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Economic Impact Analysis of the One Fair Wage Proposal on Michigan Small Businesses and Their Employees

This report analyzes the potential economic impact of implementing the One Fair Wage proposal, currently being circulated by petition, which advocates for an increase in the minimum wage in Michigan. Should the petition receive enough support, the proposal contained within would be voted on at the November 2018 general election. The proposal would increase the Michigan minimum wage to \$10.00 in 2019, \$10.65 per hour in 2020, \$11.35 per hour in 2021, and \$12.00 in 2022, after which the minimum wage would be tied to inflation as calculated by the consumer price index for urban wage earners and clerical workers or a successor index. Under the proposal, tipped employees would also see the minimum cash wage they receive raised to the level of the minimum wage for non-tipped workers by 2024.

Using the Business Size Insight Module (BSIM), a dynamic, multi-region model based on the Regional Economic Models, Inc. (REMI) structural economic forecasting and policy analysis model which integrates input-output, computable general equilibrium, econometric, and economic geography methodologies, the NFIB Research Center estimates that over a ten-year period beginning in 2019, the proposed minimum wage schedules would reduce Michigan private sector employment by as much as 183,000 jobs and result in a cumulative reduction in Michigan real output of over \$76 billion over the ten-year forecast window. Sixty-two percent of the forecast job losses are jobs that would have been in the small business sector of the economy.

Introduction

Employers in all fifty states are required to offer workers a minimum wage in exchange for their labor. The primary federal statute concerning minimum wages is the Fair Labor Standards Act (FLSA) of 1938 which, as amended, establishes a basic minimum wage that must be paid to covered workers. The current federal minimum wage is \$7.25 per hour. States are permitted to establish their own minimum wages which have the potential to replace the federal rate as the basic minimum wage, provided that the state minimum wage established exceeds the federal rate. The effective minimum wage in the state of Michigan is currently \$8.90 per hour (**Table 1**), \$1.65 per hour higher than the federal rate.

Table 1: Historical Effective Minimum Wage Rates for Non-farm Employment in Michigan

Year	Minimum Wage	Year	Minimum Wage
1976	\$2.30 (per hour)	1997	\$4.75
1977	\$2.30	1998	\$5.15
1978	\$2.65	1999	\$5.15
1979	\$2.90	2000	\$5.15
1980	\$3.10	2001	\$5.15
1981	\$3.35	2002	\$5.15
1982	\$3.35	2003	\$5.15
1983	\$3.35	2004	\$5.15
1984	\$3.35	2005	\$5.15
1985	\$3.35	2006	\$5.15
1986	\$3.35	2007	\$6.95
1987	\$3.35	2008	\$7.15
1988	\$3.35	2009	\$7.40
1989	\$3.35	2010	\$7.40
1990	\$3.35	2011	\$7.40
1991	\$3.80	2012	\$7.40
1992	\$4.25	2013	\$7.40
1993	\$4.25	2014	\$8.15
1994	\$4.25	2015	\$8.15
1995	\$4.25	2016	\$8.50
1996	\$4.25	2017	\$8.90

Source: Department of Labor

Since the end of the Great Recession in 2009, the minimum wage in Michigan has increased from \$7.40 per hour in 2009 to its current level of \$8.90 per hour. This wage increase occurred in an annually staggered fashion in accordance with the Workforce Opportunity Wage Act, Public Act 138 of 2014 (Act 138), which took effect in May 2014. Act 138 mandates a further wage increase in 2018 to \$9.25 per hour. Previous to Act 138, the most recent increases in the state

minimum wage spanned 2006 to 2008, when the minimum wage increased from \$6.95 per hour to \$7.40 per hour in accordance with Public Act 81 of 2006.

Despite what would amount to a 33 percent increase in the state minimum wage since 2006, not to mention the as-yet incomplete mandated wage increases as stipulated by recently signed legislation, certain interests argue for an even higher minimum wage. One proposal advocating for an even higher minimum wage is the One Fair Wage proposal, currently being circulated by petition, which advocates for increasing the Michigan minimum wage to \$10.00 in 2019, \$10.65 per hour in 2020, \$11.35 per hour in 2021, and \$12.00 in 2022, after which the minimum wage will be tied to inflation as calculated by the consumer price index for urban wage earners and clerical workers or a successor index. If enacted, the One Fair Wage proposal would result in the near doubling of the minimum wage since 2006. Under the proposal, tipped employees would also see the minimum cash wage they receive raised to the level of the minimum wage for non-tipped workers by 2024.

This brief report quantifies the potential economic impact implementation of the proposed minimum wage increase might have on Michigan small businesses and their employees by using the Business Size Insight Module. The BSIM is a dynamic, multi-region model based on the Regional Economic Models, Inc. (REMI) structural economic forecasting and policy analysis model which integrates input-output, computable general equilibrium, econometric, and economic geography methodologies. The underlying mechanics of the REMI model are based on decades of peer-reviewed literature.¹ The model is used by numerous clients in both the private and public sectors.² The BSIM is a customized version of the REMI model that has the unique ability to forecast the economic impact of public policy and proposed legislation on different categories of U.S. businesses differentiated by employee-size-of-firm. Forecast variables include levels of private sector employment and real output. By comparing simulation results for scenarios which include proposed or yet-to-be-implemented policy changes with the model's baseline forecast, the BSIM is able to obtain estimates of how these policy changes would impact employer firms and their employees.

¹ A list of the peer-reviewed literature is available at <http://www.remi.com/download/model-equations-v2-0?wpdmdl=7783>. The list of references includes articles published in the [American Economic Review](#) and [The Review of Economics and Statistics](#).

² The REMI model is used by a diverse group of clients spanning academia, private consulting firms, local and regional governments, and nonprofits, to name a few categories. A list of clients that use the REMI model is available at <http://www.remi.com/clients>. The list has included consultancies like Boston Consulting Group and Ernst and Young, educational institutions like the Massachusetts Institute of Technology, nonprofit institutions like AARP and the Urban Institute, and federal, regional, and local government agencies.

Description of New Employer Costs Under the Proposed Minimum Wage Increase in Michigan

Minimum wage increases raise the cost of labor for employers.³ The proposed increases in the Michigan minimum wage directly raise the cost of labor by mandating annual increases from its current level of \$8.90 per hour. Should the petition pass, the first minimum wage increase mandated by the proposal would occur in 2019 with an increase in the minimum wage to \$10.00 per hour that year. In subsequent years, the minimum wage would increase in increments of \$0.65 per year until reaching the target level of \$12.00 per hour, after which the minimum wage would be subject to possible annual increases due to cost of living adjustments. The cost of living adjustments would be calculated using the percentage change in the consumer price index for urban wage earners and clerical workers (CPI-W) or a successor index.

Since 2000, inflation as measured by CPI-W has averaged 2.2 percent (**Chart 1**). This measure is quite close to the Federal Reserve's target inflation rate of two percent. Of course, as the chart plainly shows, inflation did not remain static from 2000 to today. On the contrary, the index experienced large swings driven in no small part to the housing bubble and its ensuing collapse in the mid-2000s, as well as volatility in the energy markets with the price of oil surpassing \$100/barrel in the late 2000s only to plummet due to the global recession, the rise of shale oil production, and, more recently, decisions by at least one major oil producer to prioritize national market share rather than protect commodity prices. Despite any short-term volatility in inflation, the long-term rate of inflation has remained fairly close to the Fed's stated target rate. For this reason (and placing confidence that the Fed will be able to keep inflation close to two percent in the future), we assume that inflation in out years will equal two percent, an important assumption because of the cost of living adjustments described earlier.

Raising the minimum wage to \$12.00 per hour from its current level is equivalent to raising the cost of labor for employers of minimum wage workers by 35 percent. These increases to the cost of labor are not inconsequential. According to the Bureau of Labor Statistics, there are 8,000 workers in Michigan who currently earn the minimum wage and would be directly affected by the minimum wage increase as outlined in the One Fair Wage proposal.⁴

Moreover, this increase in the Michigan minimum wage would have a substantial impact on the cash wage that employers must pay to "tipped" employees. According to the U.S. Department of Labor (DOL), tipped employees are employees who "customarily and regularly

³ Good overviews of the literature on the minimum wage can be found in:

Brown, Charles, Curtis Gilroy, and Andrew Cohen, "The Effect of the Minimum Wage on Employment and Unemployment: A Survey," NBER Working Paper No. 846, January 1982;

Neumark, David and William Wascher, "Minimum Wages, Labor Market Institutions, and Youth Employment: A Cross-National Analysis," *Industrial and Labor Relations Review*, Vol. 57, No. 2, January 2004.

⁴ "Characteristics of Minimum Wage Workers: 2016," Table 3, Bureau of Labor Statistics, <http://www.bls.gov/opub/reports/minimum-wage/2016/pdf/home.pdf>.

receive more than \$30 per month in tips.”⁵ Employers may use tips received by such employees as a credit against their minimum wage obligations to these employees provided that a minimum cash wage, currently set to \$2.13 per hour at the federal level, is also paid to these employees.

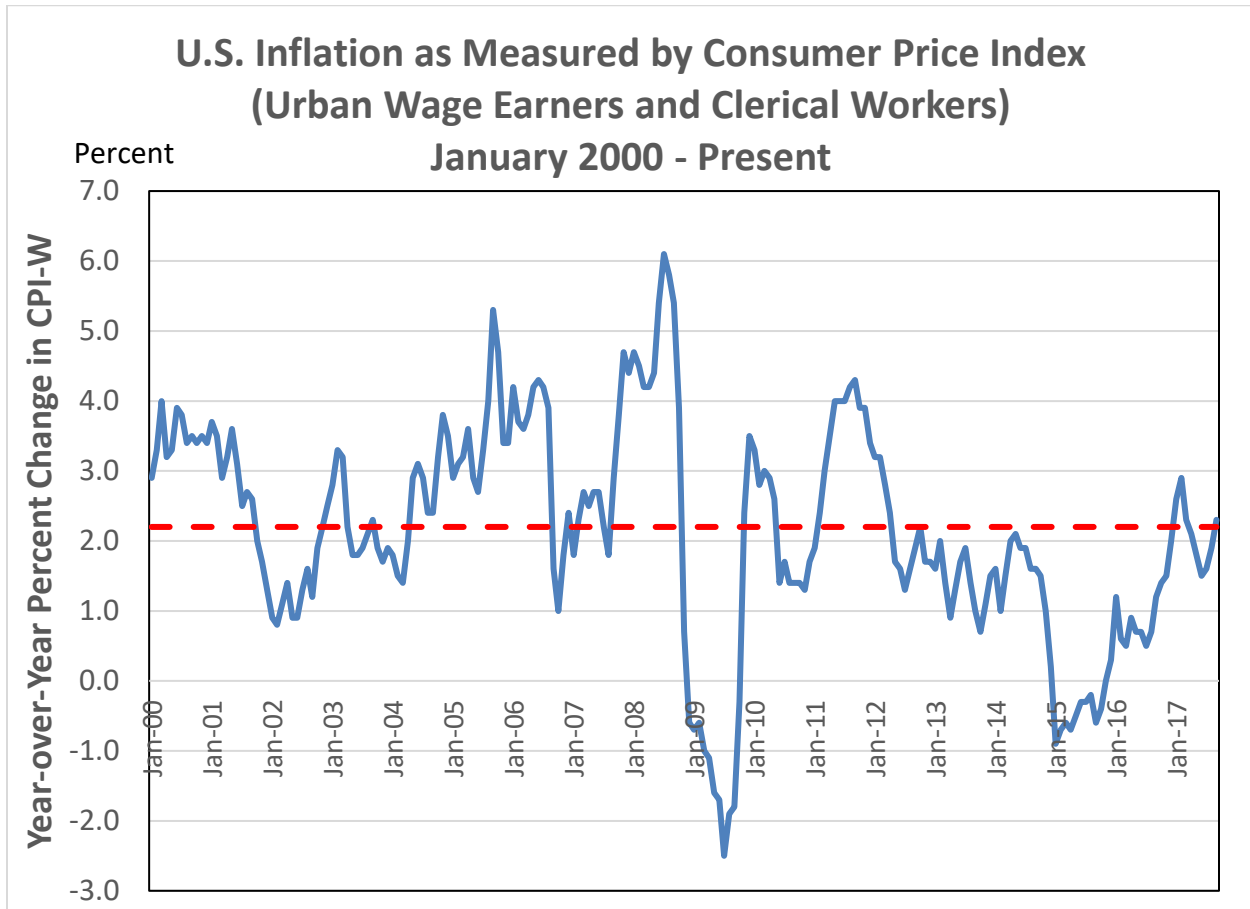


Chart 1

States have the option of establishing their own cash wage. The cash wage in Michigan is currently set to \$3.38 per hour, just slightly higher than the federal minimum. According to the Bureau of Labor Statistics, there are 49,000 Michigan workers who earn below the minimum wage. Tipped employees are required by law to earn the minimum wage through a sum of cash wages, tips, food, and lodging. The One Fair Wage proposal would increase the cash wage for tipped workers in annual increments until it eventually equals the minimum wage in 2024. The proposal stipulates that tipped workers are to earn 48 percent of the minimum hourly wage effective January 2019, 60 percent effective January 2020, 70 percent effective January 2021, 80 percent effective January 2022, 90 percent effective January 2023, and 100 percent effective January 2024. At that

⁵ For detailed information on tipped employees, a useful resource is the DOL fact sheet available here: <http://www.dol.gov/whd/regs/compliance/whdfs15.pdf>.

time, tipped workers would earn the full minimum wage and their wages in future years would be tied to cost of living adjustments just like all other minimum wage earners.

Table 2: Michigan Minimum Wage Trajectories Under the One Fair Wage Proposal

Year	Hypothetical Minimum Wage Schedule Under the One Fair Wage Proposal (2% Inflation)	Percentage Increase in Minimum Wage Under the One Fair Wage Proposal (2% Inflation)
2018	\$8.90	-----
2019	\$10.00	12.4%
2020	\$10.65	19.7%
2021	\$11.35	27.5%
2022	\$12.00	34.8%
2023	\$12.24	37.5%
2024	\$12.48	40.3%
2025	\$12.73	43.1%
2026	\$12.99	45.9%
2027	\$13.25	48.9%
2028	\$13.51	51.8%

Besides tipped employees, another issue a modeler must concern himself with when modeling an increase in the state minimum wage is business size exemptions. Some states exempt businesses of a certain size from minimum wage requirements. For example, Illinois currently exempts employer firms with three or fewer employees from minimum wage laws. Current Michigan law exempts firms with one or fewer employees from the minimum wage. However, the One Fair Wage proposal makes no explicit mention of this category of firms and is intended to supersede Act 138. We understand this to mean no class of employers or employees will be exempt from the minimum wage requirements as outlined in the One Fair Wage proposal.

A further issue takes the form of potential “emulation effects” associated with individuals earning near (just above) the current minimum wage. Some of these individuals will earn between \$8.90 per hour and the higher wages mandated in subsequent years (beginning with \$10.00 per hour in 2019). In the absence of employer action, these workers will see their wages raised automatically to these new levels contingent upon the passage of the bill. However, wages for these workers may increase to even higher levels if employers attempt to maintain the pre-implementation wage structure and raise wages for these workers to levels above the new minimum wage. Failure to increase the wages of near-minimum-wage earners sufficiently and allowing wage compression to occur may result in workers expressing their dissatisfaction by reducing work effort or leaving. Research suggests that “relative wages are important to workers,” and “firms may find it in their profit-maximizing interest to increase [near-minimum-wage]

workers' wages when minimum wages increase, in an attempt to restore work effort."⁶ For the modeler, a key concern involves estimating how many workers can be expected to contribute to such emulation effects.⁷ Based upon state-level data from the Bureau of Labor Statistics, for this analysis, it was adjudged that 30 percent of Michigan's private sector employees less those individuals currently earning at or below the minimum wage would also see per capita raises equal to the dollar amount in wage increases experienced by workers earning *at* the minimum wage in years 2019 and beyond.⁸

Besides the direct cost of higher wages in an increased minimum wage scenario, there are significant additional employer costs in the form of additional payroll taxes that must be paid on wage differentials. In general, an employer's share of payroll taxes equals 7.65 percent of employee wages and salary. Of this 7.65 percent, 6.2 percentage points are intended to help fund old age, survivors, and disability insurance, and 1.45 percentage points go toward helping to pay for Medicare hospital insurance. Employers can expect to pay more in payroll taxes as a consequence of a minimum wage increase.

No Changes to Government Demand

Given that a mandated minimum wage has been in effect for decades, it is assumed that government mechanisms to monitor compliance with the statute are established and well-developed. An increase in the minimum wage therefore should not require the development of new government mechanisms or materially increase government administrative costs. Hence, the analysis assumes no projected increases in government demand resulting from the implementation of the proposed minimum wage increase.

Additional Private Spending in the Economy

Consumers in an economy have two choices of what to do with their after-tax income. They can either choose to spend it, thereby increasing consumption within the economy, or they can elect to save it, and in doing so potentially increase investment in the economy. Government stimulus programs frequently focus on transferring wealth to lower-earning individuals because of the

⁶ Grossman, Jean Baldwin, "The Impact of the Minimum Wage on Other Wages," The Journal of Human Resources, Vol. 18, No. 3 (Summer 1983).

⁷ The assumption that wage changes due to emulation effects occur simultaneously with the minimum wage increase is supported by research suggesting that "any substantial emulation effects are not long delayed, which seems plausible because increases in the minimum are [typically] well-advertised in advance." See Gramlich, Edward M., "Impact of Minimum Wages on Other Wages, Employment, and Family Incomes," *Brookings Papers on Economic Activity*, The Brookings Institution, 1974, downloadable at:
http://www.brookings.edu/~media/projects/bpea/1976%202/1976b_bpea_gramlich_flanagan_wachter.pdf.

⁸ According to the Bureau of Labor Statistics, Michigan wage earners at the 10th percentile earn \$9.16 per hour, while those at the 25th percentile earned \$11.32 per hour. The median wage earner in Michigan earns \$17.32 per hour. Emulation effects can be assumed to occur among workers who earn near (within a few dollars of) the minimum wage. For workers who are assumed to experience emulation effects, it is assumed that their wages increase on the same dollar for dollar basis that minimum wage workers experience due to the proposed minimum wage increases, thereby maintaining the same pre-implementation wage structure in terms of dollar differences between workers along the pay scale (even though wage compression still occurs in percentage terms).

strong likelihood that these individuals will elect to spend the additional wealth, producing a consumption-fueled boost to the economy, rather than to save.⁹ Consistent with expectations pertaining to increases in income for low-income workers, this analysis assumes that new additional income received by minimum wage earners is spent (and not saved), leading to an increase in consumption.

In the analysis, the conversion of higher labor costs for employers into increased consumption by workers receiving wage increases occurs automatically due to the way in which wage costs are inputted into the BSIM. Since employer costs described in this analysis derive from an increase in the minimum wage, the costs were inputted into the BSIM under the “Wage Labor Cost” variable. The costs were distributed across different industry categories and different employee-size-of-business categories according to existing industry and business size distributions published in the Census Bureau’s Statistics on U.S. Businesses dataset. This distribution allows the BSIM to generate results for separate employee-size-of-firm categories.

Increases in the “Wage Labor Cost” variable in the BSIM translate directly to increases in the “Compensation Rate” policy variable which is used in intermediate calculations during the simulation process. During simulations, such compensation rate increases are directly “fed back” into the economy in the form of higher consumer spending on the part of workers who now have extra money to spend. Such dynamics are important in a minimum wage simulation since, as mentioned previously, it is believed that during cases involving the transfer of wealth to lower-earning individuals, there is a strong likelihood that these individuals will elect to spend the additional wealth (rather than save), producing a consumption-fueled boost to the economy. Concerns that minimum wage increases may provide a countervailing spending “stimulus” effect to the economy are therefore satisfied automatically in this analysis.¹⁰

⁹ According to the Congressional Budget Office, “increases in disposable income are likely to boost purchases more for lower-income than for higher-income households. That difference arises, at least in part, because a larger share of people in lower-income households cannot borrow as much money as they would wish in order to spend more than they do currently.” See: “The Economic Outlook and Fiscal Policy Choices: Statement of Douglas W. Elmendorf, before the Committee on the Budget, United States Senate,” Congressional Budget Office, September 28, 2010, p. 36.

¹⁰ The fact that the BSIM automatically accounts for an increase in consumer spending as a consequence of an increase in the “Wage Labor Cost” variable is an important point that should not be missed. That increased consumption is automatically accounted for by the model in an analysis of a minimum wage increase means that exogenous increases in private sector demand are unnecessary for a model to be complete. Including such exogenous increases makes the resulting forecasts conservative.

Simulation Results: One Fair Wage Proposal

BSIM simulation results for the modeled scenario in which the One Fair Wage proposal becomes law are provided below. All employment figures are expressed as number of employees, while output figures are expressed as billions of 2015 dollars. Under the above assumptions, approximately 183,000 Michigan jobs are forecast to be lost by in year 2028 (**Table 3**). More precisely, the BSIM forecasts that there will be 183,000 fewer jobs in 2028 due to the mandated increase in the cost of labor than there otherwise would have been (if the minimum wage was not increased). Approximately 62 percent of the forecast jobs lost are jobs that would have been in the small business sector of the economy. At a sectoral level, the retail trade and accommodation and food services industries are forecast to experience significant job losses. The BSIM forecasts that in 2028, there will be over 10,000 fewer jobs in retail and over 28,000 fewer jobs in accommodation and food services.

In addition to forecast reductions in employment, real output¹¹ is also projected to decrease by \$21 billion by 2028 (**Table 4**). Fifty-two percent of the reduction in real output is expected to occur in the small business sector of the economy. Over the ten-year forecast window, the *cumulative* real output lost is projected to exceed \$76 billion (**Table 5**).

Table 3: Employment Difference from Baseline (No. of Employees) Under the One Fair Wage Proposal, 2% Inflation

Firm Size	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	Percent of Total (2028)
1-4 Employees	0.380	0.535	0.147	-0.879	-2.546	-4.596	-7.198	-9.753	-12.006	-13.898	7.6%
5-9 Employees	-0.002	-0.299	-1.158	-2.634	-4.642	-6.970	-9.696	-12.302	-14.561	-16.446	9.0%
10-19 Employees	0.011	-0.344	-1.353	-3.073	-5.400	-8.085	-11.206	-14.180	-16.754	-18.900	10.3%
20-99 Employees	0.018	-0.814	-2.988	-6.575	-11.334	-16.755	-22.964	-28.817	-33.850	-38.027	20.7%
100-499 Employees	0.066	-0.705	-2.460	-5.186	-8.681	-12.542	-16.884	-20.864	-24.231	-26.991	14.7%
500 + Employees	0.838	-1.157	-5.894	-13.227	-22.558	-32.619	-43.946	-54.018	-62.408	-69.228	37.7%
< 20 Employees	0.388	-0.108	-2.364	-6.586	-12.588	-19.651	-28.100	-36.235	-43.322	-49.243	26.8%
< 100 Employees	0.406	-0.922	-5.352	-13.161	-23.922	-36.406	-51.064	-65.052	-77.172	-87.271	47.6%
< 500 Employees	0.472	-1.627	-7.813	-18.347	-32.604	-48.948	-67.948	-85.916	-101.403	-114.262	62.3%
All Firms	1.310	-2.784	-13.707	-31.574	-55.161	-81.567	-111.894	-139.934	-163.812	-183.490	100.0%

¹¹ The term “output” refers to the aggregate output of the Michigan economy (MI gross domestic product (GDP)). GDP has three possible definitions: (1) the value of final goods and services produced in an economy during a given period (as opposed to raw materials or intermediate goods which are produced or sourced earlier in the production process), (2) the sum of value added during a given period, or (3) the sum of incomes in the economy during a given period. It is a technical term whose significance may be better understood by the reader if she considers that because of the first definition, output serves as a rough proxy for sales.

Table 4: Real Output Difference from Baseline (Billions of 2015 Dollars) Under the One Fair Wage Proposal, 2% Inflation

Firm Size	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	Percent of Total (2028)
1-4 Employees	\$0.147	\$0.285	\$0.371	\$0.383	\$0.297	\$0.153	-\$0.103	-\$0.375	-\$0.626	-\$0.843	4.0%
5-9 Employees	\$0.106	\$0.193	\$0.224	\$0.185	\$0.059	-\$0.115	-\$0.382	-\$0.655	-\$0.902	-\$1.115	5.2%
10-19 Employees	\$0.110	\$0.189	\$0.199	\$0.124	-\$0.049	-\$0.277	-\$0.605	-\$0.934	-\$1.231	-\$1.485	7.0%
20-99 Employees	\$0.179	\$0.255	\$0.167	-\$0.111	-\$0.586	-\$1.167	-\$1.927	-\$2.665	-\$3.321	-\$3.878	18.2%
100-499 Employees	\$0.096	\$0.065	-\$0.114	-\$0.447	-\$0.924	-\$1.469	-\$2.124	-\$2.734	-\$3.265	-\$3.709	17.4%
500 + Employees	\$0.278	\$0.119	-\$0.462	-\$1.462	-\$2.830	-\$4.338	-\$6.129	-\$7.745	-\$9.124	-\$10.272	48.2%
< 20 Employees	\$0.364	\$0.667	\$0.794	\$0.692	\$0.307	-\$0.239	-\$1.091	-\$1.963	-\$2.760	-\$3.443	16.2%
< 100 Employees	\$0.543	\$0.922	\$0.961	\$0.582	-\$0.279	-\$1.406	-\$3.017	-\$4.628	-\$6.081	-\$7.322	34.4%
< 500 Employees	\$0.639	\$0.987	\$0.848	\$0.134	-\$1.203	-\$2.875	-\$5.141	-\$7.363	-\$9.345	-\$11.031	51.8%
All Firms	\$0.917	\$1.106	\$0.385	-\$1.328	-\$4.033	-\$7.213	-\$11.271	-\$15.107	-\$18.469	-\$21.303	100.0%

Table 5: Cumulative Real Output Difference from Baseline (Billions of 2015 Dollars) Under the One Fair Wage Proposal, 2% Inflation

Firm Size	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	Percent of Total (2028)
1-4 Employees	\$0.147	\$0.433	\$0.804	\$1.187	\$1.484	\$1.637	\$1.534	\$1.159	\$0.533	-\$0.310	0.4%
5-9 Employees	\$0.106	\$0.299	\$0.523	\$0.708	\$0.767	\$0.651	\$0.269	-\$0.386	-\$1.288	-\$2.403	3.1%
10-19 Employees	\$0.110	\$0.299	\$0.498	\$0.622	\$0.574	\$0.296	-\$0.308	-\$1.242	-\$2.473	-\$3.959	5.2%
20-99 Employees	\$0.179	\$0.435	\$0.601	\$0.491	-\$0.095	-\$1.262	-\$3.188	-\$5.853	-\$9.174	-\$13.053	17.1%
100-499 Employees	\$0.096	\$0.161	\$0.048	-\$0.400	-\$1.324	-\$2.793	-\$4.917	-\$7.652	-\$10.916	-\$14.626	19.2%
500 + Employees	\$0.278	\$0.397	-\$0.065	-\$1.527	-\$4.358	-\$8.696	-\$14.825	-\$22.570	-\$31.694	-\$41.966	55.0%
< 20 Employees	\$0.364	\$1.031	\$1.825	\$2.517	\$2.824	\$2.585	\$1.494	-\$0.469	-\$3.228	-\$6.672	8.7%
< 100 Employees	\$0.543	\$1.465	\$2.426	\$3.008	\$2.729	\$1.323	-\$1.694	-\$6.322	-\$12.403	-\$19.724	25.8%
< 500 Employees	\$0.639	\$1.627	\$2.474	\$2.608	\$1.405	-\$1.470	-\$6.611	-\$13.974	-\$23.319	-\$34.350	45.0%
All Firms	\$0.917	\$2.024	\$2.409	\$1.081	-\$2.952	-\$10.166	-\$21.436	-\$36.543	-\$55.012	-\$76.315	100.0%

Michigan Jobs Lost (Employment Difference from Baseline) by 2028 Due to One Fair Wage Proposal

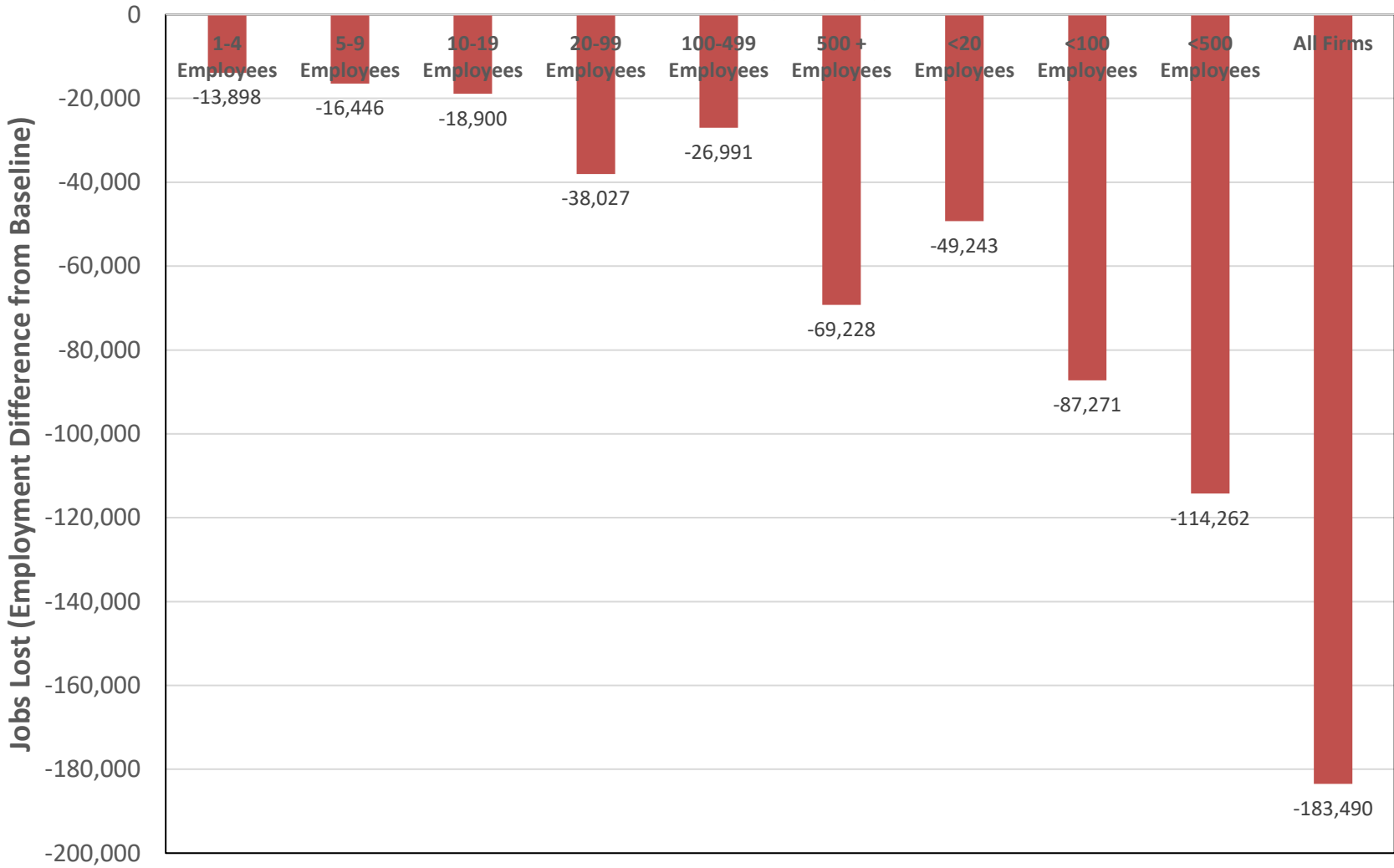


Figure 1

Real Output Lost (Billions of 2015 Dollars) by 2028 Due to One Fair Wage Proposal

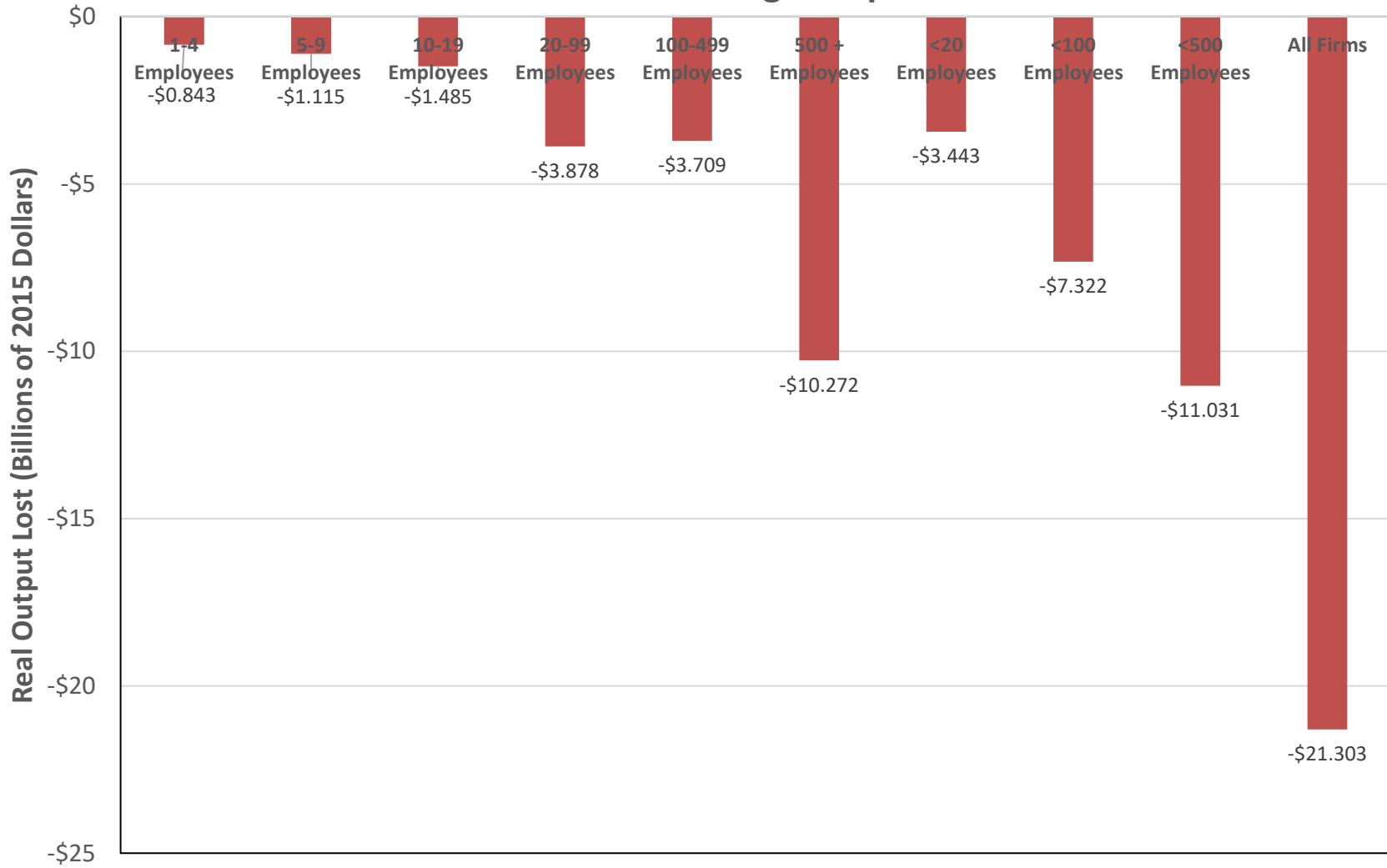


Figure 2

Cumulative Real Output Lost (Billions of 2015 Dollars) Due to One Fair Wage Proposal

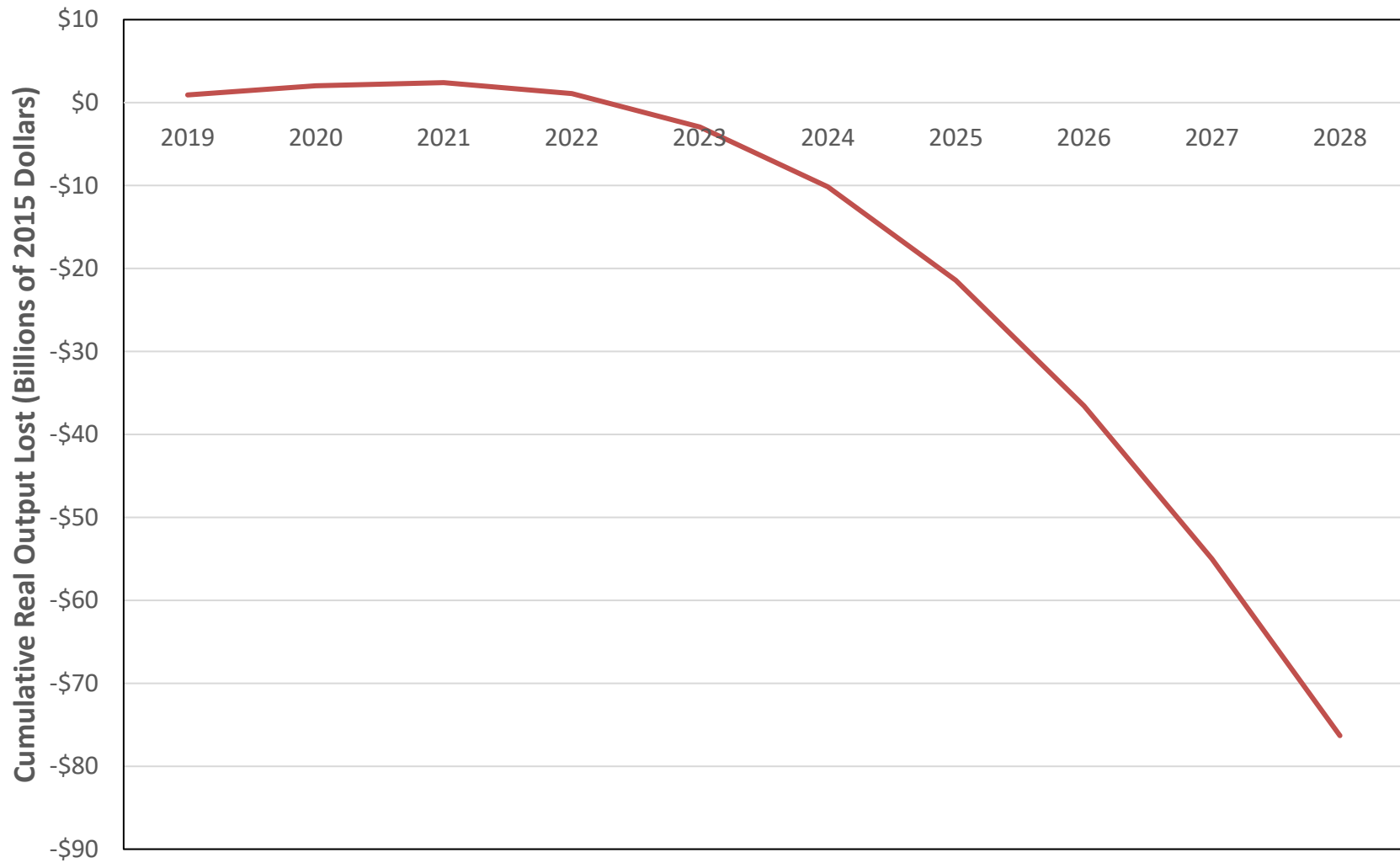


Figure 3

Appendix: Remarks Concerning Alleged Counterfactual Evidence Regarding Minimum Wage Effects on Employment

Research on the economic effects of minimum wage policy consists of a rich literature spanning decades. This body of literature includes studies whose results contradict the basic economic principle of the law of demand, suggesting that increases in the minimum wage have no impact on low-wage employment and may even have a modest positive effect. This section discusses two popular studies within this counterfactual literature and notes certain methodological problems which introduce uncertainty with respect to their findings.

A controversial and well-cited study on the minimum wage dating from the mid-1990s is Card and Krueger's investigation of the impact of the April 1, 1992 increase in the New Jersey minimum wage from \$4.25 to \$5.05 per hour.¹² Card and Krueger used a telephone survey to compare the experiences of 410 fast-food restaurants in New Jersey and Pennsylvania—331 in New Jersey and 79 in eastern Pennsylvania—following the increase in New Jersey's minimum wage. The Pennsylvania restaurants included in the survey served as a control group with which New Jersey restaurants (and their experiences) could be compared since, in the authors' opinions, "New Jersey is a relatively small state with an economy that is closely linked to nearby states" and no contemporary increase in Pennsylvania's minimum wage occurred during the time period studied. In summarizing their findings, the authors claim to have found "no evidence that the rise in New Jersey's minimum wage reduced employment at fast-food restaurants in the state." Contrary to conventional wisdom, the authors even found "that the increase in the minimum wage increased employment." In a follow-up study using different data (from the Bureau of Labor Statistics), the authors moderated their conclusion to the following: "The increase in New Jersey's minimum wage probably had no effect on total employment in New Jersey's fast-food industry, and possibly had a small positive effect."¹³

The motivation for Card and Krueger's follow-up study stems from criticism of the methodology employed in the authors' first study. In particular, concerns about noisy measurement, the unit of measure investigated (critics claimed that the study's focus should have been the number of hours worked by employees, not the number of employees itself), and inconsistencies between Card and Krueger's data set and actual payroll data from fast-food establishments in New Jersey and Pennsylvania incentivized the authors to perform subsequent research. These points aside, other criticisms can be made about Card and Krueger's analysis. First, the authors focused on a relatively small geographic area. Second, the authors focused on fast-food *chains*, which are not the same as the fast-food *industry*, which is comprised of both chains and an independent sector. The independent sector has been observed to be "much more labour intensive than the chain sector."¹⁴ This being the case, it is entirely possible for the chain sector of the fast-food industry to experience negligible effects due to a minimum wage increase,

¹² Card, David 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*, Vol. 84, No. 4, Sept. 1994, pp. 772-793.

¹³ Card, David and Alan B. Krueger, "Minimum Wage and Employment: A Case Study of the Fast-Food Industry in New Jersey and Pennsylvania: Reply," *The American Economic Review*, Vol. 90, No. 5, Dec. 2000, pp. 1397-1420.

¹⁴ Worstall, Tim, "Alan Krueger's Mistake on the Minimum Wage", *Forbes*, Aug. 31, 2011.

while the more labor-intensive independent sector (and the industry as a whole) experiences material negative employment effects due to the minimum wage increase. Third, by focusing on the fast-food industry, Card and Krueger leave out a significant subpopulation of the minimum wage workforce (employed outside of the fast-food industry). Fourth, the New Jersey minimum wage became effective two years after the legislation was passed. It is possible, and perhaps even likely, that some of the reaction among employer firms to the legislation occurred before the new minimum wage came into effect. To the extent that the examined time period excluded some employer's reactions to the minimum wage increase, the change in employment measured by Card and Krueger may be biased upward. Fifth, Card and Krueger focused on nationally-known fast-food enterprises rather than a representative sample of all eating establishments. Such a focus could bias results upward, as national chain restaurants may be better able to absorb wage increases than eating establishments in general. If such is the case, national chain restaurants may even gain market share and expand even as the industry as a whole loses employment.

The second study of some popularity which presents counterfactual evidence on the employment effects of minimum wage policy is much more recent. An article by Allegretto, Dube, and Reich (hereby ADR) published in 2011 asserts that minimum wage increases between 1990 and 2009 had essentially zero impact on teen employment (the authors rule out "any but very small disemployment effects").¹⁵ Their results were obtained using a methodology that accounted for the (according to the authors) prior-to-then ignored "heterogeneous employment patterns that are correlated with selectivity among states with minimum wages." By including control variables for "long-term growth differences among states and for heterogeneous economic shocks," the authors achieve elasticities for employment and hours worked "indistinguishable from zero."

While the approach used by ADR holds some intuitive appeal, a thorough examination of the authors' methodology by Neumark, Salas, and Wascher (hereby NSW) "points to serious problems with [their] research designs."¹⁶ NSW's analysis provides evidence that the tendency for including state-specific time trends into the baseline fixed-effects regression model typically used for minimum wage analysis to eliminate negative employment effects of minimum wages (during the time period studied) is due principally to the strong influence of the recessionary periods of the early 1990s or the Great Recession period. NSW show that when long-term trends are estimated in ways that are not highly sensitive to the business cycle, the estimated effects of minimum wages on teen employment are negative and statistically significant. NSW also address the second methodological technique used by ADR to obtain their counterfactual results, namely, the inclusion of a (Census Division x Period Interaction) term into the regression model. A justification for the inclusion of this term is that omitted factors could drive patterns of teen employment differentially by Census division, and therefore this term should be included to capture those effects. Underlying this approach is the assumption that states within a Census

¹⁵ Allegretto, Sylvia A., Arindrajit Dube, and Michael Reich, "Do Minimum Wages Really Reduce Teen Employment? Accounting for Heterogeneity and Selectivity in State Panel Data," *Industrial Relations*, Vol. 50, No. 2, Apr. 2011, pp. 205-240.

¹⁶ Neumark, David, J.M. Ian Salas, and William Wascher, "Revisiting the Minimum Wage-Employment Debate: Throwing Out the Baby with the Bathwater?", Discussion Paper No. 7166, IZA, January 2013.

division make better controls for states where minimum wages increase than are states in other Census divisions. NSW investigate this claim by utilizing two ranking algorithms to assess whether within-Census-division states truly do make for better controls.¹⁷ The two algorithms include a synthetic control approach and a “ranked prediction error” approach. Both algorithms provide evidence which generally question the rationale for restricting control states to those in the same Census division. In light of these results, NSW conclude that “the evidence still shows that minimum wages pose a tradeoff of higher wages for some against job losses for others.”

¹⁷ The structures of the algorithms are non-trivial and details surrounding them are omitted from this report. Readers interested in learning more about the algorithms should refer to Neumark et al. noted in footnote 16.