Labeling quits and layoffs under incomplete experience rating in the unemployment insurance system

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Abstract

The experience rated unemployment insurance system in the United States results in some firms paying more or less than their share of generated UI claims largely because of upper and lower bounds on the maximum UI payroll tax rate. Firms that pay less are thus receiving a subsidy relative to their peers. Per unit of paid UI benefit to the separated worker, the cost paid by the firm is called the marginal tax cost of separation, MTC, where firms with an MTC below one are receiving such a subsidy.

This paper provides new empirical evidence that the MTC matters for the composition of quits versus layoffs. Unlike the existing literature, this paper calculates a time-varying forward looking measure of the marginal tax cost as opposed to the widely used steady-state MTC. This measure is both consistent with the firm's optimization problem and incorporates a firm's expectations about the future. This paper shows that an increase of 10% in the marginal tax cost generates an increase of 17% in the probability of a given separation being labeled as a quit and a 0.3% increase in the fraction of the labor force unemployed via a quit. This suggests that some firms may profitably commit to ex-ante labeling separations as layoffs.

1 Introduction

Jobs do not last forever - the firm and the worker must eventually go their separate ways. However, these separations come in two forms: layoffs and quits. Within the context of models, this distinction has not always been clear. Some studies have treated separations as the result of a unilateral decision - layoffs are the firm's choice (e.g. Mclaughlin 1992) and quits are the worker's choice (Hall & Lazear 1989). Others (e.g.; Burdett 1978; Mortensen 1988) have proposed a model in which separations only occur through mutual agreement, leaving no distinction between quits and layoffs. Yet, not only does the composition of separations clearly matter for modeling purposes, but it also matters for very practical purposes such as the unemployment insurance (UI) system which relies on distinguishing between quits and layoffs.

One driver of the composition of separations is the existence of separation costs. As just mentioned, US unemployment benefits are only received by workers that are defined as laid off and not as having quit. Further, and largely uniquely to the US labor market, firms that generate separations that qualify for unemployment insurance claims pay more in payroll taxes to fund the system of unemployment insurance, up to some maximum percentage of payroll that varies by state. All variations on this system that tie the firm's taxes to the firm's layoffs are called *experience-rated* UI systems. However, at the maximum (minimum) payroll tax rate, some firms that generate many UI claims are potentially not paying (paying more than) the full value of the benefits their employees claim since the tax rate cannot fully adjust past the rate ceiling (floor). Consequently, such firms would end up being subsidized (taxed) relative to firms that pay the full value of the UI claims they generate.

More generally, depending on the various details of state UI programs, many firms end up paying only a fraction of the cost their layoffs incur within the UI system depending on how their individual tax rates are calculated. Empirical studies, including Feldstein (1978) and Topel and Welch (1980) have called this the *Marginal Tax Cost* (MTC) of separation. The magnitude of the MTC ranges from nearly zero to greater than one, depending on the firm. A completely pure system of experience rating would be if the MTC was always one - if all employers paid just the benefit claims their own layoffs incurred.

In general, the UI subsidy any particular firm is receiving is defined as the fraction of benefit claims not paid by the former employer, and vice versa for firms paying more in taxes than in benefits paid out to former employees. As different states set different maximum and minimum rates of UI taxation and make different decisions on how to map a firm's layoff history into tax rates, considerable heterogeneity in subsidies is generated.

In the absence of any such UI subsidy, when firms are fully and solely responsible for financing any unemployment benefits due former employees, firms have a clear incentive to minimize the number of separations that count as layoffs and hence minimize the UI bill due. Conversely, firms at the tax rate ceiling or floor under a certain experience rating system have a much reduced incentive to try and label separations as quits instead of layoffs, and in general the incentive the firm has to label separations as quits depends on their marginal tax cost.

This paper uses the variation in the effective MTC/UI subsidy across firms to analyze the composition of separations between layoffs and quits. I find that an increase of 10% in the marginal tax cost generates a 17% increase in the probability of observing a quit given a separation across the Merged Outgoing Rotation Group (MORG) - CPS from 2001-2014. Further, a 10% increase in the average MTC across states generates a 0.3% increase in the fraction of the total labor force that is currently unemployed through a quit. While the average effect across the sample is significantly positive, there is considerable variation by year. I argue that this is consistent with the incentives facing firms to label separations as quits or layoffs since the labeling incentives vary with the state of the economy.

This yearly variability motivates my refining of standard MTC measures. The labor literature has traditionally measured the marginal tax cost as a steady state value, calculated as a time series average of the main parameters and variables involved in the state's unemployment insurance tax calculations. While many of the state-specific parameters barely fluctuate across time, the insured unemployment rate fluctuates significantly with the business cycle, and the MTC moves correspondingly.

As the incentive to label a separation as a quit versus as a layoff fluctuates over the business cycle, the MTC must be measured in a way that allows it to fluctuate as well. This paper proposes a measure that is consistent with a firm's forward-looking optimization problem in the face of realistic, fluctuating separation costs. The decisions made by model firms are a function of rational expectations over future taxable wage growth, future employment growth and the future unemployment rate. In the data, I construct this measure using VARs on CPS monthly data starting from 1994.

The model also has additional strong implications for the labeling of quits versus layoffs in this forward-looking world. When firms are fully liable for any generated unemployment claims, they have every incentive to label separations as quits whenever possible. But because of the subsidy granted to some firms from an imperfect UI experience rating, firms may commit to workers to label any separation as a layoff. This is of direct benefit to the worker. From the employer's perspective, when the marginal tax cost is low, the labeling decision can be profitable if workers can observe and remember it. Firms with a reputation of labeling separations as layoffs may in the future face lower search costs or be able to hire at lower wages if the worker expects to be guaranteed unemployment benefits on separation. But when unemployment shocks alter the marginal tax cost, employers at the margin will shift strategies, altering the share of separations labeled as quits.

This paper is organized as follows. Section 2 covers the structure of unemployment insurance in the US and the methodology to construct the rational expectation insurance marginal tax cost. Section 3 shows the positive effect of the marginal tax rate on the quits-layoffs ratio. Section 4 proposes a quantitative model experiment based on the ability of firms to commit to their workers about labeling future separations. Section 5 concludes.

Related Literature: This paper is linked to two different branches of literature. First, the empirical study of unemployment insurance and the effect of the marginal tax cost on layoff decisions. Topel (1983) found that around 30% of total temporary layoffs[1] are a result of unemployment insurance subsidies. Card and Levine (1994) also found a significant effect of the marginal tax cost on temporary layoffs, including that the effect of the MTC on layoffs is higher during recessions and lower during expansions.

These papers have measured the marginal tax cost based on a calculation that relies on steady-state assumptions, but there are also papers that use a time varying marginal tax cost of separation. For example, Anderson and Meyer (1993) measure the MTC using individual firm payroll tax data. They find a smaller effect of the marginal tax cost on layoffs compared to steady-state-based measures. Ratner (2013) also measures the MTC using establishment level data to analyze the effect of the marginal tax cost on job flows, but goes beyond

[1] A temporary layoff is defined as when an unemployed worker expects to be called back to a specific job within 30 days.

Anderson and Meyer in incorporating firm expectations into the calculation of the MTC.

This paper is also related the literature dealing with different types of separation and not just the level of separation. While as mentioned the literature has found a negligible effect of the marginal tax cost on quits - Topel (1983) - Card and Levine (1994) showed that this is possibly driven by the use of a steady-state measure of the MTC. This paper shows that by more accurately measuring the marginal tax of layoffs at a higher frequency, the quits ratio is higher when the marginal tax cost is larger (and the layoffs ratio is higher when the marginal tax cost is smaller). These findings are consistent with firms optimizing in the face of fluctuating incentives to label separations.

2 Experience rating and the marginal tax cost

The unemployment insurance system in the United States is a federal-state program jointly financed by federal and state employer payroll taxes.[2] From now on, the employer's liability is referred to as the unemployment insurance tax cost. Every state independently chooses an experience rating method, the taxable wage base and the unemployment insurance tax schedule[3]. In a complete experience rating unemployment insurance system, firms fully and solely pay the unemployment benefit drawn by their former employees. Under an incomplete experience rating system, employers repay a fraction of the unemployment benefits drawn by their former employees. The existing literature calls this fraction the *Marginal Tax Cost (MTC)* and it varies across states depending on how they implement experience rating.

We proceed by precisely defining how experience rating is carried out in most states and highlight how it interacts with the firm's cost structure to understand the incentives firms face in order to accurately measure their marginal tax cost of separation.

[2]The federal tax is calculated as 6% of payroll, minus tax credits (typically 5.4%) from paying into the state system which can be reduced if the state UI program is not current with the federal one. The state tax rates vary widely.

[3]Table (1) shows some general features of the UI tax system. Also, Figures (1) and (2) show two specific examples.

2.1 Unemployment insurance system

Experience rating unemployment insurance requires some specification of how the employer's payments into UI are related to the benefits given to their former employees, the firm's insured employment. The two dominant methods of experience rating are the benefit ratio (BR) and the reserve ratio (RR), which together capture 48 of 50 states. Equation (1) gives the most general calculation of the employer's payroll UI tax cost (τ) in such a system:

$$\tau_t = f(u_{t-1}, u_{t-2}, ...) \tag{1}$$

Here, f is the function that expresses the experience rating method over the firm's layoff history. I now detail experience rating under the benefit and reserve ratio methods to provide an analytical formula for the firm's payroll tax as required to calculate the marginal tax cost.

2.1.1 Benefit Ratio

The benefit ratio is defined as the sum of unemployment benefits charged back to the firm over T years[4] divided by the firm's taxable wages (W_t) over the same T years.

$$BR_t = \frac{\sum_{j=1}^{T} \zeta_t * b_{t-j} u_{t-j}}{\sum_{j=1}^{T} W_{t-j} * N_{t-j}} \tag{2}$$

Here, ζ is the share of benefits actually charged to the employer[5], u_t is the stock of unemployment generated by the firm, and N_t is the firm's covered employment. The UI payroll tax rate under a benefit ratio system can therefore be written a function of the firm's current benefit ratio:

$$f(u_{t-1}) = \lambda_0^s + \lambda_1^s BR_t$$

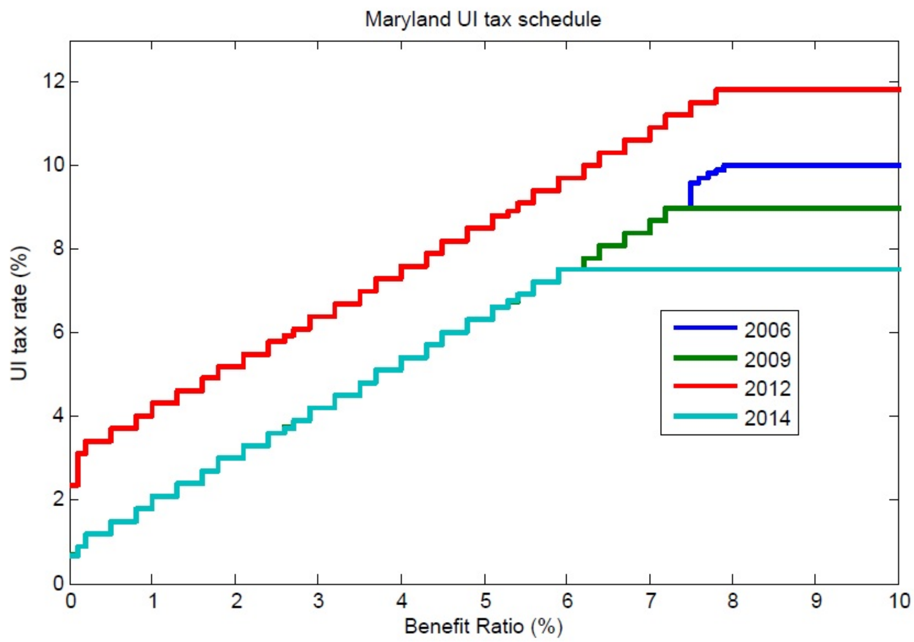
with a minimum and maximum tax rate τ_{min}^s and τ_{max}^s based on the specific state's (index s) tax schedule.

[4]This calculation uses 3 years of payroll in nine states, 4 years of payroll in four states, 5 years of payroll in two states and 10 years of payroll for South Carolina

[5]Not all benefits are charged to employers, as some states do not charge for recipients that have less than 8 weeks of work. Complete detail is provided in form ETA DOL 204 section B. ζ is obtained from those reports.

Currently, 18 out of 50 states use the benefit ratio method for payroll tax calculations[6]. For example, Figure (1) shows the unemployment insurance tax schedule in Maryland.

Figure 1: A tax schedule example: Maryland



Notes: Data collected from Employer's Handbook - Department of Labor, Licensing and Regulation - Maryland

One implication here is the nature of the corresponding dynamic problem. A layoff today, under for example a BR experience rating system, contributes to determining tax rates over the next T years for the firm.

2.1.2 Reserve Ratio

Under reserve ratio experience rating, each firm has a UI account established with the state. This account tracks the firms reserves R_t, defined as the difference between UI taxes $(\tau_t * W_t * N_t)$ paid into the account less charged unemployment benefits $(\zeta * B_t)$ paid out from

[6]The states that use the benefit ratio method are: Alabama, Connecticut, Florida, Illinois, Iowa, Maryland, Michigan, Minnesota, Mississippi, Oregon, Pennsylvania, South Carolina, Texas, Utah, Vermont, Virginia, Washington and Wyoming. Pennsylvania and South Caroline have changed from a reserve ratio formula in 2001.

the account. The law of motion for total reserves is thus:

$$R_t = R_{t-1} + \tau_t * W_t * N_t - \zeta * B_t$$

The firm's reserve ratio (r_t) is defined as the ratio of the firm's reserves (R_t) to a 3 year average of its taxable wage base.

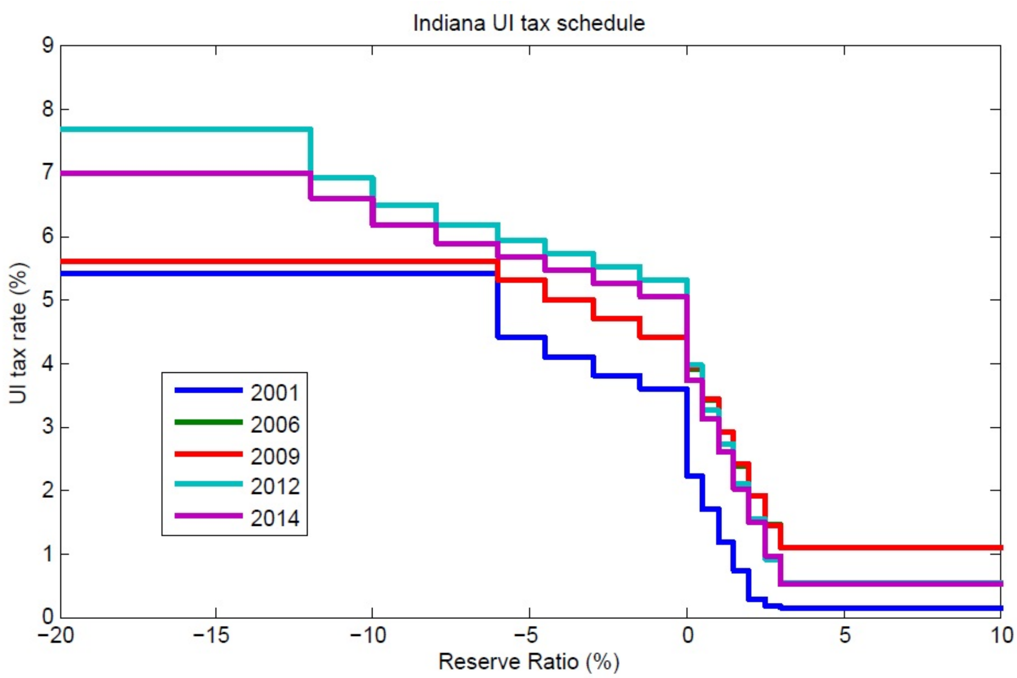
$$r_t = \frac{R_t}{\frac{1}{3}\sum_{j=0}^{2} W_{t-j} * N_{t-j}} \tag{3}$$

The UI payroll tax rate under a reserve ratio system is therefore a function of the firm's current reserve ratio:

$$f(u_{t-1}) = \lambda_0^s - \lambda_1^s r_t$$

The more negative the reserve ratio r_t, the higher the UI payroll tax. Figure (2) illustrates this negative relation between the reserve ratio and the UI payroll tax rate for the reserve ratio method state of Indiana:

Figure 2: A tax schedule example: Indiana



Notes: Data is collected from the Employer Handbook of the Indiana Department of Workforce Development.

2.1.3 Experience Rating Across States

Table (1) shows summary statistics for several individual state unemployment insurance programs and the differences in them across these states. While the time series variation is small in terms of the replacement ratio (b/W), the minimum UI tax rate (τ_{min}), and the slope of the tax schedule (λ_1), the variation in the maximum UI tax rate[7] (τ^{max}) and insured unemployment rate[8] (μ_t) are quite large. The Department of Labor collects data on the insured unemployment rate by industries and states. That data is freely available and is measured across 20 industries (two digit NAICS industry codes). This allows the measurement of the degree of variation across states and across industries[9].

2.2 Identification of the marginal tax cost (MTC)

The existing literature has measured the marginal tax cost as the present value of the total cost that a firm will have to pay per unit of benefit drawn by its former employees in a steady state environment. The steady state measure is a practical way to test the effect of the marginal tax cost on the incidence of layoffs because of the long-run relationship between separation costs and the number of separations, as shown by Feldstein (1978). One goal of this paper is to focus on the composition of unemployment and the incentives that firms have to relabel some quits as layoffs. Therefore, this section introduces a new UI marginal tax cost measure by relaxing the steady-state assumption. This MTC measure is consistent with the firm's forward-looking optimization problem in the face of realistic, fluctuating separation costs.

This more accurate marginal tax cost is defined, using the same intuition, again as the present value of future UI benefits paid, but incorporating the dynamic nature of the layoff decision. This MTC measure thus contains forward looking variables, including the expected layoff rate in the future, expected taxable wage growth and the expected employment growth

[7] The maximum UI tax rate varies because states increase it when necessary to keep UI solvent. See figures (1) and (2) as examples.

[8] The standard deviation of the insured unemployment reflects only the time series variation of the average industry insured unemployment rate. I show that most of the variability comes from cross industry variation.

[9] I initially assume that firms in the same industry and same state face a similar payroll tax rate - the industry average. This assumption will be relaxed later by allowing some within industry dispersion in a given state, as in Topel (1983).

Table 1: State UI tax schedule and statistics: 2001-2014

State	Method	b/W	$\tau_{min}(\%)$	$\tau^{max}(\%)$	$\mu_t(\%)$	λ_1
Arizona	RR	1.18	0.03	5.75	2.07	0.21
		(0.00)	(0.002)	(0.34)	(0.91)	(0.00)
Idaho	RR	0.59	0.47	5.69	3.08	0.11
		(0.00)	(0.086)	(0.51)	(1.16)	(0.00)
Louisiana	RR	1.21	0.11	4.07	2.06	0.10
		(0.01)	(0.003)	(0.58)	(0.59)	(0.00)
Nevada	RR	0.65	0.25	5.4	3.03	0.20
		(0.00)	(0.000)	(0.00)	(1.89)	(0.00)
Tennessee	RR	1.27	0.51	10.2	2.12	0.29
		0.01	(0.177)	(0.09)	(0.48)	(0.01)
Alabama	BR	1.07	0.91	6.74	2.16	1.06
		(0.01)	(0.211)	(0.47)	(0.31)	(0.03)
Florida	BR	1.37	0.72	5.79	2.47	1.13
		(0.00)	(1.031)	(0.30)	(0.75)	(0.57)
Illinois	BR	1.31	0.79	8.18	3.07	1.13
		(0.01)	(0.054)	(0.43)	(0.64)	(0.03)
Wyoming	BR	0.84	0.83	7.77	2.56	0.57
		(0.00)	(0.162)	(.42)	(0.42)	(0.01)

Values are given as average values across 14 years. Numbers in parentheses are the time series standard deviation. B/W is weekly benefits over the weekly taxable wage and λ_1 is the slope of the linear approximation of the tax schedule. All data has been collected from the Department of Labor.

rate. These expectation terms are treated using rational expectations. Equations (4) and (5) show the algebraic expression for this measure. Appendix A.1 shows the construction of this measure in the firm's dynamic environment.

1. For the benefit ratio method:

$$MTC(\mu_t) = \mathtt{E}_t\left(\sum_{j=1}^{T}\prod_{j=1}^{T-1}(1+g_{t+j})(1+\pi_{t+j})]\frac{\zeta_{t+j}\lambda_{1,t+j}}{T(1+i)^j}\mathtt{1}_{\mu_{t+j}\in[\mu_{min}\mu^{max}]}\right) \tag{4}$$

2. For the reserve ratio method:

$$MTC(\mu_t) = \mathtt{E}_t\left(\sum_{j=1}^{T}\prod_{h=j}^{j+2}[(1+g_{t+h})(1+\pi_{t+h})]\frac{\zeta_{t+j}\lambda_{1,t+j}}{(1+i)^j}\mathtt{1}_{\mu_{t+j}\in[\mu_{min}\mu^{max}]}\right) \tag{5}$$

Here, g_{t+j} and π_{t+j} are the future growth rates of employment and wages "j" periods ahead. $\mathtt{1}_{\mu_{t+j}\in[\mu_{min}\mu^{max}]}$ is an indicator variable that takes a value of one if the insured unemployment rate is inside the interval and zero otherwise. This interval is constructed using the minimum and maximum UI tax rate given by the specific state's experience rating method and weekly replacement rate. ζ_{t+j} is the actual unemployment benefits charged back to the employer's account. i is the nominal interest rate. To forecast wages (W_{t+j}), employment (N_{t+j}) and the unemployment rate (μ_{t+j}), I run a series VARs specified as follows:

$$\begin{bmatrix} W_t \\ N_t \\ u_t \end{bmatrix} = \begin{bmatrix} \theta^{11} & \theta^{12} & \theta^{13} \\ \theta^{21} & \theta^{22} & \theta^{23} \\ \theta^{31} & \theta^{32} & \theta^{33} \end{bmatrix} \times \begin{bmatrix} W_{t-1} \\ N_{t-1} \\ u_{t-1} \end{bmatrix} + \begin{bmatrix} \epsilon_t^w \\ \epsilon_t^n \\ \epsilon_t^u \end{bmatrix} \tag{6}$$

This VAR is computed for every state-industry pair available. The first set of VARs use the time series sample from 1994 to 2000 to forecast wages, employment, and insured unemployment for 2001. Then, every subsequent year the realized data is updated in the firm's information set for future regressions (2002 and on).

2.3 Marginal tax cost data by state and industry

This subsection measures the marginal tax cost of separation using unemployment insurance data from the United States. I collect data from the Department of Labor, Employment and Training Administration. I also use data from the Department of Employment Security of individual states. In particular, I require the slope of the unemployment insurance tax schedule, the minimum and maximum tax rate, the insured unemployment rate, and the weekly benefit-taxable wage ratio by state and industry level (based on two digit NAICS code classification in 2002).

Because I do not have micro-level firm data to collect an actual firm's UI payroll tax, I follow the literature by backing out average tax rates using the insured unemployment rate[10] and weekly replacement rate[11]. I effectively thus have a representative firm in each state-industry cell (from a 48×20 state-industry matrix).

To compute the marginal tax cost expressed in equations (4) and (5), I need two sets of information. First, a set of time-varying parameters related to the state-specific UI tax schedule, as per Table (1). Second, a set of forward looking variables (expected future wages, employment and insured unemployment growth), which are computed using VARs as discussed previously. I use weekly earnings, employment and unemployment data from the Merged Outgoing Rotation Groups (MORG) of the CPS starting in 1994 to generate forecasts for future wage growth, employment growth and future unemployment rate for each state and each industry, as expressed in equation (6). I provide a full description of the MTC computation in Appendix A.2.

Table (2) contains the calculated marginal tax cost of separation for a sample of states and industries. I report here the average marginal tax cost and its standard deviation across 14 years in parentheses. Note three things from the table. First, even though the numbers are averages across time, there is substantial heterogeneity across industries and states that will allow us to identify the MTC effect on the composition of unemployment. Second, there is also significant variation across time, reflected in the standard deviations being strongly positive for many state-industry pairs. Third, there are some states, like Idaho and Nevada, where

[10] I use the average insured unemployment rate as a location-fixing device in the state UI tax schedule. In other words, I want to see if a firm pays the minimum tax rate, the maximum tax rate or falls somewhere in between by using the insured unemployment rate.

[11] The weekly replacement rate is defined as the weekly benefit over weekly taxable wage

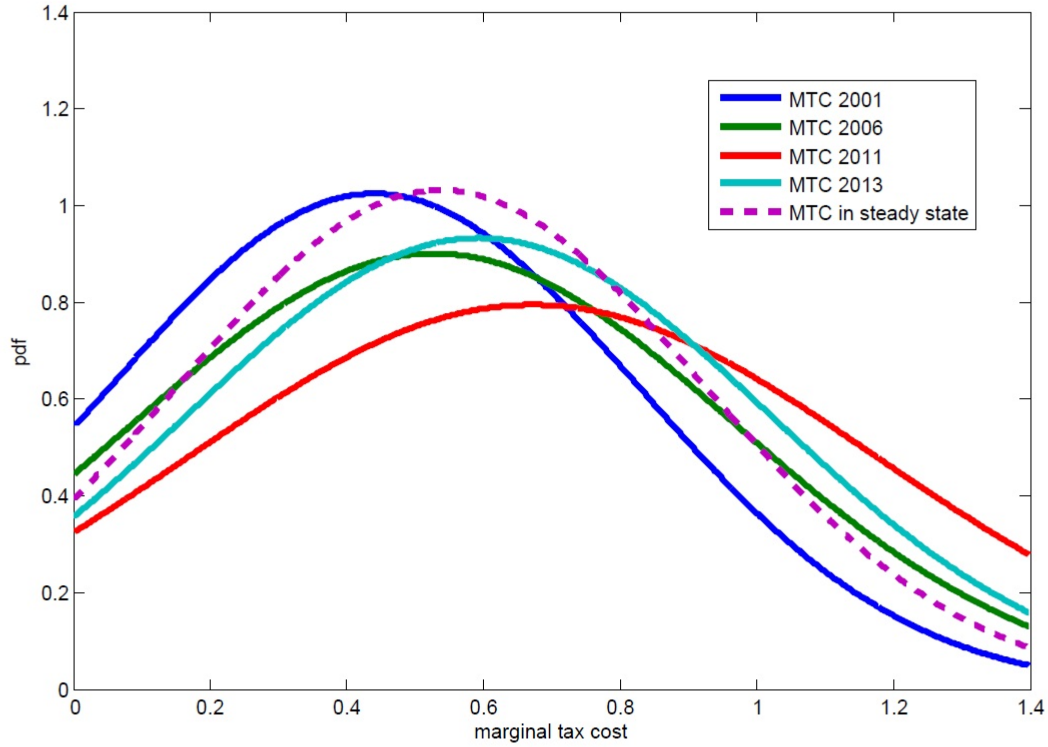
the MTC remains zero across time for many industries reflecting that the unemployment rate is always high enough to place firms at the maximum tax level.

Table 2: State-industry MTC sample: 2001-2014

Industry / State	Alabama	Arizona	Florida	Idaho	Nevada	Texas
Agriculture, F. F. and H.	0.73	0.58	1.08	0.00	0.00	0.85
	(0.48)	(0.25)	(0.58)	(0.00)	(0.00)	(0.21)
Mining	0.74	0.52	1.34	0.05	0.16	0.56
	(0.43)	(0.29)	(1.16)	(0.18)	(0.08)	(0.25)
Utilities	0.92	0.59	0.84	0.06	0.00	0.71
	(0.41)	(0.25)	(0.41)	(0.05)	(0.00)	(0.34)
Construction	0.93	0.59	0.70	0.00	0.15	0.61
	(0.23)	(0.25)	(0.25)	(0.00)	(0.29)	(0.17)
Manufacturing	0.87	0.59	1.11	0.26	0.00	0.82
	(0.21)	(0.26)	(0.40)	(0.23)	(0.00)	(0.18)
Retail and Trade	0.91	0.58	1.21	0.00	0.00	0.81
	(0.16)	(0.26)	(0.40)	(0.00)	(0.00)	(0.17)

I also plot the distribution of this measure across all state-industry pairs to illustrate the results of the calculations. I then compare my measured MTC with the steady-state measure in Figure (3). The variability in my MTC measure comes from the fact that firms make rational projections about the future when calculating their marginal tax cost of separation. Therefore, there I calculate the MTC as more variable than with the traditional steady state marginal tax cost measure. Appendix B.1. figure (6) shows the MTC by each industry.

Figure 3: Marginal tax cost distribution across industries and states



3 Effect of the MTC on the composition of unemployment

The previous section has shown that the unemployment insurance system in the United States generates substantially heterogeneous cost variation across time and in the cross-section of state-industry pairs. I now show that there is a positive correlation between the MTC and the quits-layoff ratio using two different approaches. First, I show that high MTC state-industry pairs have higher quit-layoff ratios than those with lower MTCs. Second, via regression, I show that an increase in the MTC leads to a higher quit-layoff ratio.

3.1 Groups comparison

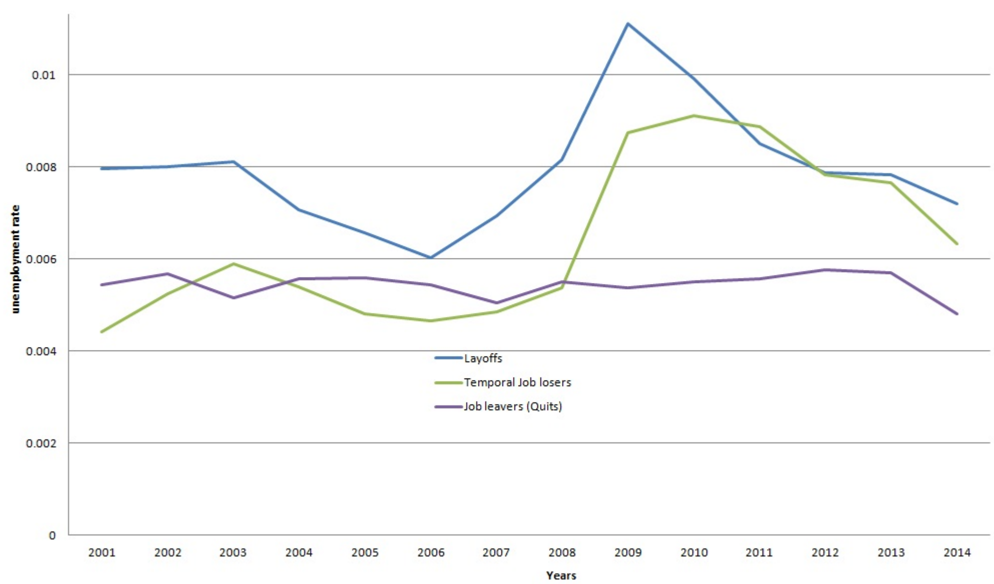
In this section, I use monthly CPS data[12] to measure the size of each cell in the state-industry matrix. The CPS categorizes all unemployment within 6 categories: Layoffs[13], Other Job Losers, Temporal Job Losers, Job Leavers, Re-entrants and New-entrants (as specified in the CPS codebooks). I map quits and layoffs into the CPS definitions as follows:

1. Employed: Employed present and absent during the week of interview (but currently employed).

2. Layoff: On layoff and temporal job losers.

3. Quit: Job leavers also looking for a job.

Figure 4: Separation rates over time: Quits and layoffs



[12]The monthly data reports labor status in the week of the interview. I can only account for quits that spend some time unemployed and cannot count job-to-job transitions that involve no unemployment spell or a minimal one. However, this second group of quits are not of interest of this paper because they do not draw unemployment benefits regardless.

[13]A layoff is classified as a person who is unemployed but expects to be called back to a specific job. Table (6) in appendix B.1. shows a complete description of the composition of unemployment.

Figure (4) shows the evolution of the separations rate from 2001 to 2014. While layoffs seem to be cyclical, quits seem to be acyclical[14].

I next classify state-industry pairs into two different groups, based on their marginal tax cost:

- **Group MTC1** Firms that have a positive MTC (strictly higher than zero).
- **Group MTC0** Firms that have a MTC equal to zero.

I calculate the quits-layoffs ratio in Table (3) and I find that the group with higher (positive) MTCs has a higher quit-layoff ratio than the group with a zero MTC. This is computed by first aggregating quits and layoffs[15] over states and industries within the same group classification. I then take the average across 14 years (from 2001 to 2014) and divide the aggregate quits by the aggregate layoffs, group by group, to get the quits-layoffs ratio. Table (3) shows the quits-layoffs ratio across the two different groups. This suggests that the MTC has a strong effect on the composition of layoffs. The second row of the table shows that the share of quits in the labor force is lower in the group with a zero MTC than in the group with a higher marginal tax cost of separation.

As found in the literature, the layoff rate is also higher in the group with a zero marginal tax rate than in the group with positive MTCs. This suggests that a higher marginal tax cost may cause some quits to be relabeled as layoffs. Appendix A.3. provides more detail through an industry-level decomposition that shows a similar effect of the MTC on the quit-layoff ratio.

Table 3: Labor force data classified by groups

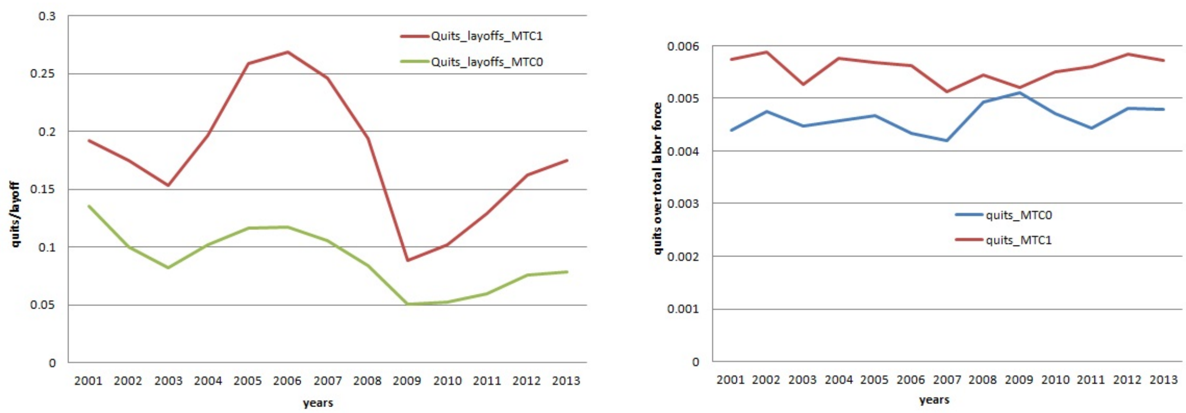
	Group MTC1	Group MTC0
Quits-layoffs ratio	0.181	0.089
Quits over LFP	0.006	0.005
Layoff over LFP	0.034	0.061

[14] Table (6) in Appendix B.1 shows more statistics across different type of unemployment and across the time

[15] The aggregation is weighted by the state-industry's share of state insured unemployment, obtained from the DOL-ETA 204 form.

A time series decomposition also shows a similar effect. Figure (5) shows that the quits-layoffs ratio is lower in the group with a zero MTC than in the group with positive marginal tax costs. Likewise, quits as a fraction of the total labor force is higher in the group of positive MTC state-industry pairs than in the group with a zero marginal tax cost.

Figure 5: Quit-Layoff ratio time series



3.2 Econometric exercise

Given that the marginal tax cost is a continuous variable and that the group comparison exercise does not control for individual characteristics that may affect the composition of unemployment, I run a series of regressions to assess and quantify the effects of the marginal tax cost on the composition of unemployment. These regressions are specified in two ways. First, I estimate the effect of the MTC on the probability that an unemployment is labeled as a quit as opposed to as a layoff (first, second and third columns in Table (4)). Second, I estimate the effect of the MTC on the probability of experiencing an unemployment spell through a quit (fourth column in Table (4)) with respect to the whole labor force.

In both cases, the dependent variable takes a value of one if the individual is experiencing unemployment though a quit and zero otherwise. The key explanatory variable is the marginal tax cost associated with the worker's former employer (strictly speaking, to the state-industry cell their prior employer belongs to). I also control for exogenous individual characteristics that may affect the probability of being labeled as a quit instead of as a layoff.

Therefore, I specify the following regression equation as a linear probability model:

$$q_{s,j,t} = \alpha_j^1 + \alpha_t^2 + \beta * MTC_{s,j,t} + \theta * X_{s,j,t} + \epsilon_{s,j,t} \tag{7}$$

Here, $q_{s,j,t}$ is the indicator variable described above, for state "s" (48 states), industry "j", (20 two digit NAICS industries) and year "t" (from 2001 to 2014). In addition I control for some generic individual characteristics X (Table (6) in Appendix B.1 shows the descriptive statistics for each control variable). Unobserved industry and time fixed effects are given as α_j^1 and α_t^2 respectively.

Table 4: Linear Probability Model for the likelihood of quits conditional on separation: MORG-CPS, 2001-2014 (standard errors in parentheses)

Covariates	(1)	(2)	(3)	(4)
MTC	.0132**	.0115**	.0165**	.00031**
	(.0037)	(.0046)	(.0000)	(.0001)
age	-.0042**	-.0139**	-.0021*	-.0006**
	(.0009)	(.0013)	(.0012)	(.0000)
age^2	1.1e-05	9.1e-05**	-3.4e-05**	5.2e-06**
	(.0000)	(.0000)	(.0000)	(.0000)
$educ$	-.0086	-.0131	-.0599**	.00301**
	(.0143)	(.0199)	(.0191)	(.0003)
$educ^2$	3.1e-4*	5.3e-4**	0.0011**	4.1e-5**
	(.0002)	(.0002)	(.0003)	(.0000)
$white$	.0228**	-.0831**	-.0536**	-.0020**
	(.0046)	(.0052)	(.0064)	(.0001)
$female$	.0492**	.1526**	.0369**	.0009**
	(.0042)	(.0052)	(.0055)	(.0001)
Industry dummy	yes	No	yes	yes
Time dummy	yes	No	yes	yes

Notes:** and * means significant at the 5% and 10% confidence level, respectively. Column (1) uses a steady state MTC measure, column (2) uses this paper's MTC measure with no industry and time dummies. Column (3) uses this paper's MTC measure and also controls for industry and time fixed effect. Column (4) uses this paper's MTC measure, but using the whole population and not conditioning on separation.

Table (4) shows that an increase of 10% in the marginal tax cost generates an increase of 17% in the probability that a given unemployment spell is labeled as a quit as opposed to as a layoff. Similarly, an increase in the marginal tax cost of 10% generates a 0.3% increase in the probability a given member of the labor force is unemployed via quit.

This evidence suggests that differences in the marginal tax cost generate differences in the quits rate and the quit-layoff ratio. While people who become unemployed via quit are not eligible to claim unemployment benefits, they seem less likely to quit when their former employer has a lower marginal tax cost of separation. I argue the reasonable interpretation is that workers are not less motivated to quit, but instead have a higher chance to simply be labeled as a layoff. Firms that are less responsible for the unemployment benefits drawn by former employees are more motivated to agree with workers to relabel quits as layoffs. In that spirit, I now provide an analysis of the incentives facing firms to commit to labeling all separations as layoffs.

4 Labeling quits and layoffs

The literature dealing with the distinction between quits and layoffs has proposed a labeling process that depends on who initiates the separation. Mclaughlin (1992) suggests that if a firm initiates a wage cut, conditional on a worker's rejection, the separation is labeled as a layoff. But, if the worker initiates a claim for a wage increase, conditional on the firm's rejection, the separation is labeled as a quit. This leads to an outcome where all quits go to higher paid jobs and all layoffs go to a lower paid jobs. He also suggests when unemployment is subsidized, quits that transition to unemployment instead of another job are more likely to be relabeled as layoffs. I call this the departure finding. Conversely, quits that quickly transition from job to job should not be affected as much by the degree of UI subsidy, as the worker would have less incentive to care if they have some idea of the expected length of their unemployment spell upon separation.

This section thus intends to provide a potential framework to rationalize the mechanism for labeling separations. At a basic level, the structure of the unemployment insurance system changes incentives within the labor market. On one hand, the insurance system penalizes employers by taxing their layoffs. On the other hand, the insurance system provides a benefit if a dismissed worker is labeled as a layoff[16].

When unemployment is subsidized an agreement between employer and worker to label

[16] The employer reports the type of separation. If the employer misreports the type of separation to avoid unemployment insurance costs, the worker may sue the firm.

all separations as layoffs will be privately beneficial. If the MTC is less than one, workers and firms could come to a mutually beneficial agreement for the worker to pay the firm in order to be labeled as a layoff instead of a quit. It is privately beneficial to take advantage of the unemployment insurance subsidy whenever the cost of labeling a separation as a layoff is lower than the benefit. This motivates the idea that a firm might find it beneficial to ex ante commit to labeling future separations as layoffs in exchange for other concessions or benefits. I thus explore some ideas to answer this question that I will test and develop in a future version of this paper.

If firms commit to labeling all separations as layoffs, they will attract more workers in the future. This will produce a lower search cost for hiring. These firms will also possibly be able to hire workers at lower wages. Furthermore, as shown in the previous section, the subsidy is time variant. This time variation in the separation cost could affect the decision to maintain a strategy of committing to labeling separations as layoffs. If firms deviate from their commitment when finding it profitable to do so, some additional separations will be labeled as quits. Firms may have incentive to deviate from the commitment strategy whenever the MTC rises from below one (required for commitment to be at all profitable) to above one. This scenario is much more likely with a realistic, forward looking MTC as measured in this paper.

5 Conclusion

This paper provides a new method of measuring the firm's marginal tax cost of separation associated with its unemployment insurance liabilities. I showed that this method is more realistic any measure previously examined in the literature. I also conducted an econometric exercise to show the positive effect of the marginal tax cost on the probability that a separation is labeled as a quit. Intuitively, when the cost of labeling a separation as a layoff is cheap, firms label more separations as layoffs. Finally, I briefly previewed a possible extension to this paper revolving around the firm's incentive to commit to labeling future separations as layoffs and the implications of such a strategy.

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Appendix

A.1 Firm dynamics

This section provides detail on how the marginal tax cost measure proposed in this paper is consistent with the firm's maximization of profit. It also shows the firm's trade-off over separating from a worker today (t) or tomorrow ($t+1$).

Every firm maximizes the discounted cash flow of profits:

$$\Pi(N_{t-1}, u_{t-1}, z_t) = \max_N \{z_t F(N_t) - w_t N_t - \tau(u_t) w_t N_t + \beta \mathtt{E}(\Pi(N_t, u_t, z_{t+1})|z_t)\} \tag{8}$$

where $z_t F(N_t)$ is the production function and w_t is the worker's compensation. N_t is the employment level (the control variable). $\tau(u_t)$ is the unemployment insurance tax rate that the firm pays based on the stock of layoffs u_t (which is a state variable along with productivity z_t). The realistic UI tax schedule looks like:

$$\tau(u) = \begin{cases} \underline{\tau}, if \lambda_0 + \lambda_1 f(u) < \underline{\tau} \\ \lambda_0 + \lambda_1 f(u), if \mu \in [\underline{\mu}, \bar{\mu}] \\ \bar{\tau}, if \lambda_0 + \lambda_1 f(u) > \bar{\tau} \end{cases} \tag{9}$$

$f(u)$ is a function that charcterizes the state's experience rateing method: either through the benefit ratio (BR) or the reserve ratio (RR). Therefore:

$$f(u_t) = (\sum_{j=0}^{t} (\tau_j * W_j * N_j) - \sum_{j=0}^{t} (b * u_j))/(\bar{W N}) \tag{BR}$$

$$f(u_t) = \sum_{j=1}^{T} (b * u_{t-j})/(1/T * \sum_{j=1}^{T} W_{t-j} * N_{t-j}) \tag{RR}$$

where$\bar{W N}_t = \sum_{j=1}^{T} W_{t-j} * N_{t-j}$. The stock of layoffs evolves as follows:

$$u_t = (1-\delta) u_{t-1} + \max\{N_{t-1} - N_t, 0\} \tag{10}$$

Here, δ is how the stock of layoffs decays over time. This decay is composed of those separated workers that either find new jobs, are recalled by the firm, or whose unemployment benefit eligibility expires.

The optimal choice of labor (N_t) is characterized by (for a firm that pays between the minimum tax rate and the maximum tax rate):

$$\frac{\partial(\Pi(N_{t-1},u_{t-1},z_t))}{\partial N_t} = z_t F'(N_t) - \underbrace{W_t - W_t * \tau(u_t)}_{\text{payroll}} + \underbrace{\beta\frac{d\mathtt{E}(\Pi(N_t,u_t,z_{t+1})|z_t)}{dN_t} - W_t * N_t * \tau'(u_t)}_{\text{insurance cost}} = 0 \quad (11)$$

The envelope condition is:

$$\frac{\partial(\Pi(N_{t-1},u_{t-1},z_t))}{\partial u_{t-1}} = (1-\delta)W_t * N_t * \tau'(u_t)$$

Therefore, the cost of separating from a worker today is: $W_t * N_t * \tau'(u_t)$ and the opportunity cost of separating from a worker today instead of tomorrow is: $\beta\mathtt{E}_t[(1-\delta)W_{t+1} * N_{t+1} * \tau'(u_{t+1})]$.

The MTC captures only the cost for an additional layoff. The equation above shows that the marginal tax cost term $\tau'(u_t)$ depends on the stock of layoffs. If the firm pays the maximum or minimum unemployment insurance tax rate (replacing the total derivative with respect to employment as: $\frac{\partial E[\Pi]}{\partial u_t}\frac{\partial u_t}{\partial N_t}$), the firm pays a quantity equivalent to:

$$z_t F'(N_t) = W_t + W_t * \bar{\tau}_t - \beta\frac{\partial\mathtt{E}(\Pi(N_t,u_t,z_{t+1})|z_t)}{\partial u_t} \quad (12)$$

So, such firms at a tax boundary have more incentive to conduct layoffs today instead of tomorrow (as the layoff cost is lower than in equation (9)). If we assume that a firm expects a steady state environment for the future, then $z_t F'(N_t) = W_t + W_t * \bar{\tau}_t$. Now, firms have less incentive to lay off today as opposed to the previous case (this layoff cost is higher than in equation (10)).

Now, I provide the marginal tax cost expression under both benefit ratio and reserve ratio experience rating. To fully characterize the marginal tax cost, I start from a case where firms pay a UI tax cost lower than the maximum and higher than the minimum state tax rate. Assume $\beta = \frac{1}{1+i}$, where i is the nominal interest rate.

- For the benefit ratio method, $\tau'(u)$ is characterized by:

$$\tau'(u_t) = \mathtt{E}_t\left(\frac{\zeta b_{t+1}\lambda_1}{T\bar{WN}_t(1+i)} + ... + \frac{\zeta b_{t+T}\lambda_1}{T\bar{WN}_{t+T-1}(1+i)^T}\right)$$

  where $\bar{WN}_t = \sum_{j=1}^{T} W_{t-j} * N_{t-j}$. Assume that taxable wages and employment grow at the rate $(1+\pi_t)$ and $(1+g_t)$ respectively. Furthermore, assume that benefits per unemployed worker are constant through time. The previous equation can be reduced to:

$$W_t * N_t * \tau'(u_t) = b * \underbrace{\zeta \mathtt{E}_t \left(\prod_{j=1}^{T-1} [(1+g_{t+j})(1+\pi_{t+j})] \left[\frac{\lambda_1}{T(1+i)} + ... + \frac{\lambda_1}{T(1+i)^T} \right] \right)}_{\text{MTC}}$$

This MTC measure is consistent with the existing literature. Card and Levine's (1994) measure can be obtained in equation (13) by dropping the rational expectations assumption and assuming a steady-state environment.

$$MTC = \zeta \lambda_1 (1+g)^{T-1} (1+\pi)^{T-1} \frac{1-(1+i)^{-T}}{Ti} \tag{13}$$

- For the reserve ratio method:

$$\tau'(u) = \mathtt{E}_t \left(\frac{\zeta b_{t+1} \lambda_1}{\bar{WN}_t (1+i)} + \frac{\zeta b_{t+1} \lambda_1}{\bar{WN}_{t+1} (1+i))^2} + ... \right)$$

where $\bar{WN}_t = \sum_{j=0}^{2} W_{t-j} * N_{t-j}/3$. Approximating $\bar{WN}_t \approx W_{t-1} N_{t-1}$, and again assuming th benefit b is constant, then:

$$W * N * \tau'(u) = b * \underbrace{\zeta \mathtt{E}_t \left(\prod_{j=1}^{2} [(1+g_{t+j})(1+\pi_{t+j})] \left[\frac{\lambda_1}{(1+i)} + \frac{\lambda_1}{(1+i)^2} + ... \right] \right)}_{\text{MTC}}$$

Once again, the marginal tax cost measure can be compared to Card & Levine (1994):

$$MTC = \frac{\lambda_1 \zeta (1+g)^2 (1+\pi)^2}{i + \lambda_1 (1+g)^2 (1+\pi)^2} \tag{14}$$

If the tax is currently out of the tax rate schedule ($\tau_t < \underline{\tau}$ or $\tau_t > \bar{\tau}$), and the benefit or reserve ratio continuously grows or declines, then the marginal tax cost will be zero (MTC=0).

However, if employers do not expect a steady state environment in the future, then the marginal tax cost will be characterized by equation (15). In this situation, firms do not expect to always be in the same location along the tax schedule. For example, when firms expect a recession, they expect to pay the maximum unemployment insurance tax rate. Likewise, when firms expect to be in an expansion tomorrow, they expect to pay a tax near the minimum UI tax rate. This marginal tax cost measure varies across years because firms update their information year by year.

$$MTC_t = \sum_{j=1}^{T} \mathtt{E}_t mtc\_pv_{t+j} = \sum_{j=1}^{T} \mathtt{E}_t \left[\frac{\zeta W_{t+j} N_{t+j} \lambda_1}{\bar{W} N_{t+j-1}(1+i)^j} * \mathtt{1}_{\mu_{t+j} \in [\underline{\mu}, \bar{\mu}]} \right] \tag{15}$$

Here, T is the years of payroll used to calculate the experience rate. mtc_pv_t is the present value flow of the marginal tax cost (PVFMTC). Furthermore, $\mathtt{1}_{\mu_{t+j} \in [\underline{\mu}, \bar{\mu}]}$ is an indicator variable if the expected future insured unemployment rate falls into the UI tax schedule.

A.2. Measuring the marginal tax cost - MTC

I propose the following steps to calculate $mtc\_pv_{t+k}, \forall k \geq 0$:

---

1. Take the insured unemployment rate in each state and in each industry (μ_{sit}) from the Department of Labor[17].

2. Calculate the weekly benefit-taxable wage ratio for every state and every year (from 2001 to 2014) from ETA Handbook Form 394.

3. Construct the insured unemployment rate interval $[\underline{\mu}, \bar{\mu}]$ for every state and year using $B_s * u_s = \Delta_{s,t} w_s \tau_s$ and both the minimum and maximum state UI payroll tax rate. $\Delta_{s,t}$ is lower than one when the state trust fund has a positive balance in period t, and higher than one when the state trust fund has negative balance. This data can again be obtained from ETA Handbook Form 394.

4. Test if $\mu_{ijt} \in [\underline{\mu}, \bar{\mu}]$ for each year and state-industry cell. If μ_{ijt} falls inside the interval[18], then $mtc\_pv_t = \frac{\zeta W_t N_t \lambda_1}{\bar{W} N_{t-1}} > 0$. Otherwise, $mtc\_pv_t = 0$.

5. If $mtc\_pv_t > 0$, then calculate λ_1, g and π for each state, industry and year.

   - λ_1 is calculated by approximating the sloped portion of the tax schedule as a linear function.

[17] Use the distribution of insured unemployment across industries and the QCEW data to calculate the industry distribution of covered employment. Then, divide the insured unemployment over covered employment for every state-industry cell in each year to get μ_{sit}.

[18] This procedure is equivalent to constructing the steady state payroll tax and then evaluating it at the minimum and maximum tax rates.

- π_{t+j} and g_{t+j} are the future growth rates of weekly taxable wages and weekly covered employment, respectively. These forward looking variables are obtained from the VARs given in the main text. Each regression is run over each state and industry available in the data set. The first time series sample is obtained from MORG-CPS data from 1994 to 2000. I then forecast variables for 2001 onwards using all prior information for each year.

I repeat the same procedure, since mtc_pv_{t+j} is a forward looking variable, for the expectation term in $\mathtt{E}_t mtc\_pv_{t+j}$. Every period after 2001, firms append realized data to their information set and run another VAR over the new sample.

Example 1 A firm in the state of Alabama and in the manufacturing industry will have a marginal tax cost in 2001 (MTC_{01}) equivalent to the following, given that Alabama uses a benefit ratio tax calculation with 3 years of experience rating.

$$MTC_{01} = \underbrace{\frac{\zeta_{01}\hat{W}_{02}\hat{N}_{02}\lambda_1}{\bar{W}N_{01}(1+i)}}_{2002} + \underbrace{\frac{\zeta_{01}\hat{W}_{03}\hat{N}_{03}\lambda_1}{\bar{W}N_{02}(1+i))^2}}_{2003} + \underbrace{\frac{\zeta_{01}\hat{W}_{04}\hat{N}_{04}\lambda_1}{\bar{W}N_{03}(1+i))^3}}_{2004}$$

Here, $\hat{W}_{t+j}, \hat{N}_{t+j}, \hat{\mu}_{t+j}$ are the predicted values from the VARs. During 2001, 2002 and 2003, the insured expected unemployment rate ($\hat{\mu}_{t+j}$) stays between the maximum and the minimum insured unemployment rate ($\hat{\mu}_{2001}, \hat{\mu}_{2002}, \hat{\mu}_{2003} \in [\underline{\mu} - \bar{\mu}]$).

Finally, I consider allowing some dispersion within each state-industry cell. Following Topel (1983), I assume a triangular distribution function given by $g(u_t)$ in each state:

$$g(\mu) = \begin{cases} \frac{1}{\gamma\bar{\mu}_i}(1 - \frac{1}{\gamma\bar{\mu}_i}(\mu - \bar{\mu}_i)) & , \mu \in (\bar{\mu}_i, (1+\gamma)\bar{\mu}_i) \\ \\ \frac{1}{\gamma\bar{\mu}_i}(1 + \frac{1}{\gamma\bar{\mu}_i}(\mu - \bar{\mu}_i)) & , \mu \in ((1-\gamma)\bar{\mu}_i, \bar{\mu}_i) \end{cases}$$

If $\mu_{ijt} \in [(1+\gamma)\mu_{min}, (1-\gamma)\mu^{max}]$, then $E(\mu) = \mu$. Otherwise, $E(\mu) < \mu$. In other words, firms close to the margin (just below and just above the maximum and minimum tax rate) will have different values than those in the middle of the tax bracket.

Example 2 A firm in Alabama and the retail and trade industry has an insured unemployment rate equivalent to 5.4% - close to the upper limit for the insured unemployment rate allowed by Alabama experience rating, which is 5.9%. Therefore, the average MTC for a representative firm in Alabama retail and trade will be (assuming a γ higher than 10%):

$$M\hat{T}C = \int_{(1-\gamma)0.05}^{0.05} \frac{1}{0.05\gamma}(1 - \frac{1}{0.05\gamma}(u - 0.05))du + \int_{0.05}^{0.06} \frac{1}{\gamma 0.05_i}(1 + \frac{1}{\gamma 0.05}(u - 0.05))du$$

A.3. Effect of MTC on quits and layoffs by industry

From the state-industry matrix, we have a quits-layoffs ratio ($q\_l_{s,i,t}$) for every cell and for every year[19](15 matrices of 53 $\times$ 20 cells). Then, I run a simple regression:

$$q\_l_{s,i,t} = \beta_0 + \beta_1 \mathbb{1}_{MTC_{g,i,t}>0} + \epsilon_{g,i,t} \tag{16}$$

where s indicates state, i indicates industry and t indicates year. $\beta_1 = \mathbf{0.02478}$ is significant at the 95% confidence level (standard deviation: 0.01249). Controlling for industry fixed effects, the result changes to $\beta_1 = \mathbf{0.02317}$, still significant (standard deviation: 0.01152). This says that the quits-layoffs ratio goes up by 2.32% on average between the group of firms at a zero MTC and a positive MTC.

The positive correlation between the marginal tax cost and the quits-layoff ratio can also be seen across industries and across time. Table (5) shows that the quits-layoffs ratio is lower in the group with zero MTCs than in the group with positive MTCs for nearly all industries.

[19]Cells where layoffs are zero, for example Professional-Scientific-Tech Services industry in several states, are dropped.

Table 5: Quits-layoffs ratio across industries

	Group MTC1	Group MTC0
Agriculture, fishing, forest and hunting	0.093	0.050
Mining	0.122	0.096
Construction	0.082	0.064
Manufacturing	0.104	0.090
Whole Trade	0.163	0.119
Retail & Trade	0.273	0.184
Transportation & Warehouse	0.155	0.119
Information	0.158	0.123
Professional/Scientific/Tech Services	0.125	0.110
Administration and Support/WM/R Services	0.143	0.113
Accomodation and Food services	0.334	0.252

B.1. Graphs and Tables

Figure 6: MTC Distribution

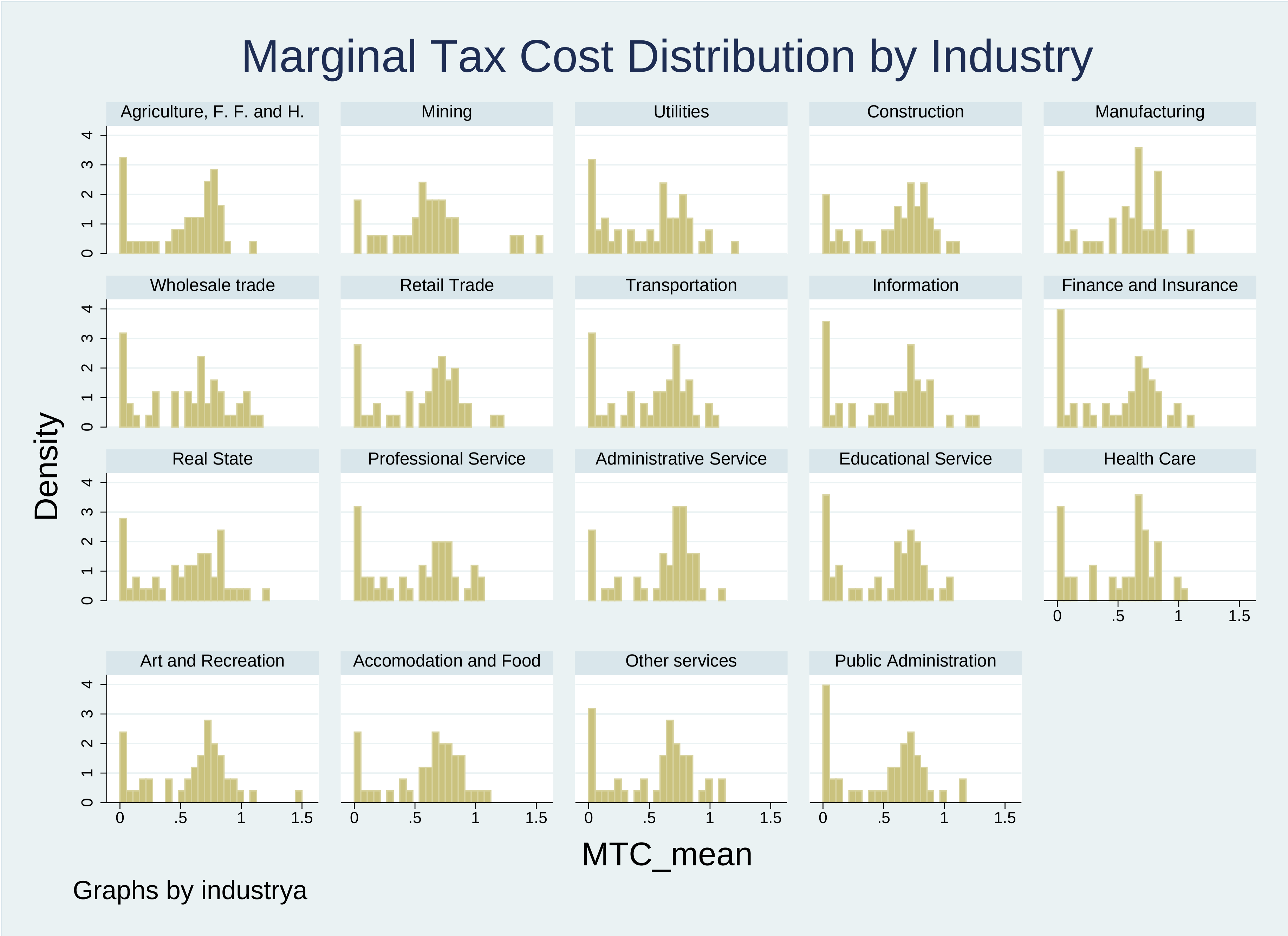

Table 6: Descriptive statistics

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Layoff	0.79	0.80	0.81	0.70	0.66	0.61	0.70	0.82	1.11	0.99	0.85	0.79	0.78	0.72
Other job losers	1.12	1.82	1.85	1.56	1.27	1.06	1.07	1.65	3.81	3.94	3.42	2.77	2.30	1.71
Temporal job losers	0.44	0.53	0.59	0.54	0.48	0.47	0.49	0.54	0.87	0.91	0.89	0.78	0.77	0.63
Job leavers	0.55	0.57	0.52	0.56	0.56	0.54	0.51	0.55	0.53	0.55	0.56	0.58	0.57	0.48
Re-entrants	1.37	1.55	1.61	1.61	1.53	1.40	1.32	1.51	2.00	2.19	2.12	2.05	1.90	1.64
Age	39.2	39.5	39.8	40.1	40.1	40.2	40.4	40.6	40.9	41.0	41.1	41.3	41.3	41.3
	(12.3)	(12.3)	(12.4)	(12.5)	(12.6)	(12.7)	(12.8)	(12.8)	(12.8)	(12.8)	(12.9)	(13.0)	(13.0)	(13.1)
Education	40.2	40.3	40.3	40.4	40.4	40.4	40.5	40.5	40.5	40.6	40.6	40.7	40.7	40.8
	(2.6)	(2.6)	(2.6)	(2.6)	(2.6)	(2.6)	(2.6)	(2.6)	(2.6)	(2.6)	(2.6)	(2.6)	(2.5)	(2.5)
Female	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.48
	(0.5)	(0.5)	(0.5)	(0.5)	(0.5)	(0.5)	(0.5)	(0.5)	(0.5)	(0.5)	(0.5)	(0.5)	(0.5)	(0.5)
White	0.85	0.86	0.85	0.85	0.84	0.84	0.84	0.84	0.84	0.83	0.83	0.83	0.83	0.82
	(0.35)	(0.35)	(0.36)	(0.36)	(0.36)	(0.36)	(0.37)	(0.37)	(0.37)	(0.37)	(0.37)	(0.37)	(0.38)	(0.38)

Standard deviations are in parenthesis. These statistics belongs to MORG-CPS data from 2001 to 2014. Only people in the labor force that are older than 16 and younger than 65 are accounted. Education takes values from 31 (less than first grade) to 46 (doctorate degree). Lafor force re-code are: Layoff — A person who is unemployed but expects to be called back to a specific job.. Other Job Losers — Persons whose employment ends involuntarily, who immediately begin looking for work. Temporal Job Losers — Those who got unemployed because of seasonal or intermittent job completed. Job Leavers — Persons who quit or otherwise terminate their employment voluntarily and immediately begin looking for work. Re-entrants — Persons who previously worked at a full-time job lasting two weeks or longer but are out of the labor force prior to beginning to look for work. New-entrants — Persons who never worked at a full-time job lasting two weeks or longer.