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Abstract

I consider changes in labor markets across U.S. states and counties around the enactment of the Affordable Care Act in 2010 and its implementation in 2014. I find that counties with large fractions of uninsured (and therefore a large exposure to the ACA) before the enactment or the implementation of the ACA experienced more rapid employment and salary growth than did counties with smaller fractions of people uninsured, both after the implementation of the ACA and after its enactment. I also find that the growth of the fraction of employees in states with larger uninsurance rates was not substantially higher than it was in states with smaller uninsurance rates. These findings are not accounted for by differential rates of recovery from the Great Recession in high- and low-uninsurance areas.

Key words: labor economics, health economics

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1 Introduction

The Affordable Care Act (ACA) has been the most far-reaching health insurance reform for people under 65 in U.S. history, and as health insurance in the U.S. is predominantly provided by employers, it has been expected to have substantial effects on the labor market. Supporters of the law claimed that by limiting the extent of adverse selection in the nongroup market, the ACA will also alleviate the problem of job lock – the fact that people seek to be in jobs that offer health insurance even if they don't have a comparative advantage for them – and make labor markets more efficent. Opponents of the law argued that the structure of the insurance subsidies envisioned by the law created disincentives to work, while the ACA's mandate on medium-sized employers to provide insurance to full-time workers or pay a fine created a bias against hiring and encouraged the substitution of full-time workers by part-time workers. The particularly slow labor market recovery following the Great Recession lent plausibility to the claims of the critics of the ACA that the expectation of its regulations was hindering job creation (Jacobs 2013).

In this paper, I will assess evidence on the effects of the ACA on the labor market by comparing places that were expected to be affected by the ACA substantially – places with a large fraction of people who were uninsured before the law – with places that the ACA was expected to affect less. For example, Texas, with 25% of people uninsured, should have experienced a much larger effect on its labor market from the ACA than Minnesota, with only 9.5% uninsured. It goes without saying that places with different uninsurance rates differ in much more than exposure to the ACA. Therefore, instead of comparing the labor markets in Texas and Minnesota directly, I will compare changes in employment in Texas and Minnesota around the last quarter of 2013, in which the ACA began to be implemented, to each other as well as to how employment was changing in both Texas and Minnesota before the implementation of the ACA. I will also perform the same comparison for the year 2010, in which the ACA was enacted but not yet implemented, to see whether the anticipation effects of the ACA could have differentially affected the recovery of different places from the Great Recession. The essential question in this paper is whether the differential between the labor market experiences in Texas and in Minnesota continued roughly along the same trend after 2010 (and after the end of 2013) as it did before, or whether after the enactment and the implementation of the Affordable Care Act, the labor market paths of these places took a different turn.

Looking at U.S. counties in 2013 and 2014, I find that, if anything, employment rose in the counties that were more exposed to the ACA relative to the less exposed counties. The magnitude of this rise, however, was moderate, at the level of around a tenth of the within-county standard deviation of employment estimated between 2012 and 2013. On the other hand, I find that the change in employment was not homogeneous across industries. While the inference is not precise, the point estimates indicate that more exposed counties

experienced a large rise in employment in industries with a low propensity to offer insurance to workers, but virtually no rise in employment in industries with a high propensity to offer insurance to workers relative to less-exposed counties. I similarly find that salaries rose more on average in more exposed counties, with the average masking a relative salary decline in low-insurance industries and a larger salary rise in high-insurance industries. Hence, the differential labor market patterns are consistent with an increase in the relative supply of workers in low-insurance industries, which is consistent with some alleviation of job lock by the ACA.

Coming back to the comparison of Texas and Minnesota, I show that the main result of this paper holds for the specific comparison of these two different states in Figure 1. I plot total year-on-year employment growth rates in Texas and Minnesota from Q1 of 2012 to Q4 of 2014. Since employment grows faster in Texas in every quarter than it does in Minnesota, I plot the series using different y-axes to make the numbers more comparable. We see that before Q4 2013, in which the ACA began to be implemented, employment growth in Minnesota was steady, while employment growth in Texas was declining. However, after this period, with the ACA implemented, employment growth in Minnesota declines slightly, while employment growth in Texas rises substantially. Since Texas has a much higher fraction of people who are uninsured than Minnesota does, and therefore, should be much more affected by the ACA, the fact that Texas and Minnesota employment growth rates diverge faster after the implementation of the ACA in Q4 2013 than they diverged before the implementation of the ACA is inconsistent with the idea that the ACA harmed employment growth.

I can exploit an additional source of variation based on the 2012 Supreme Court decision that allowed states not to implement the expansion of Medicaid foreseen by the ACA. Since the Medicaid expansion was implemented in January 2014 in some states but not in others, I can look at how employment outcomes changed differentially across pairs of bordering counties in which one county belongs to a state that expanded Medicaid and the other county belongs to a state that did not. I find that Medicaid expansion likewise did not decrease, and likely increased employment in affected counties relative to their prior trend.

It could have been the case that while there was little negative impact of the ACA at its implementation, the anticipation of the ACA between 2010 and 2014 could have affected the pace of the recovery from the Great Recession. To assess this hypothesis, I consider changes in employment for U.S. counties during the recession and recovery period centered on 2010. I find that counties that had higher uninsurance rates in 2010, if anything, grew faster after 2010 relative to their trend than did counties with lower uninsurance rates. Looking at state variation in part-time employment rates, I also show that more exposed states experienced a statistically insignificant decline in their part-time to full-time ratio. Hence, it appears very unlikely that the ACA substantially reduced employment in the areas that could expect to be most affected by it.

Supporters of the ACA have claimed that the anticipation of the reform has led providers and insurers to moderate the growth of health care expenditures for consumers, while critics have argued instead that the ACA will increase health insurance premiums through mandating more comprehensive insurance. I consider the possible anticipation effects of the ACA on the market for employer-based health insurance. I find that in the more exposed states, the average premium shows a small and statistically insignificant decline. However, the distribution of premiums experienced a compression relative to the less exposed states.

The rest of the paper is organized as follows: Section 2 discusses the institutional structure and the related literature. Section 3 describes the data. Section 4 discusses the empirical approach. Section 5 presents the estimates for the 2014 implementation of the ACA. Section 6 presents the estimates for the 2010 enactment of the ACA. Section 7 concludes.

2 Background

Adverse selection has historically been a major problem in health insurance markets because patients tend to have much more information about their propensity to utilize medical resources than they can credibly reveal to insurers. Therefore, health insurance markets in the U.S. have functioned well only in the context of large businesses buying insurance for their employees, who would then constitute a large pool that is randomly selected from the point of view of health. The individual and small group insurance market – used by people who are not employed, self-employed, or employees of small firms – sees relatively low premiums for healthy individuals and groups, but outright denial of coverage for individuals and groups who have a high risk of substantial medical expenditures. The fact that people with high risk cannot purchase insurance at a price that is close to being actuarially fair, and the fact that insurance firms compete on attracting the best risks instead of on being the best at managing risks, indicates an information failure in the nongroup market and represents substantial welfare loss (Hendren 2013).

The approach of the ACA in solving this problem is threefold. First, insurance firms are now forbidden from denying insurance or increasing premiums based on health status – premiums can now vary only based on features of the plan, and the age and tobacco use of the policyholder. Second, everyone is obligated to buy and hold a health insurance policy in order to prevent people from buying insurance only when they are sick and thus bankrupting the insurers. Finally, to make sure that poor households and firms have affordable insurance options, the government offers a subsidy to buying insurance, which phases out as the income of the policyholder grows.

A critical component of the subsidy component is the expansion of Medicaid eligibility to all individuals legally residing in the U.S. whose income is below 135% of the federal poverty line. This expansion

would have extended insurance to people earning relatively higher incomes, as well as to childless adults, who typically face much lower earning limits to qualify for Medicaid. According to a Supreme Court ruling in 2012, states could decide on whether to implement the Medicaid expansion (though not on most of the other regulations of the ACA). By early 2014, 24 states and the District of Columbia have decided to expand Medicaid to the thresholds specified in the ACA. While expanding states tended to be located in the Northeast, Midwest and on the Pacific Coast, there were many instances of similar states, such as Kentucky and Tennessee, differing in their Medicaid expansion decisions, and thus creating useful variation for observing the effect of the expansion.

In addition to these three core components, the ACA includes other provisions that may impact the labor market. First, insurance firms are required to include certain "essential health benefits" in any insurance plan that they offer, which makes it difficult for them to attract low-risk consumers by offering very inexpensive bare-bones plans. However, the additional mandated benefits make health insurance more expensive, which affects the labor costs of companies that offer health insurance. Second, the ACA imposes a mandate on medium-sized and large firms (50 full-time equivalent employees or more) to purchase insurance for their employees or to pay a fine. This fine is calculated as $2000 for each full-time employee that the firm fails to cover minus 30, as long as the firm has at least 50 full-time equivalent employees. The rationale for this fine is that firms with market power and employing workers who are eligible for the ACA insurance subsidies may stop offering their workers health insurance and have them purchase it using the subsidies, thus effectively transferring some of the firm's labor costs to the taxpayer. The fact that this formula depends on the number of full-time workers creates an incentive for firms that may pay the fine to substitute part-time workers for full-time workers, and thus, make it more difficult for people to find full-time work. Mulligan (2013) estimates that because the ACA increases marginal tax rates (through offering subsidies that are phased out and through expanding Medicaid) and incentivizes part-time employment relative to full employment, it could lead to declines in both employment and GDP for the economy.

However, some of the ACA's effects on the labor market may actually be efficiency-improving. The fact that nongroup health insurance markets work poorly creates an incentive for people to work in firms that offer insurance, and thus distorts the allocation of labor away from what it should be under the principles of comparative advantage. This phenomenon, known as *job lock*, has been found to be large in U.S. labor markets (Madrian 1994, Gruber and Madrian 2004). By creating viable nongroup markets, the ACA reduces this distortion and encourages workers to move away from firms that offer them insurance and toward firms in which their productivity (or their utility from other amenities, such as a more interesting job or more flexible hours) is higher. A specific form of job lock, known as *employment lock*, could result if some people would be better off outside of the labor force (for instance, by living on the income of another household

member, on government assistance or on private savings) but nevertheless remain employed in order to obtain health insurance. In particular, Garthwaite, Gross and Notowidigdo (2014) show that a decrease in labor force participation may be an efficiency-enhancing result of insurance expansion, and the CBO (2014) concludes that the ACA will result in a modest decline in employment for this reason.

3 Data

The key independent variable in this analysis is the fraction of people under 65 and earning less than 400% of the poverty line (hence, eligible either for Medicaid or for the exchange subsidies) who are uninsured in each county. This data element comes from model-based estimates of the Small Area Health Insurance Estimates (SAHIE) project of the Census Bureau. Figure 2 presents a map of ACA exposure across U.S. counties. Overall, counties in Southern and Western states tend to have a large ex ante ACA impact, while counties in Northern and Eastern states tend to have a relatively small one. I also use model-based estimates of county-level changes in uninsurance between 2013 and 2014 compiled by Enroll America.

Prior county uninsurance rates are related to the impact of the ACA on the labor market in multiple ways. First, ex ante uninsurance is a measure of how difficult it is to find insurance on the nongroup market in a locality. Second, it is associated with how frequently do firms offer insurance to their employees. In a county in which all firms offer insurance, the ACA should bind only weakly (by affecting entrants, for example), while in a county where no firms offer insurance, the ACA will compel a major reorganization of the existing employee benefits structures. Finally, and perhaps most importantly, prior uninsurance rates will be associated with the number of people who could conceivably choose to use exchange subsidies or who will become eligible for Medicaid. These people will see their labor supply incentives affected by the fact that the Medicaid eligibility and the subsidies will gradually phase out as they earn more income.

In the course of the analysis, it will be important to control for the differential recovery paths of different counties from the Great Recession. To do so, I will use data on county unemployment in 2010 (shortly after the trough of the recession) in the Local Area Unemployment Statistics (LAUS).

In order to assess possible effects of the ACA on labor markets, I look at variation in employment and wages across counties, years and industries in the Quarterly Census of Employment and Wages (QCEW). I also look at gross state product per capita from the Bureau of Economic Analysis as well as ratios of part-time employment to full-time employment computed from the CPS. Additionally, I consider state and year-level data from the MEPS (Insurance Component) on the distribution of employer-provided insurance premiums (the average and the 90-10 percentile ratio).

4 Empirical Approach

It is obvious that places with differing exposure to the ACA will also differ along other dimensions. States with higher uninsurance may have stricter standards for Medicaid eligibility and may be more conservative economically. They may also have a different industrial structure, with a greater reliance on low-insurance industries like leisure and hospitality. Hence, it is insufficient to simply compare more exposed to less exposed areas before and after the passage of the ACA in 2010 or its implementation in 2014. Instead, I allow labor market differences between more and less exposed areas to evolve flexibly over time and look for breaks in this evolution at the passage and implementation of the ACA.

To investigate the impact of the implementation of the ACA in late 2013, I run the following regression:

$$y_{c,t} = \alpha_c + \lambda_t + \mu_t U_c^{2013} + X_{c,t}\beta + \varepsilon_{c,t} \tag{1}$$

where $y_{c,t}$ is the outcome of interest (for example, log employment), α_c is a county fixed effect, λ_t is a year-quarter fixed effect, μ_t is another year-quarter fixed effect, U_c^{2013} is the county uninsurance rate in 2013 discussed in Section 3, $X_{s,t}$ are possible control variables. Errors are allowed to be correlated across years within each state. I run each regression for the period from Q1 2012 to Q4 2014.

I run a similar regression to study the possible impacts of the passage of the ACA on the recovery from the Great Recession. The only differences are that the regression is at an annual, rather than at a quarterly, time frequency, so λ_t and μ_t are now year fixed effects, that the regression is run for the time period 2005-2013, and that U_c is measured in 2010 rather than 2013.

Based on these regressions, I estimate the trend break in the effect of ACA exposure as the following difference of coefficients:

$$\gamma^{2014} = \frac{1}{4}\bar{U}^{2013} \times \left[\left(\mu_{2014q4} - \mu_{2013q4}\right) - \left(\mu_{2013q4} - \mu_{2012q4}\right)\right] \tag{2}$$

where $\bar{U}^{2013}$ is the nationwide uninsurance rate for the under-65, under-400% of poverty population in 2013. The expression in square brackets is the deviation of the coefficients μ_t from a straight line in a 4-quarter interval around Q4 of 2013. The (1/4) term at the beginning is used because the takeup of exchanges was around one-fourth of the relevant population. If in the counterfactual, the quarter-by-quarter impacts of ex ante ACA exposure on labor market variables evolved along a straight line, the value γ would capture the average impact of implementing the ACA on the U.S. labor market.

The similar measure that I use to measure the potential impact of the passage of the ACA on the

recovery from the Great Recession is

$$\gamma^{2010} = \frac{1}{4}\bar{U}^{2010} \times [(\mu_{2012} - \mu_{2010}) - (\mu_{2010} - \mu_{2008})] \tag{3}$$

In my analysis of the implementation of the ACA in 2014, I also estimate a specification in which I compare outcomes within pairs of bordering counties in which one county experiences a Medicaid expansion and the other one does not. The regression then becomes

$$y_{c,t} = \alpha_{b(c),t} + \mu_t M_{c,t} + \varepsilon_{c,t} \tag{4}$$

where $M_{c,t}$ is an indicator for whether Medicaid was expanded in county c and at time t, $b(c)$ is the county pair that includes county c, and $\alpha_{b(c),t}$ is a county-pair-time fixed effect.

5 Results for Implementation of the ACA in 2014

5.1 Effects on Employment

Table I presents estimates of trend breaks in the last quarter of 2013 (γ^{2014}) for the relation between the fraction uninsured in a county and employment and salaries. Since the data used to generate the estimates in Table I are at quarterly frequency, a concern may be that the results are affected by purely seasonal effects. To avoid this concern, I convert all dependent variables to year-on-year logarithmic differences. As the dependent variables are then all in logarithmic form, I multiply all coefficients and standard errors by 100 to get the percentage point change in the relevant dependent variable that is associated with each trend break. For every dependent variable, I also present its within-county standard deviation, which captures the degree to which this variable varies over time but not cross-sectionally. This measure is a reasonable way to compare any possible trend break at the passage of the ACA to the normal time-series fluctuations of labor market variables.

Column 1 presents estimates for the trend break in total employment, with the baseline estimates in Row 1. We see that the trend break in total year-on-year employment growth was 0.3, suggesting that, if anything, employment rose by an extra 0.3 percentage points in the year after the passage of the ACA than before the passage of the ACA. This estimate is statistically significant at 1%. The within-county standard deviation of quarterly year-on-year employment growth is 4.22%. Hence, this trend break is somewhat under a tenth of typical variation in quarterly employment growth within a county over time during the period

2012-2014. Figure 4 presents the plot of the coefficients μ_t on ACA exposure over time. We see that the series is declining in 2013, but rising in 2014, with the rise beginning right after the rollout of the ACA in the last quarter in 2013. The trend break is computed under the assumption that both the decline and the rise are valid features of the data. However, even if one believes that the variation in the coefficients μ_t during the period 2013-2014 is spurious, the graph still offers no evidence that the series of μ_t fell from its pre-2014 trend after the implementation of the ACA.

Row 2 attempts to obtain a cleaner picture of the effect of the implementation of the ACA by including county-specific time trends and state-time fixed effects. It is clear that different counties are on different economic trajectories, which should be well captured by linear trends over the time period in question. Moreover, the fact that I use within-state variation allows me to abstract from shocks affecting states, such as state legislation coming into effect at the beginning of a year, or changes to state-level markets. The trend break now increases to 0.58. Moreover, the plot of the coefficients μ_t, shown in Figure 5, is now much clearer in showing an unambigous rise in employment growth for counties with higher pre-ACA uninsurance rates relative to counties with lower rates. The coefficients μ_t follow a horizontal trend that is statistically indistinguishable from zero before the implementation of the ACA, and then rapidly rise, becoming statistically different from zero.

An important concern could be that other nationwide policy changes at the end of 2013 may be driving the findings above. In particular, the Emergency Unemployment Compensation (EUC) program, which had extended unemployment benefits to 99 weeks from a pre-recession level of 28 weeks, was allowed to expire effective January 1, 2014. Previous research (Hagedorn, Karahan, Manovskii and Mitman 2013) has shown that the EUC created substantial distortions in the labor market, and if high-uninsurance counties are also high-unemployment counties, its expiration could account for the increase in employment that the model in Section 4 attributes to the implementation of the ACA. To address this concern, in Row 3 of Table I I reestimate the baseline equation but add interactions of time fixed effects with the county unemployment rate in 2010 obtained from the Local Area Unemployment Statistics (LAUS). As Column 1, Row 3 shows, the effects of including these covariates on the trend break estimate are minimal, suggesting that the EUC expiration is not masking the effect of the implementation of the ACA.

It is useful to validate that the pre-implementation county uninsurance rate is a good measure of the exposure of the county to the ACA. By 2014, many states have chosen not to expand Medicaid in response to the 2012 Supreme Court ruling. As some of these states had very high levels of uninsurance (e.g. Texas), such selective nonexpansion of Medicaid could complicate the relation between the county uninsurance rate and the ACA exposure of the county. Figure 3 presents a map of the U.S. that shows which states expanded Medicaid by the end of 2013. In Row 4 of Table I, I estimate a version of the baseline

equation, in which I replace the county uninsurance rate with its estimated decline in uninsurance after the implementation of the ACA based on the model used by Enroll America, an organization attempting to increase insurance enrollments. While Census Bureau county level estimates of the decline in county-level rates of uninsurance between 2013 and 2014 are not yet available, it appears that the model used by Enroll America to estimate these declines is similar to the model used by the Census Bureau to construct the SAHIE county-level estimates. Since these estimated declines in uninsurance are likely endogenous to the macroeconomic situations of counties, I instrument their interactions with time dummies by the original county uninsurance rates in 2013 interacted with time dummies. The estimated trend break is very similar to the one obtained from the original specification in Row 1.

In Rows 5 and 6 of Table I, I consider whether counties in states that expanded Medicaid had a different trend break than counties in states that did not. For both groups of counties, the trend break is similar in magnitude to the baseline specification and statistically significant at least at 10%. Therefore, it does not appear that the greater employment growth in high-uninsurance counties is driven by either the states that expanded Medicaid or the states that did not.

Comparing the trend breaks in the regressions in Rows 5 and 6 of Table I is not a test of whether expanding Medicaid increased or decreased employment growth because the Medicaid expansion decision was not randomly assigned to states, and therefore, to counties. Instead, I exploit the fact that many states that expanded Medicaid share borders with states that didn't. As it is unlikely that states chose to expand or not expand Medicaid based on the economic conditions of counties on their borders, estimating the effect of Medicaid expansion by comparing outcomes within pairs of counties that border each other but differ in whether their state expanded Medicaid sidesteps many of the endogeneity problems that would arise under a direct comparison of counties expanding Medicaid with counties that don't. Column 1, Row 7 of Table I presents trend break estimates for the resulting specification, which is specification (4) from Section 4. The size of the trend break for employment suggests that counties expanding Medicaid had employment growth that was higher by 1.76 percentage points (although this estimate is statistically significant only at 10%). Figure 6 shows the plot of the coefficients μ_t from specification (4). We see that the employment growth differential between the counties that expanded Medicaid and their neighbors that did not is contracting over the course of 2013, and then expands through 2014, a reversal that my identification strategy attributes to the expansion of Medicaid under the ACA.

5.2 Other Labor Market Variables

In order to try to understand the mechanisms through which the ACA may have increased employment in spite of its potentially distortionary effects, I analyze the effects of the ACA on other labor market variables. As most of the estimates to be discussed will not be statistically significantly different from zero, almost all of the subsequent analysis is more speculative than the preceding section.

First, I consider how the ACA may have had different effects on employment by type of industry. It is well-known that firms are much more likely to offer insurance in some industries than in others. The Bureau of Labor Statistics reports offer rates of employer-sponsored health insurance by first-digit NAICS industry. On the basis of these offer rates, I define "low-insurance industries" to be leisure and hospitality, as well as the aggregate "other services," which includes, for example, employment in laundromats and barbershops. I define all other industries as "high-insurance industries."

Columns 2 and 3 present estimates for trend breaks in employment growth in low-insurance industries and in high-insurance industries respectively. For rows 1-4, while none of the estimates are significant, the trend break in low-insurance industries tends to be as large or larger as the trend break for employment growth as a whole (reported in Column 1), while the trend break for employment growth in high-insurance industries tends to be negative, or at least an order of magnitude less than the trend break for employment growth as a whole. Looking at Rows 5 and 6, we observe that this pattern is driven exclusively by the counties that are located in states that expanded Medicaid. Finally, in Row 7, we observe that this pattern is reversed when we look at the effect of Medicaid expansion within pairs of bordering counties. This pattern of coefficients (except in the border-time fixed effects specification) would be consistent with a story in which Medicaid expansion created incentives for people with a comparative advantage in low-insurance industries (for instance, the restaurant and hospitality industries) to reenter the labor force because their wages might still place them below the expanded Medicaid eligibility threshold. It goes without saying, however, that it could be consistent with multiple other stories (for example, people from high-insurance industries moving into low-insurance industries, or simply that low-insurance industries might expand more from the demand shock that would follow the wealth effect that moderate-income people might experience after they get subsidized insurance), and that the empirical framework cannot distinguish between these stories.

Column 4 presents estimates for the trend break in log average salaries. For most of the specifications in question it is positive (suggesting that salaries rose in high-uninsurance counties relative to low-uninsurance counties and to trend after the implementation of the ACA), statistically significant, and on the order of magnitude of 0.15 percentage points. This finding would be consistent with the ACA increasing the marginal product of labor of people who are employed, or with a change in the composition of the employment pool in

which more productive individuals enter and less productive individuals exit. The exception is the bordering counties specification (Row 7 of Table I), in which the effect of Medicaid expansion on average salaries is strongly negative. This finding could be explained by people who might qualify for Medicaid under the ACA moving from the non-expanding to the expanding county, increasing its employment but also decreasing its average productivity, and therefore, average salaries.

Columns 5 and 6 present estimates of trend breaks in log average salaries in low- and high-insurance industries respectively. The trend break for average salaries in low-insurance industries is almost always negative (though insignificantly different from zero), while the trend break for average salaries in high-insurance industries is almost always positive (and sometimes statistically significant at 10%). This pattern is consistent with a forward shift in relative supply in low-insurance industries relative to high-insurance industries, which would be consistent with an alleviation of job lock (although the presence of this pattern does notl constitute causal evidence for this story). The exception is, as usual, the border fixed-effects specification, in which both trend breaks are negative, with the trend break for log average salaries in high-insurance industries much larger in magnitude.

Based on the specifications analyzing the effects of the implementation of the entire ACA (rows 1 through 6), a consistent story would involve the ACA relaxing job lock and decreasing barriers for people to move from high-insurance industries to low-insurance industries, as well as incentivizing people who can earn relatively little in the labor market to engage in work without having to forgo Medicaid coverage. It appears that a different model is operating for the effects of the Medicaid expansion in the presence of neighboring counties that do not expand Medicaid. Some of the estimates observed from that specification can be rationalized if people who earn relatively little tend move from counties that do not expand Medicaid into counties that expand Medicaid (which would be difficult to check in an intercensal year), entering the employment pool in the expanding county but decreasing its average salary. However, the breakdown of the trend breaks by industry in the border-time fixed effects specification remains an anomaly. As the specification is estimated on the basis of only 247 county-pairs, part of the explanation for the anomalous results may come from the idiosyncracies of the sample.

6 Results for the Enactment of the ACA in 2010

While the enactment of the ACA changed few regulations that pertained to the labor market, many observers were concerned that it had created an anticipation effect of higher marginal implicit tax rates on labor supply, which would slow the recovery of the U.S. economy from the Great Recession. To address these concerns, I can use the same regression framework to look at the trend break in the difference of log

employment between high-uninsurance and low-uninsurance counties in 2010, the year in which the ACA was enacted.

The interpretation of the results from this regression will be somewhat different from that of the regression assessing the impact of the implementation of the ACA. While the previous regression looked at quarterly data over a period of three years, during which it would be difficult to argue that the structure of the economy could have quickly changed in high-uninsurance counties relative to low-uninsurance counties for reasons beside the enactment of the ACA (or the expiration of the EUC), this regression looks at annual data over the period before the Great Recession, the Great Recession itself, and the recovery period up to 2013. While this long scope is necessary to assess how the response to ACA enactment may have developed over the course of the recovery, it also complicates attributing all of the change in the employment differential between high- and low-uninsurance counties to the ACA. These counties were likely structurally different before the Great Recession, had a different experience during the recession, and had a different recovery for reasons quite different from the ACA. Still, running this regression should inform us whether any anticipation effects of ACA enactment could have been large enough to decrease employment in high- relative to low-uninsurance counties, or whether they were overwhelmed by other economic effects increasing employment in these counties.

Table **II** shows the trend break estimates from specification (1) for annual data on employment and salaries from 2005 to 2013, and using county uninsurance rates in 2010 as the uninsurance rate measure. Row 1 presents estimates with only county and year fixed effects. Row 2 adds county trends and state-year fixed effects. Row 3 adds 2010 unemployment by year fixed effects to the specification in Row 1 in order to control for potentially different recession and recovery experiences of different counties. Finally, Row 4 excludes counties in the Southwest (Texas, Arizona, New Mexico and California) from the sample. These states have high uninsurance rates, and had very special recession and recovery experiences, with California and Arizona experiencing particularly severe housing crises, while Texas experienced a relatively limited crisis and a very strong recovery. For all these specifications, the trend break estimates are similar. Employment grows by slightly over 1 percentage point more between 2010 and 2012 than it did between 2008 and 2010 in high-uninsurance counties relative to low-uninsurance counties, with the estimate being statistically significant at 1%. The estimated growth is similar for both high- and low-insurance industries, although it appears to be slightly higher in the former. Average salaries also grow in high-uninsurance counties relative to low-uninsurance counties, but the trend break is not statistically significant. Finally, there is no consistent pattern for how average salaries in low-insurance industries evolve relative to average salaries in low-insurance industries.

Figure 7 presents the graph of the coefficients μ_t for employment growth in the baseline specification

(Row 1) and Figure 8 presents the same graph for the specification with the county trends and state-year fixed effects (Row 2). We see that for the baseline specification, there is a clear trend break in the employment growth differential in 2010, with the differential contracting during the Great Recession, but expanding after the enactment of the ACA. For the specification with county trends and state-year fixed effects, the pattern is even starker, with much of the pre-trend coming from the recession being absorbed by the additional controls, yielding a flat path of the differential before the ACA enactment.

6.1 State-Level Results

It is interesting to examine the evolution of other variables besides employment, such as output, part-time employment and insurance premiums. Unfortunately, these variables tend to only be available at the state level at annual frequency. Therefore, in Table III, I presents results for how these variables evolved after the enactment of the ACA in 2010. The specification and the robustness checks are the same as in Table **II**, but all the data is now at the state level, rather than at the county level. (Therefore, in Row 2, instead of county trends and state-year fixed effects I include state-specific linear and quadratic time trends). The first column presents results for employment, which are the same as in Column 1 of Table **II**. The second two columns consider changes in employment for firms with fewer than 100 employees ("small firms") and more than 100 employees ("large firms"). We see that employment in both kinds of firms increases in high-uninsurance states relative to low-uninsurance states after 2010, but the increase is about twice as large (and statistically significant) for employment in large firms. This pattern would be consistent with the ACA discouraging employment at small firms because of the concern about the employer mandate. However, in Row 4 of the table, we see that this pattern is driven by the Southwest, and if it is removed, employment at both types of firms exhibits a statistically significant positive trend break in 2010 of a similar magnitude. Column 4 presents estimates for the trend break in gross state product per capita. Gross state product appears to have grown faster in high-uninsurance states than in low-uninsurance states after 2010 relative to the preceding trend, in much the same way as did employment.

Column 5 presents results for state-level fraction of employees working part-time as measured by the CPS. The trend break estimate is negative, suggesting that high-uninsurance states experienced a smaller increase in the fraction part-time than did low-uninsurance states. However, the estimate is statistically insignificant, and is consistent with as much as a 0.5 to 1 percentage point increase in the part-time fraction in high-uninsurance states relative to low-uninsurance states. This increase would be somewhat below the increase in the fraction employed part-time in Hawaii after it passed its employer mandate in 1972, which was about 1.4 percentage points (Buchmueller et. al. 2011), and so, would be within the range of prior

estimates in the literature.

Columns 6 and 7 present results for the behavior of employer-based insurance premiums. I observe that average premiums grew less in high-uninsurance states than in low-uninsurance states after 2010 relative to their previous trend. This finding suggests that if the ACA caused insurers and employers to expect higher insurance-associated costs in the future, these expectations were overwhelmed by countervailing pressures to lower premiums. Additionally, I show that high-uninsurance states experienced a marked reduction in the dispersion of premiums relative to low-uninsurance states. The trend break for the 90-10 ratio of the premium distribution (the ratio of the 90th percentile of premiums to the 10th percentile of premiums) is negative and statistically significant (at least at 10%) in all specifications.

7 Conclusion

I have assessed the potential effects of the ACA on labor markets by looking at trend breaks in the relationship between prior uninsurance rates (ACA exposure) and labor market variables around the implementation of the ACA in 2014 and its enactment in 2010. While these trend breaks are not necessarily causal effects of the ACA, they do not appear to be explained by confounding factors, in particular, by rich trends, differential state and county responses to the Great Recession or the behavior of particular regions. I find that more exposed states and counties have, if anything, experienced a rise in employment, salaries and output relative to less exposed areas with the implementation or the enactment of the ACA, and that the data are consistent with a relative supply shift in favor of low-insurance industries. I also observe that if the ACA had generated an adverse anticipation effect on labor markets at passage, it was overwhelmed by other forces making high-uninsurance states and counties grow faster. I also find that the premium distribution has become more compressed, and slightly lower on average.

I conclude that it is unlikely that the ACA had adverse labor market impacts in its first year, and that it did not substantially impede the recovery after the Great Recession. However, this should not be taken as a blanket statement that the ACA has improved the labor market, let alone that the welfare impacts of the ACA have been positive overall. First, major parts of the ACA, such as the employer mandate and the tax on high-premium plans (the Cadillac tax) still have yet to come into force. Second, this analysis does not directly assess the CBO's projection of the labor market impact of the ACA because the latter considers the period after 2016, by which time the employer mandate will have come in force. Moreover, the extent to which the Medicaid expansion, employer fines and subsidies act as wedges may change drastically if health care spending begins to grow faster than the economy as a whole, as it had been on average for the past five decades. Finally, the ACA's effect on the labor market is not the only, or even the main effect on

welfare that it may have. While it is heartening that the ACA does not appear to have substantially slowed the recovery or hurt it in its first year of implementation, its long-run impact on the U.S. economy remains to be seen.

References

[1] **Buchmueller, Thomas C., John DiNardo,** and **Robert G. Valletta**. 2011. "The Effect of an Employer Health Insurance Mandate on Health Insurance Coverage and the Demand for Labor: Evidence from Hawaii." *American Economic Journal: Economic Policy*, 3(4): 25-51.

[2] **Congressional Budget Office**. "The Budget and Economic Outlook: 2014 to 2024." February 2014.

[3] **Hagedorn, Marcus; Fatih Karahan, Iourii Manovskii** and **Kurt Mitman**. 2013. "Unemployment Benefits and Unemployment in the Great Recession: The Role of Macro Effects," *Federal Reserve Bank of New York Staff Report* #646 (revised February 2015).

[4] **Garthwaite, Craig, Tal Gross** and **Matthew Notowidigdo**. 2014. "Public Health Insurance, Labor Supply, and Employment Lock." *Quarterly Journal of Economics*, 129(2):653-696

[5] **Gruber, Jonathan** and **Brigitte Madrian**. 2004. Health Insurance, Labor Force Participation, and Job Choice: A Critical Review of the Literature," in Catherine McLaughlin, editor, *Health Policy and the Uninsured*, Urban Institute Press.

[6] **Hendren, Nathan**. 2013. "Private Information and Insurance Rejections." *Econometrica* 81(5):1713-1762

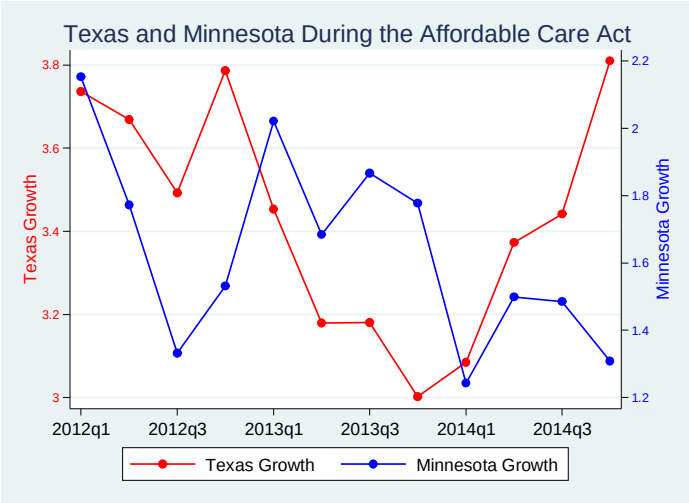
[7] **Jacobs, Denise**. 2013 (Apr.). "Half of U.S. Small Businesses Think Health Law Bad for Them." *Gallup Analytics*.

[8] **Madrian, Brigitte**. 1994. "Employment-Based Health Insurance and Job Mobility: Is There Evidence of Job-Lock?" *Quarterly Journal of Economics*, 109:27-54.

[9] **Mulligan, Casey**. 2013. *Side Effects: The Economic Consequences of the Health Reform*. Oxford University Press.

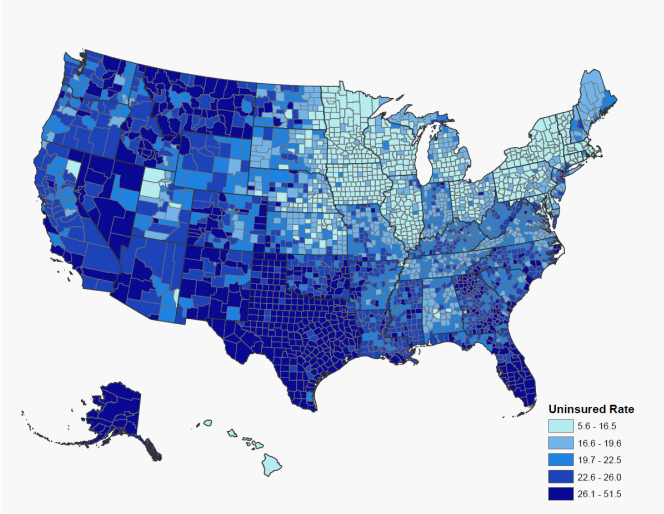
8 Figures

Figure 1 (1)



Note: See Table I for data definitions.

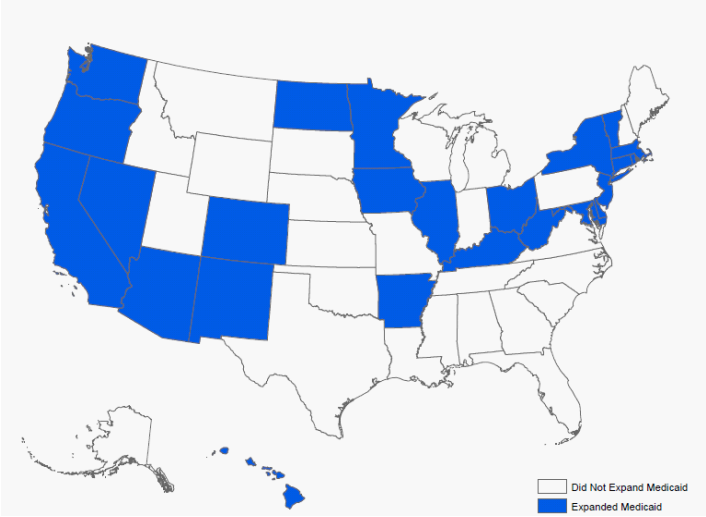
Figure 2 (2)
County Uninsurance Rates in 2013



Source: SAHIE

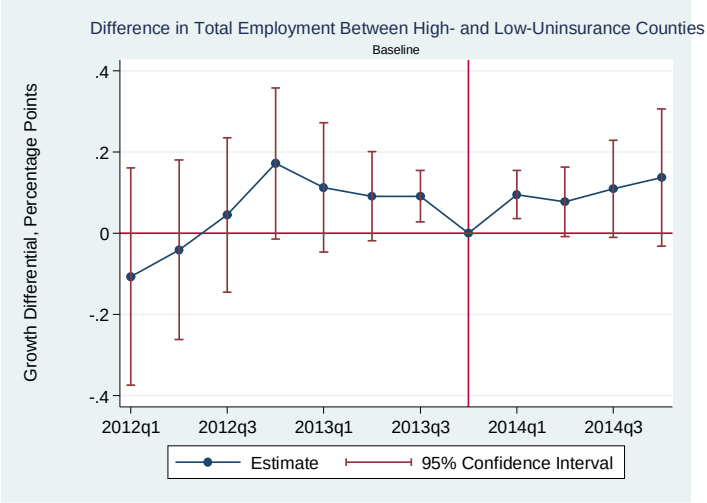
Figure 3 (3)

States Expanding Medicaid in January 2014



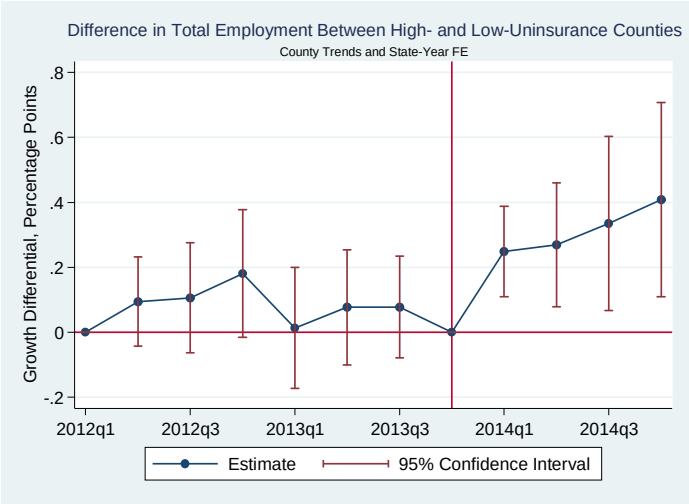
Source: KFF

Figure 4 (4)



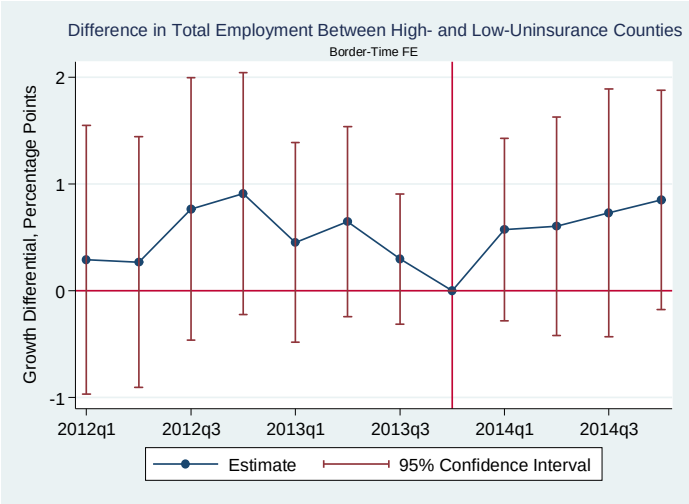
Note: See Table I for data definitions. This is a plot of the coefficients μ_t from specification (1)

Figure 5 (5)



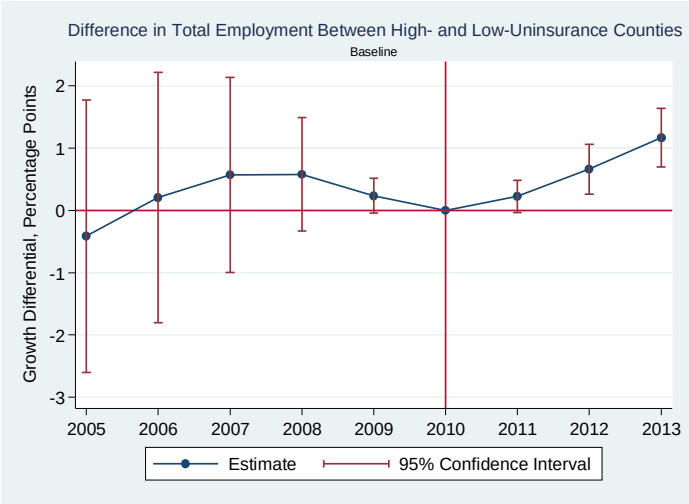
Note: See Table I for data definitions. This is a plot of the coefficients μ_t from specification (1)

Figure 6 (6)



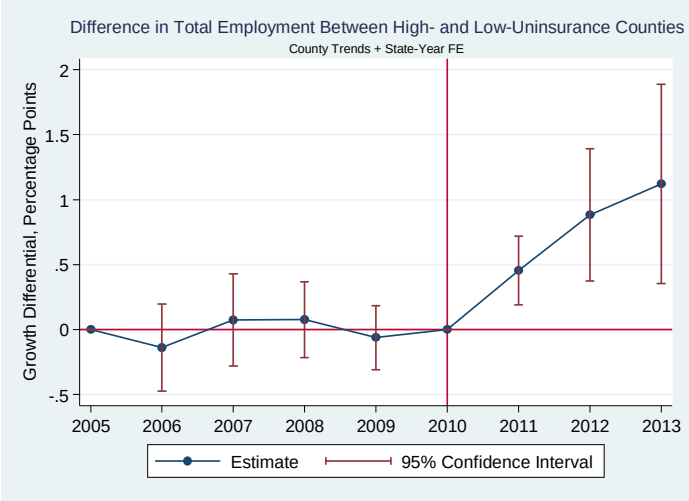
Note: See Table I for data definitions. This is a plot of the coefficients μ_t from specification (4)

Figure 7 (7)



Note: See Table II for data definitions. This is a plot of the coefficients μ_t from specification (1)

Figure 8 (8)



Note: See Table II for data definitions. This is a plot of the coefficients μ_t from specification (1)

9 Tables

Table I

Trend Breaks for ACA Implementation in 2014

Estimate is Percentage Point Change in Level of Dep. Var.

	(1)	(2)	(3)	(4)	(5)	(6)
	Empl. All	Empl. Low Ins.	Empl. High Ins.	Sal. All	Sal. Low Ins.	Sal High Ins
Baseline	.30***	.38	-.02	.15**	-.13	.20*
	(.11)	(.42)	(.10)	(.06)	(.26)	(.12)
County Trends and State-Year FE	.58***	.33	-.02	.19*	-.29	.25*
	(.13)	(.25)	(.10)	(.11)	(.22)	(.14)
UE-Time FE	.34***	.21	.01	.16***	-.06	.19*
	(.10)	(.28)	(.07)	(.05)	(.19)	(.10)
Actual Decrease in Uninsured	1.27**	8.97	-.54	3.51**	-3.11	4.70*
	(.55)	(9.23)	(2.39)	(1.59)	(5.83)	(2.59)
MCD Expansion States	.29**	1.42*	-.25	.14	-.73	.37
	(.14)	(.84)	(.18)	(.14)	(.47)	(.28)
No MCD States	.28*	-.00	.04	.16**	.08	.14
	(.15)	(.10)	(.04)	(.08)	(.06)	(.08)
Border-Time FE	1.76*	-.67	-.34	-3.58**	-1.63	-4.62**
	(.96)	(2.98)	(2.16)	(1.71)	(2.69)	(1.99)
Within SD of Dep. Var.	4.22	14.31	10.44	5.61	10.51	6.77
County and Year FE	Yes	Yes	Yes	Yes	Yes	Yes
No. Observations	37485	37104	37595	37485	37104	37595
No. Clusters	51	51	51	51	51	51

(I)

Table I presents estimates and 95% confidence intervals of trend breaks as defined by equation (2) and specification (1). The sample consists of quarterly data from 2012Q1 to 2014Q4. All dependent variables are year-on-year logarithmic differences. Dependent variables come from the QCEW. County uninsurance rates in 2013 come from the Census Bureau (SAHIE). The second row includes county-specific time trends and state by time fixed effects as controls. The third row replicates the first row, but includes time fixed effects interacted with county unemployment in 2010 as controls. The fourth row presents estimates from an instrumental variables regression in which year fixed effects interacted with changes in uninsurance from 2013 to 2014 from Enroll America data are instrumented by year fixed effects interacted with uninsurance in 2013. The fifth row estimates the main specification only for counties in states that expanded Medicaid. The sixth row estimates the main specification only for counties in states that have not expanded Medicaid before January 2014. County and time fixed effects are included in every regression through row 6. The last row is estimated using 247 pairs of bordering counties, in which one county belongs to a state that expanded Medicaid and the other county does not, and includes county-pair-by-time fixed effects. Low-insurance industries are defined as Leisure and Hospitality and Other Industries. High-insurance industries are all other industries aside from government.

Table II

Trend Breaks for ACA Enactment in 2010						
Estimate is Percentage Point Change in Level of Dep. Var.						
	(1)	(2)	(3)	(4)	(5)	(6)
	Empl. All	Empl. Low Ins.	Empl. High Ins.	Sal. All	Sal. Low Ins.	Sal High Ins
Baseline	1.23***	1.32***	1.14***	.38	.14	.34
	(.33)	(.46)	(.35)	(.26)	(.23)	(.25)
County Trends + State-Year FE	.95***	1.43***	1.13***	.59**	.90***	.57**
	(.24)	(.56)	(.20)	(.26)	(.28)	(.25)
UE-Year FE	1.04***	1.22***	.96***	.41	.19	.37
	(.24)	(.42)	(.26)	(.27)	(.23)	(.25)
No Southwest	1.39***	1.60***	1.32***	.15	-.02	.11
	(.27)	(.25)	(.27)	(.18)	(.38)	(.18)
Within SD of Dep. Var.	7.97	14.96	8.07	8.94	12.48	8.41
State and Year FE	Yes	Yes	Yes	Yes	Yes	Yes
No. Observations	28143	27919	28265	28143	27919	28265
No. Clusters	51	51	51	51	51	51

(II)

Table II presents estimates and 95% confidence intervals of trend breaks as defined by equation (3) and specification (1). The sample consists of annual data from 2005 to 2013. All dependent variables in logarithms. Dependent variables come from the QCEW. County uninsurance rates in 2010 come from the Census Bureau (SAHIE). The second row includes county-specific time trends and state by time fixed effects as controls. The third row replicates the first row, but includes time fixed effects interacted with county unemployment in 2010 as controls. The fourth row presents estimates excluding counties in Texas, Arizona, New Mexico and California. County and time fixed effects are included in every regression. Low-insurance industries are defined as Leisure and Hospitality and Other Industries. High-insurance industries are all other industries aside from government.

Table III

Trend Breaks for ACA Enactment in 2010: State-Level Regressions							
Estimate is Percentage Point Change in Level of Dep. Var.							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Empl All	Empl Sm. Firm	Empl Lrg. Firm	Income Per Capita	Fraction Part-Time	Avg Prem	Prem 9010
Baseline	1.06***	.65	1.40***	1.64***	-.25	-3.45***	-7.49**
	(.38)	(.84)	(.52)	(.44)	(.38)	(.97)	(3.54)
State Linear and Quadratic Trends	.93***	.65	1.09***	1.23***	-.26	-2.32***	-6.42*
	(.23)	(.76)	(.37)	(.42)	(.35)	(.97)	(3.48)
UE-Year FE	.72*	.34	1.24*	1.45***	-.14	-4.68***	-7.44*
	(.42)	(.89)	(.64)	(.51)	(.45)	(.84)	(4.20)
No Southwest	1.14***	1.62***	1.66***	.92***	-.13	-3.56***	-9.10*
	(.36)	(.52)	(.53)	(.36)	(.50)	(.92)	(4.81)
Within SD of Dep. Var.	3.33	2.68	4.72	8.69	1.49	11.70	9.74
State and Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
No. Observations	459	459	459	408	459	357	357
No. Clusters	51	51	51	51	51	51	51

(III)

Table III presents estimates and 95% confidence intervals of trend breaks as defined by equation (3) and specification (1) where data is at the state-year level. The sample consists of annual data from 2005 to 2013. All dependent variables are in logs except for the fraction employed part-time in Column 5. Employment, and employment by firm size come from the QCEW. County uninsurance rates in 2010 come from the Census Bureau (SAHIE). Fraction of people employed part time comes from the CPS. Insurance premium data comes from the MEPS-IC. Gross state product per capita comes from the BEA. The second row includes county-specific time trends and state by time fixed effects as controls. The third row replicates the first row, but includes time fixed effects interacted with county unemployment in 2010 as controls. The fourth row presents estimates excluding counties in Texas, Arizona, New Mexico and California. County and time fixed effects are included in every regression.