



Michael J. Chow
NFIB Research Center
Washington, DC
February 8, 2018

Economic Impact Analysis of Senate Bill 543: The Effects on Maryland Small Businesses and Their Employees

This report analyzes the potential economic impact of implementing Senate Bill 543, which proposes an increase in the Maryland state minimum wage, on the Maryland economy with an emphasis on the small business sector of the economy. Introduced on January 31, 2018 by Senator Richard S. Madaleno, SB543 would increase the minimum wage in Maryland to \$11.00 per hour in July 2019, \$12.00 per hour in July 2020, \$13.00 per hour in July 2021, \$14.00 per hour in July 2022, and \$15.00 per hour in July 2023. Additionally, beginning in 2023, the state minimum wage would be tied to inflation as measured by the Consumer Price Index, allowing for possible further increases in years 2024 and beyond to account for cost of living adjustments. Finally, SB543 addresses tipped employees by increasing their cash wage in annual increments until it eventually equals the minimum wage in July 2025, after which a separate cash wage for tipped employees will cease to exist.

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, the NFIB Research Center estimates that over a ten-year period beginning in 2019, the proposed minimum wage schedules would reduce Maryland private sector employment by over 99,000 jobs and result in a cumulative reduction in Maryland real output of over \$61 billion over the ten-year forecast window. Fifty-six 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 a state's minimum wage exceeds the federal rate. The effective minimum wage in the state of Maryland is currently \$9.25 per hour (**Table 1**), \$2.00 per hour higher than the federal rate. It is set to increase to \$10.10 per hour on July 1, 2018.

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

Year	Minimum Wage	Year	Minimum Wage
1977	\$2.30 (per hour)	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	\$6.15
1987	\$3.35	2008	\$6.15
1988	\$3.35	2009	\$6.55
1989	\$3.35	2010	\$7.25
1990	\$3.35	2011	\$7.25
1991	\$3.80	2012	\$7.25
1992	\$4.25	2013	\$7.25
1993	\$4.25	2014	\$7.25
1994	\$4.25	2015	\$8.25
1995	\$4.25	2016	\$8.75
1996	\$4.25	2017	\$8.75
1997	\$4.75	2018	\$9.25

Source: Department of Labor

Since the end of the Great Recession in 2009, the minimum wage in Maryland has increased from \$6.55 per hour in 2009 to its current level of \$9.25 per hour. Despite this considerable increase in the state minimum wage (an increase of 54 percent by this coming July),

certain interests argue for an even higher minimum wage. One proposal put forward by lawmakers that would increase the state minimum wage still more is Senate Bill 543, which would increase the state minimum wage in annual increments to a final rate of \$15.00 per hour for all Maryland employer firms, after which it would be tied to inflation. SB543 would also effectively eliminate the category of workers known as “tipped” workers by gradually raising the mandatory cash wage paid to such workers to the level of the minimum wage. Should SB543 pass both MD legislative chambers and be signed into law by Governor Hogan, the state minimum wage would increase by a further 62 percent from its current level by 2024.

This brief report quantifies the potential economic impact implementation of the proposed minimum wage increase might have on Maryland 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 Maryland

Minimum wage increases raise the cost of labor for employers.³ The proposed increase in the Maryland minimum wage directly raise the cost of labor by mandating annual increases from its current level of \$9.25 per hour (scheduled to increase to \$10.10 per hour in July). Should the legislation become law, the minimum wage would first increase to \$11.00 per hour in July 2019 with scheduled subsequent annual increases of \$1.00 per hour per year until the minimum wage reaches \$15.00 per hour in July 2023. The minimum wage would then be tied to inflation and would be subject to possible annual increases due to cost of living adjustments starting in July 2024. The cost of living adjustments would be calculated using the percentage change in the Consumer Price Index (CPI).

Since 2010, inflation as measured by CPI has averaged 1.7 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 2010 to today. On the contrary, the index experienced large swings driven in no small part by volatility in the energy markets due to 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. But 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 \$15.00 per hour from its current level is equivalent to raising the cost of labor for employers of minimum wage workers by 62 percent. These increases to the cost of labor are not inconsequential. According to the Bureau of Labor Statistics, there are 6,000 workers in Maryland who currently earn the minimum wage.⁴ A further 24,000 workers who earn below the minimum wage, and this set of workers would also be impacted by the legislation due

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>.

to proposed changes to the cash wage paid to “tipped” employees. As defined by the Department of Labor, “tipped” employees are employees who “customarily and regularly 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.

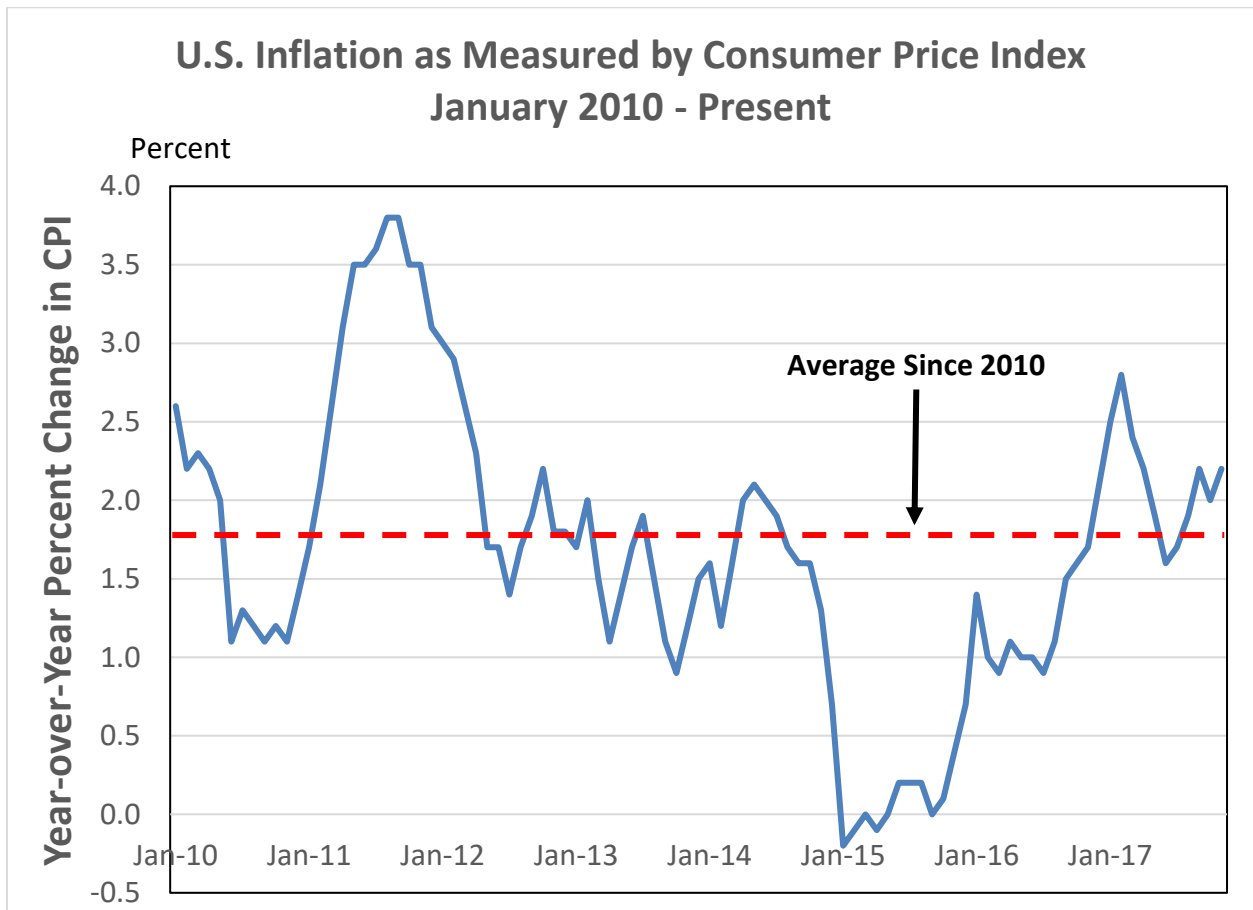


Chart 1

States have the option of establishing their own cash wage. The cash wage in Maryland is currently set to \$3.63 per hour, slightly higher than the federal minimum. Tipped employees are required by law to earn the minimum wage through a sum of cash wages, tips, food, and lodging. SB543 would increase the cash wage for tipped workers in annual increments until it eventually equals the minimum wage in 2026. The bill stipulates that tipped workers are to earn \$5.25 per

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>.

hour beginning July 2019, \$7.50 per hour beginning July 2020, \$9.00 per hour beginning 2021, \$10.50 per hour beginning July 2022, \$12.00 per hour beginning July 2023, \$13.50 per hour beginning July 2024, and \$15.00 beginning 2025. Finally, beginning July 2026, employees would be paid a wage at least equal to the state minimum wage, thereby effectively eliminating the class of tipped employees. Taking tipped employees into account, all told, roughly 30,000 workers could be directly affected by the minimum wage increase as outlined in SB543.

Table 2: Maryland Minimum Wage Trajectories Under Senate Bill 543

Year	Minimum Wage Schedule for Current Minimum Wage Workers (2% Inflation)	Wage Schedule for Current “Tipped Workers” (2% Inflation)
2018	\$9.68	\$3.63
2019	\$10.55	\$4.44
2020	\$11.50	\$6.38
2021	\$12.50	\$8.25
2022	\$13.50	\$9.75
2023	\$14.50	\$11.25
2024	\$15.00	\$12.75
2025	\$15.30	\$14.25
2026	\$15.60	\$15.60
2027	\$15.90	\$15.90
2028	\$16.20	\$16.20

*Wage rates in the table may not equal the exact rates stipulated in the bill because they are the average of two such stipulated rates (since mandated wage increases are to take place mid-year). *E.g.*, \$10.55 = (\$10.10 + \$11.00)/2.

Table 3: Percentage Increase in Wages of Maryland Minimum Wage and Tipped Workers Under Senate Bill 543

Year	Percentage Increase in Minimum Wage Schedule for Current Minimum Wage Workers (2% Inflation)	Percentage Increase in Wages for Current “Tipped” Workers (2% Inflation)
2019	14.1%	22.3%
2020	24.3%	75.6%
2021	35.1%	127.3%
2022	45.9%	168.6%
2023	56.8%	209.9%
2024	62.2%	251.2%
2025	65.4%	292.6%
2026	68.6%	329.8%
2027	71.9%	338.0%
2028	75.1%	346.3%
2029	78.6%	355.2%

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. Maryland law contains no such outright exemptions to the state minimum wage based on a firm's number of employees. SB543 also contain no such exemptions. For this analysis, we therefore need not worry about modeling a carveout of firms based on firm size.

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 \$9.25 per hour and the higher wages mandated in subsequent years (beginning with \$11.00 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 bill's passage and signing into law. 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 Maryland'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

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, Maryland wage earners at the 10th percentile earn \$9.34 per hour, while those at the 25th percentile earned \$12.64 per hour. The median wage earner in Maryland earns \$20.68 per

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 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

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).

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.

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

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: Maryland Senate Bill 543

BSIM simulation results for the modeled scenario in which SB543 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, over 99,000 Maryland jobs are forecast to be lost by in year 2028 (**Table 4**). More precisely, the BSIM forecasts that there will be more than 99,000 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 56 percent of the forecast jobs lost are jobs that would have been in the small business sector of the economy.¹¹ Equivalently, more than 55,000 small business jobs are forecast to be lost due to the increase in the minimum wage to \$15.00 per hour and higher. More than 22,000 jobs are forecast to be lost at the smallest firms (those with fewer than 20 employees).

At a sector 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 13,500 fewer jobs in each of the retail and food services and drinking industries. These results are especially unfortunate given that income for workers in these industries are typically on the lower end of the income distribution and that these workers are usually the very individuals that minimum wage policies seek to help. Sixty-one percent of the jobs lost in the food services and drinking industry are small business jobs, a not surprising result since 62 percent of workers currently employed in accommodations and food services work for small employers.

In addition to forecast reductions in employment, real output¹² is also projected to decrease by \$12 billion by 2028 (**Table 5**). Half 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 \$61 billion (**Table 6**).

¹¹ This analysis adopts the Small Business Administration's size-of-business threshold of 500 employees to distinguish between small businesses and large businesses in the analysis of results. The 500-employee threshold is frequently used by researchers to delineate the small business sector when working with firm-size data. This definition is different from the definition of "small business" as stipulated in the paid leave ballot proposal language.

¹² The term "output" refers to the aggregate output of the Maryland economy (MD 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: Employment Difference from Baseline (No. of Employees) Under Senate Bill 543, 2% Inflation

Firm Size	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	Percent of Total (2028)
1-4 Employees	-437	-1,026	-1,763	-2,584	-3,460	-4,275	-5,003	-5,644	-6,167	-6,597	6.7%
5-9 Employees	-434	-1,029	-1,797	-2,669	-3,613	-4,485	-5,260	-5,942	-6,497	-6,953	7.0%
10-19 Employees	-552	-1,307	-2,284	-3,398	-4,605	-5,721	-6,717	-7,592	-8,306	-8,892	9.0%
20-99 Employees	-1,068	-2,610	-4,701	-7,162	-9,879	-12,426	-14,719	-16,743	-18,395	-19,755	19.9%
100-499 Employees	-632	-1,638	-3,035	-4,709	-6,571	-8,345	-9,952	-11,367	-12,525	-13,478	13.6%
500 + Employees	-2,629	-6,546	-11,565	-17,216	-23,252	-28,714	-33,453	-37,533	-40,819	-43,522	43.9%
< 20 Employees	-1,422	-3,362	-5,843	-8,651	-11,678	-14,480	-16,980	-19,178	-20,969	-22,442	22.6%
< 100 Employees	-2,489	-5,972	-10,545	-15,813	-21,557	-26,906	-31,699	-35,921	-39,364	-42,197	42.5%
< 500 Employees	-3,122	-7,610	-13,580	-20,522	-28,128	-35,251	-41,651	-47,288	-51,889	-55,674	56.1%
All Firms	-5,750	-14,156	-25,145	-37,738	-51,380	-63,966	-75,104	-84,821	-92,708	-99,197	100.0%

Table 5: Real Output Difference from Baseline (Billions of 2015 Dollars) Under Senate Bill 543, 2% Inflation

Firm Size	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	Percent of Total (2028)
1-4 Employees	-\$0.017	-\$0.053	-\$0.107	-\$0.177	-\$0.258	-\$0.342	-\$0.424	-\$0.498	-\$0.561	-\$0.615	5.1%
5-9 Employees	-\$0.021	-\$0.061	-\$0.121	-\$0.199	-\$0.288	-\$0.379	-\$0.466	-\$0.544	-\$0.611	-\$0.668	5.6%
10-19 Employees	-\$0.028	-\$0.081	-\$0.161	-\$0.263	-\$0.380	-\$0.499	-\$0.613	-\$0.716	-\$0.803	-\$0.877	7.3%
20-99 Employees	-\$0.063	-\$0.191	-\$0.388	-\$0.644	-\$0.939	-\$1.240	-\$1.528	-\$1.787	-\$2.007	-\$2.194	18.3%
100-499 Employees	-\$0.045	-\$0.146	-\$0.300	-\$0.500	-\$0.731	-\$0.966	-\$1.189	-\$1.389	-\$1.558	-\$1.701	14.2%
500 + Employees	-\$0.247	-\$0.698	-\$1.314	-\$2.055	-\$2.871	-\$3.655	-\$4.365	-\$4.984	-\$5.503	-\$5.946	49.5%
< 20 Employees	-\$0.066	-\$0.195	-\$0.389	-\$0.639	-\$0.926	-\$1.220	-\$1.503	-\$1.758	-\$1.975	-\$2.160	18.0%
< 100 Employees	-\$0.129	-\$0.387	-\$0.777	-\$1.282	-\$1.864	-\$2.461	-\$3.031	-\$3.545	-\$3.982	-\$4.353	36.3%
< 500 Employees	-\$0.175	-\$0.532	-\$1.078	-\$1.782	-\$2.595	-\$3.427	-\$4.220	-\$4.934	-\$5.540	-\$6.055	50.5%
All Firms	-\$0.422	-\$1.230	-\$2.392	-\$3.837	-\$5.466	-\$7.082	-\$8.585	-\$9.918	-\$11.043	-\$12.001	100.0%

Table 6: Cumulative Real Output Difference from Baseline (Billions of 2015 Dollars) Under Senate Bill 543, 2% Inflation

Firm Size	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	Percent of Total (2028)
1-4 Employees	-\$0.017	-\$0.070	-\$0.177	-\$0.354	-\$0.612	-\$0.954	-\$1.378	-\$1.876	-\$2.437	-\$3.052	4.9%
5-9 Employees	-\$0.021	-\$0.082	-\$0.203	-\$0.402	-\$0.690	-\$1.069	-\$1.535	-\$2.079	-\$2.690	-\$3.358	5.4%
10-19 Employees	-\$0.028	-\$0.110	-\$0.271	-\$0.534	-\$0.913	-\$1.413	-\$2.026	-\$2.741	-\$3.544	-\$4.421	7.1%
20-99 Employees	-\$0.063	-\$0.255	-\$0.643	-\$1.286	-\$2.225	-\$3.466	-\$4.994	-\$6.781	-\$8.788	-\$10.981	17.7%
100-499 Employees	-\$0.045	-\$0.191	-\$0.492	-\$0.992	-\$1.722	-\$2.688	-\$3.877	-\$5.266	-\$6.824	-\$8.525	13.8%
500 + Employees	-\$0.247	-\$0.945	-\$2.260	-\$4.315	-\$7.186	-\$10.841	-\$15.206	-\$20.190	-\$25.693	-\$31.639	51.1%
< 20 Employees	-\$0.066	-\$0.261	-\$0.651	-\$1.289	-\$2.215	-\$3.435	-\$4.938	-\$6.696	-\$8.671	-\$10.831	17.5%
< 100 Employees	-\$0.129	-\$0.516	-\$1.293	-\$2.576	-\$4.440	-\$6.901	-\$9.932	-\$13.477	-\$17.459	-\$21.812	35.2%
< 500 Employees	-\$0.175	-\$0.707	-\$1.785	-\$3.567	-\$6.162	-\$9.589	-\$13.809	-\$18.743	-\$24.283	-\$30.338	48.9%
All Firms	-\$0.422	-\$1.652	-\$4.045	-\$7.882	-\$13.348	-\$20.430	-\$29.015	-\$38.933	-\$49.976	-\$61.977	100.0%

Maryland Jobs Lost (Employment Difference from Baseline) by 2028 Due to Senate Bill 543

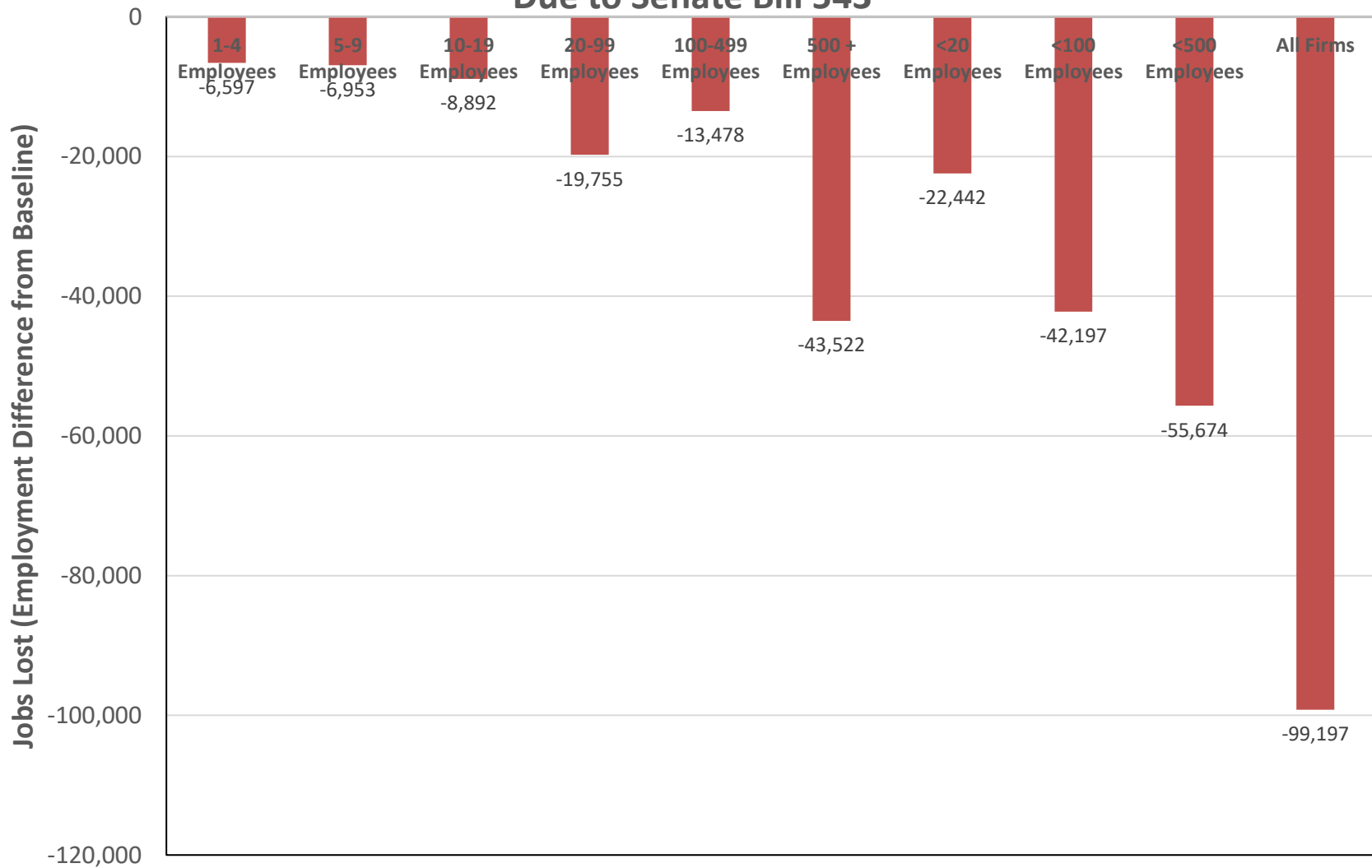


Figure 1

Maryland Real Output Lost (Billions of 2015 Dollars) by 2028 Due to Senate Bill 543

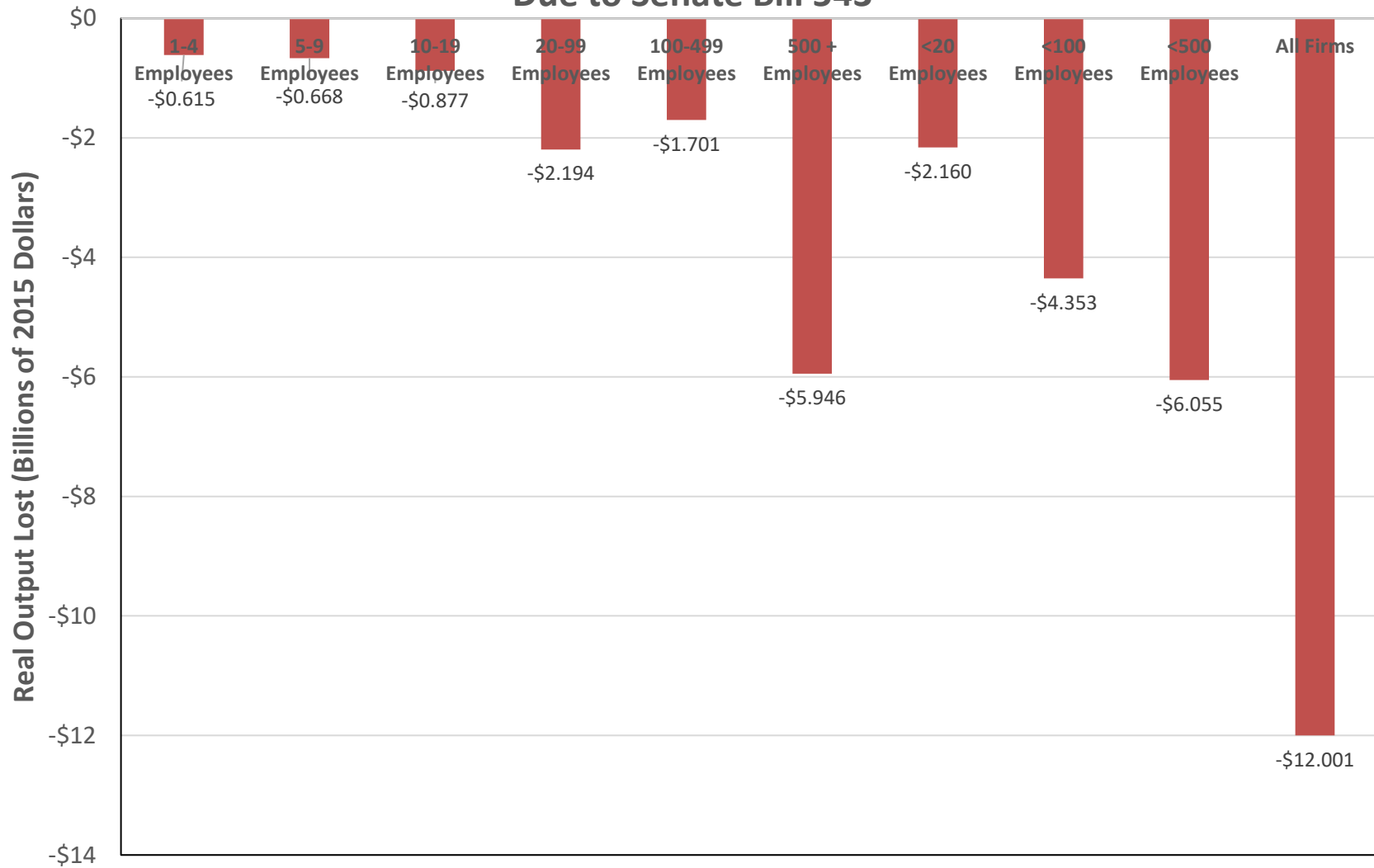


Figure 2

Cumulative Maryland Real Output Lost (Billions of 2015 Dollars) Due to Senate Bill 543

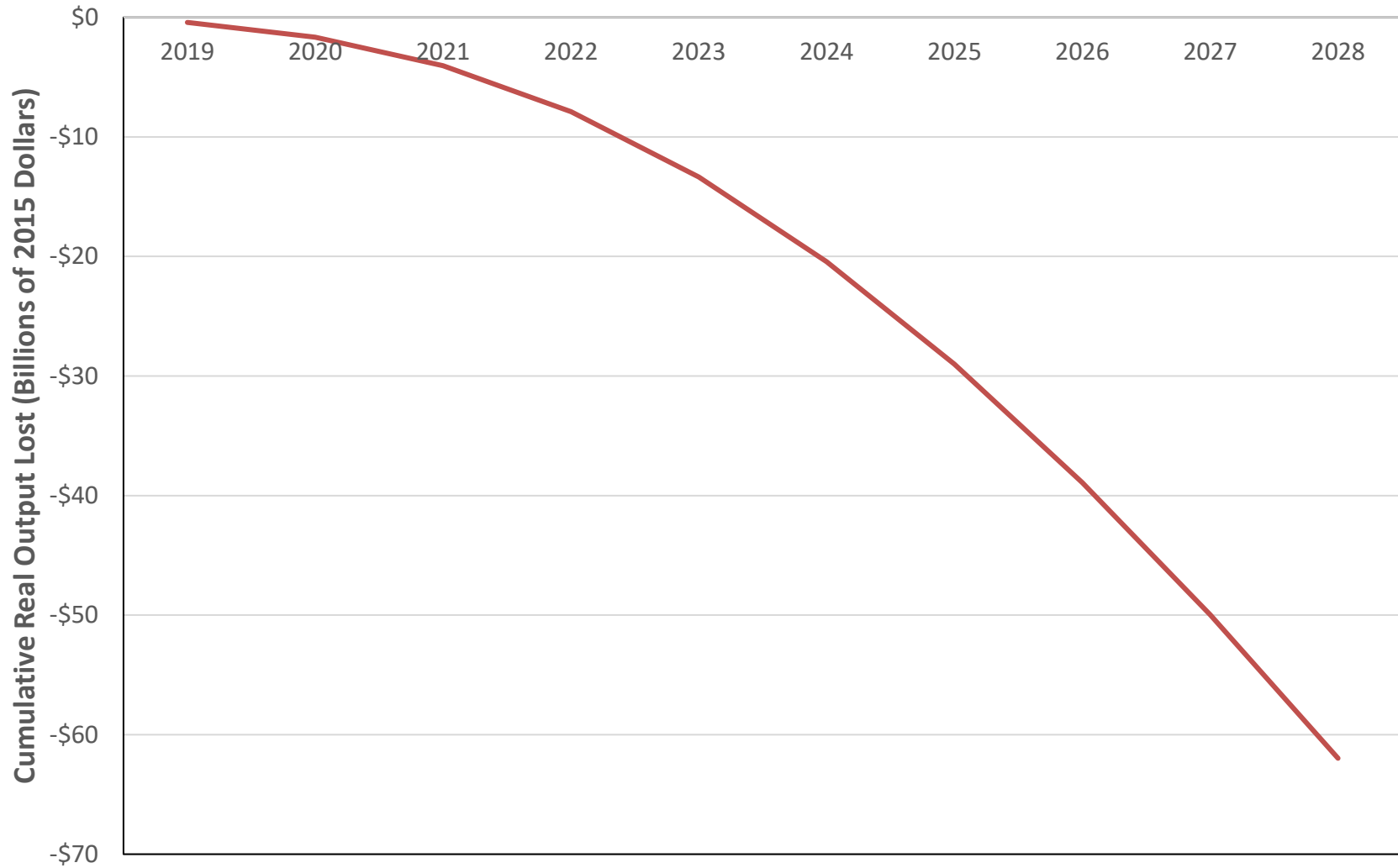


Figure 3

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.¹³ 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."¹⁴

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

¹³ 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.

¹⁴ 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.

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.”¹⁵ 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, 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”).¹⁶ 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

¹⁵ Worstall, Tim, “Alan Krueger’s Mistake on the Minimum Wage”, *Forbes*, Aug. 31, 2011.

¹⁶ 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.

“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.”¹⁷ 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 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.¹⁸ 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 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.

¹⁸ 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 17.