# How does Regulatory Uncertainty affect Wages and Employment at Smaller Employers?

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**Abstract**

The Patient Protection and Affordable Care Act (ACA) delegated certain decisions about the cost and availability of employment-based health coverage, for small employers, to state legislatures. This created regulatory uncertainty for these small employers providing a source of identification that can be used to separate the effects of regulatory uncertainty and regulatory change. Because health coverage is a labor cost, the paper focuses on how this episode of regulatory uncertainty affected employment and wage outcomes before, during, and after the period of uncertainty compared to the same outcomes at employers who were not affected by uncertainty. Data from the Quarterly Census of Employment and Wages (QCEW) and March CPS suggest that uncertainty has negative effects on employment outcomes even when the uncertainty could be beneficial.

## 1 Introduction

The Patient Protection and Affordable Care Act (ACA) contains two provisions designed to increase the availability of employment-based health coverage to workers. Because almost all large employers already offer health coverage to their employees, these provisions primarily affected small employers. One of the provisions is known as the "employer mandate." The mandate required all employers with more than 50 full-time equivalent employees (FTEs) to provide affordable health coverage as an employment benefit. If coverage was not in place as of January

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2014 employers with more than 50 employees would face a "stick" in the form of thousands of dollars in "shared-responsibility" penalties.[1] The second provision was the SHOP (Small Business Health Options) marketplace. These marketplaces were designed as a "carrot" to entice employers with fewer than 50 FTEs to provide health coverage. Most importantly, the SHOP marketplaces group small employers in each state into a single large group for the purposes of underwriting (commonly referred to as "community rating"). Large groups pool risk predictably and spread the administrative cost of coverage across a larger base leading to lower and less variable premiums.[2]

However, the ACA gave state legislatures the power to allow employers with between 50 and 100 employees access to the community-rated insurance plans offered in the SHOP marketplace. If they could obtain coverage in the SHOP marketplace the effect of the ACA on their labor costs would be smaller and more predictable. If they were not granted access to the SHOP marketplace in their state - they would have to obtain experience-rated coverage in the "large group" market. Experience-rating treats employees at each firm as a separate risk pool for the purposes of underwriting which ensures that premiums reflect the expected costs of an employer's workers plus administrative costs. For employers with between 50 and 100 employees, experience-rated premiums would be large and unpredictable. Premium variation across firm size due to experience-rating is best described by Cutler (1994) who estimated that the per-employee premium was nearly three times higher at the 90th percentile compared to the 10th percentile for small employers who were experience-rated. Cutler emphasized that plan specifics, chosen by the firm, explained practically none of this variation.

Generally, state legislatures did not settle this issue until late 2012 or early 2013.[3] As a result, the ACA (enacted in early 2010) created a three-year period of uncertainty for employers with 50-100 workers. Because the uncertainty primarily affected the expected cost of labor, the employer mandate can therefore be used to study the effect of regulatory uncertainty on total employment and wages over time at small businesses.

[1] These penalties were to be $2,000 per employee after the first 30 employees.

[2] The administrative overhead associated with group health coverage is commonly referred to as a "loading" fee. Karaca-Mandic et al. (2011) explains how employers with up to 100 employees face average loading fees equal to 34% of the plan premium. This falls to 15% for employers with between 100 and 10,000 employees, and just 4% for employers with >10,000 workers.

[3] Universally, access to the SHOP marketplace was not granted to these firms due to cost concerns created by adverse selection: many of the affected firms already offered coverage and only those who have unhealthy workers would choose to enter the marketplace. See Table 3.

Of course, because the employer mandate increased the expected cost of hiring workers the quantity of labor demanded at employers affected by the mandate (regardless of number of employees) should fall via both movements along the firm's labor demand curve and shifts towards capital (at the margin). The approach in this paper is to examine the *additional* effect of uncertainty by comparing hiring and wage differences between employers affected with certainty and without (both when uncertainty was introduced and resolved).[4]

The dollar value at stake due to the uncertainty created by the ACA is not trivial. The Kaiser Family Foundation reports that the average annual premium for a single worker in 2016 was $6,435 ($18,142 for family coverage).[5] In contrast, SHOP insurance premiums for 2017 silver-rated plans (silver plans have an actuarial value of 0.7) were $260 per month for an employee who is 21 years old and increases with age. For example, it would cost $377 per month for a 50 year-old employee, on average.[6] For a firm with an equal mix of workers of different ages, the annual cost of coverage would amount to a total of $4,416 per employee. That is $2,219 less than the $6,435 average premium reported in the Kaiser Family Foundation annual benefit report.

It is worth emphasizing that the ACA's setup allows for a unique examination of the effects of regulatory uncertainty separate from the effect of regulatory change. Due to the ACA's structure there are some employers who are not affected in any direct way by the ACA's mandate, some who are affected by the mandate but do not face uncertainty, and a third group who are affected by the mandate but are uncertain how much their labor costs will change. All else equal, the predictions of standard economic theory are clear. Employers who already provide health coverage should make little or no changes to their labor inputs because of the ACA. They provide a baseline for comparison purposes. Employers who must provide expensive experience-rated coverage and are affected with certainty provide an upper bound on the ACA's effects. Lastly, employers with 50-100 employees should turn out to be an intermediate case only if uncertainty plays no independent role. For these employers, labor costs might increase by the cost of experience-rated coverage.

[4]Note that this approach means that some of the estimates in the paper can only be considered anticipatory effects. However, theory suggests that forward-looking employers should react to the law once they became aware of it rather than waiting until the law's implementation to make changes. Moreover, as detailed in redacted, employers had significant incentives to "prepare" for the ACA in advance while individuals had little incentive to change their behavior.

[5]See http://kff.org/report-section/ehbs-2016-summary-of-findings/.

[6]These averages were calculated from data available at https://www.healthcare.gov/small-businesses/shop-rates/. For each of the 32 states that use the federal marketplace to administer their SHOP coverage options, the website reports the cheapest silver and gold plan for workers under 20 along with those aged 21, 30, 40, 50, and 60.

On the other hand, labor costs might only rise by the cost of community-rated coverage. So long as employers place any positive probability on each outcome, the negative effect of the ACA's mandate on their demand for labor should be mitigated, at least until the uncertainty is resolved. However, if institutional and regulatory uncertainty exerts an independent impact on economic decisions, standard economic theory might underestimate the size (and direction) of the effect on labor demand.

Suggesting that uncertainty matters, the QCEW and CPS data used in this paper data show that employment outcomes (the focus is on wages as it captures the outcome of changed labor demand and is available in both the QCEW and CPS data) at employers affected by the introduction of uncertainty are no better and in some cases worse than at employers who were affected by the mandate with certainty. In addition, theory suggests that employers who are ultimately told that they have to provide expensive experience-rated coverage should react negatively. However, and again suggesting uncertainty exerts an independent role in economic decision-making, the data suggests that for employers with 50-100 employees the resolution of uncertainty - even though the outcome was "bad" - had positive effects (relative to firms who were not affected or were affected with certainty). These findings complement Ghosal and Ye (2015) who found that economic uncertainty (as measured via macroeconomic indicators such as index prices, inflation, and real GDP growth) negatively affects the growth of employment, with the impact concentrated among smaller businesses.

Section 2 reviews the literature on institutional and regulatory uncertainty this paper contributes to. Section 3 explains and summarizes the QCEW and CPS data used. Section 4 details the empirical estimates and compares firms affected by uncertainty to firms not affected by uncertainty to ensure estimates are robust and causally related to the ACA's effects (rather than labor market trends more generally). Section 5 concludes.

## 2 Background and Literature

Economic output is naturally a function of the inputs available to economic agents and the institutions under which these inputs are put to productive use. Institutions include the formal and informal rules governing human behavior (North 1990, 1991). While the boundary is not clear,

examples of formal rules can include written legal and political structures, as well as constitutions; while informal rules include cultural norms and social conventions not backed by formal law. These institutions provide the general rules of the game which facilitate economic, social, and political interactions. The link between institutions and economic output has been recognized since the time of Adam Smith, and major contributions that furthered our knowledge in this area have been advanced by many authors including Hayek (1945), North (1990, 1991), Baumol (1990), and Easterly (2001). The literature concludes that desirable institutions, those which provide for contract enforcement, stable property rights, reasonable taxes and regulations, and so on, allow more economic output to be produced with any given set of economic inputs.

Institutions matter because economic agents make decisions given the constraints and relative prices they expect to confront. That is, these decisions involve not only current constraints and relative prices, but future ones when their decisions involve future consequences and obligations. Furthermore, constraints and relative prices are influenced not only by changing market conditions and price signals, but also by changes in formal and informal institutions. When government policies change, resulting in a change in the relative prices or constraints, the post- versus pre-change effects can be modeled using traditional comparative statics. While this is helpful in comparing economic outcomes before and after the policy change, it neglects the dynamic process that occurs in the middle. During periods of policy changes there exist periods of uncertainty that might exert an independent impact on economic decision makers. While this may be transitory for a single change in policy, continued policy change creates an environment of unpredictability in these rules or institutions which can have larger and on-going impacts.

That is, while better policies or "rules of the game" have been shown to be beneficial, policy instability and institutional unpredictability due to constant change could be harmful. As an example, the literature on the economic impact of inflation suggests that high rates of inflation can be harmful to an economy (see Khan and Senhadji, 2001, Sarel, 1995, or Barro, 2013). However, in this literature it is also argued that variable rates of inflation that are harder to predict are harmful (see Fischer, 1993, Braun and Di Tella, 2004, and Narayan et al., 2009). So a question for conjecture is whether it is better to have a higher, but stable and predictable rate of inflation versus having a lower (on average) rate of inflation that has more year-to-year variance (see Taylor, 1993). Empirically isolating the two effects becomes challenging because the level of inflation is correlated

with the size of the variance (again see Fischer, 1993 and Khan and Senhadji, 2000).[7]

Uncertainty caused by the policy-making and regulatory process presents similar challenges to identification. Many policy changes are the result of long deliberations and bargains among multiple branches of government (although some may be more rapid if they are done by executive or regulatory order). Earlier this decade, major tax reforms in states such as North Carolina and Kansas were the result of months or more of deliberations, and during this time economic decision makers were unsure as to the eventual changes that would be enacted, creating a period of uncertainty regarding the future policies that would be in place (and, in turn, future relative prices and constraints). As another example, the income tax rate reductions passed under the Presidency of George W. Bush contained a sunset provision in which the cuts would expire at the end of 2010 if additional action was not taken. Near the end of 2010 it was unclear if these rates would be reauthorized, and this wasn't settled until December 17 of that year with a two year extension. Then again near the end of 2012, the uncertainty of the tax rates applicable for 2013 occurred. The cuts expired on January 1, 2013, but were reinstated on January 2 retroactively. During both of these times, economic decision makers faced periods in which the future tax rates applicable to their decisions were uncertain. The government policy reactions to the 2008 financial crisis provide another case in point. As is discussed at length in Allison (2013), a former CEO of BB&T Bank who experienced these policies first hand, the uncertainty over which banks would get bailed out was a significant source of instability, that was further complicated by the government's apparently arbitrary attempt to change long-standing bankruptcy rules for bondholders in the case of the General Motors bankruptcy proceedings. The key challenge for empirical analysis in each of these cases is that all agents affected by subsequent regulatory changes experienced the same uncertainty. This makes it hard to identify the independent effect of uncertainty on associated policy outcomes.

Moreover, the large and growing literature on the importance of good institutions for economic growth has largely ignored the distinction between institutional quality and the uncertainty created by constant policy change (see Dawson, 1998, 2003, Berggren, 2003, Acemoglu et al., 2001, Acemoglu et al., 2005, Gwartney et al., 1999, Gwartney et al., 2004, and Heckelman, 2000). Many studies find that better quality institutions are conducive to growth, but ignore the role of

[7] Interestingly, reports that attempt to rank countries in terms of the quality of their policies and institutions include both a separate negative for the level of inflation and its variance (see Gwartney et al., 2014).

institutional predictability by failing to include measures of the variance or unpredictability in the measures through time in the explanatory models.

A key part of the argument for why accounting for institutional predictability is important comes from Knight (1921)'s distinction between risk and uncertainty. The difference he explains is that probabilities can be estimated for situations involving risk and thus are insurable in the marketplace. Actuarial calculations can allow economic agents (for a price) to assume the risk of the situation and thus allow decision makers to undertake decisions with certainty. Futures contracts and property insurance provide two such examples. Uncertainty, however, occurs when the outcomes and/or probabilities are not known and thus cannot be overcome through insurance markets. According to Knight, it is this true uncertainty faced by entrepreneurs which is the source of economic profits (and losses). While the future constraints and relative prices confronted by economic agents who must make decisions in the present may be unclear, the difference between whether they are changes involving risk or uncertainty matter. For example, consider a farmer or raw material user who must make current production decisions that depend on future prices. These future price movements are a situation of risk and can be offset in the marketplace through futures contracts. This is true even if the possible price movements involve the effects of possible government policy changes.

The policy instability studied in this paper is not of this type. Economic agents cannot insure against the uncertain impacts of tax cut expirations, changes in bankruptcy rules, or changes in health care mandates for their employees. These are situations involving uncertainty that can have significant impacts on economic decisions, investment, and therefore economic output.

Quantifying the impacts of institutional predictability (and its opposite) remains a challenge in the literature. The end goal would be to see whether, for example, an area with better, but less predictable, policies is more conducive to growth than an area with objectively worse, but more stable, policies. While understanding the trade-offs between institutional predictability and quality over broad measures of policy for countries may be infeasible, it is possible to quantify impacts in more easily identifiable cases of policy change and uncertainty such as that provided by the ACA's structure studied in this paper. The regulatory uncertainty caused by the ACA is due to multiple levels (rather than branches) of government setting the rules of the game where each acts at a different time. While legal challenges, political maneuvering, and congressional brinkmanship

created a source of uncertainty over the ACA itself, the ACA contains provisions which guarantee "federalized" uncertainty even if there was certainty about the ACA as a whole. In particular, Section 1304(b)(2) of the Affordable Care Act defines a small employer as an employer having at least one but no more than 100 employees. However, Section 1304(b)(3) provides each state the option of re-defining small employers as having *not more than 50 employees* for the purposes of the SHOP marketplace. When the Act came into effect, employers with between 50 and 100 employees not only faced a new employer mandate brought about by the ACA but also uncertainty over where they would obtain coverage and at what price. Crucially for this paper's analysis, the uncertainty affected different firms in different ways and lasted almost three years in most states, long enough to allow employers to make observable changes to their input mix. The consequences for employment levels and wages as a result of this episode of regulatory uncertainty (and its resolution) are the focus of this paper.

The findings of the paper join a growing body of work focused on the labor market consequences of the ACA's changes. As employment and health insurance are tightly linked in the United States it is not surprising that the changes introduced by the ACA have spurred research into the effects it may have on labor market outcomes. For example, Mathur et al. (2016) and Even and MacPherson (2018) examine how the employer mandate affected part time employment because coverage only had to be provided to workers who work more than 30 hours per week. Their work focuses on anticipatory effects under the assumption that employers are forward-looking and employment is an ongoing relationship (rather than a commodity traded in a spot market).

As another example, redacted found that workers who are more expensive to cover appear to be paying for ACA-mandated coverage in the form of lower wages.[8] Others such as Gruber and Krueger (1991), Gruber (1993), Baicker and Chandra (2006), Baicker and Levy (2008), Kolstad and Kowalski (2016), Bailey (2013, 2014), Bailey and Chorniy (2015), and more have examined the impact of various health coverage policy changes and mandates on labor market outcomes. However, none of these papers have examined if uncertainty surrounding these changes plays a separate and unique role for economic agents.

[8] This work is complemented by redacted and redacted .

## 3 Identification, Estimation, and Data

The ACA's employer mandate represents a policy change that affects groups of employers (and their employees) in different ways. This source of identification naturally lends itself to a difference-in-difference empirical approach. While the ACA likely affected the the overall economy in a variety of ways, it specifically affected employers with 50-100 employees differently to employers with more than 100 employees via the period of uncertainty created by the employer mandate's structure. If differences in employment outcomes at these types of employers would be unchanged in the absence of the mandate, a difference-in-difference estimation with indicators for firm size, time period, and an interaction between the two will estimate the causal difference in outcomes due to uncertainty. The data required would cover the time period before, during, and after the uncertainty is resolved and would include employment outcomes of interest at employers of various sizes along with information on the observed firm such as location and industry. The estimating equation would take the following form;

$$y_{ft} = \beta_1 \gamma_s + \beta_2 \lambda_t + \beta_3 \phi_f + \delta \times D_{ft} + \Pi' X_f + \epsilon_{ft}$$

Where $y$ is some labor market outcome of interest for employers of size $f$ at time $t$. The co-efficient on the $\gamma_s$ term represents a state-specific fixed effect to control for differences in outcomes between employers in states that do not vary over the time analyzed (for example, wages are higher in New York compared to Arkansas every year). The co-efficient on the $\lambda_t$ term represents a time period-specific fixed effect which controls for changes in the outcome of interest for all observations over time (to control for economy-wide changes). It would be easy to also allow for state-by-time fixed effects by interacting these two terms. The co-efficient on the $\phi_f$ term allows for there to be pre-existing differences between employers who are affected by the ACA's mandate in different ways and the $\Pi' X_f$ term represents included control variables which are not absorbed by the included fixed effects. Finally, the coefficient $\hat{\delta}$ represents the effect of interest if $D_{ft}$ is an indicator for the time period under which a certain type of firm experiences uncertainty. Specifically, $D_{ft}$ would equal 1 for employers with 50-100 employees during the period they experience uncertainty due to the ACA's mandate. The co-efficient on the $D_{ft}$ term can be interpreted as the causal difference in outcome $y$ due to the uncertainty, if the identifying assumption - that nothing else affects changes

in the outcome differently between the two types of employers in this time period - holds.

An empirical challenge is that whether or not a firm already provides health coverage fundamentally changes how the firm should react to the ACA's mandate. Firms with 50-100 employees that did not already provide coverage prior to the ACA's mandate are affected both by the mandate itself and the associated uncertainty whereas employers with 50-100 employees who already provided coverage are affected only by uncertainty. On the other side of the 100 employee cut-off, there are also employers who do and do not provide health coverage prior to being mandated to do so. This would not be an issue if the relationship between coverage and firm size was orthogonal. Unfortunately, compared to employers with fewer than 100 employees, the proportion of employers with more than 100 employees who provide health coverage prior to the mandate tends to be much higher.[9] This means that an analysis which does not control for existing provision of coverage will pick up both the negative effect of being required to provide coverage and of the uncertainty created by the ACA's structure. If the probability of offering coverage was the same across firm sizes, then there would be no concern as whatever the negative effect of having to provide health coverage is, it would be expected to be the same across the two groups.

Because the prevalence of coverage differs within the groups being examined, it changes the effect that the mandate can be expected to have. As a result, a simple difference-in-difference approach does not cleanly identify the effect of uncertainty. The immediate solution would be to use a triple-difference approach and include an additional dummy variable for whether or not coverage is in place. Data which contains information on wages, employment, and firm characteristics is available via the Quarterly Census of Employment and Wages. Unfortunately, the QCEW data does not contain information on whether or not the firm offers health coverage.

One solution to this data limitation is to use individual-level labor market data from the March CPS. Using CPS data allows the paper to examine wage and employment outcomes stratified by existing health coverage to help isolate how uncertainty affects labor market outcomes. However, the CPS data introduces a different set of problems. First, the data available is a survey and not a

[9] See the Kaiser Family Foundation's annual report for 2015 here - http://kff.org/report-section/ehbs-2015-summary-of-findings/. Note that the KFF data is affected by selection as it is perhaps more likely that a firm which provides employee benefits such as health coverage will respond to a survey about employee health benefits. Data from the Medical Expenditure Panel Survey (www.ahrq.gov) suggests coverage rates for employees suggest employees are offered coverage at about 80% of employers with 50 employees or more (a much lower rate than the KFF's annual survey).

census leading to issues with the sample size when slicing the data thinly - such as focusing on workers at firms with 50-100 employees. Second, the data is cross-sectional leading to composition and selection concerns in any empirical analysis that examines outcomes over time. Third, the analysis relies on firm size (as measured by number of employees) which is self-reported in the CPS and is therefore less reliable than the QCEW (which is based on administrative data). With individual data, the difference-in-difference estimating equation is of the form

$$y_{ift} = \beta_1 \gamma_s + \beta_2 \lambda_t + \beta_3 \phi_f + \delta \times D_{ft} + \Pi' X_i + \upsilon_{ft} + \mu_{ift}$$

Where $y$ is some labor market outcome of interest for individual $i$ who is employed at a firm of size $f$ at time $t$. In this set up, individuals are associated with employers of different sizes who are affected by the ACA. If employers respond by making different choices about their labor inputs, it will translate into changes in labor market outcomes for individuals who work for those employers.[10] The co-efficient on the $\gamma_s$, $\lambda_t$, and $\phi_f$ terms are the same as in the estimating equation at the firm level presented earlier. The $\Pi' X_i$ term here represents the effect of control variables which might affect the $y$ outcome of interest in typical labor market regression estimates such as age, gender, education, and so on.[11] Again, the coefficient $\hat{\delta}$ represents the effect of interest if $D_{ft}$ is an indicator for the time period under which a certain type of firm (and by extension the individual) experiences uncertainty. With this set-up, the co-efficient on the $D_{ft}$ term can be interpreted as the causal difference in outcome $y$ due to uncertainty.

The structure of the ACA also helps because the uncertainty was eventually resolved: each state decided to require employers with 50-100 workers to obtain experience-rated health coverage. That is, employers found out that the cost per worker would be the higher of the two potential options, which should reduce their relative demand for labor (compared to employers who were affected with certainty). On the other hand, if uncertainty exerts its own negative effect, it is possible that even this negative outcome is an "improvement" because it allows these small employers to finally make decisions that were affected by the uncertainty. Indeed, the resolution of uncertainty provides

[10] Note that, like other research which examines the early effects of the ACA, it is assumed that the choices individuals make do not anticipate the law in the same way firm choices must do. Individuals are assumed to be able to react to the law once it is in place rather than being required to prepare for it in the ways employers were required to. See Garrett and Kaestner (2015), Mathur et al. (2016), and Even and MacPherson (2018) for examples.

[11] This helps to mitigate composition change and selection problems.

cleaner identification than the introduction of uncertainty because the introduction of uncertainty was part of the announcement of the broader goals of the ACA itself whereas the resolution of uncertainty was not.

In summary, the introduction and resolution of uncertainty must be examined using different data sets due to different data requirements. The introduction of uncertainty coincided with the announcement of the employer mandate itself which naturally affected one group of employers (50-100 employees) more than another (100 or more employees) due to underlying differences in the prevalence of health coverage. This can be resolved by using individual-level data with information on existing coverage (therefore identifying who should be affected and who should not). By using March CPS data to control for coverage offer rates the effect of having to provide coverage can be teased apart from the effect of uncertainty surrounding the availability and cost of coverage. Additionally, the effect of the resolution of uncertainty is not dependent on coverage rates (employers already know about the mandate so it exerts no additional effect) and the empirical analysis can therefore utilize comprehensive data on employment and wage data aggregates by state and firm size from the Quarterly Census of Employment and Wages (QCEW). The next subsection explains and summarizes the data used in this paper.

### 3.1 Data

One data-set used to examine the impact of regulatory uncertainty created by the ACA comes from the BLS's QCEW. The QCEW serves as a near census of employment and wage information at the national, state, and county levels. At the state and area level, the QCEW program publishes employment and wage data down to the 6-digit NAICS industry level. Employment data provided by the QCEW program represents employees who worked or received pay for the period. Excluded are members of the armed forces, the self-employed, proprietors, domestic workers, unpaid family workers, and railroad workers covered by the railroad unemployment insurance system. Wages represent total compensation paid during the calendar quarter, regardless of when services were performed. Included in wages are pay for vacation and other paid leave, bonuses, stock options, tips, the cash value of meals and lodging, and in some states, contributions to deferred compensation plans (such as 401(k) plans).[12]

[12] See http://www.bls.gov/cew/cewover.htm

**Table 1:** Summary Statistics 2008-2015 QCEW by State and Firm Size

| | Mean Weekly Wage | | Mean Total Wages | | Average Employment | |
|---|---|---|---|---|---|---|
| Firm Size (# of Employees) | 100-249 | 50-100 | 100-249 | 50-100 | 100-249 | 50-100 |
| State | | | | | | |
| Alabama | $759 | $710 | $2,299,311.30 | $1,794,543.10 | 233,010 | 194,704 |
| Arizona | $795 | $762 | $3,556,356.10 | $2,566,369.10 | 343,987 | 258,653 |
| Connecticut | $1,186 | $1,260 | $3,769,732.90 | $2,852,384.10 | 244,495 | 174,074 |
| DC | $1,500 | $1,412 | $1,678,069.10 | $1,039,645.40 | 86,076 | 56,478 |
| Delaware | $954 | $792 | $720,297.90 | $430,199.10 | 58,096 | 41,773 |
| Florida | $794 | $766 | $11,146,517.60 | $8,324,674.90 | 1,078,241 | 835,498 |
| Georgia | $914 | $844 | $6,411,079.40 | $4,781,824.30 | 539,095 | 435,548 |
| Indiana | $757 | $684 | $3,865,160.40 | $2,830,120.70 | 392,495 | 318,074 |
| Kansas | $778 | $740 | $1,790,244.40 | $1,383,446.90 | 176,856 | 143,744 |
| Kentucky | $773 | $694 | $2,483,328.70 | $1,699,297.40 | 247,129 | 188,199 |
| Maine | $726 | $651 | $655,697.70 | $509,114.10 | 69,416 | 60,172 |
| Maryland | $1,028 | $896 | $4,651,511.00 | $3,382,510.30 | 348,437 | 290,180 |
| Massachusetts | $1,202 | $1,123 | $7,267,412.00 | $5,026,668.60 | 464,858 | 343,636 |
| Mississippi | $685 | $615 | $1,084,172.10 | $915,343.70 | 121,663 | 114,552 |
| Missouri | $837 | $727 | $3,642,720.90 | $2,728,173.30 | 334,764 | 288,404 |
| Montana | $699 | $640 | $336,869.30 | $392,208.40 | 37,062 | 47,100 |
| Nebraska | $734 | $691 | $966,973.10 | $813,975.00 | 101,378 | 90,650 |
| New Hampshire | $852 | $810 | $873,638.90 | $708,408.10 | 79,033 | 67,177 |
| New Jersey | $1,148 | $1,075 | $8,057,185.60 | $5,586,514.10 | 539,713 | 399,409 |
| New York | $1,397 | $1,236 | $18,577,927.30 | $13,055,671.70 | 1,021,147 | 812,054 |
| North Carolina | $827 | $721 | $5,423,862.60 | $4,214,046.70 | 504,254 | 449,045 |
| North Dakota | $812 | $771 | $504,533.40 | $463,593.70 | 46,836 | 45,354 |
| Ohio | $802 | $751 | $7,935,075.10 | $5,852,836.40 | 760,558 | 598,946 |
| Oklahoma | $834 | $720 | $2,003,003.00 | $1,544,940.10 | 184,013 | 164,582 |
| Pennsylvania | $907 | $850 | $9,273,732.60 | $7,172,810.30 | 785,836 | 648,872 |
| Rhode Island | $819 | $772 | $682,875.70 | $510,347.40 | 64,150 | 50,839 |
| South Carolina | $707 | $636 | $2,221,557.10 | $1,661,657.60 | 241,339 | 200,821 |
| South Dakota | $725 | $640 | $429,747.90 | $341,460.00 | 45,535 | 40,985 |
| Tennessee | $802 | $739 | $3,957,956.60 | $2,758,893.90 | 379,182 | 286,956 |
| Texas | $1,000 | $904 | $19,260,214.70 | $13,968,887.70 | 1,476,751 | 1,184,868 |
| Vermont | $779 | $724 | $334,091.60 | $280,040.70 | 32,972 | 29,759 |
| Wisconsin | $807 | $736 | $4,097,515.30 | $2,964,928.70 | 390,427 | 309,588 |
| Wyoming | $1,022 | $822 | $296,988.40 | $286,216.30 | 22,372 | 26,783 |
| Total | $890 | $816 | $4,250,162.40 | $3,116,416.70 | 347,005 | 278,711 |

Data comes from Quarterly QCEW 2008-2015 available at bls.gov.

As the ACA impacted employers of different sizes in different ways, the paper requires the use of a subset of the QCEW that provides aggregate wages and hiring by firm size. Unfortunately, the QCEW only provides this type of data for the first three months (January, February, and March) of each year and only at the state level. It does not stratify this data by county or NAICS codes reducing the choices of control variables in regression estimates. Table 1 presents summary statistics for the QCEW by firm size across eight years in the usable sub-sample.

Given the limitations of the QCEW the empirical analysis is supported by individual-level

**Table 2:** Summary Statistics from 2008-2015 March CPS

| | 2007 - 2009 | 2010 - 2012 | 2013 - 2014 |
|---|---|---|---|
| | (Pre-ACA) | (ACA Enacted and Period of Uncertainty) | (Uncertainty Resolved) |
| Offered Health Coverage | | | |
| % White | 85.52 | 84.79 | 82.48 |
| % Black | 9.98 | 9.79 | 12.0 |
| % Other | 4.50 | 5.42 | 5.52 |
| % High school or less | 35.60 | 33.15 | 33.71 |
| % College | 51.47 | 53.20 | 51.91 |
| % Graduate | 12.93 | 13.65 | 14.38 |
| % Male | 51.84 | 51.81 | 51.90 |
| Age (in Years) | 42.85 | 43.08 | 42.84 |
| (Std. Dev.) | (8.77) | (8.86) | (9.07) |
| Annual Wage ($2014) | $58,013 | $58,190 | $55,912 |
| (Std. Dev.) | (57,331) | (61,906) | (65,532) |
| Observations | 29,991 | 21,188 | 15,431 |
| Not Offered Health Coverage | | | |
| % White | 76.08 | 75.19 | 77.95 |
| % Black | 16.19 | 17.15 | 14.83 |
| % Other | 7.73 | 7.65 | 7.22 |
| % High school or less | 59.09 | 56.02 | 52.98 |
| % College | 36.72 | 39.18 | 41.51 |
| % Graduate | 4.19 | 4.80 | 5.51 |
| % Male | 50.48 | 49.92 | 48.73 |
| Age in Years | 40.5 | 40.8 | 41.3 |
| (Std. Dev.) | (9.02) | (9.15) | (9.33) |
| Annual Wage ($2014) | $32,975 | $32,114 | $34,155 |
| (Std. Dev.) | (28,057) | (44,708) | (58,012) |
| Observations | 6,383 | 5,283 | 1,814 |

Table presents summary statistics from the 2008-2014 March CPS for employed workers aged 27-59 who work at firms with 50-100 and 100-499 employees. Note that March CPS data generally refers to the prior year.

data from the March CPS. Any reduction in the demand for labor should also be visible in the wages and employment outcomes of individuals who work at affected firms. The March CPS is used as it is a large survey which provides a crucial piece of information that is not available in the QCEW: whether or not a firm offers insurance coverage prior to the employer mandate. Using the CPS only provides an unbiased estimate of the effects of interest if the CPS stratifies and randomizes the sample at the firm and insurance coverage level (so that any estimated co-efficient is representative of the population-level effect). The CPS is not designed this way and potential

**Table 3:** Resolution of Uncertainty By State

| Year | Month | State(s) |
|---|---|---|
| 2011 | April | MA |
| | September | RI |
| 2012 | February | VT |
| | April | NY |
| | June | NH |
| | July | DE, LA |
| | September | SD |
| | November | AL, AZ, GA, IN, KS, ME, MO, NE, NC, ND, OH, OK, WI, WY |
| | December | FL, MT, NJ, TN, VA |
| 2013 | January | CT |
| | February | MS |
| | March | MD, DC |
| | June | KY |

These data come from an exhaustive search of newspaper reports, legislative records, and press releases for 46 states and the District of Columbia. Not all states are represented in the table as it was not possible to identify when some states made their decision. The missing states are Idaho, New Mexico, Oregon, and Washington. Note that the clumping of decisions in late 2012 appears to have been caused by decisions on this matter being delayed until after the 2012 presidential and gubernatorial elections.

selection and composition issues require the use of extensive controls in empirical estimates.

The CPS sub-sample used in the paper is summarized in Table 2. The sub-sample is split into workers at firms that offer coverage already and those that do not and then split into three time periods: the period before the ACA was announced, the time period after uncertainty was resolved, and the period of uncertainty in between. Note that March CPS data generally refers to the prior year. For that reason, the March 2015 CPS data details 2014 wage and employment outcomes. The sample is restricted to workers employed at firms with 50-100 and 100-499 workers from 2010 onward - these are the buckets CPS uses for firm size.[13] Prior to 2010, the CPS grouped respondents who worked at firms with 25 to 100 workers into a single bucket. As a result, the 2007-2009 data includes respondents who work at firms with 25-50 employees and the data from 2010 onward does not.[14] In the table, the sample size is largest in years 2007-2009 because it mechanically includes more of the CPS respondents due to the bucket size change. It is smallest in

[13] Firms with more than 500 workers tend to already provide health coverage to their workers prior to the ACA, often they are self-insured and therefore exempt from various federal mandates. Essentially they were unaffected by the ACA.

[14] As the ACA was not in effect prior to this change in bucket size, the 25-100 group from 2007-2009 should still be a valid comparison group to the 50-100 group after 2010.

the third period (after uncertainty is resolved) in Table 2 because that period is just two years and in 2014 the CPS tested new questions on 3/8ths of their usual sample.[15]

As mentioned earlier, the CPS data helps because each side of the 100 employee cut-off there are employers who do and do not already provide coverage. As there are relatively more employers who do not provide coverage in the 50-100 employee group the CPS data is required to separate the effect of finding out that coverage is required from the effect of uncertainty about that coverage's cost and availability. This means that the interaction between firm size (firm size of 50-100 = 1) and uncertainty (Uncertainty = 1) in the main difference-in-difference specifications can be further interacted (creating a triple-difference estimate) with whether or not the firm already provides health coverage to employees (Existing coverage = 1). The co-efficient on the triple-difference term then provides the causal effect of uncertainty on the outcome of interest (if the identifying assumption holds: nothing else affects the change in the difference in wages across the different firm sizes in the time period studied).

The March CPS will also be used when examining the effect of the resolution of uncertainty. Indeed, the resolution of uncertainty provides cleaner identification of the effects of uncertainty. This is because - and as mentioned earlier - having coverage in place or not is irrelevant at that point: all employers with more than 50 employees know coverage must be provided. The only "change" is the resolution of remaining uncertainty simplifying the interpretation and empirical work. The dates at which each state resolved the uncertainty for employers are provided in Table 3. In all estimations a firm with 50-100 employees in a given state is considered to be facing uncertainty if the ACA has passed (after March 2010) up until their state legislature makes a final decision as laid out in Table 3. A caveat: only 46 states are represented in Table 3 and in later estimates as it was not possible to clearly identify when some states resolved SHOP marketplace-related uncertainty. The missing states are Idaho, New Mexico, Oregon, and Washington.

[15]Noticeably, the relative number of workers who did not have health coverage from their employer falls in the final time period. This suggests the mandate began to "bite" and firms began to offer coverage to workers. This is worthy of further study but is beyond the scope of this paper.

# 4 Empirical Estimates

The empirical analysis is split into two subsections. The first subsection examines the effect of the introduction of uncertainty on wage and employment outcomes using QCEW data. As a built-in robustness check, these estimates are "relative to firms that are not affected by uncertainty." This built-in robustness check ensures the estimates are not caused by labor market trends that affect all employers and employees in the time period studied, which would be the main threat to identification. Then, CPS data is used to examine if these effects are robust to stratifying the data by existing health coverage (to separate the effect of having to provide coverage from uncertainty about its cost). The second subsection focuses on wage and employment outcomes after the uncertainty is resolved again using first QCEW data and then CPS data. Again, robustness checks that ensure a causal interpretation are built-in by comparing all estimates to outcomes at employers who are unaffected by the mandate (they already provided coverage) and/or uncertainty (they have too many employees to get access to the SHOP marketplace, regardless of legislative decisions).

## 4.1 Introduction of Uncertainty

The effects of the introduction of the ACA's mandate are estimated in a difference-in-difference framework using data from 2008 to the end of 2012 in Table 4 (QCEW data) and Table 5 (March CPS data). The QCEW data provides a near-census of employment and wage information by firm size which are the outcomes of interest. However, as the main effects of the ACA also come into play at the same time as the uncertainty being studied here, there is no clean way to identify the independent effect of uncertainty on economic outcomes using the introduction of the ACA's mandates as a source of identification.[16] Essentially, the QCEW data is not informative enough. On the other hand, estimates from the March CPS are potentially not representative. However, examining the effect of the introduction of the ACA and its related uncertainty provides a baseline even if it does not answer the fundamental question at hand. The corresponding, cleaner, empirical analyses of the resolution of uncertainty are provided in Tables 6 and 7.

Table 4 presents estimates of the effect of the ACA on weekly average wages (in logs and levels) and total employment (levels only). The estimates are based on QCEW data for employers with

[16] There is no valid control group to complete a triple-difference estimation.

**Table 4:** QCEW OLS Difference-in-Difference Estimates 2008-2013 - Uncertainty Created by ACA

| | (1) | (2) | (3) |
|---|---|---|---|
| | Log Weekly Wage | Average Weekly Wage | Total Employment |
| Firms with 50-100 Employees | -0.0813*** | -63.37*** | -68,282*** |
| | (0.00279) | (2.518) | (3,142) |
| Firms with 50-100 Employees × Period of Uncertainty | -0.00939** | -13.73*** | 2,724 |
| | (0.00437) | (3.945) | (4,924) |
| Observations | 1,002 | 1,002 | 1,002 |
| State FE | Y | Y | Y |
| Year FE | Y | Y | Y |
| Month FE | Y | Y | Y |

Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. Estimates use QCEW data for workers at firms with between 50 and 249 workers. The "Period of Uncertainty" dummy variable equals 1 until a state's resolves ACA-related uncertainty. The state drops then out of the sample.

50-100 employees and 100-249 employees from 2008 onward. Period of Uncertainty is a dummy variable which equals 1 if the data is from after March 2010. However, once uncertainty is resolved within a given state the state drops out of the sample. The QCEW data is provided by the BLS as monthly aggregates by state stratified by number of employees for January, February, and March of each year. If these are not representative of the between-state and between-firm size relationships for rest of the year, then the effects seen here are biased. However, the direction of the bias is not clear, ex-ante. There are few potential control variables provided by the QCEW data other than state and time fixed effects. The direction and magnitude of the findings are not meaningfully affected by excluding these fixed effects.

As expected, the announcement of the ACA (creating a period of uncertainty from March 2010 up to whenever the particular state - as laid out in Table 3 - made a final decision on access to the SHOP marketplace for employers with 50-100 employees) leads to reduced demand for workers which manifests itself in lower wages. There is a limited impact on employment aggregates consistent with a small short-run elasticity of supply for labor. The effect sizes can be interpreted as the effect on the outcome of interest relative to firms with 100-249 employees. The estimated effect on wages works out to be a $713.96 reduction per year for a full-time (2,000 hrs/year) employee. That is, the ACA's announcement was accompanied by a fall in wages at employers with 50-100 employees, relative to those with 100-249 employees of $713.96. At first blush, this effect could be attributed to uncertainty as there is a negative effect on wages relative to employers who

experience no uncertainty. Unfortunately, given unobserved differences in the rates of coverage at employers of different sizes, it is not possible to claim this is entirely due to uncertainty. As fewer smaller employers already offer coverage to employees, the observed effect on wages consists of two components - the negative impact on labor demand from having to provide future coverage due to the mandate plus the impact of uncertainty. It is not clear which is causing the effect observed.

To separate the two explanations, it is necessary to turn to data which provides information on labor market outcomes, firm size, and *existing* health coverage. As mentioned earlier, the March CPS provides the required information but it is a survey of individuals rather than employers. Most problematically, firm size is self-reported by CPS respondents. QCEW estimates of firm size are likely much more reliable. With that caveat, Table 5 provides estimates of the effect of uncertainty using CPS data for respondents who work at firms with 50-100 employees and 100-249 employees. The table also reports triple difference estimates which interact the estimates of interest with a dummy that is equal to 1 for workers who work at firms with 50-100 employees. All estimates include a full set of typical demographic and geographic controls plus year fixed effects.[17]

In the first two columns of Table 5, the sample is restricted to CPS respondents who work at employers affected by uncertainty due to the ACA: employers with 50-100 employees. The first column uses log annual wage as a dependent variable. The first estimate in the column suggests that wages are higher at jobs that offer health coverage ("good" jobs). Specifically, wages are about 34.3% higher where coverage is offered.[18] The difference-in-difference coefficient estimate of 0.0554 (significant at the 5% level) suggests wages for CPS respondents at firms that already offer health coverage increase (by about 5.54%) relative to those that did not already offer coverage during the period of uncertainty. That is, once the ACA was announced, wages for respondents at firms who would now have to offer coverage (a new cost) are lower relative to respondents who already offer coverage. If the identifying assumption holds, then the ACA's employer mandate (unsurprisingly) caused wages to fall at firms who must now provide coverage. This pattern remains in the second column but the statistical significance of the estimates disappear suggesting that there may be different effects in various parts of the wage distribution (wages cannot go below the minimum

[17] The estimates are little changed in other estimates with varying sets of controls. This is likely due to the triple-difference estimation which is robust to effects which are constant across groups. That is, there is no reason to suspect that the difference in wages between a firm of one size and another varies by gender in ways that also vary over short periods of time.

[18] Strictly speaking, level-log coefficient estimates can only be interpreted as percents for values close to zero.

wage for example).

Columns 3 and 4 present the same estimates for respondents at firms with 100-499 workers. Again, firms that offer coverage pay higher wages generally across the time period (to the tune of $10,022 per year). What is interesting is that the effect on wages for respondents who work at firms who do not offer coverage (and must do so because of the mandate) appears smaller for firms with 100-499 workers than for firms with 50-100 workers even though both face a similar new cost of providing health coverage. To the extent that wages reflect changes in labor demand, this suggests that smaller employers might be additionally reacting to the uncertainty they are facing.

In columns 5 and 6 the "Offered Coverage × Uncertainty" term is further interacted with an indicator for the number of employees a CPS respondent's firm has (50-100 = 1) to create a triple-difference estimation. The estimates show clear differences in wages whenever coverage is offered. The ACA's introduction ("Period of Uncertainty") is associated with lower wages for all CPS respondents although the estimates are not statistically different from zero. The coefficient estimate on the dummy for smaller (50-100) employers suggests smaller employers pay lower wages to these CPS respondents in general (a common finding in the firm size literature, see Oi and Idson, 1999). The effect is significant at the 10% level when the dependent variable is annual wages. The next estimate suggests that smaller employers that offer coverage tend to pay lower wages than larger employers who offer coverage - perhaps because it is more costly or risky to do so for smaller employers. The effect is small ($150 per year) and not statistically different to zero.

The next interaction term in the table ("Offered Coverage × Uncertainty") suggests that for employers that already offer coverage - relative to firms that did not offer coverage already - respondents' wages increased. The effect is $528.80 on an annual basis but not statistically different from zero. Finally, the triple-difference interaction term shows that the small employers who offered coverage paid higher wages than those who did not after the ACA's announcement. Together, the final two estimates show that respondents who were already offered coverage prior to the ACA were paid higher wages after the ACA was announced (relative to those who did not already have coverage) and that the majority of the effect appears to show up at the smallest firms (approximately 4.37% versus 1.21% and $944 versus $528). Again, this suggests that the smallest employers who did not already offer coverage might *also* be reacting to the uncertainty they are facing.[19]

[19]Table 5, and later, Table 7, cannot consider the effect on employment levels at these firms because the CPS data is

**Table 5:** March CPS OLS Difference-in-Difference Estimates 2008-2012 - Uncertainty Created by ACA

| | 50-100 Employees | | 100-499 Employees | | Full Sample | |
|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| | Log Wage | Wage | Log Wage | Wage | Log Wage | Wage |
| Offered Coverage | 0.343*** | 11,046*** | 0.361*** | 10,022*** | 0.367*** | 10,540*** |
| | (0.0128) | (1,002) | (0.0134) | (1,102) | (0.0131) | (1,059) |
| Period of Uncertainty | -0.0570*** | -2,162 | -0.0269 | -1,318 | -0.0286 | -1,360 |
| | (0.0199) | (1,553) | (0.0182) | (1,498) | (0.0182) | (1,467) |
| Firms with 50-100 Employees | | | | | -0.0110 | -2,198* |
| | | | | | (0.0159) | (1,283) |
| Offered Coverage × 50-100 | | | | | -0.0330* | -182.5 |
| | | | | | (0.0175) | (1,413) |
| Period of Uncertainty × 50-100 | | | | | 0.0150 | -150.1 |
| | | | | | (0.0291) | (1,461) |
| Offered Coverage × Uncertainty | 0.0554** | 1,525 | 0.0108 | 518.1 | 0.0121 | 528.8 |
| | (0.0226) | (1,763) | (0.0199) | (1,639) | (0.0199) | (1,606) |
| Coverage × Uncertainty × 50-100 | | | | | 0.0437 | 944.5 |
| | | | | | (0.0299) | (2,411) |
| Observations | 22,919 | 22,919 | 30,288 | 30,288 | 53,207 | 53,207 |
| State FE | Y | Y | Y | Y | Y | Y |
| Year FE | Y | Y | Y | Y | Y | Y |
| Demographic Controls | Y | Y | Y | Y | Y | Y |

Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. March CPS data from 2015 reports on the year 2014. Demographic controls include race, age, education level, age (quadratic), industry, gender, and part-time work status.

Tables 4 and 5 provide suggestive evidence that the main effect of the employer mandate was lower labor demand and associated lower wages at employers of all sizes who did not offer coverage regardless of whether or not they were also affected by uncertainty. Indeed, the ACA's broader requirements might have overshadowed the separate effect of uncertainty about the specifics of those requirements. However, the resolution of the uncertainty provides a second chance to observe the effects of uncertainty on economic outcomes.

not a census of employers.

**Table 6:** QCEW OLS Difference-in-Difference Estimates 2011-2015 - Uncertainty Resolved

| | (1) | (2) | (3) |
|---|---|---|---|
| | Log Weekly Wage | Average Weekly Wage | Total Employment |
| Firms with 50-100 Employees | -0.0907*** | -77.10*** | -65,558*** |
| | (0.00332) | (3.332) | (3,994) |
| Firms with 50-100 Employees × After Uncertainty Resolved | -0.00773 | -10.73** | -5,661 |
| | (0.00477) | (4.786) | (5,736) |
| Observations | 792 | 792 | 792 |
| State FE | Y | Y | Y |
| Year FE | Y | Y | Y |
| Month FE | Y | Y | Y |

Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. Estimates come from QCEW data.

## 4.2 Resolution of Uncertainty

Table 6 repeats the analysis in Table 4 again using QCEW data but focusing on the period solely after 2010 to avoid the main effect of the ACA's employer mandate. The difference-in-difference estimate reflects the effect of the resolution of uncertainty on labor market outcomes (the timing is illustrated in Table 3). As mentioned earlier, the resolution of uncertainty (in every state where the decision date can be determined) required smaller employers to obtain expensive experience-rated coverage rather than cheaper community-rated coverage. As a result, small employers (50-100 workers) should further reduce their labor demand (relative to employers who were not affected by any uncertainty: those with 100-249 workers).

The estimates focus on the period after 2010 with a dummy ("After Uncertainty Resolved") which equals one when a state resolves uncertainty (see Table 3). The effect of the state-level decisions to deny employers with 50-100 employees access to the SHOP marketplace represented a change in expected cost of potentially $2,200 per employee and would be predicted to impair labor market outcomes. Instead, estimates show a relatively small effect on wages which is statistically significant (at the 5% level) only when the dependent variable is in levels. The coefficients presented should be interpreted as relative to larger employers (100-249 workers).

Table 7 presents the corresponding estimates using CPS data again broken out by reported firm size and then as a triple-difference in the final two columns. Focusing on the difference-in-difference interaction term "Offered Coverage × Uncertainty" in the first two columns, the

**Table 7:** March CPS OLS Difference-in-Difference Estimates 2011-2014 - Uncertainty Resolved

| | 50-100 Employees | | 100-499 Employees | | Full Sample | |
|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| | Log Wage | Wage | Log Wage | Wage | Log Wage | Wage |
| Offered Coverage | 0.378*** | 11,261*** | 0.359*** | 11,157*** | 0.366*** | 11,222*** |
| | (0.0205) | (1,863) | (0.0161) | (1,364) | (0.0160) | (1,392) |
| After Uncertainty | 0.0196 | 3,118 | -0.0144 | -1,313 | -0.0138 | -1,354 |
| | (0.0237) | (2,153) | (0.0206) | (1,747) | (0.0207) | (1,801) |
| Firms with 50-100 Employees | | | | | -0.0335 | -2,301 |
| | | | | | (0.0222) | (1,929) |
| Offered Coverage × 50-100 | | | | | 0.00785 | 482.4 |
| | | | | | (0.0249) | (2,170) |
| After Uncertainty × 50-100 | | | | | 0.0372 | 4,695* |
| | | | | | (0.0310) | (2,696) |
| Offered Coverage × Uncertainty | -0.0555** | -3,310 | -0.0370* | -1,135 | -0.0372* | -1,145 |
| | (0.0266) | (2,415) | (0.0222) | (1,882) | (0.0223) | (1,943) |
| Coverage × After Uncertainty × 50-100 | | | | | -0.0257 | -2,461 |
| | | | | | (0.0343) | (2,982) |
| Observations | 15,391 | 15,391 | 28,116 | 28,116 | 43,507 | 43,507 |
| State FE | Y | Y | Y | Y | Y | Y |
| Year FE | Y | Y | Y | Y | Y | Y |
| Demographic Controls | Y | Y | Y | Y | Y | Y |

Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. March CPS data from 2015 reports on the year 2014. Demographic controls include race, age, education level, age (quadratic), industry, gender, and part-time work status.

estimates suggest that CPS respondents who work at firms that offer coverage experience wage decreases (by 5.56% in the log specification) relative to respondent who report working at a firm that does not offer coverage after the uncertainty is resolved. This is a curious finding: theory would predict the opposite. The bad news (access to the SHOP marketplace was not granted) should have depressed relative wages at firms that now had to offer expensive coverage, not those that already did. That is, the resolution of uncertainty appears to have been beneficial (if the identifying assumptions - that nothing else effects wages differently across firm sizes in the time period studied - hold). On the other hand, the estimates show a similar (but not as large) effect on wages for CPS respondents at larger employers (100-499 workers). This suggests that the resolution of uncertainty was not the only factor affecting wages or perhaps that self-reported measures of the number of employees are biased upwards.

The final two columns of the table focus on triple-difference estimates. The interpretation is the same as for the corresponding estimates in Table 5. The final two estimates in each column are of main interest. They suggest that even though the resolution of uncertainty informed employers with 50-100 employees that their labor costs would be higher than with coverage from the SHOP marketplace, relative wages increased (as compared to firms that already offered coverage). The -.0372 estimate can be interpreted as approximately a 3.72% fall in relative wages for respondents at firms that already offered coverage, relative to those that did not. The estimate using annual wages as the dependent variable is -$1,145. Theory would have predicted an effect of the opposite sign: firms who got bad news should have paid relatively lower wages to respondents in the CPS. The final estimate, the triple-difference term, suggests that, relative to larger firms (100+ workers), smaller firms (50-100 workers) who offer coverage paid lower wages to respondents after the uncertainty was resolved. The flip side of that estimate is that smaller firms who did not offer coverage paid higher wages to respondents after uncertainty was resolved, relative to larger firms who did not offer coverage. That is, respondents who work for firms affected by uncertainty see a relative wage increase compared to respondents at firms of similar size who already offered coverage prior to the mandate requiring it. They also see a wage increase relative to firms who do not offer coverage but were not affected by uncertainty (because they have more than 100 workers).

Overall, there is evidence to suggest that introducing regulatory uncertainty is less than helpful and resolving that uncertainty is beneficial. This is observed even though the resolution of uncertainty in this case was not in employers' favor. These effects are causal if nothing else affected the change in the difference in wages between these groups in the time period studied.

## 5 Conclusion

By leaving crucial decisions up to state legislatures, the ACA provides a unique opportunity to study the impact of regulatory uncertainty on employment and wages. The Act mandated insurance coverage but left it up to state legislatures to determine some of the specifics of that coverage creating an easily identifiable group of small employers affected by uncertainty. However, relative to the effect of the ACA's mandate, the size of the effect of uncertainty could be expected to be of second-order importance.

Despite this, the paper successfully isolates the effect of uncertainty by stratifying the available data into two groups, those with *existing* health coverage and those without, and by studying the introduction of uncertainty and its resolution. This allows for the impact of uncertainty to be separated from the main impact of the ACA in a difference-in-difference (and occasionally, triple-difference) framework. The paper's findings, using both QCEW and CPS data, suggest the uncertainty studied here has a small but visible impact on labor demand and, in turn, wages. A situation where the range of uncertainty is larger or at least as large as the regulatory change itself would help with identification. Indeed, finding a natural experiment which can tease apart the effect of uncertainty from the effects of a given regulatory change is extremely challenging. The ACA's employer mandate would have been even more helpful if some states had allowed access to the SHOP marketplaces. However, there was no observed variation in state legislatures' decisions (they only differed, slightly, in timing - and not enough to exploit given the almost cross-sectional nature of the available data). To be certain that the muted reaction to the negative SHOP marketplace decisions was due to the resolution of uncertainty it would be helpful to see what would happen if the uncertainty had been resolved in employers' favor.

This paper also makes a contribution to a more general literature on the trade-off between the quality and predictability of institutions and policies. While improving policy ("the rules of the game") is understandably important for economic growth and prosperity, changes to those rules, even if beneficial, create periods of uncertainty. By itself, this uncertainty appears somewhat harmful to the ability of economic agents to make decisions. As a result, there exists an implicit trade-off between institutional predictability and institutional quality. Less desirable, but more stable and predictable, rules may be better for economic outcomes than a never ending search for optimal rules resulting in frequent changes. On a single, narrow policy issue, this paper has highlighted that the uncertainty associated with such a search for optimal rules might itself deter economic activity and decisions.

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