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Recent Research on the Minimum Wage: Implications for Missouri

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EXECUTIVE SUMMARY

The minimum wage has long been a contentious policy issue, but particularly so in Missouri in recent years. When St. Louis raised its city minimum wage in 2015, with increases planned to \$11 per hour by 2018, legal battles held up implementation and a state law eventually overrode the local ordinance. This essay delves into the sources of this policy dispute, first by examining the theoretical issues involved, then focusing on recent research, particularly regarding outcomes other than the traditional focus on employment outcomes. Using minimum wage increases as an anti-poverty policy is not likely to succeed. While the empirical evidence using more traditional models is decidedly mixed, once we allow for longer-lived dynamic effects, the evidence shows that job growth declines among those most often viewed as beneficiaries of minimum wage increases. Already-marginalized groups are likely to be hardest hit as employers substitute towards workers with more experience.

1. INTRODUCTION

The minimum wage has long been a contentious policy issue, but particularly so in Missouri in recent years. When St. Louis raised its city minimum wage in 2015, with increases planned to \$11 per hour by 2018, legal battles held up implementation and a state law eventually overrode the local ordinance. The minimum wage increased to \$10 per hour in that city for just three months in the middle of 2017, before returning back to the state level of \$7.70. But lost in much of this bitter battle is a broader view of the history and economics of the minimum wage.

This essay delves into the sources of this policy dispute. I begin with a discussion of the theoretical issues involved, then focus on recent research, particularly regarding outcomes other than the traditional focus on employment outcomes. I conclude with an analysis of who benefits from a minimum wage increase and whether it is a policy well-suited to fighting poverty.

2. MODELING THE EFFECTS OF MINIMUM WAGE INCREASES

The academic and policy debate over the minimum wage is over a century old, dating back to well before the first minimum wage law in the United States was enacted, in Massachusetts in 1912.¹ On one side of the debate, the argument is simple: workers whose production is worth less to their

employers than the minimum wage cannot remain employed.² Originally, this was a feature of the policy, rather than an unintended consequence; much of the original intent of minimum wage laws were to reduce the demand for low-skill labor, often with explicitly racist and eugenicist reasoning. In 1912, Sidney Webb, co-founder of the London School of Economics, wrote regarding those whose productivity did not generate enough income to make a living, that “of all the ways of dealing with these unfortunate parasites, the most ruinous to the community is to allow them to unrestrainedly compete as wage earners.”³ This suggests a role for substitution of one type of labor for another that might reduce the employment response. Indeed, Webb felt that employment would not decrease overall, even as certain groups lost their jobs – employers would substitute towards higher-skilled workers. Webb further argued that increased wages for low-skilled workers would be passed through to consumers in the form of higher prices or that profits would simply be reduced, with businesses continuing to employ the same number of workers as before.⁴

A straightforward economic analysis reveals the problem with these latter claims, which are still being made today. As H.B. Lees Smith put it in 1907, “a rise in the price of a commodity will lead to a decrease in the demand for it. This means that a certain amount of the labour and capital hitherto employed in the production of the commodity must seek other occupations. But this is likely to involve both the labourers and employers in a loss... It is no kindness to the workers in a trade to merely turn them out of it.”⁵ Lees Smith made the same counter-argument regarding falling profits: reducing the returns to a business reliant on low-skill labor leads to a shift in resources towards other activities, reducing the demand for labor and leading to the creation of “a class prevented by the State from obtaining employment.” These arguments were based on theory rather than empirical analysis, and Lees Smith noted that the amount of displaced labor depended on the characteristics of the industry.

In the intervening decades, a number of more sophisticated models of the labor market have been utilized to analyze the effects of the minimum wage. These models primarily revolve around how much market power is held by employers – that is, whether

employers are able to exert some control over the wages they pay, rather than paying the prevailing wage rate set in a smoothly-functioning market. In the presence of monopsony (employer market power) in the labor market, a higher minimum wage (up to a certain level) can actually increase employment even as it increases wages.

But there is reason to doubt that this sort of market power is at play for low-skill labor of the type that is affected by minimum wages. Most minimum-wage workers are employed by small establishments, with fewer than half of such workers at firms with 100 or more employees.⁶ It is difficult to imagine that a fast-food restaurant on one corner exerts control over the low-skill labor market, as does the fast-food restaurant across the street. More to the point, low-skill labor is, by definition, fungible across firms and industries. An individual employed as a janitor in for a fast-food restaurant can work as a janitor at any sort of establishment, or in similar manual-labor occupations. Therefore, firms must exert monopsony power over vast swaths of the low-skill labor market – an unlikely proposition.

But monopsony of the traditional, textbook type – that is, a “company town” in which there is only one employer – is not fully necessary for these conditions to hold. The presence of search frictions in the labor market can give rise to this kind of local wage-setting power, at least in the short run, because workers cannot easily switch to employers who offer slightly higher wages.⁷ But in the longer run, as movement by workers between firms is more common, this type of market power seems less likely to be a factor.⁸ Any rents generated by underpaying workers will be dissipated in a competitive market for the output of these firms. For example, even if a restaurant is able to pay wages below the competitive market level, the profits generated will be competed away as other establishments enter. Increased labor costs in the form of a minimum wage increase must drive some marginal firms out, reducing overall employment even if some remaining firms increase their level of employment. The razor-thin profit margins of the restaurant industry, which employs the largest share of minimum-wage workers, suggest that there is little scope for broad-based employment increases of this nature.

These models also generate some implications that have been tested and found wanting. The monopsony model suggests that a well-designed minimum wage will increase firms' labor input and therefore the firm's output. This increase in output implies that prices for the goods and services produced by that labor are likely to decrease. Empirical evidence in the restaurant industry finds, however, that prices increase after a minimum wage increase.⁹ Further, the monopsony model of the labor market predicts that there will be substantial bunching of workers at a new, higher minimum wage, as employers are forced to pay workers at that higher level. That is, a number of workers will be paid at exactly the level of the new minimum wage. In contrast, the competitive model of the labor market, in which workers who produce value below the minimum wage are unemployed, predicts no such bunching. Recent research suggests that the prevalence of employment at the higher minimum wages that went into effect at the end of the first decade of the 21st century was significantly below the predictions of these monopsony models.¹⁰

Some search-and-matching models of the labor market add an additional layer of sophistication. Workers' search effort could respond to higher minimum wages, potentially inducing them to enter the labor force or search more vigorously for better jobs.¹¹ Under certain conditions, this entry and additional effort generates more productivity for employers, potentially enough to reverse negative employment effects. However, there is no evidence that higher minimum wages leads to labor-market entry, and increases in search effort among those already searching tends to be very short-lived.¹²

3. WHAT ARE THE EMPIRICAL EFFECTS OF MINIMUM WAGE INCREASES?

The empirical literature on the minimum wage was fairly dormant until the early 1990s, with the handful of papers on the subject generally finding small but meaningful disemployment effects for less-experienced workers.¹³ The publication of Card and Krueger's study of fast-food restaurants in New Jersey (which had increased its minimum wage) and Pennsylvania (which had not), sparked a renewed interest in the topic.¹⁴ They found no evidence of employment losses in their phone

survey of several hundred establishments across the two states, and potentially some evidence of employment increases. A vigorous debate ensued, with criticisms of their empirical approach and difficulties replicating their findings using administrative data.¹⁵

The empirical literature on the employment effects of minimum wage increases in more recent years has homed in on the question of forming the correct counterfactual – that is, how would the labor market in the area that increased its minimum wage have evolved in the absence of such a change? This is a difficult question because there are numerous factors that might lead to spurious correlation between minimum wage increases and decreases in employment levels, like other employment regulations enacted in close proximity to those increases or changes in business conditions. Some researchers argue for the importance of accounting for spatial heterogeneity – that is, more closely controlling for regional differences.¹⁶ One popular approach in this literature is the use of border discontinuities, in which counties in states that are adjacent to each other, but have different minimum wages, are used as a comparison group. This branch of the literature can be summarized as arguing that when the correct controls are included, there tends to be no statistically significant effect from an increase in the minimum wage on the level of employment. But others argue that these approaches are invalid since they are sensitive to the time periods being examined, contiguous counties may not be good controls for each other, and ultimately, these models push the data beyond useful inference.¹⁷ Regardless, even study designs that find negative and statistically significant employment effects tend to find relatively small effects.¹⁸

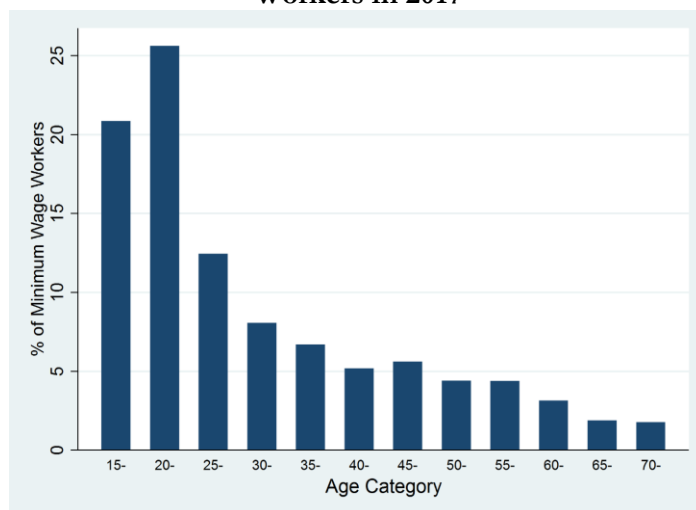
What might be the sources of this empirical confusion? It is possible that the monopsony or search-and-matching explanations discussed above are, in fact, true. More importantly, the minimum wage increases enacted prior to the last few years have tended to be fairly small, binding on only a small percentage of the workforce. In 2017, those paid at or below their state's minimum wage made up just 3.5% of employees; even among workers paid by the hour, fewer than 6% were paid at or below the minimum wage. Many researchers focus on groups that are more likely to be affected, like teenagers and

restaurant workers. But, as illustrated in Figures 1 and 2, only about one in five working teenagers earns minimum wage and only about one-fifth of minimum wage workers are teenagers, making it difficult to see effects in the data. And while the food services industry employs the largest share of minimum wage workers (about 36% in 2017), only about one-quarter of the workers in the industry are minimum wage workers. And among those workers, about half receive tips, making their true hourly wage much higher than what their employer pays. In many states, tipped workers are subject to a lower minimum wage than other workers; for example, the tipped minimum wage in Missouri is \$3.93 in 2018, as compared to \$7.85 overall. This lower level for tipped workers often does not increase when the general minimum wage does. It is therefore not surprising that those workers are relatively unaffected by minimum wage increases. A focus on less-educated workers and those working in low-wage occupations seems to be a more effective approach.¹⁹ Another reason for a relatively muted impact on the number of jobs is that employers may reduce *hours* of work even as they maintain the same number of workers; due to data limitations, few studies have been able to examine this margin of adjustment with much precision.

The new wave of high minimum wages in recent years provides a useful laboratory for examining effects on employment. Twenty-two states and the District of Columbia have raised their minimum wages since 2014, and a number of municipalities have increased local minimum wages. Local minimum wages are a relatively new (and still fairly limited) phenomenon, with only 41 municipalities having a minimum wage higher than their state's in 2018, compared to just five in 2012. Some of these are quite high compared to other areas. Seattle has had a \$15 per hour minimum wage since 2017, a level that exceeds wages for over half of the hourly workforce if it were in effect in Missouri. It is difficult for even the most ardent minimum wage proponent to credibly argue that a minimum wage of this level and scope would have no impact on the workforce.

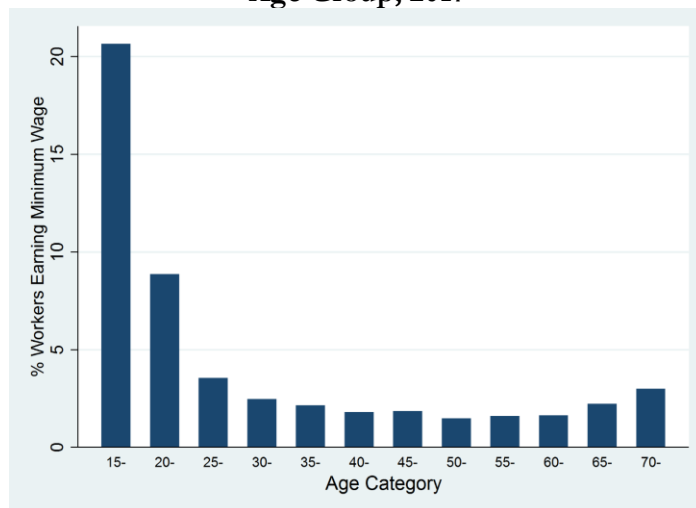
Seattle's minimum wage increase was a useful case study for researchers for several reasons. First, it was quite large relative to other previously-studied changes. Second, it was a city-level policy that raised the

Figure 1: Age Distribution of Minimum Wage Workers in 2017



Source: Current Population Survey Merged Outgoing Rotation Groups, 2017

Figure 2: Share of Minimum Wage Workers in Each Age Group, 2017



Source: Current Population Survey Merged Outgoing Rotation Groups, 2017

minimum wage to a much higher level than neighboring areas (the proposed increase considered by St. Louis would create a similar disparity). And finally, the state of Washington tracks hours of work, unlike most other states. The Seattle Minimum Wage Project research team found very large effects, to the extent that total hours worked in low-wage jobs fell by 9% after the incremental increase to \$13 per hour in 2016 from \$11 in 2015 and \$9.32 in 2014 (the final step of the increase, to \$15 per hour in 2017, is still being studied; the city's

minimum wage is now indexed to inflation and rises automatically each year).²⁰ Following the minimum wage increase, total payroll for low-wage workers actually fell by an average of \$125 per month: those workers for whom the increase was supposed to help were actually receiving fewer dollars on average after the minimum wage increase than before. Unsurprisingly, the study came in for immediate criticism from minimum wage advocates, but its methodological approach is sound and most of the critiques are groundless.²¹

A recent line of inquiry takes a different tack, suggesting that the econometric specifications used in previous research may have been incorrect. The sorts of empirical models frequently used in the minimum wage literature are well designed for capturing the effects of sharp changes in the level of employment when one state changes its policies and others do not. But there are good reasons to believe that the shifts in employment will be more gradual. For example, substituting away from low-skill labor (counter help) towards capital (self-service kiosks) in fast-food restaurants takes time as employers adjust their patterns or new types of establishments replace older, more labor-intensive ones.²² There is evidence that employers do indeed look to automate work in response minimum wage increase.²³ Further, if employers may be reluctant to fire workers for morale reasons, they reduce the size of their workforce through attrition by simply not hiring as many replacements for workers who leave. They can also demand more effort from their remaining employees in exchange for higher wages, which will lead to a slowdown in hiring expansion.²⁴ In that case, each employee is expected to work more, so the return to hiring an additional employee is reduced. The search-and-matching models described previously also imply more gradual changes, rather than the sudden drop in employment predicted by simpler supply and demand kinds of models. These types of slow adjustments are not a novel insight in labor economics,²⁵ yet had rarely been considered in the context of the minimum wage.

Taken together, then, the impact of the minimum wage on employment may be dynamic, operating through reductions in job growth that take several years to be fully reflected in the level of employment. The specifications used in most previous research on this

topic are ill suited for capturing these longer-lived impacts and, indeed, lead to biased estimates that are far smaller than the true impacts.²⁶ As an example, using three administrative data sets and a more flexible econometric model, Jeremy West and I found that minimum wage increases reduced job growth that took several years to be reflected in the level of employment.²⁷ And the overall negative effect on employment was significantly larger than that found in much of the earlier research.

The early proponents of minimum wages, who were often driven by a desire to exclude women, immigrants, and minorities from the labor force, understood that employers might substitute towards different types of labor if statutory wages made it unprofitable to employ more low-skilled workers. But the evidence on whether this exclusion occurs is limited. Studies have examined whether the impacts of the minimum wage vary by demographic group and have found inconsistent results.²⁸ However, recent work that I conducted with Jeffrey Clemens and Lisa Kahn shows that minimum wage increases tend to reduce the employment of young adults and high school dropouts. We also find that employers' job postings following minimum wage increases see an increase in requirements for high school degrees, reducing the job opportunities for the least-credentialed workers in the labor force.²⁹ Evidence from the Seattle Minimum Wage Project also suggests that employers reallocate hours towards higher-paid workers, indicating substitution towards more highly-skilled employees at the expense of lower-skilled ones.³⁰ This has important implications for the distributional impact of minimum wage increases, discussed below.

Another avenue to consider how changes in the minimum wage affect the composition of compensation. After all, cash wages are just one part of a labor contract. Flexibility of work hours, working conditions, and non-wage benefits also are important aspects of the job experience that have, for the most part, received little attention in this research. It is difficult, after all, to objectively measure working conditions or track employee perks like free parking, uniforms, or meals. However, a more easily-observed benefit is employer-provided health insurance (EPHI). The prevalence of EPHI in low-wage jobs is higher than

might be expected, with about 45% of those in low-paying jobs receiving it. Earlier research, using data from 1979 to 2000, found no impact on the provision of health insurance by employers.³¹ But more recent work, after the passage of the Affordable Care Act, finds that minimum wage increases significantly reduce EPHI, clawing back some of the wage gains even for those workers who retain their employment.³² Depending on how gains and losses are distributed and the value workers place on these benefits, worker well-being can be harmed by an increase in minimum wages even without employment losses.

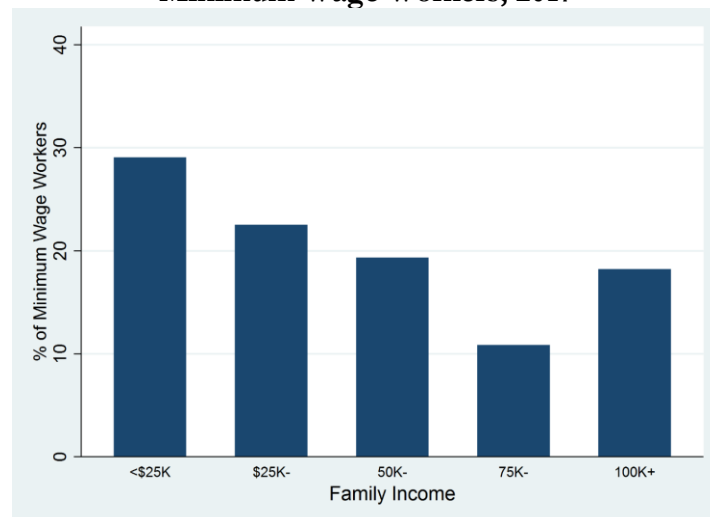
A final line of recent research has important implications for the accuracy of the border-discontinuity designs discussed above, and particularly for Missouri, whose two largest cities - Kansas City and St. Louis - border other states. A growing consensus has emerged that local minimum wage increases affect the location and commuting decisions of low-wage workers. Low-skill immigrants are less likely to locate in areas with high minimum wages.³³ Low-wage workers increase commuting out of those areas and reduce commuting into them.³⁴ Recent results from the Seattle Minimum Wage Project show that hours of work fell in the areas very close to Seattle, likely the result of changes in the composition of workers.³⁵ These kinds of spillovers make the “natural experiment” of contiguous counties across state borders less precise and can reduce the estimated impact on employment, even as workers are displaced to other areas.

4. THE MINIMUM WAGE AS AN ANTI-POVERTY PROGRAM

Along with an attempt to increase workers’ power in the labor market, the minimum wage is often promoted as an attempt to reduce poverty. Even if employers, rather than consumers or workers, bear much of the cost of the minimum wage, many of them are the owners of small single-establishment firms like restaurants or convenience stores. The owners may not be particularly wealthy themselves. With rigorous evidence of the impact on business owners essentially nonexistent, focus necessarily turns to minimum wage workers themselves.

The composition of the minimum wage workforce is not tilted towards low-income households, to the surprise of many observers. Yet this is not a new observation: only a quarter of minimum wage workers were poor in the mid-1980s, and about 30% in the mid-1990s.³⁶ Despite significant changes in the labor force over the past few decades, this is still true today. Using data from the Bureau of Labor Statistics Current Population Survey, I find that median cash income for families with a minimum wage earner in them was \$49,500 in 2017, with 10% of those families earning over \$150,000 (see Figure 3). Only 14% of those families receive Supplemental Nutrition Assistance Program aid (commonly known as Food Stamps), and 40% of minimum wage workers live in households earning more than double the supplemental poverty line, while only 20% live below it.

Figure 3: Income Distribution of Families with Minimum Wage Workers, 2017



Source: Current Population Survey, March 2017

It is no surprise, then, that the purported benefits of an increase in the minimum wage do not generally accrue to low-income households. The Congressional Budget Office estimated that nearly three times as much income would accrue to families above the poverty line than those below.³⁷ A recent study by MaCurdy (2015) began with an assumption that there would be no employment losses at all and that higher minimum wages would be passed through to prices, so as to estimate the impact of the most optimistic possibilities. He found that these price increases would be regressive, costing low-income

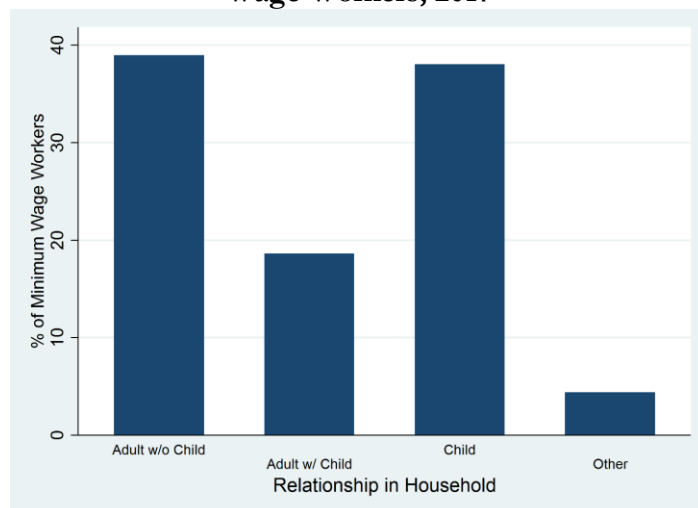
households relatively more than high-income ones, and that the benefits from higher wages would not be concentrated among poor households.³⁸ It then follows that, despite the hopes of advocates that minimum wage increases will reduce reliance on government income-support programs, that does not seem to be the case.³⁹

Who, then, makes up the minimum wage workforce? Again relying on Current Population Survey data, I find that half are 25 years old or younger, and nearly 70% are under 35. Figure 1 shows the age distribution of minimum wage workers. Only about a third are full-time workers, and slightly over a quarter are enrolled in high school or college. Figure 4 shows that nearly 40% live with their parents, and fewer than one-fifth are adults with children. Simply put, the minimum wage is badly targeted for poverty alleviation. Further, when job losses do occur because of increases in the minimum wage, they are likely to be concentrated among those who are most marginally attached to the labor force. After all, when an employer must pay a very high wage even for entry-level work, why would he or she take a chance on someone with a felony conviction, a single mother who needs some flexibility to care for her children, or a high school dropout struggling to gain work experience?

Labor force participation among many marginalized groups is shockingly low, and increases in the minimum wage may only exacerbate this fact. For example, among African-American high school dropouts under the age of 65 who are not currently incarcerated or in the military, only 19% held a full-time job in 2017. And for those in labor force, the unemployment rate was 16%, four times the level for all others. It is difficult to see, therefore, how the prospects for those individuals are improved by making it illegal to pay them less than \$11, \$12, or the popular \$15 per hour, a wage latter rate would bind on 89% of that group. It simply beggars belief that their chances for employment would be not be negatively affected.

In Missouri, the median wage for hourly workers is \$14.25, with a quarter being paid \$10.50 or less. Of all hourly workers, only 3.6% earn less than or equal to the state minimum wage in 2017, making up 2.2% of all workers. But in the center-city area of St. Louis, most likely to be affected by the proposed city minimum

Figure 4: Relationship in Household for Minimum Wage Workers, 2017



Source: Current Population Survey Merged Outgoing Rotation Groups, 2017

wage hike, the median wage was \$12.75. Here 37% of hourly workers earned less than or equal to the \$11 per hour proposed wage and thus are in most danger of seeing reduced benefits, hours of work, or possibly losing their jobs entirely.

5. CONCLUSIONS

Good anti-poverty policy should preserve incentives on one side of the market to work and on the other side to hire, and be well-targeted to the needy. Workers certainly want to be paid more, but the minimum wage fails on the other counts. While the empirical evidence using more traditional models is decidedly mixed, once we allow for longer-lived dynamic effects, the evidence shows that job growth declines among those most often viewed as beneficiaries of minimum wage increases. Already-marginalized groups are likely to be hardest hit as employers substitute towards workers with more experience.

Minimum wage increases of the magnitude recently proposed would have much more negative economic and social impacts, especially in areas where the prevailing market wages are lower. The popular “Fight for Fifteen” proposal to raise the national minimum wage to \$15 per hour would have serious consequences for states like Missouri, where over half of hourly workers currently earn less than that amount. And for

cities like St. Louis, Seattle’s experience serves as a cautionary tale: Even though Seattle is experiencing an economic boom, low-wage workers, on average, saw a reduction in their earnings relative to what they would have been without the minimum wage increase. Even if there is employer market power over low-skill labor, there is no reason to believe that policymakers are capable of designing an optimal minimum wage across all industries and localities that meets the criteria necessary to prevent employment such losses.

Anti-poverty efforts should be concentrated on more effective policies, like the earned income tax credit, which supplements low-income households’ labor

earnings. Unlike the minimum wage advocates of the late 19th and early 20th centuries, today’s advocates are, in general, well-intentioned in trying to tackle difficult issues of poverty and economic mobility. Unfortunately, the best of intentions are no substitute for good policy.

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NOTES

¹ For a thorough review, see Thomas C. Leonard, “The Very Idea of Applying Economics: The Modern Minimum-Wage Controversy and its Antecedents,” *History of Political Economy* 32, no. Suppl_1 (2000): 117-144.

² Henry Sidgwick, “Economic Socialism,” *The Contemporary Review*, 1866-1900 50 (1886): 620-631; George J. Stigler, “The Economics of Minimum Wage Legislation,” *The American Economic Review* 36, no. 3 (1946): 358-365.

³ Quoted in Thomas C. Leonard, *Illiberal Reformers: Race, Eugenics, and American Economics in the Progressive Era* (Princeton, NJ: Princeton University Press, 2016).

⁴ Sidney Webb and Beatrice Webb, *Industrial Democracy* (London: Longmans, Green, and Company, 1897).

⁵ HB Lees Smith, “Economic Theory and Proposals for a Legal Minimum Wage,” *The Economic Journal* (1907): 504-512.

⁶ Sarah Flood, Miriam King, Steven Ruggles, and J. Robert Warren, *Integrated Public Use Microdata Series, Current Population Survey: Version 5.0* [dataset]. (Minneapolis, MN: University of Minnesota, 2017).

⁷ Kenneth Burdett and Dale T. Mortensen, “Wage Differentials, Employer Size, and Unemployment,” *International Economic Review* (1998): 257-273; Alan Manning, *Monopsony in Motion: Imperfect Competition in Labor Markets* (Princeton, NJ: Princeton University Press, 2003).

⁸ Peter Kuhn, “Is Monopsony the Right Way to Model Labor Markets? A Review of Alan Manning’s Monopsony in Motion,” *International Journal of the Economics of Business* 11, no. 3 (2004): 369-378.

⁹ Daniel Aaronson and Eric French, “Product Market Evidence on the Employment Effects of the Minimum Wage,” *Journal of Labor Economics* 25, no. 1 (2007): 167-200; Charles Brown, Comment for Review Symposium “Myth and Measurement: The New Economics of the Minimum Wage,” *Industrial & Labor Relations Review* 48, no. 4 (1995): 827.

¹⁰ Jeffrey Clemens, “The Low-Skilled Labor Market from 2002 to 2014: Measurement and Mechanisms,” *SIEPR Discussion Paper* No. 16-006 (2016).

¹¹ Daron Acemoglu, “Good Jobs versus Bad Jobs,” *Journal of Labor Economics* 19, no. 1 (2001): 1-21; Christopher J. Flinn, “Minimum Wage Effects on Labor Market Outcomes Under Search, Matching, and Endogenous Contact Rates,” *Econometrica* 74, no. 4 (2006): 1013-1062.

¹² Camilla Adams, Jonathan Meer, and Carly Will Sloan, “The Minimum Wage and Search Effort,” Working Paper (2018). Texas A&M University.

¹³ Charles Brown, Curtis Gilroy, and Andrew Kohen, “The Effect of the Minimum Wage on Employment and Unemployment,” *Journal of Economic Literature* 20, no. 2 (1982): 487-528.

¹⁴ David Card and Alan B. Krueger, “Minimum Wages and Employment: A Case Study of the Fast-Food Industry in New Jersey and Pennsylvania,” *The American Economic Review* 84, no. 4 (1994): 772-793; David Card and Alan B. Krueger, *Myth and Measurement: The New Economics of the Minimum Wage*, (Princeton, NJ: Princeton University Press, 1995).

¹⁵ John Kennan, “The Elusive Effects of Minimum Wages,” *Journal of Economic Literature* 33, no. 4 (1995): 1950-1965; David Neumark and William Wascher, “Minimum Wages and Employment: A Case Study of the Fast-Food Industry in New Jersey and Pennsylvania: Comment,” *American Economic Review* 90, no. 5 (2000): 1362-1396.

¹⁶ Sylvia A. Allegretto, Arindrajit Dube, Michael Reich, and Ben Zipperer, “Credible Research Designs for Minimum Wage Studies,” (2017). *ILR Review* 70, no. 3: 559-592.

¹⁷ David Neumark, JM Ian Salas, and William Wascher, “Revisiting the Minimum Wage—Employment Debate: Throwing Out the Baby with the Bathwater?” *ILR Review* 67, no. 3_suppl (2014): 608-648.

- ¹⁸ Jeffrey Clemens and Michael Strain, “Minimum Wage Analysis Using a Pre-Committed Research Design: Evidence Through 2016,” (2018).
- ¹⁹ Jeffrey Clemens and Michael Wither, “The Minimum Wage and the Great Recession: Evidence of Effects on the Employment and Income Trajectories of Low-Skilled Workers,” *National Bureau of Economic Research* No. 20724 (2014).
- ²⁰ Ekaterina Jardim, Mark C. Long, Robert Plotnick, Emma Van Inwegen, Jacob Vigdor, and Hilary Wething, “Minimum Wage Increases, Wages, and Low-Wage Employment: Evidence from Seattle,” *National Bureau of Economic Research* No. 23532 (2017).
- ²¹ Jonathan Meer, “A Minimum-Wage Study Faces Misplaced Skepticism,” *National Review*, June 29, 2017, accessed May 18, 2018, <https://www.nationalreview.com/2017/06/seattle-minimum-wage-university-washington-study-critics-wrong/>
- ²² Daniel Aaronson, Eric French, Isaac Sorkin, and Ted To, “Industry Dynamics and the Minimum Wage: A Putty-Clay Approach,” *International Economic Review* 59, no. 1 (2018): 51-84; Isaac Sorkin, “Are There Long-Run Effects of the Minimum Wage?” *Review of Economic Dynamics* 18, no. 2 (2015): 306-333.
- ²³ Grace Lordan and David Neumark, “People Versus Machines: The Impact of Minimum Wages on Automatable Jobs,” *National Bureau of Economic Research* No. 23667, (2017); Daniel Aaronson and Brian J. Phelan, “Wage Shocks and the Technological Substitution of Low-Wage Jobs,” *The Economic Journal* (Forthcoming).
- ²⁴ Marie Louise Obenauer and Bertha Marie von der Nienburg, *Effect of Minimum-Wage Determinations in Oregon: July, 1915* (Washington D.C.: US Government Printing Office, 1915), No. 6; Mark Bills, Yongsung Chang, and Sun-Bin Kim, “How Sticky Wages in Existing Jobs Can Affect Hiring,” *National Bureau of Economic Research* No. 19821 (2014).
- ²⁵ Daniel S. Hamermesh, “Labor Demand and the Structure of Adjustment Costs,” *The American Economic Review* (1989): 674-689; Walter Y. Oi, “Labor as a Quasi-Fixed Factor,” *Journal of Political Economy* 70, no. 6 (1962): 538-555.
- ²⁶ Jonathan Meer and Jeremy West, “Effects of the Minimum Wage on Employment Dynamics,” *National Bureau of Economic Research* No. 19262 (2013).
- ²⁷ Jonathan Meer and Jeremy West, “Effects of the Minimum Wage on Employment Dynamics,” *Journal of Human Resources* 51, no. 2 (2016): 500-522.
- ²⁸ David Neumark and William Wascher, “The Effects of Minimum Wages on Teenage Employment and Enrollment: Estimates from Matched CPS Data,” *Research in Labor Economics* (1996), 25-64.
- Arindrajit Dube, T. William Lester, and Michael Reich, “Minimum Wage Effects Across State Borders: Estimates Using Contiguous Counties,” *The Review of Economics and Statistics* 92, no. 4 (2010): 945-964.
- ²⁹ Jeffrey Clemens, Jonathan Meer, and Lisa Kahn, “Dropouts Need Not Apply: Labor Substitution and the Minimum Wage,” Working Paper (2018). Texas A&M University.
- ³⁰ Ekaterina Jardim and Emma van Inwegen, “Payroll, Revenue, and Labor Demand Effects of the Minimum Wage,” Working Paper (2017). University of Washington.
- ³¹ Kosali Ilayperuma Simon and Robert Kaestner, “Do Minimum Wages Affect Non-Wage Job Attributes? Evidence on Fringe Benefits,” *ILR Review* 58, no. 1 (2004): 52-70.
- ³² Jeffrey Clemens, Lisa Kahn, and Jonathan Meer, “The Minimum Wage, Fringe Benefits, and Worker Welfare,” *National Bureau of Economic* No. 24635 (2018).
- ³³ Brian C. Cadena, “Recent Immigrants as Labor Market Arbitrageurs: Evidence from the Minimum Wage,” *Journal of Urban Economics* 80 (2014): 1-12.
- ³⁴ Terra McKinnish, “Cross-State Differences in the Minimum Wage and Out-of-State Commuting by Low-Wage Workers,” *Regional Science and Urban Economics* 64 (2017): 137-147; Jorge Perez Perez, “City Minimum Wages,” Working Paper (2018). Brown University.
- ³⁵ Ekaterina Jardim, Mark C. Long, Robert Plotnick, Emma van Inwegen, Jacob Vigdor, and Hilary Wething, “The Extent of Local Minimum Wage Spillovers,” Working Paper (2018). University of Washington.
- ³⁶ Ralph E. Smith and Bruce Vavrichek, “The Minimum Wage: Its Relation to Incomes and Poverty,” *Monthly Labor Review* 110, no. 6 (1987): 24-30; David Card and Alan B. Krueger, *Myth and Measurement: The New Economics of the Minimum Wage*, (Princeton, NJ: Princeton University Press, 1995).
- ³⁷ Congressional Budget Office, “The Effects of a Minimum-Wage Increase on Employment and Family Income,” (2014), <https://www.cbo.gov/publication/44995>.
- ³⁸ Thomas MaCurdy, “How Effective is the Minimum Wage at Supporting the Poor?” *Journal of Political Economy* 123, no. 2 (2015): 497-545.
- ³⁹ Jeffrey Clemens, “Redistribution Through Minimum Wage Regulation: An Analysis of Program Linkages and Budgetary Spillovers,” *Tax Policy and the Economy* 30, no. 1 (2016): 163-189.