



# **Economic Effects of Implementing House Bill 395 or Senate Bill 7 on Virginia Small Businesses and Economy**

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## **Executive Summary**

This report analyzes the economic impacts of implementing House Bill 395 and Senate Bill 7, each of which proposes an increase in the Virginia state minimum wage to \$15.00 per hour within the next six years, on the Virginia economy with an emphasis on the state's small business sector. Introduced on January 8, 2020 by Delegate Jeion Ward, HB 395 would increase the minimum wage in Virginia to \$9.00 per hour in July 2020, \$11.00 per hour in July 2021, \$13.00 per hour in July 2022, and \$15.00 per hour in July 2023. SB 7, introduced on January 8, 2020 by Senator Richard Saslaw, would also increase the state minimum wage in stages, but at a more gradual rate over a longer period of time. SB 7 would increase the state minimum wage to \$10.00 per hour in July 2020, \$11.00 per hour in July 2021, \$12.00 per hour in July 2022, \$13.00 per hour in 2023, \$14.00 per hour in 2024, and \$15.00 per hour in July 2025. Additionally, SB 7 would mandate adjustments in the state minimum wage in July 2026 and thereafter dependent upon increases in the Consumer Price Index (CPI-U).

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 2020, each of the proposed minimum wage schedules would reduce Virginia private sector employment by over 130,000 jobs and result in a cumulative loss in real output produced by Virginia's private sector of over \$87 billion over the ten-year forecast window. Fifty-one 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 Virginia state minimum wage law does not contain current dollar minimums, so the effective minimum wage in the state is equal to the federal rate of \$7.25 per hour (**Table 1**).

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

<b>Year</b>	<b>Minimum Wage</b>	<b>Year</b>	<b>Minimum Wage</b>
1976	\$2.00 (per hour)	1998	\$5.15
1977	\$2.00	1999	\$5.15
1978	\$2.00	2000	\$5.15
1979	\$2.35	2001	\$5.15
1980	\$2.35	2002	\$5.15
1981	\$2.65	2003	\$5.15
1982	\$2.65	2004	\$5.15
1983	\$2.65	2005	\$5.15
1984	\$2.65	2006	\$5.15
1985	\$2.65	2007	\$5.15
1986	\$2.65	2008	\$5.85
1987	\$2.65	2009	\$6.55
1988	\$2.65	2010	\$7.25
1989	\$2.65	2011	\$7.25
1990	\$2.65	2012	\$7.25
1991	\$2.65	2013	\$7.25
1992	\$3.65	2014	\$7.25
1993	\$3.65	2015	\$7.25
1994	\$4.25	2016	\$7.25
1995	\$4.25	2017	\$7.25
1996	\$4.25	2018	\$7.25

Source: Department of Labor

State lawmakers in both chambers are currently considering proposals to more than double the minimum wage in Virginia. House Bill 395 and Senate Bill 7 of the 2020 legislative session both propose to establish current dollar minimums for the state minimum wage starting at levels higher than the federal minimum on July 1, 2020, and increasing over the next several

years to a rate of \$15.00 per hour. The rate adjustment schedules for the House and Senate bills are different and are provided below in **Table 2**. The two bills also differ in that SB 7 would allow for annual adjustments in the minimum wage (after it reaches \$15.00 per hour) to account for inflation, while the HB 395 has no such provision.

This report quantifies the economic impact implementing the proposed minimum wage increases outlined in HB 395 and SB 7 would have on the Virginia economy through the use of the Business Size Insight Module (BSIM). 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.<sup>1</sup> The model is used by numerous clients in both the private and public sectors.<sup>2</sup> 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. Among the macroeconomic variables forecast by the BSIM are measures of employment, production, and personal income. 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, their employees, and the broader economy.

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<sup>1</sup> 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.

<sup>2</sup> 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 Virginia**

Minimum wage increases raise the cost of labor for employers.<sup>3</sup> The proposed increases to the Virginia minimum wage outlined in HB 395 and SB 7 would directly raise the cost of labor by mandating annual increases from its current level of \$7.25 per hour to at least \$15.00 per hour over the next several years. HB 395 would increase the minimum wage in Virginia to \$9.00 per hour in July 2020, \$11.00 per hour in July 2021, \$13.00 per hour in July 2022, and \$15.00 per hour in July 2023. SB 7 would also increase the state minimum wage to \$15.00 per hour, but according to a more gradual schedule. The Senate bill would have the minimum wage increase to \$10.00 per hour in July 2020, \$11.00 per hour in July 2021, \$12.00 per hour in July 2022, \$13.00 per hour in 2023, \$14.00 per hour in 2024, and \$15.00 per hour in July 2025. Additionally, SB 7 would mandate adjustments in the state minimum wage in July 2026 and thereafter dependent upon increases in the Consumer Price Index (CPI-U).

Since the end of the Great Recession, inflation as measured by CPI-U has averaged just under 1.7 percent (**Chart 1**). This measure is close, although somewhat below, the Federal Reserve's target inflation rate of two percent. Of course, as the chart plainly shows, inflation did not remain static from 2009Q3 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 domestic shale oil production and reactions to increased U.S. oil production by other actors in global energy markets. But despite any short-term volatility in inflation, the post-recession average rate of inflation has remained relatively close to the Fed's stated target rate.

Although recent data points for the inflation series regularly register above the post-recession average, these recent measures of inflation fall largely below where inflation was prior to the Great Recession (**Chart 2**). There are a couple of reasons, however, to believe that inflation may pick up in the near term. First, today's historically tight labor market has led to an increase in the rate of wage growth (**Chart 3**). Upward wage pressures may have the effect of raising the price level, thereby increasing the price levels of consumer goods and services. Second, tariffs implemented by the Trump administration may have increased (and might

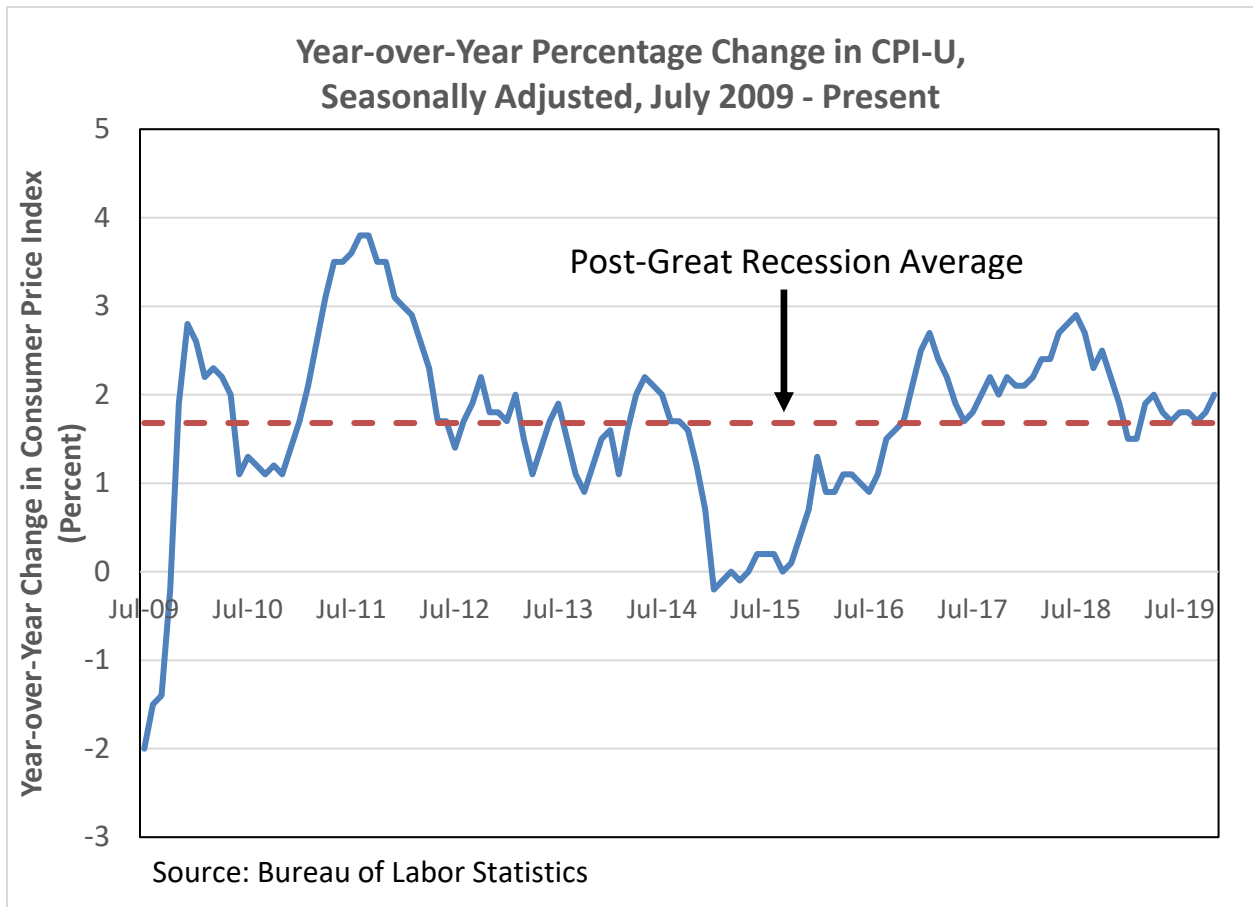
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<sup>3</sup> Good overviews of the literature on the minimum wage can be found in:

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.

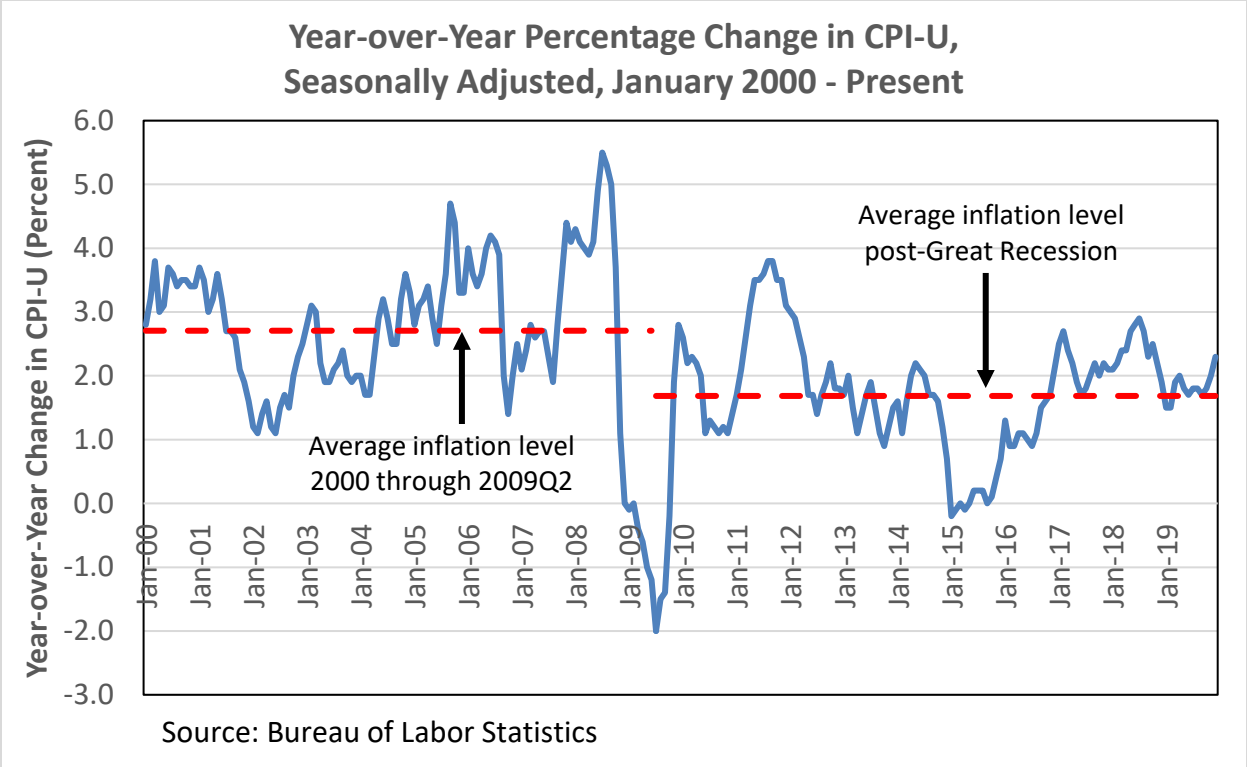
continue to increase) consumer prices. Quantitative estimates on the impact recent tariff actions have had on domestic inflation are scarce, but two recent studies on the issue suggest that the impact on consumer prices are modest with retailers choosing to absorb the costs through smaller profit margins.<sup>4</sup>



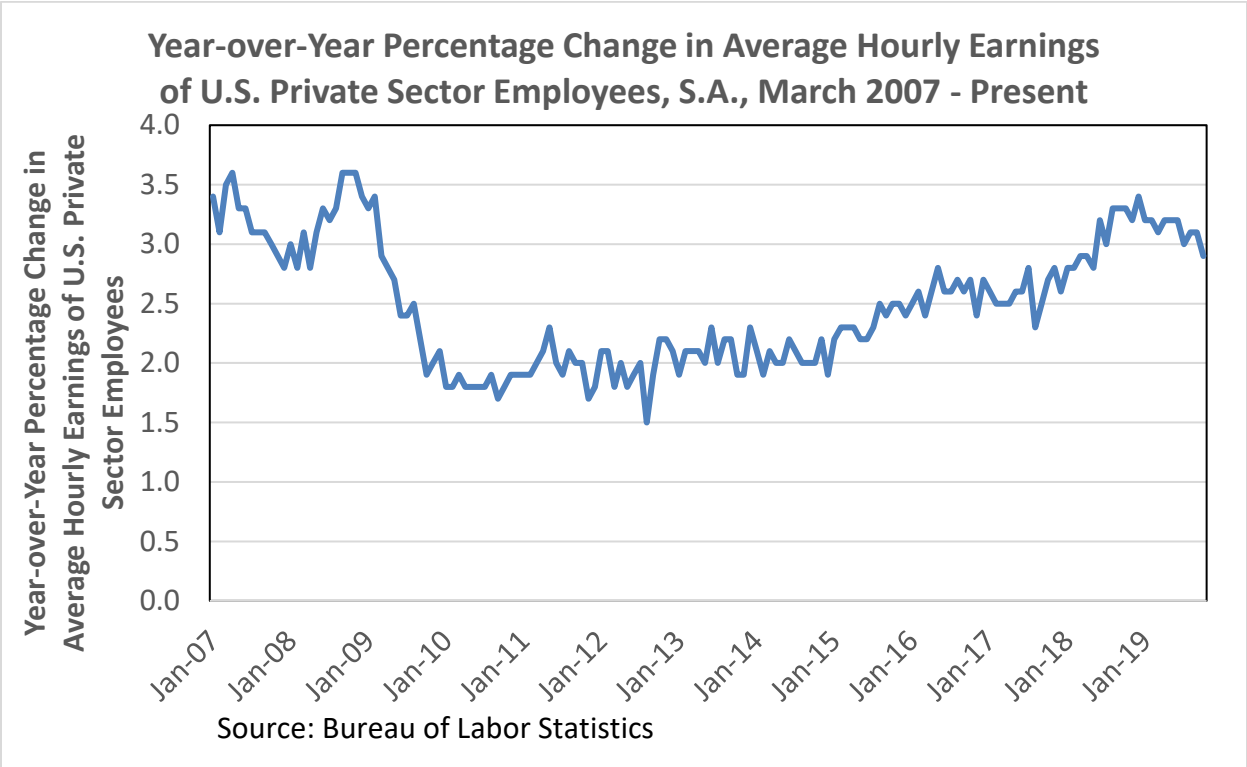
**Chart 1**

<sup>4</sup> Cavallo, Alberto et al., “Tariff Passthrough at the Border and at the Store: Evidence from US Trade Policy,” National Bureau of Economic Research, Working Paper No. 26396, October 2019.

Hale, Galina et al., “Inflationary Effects of Trade Disputes with China,” FRBSF Economic Letter, Federal Reserve Bank of San Francisco, February 25, 2019.



**Chart 2**



**Chart 3**

In an economy with full employment, upward wage pressures are a given, as are increases in the price level. Some experts view the current economy as recession-prone with traditional threats to growth not particularly concerning to the economy's wellbeing.<sup>5</sup> While we generally agree that the economy is currently more resilient to negative shocks that, under different circumstances, would push it into a state of negative growth, it strikes us as a stretch to say that the economy is recession-proof or that the economy will remain on a positive growth trajectory in the long term. Prior to the current economic expansion (the longest on record), the longest business cycle lasted 101 months, or about 8.4 years, while the average business cycle lasted approximately 69 months, or just under six years.<sup>6</sup> The boom-bust history of the business cycle suggests that another recession will come; the question is simply when. According to historical precedence, the economy is past due for another recession, and we rely on this fact as guidance for our own assumptions that the current expansion, with its upward pressures on wages and prices, will not persist through 2029 and that a long-term inflation rate of just under 1.7 percent is reasonable (and perhaps even conservative).

As for U.S. trade policy, considerable uncertainty surrounds how such policy will evolve in both the near and long term. The history of the Trump administration's approach to trade with China is characterized by tit-for-tat impositions of tariffs by both sides as well as promised, yet delayed, additional tariffs by the U.S. The delays have often been last minute and unexpected, creating an abundance of uncertainty with regard to the administration's pledges and whether or not the administration will actually follow through with tariff threats or whether it can be trusted to adhere to agreed upon terms from any trade deals. Economists disagree about exactly how much tariffs have raised inflation. In spring of 2019, Standard Chartered suggested that "the

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<sup>5</sup> Jan Hatzius and David Mericle with Goldman Sachs recently wrote: "A review of the last century of US recessions highlights five major causes: industrial shocks and inventory imbalances; oil shocks; inflationary overheating that leads to aggressive rate hikes; financial imbalances and asset price crashes; and fiscal tightening. The first three causes of recession have become structurally less threatening, in our view. Better inventory management and the shrinking output share of the most cyclical sectors have reduced the impact of industrial fluctuations. The decline in the economy's energy intensity and the rise of shale have reduced the impact of oil price shocks. And better monetary policy has led to a flatter and more anchored Phillips curve, reducing the risk of inflationary overheating . . . Overall, the changes underlying the Great Moderation appear intact, and we see the economy as structurally less recession-prone today. While new risks could emerge, none of the main sources of recent recessions—oil shocks, inflationary overheating, and financial imbalances—seem too concerning for now. As a result, the prospects for a soft landing look better than widely thought."

Excerpt taken from a republication of Goldman Sach's research in the Financial Times on January 2, 2020, available at <https://ftalphaville.ft.com/2020/01/02/1577965094000/The-US-economy-is-not-recession-proof/>.

<sup>6</sup> "US Business Cycle Expansions and Contractions," National Bureau of Economic Research, [https://www.nber.org/cycles/US\\_Business\\_Cycle\\_Expansions\\_and\\_Contractions\\_20120423.pdf](https://www.nber.org/cycles/US_Business_Cycle_Expansions_and_Contractions_20120423.pdf).

overall impact on inflation will probably ... remain relatively subdued,” estimating that pending tariff increases at the time were unlikely to push annual inflation up by more than 0.05 percentage points. Contemporaneously, economists at Goldman Sachs estimated that at-the-time threatened tariffs could add as much as 0.5 percentage points to the core personal consumption expenditures price index.<sup>7</sup> Recent research on tariff passthrough by academics from Harvard, the University of Chicago, and the Federal Reserve finds that while the tariff considered here are almost fully passed-through to U.S. import prices, the evidence is more mixed regarding retail price increases, suggesting that many U.S. retailers reduced the profit margin on their sales of the affected goods. The absorption of higher import prices through reduced margins would limit the impact tariffs have on consumer prices.<sup>8</sup>

While the current state of the labor market and the administration’s trade policy have the potential to increase consumer prices, the impact these considerations might have on inflation are uncertain. Among the two, the largest potential near-term effect on inflation appears to be an increases in consumer prices due to recent ad hoc tariff increases, which has had the effect of raising retail prices on some goods (offset to some degree by retailers absorbing some of the higher import costs through lower margins). Extrapolating longer term inflationary effects due to trade policy is difficult given the inherent uncertainty by which the current administration conducts trade negotiations and imposes tariffs. The unclear outcome of the 2020 presidential election also clouds longer term forecasts of inflation.<sup>9</sup> Regardless, for our purposes, recent quantitative estimates of how much inflation would increase due to trade policy are minor compared to the proposed more-than-doubling of the state minimum wage, and excluding long term increases in inflation of up to a few percentage points makes little difference to the state minimum wage in out years. Should excluding long term increases in inflation cause us to undershoot the actual minimum wage levels in years 2026 and beyond, then the forecast impacts on employment and production in this report may be considered conservative.

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<sup>7</sup> “What Will Trump’s Latest Tariffs Mean for Inflation? Not Too Much, Economists Say,” Wall Street Journal, May 16, 2019.

<sup>8</sup> Cavallo et al.

<sup>9</sup> Long term inflation estimates (as opposed to short term estimates) are what are important for this analysis since the CPI does not factor into the proposed wage schedule stipulated in SB 7 until at least 2026.



Under the above assumptions, the minimum wage schedules proposed in HB 395 and SB 7 take the form of the schedules provided in Table 2. Both bills would directly impact the estimated 56,000 Virginia workers earning at or below the current effective minimum wage of \$7.25 per hour. Should either of the bills become law, workers earning the minimum wage would naturally see their wages increased as a matter of law. Meanwhile, workers earning below the minimum wage, such as tipped workers (who are not directly addressed in either bill), would also see their wages increase since employers would be obligated to pay more in wages to cover the gap between workers' tipped income and the higher minimum wage.

**Table 2: Virginia Minimum Wage Trajectories Under House Bill 395 and Senate Bill 7**

Year	Minimum Wage Schedule for Current Minimum Wage Workers (House Bill 395)	Minimum Wage Schedule for Current Minimum Wage Workers (Senate Bill 7)
2020	\$8.13	\$8.63
2021	\$10.00	\$10.50
2022	\$12.00	\$11.50
2023	\$14.00	\$12.50
2024	\$15.00	\$13.50
2025	\$15.00	\$14.50
2026	\$15.00	\$15.12
2027	\$15.00	\$15.25
2028	\$15.00	\$15.37
2029	\$15.00	\$15.50

\*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.*, \$10.50 = (\$10.00 + \$11.00)/2.

**Table 3: Percentage Increase in Wages of Virginia Minimum Wage Workers Under House Bill 395 and Senate Bill 7**

Year	Percentage Increase in Minimum Wage Schedule for Current Minimum Wage Workers (House Bill 395)	Percentage Increase in Minimum Wage Schedule for Current Minimum Wage Workers (Senate Bill 7)
2020	12.1%	19.0%
2021	37.9%	44.8%
2022	65.5%	58.6%
2023	93.1%	72.4%
2024	106.9%	86.2%
2025	106.9%	100.0%
2026	106.9%	108.6%
2027	106.9%	110.3%
2028	106.9%	112.0%
2029	106.9%	113.8%

It is important to recognize that the 56,000 workers who would initially be impacted by HB 395 or SB 7 do not constitute all the workers who would have their wage schedules impacted by the legislation. The reason for this is potential “emulation effects” (also referred to as “ripple” or “spillover” effects) associated with individuals earning near (just above) the current minimum wage. Some of these individuals will earn between \$7.25 per hour and the higher wages mandated in subsequent years (beginning with \$10.00 per hour or \$10.50 per hour in 2020, depending on which bill). 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.”<sup>10</sup> For an economist considering such effects, a key concern involves estimating how many workers can be expected to contribute to such emulation effects.<sup>11</sup> Based upon state-level data from the Bureau of Labor Statistics, for this analysis, it was adjudged that 30 percent of Virginia’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 2020 and beyond.<sup>12</sup>

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<sup>10</sup> Grossman, Jean Baldwin, “The Impact of the Minimum Wage on Other Wages,” The Journal of Human Resources, Vol. 18, No. 3 (Summer 1983). See also: Dube, Arindrajit et al., “Fairness and Frictions: The Impact of Unequal Raises on Quit Behavior,” IZA Discussion Paper No. 9149, June 2015; Autor, David H. et al., “The Contribution of the Minimum Wage to US Wage Inequality over Three Decades: A Reassessment,” American Economic Journal: Applied Economics, 8(1): 58-99, 2016.

<sup>11</sup> 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.

<sup>12</sup> According to the Bureau of Labor Statistics, Virginia wage earners at the 10<sup>th</sup> percentile earn \$9.31 per hour, while those at the 25<sup>th</sup> percentile earned \$12.46 per hour. The median wage earner in Virginia earns \$19.63 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).

A consideration that an economist must sometimes concern himself with when analyzing 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. Virginia law contains no such outright exemptions to the state minimum wage based on a firm's number of employees, and neither HB 395 nor SB 7 contain such an exemption. For this analysis, we therefore need not worry about modeling a carveout of firms based on firm size.

In an increased minimum wage scenario, in addition to the direct cost of higher wages paid to minimum wage employees, there are other 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.<sup>13</sup> 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.<sup>14</sup>

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<sup>13</sup> 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.

<sup>14</sup> 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: Virginia House Bill 395 and Senate Bill 7**

BSIM simulation results for the modeled scenarios in which HB 395 or SB 7 become law are provided below. All employment figures are expressed as number of employees while output figures are expressed as billions of 2019 dollars. The simulation results for the two bills are very similar. Under the above assumptions, over 130,000 Virginia private sector jobs are forecast to be lost by year 2029 if either bill is enacted (**Table 4** and **Table 5**). More precisely, the BSIM forecasts that there will be more than 130,000 fewer jobs in 2029 due to the mandated increase in the cost of labor than there otherwise would have been (if the minimum wage was not increased). Approximately 51 percent of the forecast private sector jobs lost are jobs that would have been in the small business sector of the economy.<sup>15</sup> Equivalently, approximately 67,000 small business jobs are forecast to be lost due to the increase in the minimum wage to \$15.00 per hour and higher. Approximately 26,000 jobs are forecast to be lost at the smallest firms (those with fewer than 20 employees).

At a sector level, the retail and food services industries are forecast to experience significant job losses. The BSIM forecasts that in 2029, there will be over 12,000 fewer jobs in retail and over 6,400 fewer jobs in the accommodations and food services industries (under both scenarios). 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. Fifty-seven percent of the jobs lost in the accommodations and food services industries are jobs that would have been located at small businesses.

In addition to forecast reductions in employment, private sector real output<sup>16</sup> is also projected to decrease by approximately \$16 billion by 2029 (**Table 6** and **Table 7**). Forty-six 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 in the private sector is projected to reach at least \$87 billion in both scenarios (**Table 8** and **Table 9**).

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<sup>15</sup> 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.

<sup>16</sup> Output refers to the value of final goods and services as well as the value of intermediate goods and raw materials that are produced or sourced earlier in the production process. Output serves as a proxy for sales.

**Table 4: Private Sector Employment Difference from Baseline (No. of Employees) Under House Bill 395, 1.68% Inflation**

<b>Firm Size</b>	<b>2020</b>	<b>2021</b>	<b>2022</b>	<b>2023</b>	<b>2024</b>	<b>2025</b>	<b>2026</b>	<b>2027</b>	<b>2028</b>	<b>2029</b>	<b>Percent of Total (2029)</b>
1-4 Employees	-310	-1,034	-2,011	-3,207	-4,361	-5,322	-6,150	-6,821	-7,353	-7,761	5.9%
5-9 Employees	-379	-1,257	-2,416	-3,808	-5,106	-6,144	-7,022	-7,723	-8,271	-8,686	6.6%
10-19 Employees	-463	-1,533	-2,943	-4,640	-6,220	-7,483	-8,555	-9,414	-10,089	-10,603	8.0%
20-99 Employees	-1,036	-3,441	-6,631	-10,491	-14,110	-17,014	-19,483	-21,459	-23,009	-24,185	18.3%
100-499 Employees	-667	-2,269	-4,467	-7,159	-9,730	-11,806	-13,528	-14,887	-15,939	-16,726	12.6%
500 + Employees	-2,665	-9,204	-18,211	-29,048	-39,180	-47,022	-53,210	-57,964	-61,593	-64,280	48.6%
< 20 Employees	-1,152	-3,825	-7,369	-11,654	-15,687	-18,949	-21,727	-23,958	-25,713	-27,050	20.5%
< 100 Employees	-2,188	-7,266	-14,000	-22,146	-29,797	-35,964	-41,210	-45,417	-48,722	-51,235	38.7%
< 500 Employees	-2,855	-9,535	-18,467	-29,305	-39,527	-47,769	-54,738	-60,304	-64,662	-67,961	51.4%
<b>All Firms</b>	<b>-5,520</b>	<b>-18,740</b>	<b>-36,678</b>	<b>-58,353</b>	<b>-78,706</b>	<b>-94,791</b>	<b>-107,948</b>	<b>-118,268</b>	<b>-126,254</b>	<b>-132,242</b>	<b>100.0%</b>

**Table 5: Private Sector Employment Difference from Baseline (No. of Employees) Under Senate Bill 7, 168% Inflation**

<b>Firm Size</b>	<b>2020</b>	<b>2021</b>	<b>2022</b>	<b>2023</b>	<b>2024</b>	<b>2025</b>	<b>2026</b>	<b>2027</b>	<b>2028</b>	<b>2029</b>	<b>Percent of Total (2029)</b>
1-4 Employees	-480	-1,265	-2,048	-2,940	-3,886	-4,854	-5,746	-6,488	-7,124	-7,654	5.8%
5-9 Employees	-587	-1,534	-2,440	-3,454	-4,520	-5,601	-6,579	-7,370	-8,041	-8,593	6.6%
10-19 Employees	-718	-1,870	-2,967	-4,198	-5,497	-6,820	-8,018	-8,985	-9,810	-10,491	8.0%
20-99 Employees	-1,607	-4,201	-6,690	-9,495	-12,464	-15,492	-18,244	-20,468	-22,363	-23,927	18.3%
100-499 Employees	-1,036	-2,790	-4,556	-6,524	-8,595	-10,698	-12,617	-14,174	-15,481	-16,545	12.6%
500 + Employees	-4,140	-11,372	-18,631	-26,404	-34,411	-42,430	-49,632	-55,348	-60,031	-63,794	48.7%
< 20 Employees	-1,785	-4,669	-7,455	-10,591	-13,903	-17,274	-20,344	-22,843	-24,975	-26,738	20.4%
< 100 Employees	-3,392	-8,871	-14,145	-20,086	-26,367	-32,766	-38,588	-43,311	-47,338	-50,665	38.7%
< 500 Employees	-4,428	-11,661	-18,702	-26,610	-34,962	-43,463	-51,205	-57,485	-62,818	-67,210	51.3%
<b>All Firms</b>	<b>-8,567</b>	<b>-23,033</b>	<b>-37,333</b>	<b>-53,015</b>	<b>-69,373</b>	<b>-85,893</b>	<b>-100,837</b>	<b>-112,833</b>	<b>-122,849</b>	<b>-131,004</b>	<b>100.0%</b>

**Table 6: Private Sector Real Output Difference from Baseline (Billions of 2019 Dollars) Under House Bill 395, 1.68% Inflation**

Firm Size	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	Percent of Total (2029)
1-4 Employees	-\$0.024	-\$0.080	-\$0.163	-\$0.272	-\$0.390	-\$0.501	-\$0.601	-\$0.684	-\$0.748	-\$0.795	4.9%
5-9 Employees	-\$0.027	-\$0.091	-\$0.182	-\$0.301	-\$0.426	-\$0.539	-\$0.640	-\$0.722	-\$0.786	-\$0.832	5.2%
10-19 Employees	-\$0.034	-\$0.114	-\$0.229	-\$0.379	-\$0.535	-\$0.675	-\$0.799	-\$0.901	-\$0.979	-\$1.036	6.4%
20-99 Employees	-\$0.082	-\$0.282	-\$0.572	-\$0.949	-\$1.340	-\$1.689	-\$1.993	-\$2.240	-\$2.430	-\$2.568	15.9%
100-499 Employees	-\$0.071	-\$0.250	-\$0.514	-\$0.855	-\$1.203	-\$1.504	-\$1.755	-\$1.954	-\$2.104	-\$2.212	13.7%
500 + Employees	-\$0.298	-\$1.072	-\$2.214	-\$3.644	-\$5.054	-\$6.200	-\$7.103	-\$7.798	-\$8.313	-\$8.676	53.8%
< 20 Employees	-\$0.085	-\$0.285	-\$0.574	-\$0.952	-\$1.351	-\$1.715	-\$2.040	-\$2.307	-\$2.512	-\$2.664	16.5%
< 100 Employees	-\$0.167	-\$0.567	-\$1.146	-\$1.901	-\$2.691	-\$3.404	-\$4.034	-\$4.547	-\$4.942	-\$5.232	32.5%
< 500 Employees	-\$0.238	-\$0.816	-\$1.661	-\$2.756	-\$3.894	-\$4.908	-\$5.788	-\$6.501	-\$7.047	-\$7.444	46.2%
<b>All Firms</b>	<b>-\$0.536</b>	<b>-\$1.888</b>	<b>-\$3.874</b>	<b>-\$6.400</b>	<b>-\$8.948</b>	<b>-\$11.108</b>	<b>-\$12.892</b>	<b>-\$14.299</b>	<b>-\$15.359</b>	<b>-\$16.119</b>	<b>100.0%</b>

**Table 7: Private Sector Real Output Difference from Baseline (Billions of 2019 Dollars) Under Senate Bill 7, 1.68% Inflation**

Firm Size	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	Percent of Total (2029)
1-4 Employees	-\$0.037	-\$0.098	-\$0.169	-\$0.257	-\$0.354	-\$0.457	-\$0.556	-\$0.643	-\$0.718	-\$0.779	4.9%
5-9 Employees	-\$0.041	-\$0.111	-\$0.188	-\$0.281	-\$0.384	-\$0.491	-\$0.593	-\$0.681	-\$0.756	-\$0.818	5.1%
10-19 Employees	-\$0.052	-\$0.140	-\$0.237	-\$0.353	-\$0.481	-\$0.614	-\$0.741	-\$0.850	-\$0.943	-\$1.019	6.4%
20-99 Employees	-\$0.127	-\$0.347	-\$0.592	-\$0.883	-\$1.200	-\$1.532	-\$1.846	-\$2.115	-\$2.343	-\$2.527	15.8%
100-499 Employees	-\$0.110	-\$0.309	-\$0.534	-\$0.792	-\$1.069	-\$1.354	-\$1.622	-\$1.848	-\$2.035	-\$2.184	13.7%
500 + Employees	-\$0.463	-\$1.335	-\$2.294	-\$3.341	-\$4.437	-\$5.552	-\$6.575	-\$7.413	-\$8.087	-\$8.616	54.0%
< 20 Employees	-\$0.131	-\$0.349	-\$0.594	-\$0.891	-\$1.219	-\$1.561	-\$1.889	-\$2.174	-\$2.417	-\$2.616	16.4%
< 100 Employees	-\$0.258	-\$0.696	-\$1.186	-\$1.774	-\$2.419	-\$3.093	-\$3.734	-\$4.288	-\$4.760	-\$5.143	32.3%
< 500 Employees	-\$0.368	-\$1.005	-\$1.720	-\$2.566	-\$3.488	-\$4.447	-\$5.357	-\$6.137	-\$6.796	-\$7.327	46.0%
<b>All Firms</b>	<b>-\$0.831</b>	<b>-\$2.340</b>	<b>-\$4.014</b>	<b>-\$5.907</b>	<b>-\$7.925</b>	<b>-\$9.999</b>	<b>-\$11.932</b>	<b>-\$13.549</b>	<b>-\$14.883</b>	<b>-\$15.943</b>	<b>100.0%</b>

**Table 8: Cumulative Private Sector Real Output Difference from Baseline (Billions of 2019 Dollars) Under House Bill 395, 1.68% Inflation**

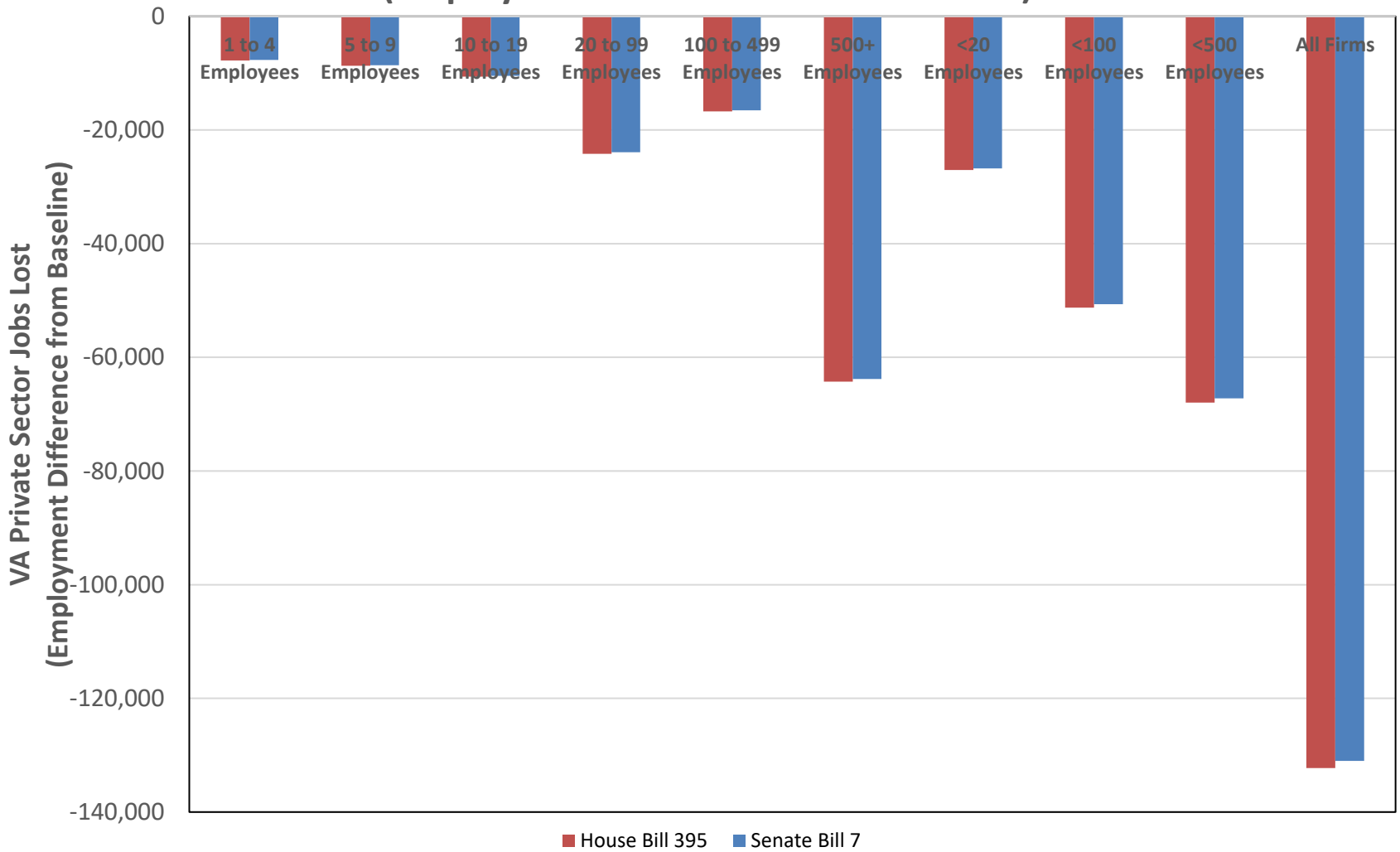
Firm Size	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	Percent of Total (2029)
1-4 Employees	-\$0.024	-\$0.104	-\$0.267	-\$0.539	-\$0.929	-\$1.430	-\$2.031	-\$2.715	-\$3.462	-\$4.258	4.7%
5-9 Employees	-\$0.027	-\$0.117	-\$0.299	-\$0.601	-\$1.027	-\$1.566	-\$2.206	-\$2.928	-\$3.713	-\$4.546	5.0%
10-19 Employees	-\$0.034	-\$0.148	-\$0.377	-\$0.756	-\$1.291	-\$1.967	-\$2.766	-\$3.667	-\$4.645	-\$5.682	6.2%
20-99 Employees	-\$0.082	-\$0.364	-\$0.937	-\$1.885	-\$3.225	-\$4.914	-\$6.907	-\$9.148	-\$11.578	-\$14.146	15.5%
100-499 Employees	-\$0.071	-\$0.320	-\$0.835	-\$1.690	-\$2.893	-\$4.396	-\$6.151	-\$8.105	-\$10.209	-\$12.421	13.6%
500 + Employees	-\$0.298	-\$1.370	-\$3.584	-\$7.228	-\$12.282	-\$18.481	-\$25.585	-\$33.383	-\$41.696	-\$50.371	55.1%
< 20 Employees	-\$0.085	-\$0.369	-\$0.944	-\$1.896	-\$3.247	-\$4.962	-\$7.002	-\$9.309	-\$11.821	-\$14.485	15.8%
< 100 Employees	-\$0.167	-\$0.734	-\$1.880	-\$3.781	-\$6.472	-\$9.876	-\$13.910	-\$18.457	-\$23.399	-\$28.631	31.3%
< 500 Employees	-\$0.238	-\$1.054	-\$2.715	-\$5.471	-\$9.365	-\$14.272	-\$20.061	-\$26.562	-\$33.608	-\$41.052	44.9%
<b>All Firms</b>	<b>-\$0.536</b>	<b>-\$2.424</b>	<b>-\$6.298</b>	<b>-\$12.698</b>	<b>-\$21.646</b>	<b>-\$32.754</b>	<b>-\$45.646</b>	<b>-\$59.945</b>	<b>-\$75.304</b>	<b>-\$91.423</b>	<b>100.0%</b>

**Table 9: Cumulative Private Sector Real Output Difference from Baseline (Billions of 2019 Dollars) Under Senate Bill 7, 1.68% Inflation**

Firm Size	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	Percent of Total (2029)
1-4 Employees	-\$0.037	-\$0.135	-\$0.305	-\$0.562	-\$0.916	-\$1.373	-\$1.928	-\$2.571	-\$3.289	-\$4.068	4.7%
5-9 Employees	-\$0.041	-\$0.152	-\$0.340	-\$0.622	-\$1.006	-\$1.496	-\$2.089	-\$2.770	-\$3.526	-\$4.344	5.0%
10-19 Employees	-\$0.052	-\$0.192	-\$0.429	-\$0.782	-\$1.262	-\$1.876	-\$2.617	-\$3.467	-\$4.410	-\$5.429	6.2%
20-99 Employees	-\$0.127	-\$0.474	-\$1.066	-\$1.948	-\$3.148	-\$4.680	-\$6.526	-\$8.640	-\$10.983	-\$13.510	15.5%
100-499 Employees	-\$0.110	-\$0.419	-\$0.953	-\$1.746	-\$2.815	-\$4.169	-\$5.791	-\$7.639	-\$9.675	-\$11.859	13.6%
500 + Employees	-\$0.463	-\$1.798	-\$4.092	-\$7.433	-\$11.870	-\$17.422	-\$23.997	-\$31.409	-\$39.497	-\$48.113	55.1%
< 20 Employees	-\$0.131	-\$0.479	-\$1.074	-\$1.965	-\$3.184	-\$4.745	-\$6.634	-\$8.808	-\$11.225	-\$13.841	15.9%
< 100 Employees	-\$0.258	-\$0.953	-\$2.139	-\$3.913	-\$6.332	-\$9.425	-\$13.160	-\$17.448	-\$22.208	-\$27.351	31.3%
< 500 Employees	-\$0.368	-\$1.372	-\$3.093	-\$5.659	-\$9.147	-\$13.594	-\$18.951	-\$25.087	-\$31.883	-\$39.210	44.9%
<b>All Firms</b>	<b>-\$0.831</b>	<b>-\$3.171</b>	<b>-\$7.185</b>	<b>-\$13.092</b>	<b>-\$21.017</b>	<b>-\$31.016</b>	<b>-\$42.947</b>	<b>-\$56.497</b>	<b>-\$71.380</b>	<b>-\$87.323</b>	<b>100.0%</b>

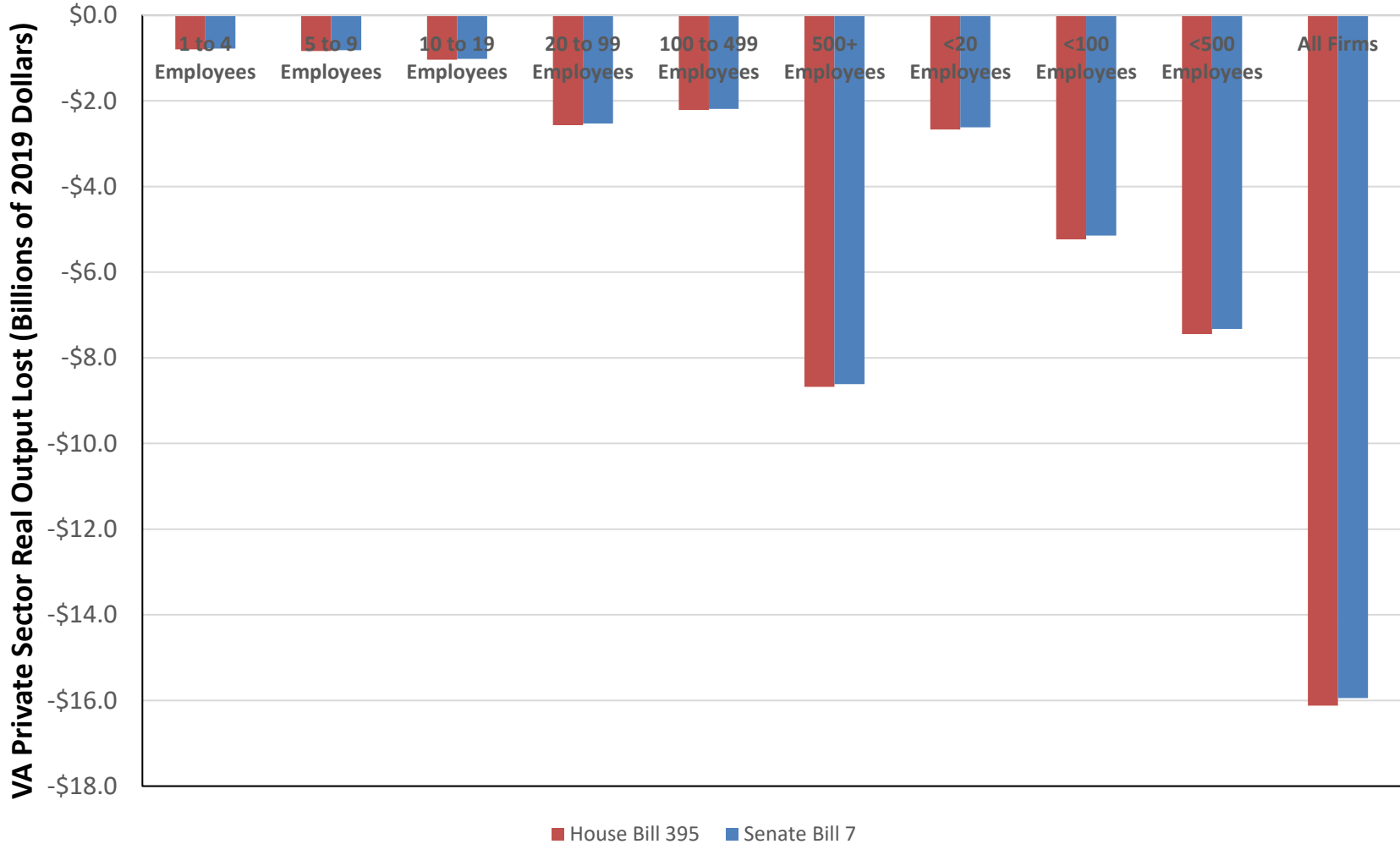


## Virginia Private Sector Jobs Lost by 2029 Due to HB 395 or SB 7 (Employment Difference from Baseline)



**Figure 1**

## Virginia Real Output Lost (Billions of 2019 Dollars) by 2029 Due to HB 395 or SB 7



**Figure 2**

### Cumulative Private Sector Real Output Lost (Billions of 2019 Dollars) Due to HB 395 or SB 7

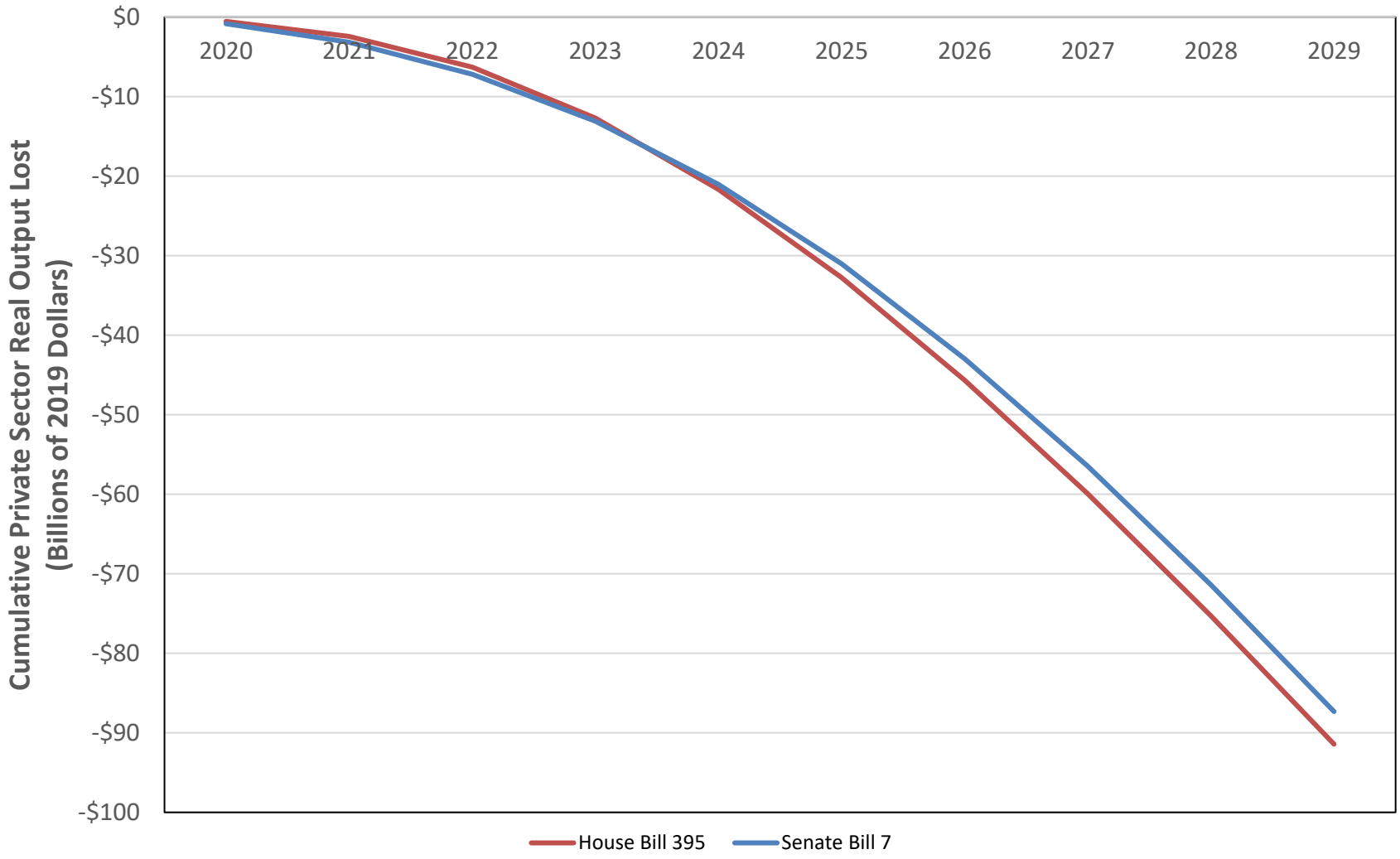


Figure 3

## **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.<sup>17</sup> 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."<sup>18</sup>

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

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<sup>17</sup> 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.

<sup>18</sup> 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.”<sup>19</sup> 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”).<sup>20</sup> Their results were obtained using a methodology that accounted for the (according to the authors) prior-to-then ignored “heterogeneous employment

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<sup>19</sup> Worstall, Tim, “Alan Krueger’s Mistake on the Minimum Wage”, *Forbes*, Aug. 31, 2011.

<sup>20</sup> 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.

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.”<sup>21</sup> 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.<sup>22</sup> 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.”

Other recent research investigating the impact of minimum wage increases in Seattle and San Francisco on labor market conditions and business dynamics reinforces NSW’s conclusion that minimum wage increases do indeed result in job losses for at least part of the workforce.

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<sup>21</sup> 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.

<sup>22</sup> 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 21.

For example, researchers at the University of Washington analyzed the impact of recent minimum wage increases in Seattle from \$9.37 per hour to as high as \$13.00 per hour. The researchers found that while the minimum wage hikes led to higher wages for workers with above-median experience, no wage increases were found among the less skilled. Furthermore, the researchers found that these wage increases came at the cost of a significant reduction in the rate of new entries into the workforce.<sup>23</sup> Additionally, researchers at Harvard Business School examined the effect of recent increases in the minimum wage in San Francisco and found that minimum wage increases raised the likelihood of firm exits, an outcome that constitutes not only lost jobs but also shuttered businesses.<sup>24</sup>

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<sup>23</sup> Jardim, Ekaterina et al, “Minimum Wage Increases and Individual Employment Trajectories,” NBER Working Paper 25182, 2018.

<sup>24</sup> Luca, Dara Lee and Michael Luca, “Survival of the Fittest: The Impact of the Minimum Wage on Firm Exit,” Harvard Business School, Working Paper 17-088, 2017.