Does One-Size-Fits-All Minimum Wage Cause Financial Stress to Small Businesses? Evidence from 15 Million Establishments

Sudheer Chava Alexander Oettl Manpreet Singh*

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*Sudheer Chava can be reached at sudheer.chava@scheller.gatech.edu. Alexander Oettl can be reached at alex.oettl@scheller.gatech.edu. Manpreet Singh can be reached at manpreet.singh@scheller.gatech.edu. We thank conference participants at American Finance Association Conference 2019, Midwest Finance Association Conference 2019, Colorado Finance Summit 2018, UT Dallas Finance Conference 2018, and Workshop on Workforce Development Initiatives 2018 and seminar participants at Deakin University, Georgia Tech, Melbourne Business School and University of New South Wales for comments that helped to improve the paper. We gratefully acknowledge funding support from the Kauffman Foundation Junior Faculty Fellowship.

ABSTRACT

Do increases in federal minimum wage impact the financial health of small businesses? Using inter-temporal variation in whether a state's minimum wage is bound by the federal rate and credit-score data for approximately 15.2 million establishments for the period 1989-2013, we find that increases in federal minimum wage worsen the financial health of small businesses in the affected states. Small, young, labor-intensive, minimum-wage sensitive establishments located in the bounded states and those located in competitive and low-income areas experience higher financial stress. Increases in the minimum wage also lead to lower bank credit, higher loan defaults, lower employment and, higher exits for small businesses and a lower entry. Our results document the costs of one-size-fits-all nationwide minimum wage and highlight how it can have an adverse effect on the financial health of some small businesses.

I. Introduction

Minimum wage has been the focus of substantial debate by academics and policymakers[1]. Some of the pertinent issues are: whether there should be a mandated minimum wage, if so, the level of the minimum wage and whether it should be mandated at the federal level or the state or local level; the impact of minimum wage on employment and wages and who bears the cost of minimum wage increases. In this paper, we contribute to this debate by analyzing the impact of federal minimum wage increases on the financial health of small businesses, thereby, shedding light on the costs of a one-size-fits-all federal minimum wage increases.

We focus on small businesses as they are a vital component of the U.S. economy accounting for almost 50% of the non-farm GDP. Opening and closing of small businesses, with less than ten employees, accounted for more than 70% of job gains and losses in 2018 (Bureau of Labor Statistics (BLS)). Moreover, wages comprise a significant fraction of the costs faced by many small businesses. An increase in the labor costs due to an increase in the minimum wage may not cause financial stress to a firm if it has flexibility to immediately adjust its capital to labor ratio, or pass on the increased costs to the customers or alternately, can maintain profit margins by reducing other costs or by increasing productivity. But, their inability to do so may impact profit margins and financially stress the firms.

There are substantial geographical differences in employer concentration, labor market conditions including availability, productivity and bargaining power of workers across the U.S. In addition, there are significant differences in economic conditions, local product market competition and consequently the ability of the businesses to pass on the increased labor costs to consumers. However, fourteen states have minimum wage rate equal to the federal rate, two states have rates below the federal rate, and five states have no state minimum wage requirement.[2] In this paper, we study the impact of one-size-fits-all federal minimum wage increases on the financial health of small establishments located in "bounded" states (where effective minimum wages equal to the federal rate) relative to those in "unbounded" states (where rates are higher than the federal rate). Further, we study how firm-level, industry-level and local area economic conditions moderate or amplify these wage increases.

We use inter-temporal variation in whether a state's minimum wage is bound by the federal minimum wage and Dun and Bradstreet (D&B) *Paydex Credit Score* data for approximately 15.2 million establishments over the period of 1989 to 2013. *Paydex Score* is a dollar-weighted numerical indicator of how a firm paid its bills based on trade experi-

[1]See Belman and Wolfson (2014) for a survey of the vast literature on the minimum wage.

[2]Since 1981, apart from numerous changes in state minimum wages, seven federal changes occured during 1990–1991, 1996–1997, and 2007–2009. Under the provisions of the Fair Labor Standards Act (FLSA), employers have to pay workers the highest minimum wage prescribed by federal, state, and local law.

ences reported to D&B through its 4,000 trade exchange participants in the US. It rates the likelihood of business will make payments to suppliers/vendors on time and hence, it can affect the availability of credit and interest rates for the small businesses. (Barrot and Nanda, 2018). We find that for a dollar increase in federal minimum wage, *Paydex Credit Score* reduces by almost 1.0 point more for establishments in bounded states compared to unbounded states. The one point reduction implies a delay of 1 more day beyond the typical payment terms of 30 days. The median establishment in our sample that delays its payment on average by five days beyond the payment terms.

One potential concern in identifying the effect of federal minimum wage changes is that they are enacted during the recession years, i.e., 1990-1991 and 2007-2009. Broadly, the concern is whether our results can be attributed to either the business cycles at the national level or in the bounded states rather than the minimum wage increases. Mitigating this concern, we find that the bounded and unbounded states followed similar business cycles before and after the federal minimum wage increases. In fact, unbounded states seem to be more affected by the downturn in the overall economy.

More broadly, if the federal government's decision to adjust minimum wages is affected by, or correlated with some other observable and unobservable differences in the economies of bound versus unbound states, we may not be able to identify our effect. We control for the various state, county and zip-level observable characteristics in the regressions and also use them in matching methods to identify the right control group. We also use state-year and county-year fixed effects in various cross-sectional tests to ensure that different unobservable local economic conditions in the bounded vs. unbounded state are not driving our results.

Using the nearest neighbor matching method, we use the credit score one year before the minimum wage increase and exactly match establishments in the bounded states (treatment group) with the possible set of control establishments within the same NAICS4 industry group in the unbounded states (control group). Next, for the exactly matched control sample based on one year before credit score, we compute the Euclidean distance between treatment and control samples based on establishment-, state-, county- and zip-level observable characteristics. We use *establishment-level* variables like sales, employees, employee-to-sales ratio and sales growth, *state-level* variables like GSP and population (both level and growth), state political partisanship, *county-level* variables like unemployment rate (both level and growth), *zip-level* variables like aggregate sales growth, personal income and house prices (both level and growth). We use the nearest neighbor establishment based on the Euclidean distance as the control establishment and find consistent results. In addition, our results are robust if we exactly match on credit score three years before the minimum wage increases.

We further attempt to control for local economic conditions by analyzing the establish-

ments located in the contiguous counties close to state borders. The underlying assumptions for this identification strategy includes 1) the adjacent counties at state borders have similar economic conditions except for the minimum wage, and 2) there are no spillovers around the state borders, i.e., minimum wage workers do not cross borders for a higher minimum wage. Firstly, we find there are more county-pairs where "bounded" states bordering other "bounded" states rather than the "unbounded" states. Second, we find that the negative effect diminishes for businesses closer to the state borders. Third, we find no effect for establishments located in county-pairs where "bounded" states bordering "unbounded" states. Spillovers at the state borders may be one reason for no effect, i.e., minimum wage workers are more likely to cross state borders for a higher wage. Consistent with this, within the same state, after controlling for state-year fixed effects, we find a more negative impact on establishments located far from the state borders.

We also test the dynamics of our results. Before the federal minimum wage increases, there are parallel trends in the average *Paydex Score* for establishments in bounded and unbounded states. Within two years of the federal minimum wage increase, there is a sharp decline in the *Paydex Score* for establishments in bounded states. Finally, we observe that the difference between the *Paydex Score* for establishments in the bounded and unbounded states converges over the next three to five years. The results suggest that establishments that managed to survive may be able to pass-through some of these extra labor costs to customers over a longer period. We find that our results are robust to states switching from bounded to unbounded, time-varying industry-specific unobservables, different industry samples and placebo tests.

So far, we have established the negative impact of one-size-fits-all federal minimum wage increases on the financial health of the affected small establishments. If affected establishments can completely and immediately pass these increased wage costs on to the customers, then they may not feel any financial stress. On the other hand any constraints in passing on the wage costs may impact the financial stress faced by the small businesses in our sample. In line with some small businesses facing constraints, we find that establishments within the same industry, those located in the more competitive counties and those located in the low-income zip codes find it difficult to pass on the increased labor costs and hence, experience a more significant decrease in their credit score.

We also find that small and young establishments that are more likely to have financial constraints experience a more significant decrease in credit scores. Establishments that are labor-intensive i.e., with high labour costs and those with ex-ante lower *Paydex Score*, seem to find it more difficult to absorb minimum wage inceases and hence experience a more significant decline in their credit score. In our cross-sectional tests, we absorb state-year

or sometime county-year fixed effects. So, all our cross-sectional regressions incorporate time-varying unobservables at state or county level that may be associated with the timing of federal minimum wage change.[3] Similarly, we find that the negative impact is more pronounced in industries that employ more minimum wage workers, i.e., restaurants and retail, but it is not limited to these industries. One possible explanation may include a spillover effect on other sectors.[4]

Further, we test the implication of lower credit score on loans granted. Using Small Business Administration (SBA) data for almost one million small business guaranteed loans, we find that for a dollar increase in federal minimum wage, the loan amount reduces by 9% more for establishments in bounded states compared to those in unbounded states, where the median loan size is $100,000. We also find that establishments located in bounded states are 12% more likely to default on bank loans compared to those in unbounded states around the federal minimum wage increase.

Next, we test if the *Paydex Score* correlates with observed exit rates. In our sample, the average exit rate decreases with increase in *Paydex Score*. Also, we calculate the exit and entry of businesses within each county for each NAICS5 industry. We find that exit rate increases and entry rate reduces significantly for counties in bounded states one year after the federally mandated minimum wage increase. The results are dominated by restaurants, businesses without Paydex Score and those employing less than ten workers. Our results are consistent with Luca and Luca (2018), who finds that minimum wage increase leads to higher exit rate for restaurants with a lower rating.

Finally, we test if the financial burden on businesses has any aggregate real implications. We utilize publicly available county-industry level employment and establishments data from BLS Quarterly Census of Employment and Wages (QCEW) database. We find that aggregate employment decline significantly more for restaurants (9.5%) and retail businesses (8.2%) in bounded states. Also, the negative effect is prominent in counties with lower personal income. We find similar results for aggregate number of establishments. Overall, our results document the unintended effect of the federally imposed uniform rule that increases the minimum wage in areas where businesses may not be able to absorb the increased cost of

[3]While it is possible that some large firms may cut down job hours, or close locations to rebalance their workforce (Gopalan, Hamilton, Kalda, and Sovich, 2018), our sample is restricted to small business and excludes multi-establishment firms. The scope of our analysis is also limited by the lack of detailed data on worker hours. Our estimates can be considered a lower bound in case some businesses cut work hours to maintain the labor costs.

[4]Barrot and Nanda (2018) find that accelerated payments by the federal government to small business contractors can have a significant positive impact on employment. It is difficult to document spillover effects on suppliers/vendors because of limitations on data on the input-output matrix and the network of firm's vendors and suppliers for the very small firms that we analyze.

labor and thereby feel financially stressed or may even get default and also cut employment.

Our study is related to the recent work that examines the effect of minimum wage on entry and exit of restaurants (Aaronson, French, Sorkin, and To (2018) and Luca and Luca (2018)). In our study, we provide comprehensive evidence on the impact of one-size-fits-all federal minimum wage increases on a large number of industries. Further, we are able to provide direct evidence of financial stress, i.e., credit score data, for 15 million small businesses in the US. Consistent with the above studies we do find that the increase in minimum wages leads to a higher exit risk for affected small businesses, but we are able to characterize the effect based on the firm, geography and industry's ability to absorb higher wage costs or to pass on the costs to the consumers. Our study is also related to Clemens and Wither (2019), that uses the cross-sectional variation of bounded versus unbounded states to identify the effect of the federal minimum wage increase, during the great recession, on employment and income of low-skilled workers.

Further, while we contribute to the voluminous literature on the effect of minimum wage on *employment*[5]. Our paper is also related to the effect of labor costs, in general, and the minimum wage policies, in particular on firm outcomes like firm profitability (Draca, Machin, and Van Reenen, 2011) and firm investment (Gustafson and Kotter, 2018; Cho, 2016). Our paper adds to the literature analyzing the interactions between labor costs and firm outcomes. Our results highlight how the increases in minimum wages can hurt the financial health of small businesses.

The rest of the paper proceeds as follows. We discuss our empirical methodology and identification concerns in Section II. Section III describes our data and provide summary statistics. Our main empirical results are presented in Section IV, and finally we conclude in Section V.

II. Minimum Wage and Identification Challenges

A. History of Minimum Wage in the United States

The Fair Labor Standards Act (FLSA), enacted in 1938, is the federal legislation that established a general minimum wage of $0.25 per hour ($4.36 in 2018 dollars) that must be paid to all covered workers.[6] While the FLSA mandates broad minimum wage coverage,

[5](Katz and Krueger, 1992; Card and Krueger, 1994; Neumark and Wascher, 2000; Card and Krueger, 2000; Dube, Lester, and Reich, 2010; Giuliano, 2013; Sorkin, 2015; Meer and West, 2015), *wage dispersion* (Dinardo, Fortin, and Lemieux, 1996; Lee, 1999; MaCurdy, 2015; David, Manning, and Smith, 2016), *price levels* (Aaronson, 2001; Aaronson and French, 2007), and *personal finance* (Aaronson, Agarwal, and French, 2012; Tonin, 2011; Agarwal, Ambrose, and Diop, 2018).

[6]Using CPI calculator, `https://www.bls.gov/data/inflation_calculator.htm`

states are able to set separate minimum wage rates that differ from those federally mandated. Under the provisions of the FLSA, employers have to pay workers the highest minimum wage as prescribed by either federal, state, or local law. For the purpose of this study, we will refer to states with minimum wage rates higher than the federal rate as "unbound" (to the federal minimum wage rate) and states with effective minimum wages equal to the federal rate as "bound" (by the federal rate).

Since July 24, 2009, the federal government has mandated a nationwide minimum wage of $7.25 per hour. As of January 2019, 29 states and the District of Columbia have minimum wage rates above the federal rate of $7.25 per hour, with rates ranging from $7.50 to $13.25. Two states have minimum wage rates below the federal rate, and five states have no state minimum wage requirement. The remaining 14 states have minimum wage rates equal to the federal rate.[7] In any given year, the exact number of states with a minimum wage rate above the federal rate may vary, depending on the interaction between the federal rate and the mechanisms in place to adjust the state minimum wage. Adjusting state minimum wage rates is typically done in one of two ways: (1) legislatively scheduled rate increases that may include one or several increments; (2) a measure of inflation to index the value of the minimum wage to the general change in prices.

Before 1987, Alaska and the District of Columbia were the only two states that consistently had minimum wage rates that exceeded the federal rate. Since 1987, many states have adopted higher minimum wage rates, resulting in a divergence between the average state minimum wage and the federal rate. Because the federal and state minimum wage rates change at different times and at different increments, the share of the labor force for which the federal rate is the binding wage floor has changed over time, with many states alternating between being bound and unbound over time. Figure 1 demonstrates this variation over time: the bars show in a given year, the number of states with an average minimum wage above the average federal minimum wage. The dashed line plots the average federal minimum wage (in nominal dollars) and the solid line plots the average minimum wage for unbounded states.[8]

There have been three series of federal minimum wage increases over the past three decades: 1990–1991, 1996–1997, and 2007–2009.[9] During that same period, there have been

[7]Source: National Conference of State Legislatures

[8]We limit our analysis for the year 1989-2013 based on the availability of Paydex Score data.

[9]The law for the 1990–1991 increase was enacted on Nov. 17, 1989 with the federal minimum wage increasing in two waves from $3.35 to $3.80 on April 1, 1990 and to $4.25 on April 1, 1991. For 1996–97 change, the law was enacted on Aug. 20, 1996 and the federal minimum wage was again increased in two waves from $4.25 to $4.75 on October 1, 1996 and to $5.15 on September 1, 1997. The most recent federal minimum wage change was enacted on May 25, 2007 and rates were increased from $5.15 in three waves to $5.85, $6.66, and $7.25 effective July 24, 2007, July 24, 2008 and July 24, 2009, respectively.

numerous changes in state minimum wage policies. At the beginning of our sample in 1990, the federal minimum wage was $3.80 per hour. In Figure 2, we graphically show by state the % of years that a given state was bounded in our sample by the federal minimum wage. Notice that federal minimum wage always bounded in states like Alabama, Georgia, Texas, and many others – that is, employers in these states have always had their minimum wage rates defined by federal laws rather than state laws.

B. Identification Challenges

In this section, we discuss our identification strategy. The recent increase in minimum wage by various state and local bodies has generated enormous interest amongst economists and policy makers alike. Exploiting staggered state-level minimum wage changes in a difference-in-differences setup would seem a natural starting point for empirical examination. However, estimates in this framework are likely to be biased as the introduction of state-level minimum wage increases are likely to occur at non-random times and may be correlated with local economic conditions. For example, Allegretto, Dube, Reich, and Zipperer (2017) show that states that increase minimum wages have different business cycle severity, inequality, and composition of the labor force. However, not all states voluntarily increase their minimum wages. After the introduction of higher federal minimum wage requirements, states with effective minimum wages below the federal minimum are bound and must immediately match the federal minimum wage. In this study, we make use of this bounding feature to examine the differential effect of federal minimum wage increases on the financial health of establishments located in bounded states versus unbounded states. During our sample period, the federal minimum wage has only changed seven times, with the result of laws passed in 1989, 1996, and 2007. Our strategy exploits the fact that an increase in the federal minimum wage rate affects states with minimum wage rates equal to or less than the federal minimum wage (i.e., bound states) more directly than states with higher minimum wages.

In our baseline analysis, we apply a difference-in-differences estimation to quantify the differential impact of the federal minimum wage change on the financial health of establishments located in bounded states versus unbounded states. We do so by estimating the following equation,

$$Y_{it} = \alpha_1 Bound_{s,t-1} \times \Delta MW(F)_t + \alpha_2 Bound_{s,t-1} + \kappa X_{i,t-1} + \nu_i + \omega_t + \epsilon_{ist} \qquad (1)$$

where subscripts i, s, t index establishments, states and years, respectively. Our dependent variable,Y_{it}, is the average *Paydex Score*, our measure for an establishment's financial

health. The *Paydex Score* is a business credit score generated by Dun & Bradstreet (D&B) that captures an establishment's payment performance (i.e., if it pays its bills on time) and gives it a numerical score from 1 to 100, with 100 signifying a perfect payment history. We explain this variable in more detail in our data section III. $\Delta MW(F)_t$ measures the nominal dollar increase in maximum federal minimum wage in year t, otherwise zero. $Bound_{s,t-1}$ is a dummy variable equal to 1 if at the beginning of fiscal year t the establishment's state s has a minimum wage less than or equal to the maximum federal minimum wage. We include establishment fixed effects, ν_i to control for time-stable unobserved heterogeneity at the establishment level and year fixed effects, ω_t to control for time-specific macro-level shocks. In addition, we include a full set of establishment-level control variables ($X_{i,t-1}$) in our regressions: size (measured as Log(sales)), age (Log(age)), number of employees (Log(employees)) and sales growth and are winsorized at their 1^{st} and 99^{th} percentiles.

As all of our identifying variation is within-establishment due to the inclusion of ν_i, we can interpret our main coefficient of interest, α_1 as the differential effect of a federally mandated minimum wage increase for bounded firms above and beyond the effects of bounding on an establishment's bounding performance (as captured by α_2). Our standard errors are clustered at the state level.

A critical assumption to this specification is that it can only identify the causal effect of minimum wage increases to the extent that the *Paydex Score* of establishments in bound and unbound states evolve similarly (observe parallel trends) before the time of the federal minimum wage adjustment. We conduct various tests to verify this assumption.

In addition, two waves of federal government mandated minimum wage increases occurred during recession years (1990-1991 and 2007-2009). This overlap may confound our analysis if the economies of firms (and thus their financial health) in bounded states are more correlated with the US economy as a whole. As such, our results may be measuring recessionary effects rather than minimum wage effects if heterogeneity exists between firms in bounded and unbounded states. To mitigate this concern we examine the extent to which business cycles vary for bounded and unbounded states around the time of minimum wage changes. We measure state-specific business cycles using the State Leading Index provided by FRED.[10] For January of each year, we look at five years before the first federal minimum wage increase in our data set (1990) to five years after the last federal minimum wage increase (2007). We

[10]The *State Leading Index* index measures the the current and future economic situation of given state. The leading index for each state predicts the six-month growth rate of the state's coincident index. In addition to the coincident index, the models include other variables that lead the economy: state-level housing permits (1 to 4 units), state initial unemployment insurance claims, delivery times from the Institute for Supply Management (ISM) manufacturing survey, and the interest rate spread between the 10-year Treasury bond and the 3-month Treasury bill.

estimate the following regression model at the state level for the years 1985 to 2012:

$$SLI_{st} = \sum_{j=-5}^{5} \alpha_j BD_{s,t-j} + \sum_{j=-5}^{5} \alpha_j UBD_{s,t-j} + \nu_s + \epsilon_{st} \quad (2)$$

where our dependent variable, SLI_{st}, is the mean *State Leading Index* for state s during year t. $BD_{s,t}$ is defined as $Bound_{s,t-1} \times \Delta MWDummy(F)_t$ and $UBD_{s,t}$ is defined as $(1 - Bound_{s,t-1}) \times \Delta MWDummy(F)_t$. $\Delta MWDummy(F)_t$ is an indicator variable equal to 1 if there is an increase in the maximum federal minimum wage in year t, and zero otherwise. We control for state-specific unobserved heterogeneity through the inclusion of state fixed effects (ν_s).

Figure 3 plots the OLS regression coefficients of Equation 2 with ninety-five percent confidence intervals. The solid line with circles plots the regression coefficients for bounded states, while the dashed line with diamonds plots the coefficients for unbounded states. The bold-dashed line indicates the period right before the federal minimum wage change.

We find that the bounded and unbounded states followed similar business cycles before and after federal minimum wage changes. Further, if anything, we see that the amplitude of business cycle swings are slightly more pronounced in unbounded states than in bounded states. As such, these results provide some reassurance that we are able to separately identify minimum wage effects from effects arising from economic recessions. We provide additional robustness to these results by controlling for various state, county, and zip-level observables that may be correlated with both the timing of minimum wage enactment and firm health. We present results that directly control for a battery of local economic conditions in Section IV.A.2. Section IV.A.5 presents results from a nearest neighbor matching estimator. We present results from a geographic border discontinuity design in Section IV.A.6. And lastly, we estimate more stringent specifications that include state $\times$ year and county $\times$ year fixed effects in various cross-sectional results presented in Section IV.A.8. In sum, conditional on a variety of approaches, we show that firms in bounded and unbounded states serve as appropriate counterfactuals to the effect of a federal increase in minimum wage laws and minimize concerns that our presented results are biased.

III. Data

A. Sample Selection

We use establishment-level data for all the establishments in the United States from the National Establishment Time-Series (NETS) Database (Walls & Associates, 2014).[11] The database provides an annual record for a large part of the U.S. economy that includes establishment-level employment counts, sales figures, establishment failure, market segment, corporate affiliations, and historical D&B credit and payment ratings.

The database covers almost 50 million US businesses of which data for *Paydex Score* is available for 15 million businesses over 25 years, i.e., 1989-2013. We exclude establishments with only one employee (dropping almost 3 million businesses). From the remaining 12.79 million establishments we further remove non stand-alone businesses (i.e., drop 900,000 establishments affiliated with large firms). In addition, we exclude 3.8 million establishments in finance and real estate, utilities, and those in professional services that are less likely to employ minimum wage workers.[12] Finally, to construct our measure of lagged sales growth (one of our control variables in baseline specification), we need at least three observation, and therefore we lose an additional 3 million establishments. However, our results are robust if we include these businesses in our sample (see section IV.A.3). As such, our final sample consists of 4.4 million small businesses that survived for three years or more.

B. Summary Statistics

We next provide summary statistics of our dataset. We first describe our primary variable of interest, i.e., *Paydex Score*, then how it relates to various firm characteristics, and lastly summary statistics on state and federal minimum wage changes.

B.1. Paydex Score

The *Paydex Score* is a business credit score assigned by Dun and Bradstreet (D&B) to an establishment. It is a dollar-weighted numerical indicator of how a firm paid its bills based on trade experiences reported to D&B through its trade exchange program. D&B acquires

[11] Walls & Associates converts Dun and Bradstreet (D&B) archival establishment data into a time-series database of establishment information.

[12] Specifically, we drop establishments in the following industries: utilities (NAICS 22), finance and insurance (NAICS 52), real estate (NAICS 53), professional services and management of companies (NAICS 54, 55), educational services (NAICS 61), health care (NAICS2 62), religious organizations (NAICS 813), and public administration (NAICS 92).

its trade data from over 12,000 trade exchange participants globally in 35 markets, of which 4,200 are located in the US.

It compares payments to terms of sale, is dollar-weighted, and is calculated based on the overall manner of payments reported to D&B. The score rates the likelihood a business will make payments to suppliers/vendors on time. Like a personal credit score, it is primarily used to measure the financial risk to lenders, and it can affect the premiums and interest rates companies pay when it comes to financing bank loans or credit cards for small businesses.

In addition to lenders, the Paydex score is used by vendors, who often deliver goods and services and invoice a business for payment afterward. As a result, vendors have some financial risk of not getting paid. The Paydex score is one metric such suppliers can use to determine whether a new client or business partner might present possible risks going forward. Poor scores may make suppliers reluctant to do business or may limit the size and scope of services they are willing to agree to.

Figure 4 presents a histogram of observations (left-axis) in each Paydex group, while the circle dots represent the mean Paydex (right-axis) score in each bucket for our sample. Note that a score of 80 and above means that the business is making its payments on time or in advance. A perfect score of 100 implies business makes payments one month in advance of when they are due. From the NETS dataset, we observe minimum and maximum Paydex score for a given establishment over a given year. We take the mean of the two measures and create *Average Paydex Score*. In our sample, the median of Average Paydex score is about 76.5, which implies that the business make payment five days after the terms, where the term is typically 30 days.[13]

B.2. Establishment Characteristics

Table I, Panel A provides the summary statistics of our establishment sample. From our 4.4 million small businesses with paydex scores we obtain just over 31 million establishment-year observations. While the *Paydex Score* is available for only 42.9% of our total observations, we report information on the approximately 41 million establishment-year observations of firms that do not have paydex scores. We do not utilize these data but present them here for comparison. Based on observable establishment characteristics, establishments with *Paydex Score* have lower exit rates, have larger sales, more employees, are older, more labor-intensive (with a higher number of employees per thousand sales), and compete in more concentrated industries as measured by a higher HHI index (defined at the 5 digit NAICS level).

[13]See `https://www.dandb.com/glossary/paydex/` for more information.

B.3. Minimum Wage

Table I, Panel B, reports the summary statistics on federal and state minimum wage and their growth rate. We find that the average annual state minimum wage is about $5.50 per hour which is above the federal minimum wage, i.e., $5.25 per hour. This is especially true for unbounded states. Note that, whenever the federal government decides to change the minimum wage, the average level of change or growth is much higher for bounded states compared to the unbounded states. For example, the median $\%\Delta MW(S)$ is about 6.0% for bounded states while for unbounded it is 3.0%.

IV. Results

A. Paydex Results

In this sub-section we discuss our baseline Paydex results (section IV.A.1) for equation (1). We show that our results are robust to the inclusion of controls for location economic conditions (section IV.A.2), for variations in the baseline model (section IV.A.3) and conduct placebo tests on subsamples that should not respond to minimum wage changes (section IV.A.4). We construct a nearest-neighbor matched sample (section IV.A.5) and utilize bordering county discontinuity tests (section IV.A.6) to further addresses endogeneity concerns. In addition, we conduct tests for pre- and post-minimum wage change dynamics (section IV.A.7), and lastly explore establishment-level heterogeneity (section IV.A.8).

A.1. Baseline

We begin our analysis by plotting the average Paydex Score for establishments in bounded states and unbounded states around the years before and after federal minimum wage increases. Figure 5 plots the average score with ninety-five percent confidence interval. The solid line with circle data points plots the average Paydex score for establishments located in bounded states, while the dashed line with diamond data points plots the average of the Paydex score for unbounded states. The bold-dashed line indicates the period right before the federal minimum wage change. As can be seen, the average *Paydex Score* for bounded and unbounded states followed parallel trends prior to the minimum wage enactment. Second, within two years of a federal minimum wage increase, there is a sharp decline in the *Paydex Score* for establishments in bounded states. Finally, we observe that the difference between the *Paydex Score* for establishments in the bounded and unbounded states converges after three to five years. We test these observations further in Section IV.A.7.

It should be noted that these results do not take in to account firm-specific and time-specific unobserved heterogeneity that may lead to lower credit score for establishments located in bounded states. To account for this potential unobserved heterogeneity we estimate our difference-in-differences equation (1). Note that the interaction-term, α_1 as captured by $Bound_{s,t-1} \times \Delta MW(F)_t$, identifies the differential effect of federally-mandated minimum wage increases over and above the effect of state-level variation caused by a change in the state-determined minimum wage and changing status of the focal state from bound to unbound (or from unbound to bound). As previously discussed in Section II.A, the number of states that are bounded by the federal minimum wage changes across time. In addition, we also control for establishment fixed effects and year fixed effects to ensure identification solely arises from within-establishment variation after controlling for macroeconomic trends. We report these results in Table II.

In Columns (1)-(3), we estimate the regression equation without establishment controls, while Columns (4)-(6) report results with a full set of establishment-level control variables ($X_{i,t-1}$) in our regressions: size (measured as ln Sales), age (ln Age), number of employees (ln Employees), and sales growth that is winsorized at their 1^{st} and 99^{th} percentiles. Column (1) and (4) report results for a minimum Paydex score during the year, while Column (2) and (5) report results for a maximum Paydex score during the year. In Column (3) and (6), we report results for an average score during the year measured as mean of minimum and maximum score during the year.

Our preferred specification presened in Column (6) presents a point estimate of -0.73, implying that for a dollar increase in the federal minimum wage, establishments in bounded states experience a reduction in their average *Paydex Score* by 0.73 points relative to changes in the *Paydex Score* of establishments in unbounded states. The median establishment in our sample has a *Paydex Score* of 76.5, implying payment that on average is 5 days beyond term. As such, a reduction of the *Paydex Score* by 0.73 points to 75.77 implies a delay of 6 days beyond term (or a 20% increase in delay).

A.2. Local economic conditions

The extent to which state governments set their minimum wages to mirror those at the federal level (or above) is not done at random. As shown by Allegretto, Dube, Reich, and Zipperer (2017), states that increase their minimum wages tend to differ in their business cycle severity, their economic inequality, and the composition of their labor force. We test for state-level variables that may affect a state's decision to keep minimum wages at the federal level. Table IA1 report the results where we regress bound dummy on state-level economic conditions and political partisanship. We find that states with large populations and states

with Democratically-controlled senates are more likely to keep state minimum wage above the federal minimum wage. In results presented shortly, we explicitly control for these state-level variables. In addition, counties and zip codes in unbounded and bounded states may differ in other economic conditions like unemployment rate, per capita income, house prices, and aggregate demand. These factors may influence the credit score of establishments located in bounded states and as such it will be critical to control for these factors as well.

In this section, we report results for regression estimates where we control for various state-, county-, and zip-level observable characteristics. In Table III we present results that are robust to the inclusion of various state, county and zip-level control variables.

In Column (1), we control for lagged state-level economic conditions by including both level and growth in GSP and population. Note that after controlling for state economic conditions the negative effect increase from -0.73 to -0.83, and remains statistically significant. In Column (2), we control for state-level political partisanship and find consistent results.

In Column (3), we include county-level lagged unemployment rate, labor force participation, and contemporaneous changes in the county-level unemployment rate. We find that establishments located in counties with high unemployment rate (both level and changes) have low credit score. The effect of minimum wage diminishes to -0.67, but remains statistically distinct from zero.

In Columns (4) to (6), we control for zip-level controls inclusing aggregate sales growth, personal income (lagged level and growth), and house prices (lagged level and growth), respectively. We find that an establishment's credit score is positively correlated with these variables. In Column (7), we show completely robustness to various local economic factors by including all state-, county- and zip- level controls .[14] Although our observations drop significantly as a result of missing covariate data, we continue to find a significant and negative effect of minimum wage changes on credit scores of establishments in bounded states. As a further robustness check, we use these variables to create a matched control sample and report these results in Section IV.A.5.

A.3. Robustness

In this section, we test the robustness of our main result reported in Column(6) of Panel A, Table II. We present the results of these robustness checks in Table IV.

One potential concern with the interpretation of the results presented so far is that they may be driven by the entering of numerous small unhealthy firms into bounded states. To account for this potential, we interact all establishment controls with the bound dummy and

[14]We calculate aggregate sales growth using NETS data, for personal income we use publicly available IRS zip-level individual income data, and we use Zillow's house price index at the zip-level.

report results in Column (1). We find that the negative effect reduces from -0.73 to -0.70, but remains statistically significant. Later, to address this issue further, in Section IV.A.5 we use nearest-neighbor matching to contstruct counterfactual establishments.

In Column (2), we replace year fixed effects with NAICS4×year fixed effects to control for industry-specific time-varying unobserved heterogeneity in an establishment's Paydex Score. Our results are robust to the inclusion of these fixed effects.

In Column (3), we include all the establishments that we drop from our baseline. We make use of 90 million observations for 15 million establishments. Although the magnitude reduces by 0.10 points, it remained significant. In Column (4), we include all the industries that we drop from our baseline sample and find similar results.

In Column (5), we include multi-establishment businesses that are less likely to be affected by minimum wage increases and find that our negative effect reduces the magnitude but it still remains statically significant at 1% level. In Column (6), we report results for businesses connected with multiple establishment firms and find an almost insignificant effect on their credit score.

In Columns (7) and (8), we replace $\Delta MW(F)_t$ with $\%\Delta MW(F)_t$ and $\Delta MWDummy(F)_t$, respectively and report regression results. $\Delta MWDummy(F)_t$ is an indicator variable equal to 1 if there is an increase in maximum federal minimum wage in year t, otherwise zero. While $\%\Delta MW(F)_t$ captures the percentage change in minimum wage by the federal government in year t, otherwise zero. For example, in the year 2007, the federal minimum wage increased from \$5.15 to \$7.25, which implies an increase of almost 40%. The regression coefficient suggests a decline in score by (0.40*3.85=) 1.85 points. This reduction in score implies a delay in payment by nearly three days. We find consistent results when we use a dummy instead of change measure.

In Column (8), we report the dynamics of the three main federal minimum wage increases under examination. $\Delta MWDummy(F)_t$ Yr1 is an indicator variable equal to 1 that identifies the year 1990, 1996 and 2007. $\Delta MWDummy(F)_t$ Yr2 identifies the year 1991, 1997 and 2008. $\Delta MWDummy(F)_t$ Yr3 identifies the year 2009. We find the effect is negative and reduces over time. We further explore the dynamics in section IV.A.7.

A.4. Placebo Test

As mentioned in data section III.A, we drop industries that are not likely to hire minimum wage workers, i.e., researchers, management consultants, etc. In this section, we report results for establishments in such industries and use them to conduct placebo tests wherein we should see no response to minimum wage increases.

Table V report results for our placebo tests. Column (1) we report results for estab-

lishments that employ researchers (NAICS4 5416, 5417). Column (2) report results for Physicians (NAICS3 621), Column (3) for religious institutions (NAICS3 813), Column (4) for management consultants (NAICS2 55) and Column (5) for education services (NAICS2 61). Notice that for all these samples we do not find a statistically significant negative effect on Paydex Score.

A.5. Nearest Neighbor Matching

As we discuss in the previous section, a critical concern for identification of our results arsies if establishments in unbounded states not serving as appropriate controls for establishments in bounded states wherein establishments in unbounded states exhibit lower financial health. To control for this selection issue, we make use of a narrow event window, and in the pre-event year, we match establishments in the bounded states (treatment group) with those in unbounded states (control group) based on the pre-shock level of the treated establishments' credit scores and establishment-, state-, county- and zip-level observable characteristics.

In 2007, the federal minimum wage increased from \$5.15 to \$7.25, which implies an increase of almost 40%. For this particular series of the federal minimum wage increase, we match firms in the year 2006. To consturct our control sample we first use the credit score in the year 2006 and exactly match establishments in the bounded states (treatment group) with the possible set of control establishments within the same NAICS4 industry group in the unbounded states (control group). Next, for the exactly matched control sample, we compute the Euclidean distance between treatment and control samples based on establishment-, state-, county- and zip-level observable characteristics.

Table IA2 reports the means of the Euclidean distance based nearest neighbor pairs in the year 2006. Panel A reports the matching balance in year 2006 for establishment-level characteristics, i.e., credit score, sales, employees, employee-to-sales and sales growth. Note, by construction, the average Paydex score is the same for the treatment and control group establishments in 2006. After matching on the Euclidean distance we find a decline in the difference between the means of establishment-level characteristics. At the state-level, we match state-level economic conditions by including both the level and growth in GSP and population. Next, we match on state-level political conditions i.e., we match for state-leve partisanship. At the county-level we match on unemployment rate, labor force and change in unemployment rate. At zip-level, we match for aggregate sales growth, personal income (lagged level and growth) and house price (lagged level and growth). Note that, for establishments located in bounded states in 2006, we find between 600,000 and 800,000 matched pairs in different matching models. Finally, in Table IA2, Panel H, we report the

matching balance when we include all establishment-, state-, county- and zip-level observable characteristics. After matching, the t-stat for the two-sample t-statistic of mean equality is greater than 2 only for the employee-sales ratio variable, where the differences in magnitude are not very large. We next use the above matched sample and estimate (1).

Table VI reports the results from our baseline regression equation (1) between the years of 2006 and 2013 for the *matched pairs*. $Bound_{s,t-1}$ is a dummy variable equal to 1 if at the beginning of fiscal year t if state s has a state minimum wage less than or equal to the maximum federal minimum wage. $\Delta MW(F)_t$ is the dollar increase in maximum federal minimum wage in year 2007, 2008 and 2009, otherwise zero. Therefore, the interaction-term, $Bound_{s,t-1} \times \Delta MW(F)_t$ identifies the differential effect of federally mandated minimum wage increases over and above the effect of state-level variation caused by a change in state-determined minimum wage and changing status for bound to unbound or vice-à-versa. In Columns (2) - (8), we add as controls the matching variables (at increasing granularity) to the establishment-level controls already present in Column (1). In addition, we also include matched-pair fixed effects and year fixed effects. Notice that for the matched sample we find consistent results in all specifications and the magnitude in Column (8) matches our baseline estimates.

One concern with our interpretation of our results as causal is that even if we match establishments on levels of *Paydex Score*, establishments may follow distinct trends before the federal minimum wage increase. We address this concern by exactly matching, in year 2005 and 2006, average Paydex score for establishments in the bounded states (treatment group) with the possible set of control establishments within the same NAICS4 industry donor group in the unbounded states (control group). We then match establishment-, state-, county- and zip-level observable characteristics. Table IA3, Panel A reports the regression results for sample firms in year 2005-2013. In Panel B, we restrict our sample to years 2006-2013. As a further robustness, we attempt exact matching on Paydex Score in year 2004, 2005 and 2006. Panel C and Panel D report the regression results. In all these tests, the regression coefficient on $Bound_{s,t-1} \times \Delta MW(F)_t$, is negative and statistically significant. Meanwhile, the magnitude of the estimate reduces as it requires the sample firms to have more than three observations before the minimum wage increase and thus introduces some survivor bias which will be positively associated with an establishment's *Paydex Score*.

The results suggest that for establishments in the bounded state, with a dollar increase in federal minimum wage, the *Paydex Score* declines by 0.75 points more, compared to similar establishments located in the unbounded state.

A.6. Bordering County

In section IV.A.5, we used nearest-neighbor matching based on observable variables to control for differences in local economic conditions. We further attempt to control for local economic conditions by analyzing the establishments located in the contiguous counties close to state borders. The underlying assumptions for this identification strategy includes 1) the adjacent counties at state borders have similar economic conditions except for the minimum wage, and 2) there are no spillovers around the state borders, i.e., minimum wage workers do not cross borders for a higher minimum wage.

Table VII reports the heterogeneity of our results based on distance from state borders. In Columns (1)-(3), we report results for establishments located in contiguous counties at state borders. Column (1) includes all the establishments in contiguous counties. We find that the negative effect is lower compared to the baseline specification. One possible reason for this could be spillovers across state borders. In Column (2) we include counties where both the states are either bounded or unbounded by federally mandated minimum wage. We find that there are more county-pairs where "bounded" states border other "bounded" states rather than the "unbounded" states. In Column (3), in the treatment group, we only include state-borders where only one state is bounded by federally mandated minimum wage. We find no effect for establishments located in county-pairs where "bounded" states bordering "unbounded" states. Spillovers at the state borders may be one reason for no effect, i.e., minimum wage workers are more likely to cross state borders for a higher wage.

Further, in Columns (4)-(7) we include establishments located in non-contiguous counties. Column (5), Column (6) and Column (7) report results for establishments located within 50-100 miles, 100-150 miles and more than 150 miles, respectively from the state border. We find that establishments located far from state borders have strong negative effect on Paydex Score, which further confirm the possibility of spill-over at state borders.

In Column (8), we report the difference of Column (7) and Column (5). Here, we only include establishments located within 50-100 miles and those more than 150 miles from the state borders. $Distance(> 150)$ is a dummy variable that identifies establishments located more than 150 miles from the state border. Here we include establishment fixed effects and group specific-year fixed effects. To ensure that local economic conditions in the bounded vs. unbounded state are not driving our results, we also control for state-year fixed effects. The results suggest that among the bounded states within the same state, establishments located far from state borders are more adversely affected by an increase in federal minimum wage increase compared to establishments close to state borders.

A.7. Pre and Post Dynamics

As discussed before in Section II.B, our above results can only identify the causal effect of minimum wage increases to the extent that the *Paydex Score* of establishments in bounded and unbounded states are following similar trends around the time that the federal government adjusts minimum wages. We test this assumption in this sub-section. We estimate the following equation:

$$Y_{it} = \sum_{j=-5}^{5} \alpha_j BD_{s,t}(j) + \sum_{j=-5}^{5} \alpha_j Bound_{s,t}(j) + \kappa X_{i,t-1} + \nu_i + \omega_t + \epsilon_{ist} \tag{3}$$

In the above equation $BD_{s,t}$ is defined as $Bound_{s,t-1} \times \Delta MWDummy(F)_t$ and all the controls are similar to those included in Equation (1). The inclusion of $Bound_{s,t-1}$ dummy for both pre and post window controls for changing status for bound to unbound or vice-à-versa. Here, we estimate these interaction terms for five years before and five years after the minimum wage increase.

We present our regression results graphically in Figure 6. The bar plots the regression coefficients of the interaction term identifying bounded states for five years before and after the federal minimum wage increase, while dashed lines correspond to ninety-five percent confidence interval. The bold-dashed line indicates the period right before the federal minimum wage change.

Similar to Figure 5, we observe that establishments in bounded states did not experience differential trends prior to the introduction of federal minimum wage changes. This increases our confidence that the results we present may be interpreted as causal. Second, we note that in the year of the federal minimum wage increase, there is a sharp decline in the Paydex score for establishments in bounded states. This is consistent with our baseline results reported in section IV.A.1. Finally, we observe that the difference between the Paydex score for establishments in the bounded and unbounded states converge over three to five years. One possible reason for this could be that establishments that managed to survive may be able to pass through some of these extra labor costs to customers over a more extended period.

A.8. Heterogeneity

In this sub-section, we explore the heterogeneity of our results. We examine how the minimum wage induced *Paydex Score* effects vary with the sensitivity of the establishment's industry to the minimum wage, the establishment's labor intensity, its size, age, local competition, local income, and ex-ante credit worthiness.

A.8.1 Minimum Wage Sensitive Industries

As per the 2015 Current Population Survey, Restaurants (NAICS 72) and Retail Trade (NAICS 44,45) are the only industries where over 10% of employees make the minimum wage. In this sub-section, we test if the magnitude of the impact is higher for such industries. We estimate equation (3) separately for each industry and plot the regression coefficient of the interaction terms in Figure 7. We find that the negative effect is larger for restaurants and retail but this impact is not limited to these industries. The pre and post dynamics are similar to baseline results on dynamics.

A.8.2 Labor Intensity

We next test the differential effect of a federal minimum wage increase on the establishment's financial health based on its labor utilization. In our data, the median establishment employs 12 employees per 1$ million in sales. We hypothesize that the negative effect of the federal minimum wage increase should be more for labor-intensive businesses. Firstly, we partition our sample into quintiles based on labor intensity one year before the federal minimum wage change. Then, we reestimate equation (1) where we interact the equation by each quintile group. In Figure 8 we plot the regression coefficient on triple interaction terms with 95% confidence interval. We find that with the minimum wage increase, the more labor-intensive establishments are adversely affected compared to less labor-intensive establishments.

As discussed before in section II.B, one threat to our identification strategy is if the federal government's decision to adjust minimum wages is affected by or correlated with unobservable differences in the economies of bound versus unbound states and thus biasing our point estimates. To ensure that local economic conditions in the bounded vs. unbounded states are not driving our results, we also control for state-year fixed effects in our cross-sectional results. Table VIII reports the results of analysis using triple-interaction.

We partition our sample into two groups using the median establishment labor-intensity one year before the federal minimum wage change. We define $MoreLabour$ as an indicator variable equal to 1 if the establishment's labor-intensity measure is above median labor-intensity, otherwise zero. We define $LessLabour$ as 1-$MoreLabour$. For $LessLabour$ and $MoreLabour$ establishments, we run our baseline model i.e. column (6) of Table II, Panel A, and report results in column (1) and column (2) of Table VIII, respectively. Note that we find strong negative results for both $LessLabour$ and $MoreLabour$ establishments, while the negative effect is more for $MoreLabour$ establishments. In column (3), we include establishment controls, establishment fixed effects, and state-year fixed effects. While in column (4), we further include NAICS4-year fixed effects. We find consistent results.

We extend our analysis by calculating labor cost instead of labor intensity. We measure

the establishment's labor cost as the number of employees × average salary divided by sales. We use QCEW data to estimate average compensation at county-NAICS4 level. Table IX reports the regression results. The results are similar to the labor-intensity results.

Further, using both measures of labor utilization, we re-estimate Equation(3) by interacting the equation with a dummy equal to one if the establishment's labor intensity or labor costs are above the median. The Figure 9 plots the regression coefficients with ninety-five percent confidence interval. The solid line with circle plots the regression coefficients for more labor intensive/cost establishments, while the dashed line with diamonds plots the coefficient for less labor intensive/cost establishments. The bold-dashed line indicates the period right before the federal minimum wage change.

Consistent with findings presented earlier, the difference between the Paydex score before the minimum wage increase is insignificant across the two groups, while the difference increases after the minimum wage increase is enacted. Overall, we find consistent negative results for labor-intensive businesses.

A.8.3 Establishment Size and Age

In this sub-section, we test the differential effect of a federal minimum wage increase on the establishment's financial health based on its size and age. These measures may proxy for the ability of the businesses to absorb the financial shock caused by an increase in labor cost. We test this hypothesis and report results in Table X and Table XI.

As we did with labor-intensity, we partition our sample into quintiles based on size (measures as sales) and age one year before the federal minimum wage change. We then re-estimate (1) where we interact the equation by each quintile group. In Figure 10 we plot the regression coefficient on triple interaction terms with 95% confidence interval. We find that with the minimum wage increase, small and young establishments are adversely affected.

Next, we partition our sample into two groups splitting along the median of sales. We define this size-median one year before the federal minimum wage change and define *Small* by an indicator variable equal to 1 if establishment's sale is below median sales, otherwise zero. We define *Large* as 1-*Small*. For *Small* and *Large* establishments, we run our baseline model i.e. Column (6) of Table II, Panel A, and report results in Column (1) and Column (2), respectively. Note that we find strong negative results for both *Small* and *Large* establishments, while the negative effect is more for *Small* establishments.

In Column (3), we include establishment controls, establishment fixed effects, and state-year fixed effects. We are able to hold all state-year specific heterogeneity constant through the inclusion of these state-year fixed effects and identify our triple interaction effect through within state-year across firm-size variation by interacting *Small* with our main coefficient

$(Bound_{s,t-1} \times \Delta MWDummy(F)_t)$ from Equation (1). We find the effect is stronger for small establishments relative to large establishments within the bounded states. Finally, in Column (4), we further strengthen the veracity of our results by including NAICS4-year fixed effects to absorb any industry-year specific heterogeneity that may exist.

We conduct the same analysis for establishment age and report our results in Table XI. We find similar results: younger firms experience larger decreases in their *Paydex Score* then older firms.

A.8.4 Local Competition

With the increase in labor cost, the cost of goods sold (COGS) increases for businesses. If establishments can completely pass on these increased costs on to their customers immediately, then they may not feel any additioanl financial stress as a result. In this sub-section, we test this possibility by looking at the relative local competitiveness in the given firm's industry. The establishments in our sample are relatively small businesses, and the local competition determines their cash flows. We expect that an establishment within the same industry, located in a less competitive neighborhood may find it easy to pass on the increased labor costs compared to other establishments and may observe a lower reduction in Paydex score

To test the effect of local competition on a firm's ability to pass through these costs, we measure local product market competition using the HHI index measured at the NAICS5-county-year. To create the HHI index we use the full set of 50 million establishments found in the NETS dataset. Similar to the previous sub-section, we first partition our sample into quintiles based on the HHI index one year before the federal minimum wage change. We then estimate Equation (1) and interact our main coefficient with each quintile group. In Figure 10 we plot the regression coefficient on triple interaction terms with 95% confidence interval. We find that with the minimum wage increase, establishments in more competitive location are adversely affected, while establishments in less competitive locations are not negatively affected at all.

We also partition our sample into two groups and split the HHI at its median one year before the federal minimum wage change and define $HighCompetition$ as indicator variable equal to 1 if establishment's NAICS5-county-year HHI measure is below the median HHI, and zero otherwise. We define $LowCompetition$ as 1-$HighCompetition$. For establishments in $HighCompetition$ and $LowCompetition$ industry-county-years, we run our baseline model, i.e., Column (6) of Table II, Panel A, and report results in Table XII, Column (1) and Column (2), respectively. We find that the effect is very strong and dominant for establishments in more competitive areas.

In Column (3) and (4), we include a triple interaction to identify our effect of interest. In Column (3), we include we include establishment controls, establishment fixed effects, and state-year fixed effects. While in Column (4), we further include NAICS4-year fixed effects. As such, our tests are effectively comparing two establishments in the same industry and bounded state and only exploint across industry-state competition variation. We find a strong negative effect for establishments located in counties where they face more competition.

Overall, these results suggest that small businesses located in bounded states are more effected by federally imposed minimum wage increases, especially those located in more competitive counties. Thus, establishments may not be able to completely pass on these increased costs to their customers immediately, and therefore they observe some financial stress.

A.8.5 Local Personal Income

Similar to local competitiveness, the ability of establishments to completely pass on increased labor costs on to their customers immediately may depend on the local personal income of the establishment's customers. The increase in minimum wage, on one hand, increase labor costs for businesses, but at the same time, it increases the per-capita local income. If businesses can pass on these costs in low-income zip-codes, then we should not find a decline in their score. Otherwise, we should expect more negative effect in a low-income neighborhood.

To test the effect of local personal income on a firm's ability to pass-through these costs, we use zip code level IRS data on personal income. Similar to the previous sub-section, firstly, we partition our sample into quintiles based on local personal income one year before the federal minimum wage change. Then, re-estimate (1) where we interact the equation by each quintile group. In Figure 10 we plot the regression coefficient on triple interaction terms with 95% confidence interval. We find that with the minimum wage increase, establishments in the lowest-income neighborhood are adversely affected the most.

We next partition our sample into two groups and define income one year before the federal minimum wage change and define $HighIncome$ as an indicator variable equal to 1 if establishment's zip code is above median income, otherwise zero. We define $LowIncome$ as 1-$HighIncome$. For establishments in $HighIncome$ and $LowIncome$ zip coded, we run our baseline model, i.e., Column (6) of Table II, Panel A, and report results in Table XIII, Column (1) and Column (2), respectively. We find that the effect is very strong and dominant for establishments in low-income areas.

In Column (3) and (4), we do this analysis using triple interactions. In Column (3),

we include establishment controls, establishment fixed effects, and county-year fixed effects. While in Column (4), we further include NAICS4-year fixed effects. Here, our tests essentially compare two establishments in the same industry and the bounded state; we find a strong negative impact on establishments located in zip codes with low income.

A.8.6 Ex-ante Paydex Score Group

In this sub-section, we test if the ex-ante financial health affects the magnitude of the impact. In other words, if the business is already delaying payments and have cash flow problems, then we expect the adverse effect should be more for financially unhealthy firms. We test this hypothesis and report results in Figure 11.

The figure plots the regression coefficients of equation (1) with 95% confidence interval for different Paydex groups defined one year before the federal minimum wage change. We do find a significant negative effect on the Paydex score for establishments with ex-ante low scores, with the effect diminishing with the high ex-ante Paydex score.

B. Bank Loan and Default Results

As discussed in section III.B.1, the *Paydex Score* is frequently used by lenders to measure the financial risk of potential borrowers. In this section, we directly test if minimum wage increases also affects a small businesses' ability to obtain bank loans.

We make use of 1 million publicly available transactions of all 7(a) and 504 loans approved since January 1, 1990 from the US Small Business Administration (SBA). The SBA 7(a) Loan Guarantee program is one of the most popular loan programs offered by the agency and is the most common SBA loan. A 7(a) loan guarantee is provided to lenders to make them more willing to lend money to small businesses with "weaknesses" in their loan applications. We drop all the canceled loans and to be consistent with our Paydex sample we apply the same industry filter as well. The average loan is about $100,000 with a maximum loan size $0.5 million. In this section, we test the differential effect of federally mandated minimum wage increases on the amount of SBA guaranteed bank loans offered to small businesses. We also look at the default risk on previously issued loans around the minimum wage increase time period.

B.1. Loan Amount

We estimate our dynamic regression Equation (3) using logged loan amounts as our dependent variable. We report our results in Table XIV. Column (1) reports results with state and NAICS4×year fixed effects. We report only interaction terms five years before

and after the minimum wage increase. We find that there is no difference in loan amount between the bounded and unbounded states before the federally mandated minimum wage increase. We find loan amounts reduce by 15% one year after the minimum wage increase. The result implies a 9% decline for a dollar increase in federal minimum wage. Similar to Paydex results, the difference between bounded and unbounded states diminishes within 5 years. In Column(2) we add state-level controls for economic conditions i.e., GSP and population (both level and growth). In Column (3) and (4), we replace state fixed effects with borrower zip code fixed effects. We find consistent and negative results across all of these specifications.

B.2. Loan Default

Next, for the loans issued we test if the probability of default of granted loans increases with an increase in minimum wage. In Figure 12, we plot the regression coefficient of the dynamics of the differential effect of federal minimum wage for establishments located in bounded versus unbounded states on default of bank loans issued before the minimum wage increase. The figure plots the regression coefficients of equation (3) with 95% confidence interval, where we run cox-survival model stratified over loan term and NAICS4 $\times$ year after controlling for loan size. The bars plots the regression coefficients of interaction term identifying bounded states for five years before and after the federal minimum wage increase, while dashed lines plots the ninety-five percent confidence interval. The bold-dashed line indicates the period right before the federal minimum wage change. We find that for a dollar increase in the federal minimum wage increase, risk of default on a loan increases by almost 12% by the end of five years.

C. Exit and Entry Results

In the previous sections, we find that with an increase in minimum wage by the federal government, there is a differential effect on the Paydex score of establishments located in bounded versus unbounded states. The effect is stronger for labor-intensive, small and young business and those located in low income and competitive neighborhoods. Further, we find a lower loan amount and higher default risk on bank loans. In this context, it is important to understand, whether this increased cost of labor significantly affects the entry and exit of small businesses.

Note that the Paydex score is one metric such suppliers can use to determine whether a new client or business partner might present possible risks going forward. Poor scores may make suppliers reluctant to do business or may limit the size and scope of services they are

willing to agree to. We check if Paydex score correlates with observed exit rates or not. In Figure 13, we plot exit rates for establishments without a Paydex score and for each group of the Paydex score. We find a clear negative pattern, i.e., the average exit rate is about 11% for establishments without a Paydex score, and this rate decreases with increase in the Paydex score.

Next, we calculate the exits within each county at NAICS5 digit level. We define our dependent variable, *Log(1+exits)* where we count the number of firm exits within each county-NAICS5 industry in a given year. Figure 14 plots the regression coefficient of the dynamics of the differential effect of federal minimum wage for establishments located in bounded versus unbounded states on exits. The figures here plots the regression coefficients of equation (3) with 95% confidence intervals, where the exits at FIPS-NAICS5 level are calculated using NETS data. In regressions, we include county and NAICS5×year fixed effects. The bars plots the regression coefficients of interaction term identifying bounded states for five years before and after the federal minimum wage increase, while dashed lines plots the ninety-five percent confidence interval. The bold-dashed line indicates the period right before the federal minimum wage change. We find that the exits increase by 5% one year after the minimum wage increase. We observe that the exit rate is higher for firms without a Paydex score.

We find a similar pattern of exits for restaurants and businesses employing less than ten workers. We also find a similar pattern for the entry of new businesses. Figure 15 plots the regression coefficient of the dynamics of the differential effect of federal minimum wage for establishments located in bounded versus unbounded states on exits. We observe a decline in entry rate by almost 4% during the year of minimum wage increases and find a similar pattern for businesses without Paydex Score, those in the restaurant industry and with less than ten workers.

Overall, we find an increase in exits and a decline in entry for all industries including minimum wage sensitive industry with an increase in the minimum wage when their state is bounded federal minimum wage.

D. Aggregate Employment Results

So far we find that with an increase in the minimum wage by the federal government, small establishments located in bounded versus unbounded states observe a decline in credit score, a lower loan amount and higher default risk on bank loans. Further, we find an increase in exits and a reduction in the entry for small businesses.

Finally, in this section, we test the aggregate employment effect. We test the differential effect of federal minimum wage on aggregate 1) employment and 2) number of es-

tablishments, in the bounded versus unbounded states. We utilize the annual frequency of BLS Quarterly Census of Employment and Wages (QCEW) database for each county-NAICS2 for the period 1990-2013 and define our dependent variables, *Log(1+Employment)* and *Log(1+Establishment)*. One caveat of this data set is that we can not separate the effect for small and large businesses. We use this data to test the differential effect based on a) industry and b) local personal income. We estimate the regression from Equation 1 and plot the regression coefficients of with 95% confidence interval in Figure 16. We interact the equation by each industry groups and quartile groups based on county-level local personal income one year before the federal minimum wage change. All regressions include county and year fixed effects.

We find that with an increase in the federal minimum wage, with an increase in the minimum wage by the federal government, there is a differential effect on the aggregate employment for counties located in bounded versus unbounded states is negative but statistically insignificant. When we interact the equation by each industry groups, we find a decline in employment in restaurants and retail by 9% and 7%. We find similar results for the number of establishments. Alternatively, we interact the equation by each county-level local personal income quartile one year before the federal minimum wage change. We find a decline in employment and the number of establishments for the two poorest quartiles.

Overall, using aggregate data we find that with an increase in the federal minimum wage, the establishments located in bounded versus unbounded states may not be able to absorb the increase wage cost resulting in a decline in aggregate employment especially in minimum wage sensitive industries and those located in low-income areas.

V. Conclusion

The ongoing policy discussion on increasing federal minimum wage to \$15 *per hour* requires a thorough analysis of its impact on small businesses. Using inter-temporal variation in whether a state's minimum wage is bound by the federal minimum wage and credit-score data for approximately 15.2 million establishments for the period 1989-2013, we find that increases in federal minimum wage worsen the financial health of small businesses in the affected states. Small, young, labor-intensive, minimum-wage sensitive establishments located in bounded states and businesses located in competitive and low-income areas experience higher financial stress. Increases in minimum wage also lead to lower bank loans, a higher risk of loan default, higher exit rate and lower entry rate for affected small businesses. The evidence suggests that some small businesses are unable or unwilling to pass-through costs to customers immediately and consequently experience financial stress. Overall, our results

document the unintended effect of the one-size-fits-all federal minimum wage increases on small businesses in industries and areas that may not be able to absorb the increased cost of labor and thereby feel financially stressed or may even default.

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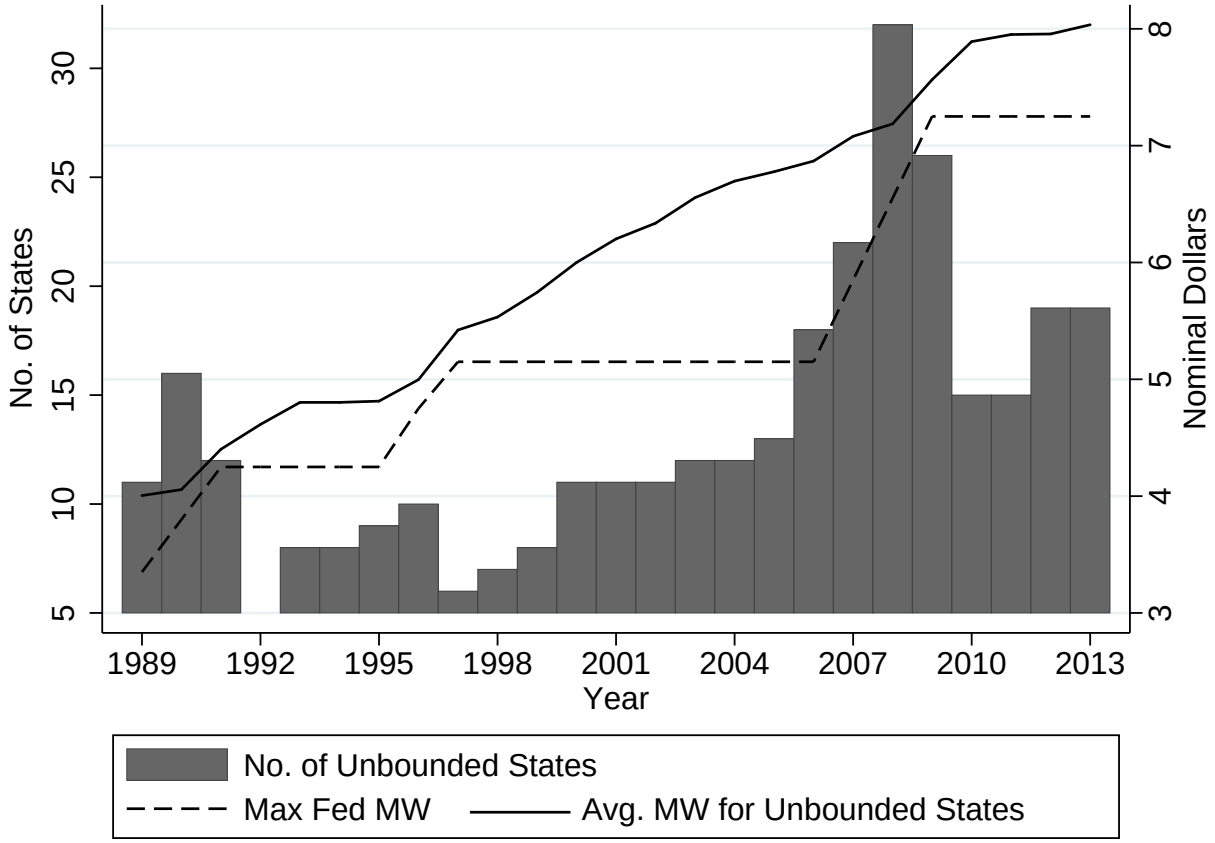


Figure 1: Minimum Wage and Unbounded States: The bar (left-axis) shows by year the number of states with minimum wage above the federal mandated minimum wage (unbounded states) in each year between 1989 and 2013. The dash line and solid line (right-axis) plots the average federal minimum wage per hour and average minimum wage in unbounded states, respectively. Calculated based on Source: Bureau of Labour Statistics

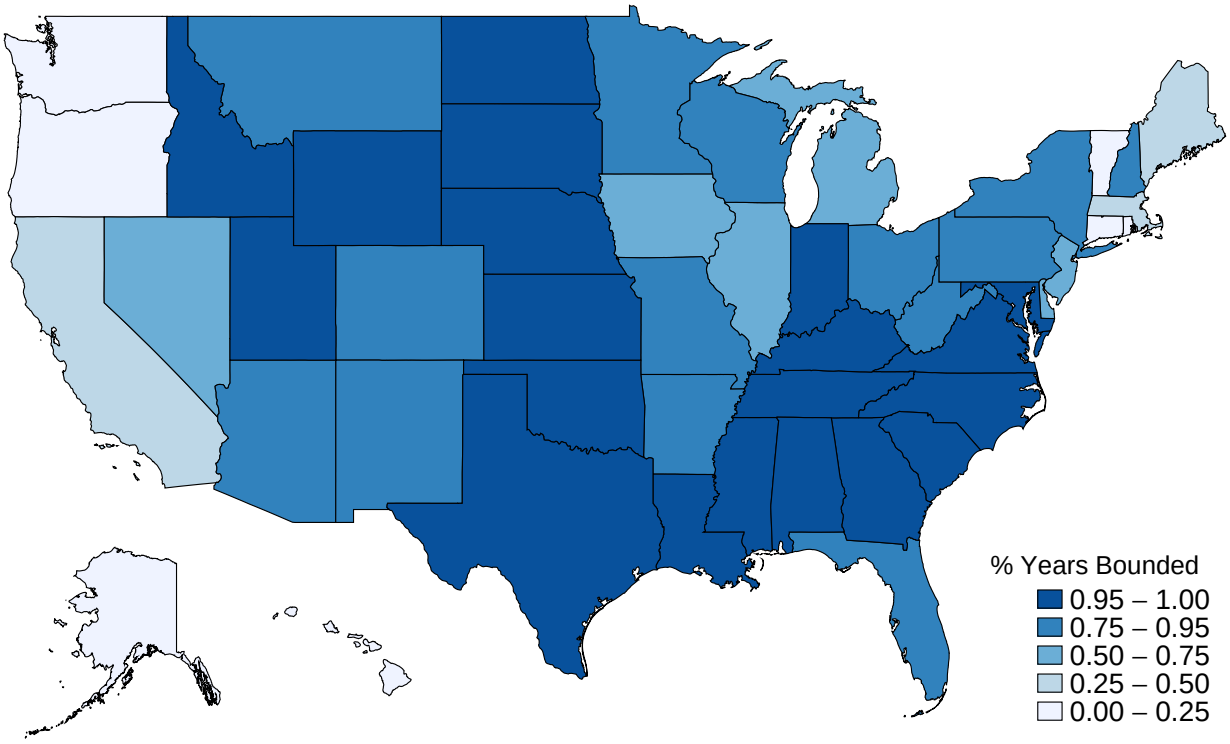


Figure 2: Bounded States by Year: The map plots the % of years during 1989-2013 a given state has average minimum wage bounded by maximum federal minimum wage. The dark shade reflects that states which are mostly bounded by federal mandated minimum wage. Calculated based on Source: Bureau of Labour Statistics

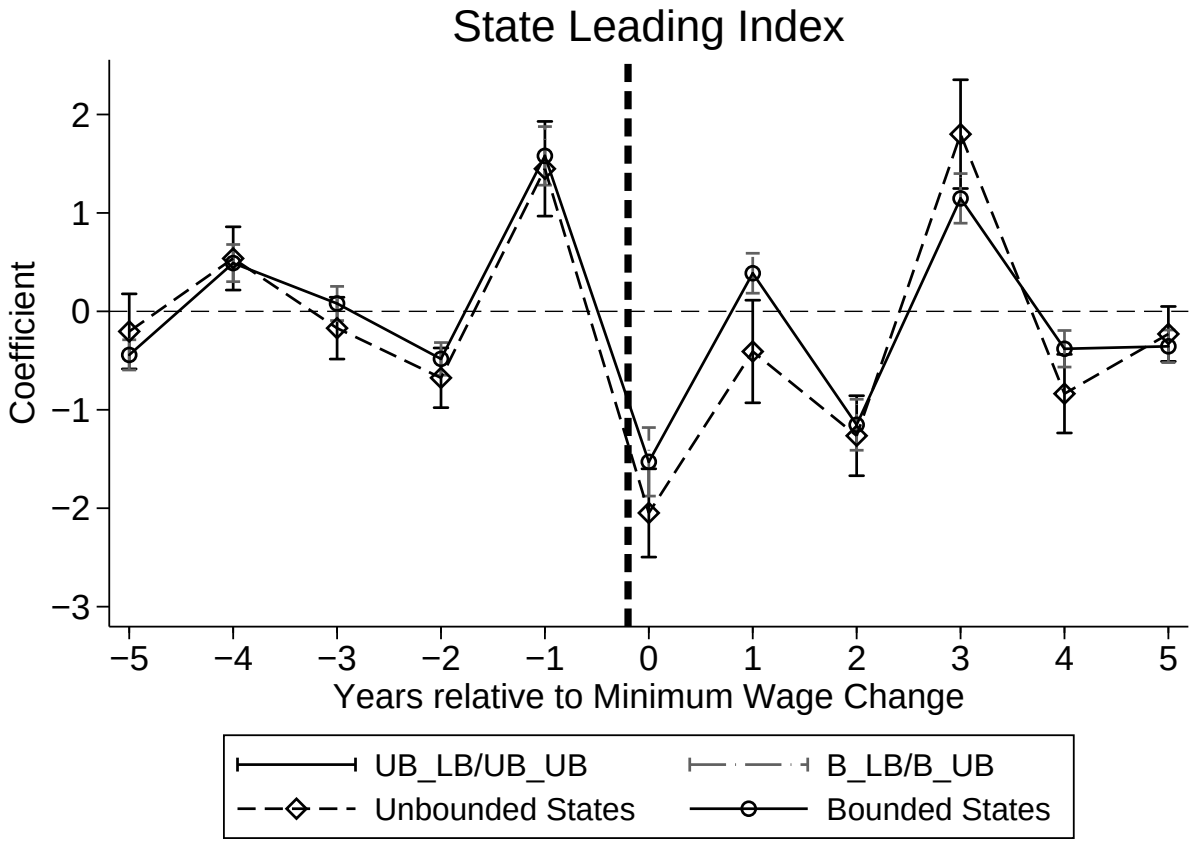


Figure 3: State Leading Index Dynamics: We test the dynamics of the differential trends of bounded versus unbounded states around federal minimum wage increase. This figure plots the regression coefficients of equation (2) with ninety five percent confidence interval. The solid line with circle plots the regression coefficients for bounded states, while dashed line with diamonds plots the coefficient for unbounded states. The bold-dashed line indicates the period right before the federal minimum wage change.

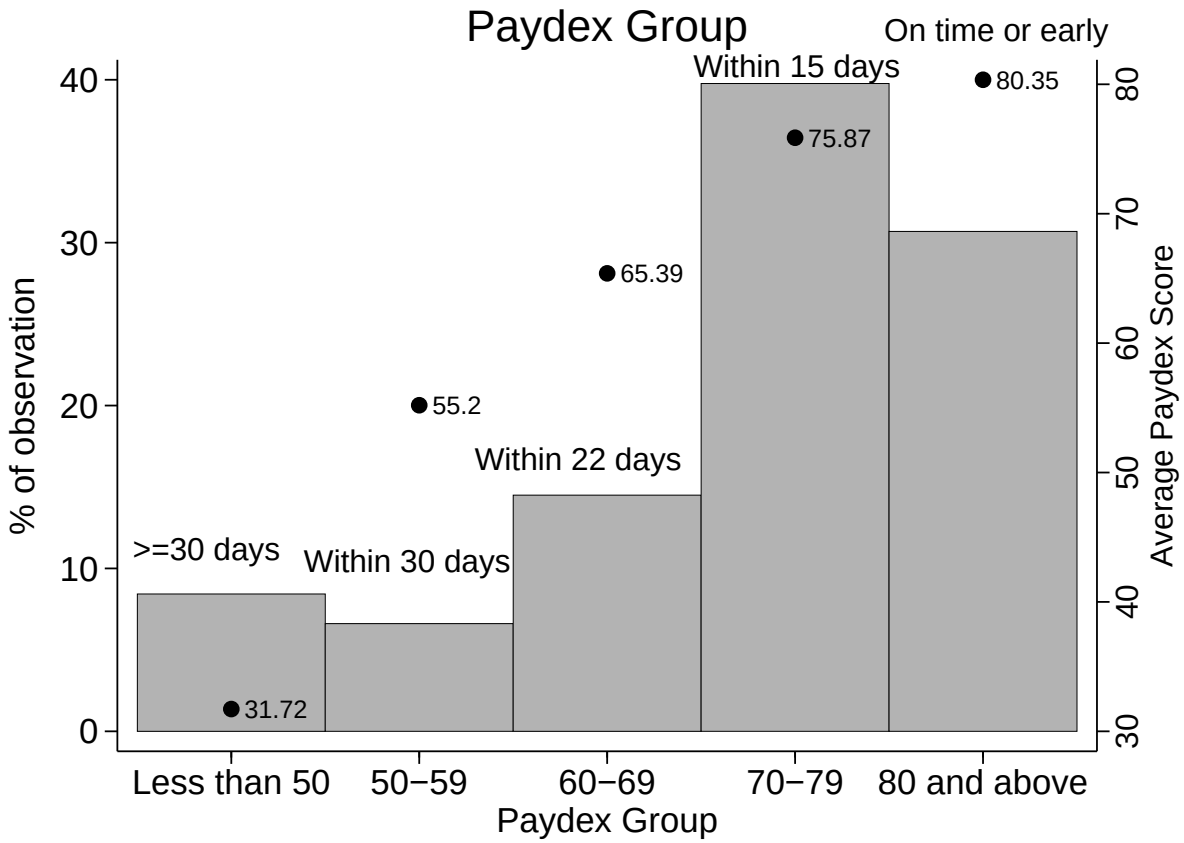


Figure 4: Paydex Group Summary: The bars in the figure plots the % of observations (left-axis) in each paydex group, while the circle dots represent the mean paydex (right-axis) score in each group.

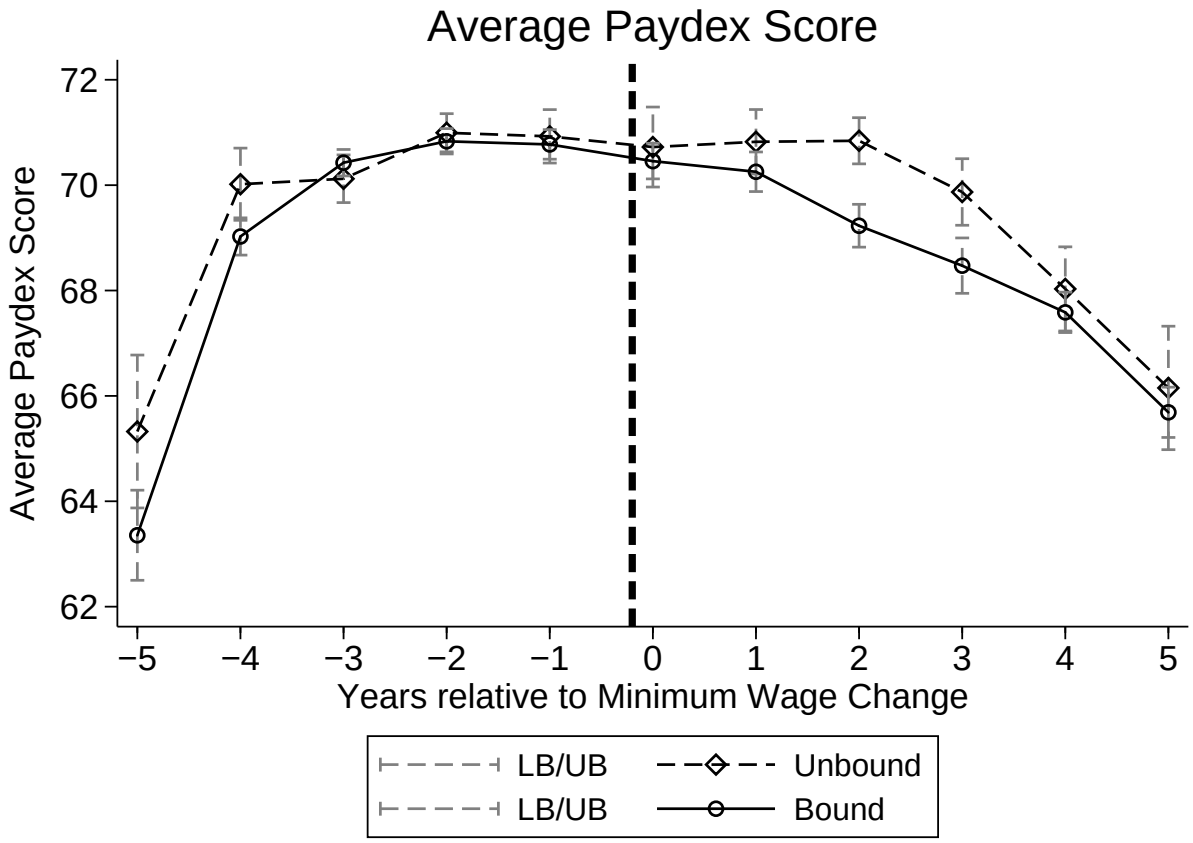


Figure 5: Paydex Score Dynamics I: We test the dynamics of the differential effect of federal minimum wage on Paydex score for establishments located in bounded versus unbounded states. This figure plots the Average Paydex Score with ninety-five percent confidence interval. The solid line with circle plots the average Paydex score for establishments located in bounded states, while dashed line with diamonds plots the average of Paydex score for unbounded states. The bold-dashed line indicates the period right before the federal minimum wage change. Standard errors in brackets and are clustered at the state level.

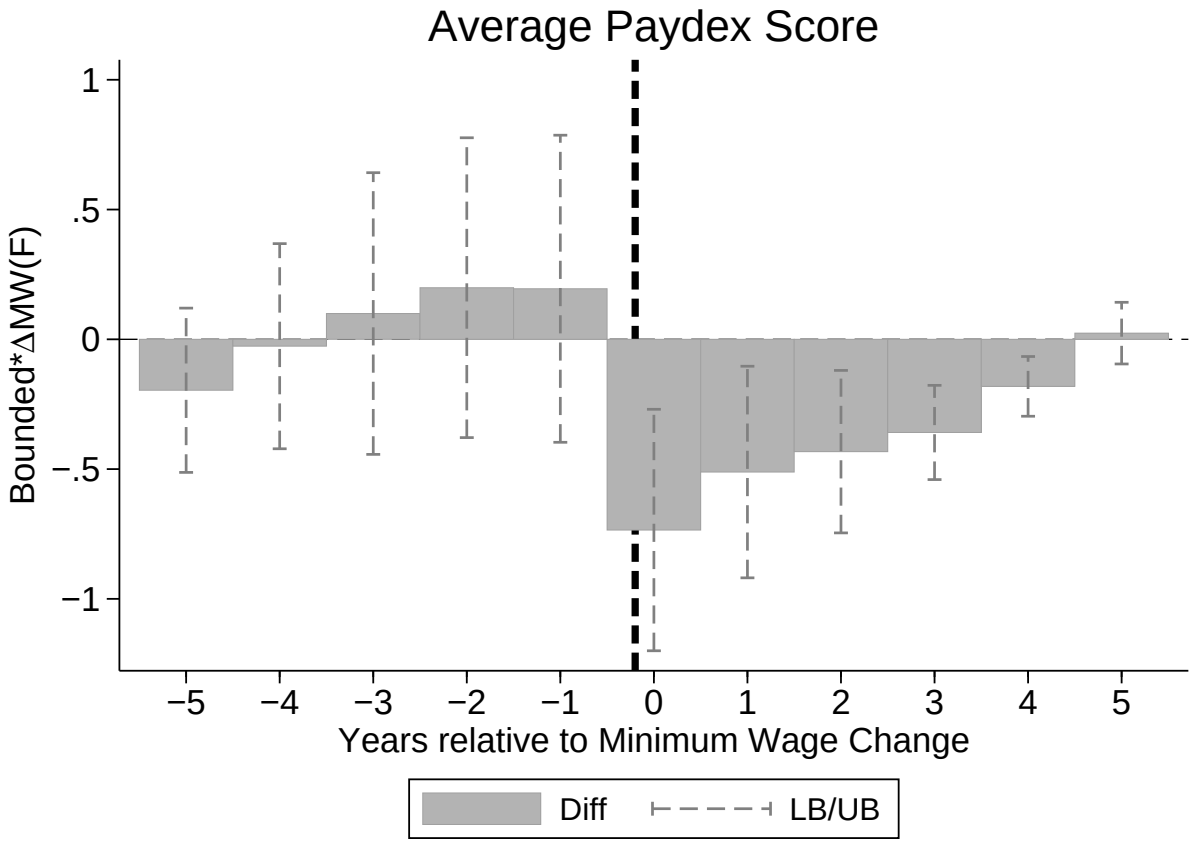


Figure 6: Paydex Score Dynamics II: We test the dynamics of the differential effect of federal minimum wage on the Paydex score for establishments located in bounded versus unbounded states. This figure plots the regression coefficients of equation (3) with ninety-five percent confidence interval. The bars plots the regression coefficients of interaction term identifying bounded states for five years before and after the federal minimum wage increase, while dashed lines plots the ninety-five percent confidence interval. The bold-dashed line indicates the period right before the federal minimum wage change.

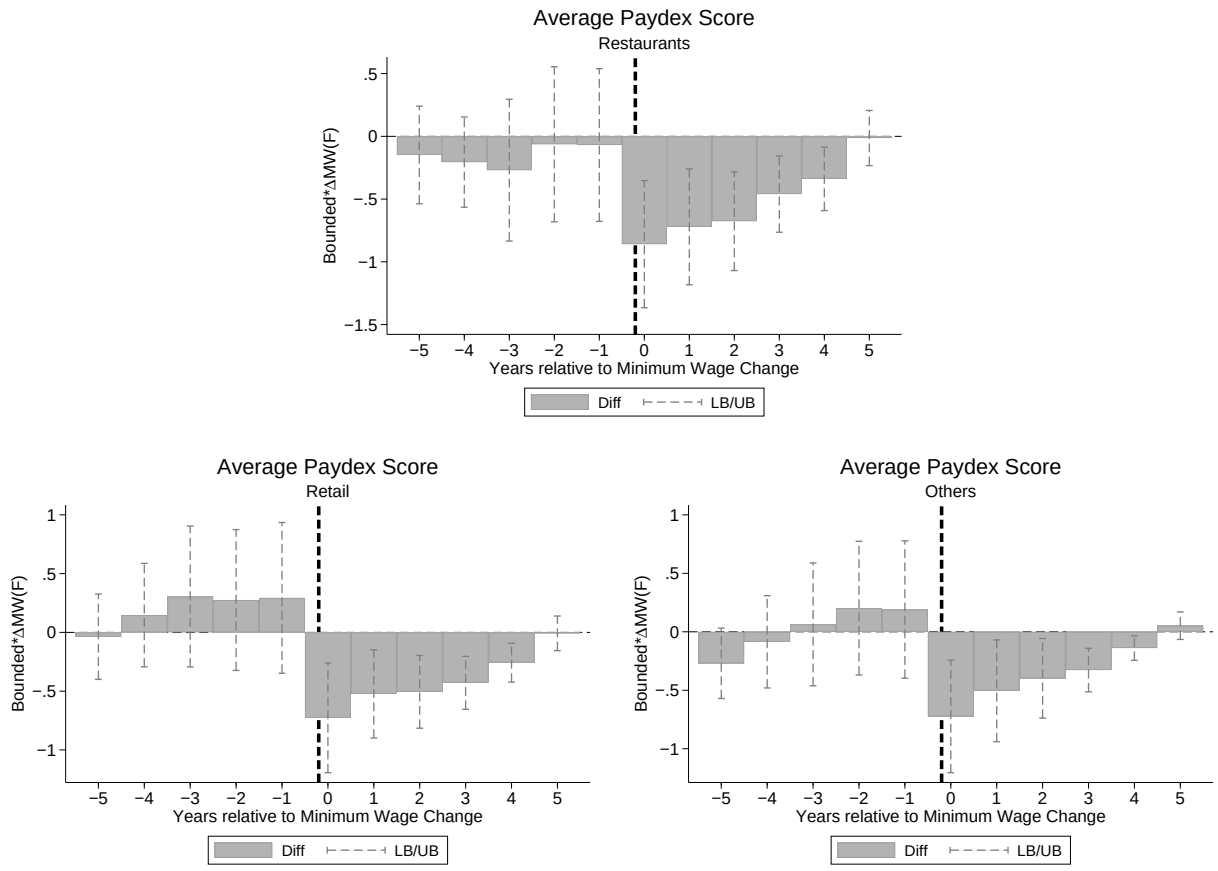


Figure 7: Paydex Score Dynamics–Industry Heterogeneity: We test the dynamics of the differential effect of federal minimum wage on the Paydex score for establishments located in bounded versus unbounded states based on industry heterogeneity. The figures here plot the regression coefficients of equation (3) with 95% confidence interval for each group. The bold-dashed line indicates the period right before the federal minimum wage change. We present plots for a) Restaurants (NAICS2 72) b) Retail (NAICS2 44 and 45) and c) Others.

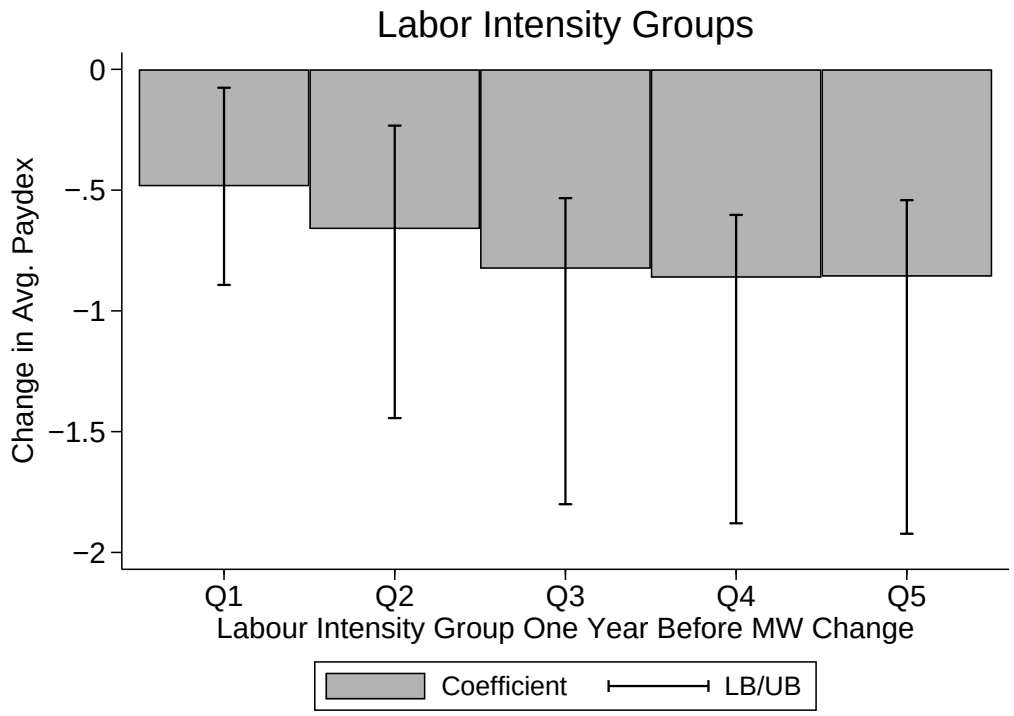


Figure 8: Paydex Score–Labour Heterogeneity: We test the differential effect of federal minimum wage on the Paydex score for establishments located in bounded versus unbounded states based on establishment's labor intensity. The figures here plot the regression coefficients of equation 1 with 95% confidence interval, where we interact the equation by each quintile group based on labor intensity one year before the federal minimum wage change.

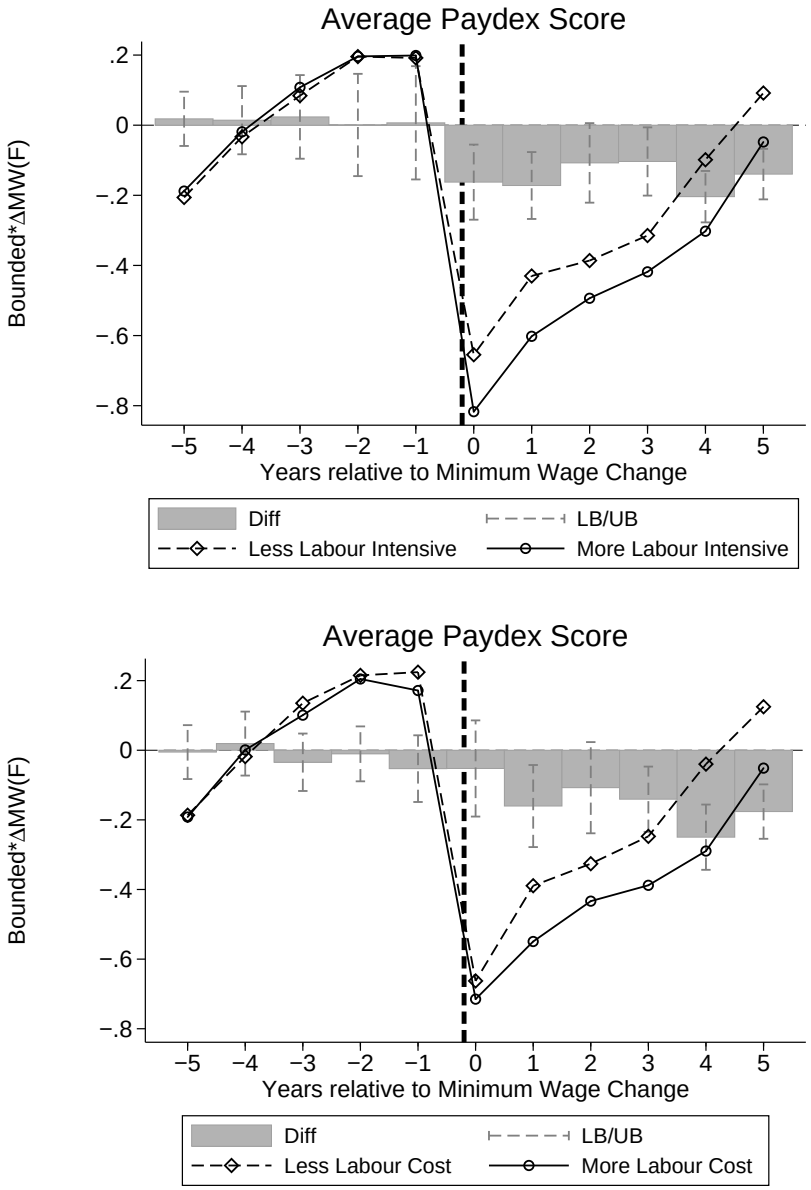


Figure 9: Paydex Score Dynamics–Labour Heterogeneity: We test the dynamics of the differential effect of federal minimum wage on Paydex score for establishments located in bounded versus unbounded states based on establishment's labour utilization heterogeneity. The figures here plot the regression coefficients of equation 3 with 95% confidence interval, where we interact the equation by each median group. The solid line with circle plots the regression coefficients for more labour intensive/cost establishments, while dashed line with diamonds plots the coefficient for less labour intensive/cost establishments. The bold-dashed line indicates the period right before the federal minimum wage change.

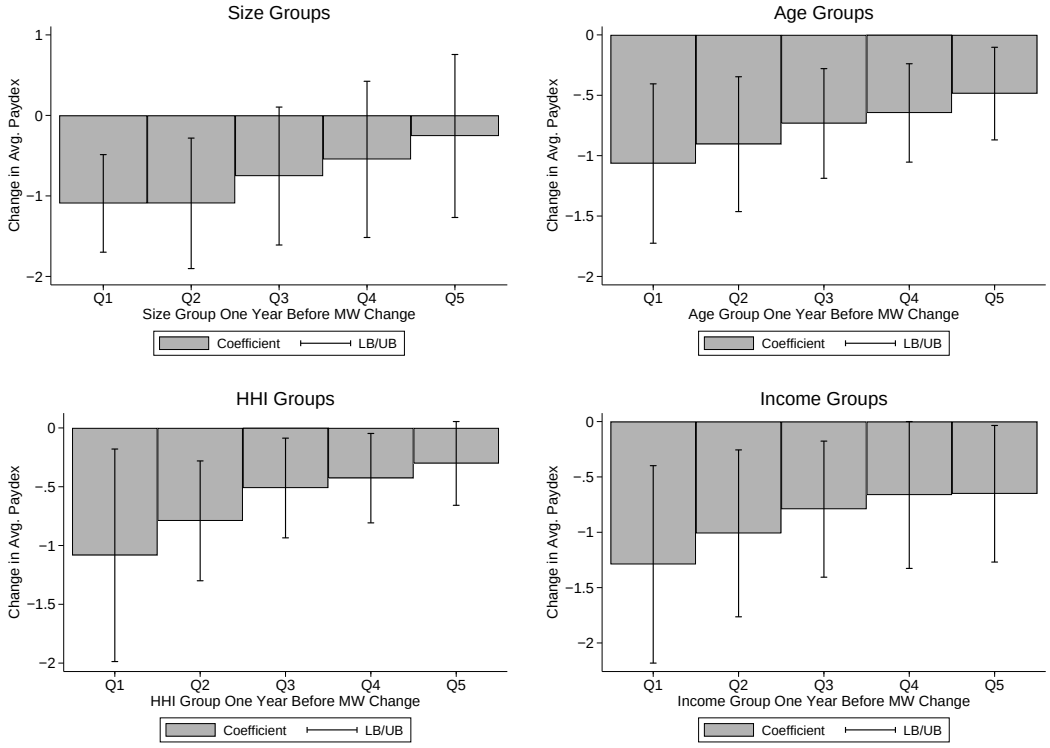


Figure 10: Paydex Score–Heterogeneity: We test the differential effect of federal minimum wage on Paydex score for establishments located in bounded versus unbounded states based on establishment's a) size, b) age, c) competition in local area and d) local personal income. The figures here plot the regression coefficients of equation 1 with 95% confidence interval, where we interact the equation by each quintile group based on above measures one year before the federal minimum wage change.

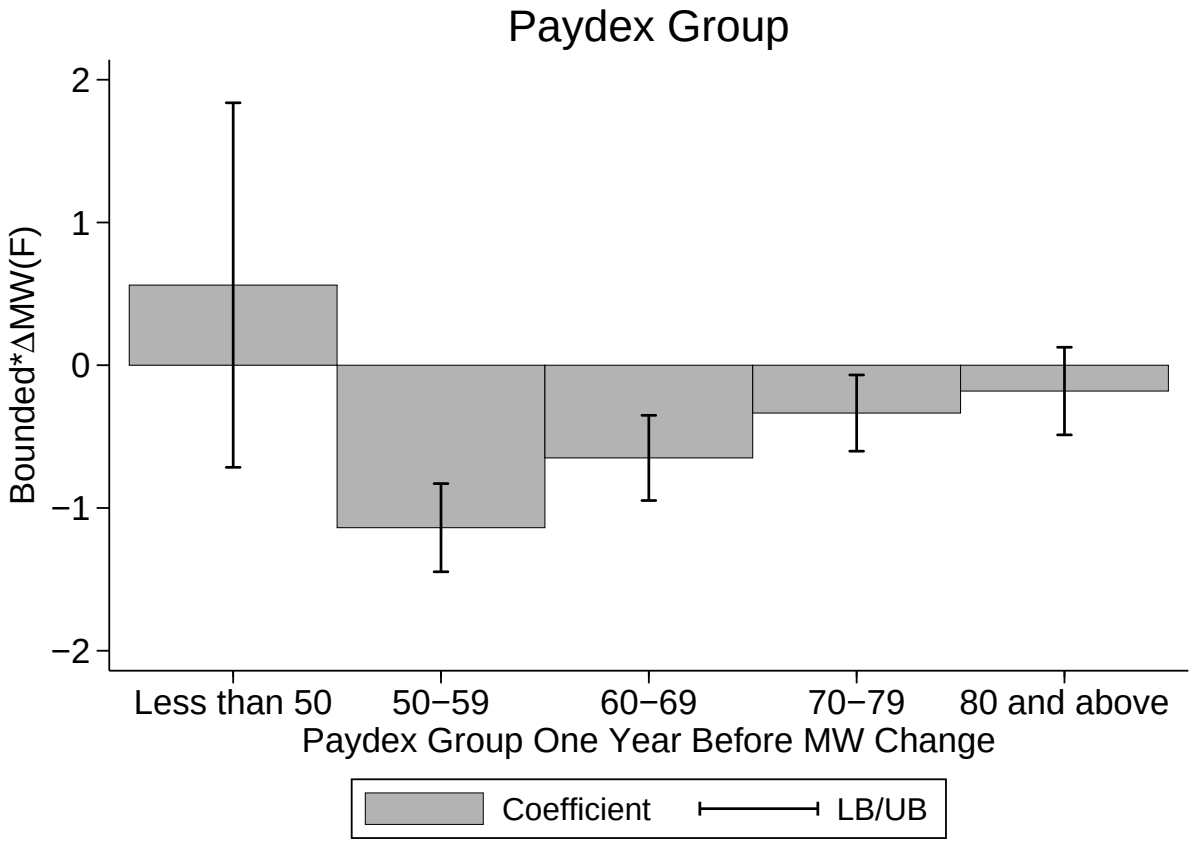


Figure 11: Paydex Group: The figure plots the regression coefficients of equation 1 with 95% confidence interval for different paydex groups defined one year before the federal minimum wage change for bounded and unbounded states.

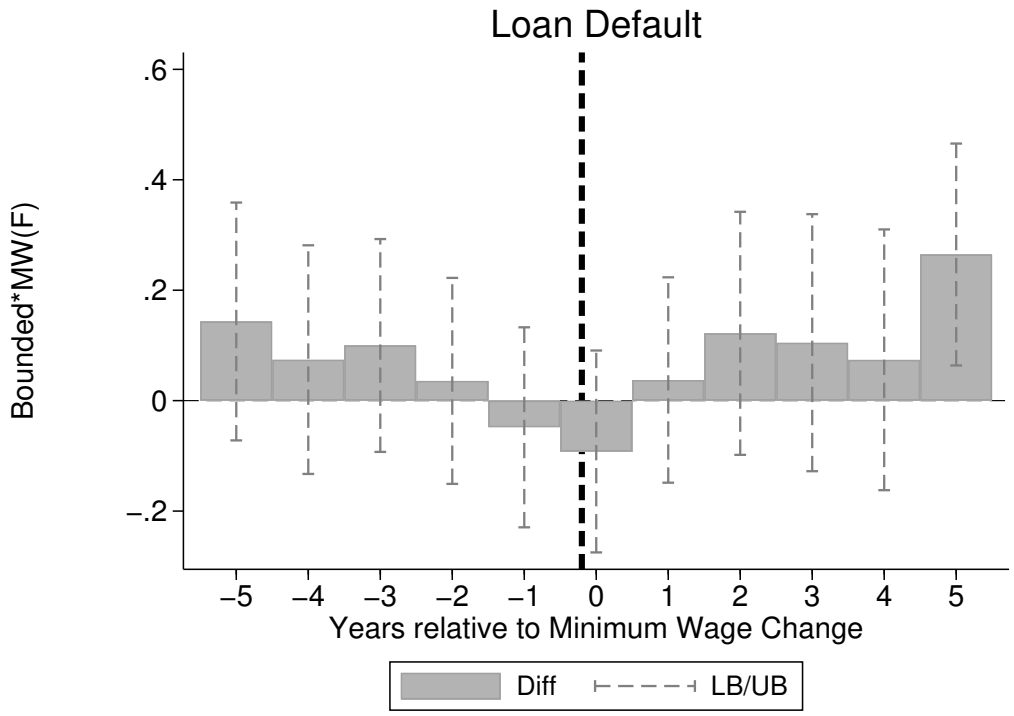


Figure 12: Bank Loans Default: The figure plots the regression coefficient of the dynamics of the differential effect of federal minimum wage on Paydex score for establishments located in bounded versus unbounded states on default of bank loans issued before the minimum wage increase. The figure here plots the regression coefficients of equation 3 with 95% confidence interval, where we run cox-survival model stratified over loan term and NAICS4 $\times$ year after controlling for loan size. The bars plots the regression coefficients of interaction term identifying bounded states for 5 year before and after the federal minimum wage increase, while dashed lines plots the ninety five percent confidence interval. The bold-dashed line indicates the period right before the federal minimum wage change.

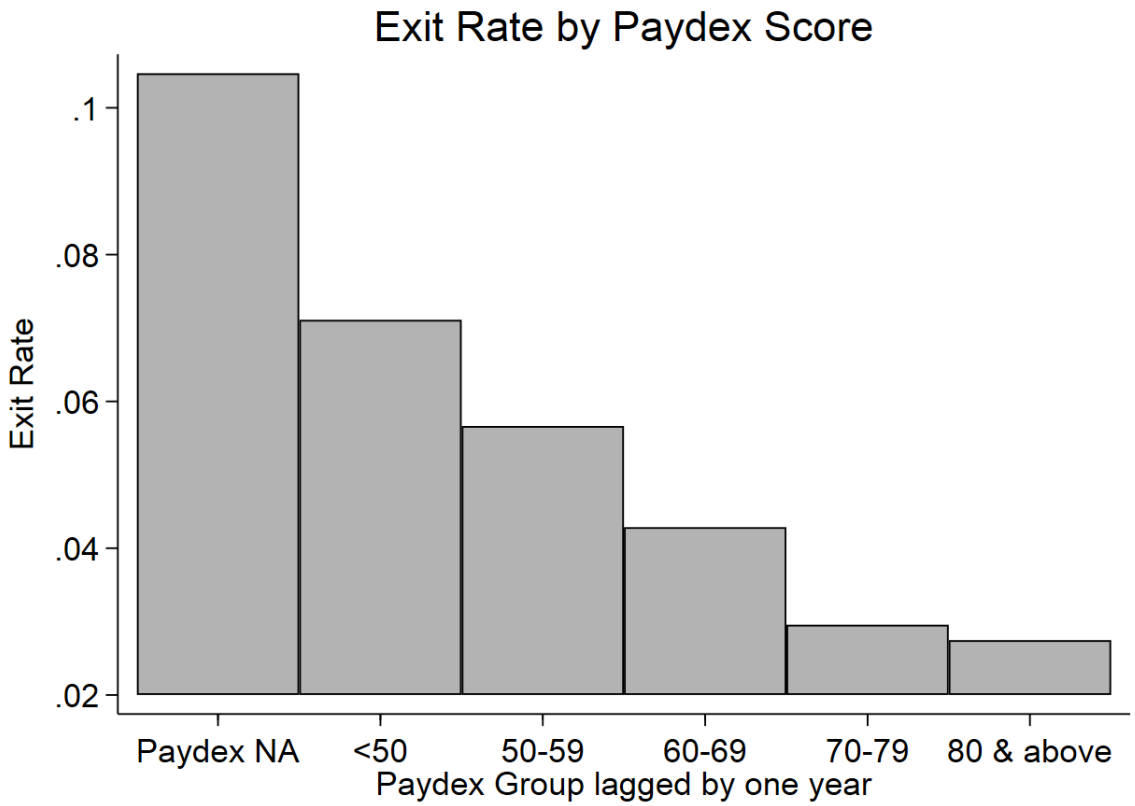


Figure 13: Exits by Paydex Group: The figure plots average exit rate sample without Paydex score and for different Paydex groups lagged by one year.

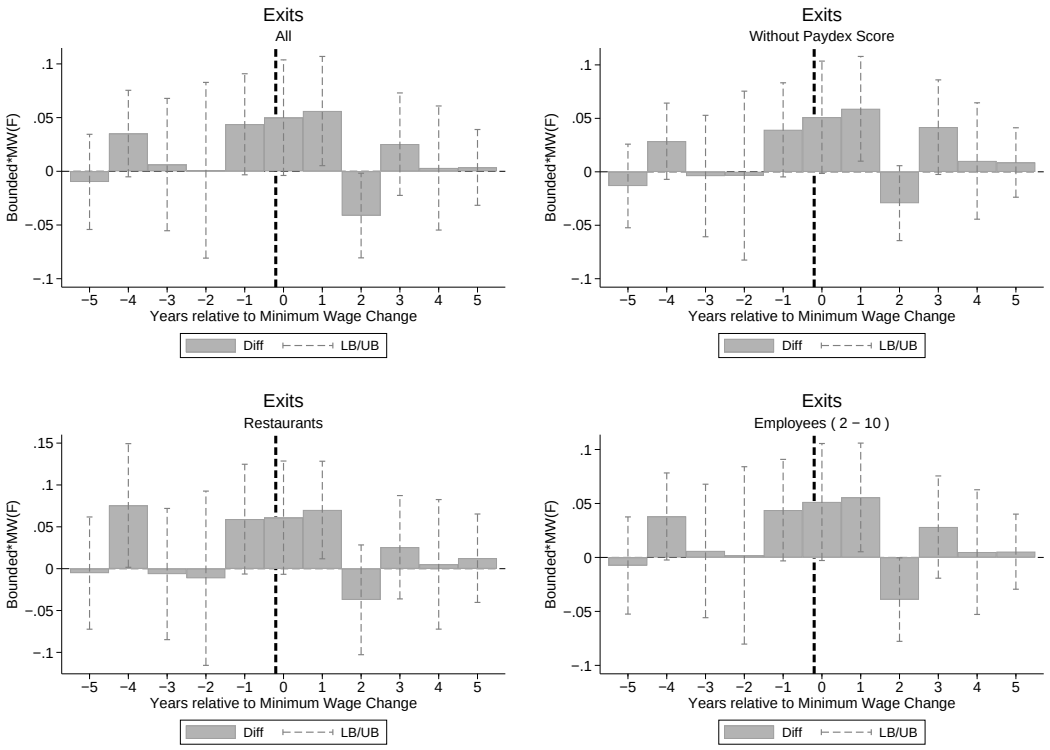


Figure 14: Exits: The figures plot the regression coefficient of the dynamics of the differential effect of federal minimum wage for establishments located in bounded versus unbounded states on exit rates. We define our dependent variable, *Log(1+exits)* where we count the number of firm exits within each county-NAICS5 industry in a given year for a) All Industries, b) Businesses without Paydex Score, c) Restaurants (NAICS2 72) and d) Businesses with less than ten workers. The figures plot the regression coefficient of the dynamics of the differential effect of federal minimum wage for establishments located in bounded versus unbounded states on exits. The figures here plots the regression coefficients of equation (3) with 95% confidence interval, where the exits at FIPS-NAICS5 level are calculated using NETS data. In regressions, we include county and NAICS5×year fixed effects. The bars plots the regression coefficients of interaction term identifying bounded states for five years before and after the federal minimum wage increase, while dashed lines plot the ninety-five percent confidence interval. The bold-dashed line indicates the period right before the federal minimum wage change.

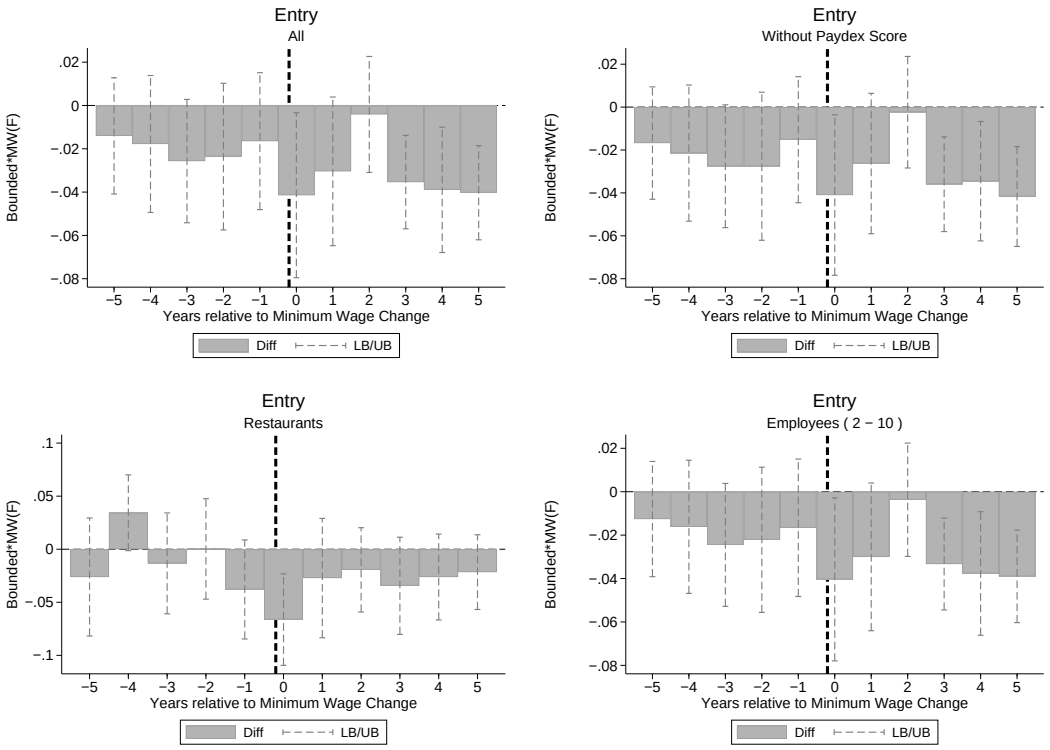


Figure 15: Entry: The figures plot the regression coefficient of the dynamics of the differential effect of federal minimum wage for establishments located in bounded versus unbounded states on entry rates. We define our dependent variable, *Log(1+entry)* where we count the number of firms enters within each county-NAICS5 industry in a given year for a) All Industries, b) Businesses without Paydex Score, c) Restaurants (NAICS2 72) and d) Businesses with less than ten workers. The figures plot the regression coefficient of the dynamics of the differential effect of federal minimum wage for establishments located in bounded versus unbounded states on entry rates. The figures here plots the regression coefficients of equation (3) with 95% confidence interval, where the entry at FIPS-NAICS5 level are calculated using NETS data. In regressions, we include county and NAICS5×year fixed effects. The bars plots the regression coefficients of interaction term identifying bounded states for five years before and after the federal minimum wage increase, while dashed lines plot the ninety-five percent confidence interval. The bold-dashed line indicates the period right before the federal minimum wage change.

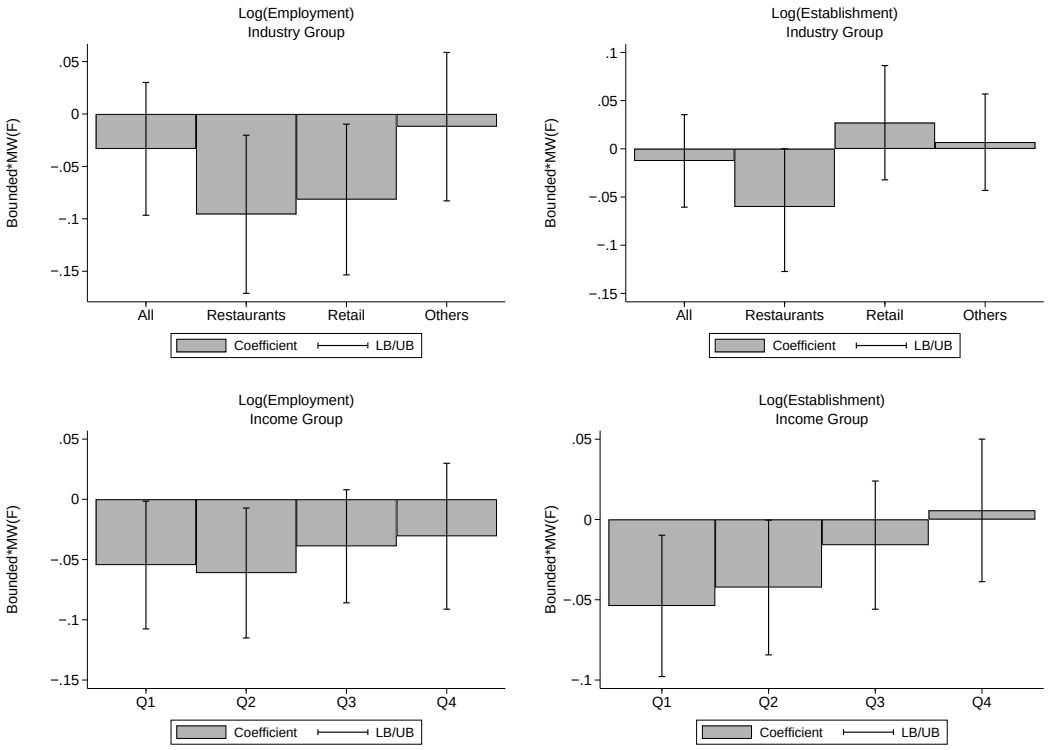


Figure 16: Aggregate Employment and Establishments: We test the differential effect of federal minimum wage on aggregate 1) employment and 2) number of establishments in bounded versus unbounded states based on a) industry and b) local personal income. We utilize annual frequency of BLS Quarterly Census of Employment and Wages (QCEW) database for each county-NAICS2 for period 1990-2013 and define our dependent variables, *Log(1+Employment)* and *Log(1+Establishment)*. The figures here plot the regression coefficients of equation 1 with 95% confidence interval, where we interact the equation by each industry groups and quartile groups based on local personal income one year before the federal minimum wage change. In regressions, we include county and year fixed effects. The bars plots the regression coefficients of interaction term identifying bounded states and the federal minimum wage increase, while lines plot the ninety-five percent confidence interval.

Table I: Summary Statistics

This table reports summary statistics for our sample. Panel A report the summary statistics. Panel B reports summary statistics for federal and state minimum wage during 1989-2013.

Panel A: Establishment Sample

	All			With Paydex Score			Without Paydex Score		
Observations	72,375,466			31,083,694			41,291,772		
	Median	Mean	SD	Median	Mean	SD	Median	Mean	SD
Paydex Score									
Minimum	74	67.35	17.13	74	67.35	17.13	-	-	-
Maximum	80	73.92	12.74	80	73.92	12.74	-	-	-
Average	76.5	70.63	13.12	76.5	70.63	13.12	-	-	-
Exit	0	0.05	0.21	0	0.03	0.16	0	0.06	0.24
Sales ($ million)	0.25	0.71	1.33	0.49	1.41	3.12	0.17	0.34	0.68
Employees	3	6.8	9.7	5	10.90	17.68	2	4.29	5.82
Age (in years)	12	17.7	17.0	17	22	18.77	9	14.5	14.7
Employee-to-Sales	14.28	18.28	15.39	12.0	15.34	12.99	16.1	20.48	16.30
HHI Index	0.07	0.17	0.24	0.09	0.19	0.25	0.06	0.16	0.23

Panel B: Minimum Wage

	N	Median	Mean	SD
All				
Average Federal Minimum Wage ($ per hour)	1,275	5.15	5.25	1.13
Average State Minimum Wage ($ per hour)	1,275	5.15	5.50	1.29
Bound_{t-1}	1,275	1	0.74	0.44
$\Delta MWDummy(F)$	1,275	0.00	0.44	0.50
For $\Delta MWDummy(F)$=1				
$\Delta MW(F)$ ($ per hour)	561	0.34	0.35	0.22
$\%\Delta MW(F)$	561	0.06	0.07	0.04
Bounded States				
Average Federal Minimum Wage ($ per hour)	939	5.15	5.14	1.09
Average State Minimum Wage ($ per hour)	939	5.15	5.17	1.10
For $\Delta MWDummy(F)$=1				
$\Delta MW(S)$($ per hour)	399	0.34	0.34	0.26
$\%\Delta MW(S)$	399	0.06	0.07	0.05
Unbounded States				
Average Federal Minimum Wage ($ per hour)	336	5.15	5.55	1.18
Average State Minimum Wage ($ per hour)	336	6.75	6.42	1.35
For $\Delta MWDummy(F)$=1				
$\Delta MW(S)$ ($ per hour)	162	0.15	0.24	0.26
$\%\Delta MW(S)$	162	0.03	0.04	0.05

Table II: Effect of Minimum Wage on Firm Credit Quality

This table report results from our baseline regressions equation (1) estimating the differential effect of federally mandated minimum wage on establishment's credit score using Paydex Score as a dependent variable. In Column (1)-Column (3) we estimate the regression equation without establishment controls, while Column (4)-Column (6) report results with a full set of establishment-level control variables ($X_{i,t-1}$) in our regressions: size (measured as Log(sales)), age (Log(age)), number of employees (Log(employees)) and sales growth and are winsorized at their 1^{st} and 99^{th} percentiles. Column (1) and (4) report results for a minimum Paydex score during the year, while Column (2) and (5) report results for a maximum Paydex score during the year. In Column (3) and (6), we report results for an average score during the year measured as mean of minimum and maximum score during the year. $Bound_{s,t-1}$ is a dummy variable equal to 1 if at the beginning of fiscal year t if establishments' state s has a state minimum wage less than or equal to the maximum federal minimum wage. $\Delta MW(F)_t$ measures the nominal dollar increase in maximum federal minimum wage in year t, otherwise zero. Therefore, the interaction-term, $Bound_{s,t-1} \times \Delta MW(F)_t$ identifies the differential effect of federally mandated minimum wage over and above the effect of state-level variation caused by a change in state-determined minimum wage and changing status for bound to unbound or vice-à-versa. Standard errors in brackets and are clustered at the state level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Dependent Variable:	Paydex Score					
	(1) Min.	(2) Max.	(3) Average	(4) Min.	(5) Max.	(6) Average
Bound$_{s,t-1} \times \Delta MW(F)_t$	-0.90***	-0.60**	-0.75***	-0.87***	-0.58***	-0.73***
	[0.30]	[0.23]	[0.24]	[0.30]	[0.21]	[0.23]
Bound$_{s,t-1}$	-0.04	-0.00	-0.02	-0.07	-0.03	-0.05
	[0.16]	[0.13]	[0.14]	[0.16]	[0.12]	[0.14]
Establishment & Year FE	✓	✓	✓	✓	✓	✓
Establishment Controls				✓	✓	✓
Adj.-R^2	0.59	0.56	0.61	0.59	0.56	0.62
No. of Establishments		4,447,312			4,447,312	
Obs.		31,031,426			31,031,426	

Table III: Local Economic Conditions

This table report results from our baseline regression equation (1) where we include additional controls for local economic conditions at state, county and zip-level to our baseline specification, i.e., Column (6) of Table II. In Column (1), we control for state-level economic conditions by including both level and growth in GSP and population. In Column (2), we control for partisan at the state-level. In Column (3), we include the county-level lagged unemployment rate, labor force and growth in the unemployment rate. While in Column (4) to (6), we control for aggregate sales growth, personal income (lagged level and growth) and house price (lagged level and growth) at zip-level, respectively. In Column (7), we include all the controls at state, county and zip level. Standard errors in brackets and are clustered at the state level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Dependent Variable:	Average Paydex Score						
	State-Level		County-Level	Zip-Level			All
	(1) Economic Conditions	(2) Political Conditions	(3) Unemp. Rate	(4) Agg. Sales Growth	(5) Personal Income	(6) House Price	(7) All
$\text{Bound}_{s,t-1} \times \Delta MW(F)_t$	-0.83***	-0.71***	-0.67***	-0.73***	-0.88***	-0.64**	-0.59***
	[0.23]	[0.22]	[0.19]	[0.23]	[0.32]	[0.25]	[0.20]
$\text{Bound}_{s,t-1}$	-0.06	-0.01	-0.04	-0.05	0.12	0.05	0.10
	[0.11]	[0.15]	[0.12]	[0.14]	[0.23]	[0.15]	[0.14]
$\text{Log(GSP)}_{s,t-1}$	1.25***						0.69**
	[0.19]						[0.33]
GSP Growth $_{s,t-1}$	0.11*						0.01
	[0.06]						[0.07]
$\text{Log(Population)}_{s,t-1}$	-1.12***						-0.47*
	[0.24]						[0.26]
$\text{Population Growth}_{s,t-1}$	0.34***						0.19*
	[0.11]						[0.10]
$\text{Democratic Governor}_{s,t}$		0.03					-0.01
		[0.12]					[0.15]
$\text{Democratic House}_{s,t}$		0.11					0.20*
		[0.11]					[0.12]
$\text{Democratic Senate}_{s,t}$		0.21					0.03
		[0.13]					[0.15]
$\text{Democratic Both}_{s,t}$		-0.08					-0.07
		[0.14]					[0.19]
$\text{Unemployment Rate}_{c,t-1}$			-0.26***				-0.28***
			[0.03]				[0.05]
$\Delta\text{Unemployment Rate}_{c,t}$			-0.12***				-0.16***
			[0.02]				[0.02]
$\text{Log(Labour Force)}_{c,t-1}$			-0.00				0.06
			[0.04]				[0.06]
$\text{Agg. Sales Growth}_{z,t}$				0.05*			0.05
				[0.03]			[0.03]
$\text{Log(Personal Income)}_{z,t-1}$					0.58***		-0.74***
					[0.11]		[0.18]
$\Delta\text{Log(Personal Income)}_{z,t}$					0.16***		-0.10
					[0.06]		[0.12]
$\text{Log(House Price Index)}_{z,t-1}$						1.28***	1.11***
						[0.13]	[0.23]
$\Delta\text{Log(House Price Index)}_{z,t}$						0.35	-0.86**
						[0.33]	[0.38]
Est & Year FE	✓	✓	✓	✓	✓	✓	✓
Est. controls	✓	✓	✓	✓	✓	✓	✓
Adj.-R^2	0.62	0.62	0.62	0.62	0.68	0.64	0.68
No. of Est	4,420,503	4,447,312	4,419,080	4,447,287	3,692,469	3,503,129	3,131,759
Obs.	30,871,118	31,031,426	30,845,366	31,030,782	18,732,437	21,710,331	15,690,130

Table IV: Robustness

In this table we report results for various robustness test on our baseline specification, i.e., Column (6) of Table II. In Column (1), we report results where we interact the establishment controls with the bound dummy. Column (2) reports regression results where we include NAICS4 industry-year fixed effects. In Column (3), we do not drop any data and report regression results on the full sample. Column (4) we include all the industries that we drop from our baseline specification. Column (5) we also include multi-establishment businesses to our baseline specification. Column (6), we report results for multi-establishment businesses. We replace $\Delta MW(F)_t$ with $\%\Delta MW(F)_t$ and $\Delta Dummy(F)_t$ report results in Column (7) and Column (8), respectively. $\Delta MWDummy(F)_t$ is an indicator variable equal to 1 if there is an increase in maximum federal minimum wage in year t, otherwise zero. While, $\%\Delta MW(F)_t$ is change measure indicating the percentage increase in minimum wage by the federal government in year t, otherwise zero. In Column (9), we report the dynamics. $\Delta MWDummy(F)_t$ Yr1 is an indicator variable equal to 1 that identifies the year 1990, 1996 and 2007. $\Delta MWDummy(F)_t$ Yr2 identifies the year 1991, 1997 and 2008. $\Delta MWDummy(F)_t$ Yr3 identifies year 2009. Standard errors in brackets and are clustered at the state level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Dependent Variable:	Average Paydex Score								
	(1) Bound× Controls	(2) NAICS4 × Year FEs	(3) No Drop	(4) All Industries	(5) Include Multi-Est	(6) Only Multi-Est	(7) Percentage Change	(8) Dummy	(9) Series
$\text{Bound}_{s,t-1} \times$	-0.70***	-0.74***	-0.63***	-0.68***	-0.65***	-0.24*			
$\Delta MW(F)_t$	[0.24]	[0.23]	[0.21]	[0.23]	[0.22]	[0.13]			
$\text{Bound}_{s,t-1} \times$							-3.85***		
$\%\Delta MW(F)_t$							[1.33]		
$\text{Bound}_{s,t-1} \times$								-0.43***	
$\Delta MWDummy(F)_t$								[0.15]	
$\text{Bound}_{s,t-1} \times$									-0.48*
$\Delta MWDummy(F)_t$ Yr1									[0.25]
$\text{Bound}_{s,t-1} \times$									-0.40**
$\Delta MWDummy(F)_t$ Yr2									[0.17]
$\text{Bound}_{s,t-1} \times$									-0.42**
$\Delta MWDummy(F)_t$ Yr3									[0.17]
$\text{Bound}_{s,t-1}$	-0.57	-0.03	-0.04	-0.07	-0.07	-0.20	-0.06	-0.07	-0.07
	[0.55]	[0.13]	[0.12]	[0.13]	[0.14]	[0.16]	[0.13]	[0.14]	[0.13]
Est. & Year FE	✓	✓	✓	✓	✓	✓	✓	✓	✓
Est. Controls	✓	✓		✓	✓	✓	✓	✓	✓
Adj.-R^2	0.62	0.62	0.59	0.62	0.60	0.44	0.62	0.62	0.62
No. of Est	4,447,312	4,447,312	15,046,496	6,632,327	4,921,821	474,509	4,447,312	4,447,312	4,447,312
Obs.	31,031,426	31,031,419	90,291,929	45,172,568	37,235,728	6,204,302	31,031,426	31,031,426	31,031,426

Table V: Placebo Test

In this table we report results for our placebo tests on our baseline specification, i.e., Column (6) of Table II. In Column (1) we report results for establishments that employ researchers (NAICS4 5416, 5417). Column (2) report results for Physicians (NAICS3 621), Column (3) for religious institutions (NAICS3 813), Column (4) for management consultants (NAICS2 55) and Column (5) for education services (NAICS2 61). Standard errors in brackets and are clustered at the state level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Dependent Variable:	Average Paydex Score				
	(1) Researchers	(2) Physicians	(3) Religious Organizations	(4) Management Consultant	(5) Education Services
$\text{Bound}_{s,t-1} \times \Delta MW(F)_t$	-0.46	-0.53	-0.38	-0.12	-0.23
	[0.34]	[0.34]	[0.26]	[0.53]	[0.32]
$\text{Bound}_{s,t-1}$	-0.02	-0.07	-0.17	-0.36*	-0.13
	[0.11]	[0.14]	[0.12]	[0.18]	[0.18]
Establishment & Year FE	✓	✓	✓	✓	✓
Establishment Controls	✓	✓	✓	✓	✓
Adj.-R^2	0.67	0.57	0.61	0.74	0.63
No. of Establishments	150,394	457,352	259,190	12,431	68,674
Obs.	781,528	2,954,854	1,798,595	44,857	475,002

Table VI: Exact and Nearest-Neighbor Matching

This table report results for an exact/nearest neighbor match for our baseline regressions equation (1). For federally mandated minimum wage increase from 2007 to 2009, we use matching methods to identify the right control group. First, for the establishment in the bounded states (treatment group) in the year 2006, we identify exact match based on average Paydex Score within the same NAICS4 industry from the unbounded state (control group). For these exact matches, we determine the nearest neighbor based on other covariates using Euclidean distance. In Table IA2, we report the balance for state-, county- and zip-level observable characteristics. This table reports the results of our baseline regressions equation (1) for the year 2006 to 2013 for the *matched pairs*. $Bound_{s,t-1}$ is a dummy variable equal to 1 if at the beginning of fiscal year t if state s has a state minimum wage less than or equal to the maximum federal minimum wage. $\Delta MW(F)_t$ is the dollar increase in maximum federal minimum wage in year 2007, 2008 and 2009, otherwise zero. Therefore, the interaction-term, $Bound_{s,t-1} \times \Delta MW(F)_t$ identifies the differential effect of federally mandated minimum wage over and above the effect of state-level variation caused by a change in the state-determined minimum wage and changing status for bound to unbound or vice-à-versa. In Column (2)-Column (8), in addition to establishment-level controls, I also include the matching variables as controls. All regression are with matched-pair fixed effect and year fixed effects. Standard errors in brackets and are clustered at the state level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

	Establishment-Level	State-Level		County-Level	Zip-Level			All
	(1) Establishment Characteristics	(2) Economic Conditions	(3) Political Conditions	(4) Unemp. Rate	(5) Agg. Sales Growth	(6) Personal Income	(7) House Price	(8) All
$\text{Bound}_{s,t-1} \times \Delta MW(F)_t$	-0.79**	-0.76***	-0.65**	-0.56***	-0.75*	-0.65**	-0.38**	-0.75***
	[0.38]	[0.28]	[0.28]	[0.20]	[0.38]	[0.28]	[0.17]	[0.18]
$\text{Bound}_{s,t-1}$	0.54**	0.20	0.58***	0.00	0.52**	0.72***	0.27**	0.23*
	[0.24]	[0.17]	[0.18]	[0.11]	[0.23]	[0.18]	[0.11]	[0.12]
Matched-Pair & Year FE	✓	✓	✓	✓	✓	✓	✓	✓
Controls	✓	✓	✓	✓	✓	✓	✓	✓
Adj.-R^2	0.49	0.50	0.49	0.50	0.49	0.55	0.50	0.51
No. of Pairs	861,804	862,818	861,822	863,184	862,303	837,103	662,299	654,266
Obs.	10,699,327	10,809,094	10,664,903	10,770,820	10,683,110	7,120,312	8,234,942	7,780,297

Table VII: Bordering County

This table report heterogeneity of results, our baseline regressions equation 1, based on distance of establishment location from state borders. Column (1)-Column (3), we report results for establishments located in contiguous counties at state borders. Column (1) include al the establishments in contiguous counties. Column (2) we include counties where both the states are either bounded or unbounded by federally mandated minimum wage. In Column (3), in the treatment group we only include state-borders where only one state is bounded by federally mandated minimum wage. In Column (4)-Column (7) we include establishments located in non-contiguous counties. Column (5), Column (6) and Column (7) report results for establishments located within 50-100 miles, 100-150 miles and more than 150 miles, respectively from the state border. In Column (8), we report the difference of Column(7) and Column (5). Here, we only include establishments located within 50-100 miles and those more than 150 miles. $Distance(>150)$ is a dummy variable that identifies establishments located more than 150 miles from the state border. Here we include establishment fixed effects, group specific-year fixed effects and state-year fixed effects. Standard errors in brackets and are clustered at the state level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Dependent Variable:	Average Paydex Score							
	Contiguous Counties			Non-Contiguous Counties				
	All	Both Bounded	One Bounded	All	Distance from Border (in Miles) 50-100	100-150	>150	Diff (7)-(5)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
$\text{Bound}_{s,t-1} \times \Delta MWDummy(F)_t$	-0.40**	-0.46**	-0.17	-0.83***	-0.19	-1.16***	-1.46***	
	[0.18]	[0.20]	[0.18]	[0.22]	[0.23]	[0.41]	[0.41]	
$\text{Bound}_{s,t-1}$	-0.08	-0.41***	-0.06	-0.05	-0.04	0.38	0.11	
	[0.17]	[0.14]	[0.11]	[0.13]	[0.17]	[0.23]	[0.13]	
$\text{Distance}(>150) \times \text{Bound}_{s,t-1} \times \Delta MWDummy(F)_t$								-0.83***
								[0.25]
$\text{Distance}(>150) \times \text{Bound}_{s,t-1}$								-0.10
								[0.20]
Establishment FE	✓	✓	✓	✓	✓	✓	✓	✓
Controls	✓	✓	✓	✓	✓	✓	✓	✓
Group × Year FE								✓
State × Year FE								✓
Adj.-R^2	0.61	0.62	0.66	0.62	0.63	0.62	0.62	0.62
No. of Est.	1,216,115	1,000,972	707,568	3,080,186	1,050,885	403,992	952,167	2,013,780
Obs.	8,793,053	6,574,411	3,739,674	21,056,855	7,370,887	2,697,646	6,002,619	13,448,768

Table VIII: Labour Intensity

This table reports labour heterogeneity for our baseline regression equation (1). We measure the establishment's labor intensity as number of employees per $\$million$ sales. We partition our sample into two groups using the median establishment labor-intensity. We define labor-intensity median one year before the federal minimum wage change and define $MoreLabour$ as indicator variable equal to 1 if the establishment's labor-intensity measure is above median labor-intensity, otherwise zero. We define $Less$ as 1-$MoreLabour$. For $LessLabour$ and $MoreLabour$ establishments, we run our baseline model, i.e., Column (6) of Table II, Panel A, and report results in Column (1) and Column (2), respectively. In Column (3) and (4), we do this analysis using triple-interaction. In Column (3), we include we include establishment controls, establishment fixed effects, and state-year fixed effects. While in Column (4), we further include NAICS4-year fixed effects. Standard errors in brackets and are clustered at the state level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Dependent Variable:	Average Paydex Score			
	(1) Less	(2) More	(3) All	(4) All
$\text{Bound}_{s,t-1} \times \Delta MW(F)_t$	-0.56**	-0.84***		
	[0.22]	[0.26]		
$\text{Bound}_{s,t-1}$	-0.05	-0.03		
	[0.14]	[0.13]		
More Labour $\times$ $\text{Bound}_{s,t-1} \times \Delta MW(F)_t$			-0.24***	-0.24***
			[0.08]	[0.08]
More Labour $\times$ $\text{Bound}_{s,t-1}$			0.01	-0.01
			[0.04]	[0.03]
More Labour $\times$ $\Delta MW(F)_t$			0.23***	0.27***
			[0.06]	[0.04]
Establishment & Year FE	✓	✓	✓	✓
Establishment Controls	✓	✓	✓	✓
State $\times$ Year FE			✓	✓
NAICS4 $\times$ Year FE				✓
Adj.-R^2	0.59	0.66	0.62	0.62
No. of Establishments	2,073,441	2,829,919	4,420,503	4,420,503
Obs.	15,324,301	15,314,557	30,871,118	30,871,111

Table IX: Labour Cost

This table reports labour heterogeneity for our baseline regressions equation (1). We measure the establishment's labor cost as number of employees × average salary divided by sales. We use QCEW data to estimate average compensation at county-NAICS4 level. We partition our sample into two groups using the median establishment labor-cost. We define labor-cost median one year before the federal minimum wage change and define $MoreLabourCost$ as indicator variable equal to 1 if the establishment's labor-cost measure is above median labor-cost, otherwise zero. We define *Less* as 1-$MoreLabourCost$. For $LessLabourCost$ and $MoreLabourCost$ establishments, we run our baseline model, i.e., Column (6) of Table II, Panel A, and report results in Column (1) and Column (2), respectively. In Column (3) and (4), we do this analysis using triple-interaction. In Column (3), we include we include establishment controls, establishment fixed effects, and state-year fixed effects. While in Column (4), we further include NAICS4-year fixed effects. Standard errors in brackets and are clustered at the state level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Dependent Variable:	Average Paydex Score			
	(1) Less	(2) More	(3) All	(4) All
$\text{Bound}_{s,t-1} \times \Delta MW(F)_t$	-0.50***	-0.73**		
	[0.18]	[0.31]		
$\text{Bound}_{s,t-1}$	-0.09	-0.07		
	[0.16]	[0.16]		
More Labour Cost × $\text{Bound}_{s,t-1} \times \Delta MW(F)_t$			-0.21**	-0.17**
			[0.09]	[0.08]
More Labour Cost × $\text{Bound}_{s,t-1}$			0.01	0.05
			[0.04]	[0.03]
More Labour Cost × $\Delta MW(F)_t$			0.44***	0.27***
			[0.05]	[0.05]
Establishment & Year FE	✓	✓	✓	✓
Establishment Controls	✓	✓	✓	✓
State × Year FE			✓	✓
NAICS4 × Year FE				✓
Adj.-R^2	0.58	0.68	0.62	0.62
No. of Establishments	1,821,320	2,431,749	3,778,189	3,778,182
Obs.	12,634,843	12,106,979	25,084,109	25,084,109

Table X: Establishment Size

This table reports size heterogeneity for our baseline regressions equation (1). We partition our sample into two groups using median sales. We define size median one year before the federal minimum wage change and define *Small* as indicator variable equal to 1 if establishment's sale is below median sales, otherwise zero. We define *Large* as 1-*Small*. For *Small* and *Large* establishments, we run our baseline model, i.e., Column (6) of Table II, Panel A, and report results in Column (1) and Column (2), respectively. In Column (3) and (4), we do this analysis using triple-interaction. In Column (3), we include establishment controls, establishment fixed effects, and state-year fixed effects. While in Column (4), we further include NAICS4-year fixed effects. Standard errors in brackets and are clustered at the state level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Dependent Variable:	Average Paydex Score			
	(1) Small	(2) Large	(3) All	(4) All
$\text{Bound}_{s,t-1} \times \Delta MW(F)_t$	-1.02***	-0.46**		
	[0.30]	[0.21]		
$\text{Bound}_{s,t-1}$	0.02	-0.09		
	[0.15]	[0.15]		
$\text{Small} \times \text{Bound}_{s,t-1} \times \Delta MW(F)_t$			-0.54***	-0.50***
			[0.08]	[0.08]
$\text{Small} \times \text{Bound}_{s,t-1}$			0.12**	0.09**
			[0.05]	[0.04]
$\text{Small} \times \Delta MW(F)_t$			0.70***	0.62***
			[0.06]	[0.05]
Establishment & Year FE	✓	✓	✓	✓
Establishment Controls	✓	✓	✓	✓
State × Year FE			✓	✓
NAICS4 × Year FE				✓
Adj.-R^2	0.69	0.55	0.62	0.62
No. of Establishments	2,073,441	2,829,919	4,420,503	4,420,503
Obs.	15,324,301	15,314,557	30,871,118	30,871,111

Table XI: Establishment Age

This table reports age heterogeneity for our baseline regressions equation (1). We partition our sample into two groups using the median establishment age. We define age median one year before the federal minimum wage change and define $Young$ as indicator variable equal to 1 if the establishment's age is below median age, otherwise zero. We define *Old* as 1-$Young$. For $Young$ and *Old* establishments, we run our baseline model, i.e., Column (6) of Table II, Panel A, and report results in Column (1) and Column (2), respectively. In Column (3) and (4), we do this analysis using triple-interaction. In Column (3), we include we include establishment controls, establishment fixed effects, and state-year fixed effects. While in Column (4), we further include NAICS4-year fixed effects. Standard errors in brackets and are clustered at the state level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Dependent Variable:	Average Paydex Score			
	(1) Young	(2) Old	(3) All	(4) All
$\text{Bound}_{s,t-1} \times \Delta MW(F)_t$	-0.84***	-0.58***		
	[0.29]	[0.21]		
$\text{Bound}_{s,t-1}$	-0.04	-0.05		
	[0.14]	[0.12]		
$\text{Young} \times \text{Bound}_{s,t-1} \times \Delta MW(F)_t$			-0.28**	-0.25**
			[0.12]	[0.12]
$\text{Young} \times \text{Bound}_{s,t-1}$			-0.35***	-0.35***
			[0.04]	[0.04]
$\text{Young} \times \Delta MW(F)_t$			0.62***	0.58***
			[0.08]	[0.09]
Establishment & Year FE	✓	✓	✓	✓
Establishment Controls	✓	✓	✓	✓
State × Year FE			✓	✓
NAICS4 × Year FE				✓
Adj.-R^2	0.69	0.57	0.62	0.62
No. of Establishments	2,073,441	2,829,919	4,420,503	4,420,503
Obs.	15,324,301	15,314,557	30,871,118	30,871,111

Table XII: Local Competition

This table reports local competition heterogeneity for our baseline regression equation (1). We measure local product market competition using the HHI index measured at NAICS5-county-year. We partition our sample into two groups and define HHI median one year before the federal minimum wage change and define *HighCompetition* as indicator variable equal to 1 if establishment's NAICS5-county-year HHI measure is below median HHI, otherwise zero. We define *LowCompetition* as 1-*HighCompetition*. For establishments in *HighCompetition* and *LowCompetition* industry-county-years , we run our baseline model, i.e., Column (6) of Table II, Panel A, and report results in Column (1) and Column (2), respectively. In Column (3) and (4), we do this analysis using triple-interaction. In Column (3), we include establishment controls, establishment fixed effects and state-year fixed effects. While in Column (4), we further include NAICS4-year fixed effects. Standard errors in brackets and are clustered at the state level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Dependent Variable:	Average Paydex Score			
	(1) High	(2) Low	(3) All	(4) All
$\text{Bound}_{s,t-1} \times \Delta MW(F)_t$	-0.76**	-0.47**		
	[0.29]	[0.19]		
$\text{Bound}_{s,t-1}$	-0.07	-0.07		
	[0.15]	[0.12]		
High Competition $\times$ $\text{Bound}_{s,t-1} \times \Delta MW(F)_t$			-0.24**	-0.21**
			[0.10]	[0.10]
High Competition $\times$ $\text{Bound}_{s,t-1}$			0.07*	0.03
			[0.04]	[0.03]
High Competition $\times$ $\Delta MW(F)_t$			0.39***	0.29***
			[0.07]	[0.08]
Establishment & Year FE	✓	✓	✓	✓
Establishment Controls	✓	✓	✓	✓
State $\times$ Year FE			✓	✓
NAICS4 $\times$ Year FE				✓
Adj.-R^2	0.63	0.62	0.62	0.62
No. of Establishments	2,073,441	2,829,919	4,420,503	4,420,503
Obs.	15,324,301	15,314,557	30,871,118	30,871,111

Table XIII: Local Personal Income

This table reports local personal income heterogeneity for our baseline regressions equation (1). We measure local personal income using IRS data at zip-level. We partition our sample into two groups and define income median one year before the federal minimum wage change and define $MoreIncome$ as indicator variable equal to 1 if personal income in establishment's zip code is above median income, otherwise zero. We define $LessIncome$ as 1-$MoreIncome$. For establishments in $Lessincome$ and $MoreIncome$ zip codes , we run our baseline model, i.e., Column (6) of Table II, Panel A, and report results in Column (1) and Column (2), respectively. In Column (3) and (4), we do this analysis using triple-interaction. In Column (3), we include we include establishment controls, establishment fixed effects and county-year fixed effects. While in Column (4), we further include NAICS4-year fixed effects. Standard errors in brackets and are clustered at the state level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Dependent Variable:	Average Paydex Score			
	(1) Less	(2) More	(3) All	(4) All
Bound$_{s,t-1}$ × $\Delta MW(F)_t$	-1.08***	-0.61*		
	[0.37]	[0.31]		
Bound$_{s,t-1}$	0.21	0.03		
	[0.26]	[0.20]		
Less Income × Bound$_{s,t-1}$ × $\Delta MW(F)_t$			-0.23***	-0.23***
			[0.06]	[0.06]
Less Income × Bound$_{s,t-1}$			0.10***	0.11***
			[0.03]	[0.03]
Less Income × $\Delta MW(F)_t$			0.29***	0.29***
			[0.06]	[0.04]
Establishment & Year FE	✓	✓	✓	✓
Establishment Controls	✓	✓	✓	✓
County × Year FE			✓	✓
NAICS4 × Year FE				✓
Adj.-R^2	0.68	0.67	0.67	0.67
No. of Establishments	2,359,556	1,757,668	3,885,352	3,885,352
Obs.	12,278,824	8,511,296	21,151,603	21,151,603

Table XIV: Loan Amount

This table report results from regressions equation(3) estimating the differential effect of federally mandated minimum wage on SBA guaranteed bank loans to small businesses. In Column (1) we report results with state and NAICS4×year fixed effects. In Column(2) we add state-level control on economic conditions i.e., GSP and population (both level and growth). In Column (3) and (4), we replace state fixed effects with borrower zip code fixed effects. Standard errors in brackets and are clustered at the state level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Dependent Variable:	Log(Loan Amount)			
	(1)	(2)	(3)	(4)
$\text{Bound}_{s,t-1} \times \Delta MWDummy(F)_{t-5}$	0.03	0.03	0.04	0.05
	[0.11]	[0.09]	[0.11]	[0.09]
$\text{Bound}_{s,t-1} \times \Delta MWDummy(F)_{t-4}$	0.08	0.07	0.07	0.08
	[0.08]	[0.08]	[0.07]	[0.08]
$\text{Bound}_{s,t-1} \times \Delta MWDummy(F)_{t-3}$	-0.01	-0.03	-0.01	-0.01
	[0.07]	[0.08]	[0.07]	[0.08]
$\text{Bound}_{s,t-1} \times \Delta MWDummy(F)_{t-2}$	-0.12	-0.15	-0.10	-0.13
	[0.07]	[0.08]	[0.07]	[0.08]
$\text{Bound}_{s,t-1} \times \Delta MWDummy(F)_{t-1}$	-0.04	-0.08	-0.04	-0.06
	[0.07]	[0.09]	[0.06]	[0.09]
$\text{Bound}_{s,t-1} \times \Delta MWDummy(F)_{t}$	-0.04	-0.07	-0.04	-0.07
	[0.07]	[0.10]	[0.07]	[0.10]
$\text{Bound}_{s,t-1} \times \Delta MWDummy(F)_{t+1}$	-0.15**	-0.17*	-0.14**	-0.16*
	[0.07]	[0.09]	[0.06]	[0.09]
$\text{Bound}_{s,t-1} \times \Delta MWDummy(F)_{t+2}$	-0.17**	-0.19**	-0.15*	-0.17*
	[0.08]	[0.09]	[0.08]	[0.09]
$\text{Bound}_{s,t-1} \times \Delta MWDummy(F)_{t+3}$	-0.14**	-0.17**	-0.13**	-0.16**
	[0.06]	[0.07]	[0.06]	[0.07]
$\text{Bound}_{s,t-1} \times \Delta MWDummy(F)_{t+4}$	-0.10*	-0.12**	-0.11*	-0.12**
	[0.06]	[0.05]	[0.06]	[0.05]
$\text{Bound}_{s,t-1} \times \Delta MWDummy(F)_{t+5}$	-0.05	-0.08	-0.05	-0.07
	[0.06]	[0.05]	[0.06]	[0.05]
State FE	✓	✓		
Zip code FE			✓	✓
State Controls		✓		✓
NAICS4 × year	✓	✓	✓	✓
Adj.-R^2	0.21	0.21	0.24	0.24
Obs.	909,393	775,772	902,409	768,633

Internet Appendix

Table IA1: Reverse: State Economic Conditions

The table presents the results for regressions estimating the effect of various state-level economic and political conditions state's decision on keeping the minimum wage at federal level. All regressions are with state and year fixed effects. Standard errors in brackets and are clustered at the state level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Dependent Variable:	Bound					
	(1)	(2)	(3)	(4)	(5)	(6)
	State-Economic Conditions			Political Conditions		
$\text{Log(GSP)}_{s,t-1}$	-0.06		0.19			0.28
	[0.27]		[0.31]			[0.30]
GSP Growth $_{s,t-1}$	0.78*		0.31			0.35
	[0.45]		[0.33]			[0.33]
$\text{Log(Population)}_{s,t-1}$		-0.29	-0.46			-0.65**
		[0.31]	[0.37]			[0.32]
$\text{Population Growth}_{s,t-1}$		4.05	3.00			1.99
		[2.83]	[2.69]			[2.56]
$\text{Democratic Governor}_{s,t}$				-0.08**		-0.06*
				[0.03]		[0.04]
$\text{Democratic House}_{s,t}$					0.03	0.02
					[0.04]	[0.05]
$\text{Democratic Senate}_{s,t}$					-0.13***	-0.14***
					[0.05]	[0.04]
$\text{Democratic Both}_{s,t}$					-0.09**	-0.04
					[0.04]	[0.05]
State FE	✓	✓	✓	✓	✓	✓
Year FE	✓	✓	✓	✓	✓	✓
Adj.-R^2	0.59	0.59	0.59	0.59	0.60	0.61
No. of States	51	51	51	51	51	51
Obs.	1,275	1,275	1,275	1,275	1,275	1,275

Table IA2: Matching Balance

This table reports the matching balance for different matching methods. Firstly, we use the credit score in the year 2006 and exactly match establishments in the bounded states (treatment group) with the possible set of control establishments within the same NAICS4 industry donor group in the unbounded states (control group). Next, for the exactly matched control sample, we compute the Euclidean distance between treatment and control samples based on establishment-, state-, county- and zip-level observable characteristics. Panel A reports the matching balance in year 2006 for establishment-level characteristics, i.e., credit score, sales, employees, employee-to-sales and sales growth. Panel B reports the matching balance where we exactly match the credit score and use establishment's sales, employees, employee-to-sales and sales growth, and we match state-level economic conditions by including both level and growth in GSP and population. We use the first-nearest neighbor establishment as control firm. In Panel C, we match on state-level political conditions i.e., we match for partisan at the state-level. In Panel D, at county-level we match on unemployment rate, labor force and change in unemployment rate. In Panel E, F and G, at zip-level, we match for aggregate sales growth, personal income (lagged level and growth) and house price (lagged level and growth). Panel H, we report the matching balance when we include all establishment-, state-, county- and zip-level observable characteristics. The reported t-stats are based on state-level clustered adjusted standard errors.

Panel A: Matching Balance, Establishment Characteristics (Column 1)

	Before Matching				After Matching			
	Bounded	Unbounded	Diff	t-stat	Bounded	Unbounded	Diff	t-stat
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Observations	1,099,028	1,427,678			869,428	869,428		
Average Paydex Score$_{i,t}$	70.51	71.39	-0.88	-1.1	70.72	70.72	0.00	0.00
Sales$_{i,t}$	1.19	1.24	-0.048	-0.5	1.35	1.28	0.07	0.75
Employees$_{i,t}$	9.71	9.57	0.15	0.25	10.62	10.17	0.45	0.77
Employees-Sales$_{i,t}$	17.1	16.1	1.02	3.75	16.5	15.4	1.0	2.5
Sales Growth$_{i,t}$	0.030	0.028	0.002	0.56	0.036	0.036	0.000	-0.05

Panel B: Matching Balance, State Economic Conditions (Column 2)

	Before Matching				After Matching			
	Bounded	Unbounded	Diff	t-stat	Bounded	Unbounded	Diff	t-stat
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Observations	1,099,028	1,427,678			869,428	869,428		
Average Paydex Score$_{i,t}$	70.51	71.39	-0.88	-1.1	70.72	70.72	0.00	0.00
Sales$_{i,t}$	1.19	1.24	-0.048	-0.5	1.35	1.19	0.16	1.89
Employees$_{i,t}$	9.71	9.57	0.15	0.25	10.60	9.47	1.13	2.26
Employees-Sales$_{i,t}$	17.1	16.1	1.02	3.75	16.5	15.3	1.2	5.2
Sales Growth$_{i,t}$	0.030	0.028	0.002	0.56	0.022	0.019	0.003	0.9
Log(GSP)$_{s,t}$	12.54	13.08	-0.54	-1.59	12.5	12.6	-0.08	-0.28
GSP Growth$_{s,t}$	-0.01	0.11	-0.11	-2.21	0.05	0.07	-0.02	-1.74
Log(Population)$_{s,t}$	15.75	16.20	-0.45	-1.35	15.72	15.71	0.01	0.05
Population Growth$_{s,t}$	0.012	0.009	0.004	0.80	0.012	0.012	0.000	0.1

Panel C: Matching Balance, State Political Conditions (Column 3)

	Before Matching				After Matching			
	Bounded	Unbounded	Diff	t-stat	Bounded	Unbounded	Diff	t-stat
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Observations	1,099,028	1,427,678			869,428	869,428		
Average Paydex Score$_{i,t}$	70.51	71.39	-0.88	-1.1	70.72	70.72	0.00	0.00
Sales$_{i,t}$	1.19	1.24	-0.048	-0.5	1.35	1.18	0.17	3.22
Employees$_{i,t}$	9.71	9.57	0.15	0.25	10.60	9.50	1.10	2.89
Employees-Sales$_{i,t}$	17.1	16.1	1.02	3.75	16.5	15.5	1.0	6.0
Sales Growth$_{i,t}$	0.030	0.028	0.002	0.56	0.036	0.036	0.0	-0.06
Democratic Governor$_{s,t}$	0.43	0.35	0.08	0.41	0.43	0.36	0.1	0.31
Democratic House$_{s,t}$	0.33	0.52	-0.19	-0.9	0.34	0.35	0.0	-0.03
Democratic Senate$_{s,t}$	0.28	0.51	-0.24	-1.14	0.28	0.29	0.0	-0.04
Democratic Both$_{s,t}$	0.12	0.16	-0.03	-0.29	0.13	0.12	0.0	0.02

Panel D: Matching Balance, Unemployment Rate (Column 4)

	Before Matching				After Matching			
	Bounded	Unbounded	Diff	t-stat	Bounded	Unbounded	Diff	t-stat
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Observations	1,099,028	1,427,678			869,428	869,428		
Average Paydex Score$_{i,t}$	70.51	71.39	-0.88	-1.1	70.72	70.72	0.00	0.00
Sales$_{i,t}$	1.19	1.24	-0.048	-0.5	1.35	1.17	0.18	2.89
Employees$_{i,t}$	9.71	9.57	0.15	0.25	10.60	9.34	1.26	3.57
Employees-Sales$_{i,t}$	17.1	16.1	1.02	3.75	16.5	15.6	0.9	3.5
Sales Growth$_{i,t}$	0.030	0.028	0.002	0.56	0.036	0.036	0.0	-0.06
Unemployment Rate$_{c,t}$	4.66	4.54	0.12	0.38	4.73	4.62	0.1	0.38
ΔUnemployment Rate$_{c,t}$	-0.52	-0.40	-0.12	-1	-0.52	-0.47	-0.05	-0.47
Log(Labour Force)$_{c,t}$	11.56	12.49	-0.93	-2.89	11.5	11.8	-0.23	-0.9

Panel E: Matching Balance, Aggregate Sales Growth (Column 5)

	Before Matching				After Matching			
	Bounded	Unbounded	Diff	t-stat	Bounded	Unbounded	Diff	t-stat
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Observations	1,099,028	1,427,678			869,428	869,428		
Average Paydex Score$_{i,t}$	70.51	71.39	-0.88	-1.1	70.72	70.72	0.00	0.00
Sales$_{i,t}$	1.19	1.24	-0.048	-0.5	1.35	1.25	0.11	1.14
Employees$_{i,t}$	9.71	9.57	0.15	0.25	10.60	9.90	0.70	1.32
Employees-Sales$_{i,t}$	17.1	16.1	1.02	3.75	16.5	15.2	1.3	3.4
Sales Growth$_{i,t}$	0.030	0.028	0.002	0.56	0.036	0.040	0.0	-0.59
Agg. Sales Growth$_{z,t}$	0.041	0.035	0.007	1.16	0.040	0.036	0.0	0.57

Panel F: Matching Balance, Personal Income (Column 6)

	Before Matching				After Matching			
	Bounded	Unbounded	Diff	t-stat	Bounded	Unbounded	Diff	t-stat
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Observations	1,099,028	1,427,678			659,107	659,107		
Average Paydex Score$_{i,t}$	70.51	71.39	-0.88	-1.1	70.72	70.72	0.00	0.00
Sales$_{i,t}$	1.19	1.24	-0.048	-0.5	1.37	1.27	0.10	0.56
Employees$_{i,t}$	9.71	9.57	0.15	0.25	10.70	9.80	0.90	1.27
Employees-Sales$_{i,t}$	17.1	16.1	1.02	3.75	16.5	15.4	1.10	1.9
Sales Growth$_{i,t}$	0.030	0.028	0.002	0.56	0.036	0.027	0.01	2.15
Log(Personal Income)$_{z,t}$	10.78	10.90	-0.12	-3.89	10.78	10.79	-0.01	-0.56
ΔLog(Personal Income)$_{z,t}$	0.044	0.040	0.004	0.88	0.044	0.040	0.004	0.88

Panel G: Matching Balance, House Prices (Column 7)

	Before Matching				After Matching			
	Bounded	Unbounded	Diff	t-stat	Bounded	Unbounded	Diff	t-stat
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Observations	1,099,028	1,427,678			667,193	667,193		
Average Paydex Score$_{i,t}$	70.51	71.39	-0.88	-1.1	70.71	70.71	0.00	0.00
Sales$_{i,t}$	1.19	1.24	-0.048	-0.5	1.36	1.16	0.20	2.39
Employees$_{i,t}$	9.71	9.57	0.15	0.25	10.70	9.47	1.23	2.39
Employees-Sales$_{i,t}$	17.1	16.1	1.02	3.75	16.5	16.0	0.5	1.5
Sales Growth$_{i,t}$	0.030	0.028	0.002	0.56	0.038	0.036	0.002	0.24
Log(House Price Index)$_{z,t}$	11.98	12.50	-0.52	-3.32	11.98	12.07	-0.09	-0.87
ΔLog(House Price Index)$_{z,t}$	0.045	0.033	0.012	1.08	0.045	0.044	0.001	0.07

Panel H: Matching Balance, All (Column 8)

	Before Matching				After Matching			
	Bounded	Unbounded	Diff	t-stat	Bounded	Unbounded	Diff	t-stat
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Observations	1,099,028	1,427,678			659,107	659,107		
Average Paydex Score$_{i,t}$	70.51	71.39	-0.88	-1.1	70.75	70.75	0.00	0.00
Sales$_{i,t}$	1.19	1.24	-0.048	-0.5	1.37	1.20	0.17	1.82
Employees$_{i,t}$	9.71	9.57	0.15	0.25	10.75	9.59	1.16	1.75
Employees-Sales$_{i,t}$	17.1	16.1	1.02	3.75	16.4	15.8	0.6	2.7
Sales Growth$_{i,t}$	0.030	0.028	0.002	0.56	0.023	0.020	0.003	0.89
Log(GSP)$_{s,t}$	12.54	13.08	-0.54	-1.59	12.6	12.7	-0.13	-0.42
GSP Growth$_{s,t}$	-0.01	0.11	-0.11	-2.21	0.05	0.06	-0.01	-0.85
Log(Population)$_{s,t}$	15.75	16.20	-0.45	-1.35	15.78	15.84	-0.06	-0.2
Population Growth$_{s,t}$	0.012	0.009	0.004	0.80	0.014	0.010	0.004	0.92
Democratic Governor$_{s,t}$	0.43	0.35	0.08	0.41	0.43	0.46	-0.03	-0.12
Democratic House$_{s,t}$	0.33	0.52	-0.19	-0.9	0.32	0.30	0.01	0.08
Democratic Senate$_{s,t}$	0.28	0.51	-0.24	-1.14	0.26	0.35	-0.09	-0.47
Democratic Both$_{s,t}$	0.12	0.16	-0.03	-0.29	0.11	0.12	-0.005	-0.04
Unemployment Rate$_{c,t}$	4.66	4.54	0.12	0.38	4.52	4.50	0.02	0.06
ΔUnemployment Rate$_{c,t}$	-0.52	-0.40	-0.12	-1	-0.50	-0.33	-0.17	-1.35
Log(Labour Force)$_{c,t}$	11.56	12.49	-0.93	-2.89	11.8	12.0	-0.18	-0.7
Agg. Sales Growth$_{z,t}$	0.041	0.035	0.007	1.16	0.040	0.034	0.006	1.03
Log(Personal Income)$_{z,t}$	10.78	10.90	-0.12	-3.89	10.85	10.84	0.01	0.3
ΔLog(Personal Income)$_{z,t}$	0.044	0.040	0.004	0.88	0.048	0.039	0.009	1.65
Log(House Price Index)$_{z,t}$	11.98	12.50	-0.52	-3.32	11.99	12.20	-0.21	-2.27
ΔLog(House Price Index)$_{z,t}$	0.045	0.033	0.012	1.08	0.045	0.040	0.004	0.42

Table IA3: Regression Estimates: Matching Trends

The table presents the results for regressions estimates where we exactly match paydex score on pre-trends. Panel A reports the regression results where we exactly match in year 2005 and 2006, average Paydex score for establishments in the bounded states (treatment group) with the possible set of control establishments within the same NAICS4 industry donor group in the unbounded states (control group). Then we match establishment-, state-, county- and zip-level observable characteristics. Here we firms regressions for the sample period 2005-2013. In Panel B, we restrict our sample to years 2006-2013. Panel C and Panel D report the regression results where we attempt exact matching on Paydex Score in year 2004, 2005 and 2006. All regression are with matched-pair fixed effect and year fixed effects. Standard errors in brackets and are clustered at the state level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Panel A: Exact Matching in year 2005 and 2006, Sample 2005-2013

	Establishment-Level	State-Level		County-Level	Zip-Level			All
	(1) Establishment Characteristics	(2) Economic Conditions	(3) Political Conditions	(4) Unemp. Rate	(5) Agg. Sales Growth	(6) Personal Income	(7) House Price	(8) All
$\text{Bound}_{s,t-1} \times \Delta MW(F)_t$	-0.59*	-0.51***	-0.62**	-0.43**	-0.60*	-0.66**	-0.47**	-0.53***
	[0.31]	[0.17]	[0.27]	[0.19]	[0.32]	[0.32]	[0.21]	[0.18]
$\text{Bound}_{s,t-1}$	0.46**	0.23*	0.54***	0.01	0.49**	0.51**	0.41***	0.13
	[0.20]	[0.14]	[0.17]	[0.10]	[0.20]	[0.19]	[0.15]	[0.11]
Matched-Pair & Year FE	✓	✓	✓	✓	✓	✓	✓	✓
Controls	✓	✓	✓	✓	✓	✓	✓	✓
Adj.-R^2	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.39
No. of Pairs	634,894	634,999	634,876	628,531	634,946	632,377	481,040	475,770
Obs.	9,131,694	9,179,604	9,103,585	9,090,540	9,132,699	8,567,077	6,908,727	6,493,993

Panel B: Exact Matching in year 2005 and 2006, Sample 2006-2013

	Establishment-Level	State-Level		County-Level	Zip-Level			All
	(1) Establishment Characteristics	(2) Economic Conditions	(3) Political Conditions	(4) Unemp. Rate	(5) Agg. Sales Growth	(6) Personal Income	(7) House Price	(8) All
$\text{Bound}_{s,t-1} \times \Delta MW(F)_t$	-0.66*	-0.57***	-0.64**	-0.46**	-0.67*	-0.73*	-0.43*	-0.50***
	[0.36]	[0.19]	[0.29]	[0.20]	[0.37]	[0.37]	[0.22]	[0.18]
$\text{Bound}_{s,t-1}$	0.50**	0.27*	0.54***	0.01	0.53**	0.56**	0.41***	0.10
	[0.23]	[0.15]	[0.18]	[0.12]	[0.23]	[0.23]	[0.15]	[0.11]
Matched-Pair & Year FE	✓	✓	✓	✓	✓	✓	✓	✓
Controls	✓	✓	✓	✓	✓	✓	✓	✓
Adj.-R^2	0.38	0.39	0.38	0.39	0.38	0.39	0.39	0.39
No. of Pairs	634,893	634,998	634,875	628,530	634,945	632,375	481,026	475,757
Obs.	8,380,636	8,424,236	8,356,650	8,341,450	8,380,113	7,840,034	6,346,972	5,952,354

Panel C: Exact Matching in year 2004, 2005 and 2006, Sample 2004-2013

	Establishment-Level	State-Level		County-Level	Zip-Level			All
	(1) Establishment Characteristics	(2) Economic Conditions	(3) Political Conditions	(4) Unemp. Rate	(5) Agg. Sales Growth	(6) Personal Income	(7) House Price	(8) All
$\text{Bound}_{s,t-1} \times \Delta MW(F)_t$	-0.31*	-0.33**	-0.38**	-0.24	-0.33*	-0.41*	-0.38**	-0.41**
	[0.19]	[0.15]	[0.18]	[0.15]	[0.19]	[0.21]	[0.18]	[0.16]
$\text{Bound}_{s,t-1}$	0.32***	0.21*	0.41***	-0.01	0.33***	0.38***	0.31**	0.12
	[0.12]	[0.11]	[0.12]	[0.07]	[0.12]	[0.13]	[0.12]	[0.10]
Matched-Pair & Year FE	✓	✓	✓	✓	✓	✓	✓	✓
Controls	✓	✓	✓	✓	✓	✓	✓	✓
Adj.-R^2	0.26	0.27	0.26	0.27	0.27	0.28	0.27	0.28
No. of Pairs	174,616	174,608	174,604	173,564	174,617	173,589	129,973	129,118
Obs.	3,169,201	3,175,656	3,163,352	3,152,795	3,167,134	2,689,964	2,346,539	2,013,088

Panel D: Exact Matching in year 2004, 2005 and 2006, Sample 2006-2013

	Establishment-Level	State-Level		County-Level	Zip-Level			All
	(1) Establishment Characteristics	(2) Economic Conditions	(3) Political Conditions	(4) Unemp. Rate	(5) Agg. Sales Growth	(6) Personal Income	(7) House Price	(8) All
$\text{Bound}_{s,t-1} \times \Delta MW(F)_t$	-0.46	-0.44**	-0.50**	-0.32*	-0.47*	-0.50*	-0.38*	-0.40**
	[0.28]	[0.19]	[0.23]	[0.19]	[0.28]	[0.27]	[0.21]	[0.16]
$\text{Bound}_{s,t-1}$	0.41**	0.25*	0.45***	0.00	0.42**	0.44**	0.34**	0.11
	[0.19]	[0.14]	[0.16]	[0.10]	[0.18]	[0.17]	[0.14]	[0.11]
Matched-Pair & Year FE	✓	✓	✓	✓	✓	✓	✓	✓
Controls	✓	✓	✓	✓	✓	✓	✓	✓
Adj.-R^2	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29
No. of Pairs	174,614	174,606	174,602	173,562	174,615	173,586	129,966	129,110
Obs. Obs.	2,528,481	2,536,858	2,526,693	2,518,918	2,529,349	2,358,719	1,879,987	1,770,727