigns the firm a tax rate based on their benefit ratio, where those with higher ratios pay higher tax rates and those with lower ratios pay lower ones. These rates are assigned by a simple formula of the form $\tau = \alpha + \beta \times \text{benefit ratio}$. The formula also has a cap that limits how high rates can rise, a point we expand upon shortly. New firms have no benefit ratio, and so are assigned a flat “new employer” rate, usually for two to three years, while the firm develops a history on which to rate. The typical rate for new employers is 2.7 percent (a patrimony of history when this was determined the “standard rate” in federal legislation), which is higher than most established (rated) firms and half of the federal maximum.

The parameters are selected by the state agency or the legislature; α reflects the

¹³Taxes are tracked at the state level for each firm. Each state-EIN combination will have its own UI account.

¹⁴There is an important distinction between taxable payroll and total payroll, as only earnings up to the state’s taxable wage base enter into the benefit ratio calculation. For example, if a state’s taxable wage base is \$7,000, each employee’s earnings above that threshold do not contribute to the denominator.

Figure 1: Archetypal Benefit-Ratio UI Tax Formula

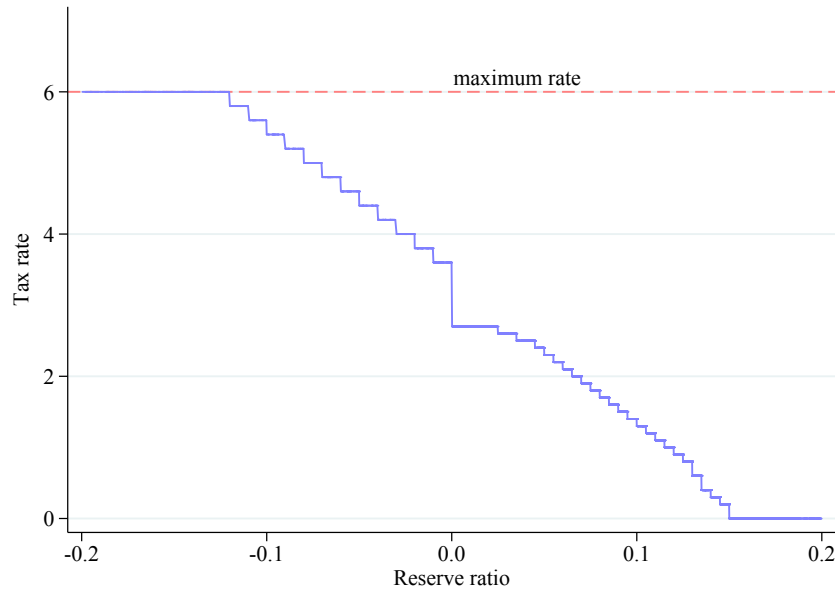


Source: Administrative data from Florida’s Department of Economic Opportunity.

minimum tax rate and is usually close to zero; β is the slope parameter and hovers near one. Intuitively, if a firm’s costs are 1 percent of taxable wages, a tax rate of 1 percent will recover the costs of benefits. Each state also selects a maximum rate, above which a firm’s tax rate cannot rise. An example of a benefit-ratio tax schedule can be seen in Figure 1.

There are two things to notice about this structure: First, a given benefit charge affects the benefit ratio and tax rate for exactly n years. After that period, the initial event no longer factors into the benefit ratio, and the firm enjoys a clean slate—even if the firm has not covered the cost of its charges, so the firm is only *partially* experience rated. Imagine a mass layoff. The firm will usually be shielded from the full cost of its layoffs (since the maximum tax rate will prevent the firm’s rate from rising to reflect the full cost) and will pay the maximum rate for n years. The year after the mass layoff, any additional dismissals have no impact on their tax costs the following year, and will only affect rates for one year starting n years after the mass layoff. Second, the tax rate in a benefit-ratio state does not respond to a firm’s contributions (unlike the alternative system discussed shortly).

Figure 2: Archetypal Reserve Ratio UI Tax Schedule



Source: Administrative data from Missouri’s Division of Employment Security.

If a firm has a falling payroll or is shielded by the maximum tax rate, the firm will typically not repay the total cost of benefit charges. For shrinking firms, the tax base shrinks too, reducing the contributions the firm pays. Conversely, if the firm is growing, it pays its assigned rate on an expanding payroll and is likely to pay *more* than the cost it generated for the system.¹⁵ During the 2007-2009 recession, states in a financial pinch raised their β parameter making the rate function steeper to cover the shortfall. Even stable or shrinking firms often paid more than they owed the system.

The primary alternative to a *benefit-ratio* model is a *reserve-ratio* system which is employed in 29 states.¹⁶ In it, each firm has a private account. Taxes paid accrue reserves in the firm’s account, and benefits received by former employees reduce the firm’s reserve dollar for dollar. The state calculates a “reserve ratio” by dividing a firm’s balance in their

¹⁵Miller and Pavosevich (2019) propose a new mechanism for experience rating that avoids these implicit penalties for employment growth.

¹⁶The remaining alternatives are Benefit-Wage Ratios, used in Delaware and Oklahoma, and a Payroll Variation plan used in Alaska. Alaska measures the stability of payrolls over a 3-year period, and ranks employers according to their average quarterly decline. Delaware and Oklahoma measure benefit wage ratios, which are similar to benefit ratios except that the numerator consists of benefit wages (what claimants earned during the base period used to determine UI eligibility) rather than the benefit claims.

account by the firm’s taxable wage base to adjust for firm size.

$$\text{reserve ratio}_t = \frac{\text{reserve}_t = \sum_0^t \text{payments}_p - \sum_0^t \text{charges}_p}{\text{taxablepayroll}_{t-3} + \text{taxablepayroll}_{t-2} + \text{taxablepayroll}_{t-1}} \quad \text{if } n = 3$$

The state creates a tax schedule that translates a firm’s reserve ratio into an assigned tax rate, an example of which can be seen in Figure 2. Firms with lower reserve ratios (less savings per worker with which to pay out claims) have a high rate, while those with generous reserves enjoy a lower one. Notice that, because the system is based on an account reserve (and not only three years of cost history), it has an infinite memory: if a firm has not paid the cost of its UI charges, those costs continue to push up the firm’s tax rate to recover the cost of benefits. Firms with a negative balance are not charged interest for what is effectively a loan, nor do firms earn interest on their accumulated reserves. These accounts follow the firm if they are acquired or sold, and employers lose reserves paid if they go out of business.

3.1 Policy Choices in UI Tax Structure

States select a few key features of their UI tax program. In addition to states selecting either a benefit-ratio formula or a reserve-ratio schedule, states select two parameters that influence the degree to which firms with high UI costs will pay for the charges they generate, shaping the *degree* of experience rating in a jurisdiction. The first is the maximum tax rate. States allow taxes to vary up to a cap which differs significantly from state to state, from 5.4 in a handful of states (the lowest maximum allowed by federal law) up to 13.5 percent. Intuitively, maximum rates limit how much a firm can be charged for their benefits, especially in benefit-ratio states where the tax formula “forgets” charges after a few years. When firms are shielded from their costs, the deficit in payments is shifted to other employers, often through uniform surcharges or higher minimum rates.

The second parameter is the taxable wage base: the amount of each worker’s earnings exposed to the tax, which varies substantially across states, from \$7,000 to \$50,000. A

\$10,000 tax base means the employer is charged the assigned tax rate only on the first 10,000 dollars a worker earns, after which employers pay a zero-marginal tax rate on additional earnings paid for the remainder of the year to that worker. Because workers typically earn more than the taxable wage base, UI taxes function as a head tax for most employers—a tax on the *quantity* of workers a firm employs rather than a tax on payroll (a point also noted by Acemoglu and Shimer (1999) and Chetty (2006)).

Firms face a greater degree of experience rating as the maximum tax rate increases and as the taxable wage base expands. In most respects, a higher taxable wage base and a greater maximum rate are equivalent. When employing a worker who earns \$50,000 each year, a five percent tax on a \$20,000 wage base (resulting in a \$1,000 tax bill) is equivalent to a ten percent tax on a \$10,000 wage base.¹⁷ The cost to employers differs, however, for workers with very low yearly earnings, particularly those that are seasonal or part-time. Given a \$10,000 tax base, employing three part-time workers (each earning \$10,000 a year) would generate three times the tax cost of a single full-time worker. Thus, an expanded tax base makes high-skilled, full-time, and permanent workers less attractive and unskilled, part-time, and temporary workers more attractive, all else equal.¹⁸

One open question is how the taxes and benefits are distributed along the income distribution. In Figure 3, we plot the average UI tax payment per worker along the income distribution, using administrative UI data from Florida.¹⁹ The figure also plots the average UI benefit receipt in the year following the year we measure yearly income (thus avoiding a mechanical link between benefit receipt and income earned). Tax payments rise steeply over the range of the taxable wage base and then level off, with higher-income workers paying only slightly more than middle- and low-income earners. Benefit costs also scale with previous earnings—a product of the UI benefit formula. Benefits top out at \$28,000 in

¹⁷In states with non-zero minimum rates, a broader tax base will increase total collections from low risk firms where raising the maximum only affects firms with less stable employment (Lester (1960)). In practice, however, minimum rates are higher when a state cannot recoup costs; thus, in equilibrium, we would expect minimum rates to shrink somewhat under a broader base and especially with greater maximum rates.

¹⁸Huang (2020), for instance, finds that a larger tax base increases teenage employment significantly using a difference-in-differences approach.

¹⁹To measure benefit receipt and tax contribution (on one's behalf) we need individual-level data which are hard to come by. We have records from a populous state, Florida, which sheds light that cannot be reconstructed from aggregate data.

yearly earnings, the insurable yearly income in Florida, and decline somewhat thereafter.²⁰ In contributions, both benefits and tax payments are progressively distributed, with higher income earners contributing three times more than they draw in benefits.²¹ Anderson and Meyer (2006) provide a conceptual framework for evaluating the equity of UI tax and benefits in terms of the *benefit principle* (those who benefit are those who pay) and the *ability-to-pay principle* (those with means are those who pay); in social insurance, these two desiderata naturally come into tension.

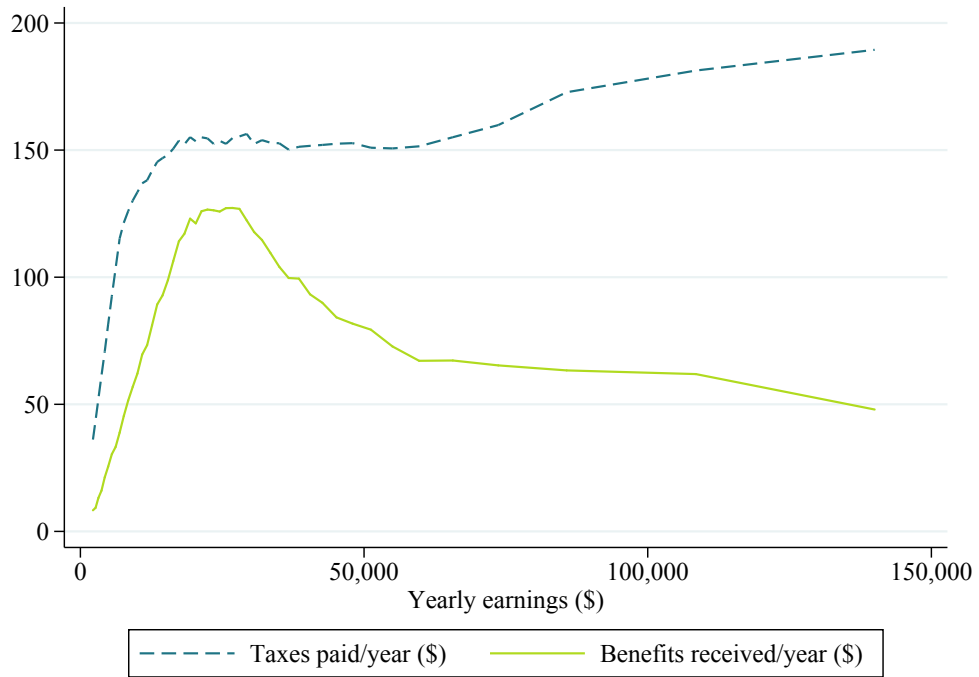
Another distinction between higher maximum rates and a higher taxable wage base occurs because taxes are assessed and paid on a quarterly basis. In states with low taxable wage bases, the bulk of the tax is paid in the second quarter (taxes calculated for the first quarter are paid at the beginning of the second), so a broader tax base smooths tax collection throughout the year. As an example, imagine two firms with the same UI costs (per worker) in two states having perfect experience rating. To simplify the example, imagine they both pay each worker \$40,000 per year. The firm in the state with a low taxable wage base (\$10,000) pays a 5.0 percent rate; the other, in a state with a high taxable wage base (\$40,000), pays a lower rate (1.25 percent) that generates the same revenue over the larger tax base. Because the taxes are assessed quarterly, the first firm will pay \$500 for each worker in quarter two and *no* taxes in other quarters. The second firm will pay \$125 for each worker in each quarter. Johnston (2020) finds that employment reductions from tax hikes are concentrated in the quarters that taxes are paid, suggesting firms are not fully forward looking with respect to UI taxation. If so, a broader base may have the subtle advantage of pacing payments for firms.

A good gauge of the degree of experience rating is the product of the maximum rate and the taxable wage base; we show the geographic variation in this measure across the country in Figure 4. Higher maximum taxes forces firms with greater layoffs to repay a

²⁰In Florida, the maximum weekly benefit is $\$275 \times 2$ (since the replacement rate in Florida is 50.0 percent) $\times 52$ weeks = \$28,600 in yearly earnings)

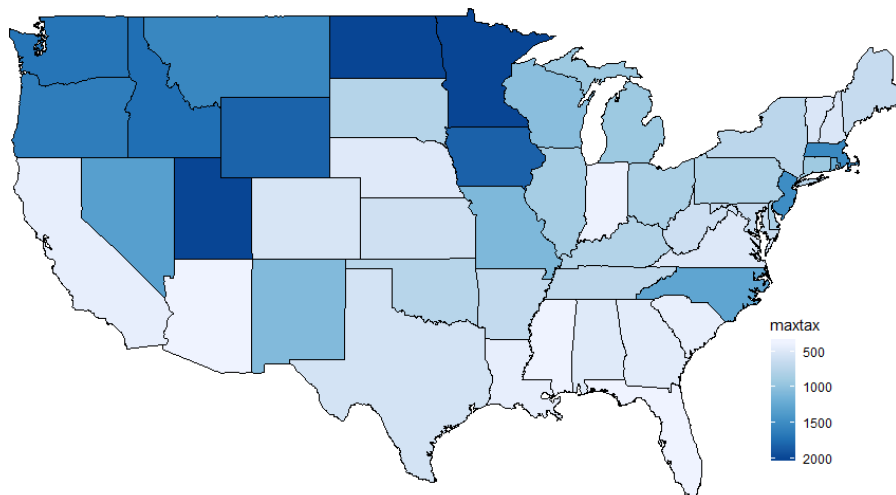
²¹Using data from the March CPS, online appendix Figure A.1 shows that across 2008 income deciles, the share of UI benefits claimed in 2009 is relatively evenly distributed. Roughly 9% of reported UI benefits were claimed by the top income decile, while the middle income deciles claimed the highest shares at 14% and 12% respectively. The bottom income decile claimed the lowest share (6%), likely due to higher rates of ineligibility.

Figure 3: Income Distribution of UI Taxes and Benefits



Source: Florida Department of Economic Opportunity. The y-axis reflects the amount in dollars (\$) the average worker contributed in UI taxes and received in UI benefits the following year (to avoid a mechanical relationship between benefits and tax payments). We use the universe of Florida's workers in 2005 to calculate their yearly earnings and the taxes their employer paid on their behalf. Connecting each worker to their firm, we calculate the amount of UI taxes that was assessed for each worker. We also link each worker to the benefits they received from UI the following year, in 2006. The figure represents the average UI payment in dollars and UI receipt in dollars along the income scale in evenly divided bins.

Figure 4: State Maximum Per-Worker UI Taxes (2008)



Source: US Dept of Labor *Significant Measures of State Unemployment Insurance Tax Systems*
Maximums are topcoded at 2000.

larger proportion of their charges, and to do so more quickly. They are also highly correlated with the actual taxes paid by employers; using average UI tax contributions calculated from the QCEW and accounting for state and year fixed effects, a \$1 increase in state maximum taxes is associated with a \$0.13 increase in average per-worker tax contributions from 2001 to 2018 ($p < 0.001$).²²

The (real) taxable wage base has eroded steadily over the past several decades as some states have not adjusted their base to keep pace with inflation. The exception is 18 states that have indexed their taxable wage base to average wages (or a percentage of average wages), resulting in wage bases as high as \$50,000 in Washington state. At the outset of the unemployment compensation program, the taxable wage base covered 97.8 percent of earnings in 1938. This share fell to 81.1 percent a decade later (in 1948) and 68.2 percent a decade after that in 1958.²³ By 2018, taxable wage bases covered only 20.3 percent of total

²²Online Appendix Figure A.2 plots geographic variation in average rather than maximum UI taxes in 2008.

²³We draw on information presented in Lester (1960) who reports the average employer state tax both (i)

wages.²⁴

Figure 5 shows how the (real) taxable wage base has evolved since 1965. The average real taxable wage base fell steadily from \$26,500 in 1965 to \$16,000 at its lowest in 2008. The federal government required states to increase their taxable wage base to at least \$4,200 in 1972 and \$6,000 (at least) in 1978, contributing to the two spikes seen in those years amid high inflation. The federal government mandated its last increase, to \$7,000, in 1983, and there have been no further federal adjustments. The dashed line reflects the standard deviation in wage bases across states in a given year. Some states have maintained the lowest allowable taxable wage base over time while others index, leading to a sizeable increase in variance since 1980.

To protect distressed (or offending) firms from crushing tax rates, states set a maximum rate, above which taxes cannot rise. As of 1985, the Tax Equity and Financial Responsibility Act (TEFRA) required that states set maximum rates of 5.4 percent or higher. Currently Florida is the only state at the federal minimum. Meanwhile, states like Massachusetts, Pennsylvania, and Wisconsin employ maximum rates over 10 percent, exposing firms to the costs of their layoffs.

Table 1 summarizes the main parameters of each state’s unemployment insurance program as of 2019. For each state, the table lists the type of formula used to determine employer tax rates, the taxable wage base, minimum and maximum tax rates, and the maximum weekly benefit claimants are eligible to collect. Importantly, cross-sectional comparisons of state UI maximum taxes with other business costs such as income tax rates and R&D tax credits does not indicate a strong correlation between UI taxes and other state-level policies (Guo (2020)).

Table 1: Summary of State UI Tax Systems (2019)

State	Tax Formula	Tax Base	Min Rate	Max Rate	Max Benefit
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as a percent of taxable wages and (ii) as a percent of total wages. By dividing the latter by the former, we can calculate the fraction of earnings exposed to UI taxation. See Table 1 in Lester (1960).

²⁴Calculated from the Quarterly Census of Employment and Wages, by dividing taxable annual wages by total annual wages.

Alabama	Benefit Ratio	\$8,000	0.65%	6.8%	\$265
Alaska	Payroll Variation	\$39,900	1.5%	5.9%	\$442
Arizona	Reserve Ratio	\$7,000	0.04%	11.8%	\$240
Arkansas	Reserve Ratio	\$10,000	0.1%	6%	\$451
California	Reserve Ratio	\$7,000	1.5%	6.2%	\$450
Colorado	Reserve Ratio	\$13,100	0.62%	8.15%	\$597
Connecticut	Benefit Ratio	\$15,000	0.5%	5.4%	\$676
Delaware	Benefit Wage	\$16,500	0.1%	8%	\$330
DC	Reserve Ratio	\$9,000	1.6%	7%	\$438
Florida	Benefit Ratio	\$7,000	0.1%	5.4%	\$275
Georgia	Reserve Ratio	\$9,500	0.03%	8.1%	\$330
Hawaii	Reserve Ratio	\$46,800	0%	5.6%	\$630
Idaho	Reserve Ratio	\$40,000	0.26%	5.4%	\$414
Illinois	Benefit Ratio	\$12,960	0.48%	6.88%	\$648
Indiana	Reserve Ratio	\$9,500	0.5%	7.4%	\$390
Iowa	Benefit Ratio	\$30,600	0%	7.5%	\$527
Kansas	Reserve Ratio	\$14,000	0%	7.1%	\$474
Kentucky	Reserve Ratio	\$10,500	0.3%	9%	\$502
Louisiana	Reserve Ratio	\$7,700	0.09%	6%	\$284
Maine	Reserve Ratio	\$12,000	0%	5.4%	\$461
Maryland	Benefit Ratio	\$8,500	0.3%	7.5%	\$430
Massachusetts	Reserve Ratio	\$15,000	0.94%	14.37%	\$870
Michigan	Benefit Ratio	\$9,000	0%	6.3%	\$362
Minnesota	Benefit Ratio	\$34,000	0.1%	9%	\$717
Mississippi	Benefit Ratio	\$14,000	0%	5.4%	\$235
Missouri	Reserve Ratio	\$12,000	0%	5.4%	\$320
Montana	Reserve Ratio	\$33,000	0%	6.12%	\$527
Nebraska	Reserve Ratio	\$9,000	0%	5.4%	\$426
Nevada	Reserve Ratio	\$31,200	0.25%	5.4%	\$450
New Hampshire	Reserve Ratio	\$14,000	0.1%	7.5%	\$427
New Jersey	Reserve Ratio	\$34,400	0.4%	5.4%	\$696
New Mexico	Benefit Ratio	\$24,800	0.33%	5.4%	\$492
New York	Reserve Ratio	\$11,400	0.3%	7.3%	\$450
North Carolina	Reserve Ratio	\$24,300	0.06%	5.76%	\$350
North Dakota	Reserve Ratio	\$36,400	0.15%	9.75%	\$595
Ohio	Reserve Ratio	\$9,500	0.3%	9.2%	\$598
Oklahoma	Benefit Wage	\$18,100	0.1%	5.5%	\$520
Oregon	Benefit Ratio	\$40,600	0.9%	5.4%	\$624

Pennsylvania	Benefit Ratio	\$10,000	2.39%	11.03%	\$569
Rhode Island	Reserve Ratio	\$23,600	1.1%	9.7%	\$651
South Carolina	Benefit Ratio	\$14,000	0%	5.4%	\$326
South Dakota	Reserve Ratio	\$15,000	0%	9.35%	\$402
Tennessee	Reserve Ratio	\$7,000	0%	10%	\$275
Texas	Benefit Ratio	\$9,000	0%	6%	\$507
Utah	Benefit Ratio	\$35,300	0%	7%	\$560
Vermont	Benefit Ratio	\$15,600	0.8%	6.5%	\$498
Virginia	Benefit Ratio	\$8,000	1.5%	6%	\$378
Washington	Benefit Ratio	\$49,800	0%	5.4%	\$749
West Virginia	Reserve Ratio	\$12,000	1.5%	7.5%	\$424
Wisconsin	Reserve Ratio	\$14,000	0%	10.7%	\$370
Wyoming	Benefit Ratio	\$25,400	0%	8.5%	\$489

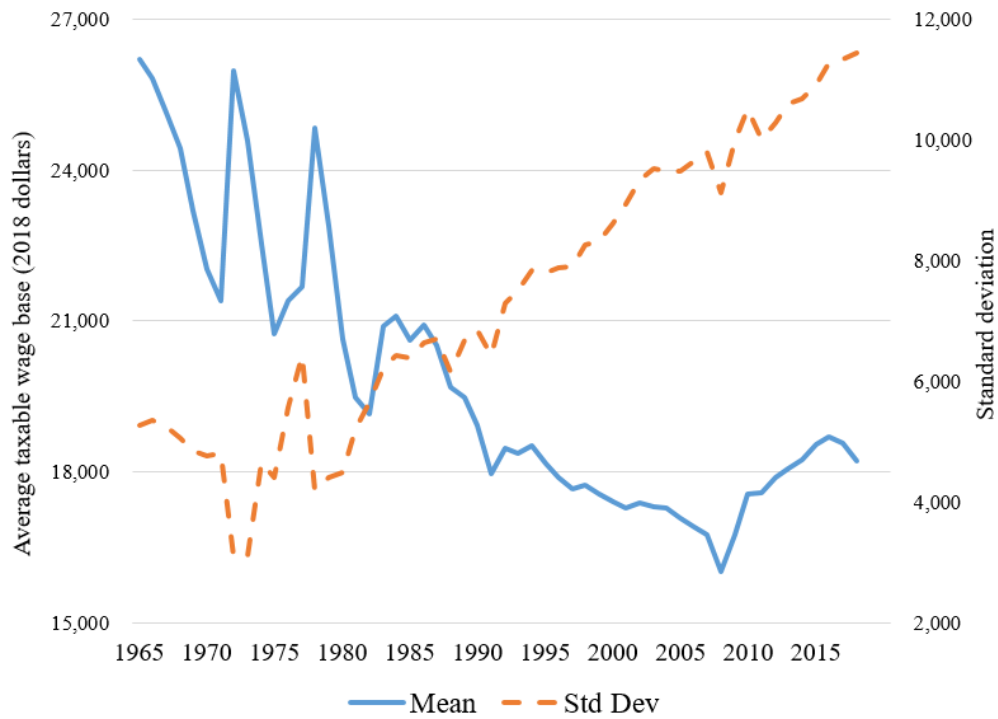
Rhode Island employers in the highest tax group have a \$1500 higher taxable wage base. In states with dependency allowances, maximum benefits are calculated to correspond with three qualified dependents.

3.2 Implications for Trust Fund Solvency

Unemployment benefits are not paid out from state budgets, but rather a designated trust fund into which employer contributions are paid. State UI trusts have varying reserves, depending on the size and prevalence of claims as well as their ability to recoup costs from employers. As a rule of thumb, if a state has in trust a reserve ratio greater than its average recession-level benefit costs, the U.S. Department of Labor considers the state program to have “minimum adequate funding.” This ratio is called the average high cost multiple (AHCM), and solvency is denoted by having an AHCM greater than or equal to one. Figure 6 illustrates state-level variation in the AHCM in Q3 of 2007, the last measure of solvency prior to the onset of the Great Recession in December 2007. Solvency ranged from an AHCM of 0.04 in Michigan to over 1.5 in high-tax states like New Mexico and Washington.²⁵ Of the nine states with maximum taxes near the federally mandated minimum, only Mississippi (which also had the lowest maximum weekly benefits in the US) reported an AHCM within

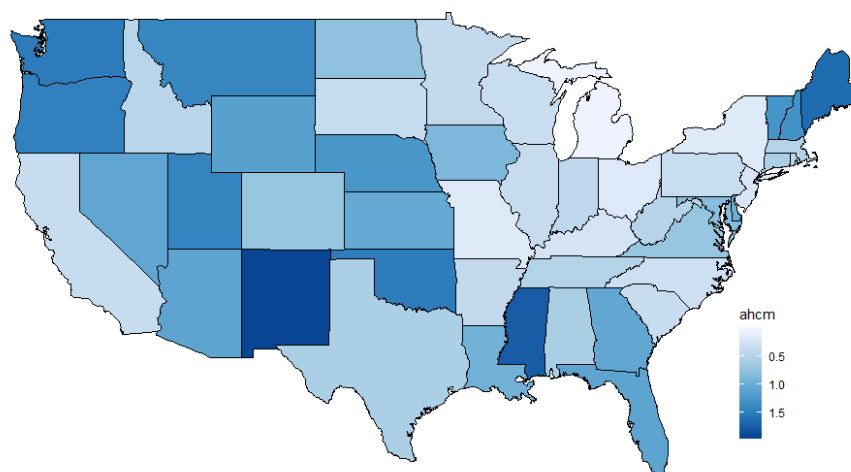
²⁵In one recent discussion with Washington state, the administrators were worried that their reserves were too large—stating that the reserves were left idle and may be put to better use in the hands of employers. Dept of Labor Trust Fund Solvency Report, 2019 (<https://oui.dola.wa.gov/unemploy/docs/trustFundSolvReport2019.pdf>)

Figure 5: State Taxable Wage Bases, Mean and SD over time (1965 - 2018)



Source: US Dept of Labor Unemployment Insurance Chartbook and CPI-U.
 Tax bases are adjusted to 2018 dollars. 1972, 1978, and 1983 were years when federal mandate was raised to \$4,200, \$6,000, and \$7,000 respectively.

Figure 6: UI Trust Fund Solvency: Average High Cost Multiple (2007)



Source: US Dept of Labor Unemployment Insurance Data Summary, 2007 Q3. The AHCM is calculated by dividing the state trust fund's reserve ratio by the average of the three highest calendar year benefit cost rates in the last twenty years.

the top quartile. While benefit generosity may lead some state trust funds to be more solvent than others, another major determinant is the degree of experience rating. After controlling for the maximum UI benefit level, a \$100 increase in the state maximum tax is associated with a 3% increase in the AHCM in 2007 ($p = 0.069$).²⁶

In order to guarantee that workers will have access to unemployment benefits during economic downturns, states that deplete their trust funds are eligible to borrow from the federal government in order to continue paying benefits. States have two years to repay their loan (with interest). Borrowing states must raise taxes all the more during recoveries to pay back what now is owed to the federal government, potentially hampering a swift recovery. If repayment is not made within the two-year time frame, each employer within the state faces additional federal payroll taxes which scale the longer the debt goes unpaid. In 2013, thirteen states still had outstanding loans from the Great Recession. Employers in those states faced an additional 0.6 to 1.2% tax on their \$7000 federal wage base (depending on

²⁶For comparison, a \$10 increase in the maximum weekly benefit is associated with a 2.5% decrease in the AHCM ($p = 0.014$).

which year the initial loan was received).²⁷ California was the last state to repay its loan from the federal government, after employers faced an additional 2.4% federal tax in 2018. Thus, when states opt for low reserves (through generous benefits or low taxes) to fund their unemployment compensation, experience rating breaks down and all employers—regardless of whether their workers utilize UI benefits or not—face tax increases when UI trust funds become insolvent.

3.3 Comparison to Other Countries

Experience rating in UI is unique to the United States. Most countries, including Canada, France, Germany, Japan, and the United Kingdom, impose a uniform payroll tax on workers, employers, or both to finance benefits. While some European countries have experience-rated components of their UI systems (primarily in the form of differentiated rates by sector, or they have a penalty for dismissals *like* experience rating), none are employer-specific like the U.S. (Baicker et al. (1998), Fath and Fuest (2005), Simonetta (2017), Miller and Pavosevich (2019)). Some countries in Scandinavia and the Netherlands have implemented industry-specific rates set by trade unions. In France and Germany, employers face a penalty for laying off older workers, but don't have experience rating for UI (Behaghel et al. (2008)). Great Britain, the only other country to experiment with firm-specific tax rates, abandoned the effort almost a century ago after a series of difficulties implementing. In 1911 Great Britain enacted reforms that would refund tax costs to employers who maintained stable employment, but they were repealed by 1920 due to administrative burden and skepticism that it discouraged firms from laying off workers (Lester and Kidd (1939)). Nevertheless, the state-level administration featured in the United States has been proposed as a potential model for the creation of an EU-administered unemployment insurance system (Simonetta (2017)).

The lack of experience rating could also be related to the fact that many other countries have stronger employment protection legislation than the U.S.²⁸ Significant firing costs

²⁷ADP Report on FUTA Increases in 2013 (<https://www.adp.com/tools-and-resources/adp-research-institute/insights/-/media/eae6055d53a141c3b57b63cc8fef8582>)

²⁸The OECD Indicators of Employment Protection indicators show that the U.S. is one of the lowest

seem to be linked to the rise of “Eurosclerosis,” marked by employment stagnation in the 1970’s and 1980’s (Bentolila and Bertola (1990), Ljungqvist and Sargent (1998), Ljungqvist and Sargent (2008)). Several European countries liberalized their labor-market regulations, relaxing or abandoning penalties for dismissal, which seems to have improved labor-market outcomes (Autor (2003), Price (2018)).

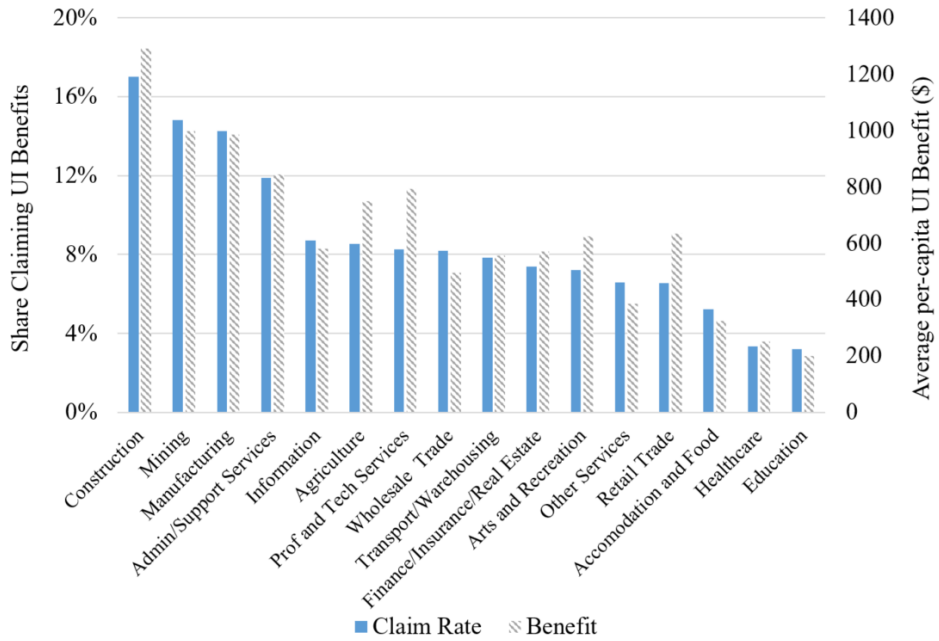
4 The Influence of Experience Rating on Taxes

Experience rating was criticized in early days as an instrument of discrimination. Critics argued that all firms should equally bear the cost of the insurance protecting workers. But, of course, layoffs are not randomly distributed across industries, or even among firms within them. Figure 7 shows the percent of each major industry’s labor force that claimed UI benefits during the Great Recession. Each primary bar represents the share of respondents (ages 21-64) that received UI benefits in 2009, while the secondary bars denote the average benefit amounts received. Layoffs were elevated throughout the economy, even affecting canonically secure employment in public schools, but the industries with the highest utilization of UI benefits were construction, manufacturing, mining, and administrative/support services. During the Great Recession, over 17% of construction workers reported UI receipt in the March CPS and received the highest average benefit payments as well.

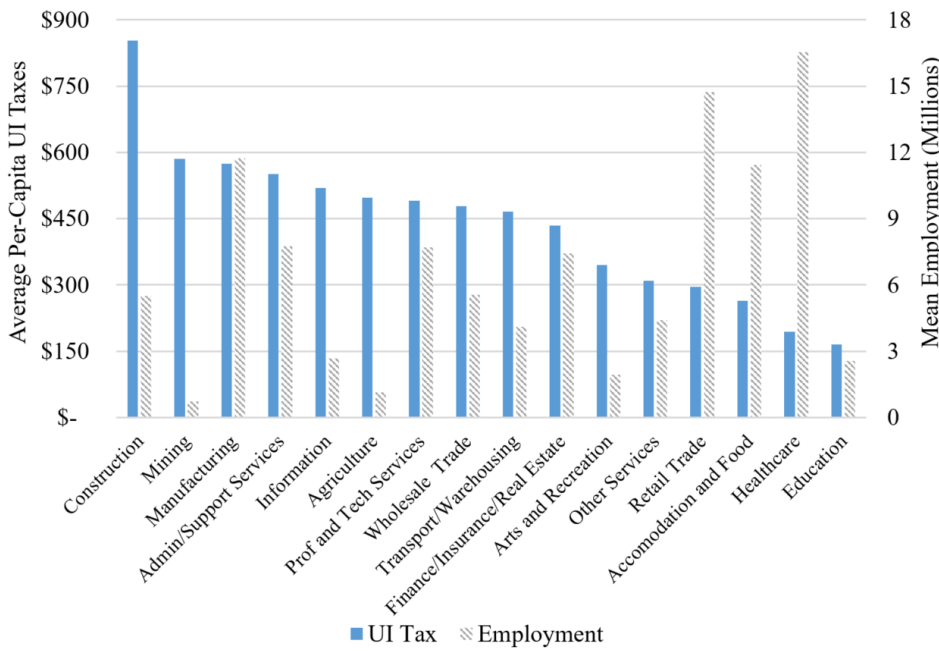
Differences in UI utilization naturally translate into differences in tax costs by industry. Panel B of Figure 7 shows how tax costs per worker vary in those same industries in 2011, as well as how employment itself is distributed. UI tax costs peaked in 2011 due to layoffs incurred during the Great Recession. This provides a sense of which industries benefit from uniform rates and which are likely to subsidize others in the absence of experience rating. Taxes are highest in construction, but also significant for manufacturing and administrative/support services. The three largest employers—retail, hospitality, and healthcare—pay relatively low UI taxes.

One interesting feature of UI tax rates is their evolution over the business cycle. Lester ranking countries in terms of dismissal costs for permanent workers, temporary employment, and individual dismissal. <http://www.oecd.org/els/emp/oecdindicatorsofemploymentprotection.htm>

Figure 7: UI Claimants and Taxes, by Industry
 A: Share of Labor Force Claiming UI Benefits (2009)



B: Average Employment and per-worker UI Taxes (2011)



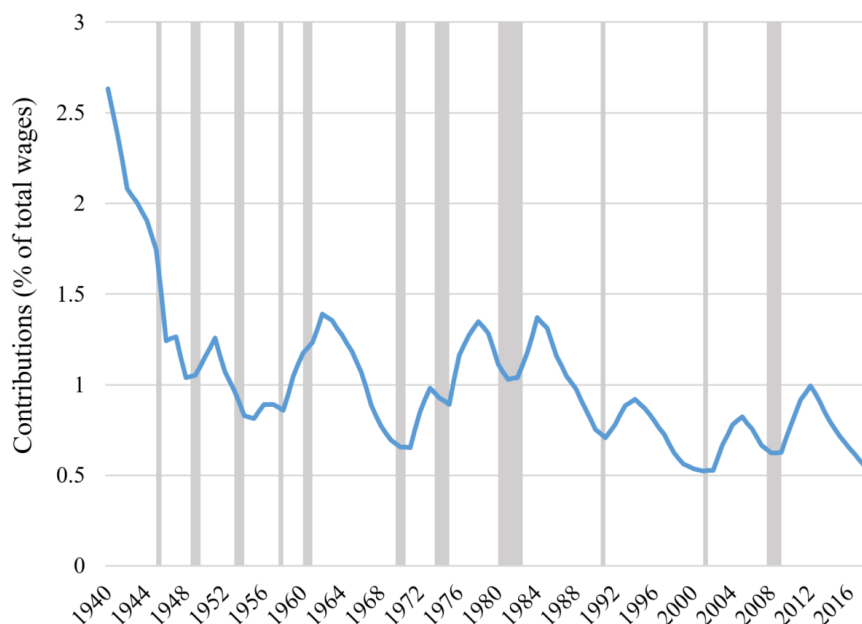
and Kidd (1939) argued that experience rating would tend to place a drag on economic recovery since taxes rise after recessions, as the labor market is mending.²⁹ In Figure 8, we plot UI taxes as a fraction of total wages over time, starting at the inception of the program. At the outset, states assigned relatively high fixed rates which transition to a variable (usually lower) rate after a few years when the firm has established a history with which to assign a differentiated tax. For that reason, taxes start quite high as UI rolls out across the country in the early 1940s. Since that time, taxes demonstrate a cyclical pattern with taxes rising after recessions (represented by shaded grey regions) and falling as labor markets tighten.

One important question for researchers is the macroeconomic implications of experience rating. If firms are less able to pay tax increases after recessions, their sensitivity may lead to reduced hiring or increased exit. Economists typically regard UI as a naturally stabilizing influence over the business cycle, since benefits are discharged in proportion to unemployment. Since tax hikes echo payments, however, it is ultimately unclear the extent to which the UI program alleviates or prolongs economic downturns.

Because states set different implicit limits on experience rating, large unemployment shocks translate into widely ranging taxes faced by firms. In Figure 9, we map county-level average UI taxes assessed on manufacturing firms for the 2008 calendar year, before the Great Recession. Rates are low throughout the country, although they are somewhat higher in places that allow greater rating (in the Northwest, industrial Midwest, and New England). The map below it shows the average costs across the country in 2011, when claims had dealt their maximum impact on UI tax rates. Though rates increase across the country, taxes rise by the greatest degree where tax assessments are least constrained by small taxable wage bases and low maximum rates. In online Appendix Figure A.3, we show a corollary figure for the UI costs faced by construction firms, who were also hard hit during the recession.

²⁹In Lester (1960) writes, “One problem of the unemployment compensation tax under experience rating is that the rate tends to vary inversely with phases of the business cycle. . .Such a pattern of variation, it is claimed, tends to accentuate the cycle by increasing the tax rate (or burden) in the midst of a recession and lowering the rate during prosperous times, when industry is best able to pay.”

Figure 8: Total UI Contributions, as percent of total wages (1940 - 2018)



Source: US Dept of Labor Unemployment Insurance Chartbook.
 Shaded regions denote US recession years, as defined by NBER.

5 Open Questions

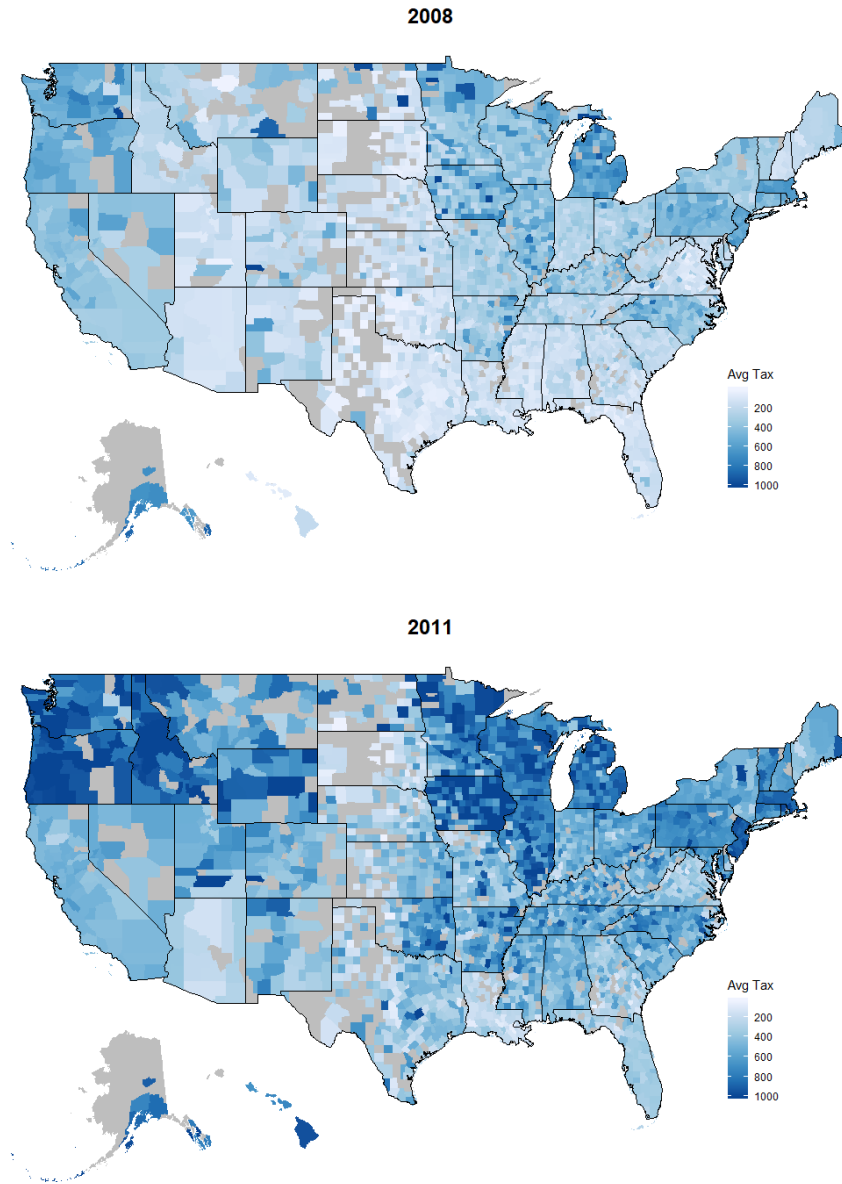
The potential implications of UI financing are widespread. We recommend a few areas we believe to be essential in assessing the role of UI finance on the labor market.

5.1 Impact of experience rating

The degree of experience rating reflects a cost of dismissal to firms. Prior work emphasized the influence of experience rating on temporary layoffs using survey data (Feldstein (1976), Feldstein (1978), Topel (1983), Card and Levine (1994)).³⁰ We encourage new work using design-based methods and large, administrative data to shed brighter light on the

³⁰Feldstein (1976) notes that the UI system provides a “subsidy” (a word that implies the norm is perfect experience rating, when the norm around the world is no experience rating) to firms with high rates of layoffs because of partial experience rating, and theorizes that lower subsidies for layoffs (higher experience rating) decreases temporary layoffs. Feldstein (1978) takes theory to data and shows a positive relationship between UI benefit replacement rates and temporary layoffs in the 1971 CPS. Topel (1983) imputes UI subsidies at the industry level and argues that temporary layoff rates would have been 30 percent lower in the absence of UI subsidies under full experience rating using the 1975 CPS. Additional papers such as Saffer (1982) and Card and Levine (1994) provide further evidence that experience rating and temporary layoffs are linked.

Figure 9: Average UI Taxes per Worker in Manufacturing, by county



Source: Quarterly Census of Employment and Wages. Average taxes are calculated as total quarterly UI contributions divided by total employment, and summed up across all four quarters of the year. Values winsorized at \$1000 (top 3%). Grey areas denote counties too small for disclosure.

influence of experience rating in the labor market.

5.1.1 The employment-stability tradeoff of experience rating

Penalties for layoffs may discourage them, but dismissal costs may also discourage hiring and lead to lower equilibrium employment. One of the early debates over unemployment insurance identified the potential tradeoff between “employment stability” on one hand and “total employment” on the other. Myers (1939) reports survey data suggesting that 2.4 percent of employees lost employment as a result of experience rating, but others enjoyed more hours. Anderson (1993) examines a sample of administrative UI records from six states and finds that adjustment costs from UI experience rating are associated with less response to seasonal fluctuations, smoothing employment over the year. Betcherman and Leckie (1995) study firms along the U.S.-Canada border and find little evidence that experience rating affects layoffs or training.

If greater experience rating improves retention, what are the costs and benefits of *induced* retention? Does it enhance or reduce the productive capacity of firms and the welfare of workers? On one side of the ledger, firms and workers may be more likely to sustain unproductive matches to avoid the separation tax. On the other, firms and workers may be more willing to invest in match-specific human capital that fosters greater output and wellbeing.

Another open question is the influence of experience rating on total employment. If firm managers are present-biased, the layoff tax may deter separation but have a muted impact on hiring, leading to greater employment. If true, it would be interesting to know what downsides might arise from greater-than-natural employment. On the other hand, experience rating may have little impact on layoffs (if, for instance, managers only engage in layoffs when financially necessary to avoid closure) but rating could reduce hiring because layoffs—once necessary—would be more costly.³¹

³¹A series of theoretical papers touch on this question using equilibrium models of the labor market. Albrecht and Vroman (1999) find that experience rating reduces unemployment and leads to higher output among employers using efficiency wages. Millard and Mortensen (1997) use an equilibrium search model in which match quality between firms and workers deteriorate over time. The model implies that experience rating increases the duration of unemployment spells, extends employment, and reduces productivity by inducing employers to sustain bad matches with workers and delay adopting good ones. Most recently,

Current design-based methods and administrative microdata promise a greater degree of clarity. Ideally, analysts would compare the employment behavior of similar firms who faced different levels of experience rating. One could evaluate firms in the same industry on either side of a border where one state institutes greater rating. Alternatively, analysts could study whether firms are more prone to layoffs when they are already positioned at the maximum rate, and thus partially shielded from additional charges in benefit-ratio states (and less so in reserve-ratio ones).

Once researchers have managed to measure these influences (the effect on turnover and that on employment), the task of making them commensurable would allow us to evaluate the net influence of experience rating.

5.1.2 The influence of experience rating on risky workers

One unexplored yet important question is whether, under experience rating, firms are especially reluctant to hire workers that seem likely to separate and claim benefits. Beyond the initial layoffs themselves, experience rating formulas penalize firms for workers who remain unemployed for longer durations.

Early survey work suggests that the most common response to experience rating by firms was a “more careful selection of the work force” (Myers (1939)). Is this response socially efficient?³² Finland instituted experience rating for *disability* insurance in 1996, a reform studied by Hawkins and Simola (2020) who find that experience rating *reduces* flows into disability insurance (as firms are given measured incentives to accommodate the partially disabled), but firms also avoided new hires that were likely to claim disability eventually (though the first effect appears far larger than the second).

Another potential firm response to experience rating could be a larger reliance on

Ratner (2013) combines a search model of unemployment with firm-level data from the Quarterly Census of Employment and Wages. He finds that greater experience rating reduced turnover as well as unemployment.

³²Many of the other firm responses to experience rating are interesting and worthy of investigation. To avoid the penalties of experience rating, firms would introduce “work spreading” (spreading the available work among the largest number of workers by reducing hours), transfer workers between departments within the firm, build out storage facilities to stockpile production during slack periods (which only works when a product is standardized and not perishable), attempt to find new products or services whose demand is high during the slack season, form cooperatives with other businesses to transition employment between firms (unions detested the practice), hiring fewer workers in peak season, filling orders more slowly, refusing orders, and contracting work out (Ibid).

contract or contingent workers, whom the firm can freely terminate without it raising their UI taxes. As contingent workers become more common due to rising costs, UI taxes may play a role in diminishing traditional employment.

When firms hire an unemployed worker, they relieve another employer and potentially the state of costs in an array of supports provided those in want. Experience rating internalizes the externality of layoffs, but not externality of hiring. A richer system could provide firms a countervailing incentive that reflected part of the costs of social supports that are rendered unnecessary when the person finds employment.

5.1.3 The influence of experience rating on contests and collusion

Another element of firm behavior is how experience rating influences the propensity of firms to challenge UI claims or transfer utility to workers by abusing UI at the community's expense. Anderson and Meyer (2000) investigate the impact of experience rating on benefit disputes using Washington's adoption of experience rating in 1985. Challenges (where firms contest a worker's claim) in Washington increased by 2.7 percentage points, a 50 percent rise; in the rest of the country, challenges remained constant over the same period. Auray and Fuller (2020) evaluate how benefit disputes influence takeup of UI benefits. They find that higher rates of improper benefit denials (as measured in random audits) is negatively related with takeup among the unemployed, suggesting that contests increase the cost of claiming and discourage claiming. Schoenherr et al. (2019) show that, in the absence of experience rating, firms and laborers collude to extract rents from taxpayers, propagating layoffs and hires to coincide exactly with eligibility rules and benefit durations. In old-age insurance, too, experience rating seems to mitigate the potential for collusion between workers and employers at the public's expense (Hakola and Uusitalo (2005)).

5.1.4 Impact of experience rating on entry, exit, and adverse selection

Does variation in experience rating affect entry, exit, or adverse selection among firms? In particular, do high-risk firms endogenously select into states that shield firms from the full cost of their separations? Work in this area could be accomplished using public data

that describe the county-level counts of firms in various industries over time (including the Quarterly Census of Employment and Wages (QCEW) or County Business Patterns data (CBP)). A difference-in-differences approach, with the first difference measuring how common *risky* firms are in counties with low maximum fees relative to neighboring counties across state lines with higher maximum fees. The second difference would measure how common *stable* firms are across state borders. The DiD allows us to compare the influence of experience rating while netting out the influence of general business climates that may be correlated with experience rating. Bernardus Doornik and Skrastins (2020) show that UI subsidizes risky firms, equalizing the wages they pay in equilibrium; interestingly, risky firms tend to be more innovative and the authors produce evidence that UI increases entrepreneurship. Deere (1991) finds that incomplete experience rating shifts labor into riskier industries, increasing layoff unemployment by five percent.

The most tailored work that has been done is that of Guo (2020) who exploits multi-establishment manufacturing firms that have locations across state lines. She finds that firms are more likely to shutter plants in states with relatively high UI tax exposure, implying that UI tax differences induce greater exit in high-tax states during economic downturns even at the expense of plant-level productivity. While firm exits impose a negative fiscal externality on the remaining employers in the state, it's also possible that the reallocation of riskier employers towards lower experience rating states will, over time, exacerbate differences in state UI trust fund solvency.

5.2 The implications of endogenous vs. exogenous layoffs

As discussed, experience rating may be most effective if layoffs are the result of factors firms directly control. For instance, if layoffs are largely the result of mismanagement, experience rating can succeed in curbing mismanagement and the layoffs it produces. If, instead, layoffs are the result of forces outside the employers' control—trade shocks, supply-chain problems, or technological change—experience rating cannot internalize an externality within the power of the firm to mitigate. In those circumstances, the benefit of experience rating is in moderating firm choice to reflect social costs of layoffs. Given a negative shock,

the firm may be more likely to retain the worker, but the shock is not avoided as firm mismanagement could be.

When layoffs are the result of external forces, experience rating will heap additional costs on firms already facing negative shocks, possibly magnifying their effect.³³ Insurance for the worker, in this way, can produce greater risk for the firm. In early work, 47 percent of firms reported they could not stabilize their employment because “difficulties inherent in the nature of the business” either limited, or made impossible, greater stabilization (Myers (1939)). Another 46 percent of respondents had attempted stabilization well in advance of experience rating or were naturally stable businesses. Work measuring the influence of various factors on layoffs would be helpful in assessing the potential for experience rating to stabilize employment.

A related issue is that small firms may face especially volatile tax rates since their rates suffer from a “small-sample” problem: a single, aberrant layoff may drive the firm’s rate from the minimum to the maximum rate. Would it be optimal to lean less heavily on firm-specific histories when setting rates for smaller firms?

5.3 Impact of tax-rate changes on firm behavior

One of the unique features of UI taxation is that it varies for individual firms and over time. Do UI tax increases affect the propensity of firms to hire new workers, reduce wages, or exit the market? What makes an analysis of these questions challenging is that tax hikes are not random—they reflect the health and finance of the firm. Anderson and Meyer (1997) are the first to attempt to measure the relationship between UI tax rates and labor demand, regressing firm-level employment changes on (endogenous) changes in tax rates. Johnston (2020) addresses selection leveraging a kink in the UI tax schedule to estimate how tax hikes affect hiring, layoffs, and exit. Guo (2020) exploits variation in locations of multi-state firms to study how labor demand varies with tax costs. These two recent papers have found that higher tax rates depress hiring, while doing little to deter layoffs.

³³Baicker et al. (1998) write the problem this way: “Merit rating could unduly penalize some firms that experienced negative shocks and could even exacerbate a downturn by driving such firms into bankruptcy. . .if employment were more stochastic than predictable, equity considerations would argue against experience rating.”

The next logical question, then, is whether these labor-demand responses vary by firm characteristics. Lester (1960) predicts that firms with layoffs will have larger labor-demand elasticities with respect to tax increases (reasoning that low-tax firms are more monopolistic and more robust to shocks than high-tax ones). By understanding the distribution of firm responses, policymakers can construct UI tax schedules that minimize the depression of labor demand. Most states use reserve-ratio systems containing several tax-rate discontinuities which would be useful for estimating the causal impact of tax rates on firm behavior at several points in the firm distribution of layoffs. Some discussants have suggested that UI tax fluctuations may have a useful “pruning” effect in the labor market. The logic is that firms that cannot sustain their financial footing amid changes in tax rates *should* be removed from the market, and their resources freed for better use—an interesting hypothesis to examine.

5.3.1 Incorporating these impacts into the optimal UI calculation

The existing work on optimal UI usually assumes that taxes are paid from worker wages (Baily (1978)) or an efficient lump-sum tax (Acemoglu and Shimer (1999)). For the portion of UI taxes that are stable over time and common among employers, these incidence assumptions are approximately true. For the portion of taxes that vary over time or across firms operating in a shared labor or product market, however, these incidence assumptions render misleading conclusions about the optimal level and duration of benefits. Johnston (2020) incorporates into the optimal-benefit formula the employment reductions resulting from UI tax hikes. The calculation suggests optimal benefits decline by a quarter once the employment losses from taxes are accounted for. A more systematic study of how incidence influences the optimal-benefit function would be a welcome contribution.

Relatedly, taxes may lead to deviations from efficiency in the presence of moral hazard among claimants. When workers reduce their search effort in the presence of insurance, the costs generated by moral hazard are assigned to firms. While firms can avoid some UI costs by careful management, the portion of costs owed to moral hazard in search effort is outside the control of employers, leading to inefficiently high taxation (the product of

uncompensated work-search externalities). An interesting extension would be to incorporate moral hazard into the model of optimal UI and experiment with systems in which both firms and workers were experience rated.

Because rates are highly individualized, competing firms in the same product and labor markets will face different taxes. These costs cannot fully express themselves in prices to consumers in competitive markets—neither workers nor consumers will abide a significant cost shifting. In practice, this means that firms bear the intramarket variation in taxes (Lester (1960), Anderson and Meyer (1997)). Empirical and theoretical work to trace out the implications of these varied costs (for entry, exit, employment, and the allocation of other resources) would be helpful for assessing the tradeoffs of greater experience rating.³⁴

5.4 Experience rating and the macroeconomy in recession and recovery

Experience rating has immediate implications for the macroeconomy. Early critics argued that experience rating would burden the economy as it emerged from recessions. In some contrast to the pattern of experience rating, early Keynesians advocated the opposite policy in which payroll taxes would rise in booms and fall during recessions (Israelsen (1994)). While there has been work estimating the macro impacts of benefit discharges on employment and output (Johnston and Mas (2018)), work to measure the macro impacts of tax increases would be extremely valuable as well.³⁵ These estimates would allow policymakers to have a complete picture of the influence of UI on macro stabilization.³⁶

In a related stream, opponents of experience rating have argued that since (1) dif-

³⁴In theoretical work, Hopenhayn and Nicolini (1997) considers the inclusion of worker experience rating via a wage tax after re-employment, and finds that this allows for higher replacement rates and results in larger cost savings (utility gains) when agents are liquidity constrained. Wang and Williamson (2002) introduce experience rating into a general equilibrium search model, but on the worker side rather than the firm side. They find no effects on unemployment rates as underlying risk levels do not affect workers' work or search behavior. However, if the underlying risk arose from firms or industries instead, this could lead to different conclusions about optimal benefit design.

³⁵Di Maggio and Kermani (2016) studies UI benefits as a potential automatic stabilizer and find that greater benefit generosity helps to mitigate negative demand shocks. Hagedorn et al. (2016) find evidence that UI benefits adversely impact labor demand through higher reservation wages.

³⁶Ratner (2013) estimates a general equilibrium model with firm experience rating and finds asymmetric responses over the business cycle; while greater experience rating dampens employment responses to positive shocks in his model, it also prolongs unemployment during busts as firms are hit with higher tax rates.

ferentiated rates fall disproportionately on construction and capital goods and (2) these sectors are the “backbone” of a national economy, uniform rates are preferred. The essential question is whether there are positive externalities arising from these industries to justify a subsidy (as in Bernardus Doornik and Skrastins (2020)). If, for instance, there are increasing returns to domestic scale (Dingel (2017)), agglomeration effects, or externalities from risky, innovative firms, there may be a rationale for subsidizing employment in those firms by way of lower experience rating. Similarly, high labor demand in these industries may produce a larger, more durable middle class which is associated with economic mobility as well as political stability (Easterly (1999) and Chetty et al. (2014)).

5.5 Alternative models of UI finance

Finally, work studying the potential benefits of alternative systems for UI financing would be informative. Apart from uniform payroll taxation, the primary alternative is found in unemployment insurance savings accounts (UISA) in which firms contribute to a private account for each worker from which the worker draws benefits when unemployed. At the end of his career, each worker receives all that remains in his account, implying workers have fully internalized incentives for work and search (Feldstein and Altman (2007)). Mexico and Chile employ a policy of this form in which workers can draw unemployment compensation from their own privately funded, federally managed retirement account. Austria, as well as various countries in Latin America, have adopted policies of this form, but work that is able to measure the impacts of these UISAs has been elusive for want of a clear empirical design (Hartley et al. (2011)).

6 Conclusion

Unemployment insurance payments have been subject to rich economic analysis. How much insurance value do payments provide? (Gruber (1997), Ganong and Noel (2019), Landais and Spinnewijn (2020)). How do shorter or less generous benefits influence the labor market? (Farber et al. (2015), Hagedorn et al. (2015), Schmieder et al. (2016), Johnston

and Mas (2018), Price (2018)). How should benefits be structured and timed, down to fine-resolution details? (Lindner and Reizer (2020), Kolsrud et al. (2018)). Researchers have produced hundreds of careful studies to address these subjects, dotting unknown questions as healthy antibodies dot unknown pathogens.

In bright contrast, very little has been done to address the unknowns surrounding the U.S.'s unique financing scheme for unemployment compensation and its influence on the labor market. How can we quantify the tradeoffs associated with experience rating? If the advantages are substantial, the workers of many other countries could benefit from a clearer measurement of those benefits. If the costs outweigh, a hundred and fifty million workers in this country could be spared their deleterious effects. Questions surrounding experience rating in unemployment compensation are tied to several issues economists find interesting, combining corrective taxation, industrial policy, and the study of labor markets.

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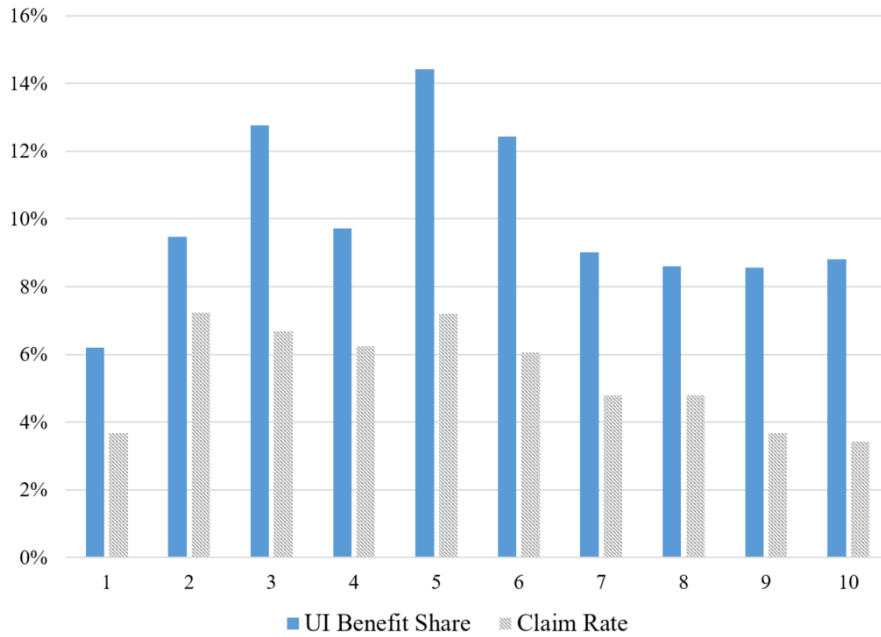
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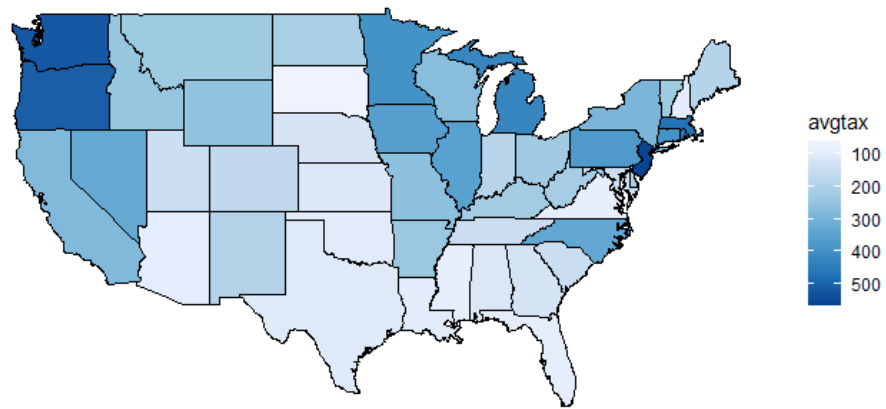
ONLINE APPENDIX

Figure A.1: Distribution of UI Benefits, by income decile (2009)



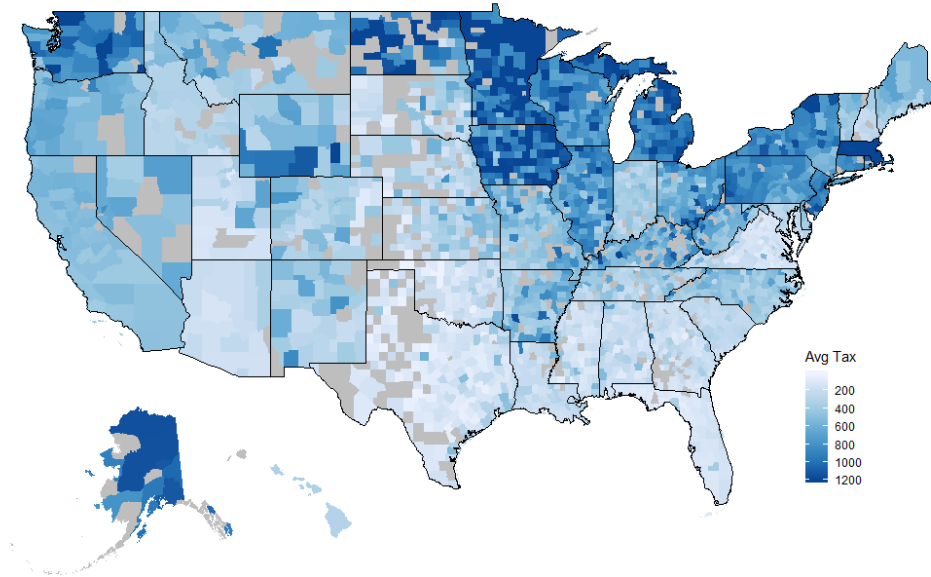
Source: 2009-2010 March CPS. Restricted to respondents age 21-64 who reported positive earnings and no UI receipt in 2008. Income deciles determined by annual earnings in 2008. The earnings cutoff for the highest income decile is \$92,000.

Figure A.2: State Average Per-Worker UI Taxes (2008)

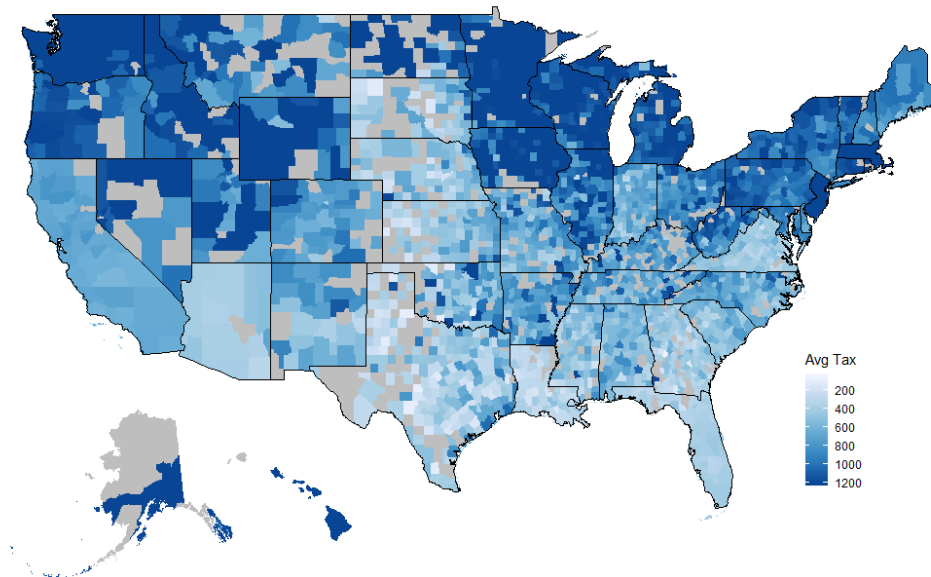


Source: US Dept of Labor *Significant Measures of State Unemployment Insurance Tax Systems*.

Figure A.3: Average UI Taxes per Worker in Construction, by county
2008

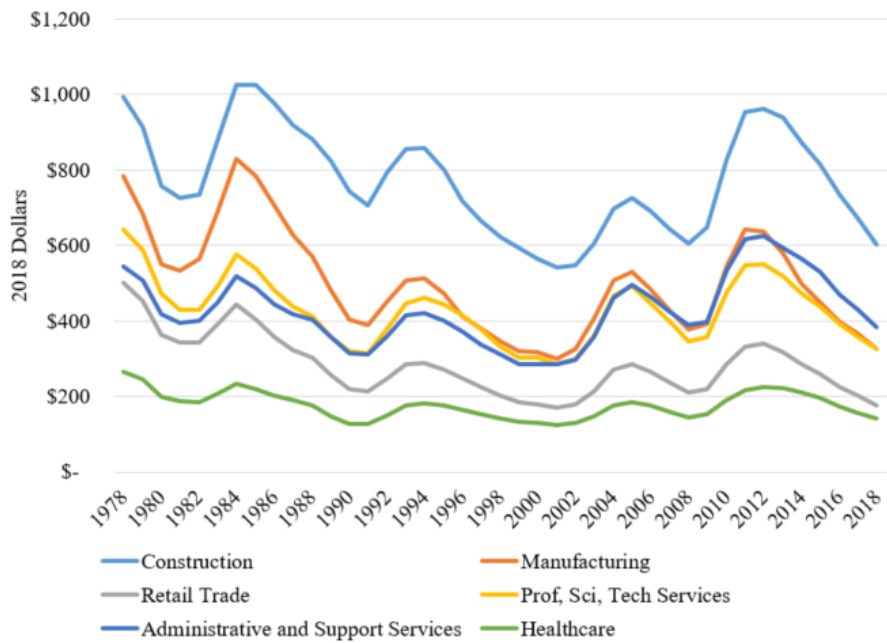


2011



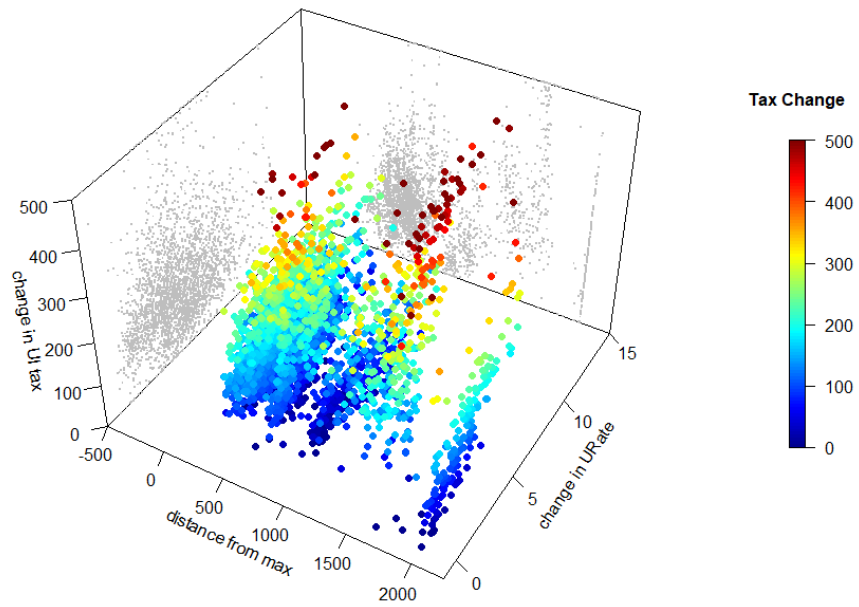
Quarterly Census of Employment and Wages. Average taxes are calculated as total quarterly UI contributions divided by total employment, and summed up across all four quarters of the year. Values winsorized at \$1200 (top 10%). Grey areas denote counties too small for disclosure.

Figure A.4: Average Per-Worker UI Taxes, by sector (1978-2018)



Source: Quarterly Census of Employment and Wages. SIC to NAICS concordance from Fort and Klimek (2018).

Figure A.5: County-level UI Tax Increases



UI tax changes from QCEW, calculated as largest change in average per-worker taxes between 2008 and 2010-11 (Topcoded at \$500). County unemployment rates from LAUS, calculated as largest change between 2007-08 and 2009-11 (Topcoded at 12 percent). Distance from maximum calculated as difference between state maximum UI tax and average per-worker tax in 2008.