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Effects of state minimum wage increases on employment, hours, and earnings of low-wage workers in Illinois

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Abstract. In a 2003 study, we simulated the effects of a minimum wage increase in Illinois using payroll and population data, and predicted that the increase would not trigger widespread job loss. Data are now available to examine these effects empirically. Controlling for the demographics and economic changes of bordering states, as well as using Illinois before the minimum wage change as a control, we arrive at unexpected results given our prior simulations. Taken at face value, our estimates imply that the price elasticity of demand for low-wage workers in Illinois is high; in fact, much larger than current evidence suggests.

1. Introduction

In 2002, Illinois' new governor pledged to support the state's hundreds of thousands of working poor by increasing the state minimum wage. At that time, more than a dozen states had raised their minimum wage rates above the national minimum, but Illinois provides a nice context within which to test how a minimum wage rate increase affects employment, hours, and earnings because its bordering states remained at the national rate when its rate hike was implemented. In a 2003 study, we made a range of predictions when the increase in the minimum wage was first proposed, based on simulations using payroll and population data. In this paper, we revisit the issue and examine the rate hike empirically, now that several years of data are available to capture labor market adjustments.

Controlling for bordering states' demographics and economic changes, as well as using Illinois before the minimum wage change for comparison, we arrive at unexpected results, given our prior research in this area. First, although we find the minimum rate increase did raise hourly pay rates, the observed increase is much smaller than expected. Although the minimum wage rate increased by $1.35 between 2003 and 2005—from $5.15 to $6.50 per hour— hourly pay for low-wage workers rose by only 15 cents on average.[1] Moreover, many low-wage workers throughout 2005 continued to earn substantially less than the new state minimum wage. Second, we find that, while the chances of low-wage workers being employed did not fall, the observed modest wage rate increase seems to be associated with substantial reductions in the hours of low wage workers. Usual hours worked by low-wage workers fell by about two hours per week, resulting in lower weekly earnings.

Altogether, this study yields results at odds with our prior expectations based on our own earlier study and the revisionist approach of Card and Krueger (1995). Indeed, these results are considerably more extreme than traditional mainstream theory would predict. Employers should not have responded to a small realized increase in labor costs—roughly 15 cents per hour per worker—by cutting hours so deeply. These estimates taken at face value would imply unreasonably-large demand elasticities—two to three—for low-wage workers. Extensive sensitivity testing demonstrates the robustness of these results. Even the most passionate critics of minimum wage policy would not expect demand elasticities of this

[1] Throughout this paper, we restrict our analysis to workers who report earnings between $4.25 and $7.50 in jobs paid hourly. We exclude salaried workers and those who hold jobs that tend to earn tips (waiters/waitresses, bartenders, busboys [sic], and taxicab drivers) because tipped jobs are treated differently under minimum wage law.

magnitude, and no studies to date have arrived at such estimates. At this point, we are left without a full explanation of these results. At the end of this paper, we propose a few possible explanations that further empirical research could explore.

2. The debate over state minimum wage policy

The latest round in economists' debates over minimum wages has been going on for more than a decade, and has centered on state minimum wage increases. David Card (1992) focused explicitly on the state minimum wage increase in California that took effect in 1988 and found not only that the income of low-wage workers increased from five to ten percent on average, but also, found no evidence of employment loss among young workers, nor any job loss in retail trade. Establishments in the retail trade industry rely on great numbers of minimum wage workers. Contrary to Card (1992), Neumark and Wascher (1992) examined state minimum wage laws and employment trends and revealed a one to two percent decline in youth employment for every ten percent increase in the minimum wage. Card, Katz, and Krueger (1994, p. 495-496) challenge Neumark and Wascher's findings and conclude:

We use their [Neumark and Wascher's] data and other more precise state-level data to estimate the effects of state minimum wage rates on teenage wages and teenage employment rates. We find that an increase in the state minimum wage raises average teenage wages, but it has insignificant employment effects that vary in sign and average close to zero. Finally, a re-analysis of Neumark and Wascher's evidence shows that state sub-minimum wage provisions are rarely (if ever) used.

Neumark and Wascher (1994) counter the critique leveled by Card, Katz, and Krueger (1994) and stand by their original results. Card and Krueger (1995) extend their analyses to other states that have passed higher minimum wage rates, focusing on the fast-food industry, which is heavily reliant on minimum wage labor. In *Myth and Measurement*, Card and Krueger find that "the relative employment of workers most heavily affected by the New Jersey minimum wage seems to have risen rather than to have fallen" (1995, p. 57). The authors offer results that help explain this phenomenon. In their study of New Jersey fast food restaurants, the pre-tax price of a full meal comprised of a main course, small order of fries, and medium-sized soft drink increased four percent, about eight to ten cents per meal. Their Texas study produces similar results. In addition to these important findings, Card and Krueger (1995) also reveal that the fraction of full-time employees in the fast-food industry in New Jersey increased after the minimum wage was raised; the minimum wage increase was associated with increases, not decreases, in fast-food industry employment in both New Jersey and Texas; there was no evidence that New Jersey fast food establishments offset the minimum wage increase by reducing the availability of reduced-price or free meals; and, there was no strong evidence that fast food restaurants reduced employee fringe benefits to offset the increased cost of the minimum wage.

But others find that the affected firms cut workers' hours to compensate for the higher labor costs that they face (Neumark 2002; Neumark and Wascher 1992, 2004; Michl 2000; Deere, Murphy, and Welch 1995). Reduced hours erode workers' welfare, even as an increased minimum wage is meant to make them better off. These findings suggest that employers compensate for increased labor costs through means other than employment reductions: modest product price increases, minimal reductions in profit, and cuts in hours worked. Because the additional payroll costs associated with the Illinois rate increase from $5.15 to $6.50 constituted a small portion of employers' wage bills, we expected similar employers in Illinois would recoup their increased personnel costs through modest changes in product pricing and other business strategies.

In 2003, the Illinois Legislature passed a two-phased minimum wage increase: the initial increase from $5.15 to $5.50 took effect on January 1, 2004, and the second change from $5.50 to $6.50 took effect on January 1, 2005. In this paper, we use cross-state data from before and after these rate hikes to gauge the accuracy of the predictions set forth in our earlier study. That effort explored whether a state-level minimum wage increase would improve the earnings of low-income households, whether it would lower state employment, and/or whether weaken the competitive position of Illinois industries. We examined the wage and employment characteristics of Illinois households with workers earning at or near the minimum wage, conducted a statistical analysis of the relationship between state minimum wages and employment levels, and studied the changing traits of the low-wage workforce over a five-year period surrounding the 1997 federal minimum wage increase. In that study, we predicted that the proposed state minimum wage rate increase would improve the earnings of a significant share of low-income workers and households, while resulting in minimal costs to business and a negligible impact on overall employment, due to sustained labor demand in a healthy economy. Impacts on payrolls were predicted to amount to less than one percent of total wage payments: new wage payments to directly-impacted workers would total 0.35 percent of wages Illinois businesses paid to workers in 2001. Spillover wage increases to workers currently earning between \$6.50 and \$7.50 per hour were estimated to total less than one half of one percent of the wages Illinois businesses paid to workers in 2001.

Moreover, simulating the effects of higher wages on consumption demonstrated a multiplier effect of increased spending, which would benefit local economies. All of these results were based on the proposition that the minimum wage in Illinois would generate no reductions in employment or hours of low-wage workers. We based this, in part, on the studies of Card and Krueger (1995); but also on a 50-state, 19-year panel study that suggested state minimum wage differences had not appreciably affected state employment growth in low wage industries (Baiman et al, 2003). Our predictions were quite optimistic. Somewhat naïvely, our predictions assumed that all low wage workers would be covered by the proposed minimum wage change and based on this assumption suggested that low wage workers—defined here as those earning between \$4.25 and \$7.50 per hour—would experience average increases of \$0.60 an hour as the minimum wage went up to \$6.50.[2]

What has actually happened since the full increase took effect in January 2005? Using data from the CPS merged outgoing rotation groups from 2003 and 2005; we set out to gauge the impact of the minimum wage rate hike from \$5.15 to \$6.50. We expected to find support for the revisionist position of Card and Krueger given our own predictions. Alternatively, we recognized that our results might rather support the more traditional position of Neumark and others who predicted declines in employment and hours after state minimum wage increases. Somewhat surprisingly, our experiment suggests that neither of these approaches provides an adequate framework for explaining the estimated effects of state minimum wage policies. Far from a simple test between alternative theories, our study generates a new range of questions concerning what the Illinois state minimum wage actually accomplished.

3. Methods and data

Acknowledging the conflicting theoretical predictions and empirical findings described above and given our earlier simulations, the null hypothesis of this study is that the minimum wage rate increase in Illinois did not adversely impact low-income workers' employment and hours. Using data from the merged outgoing rotation group (MORG) file produced by the National Bureau of Economic Research (NBER 2006)[3] and following the lead of a number of researchers, we use an interrupted time series model to capture the effects of Illinois' minimum wage increase on employment, hourly pay, and weekly hours, comparing Illinois to its border states where no change occurred. We then split the sample by household income and repeat the analysis to determine whether low-wage workers in low-income households were worse off after the Illinois minimum wage increase.

The interrupted time series method allows us to hold constant a variety of demographic characteristics that could explain changes to wages, hours, and employment status, and as Heckman, Ichimura, Smith, and Todd (1998) find, including a vector of demographic variables in the differences model helps to control for selection bias as well. In his analysis of the living wage in California, Neumark (2002) employs this model because it allows him to incorporate control groups for comparison to the treatment group, and he critiques prior studies that fail to compare groups covered by new or increased wage rates to control groups that are not affected (2001, p. 40). Here, Illinois and the states sharing its borders provide nice controls because not only have no other states in the region passed a higher state minimum wage rate, but also, none of the states that are anywhere near the Midwest. As of 2005, every state with a higher-than-national minimum wage was either on the Pacific coast (California, Oregon, Washington, Alaska, and Hawaii) or in New England and the Eastern seaboard (New York, Maine, Vermont, Massachusetts, Rhode Island, Connecticut, Delaware, and the District of Columbia). The number of states that have passed minimum wage rate increases has risen to 29.

Three models are run to gauge the effects of the state minimum wage increase on employment, hourly

[2] More specifically this assumes that all workers between \$5.15 and \$7.50 would experience spillovers according to the following formula: wage after = wage before + 1.35*(1 - (wage before - 5.15)/2.35). The estimate is based on data from the 2003 Illinois MORG files and hence differs somewhat from those in the original study. The average for these workers is projected to go from \$6.49 per hour to \$7.09 per hour.

[3] MORG data distributed by NBER are annualized, person-level data from the monthly household CPS surveys, and are especially useful when conducting cross-section studies or when examining something at two points in time. Individual observations may appear in consecutive years, which is why time-series analyses are not recommended for these data. MORG data contain complete demographic information from the March ASEC and earnings information from each household's outgoing month survey.

earnings, and hours worked. The first model is estimated to capture the effects of the Illinois minimum wage on employment. Employers that need to hire may postpone doing so and demand more productivity from their current workers who now make more than they used to. This is supported by other findings: in their cross-country comparison of 17 OECD countries over a 25-year period, Neumark and Wascher (2004) find the disemployment effects of minimum wages to be strongest in countries with the least regulated labor markets, one of which is the United States. However, their evidence also suggests considerable variation across countries, and that the disemployment effects of minimum wages are smallest in countries with lower union coverage and sub-minimum wage provisions for youths. As this also describes the U.S. labor market, predictions of disemployment effects of a state minimum wage are not clear. To test whether Illinois respondents were any less likely to be employed as a result of the minimum wage increase, we estimate the following models:

$$Emp_{isy} = \alpha + \beta_1 T_{isy} + \beta_2 A_{isy} + \beta_3 A_{isy} T_{isy} + \varepsilon_{isy} \quad (1a)$$
$$Emp_{isy} = \alpha + \varphi X_{isy} + \beta_1 T_{isy} + \beta_2 A_{isy} + \beta_3 A_{isy} T_{isy} + \varepsilon_{isy} \quad (1b)$$

Emp is a dummy variable denoting whether individual (i) in state (s) in year (y) is employed in a non-tipped hourly job or not, T is a dummy variable that takes the value of one if the observation is in the treatment area (Illinois), and zero if in the control area (border states); A is a dummy variable that takes the value of one if the observation is in the period after the treatment (2005), and zero if not (2003). Equation [1b] adds demographic control variables: X is a vector of demographic variables including age and the square of age to capture the nonlinearity of age on employment, marital status, educational attainment, and sex. The key variable is the interaction between "After" and "Treatment" ($A_{isy}T_{isy}$), β_3, which will only have nonzero values for observations in the treatment area, after treatment (Illinois in 2005). This interaction variable captures the effect on employment status for Illinois respondents after the minimum wage hike occurred, compared to respondents in bordering states in both years and compared to respondents in Illinois before the change took effect. If the higher state minimum wage caused employers to defer new hiring or to choose not to fill vacancies—or to leave the state altogether—then the coefficient on the interaction variable should be negative and statistically significant and show that employment fell. To gauge the effect of the state minimum wage increase on hourly earnings, we estimate:

$$w_{isy} = \alpha + \delta_1 T_{isy} + \delta_2 A_{isy} + \delta_3 A_{isy} T_{isy} + \varepsilon_{isy} \quad (2a)$$
$$w_{isy} = \alpha + \varphi X_{isy} + \delta_1 T_{isy} + \delta_2 A_{isy} + \delta_3 A_{isy} T_{isy} + \varepsilon_{isy} \quad (2b)$$

where w denotes hourly wage earnings, T is a dummy variable that takes the value of one if the observation is in the treatment area, and zero if in the control area; A is a dummy variable that takes the value of one if the observation is in the period after the treatment and zero if not. Equation [2b] adds X, which is a vector of demographic variables for individual (i) in state (s) in year (y), including age, marital status, race and ethnicity, educational attainment, and sex. To capture the nonlinear relationship between age and hours worked, age and age squared are included, as in Neumark (2002). The coefficient on δ_3 will indicate the effect on usual weekly earnings of the state minimum wage increase. Since the hourly earnings is continuous, the model is estimated using ordinary least squares. In accordance with our optimistic scenarios (1 and 3), δ_3 should be positive and statistically significant. The magnitude of this coefficient is important, as well: Card and Krueger (1995) found an average hourly pay increase of about 40 cents, and we arrived at an average hourly pay increase of 60 cents in our simulations. Effects on hourly earnings must be examined in light of usual hours worked, as well. Employers may offset the higher cost of earnings they have to pay by reducing the number of hours worked. If the higher state minimum wage in Illinois triggered a substitution away from lesser-skilled, lower-wage workers, then the coefficient on ($A_{isy}T_{isy}$) should be negative and statistically different from zero. Employers that rely heavily upon minimum wage work may reduce their costs by cutting the employees' numbers of hours worked. To test that, we estimate the following:

$$h_{isy} = \alpha + \gamma_1 T_{isy} + \gamma_2 A_{isy} + \gamma_3 A_{isy} T_{isy} + \varepsilon_{isy} \quad (3a)$$
$$h_{isy} = \alpha + \varphi X_{isy} + \gamma_1 T_{isy} + \gamma_2 A_{isy} + \gamma_3 A_{isy} T_{isy} + \varepsilon_{isy} \quad (3b)$$

where h is the number of hours usually worked per week on the primary job, and the remaining variables are defined in the same way that as in Equations 1 and 2. Hours worked is a continuous variable, equations [3a] and [3b] can be estimated with ordinary least squares. If the coefficient on $A_{isy}T_{isy}$ is negative and statistically significant, then employers reduced their labor costs by cutting the hours of workers to whom they now must pay a higher wage. This result would indicate that the minimum wage increase leads to a decline in hours.

4. Data analysis

Table 1 displays the results of estimating equation [1b], [2b] and [3c], which were run using ordinary least squares. We hypothesized that, consistent with our earlier findings in the 2003 Illinois Minimum Wage Study, Illinois workers would not experience unemployment to any greater degree than others in the Midwest, or compared to trends in Illinois prior to the wage rate hike. Recall that all of our estimations limit the sample to workers whose jobs do not involve tips, and who earn between $4.25 and $7.50, for those are the workers most likely to be affected by a minimum wage rate hike. The results in Table 1 show the probability of holding one of these jobs in Illinois after the minimum wage rate increase.

Table 1. Effect on employment status, hourly pay, and hours in Illinois after its minimum wage increase, compared to bordering states

	(1) Employment	(2) Hourly Pay	(3) Usual Weekly Hours
After Treatment (Illinois in 2005)	-0.005	14.708***	-2.042***
Treatment (Illinois)	0.010	-1.886	1.284***
After (2005)	-0.022***	3.881	-0.261
Sex	0.085***	-3.743*	-3.561***
Age	-0.029***	2.508***	1.568***
Age^2	0.000***	-0.028***	-0.018***
Married	-0.046***	5.032*	0.772*
Less than High School	0.301***	-12.765**	1.558*
High School Diploma	0.096***	0.0948	4.271***
Some Post-Secondary	0.052***	1.428	1.550*
Constant		615.271***	4.336**
Model F		19.08***	109.26***
R-Squared		0.0390	0.2208
Likelihood Ratio X^2	4948.44***		
Pseudo R^2	0.2026		
Number of Observations	27,298	4,458	3,867

*≡significant at the 10% level; **≡5%; ***≡1%

Of all non-tipped hourly workers (n=27,298), the chances of holding a job in the low hourly pay range that we specified falls very slightly after the minimum wage increase, but the effect is not statistically significant (column 1). Job loss does not appear to have happened in the wake of the rate increase for all workers.

Column 2 shows that hourly wages increased by only 15 cents in Illinois after the minimum wage increase, and that effect is statistically significant and positive. David Card's 1992 study of the California minimum wage change is perhaps most similar to ours in its context and approach, and he also finds only a small hourly pay increase despite a rather large increase in the minimum wage. While Card found average pay to increase between five and ten percent on average, column 1 in table 1 shows our effect on pay to be smaller than his at about two-and-a-half percent. As column 3 shows, however, firms appear to have reacted to the increase in labor costs by reducing the number of hours worked.[4] The coefficient on $A_{isy}T_{isy}$ indicates that non-tipped hourly workers within this wage range worked about two fewer hours per week in Illinois after the minimum wage rate increase compared to the same workers in bordering states, but cuts in hours were not distributed evenly across workers. We know from the results in column 1 that this decrease in hours did not come from net job loss. We can throw some light on these changes by dividing usual hours worked into those at very low wages (less than

[4] Any effect on hours due to California's minimum wage change is not reported by Card in his 1992 paper.

$6.50 an hour) and those at wages in the $6.50 to $7.50 range. In Illinois, there was a sharp reduction in the number of very low wage nontipped hours worked in Illinois (Chart 1).

The fall in hours is concentrated among those usually working more than 20 hours per week. What is surprising in this chart is that the minimum wage law didn't reduce the number of very low wage hours even further. In 2005, all of the observations illustrated in chart 1 are earning sub-minimum wage hours. Quite simply we did not expect to observe so many sub-minimum wage hours (Mellor 1987). Schiller (1994) reveals the high incidence of noncompliance with minimum wage laws among employers, which could help to explain this result (Griener 1982). But turning to the distribution of Illinois hours for higher-wage workers ($6.50-$7.50) we find more surprises. Where our ex ante simulations assumed all hours lost from below $6.50 would "reappear" in the $6.50 to $7.50 range, Chart 2 suggests that this was only true for part time workers, not full time. For full time Illinois workers in this category we actually see a fall in hours. While we find no evidence of net job loss (column 1 from table 1), chart 2 shows that either the number of full-time jobs fell with an accompanying increase in part-time jobs, or that the numbers of hours worked by incumbent full-time workers were cut in Illinois. Neither scenario represents a positive outcome of Illinois' minimum wage rate increase. Simulations based on the proposed state legislation did not anticipate a strong negative reaction.[5]

The shift from full-time to part-time work can help explain the negative effect of the minimum wage rate increase that we observe in column 3 of table 1. Again, the average number of hours worked per week fell by about two, and this appears to have been the result of a shift away from full-time employment. Only future research can show whether or not this was a short-term strategy by firms: transaction costs of layoffs and hiring are substantially higher than are those associated with adjusting hours. Firms may be waiting to see what the full impact of the minimum wage change will be.

As we originally conceptualized our study, we intended to pay particular attention to possible differences in the impact of the state minimum wage hike on low-wage workers from different household income classes. A number of researchers (Fairchild 2005; Neumark, Schweitzer, and Wascher 2005; Neumark and Wascher 2002, 2001; Vedder and Gallaway 2002; Burkhauser, Couch, and Wittenburg 2000; Partridge and Partridge 1999) hypothesized that rising minimum wages result in the displacement of workers from low-income households, and that minimum wage increases fail to help workers in low-income households in general. Could substitution effects underlie our unexpected estimates? Could cuts in hours be concentrated among low-wage workers from low-income households?

We examine the effects of the state minimum wage increase on hourly earnings for households in the lowest and highest thirds of the household income distribution by aggregating reported earnings of all workers in the same household.[6] To estimate the effect of the minimum wage increase on employment, hourly pay, and hours worked, we use the approach taken by Lee (1999), Pollin, Luce, and Brenner (1999) and repeated by Neumark (2002), to divide respondents into groups according to annual household income. This allows us to test not only the effects of the Illinois minimum wage increase on those toward whom it is targeted—poorer workers—but also to test whether our effects differ for low-wage workers in higher-income households compared to low-wage workers in low-income households. The former are less likely to rely on their earnings to fully support themselves compared to the latter.

Tables 2 and 3 show results from varying the basic model where we split the sample by household income: lowest and top one-third of the distribution.

As a comparison between the first column in tables 2 and 3 shows, employment share was unchanged for low-wage workers in low-income households, but those in high-income households were more likely to have lost their jobs in the wake of the minimum wage increase. This suggests that employers substituted *away* from low-wage workers in high-income households, which challenges critics of minimum wage increases who claim that the policy especially harms working poor adults. A similar comparison between the effect on hours demonstrates that the hours worked by low-wage workers in high-income households were cut more. Firms realized their cost savings by cutting the hours of workers from high-income households and preserved the hours worked by those who tended to support themselves and their

[5] Appendix A provides the context for these Illinois changes: a general downward drift in hours occurred in bordering states between 2003 and 2005 for hourly workers within our pay ranges, both those in the very low wage category ($4.25-$6.49) and those earning $6.50 to $7.50.

[6] MORG data do not contain information on household earnings, so weekly earnings of all members of a household were aggregated using several variables to isolate distinct households: household ID, interview month, state, year, household number, and month in sample. Resulting data were checked using household composition variables: age, sex, weekly earnings, and household ID.

Table 2. Effect on employment, hourly pay, and usual weekly hours for low-wage workers in households with the lowest one-third of household income, 2003 and 2005

	(1) Employment	(2) Hourly Pay	(3) Usual Weekly Hours
After Treatment (Illinois in 2005)	0.010	16.616**	-2.000*
Treatment (Illinois)	-0.010	-5.009	1.312
After (2005)	-0.032***	5.988	-0.139
Sex	0.0718***	2.152	-2.790***
Age	-0.0313***	1.395***	1.226***
Age^2	0.000***	-0.016***	-0.014***
Married	-0.013	4.578	1.264**
Less than High School	0.286***	-15.173**	4.182****
High School Diploma	0.101***	-1.524	4.952***
Some Post-Secondary	0.043**	-4.022	2.753**
Constant		625.948***	7.479***
Model F		5.16***	109.26***
R-Squared		0.0256	0.1462
Likelihood Ratio X^2	894.86***		
Pseudo R^2	0.0995		
Number of Observations	8,048	1,973	1,697

*≡significant at the 10% level; **≡5%; ***≡1%

Table 3. Effect on employment, hourly pay, and usual weekly hours for low-wage workers in households with the top one-third of household income, 2003 and 2005

	(1) Employment	(2) Hourly Pay	(3) Usual Weekly Hours
After Treatment (Illinois in 2005)	-0.018*	18.405**	-5.142***
Treatment (Illinois)	0.026***	2.536	2.137**
After (2005)	-0.012*	3.287	1.250
Sex	0.064***	-8.674**	-4.620***
Age	-0.025***	3.656***	2.182***
Age^2	0.000***	-0.040***	-0.0243***
Married	-0.034***	-2.875	-5.656***
Less than High School	0.250***	-8.944	-0.926
High School Diploma	0.054***	2.562	4.254**
Some Post-Secondary	0.043***	1.837	-0.203
Constant		602.593***	-3.450
Model F		6.58***	43.62***
R-Squared		0.0525	1.2953
Likelihood Ratio X^2	2541.82***		
Pseudo R^2	0.6498		
Number of Observations	9,533	1,199	1,052

*≡significant at the 10% level; **≡5%; ***≡1%

families with their earnings. This is an important finding. While our results are consistent with Neumark (2002), Neumark and Wascher (1992, 2004), Deere, Murphy, and Welch (1995), and others who found hours to fall when minimum wage rates increased, we show that low-income workers are not the ones suffering these cuts. Some have suggested that employers substitute away from low-income workers in low-income households, but our findings do not support this.

5. Conclusions

We simulated the potential effects of a state minimum wage increase based on the proposed legislation to determine whether a state-level minimum wage increase would weaken the competitive position of Illinois industries or impose excessive increases in labor costs, or result in lower employment. At that time, our simulations predicted that the hourly pay change from $5.15 to $6.50 would result in an increase of less than one percent of total labor costs. In addition, we predicted that there would not be widespread firm closures or losses to bordering states, because those industries that are most heavily reliant upon minimum wage labor are place-based services. Such establishments are not likely to close and move elsewhere, for their clientele cannot be assumed to move too. In this paper, we follow up on the predictions of that study, now that the new rate has taken effect and the data are available. Using an interrupted time series model, we find that hourly wages for low-wage workers increased on average by about 15 cents, but usual weekly hours fell. On net, weekly earnings fell slightly but not for workers in low-income households. If anyone benefits from minimum wage rate increases, it is the low-wage worker in a low-income household. Firms offset their higher labor costs by cutting hours, but our findings suggest that employers are aware of who among their workforce relies most on their earnings to support families and who does not. But, while the minimum wage increase in Illinois benefited low-income workers, they still earn wages that are below self-sufficiency levels (EPI self sufficiency measure). What is more, their hours are still susceptible to cuts even though these findings demonstrate that employers tend to cut others' hours.

Our results lie outside the predictions of both supporters and critics of the minimum wage, and yet our results stand up to rigorous sensitivity testing. For instance, our findings are unaffected by changing the wage range: increasing the upper limit of the ranges from $7.50 to $8.00, $9.00, up to $10.00 did not change our results except to dilute their statistical significance, and likewise for the lower boundary. We could not rationalize a wage range this wide, for nothing in the literature suggests that a minimum wage increase affects workers earning $10.00 per hour. Our results are also robust to adding and deleting demographic variables as well as to adding or dropping observations. We also ran separate equations for observations in metro, non-metro, and rural areas in case the higher earnings in and near Chicago skewed statewide estimates, but that variation failed to alter our results as well. To test whether our 2005 data failed to capture the impact of the second increase since it took effect at the beginning of that year, we divided 2005 based on interview month and results were impervious to use of either the first or second half of 2005 in our estimations. Finally, we considered our controls. None of Illinois' bordering states had changed their minimum wage rates when Illinois did, but one had done so by the middle of 2005. Wisconsin's minimum wage rate increase took effect in mid-2005, so to determine whether that change had any effect on our findings, we estimated all models without Wisconsin and our findings remained nearly the same.

And so we are left to speculate about our results: at approximately 15 cents per hour, wages rose less than we would have anticipated and hours were cut by more than we anticipated. The increase to the Illinois minimum wage cannot be interpreted as the movement along the demand curve; something shifted demand for Illinois' low wage workers in response to the minimum wage rate hike. We might also wonder whether or not a state-level minimum wage change operates differently than does one implemented nationwide. The states that have enacted higher minimum wages tend to be higher personal income states already—Alaska, Hawaii, Pacific coast states, and New England—so it may be that the effect of an increase is smaller than a nationwide rate hike. Unlike other studies of U.S. wage distributions (DiNardo, Fortin, and Lemieux 1996, Lee 1999), we do not find a strong spike at $6.50 when the new increase was fully implemented, which may be due to higher incomes on average. The average wage of our sample is $6.49, so unlike the simulations of DiNardo, Fortin, and Lemieux (1996) or the empirical analyses of Lee (1999), the Illinois minimum wage increase may be less binding.

Another factor that would not be captured in our data is multiple jobholding, given that the data rely on self reports. Say a person holds two low-wage jobs: one full-time and one part-time. If her full-time job is her primary occupation in 2003, but she loses it due to the increased minimum wage, her primary job in 2005 may be the part-time job. Since CPS questions refer to respondents' primary jobs, this hypothetical case would suggest to us that her hours fell with no net job loss. To the extent that this may occur on a larger scale, further research using different methods would be needed to tease that out. Further research could examine the effect longitudinally, by following key workers before and after such policy changes are enacted and implemented. This type of analysis would help determine whether job loss occurs, whether hours fall, or if other outcomes altogether result from state minimum wage rate increases.

We chose observations by their hourly wage rates, hypothesizing that these workers—no matter their jobs—would be most susceptible to minimum wage increases by virtue of their hourly pay rate. The law partially exempts tipped employees—which is why we avoided them in our analysis—but we cannot tell, for instance, if some employers pay their cashiers as "tipped workers" if a tip jar is placed at the cash register or if busboys are paid as such because they receive a portion of what waiters and bartenders collect. Interestingly, when examining the effects on fast-food workers only, we find that their hourly wage rate increases by $1.00 in Illinois after the state minimum wage increase, compared to fast-food workers before the change and those in bordering states, and the change in hours is not statistically different from zero. A more precise approach may be to focus on specific occupations comprised largely of minimum wage earners, rather than examining effects on all workers within a particular wage range.

Another unexplained outcome is the proportion of very low-wage workers as a total of all workers in Illinois (chart 1): why would there be so many earning below the minimum wage after the rate hike? Occupations held by Illinois workers earning $4.25-$6.49 include cooks, cashiers, secretaries, receptionists, data entry, and childcare workers. The law provides for a training wage for workers under 18, but we would have expected a greater shift to $6.50 with few remaining sub-minimum wage workers in 2005 in Illinois, despite even widespread employer noncompliance (Schiller 1994). What is the role of workers in the economy who earn less-than-minimum wages, and could competition from undocumented work shape the effects of policy on this population?

Our results back neither proponents nor opponents of the minimum wage. Wages did not increase as much as expected, but employment did not fall. Clearly, even the most straightforward policy change brings about a far more complex series of outcomes than existing theory—which presumes mechanistic adjustments to wage changes—predicts.

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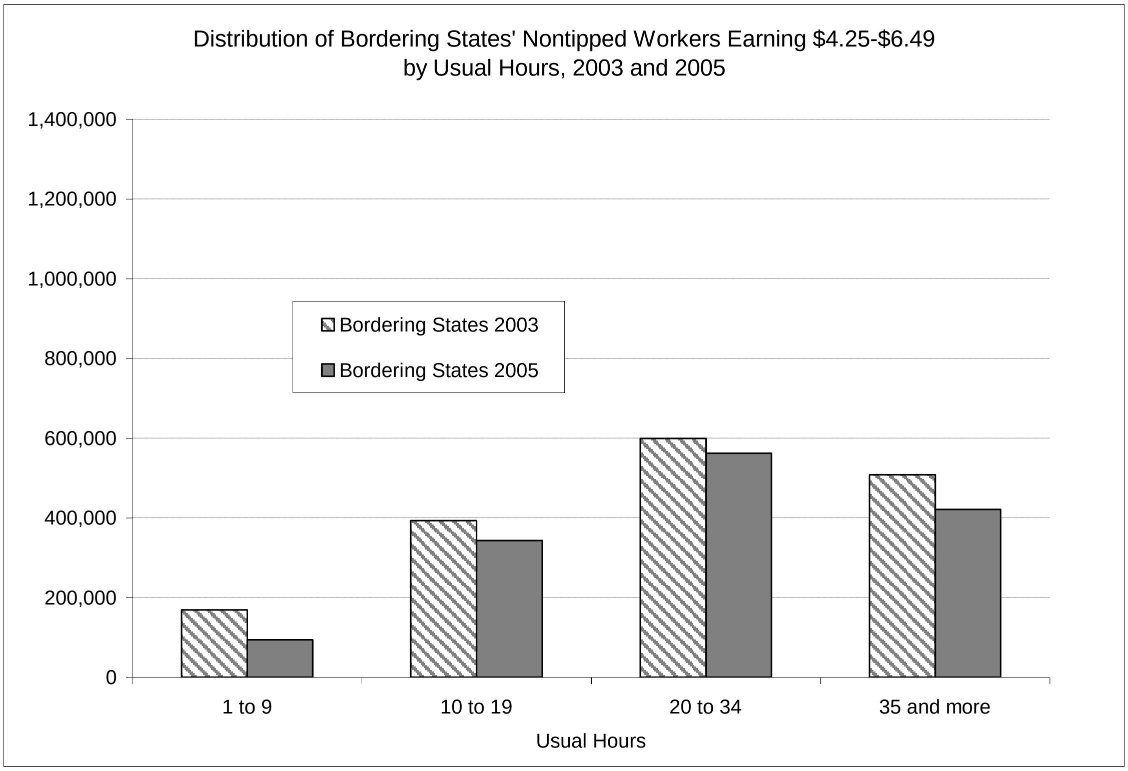
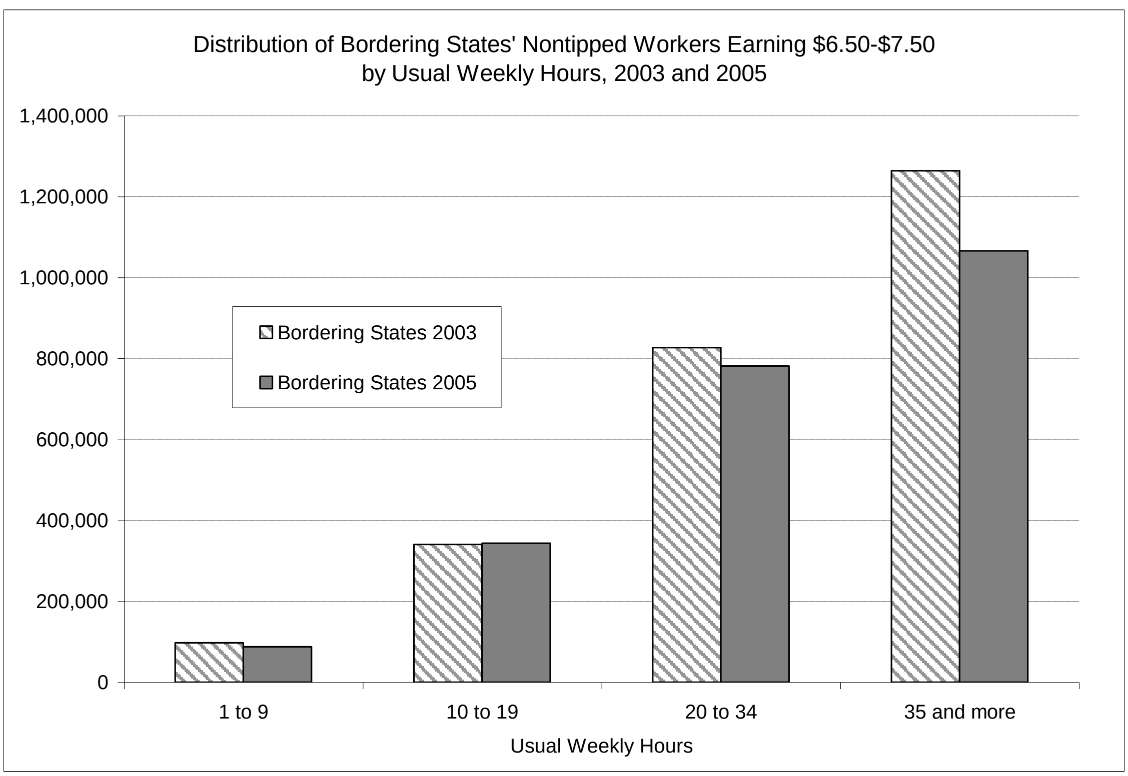
Appendix A. Distribution of low-wage workers in bordering states, 2003 and 2005





Source: Authors' calculations using CPS MORG data, 2003 and 2005