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Economic Impact Analysis of California Senate Bill No. 935

This report analyzes the potential economic impact implementing California Senate Bill No. 935 could have on the California economy. Introduced in February 2014, Senate Bill No. 935 would modify the California Labor Code to mandate a staggered increase in the California minimum wage from 2015 through 2017. Specifically, the bill would increase the state minimum wage to \$11.00 per hour in 2015, \$12.00 per hour in 2016, and \$13.00 per hour in 2017. The bill would also require automatic annual adjustments of the state minimum wage in future years dependent upon future rates of inflation as calculated using the California Consumer Price Index (CCPI). The increases to the California minimum wage outlined in Senate Bill No. 935 are being proposed despite the fact that a bill mandating an increase in the California minimum wage was passed just last year.

Using the Business Size Insight Module (BSIM)—a leading economic forecasting model—it was estimated that over a ten-year period beginning in 2015, California Senate Bill No. 935 would reduce California private sector employment by 323,000 jobs and result in a cumulative reduction in California real output of \$224 billion over the ten-year forecast window. A substantial share of the job losses would occur in retail trade and the food services and drinking places industry. More than 57 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 in the area of 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 California is currently \$8.00 per hour (**Table 1**), seventy-five cents higher than federal rate. Due to the recent passage of Assembly Bill 10 (AB 10) last year, the California minimum wage is scheduled to increase to \$9.00 per hour in July 2014 and to not less than \$10.00 per hour in January 2016.

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

Year	Minimum Wage	Year	Minimum Wage
1973	\$1.60 (per hour)	1994	\$4.25
1974	\$1.60	1995	\$4.25
1975	\$1.60	1996	\$4.25
1976	\$2.30	1997	\$4.75
1977	\$2.30	1998	\$5.15
1978	\$2.30	1999	\$5.15
1979	\$2.90	2000	\$5.75
1980	\$3.10	2001	\$6.25
1981	\$3.35	2002	\$6.75
1982	\$3.35	2003	\$6.75
1983	\$3.35	2004	\$6.75
1984	\$3.35	2005	\$6.75
1985	\$3.35	2006	\$6.75
1986	\$3.35	2007	\$7.50
1987	\$3.35	2008	\$8.00
1988	\$3.35	2009	\$8.00
1989	\$3.35	2010	\$8.00
1990	\$3.35	2011	\$8.00
1991	\$4.25	2012	\$8.00
1992	\$4.25	2013	\$8.00
1993	\$4.25	2014	\$8.00/\$9.00

Source: Department of Labor

Despite a 15.6 percent increase in the effective minimum wage in California over the past decade and the passage of an increase in the state minimum wage just last year, proponents of a higher minimum wage continue to push for additional increases. Assembly Bill 10, signed into law last year, will increase the state minimum wage by 25 percent over the next two years.

California Senate Bill No. 935 would further increase the minimum wage by an additional 30 percent to \$13.00 per hour by 2016 (versus \$10.00 per hour in 2016 under AB 10), resulting in a cumulative increase in the state minimum wage of 62.5 percent from its current level of \$8.00 per hour (or an increase of 44.4 percent from its soon-to-be level of \$9.00 per hour).

This brief report quantifies the potential economic impacts implementation of Senate Bill No. 935 might have on California 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. It 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.

Description of New Employer Costs Under California Senate Bill No. 935

Minimum wage increases raise the cost of labor for employers.¹ California Senate Bill No. 935 directly raises the cost of labor by mandating increases to the state minimum wage to \$11.00 per hour in 2015, \$12.00 per hour in 2016, and \$17.00 per hour in 2017. The bill would also require future increases to the minimum wage in years beyond 2017 dependent upon future rates of inflation as calculated using the California Consumer Price Index for All Urban Consumers. Given no persuasive reason to believe that future rates of inflation will differ from inflation rates of the recent past (the most recent ten years), this analysis assumes that the annual rate of inflation in years beyond 2017 is 2.4 percent, equal to both the arithmetic and geometric means of annual inflation rates as calculated by the California CPI over the past ten years.² The bill stipulates that minimum wage totals in future years resulting from calculations intended to account for inflation shall be rounded to the nearest five cents (\$0.05).

Table 2 presents the proposed wage schedule for California workers earning the minimum wage under the proposed bill along with the percentage increases relative to the current (and soon-to-be current) minimum wage that future proposed levels of the minimum wage represent. Raising the minimum wage to \$13.00 per hour from its current and soon-to-be levels of \$8.00 per hour and \$9.00 per hour is equivalent to raising the cost of labor for employers of minimum wage workers by 62.5 percent and 44.4 percent, respectively. These

¹ 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.

² A complete series of the CCPI dating back to 1955 and calculations of annual rates of change in the CCPI are available at <http://www.dir.ca.gov/OPRL/CPI/CPIHistDataSeries.xls>.

increases to the cost of labor are not inconsequential. According to the Bureau of Labor Statistics, there are 45,000 workers in California who currently earn the minimum wage and would be directly and immediately affected by an increase in the state minimum wage.³

Table 2: California Minimum Wage Trajectories under Senate Bill No. 935

Year	Hypothetical Minimum Wage Schedule under California Senate Bill No. 935	Percentage Increase in California Minimum Wage (Compared to Status Quo) Assuming Implementation of California Senate Bill No. 935 ⁴
2014	\$8.00 (per hour)/\$9.00 (per hour)	N/A
2015	\$11.00	37.5%/22.2%
2016	\$12.00	50.0%/33.3%
2017	\$13.00	62.5%/44.4%
2018	\$13.30	66.3%/47.8%
2019	\$13.60	70.0%/51.1%
2020	\$13.90	73.8%/54.4%
2021	\$14.20	77.5%/57.8%
2022	\$14.50	81.3%/61.1%
2023	\$14.85	85.6%/65.0%
2024	\$15.20	90.0%/68.9%

An important aspect of modeling minimum wage increases is “tipped” employees. According to the U.S. Department of Labor (DOL), 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 the employees, provided that a minimum cash wage, currently set to \$2.13 per hour at the federal level, is also paid to the employees. States have the option of establishing their own cash wage.

California is among a handful of states that does not permit tip credit. Instead, the minimum cash wage paid by employers must be the same for both tipped and non-tipped employees.⁶ Nonetheless, there are 82,000 workers in California who, according to the Bureau of Labor Statistics, earn below the minimum wage.⁷ Senate Bill No. 935 does not specifically address these employees, but it is reasonable to assume that if wages are increased for workers earning the minimum wage, these workers will view an increase in their own minimum cash

³ “Characteristics of Minimum Wage Workers: 2012,” Table 3, Bureau of Labor Statistics, <http://www.bls.gov/cps/minwage2012tbls.htm>.

⁴ Two percentages are provided in this column due to the fact that the California minimum wage takes on two different values during 2014. The first percentage in each row is the percentage increase in the CA minimum wage relative to the \$8.00 per hour level in effect for the first half of 2014. The second percentage in each row is the percentage increase in the CA minimum wage relative to the \$9.00 per hour level in effect for the second half of 2014.

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>.

⁶ Information on mandated cash wages paid to tipped employees by state is available from the Department of Labor’s Wage and Hour Division at <http://www.dol.gov/whd/state/tipped.htm>.

⁷ Such workers may include outside salespeople and employees in the immediate family of their employer, among others.

wage as only fair and will demand an increase in the minimum cash wage. For this analysis, it is assumed that the mandated cash wage paid to these 82,000 employees adjusts on a dollar-for-dollar basis equal to changes in the state minimum wage according to the wage schedule provided in Table 2. Whether the increase in the cash wage occurs as a result of a mandate in subsequent legislation or because employers simply respond to worker demands is immaterial so far as modeling inputs to the BSIM is concerned.

A second 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. The state of Illinois, for example, exempts employer firms with three or fewer employees from minimum wage laws. No such exemptions exist for the state of California, and employers in all employee-size-of-firm categories in the state are therefore assumed to be required to comply with the proposed bill.

A third 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 \$9.00 per hour and the higher wages mandated in 2015, 2016, and 2017 by California Senate Bill No. 935 (\$11.00 per hour, \$12.00 per hour, and \$13.00 per hour, respectively). In the absence of employer action, these workers will see their wages raised automatically to these new levels contingent upon 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.”⁸ For the modeler, a key concern involves estimating how many workers can be expected to contribute to such emulation effects. Based upon state-level data from the Bureau of Labor Statistics, for this analysis, it was adjudged that 15 percent⁹ of California’s private sector employees less those individuals earning at or below

⁸ Grossman, Jean Baldwin, “The Impact of the Minimum Wage on Other Wages,” The Journal of Human Resources, Vol. 18, No. 3 (Summer 1983).

⁹ According to the Bureau of Labor Statistics, California wage earners at the 10th percentile earn \$9.04 per hour, while those at the 25th percentile earned \$11.55 per hour. Emulation effects can be assumed to occur among workers who earn near (within a few dollars of) the minimum wage. Workers at the 15th percentile currently earn less than one dollar more than the proposed new minimum wage levels in 2015 under California Senate Bill No. 935 and earn *below* the proposed wage levels in 2016 and 2017. These workers would automatically see their wages increase to the new minimum wage by 2016 if the bill were implemented, all else unchanged, but a reasonable scenario is that these workers will press for the restoration of the original wage structure. It is assumed that emulation effects do not occur for workers earning above the 15th percentile. For workers earning at or below the 15th percentile, it is assumed that earnings increase by \$2.00 per hour in 2015 if the bill is implemented, and by an additional \$1.00 per hour in both 2016 and 2017. The much larger number of workers who would be directly impacted in the short term due to Senate Bill No. 935 relative to those workers directly impacted by AB 10 in the short term is noteworthy.

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 2015, 2016, and 2017.¹⁰

Besides the direct cost of higher wages in an increased minimum wage scenario, there are significant additional employer costs in the form 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 California Senate Bill No. 935.

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.¹¹ 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 this 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

¹⁰ 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.

¹¹ 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.

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-firm categories according to existing industry and firm 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.¹²

Simulation Results

BSIM simulation results for the modeled legislative scenario are provided below. All employment figures are expressed as number of employees, while output figures are expressed as billions of 2005 dollars. Under the above assumptions, job losses forecast in year 2024 are approximately 323,000 (**Table 3**). More precisely, the BSIM forecasts that there will be 323,000 fewer jobs in 2024 due to the bill’s mandated increase in the cost of labor than there otherwise would have been (if the bill had not been implemented). Fifty-seven (57) percent of the forecast jobs lost are jobs that would have been in the small business sector of the economy. Retail trade and food services and drinking places (a sub-industry of the NAICS “leisure and hospitality” industry category) are forecast to experience significant job losses (**Table 4** and **Table 5**). The BSIM forecasts that in 2024, there will be more than 46,000 fewer jobs in retail trade (14.3 percent of all jobs lost) and more than 27,000 fewer jobs in food services and drinking places (8.4 percent of all jobs lost).

In addition to forecast reductions in employment, real output¹³ is also projected to decrease by approximately \$39.5 billion by 2024 (**Table 6**). Over the ten-year forecast window,

¹² 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.

¹³ The term “output” refers to the aggregate output of the California economy (CA 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.

the *cumulative* real output lost is approximately \$224 billion. As with job losses, more than half of the reduction in real output is expected to occur in the small business sector of the economy.

Table 3: Employment Difference from Baseline (Number of Employees) under California Senate Bill No. 935

Firm Size	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	Percent of Total (2024)
1-4 Employees	-2,388	-5,245	-8,719	-11,879	-14,825	-17,507	-19,922	-22,055	-24,010	-25,781	8.0%
5-9 Employees	-2,314	-5,067	-8,414	-11,441	-14,251	-16,783	-19,049	-21,044	-22,853	-24,483	7.6%
10-19 Employees	-2,654	-5,852	-9,754	-13,301	-16,599	-19,568	-22,213	-24,529	-26,614	-28,484	8.8%
20-99 Employees	-5,614	-12,506	-20,914	-28,581	-35,677	-42,063	-47,698	-52,606	-57,026	-60,972	18.9%
100-499 Employees	-3,810	-8,906	-15,150	-20,967	-26,318	-31,122	-35,312	-38,958	-42,221	-45,134	14.0%
500 + Employees	-11,203	-27,699	-47,643	-66,241	-82,871	-97,494	-109,917	-120,515	-129,865	-138,100	42.8%
< 20 Employees	-7,356	-16,164	-26,887	-36,621	-45,675	-53,858	-61,184	-67,628	-73,477	-78,748	24.4%
< 100 Employees	-12,970	-28,670	-47,801	-65,202	-81,352	-95,921	-108,882	-120,234	-130,503	-139,720	43.3%
< 500 Employees	-16,780	-37,576	-62,951	-86,169	-107,670	-127,043	-144,194	-159,192	-172,724	-184,854	57.2%
All Firms	-27,983	-65,275	-110,594	-152,410	-190,541	-224,537	-254,111	-279,707	-302,589	-322,954	100.0%

Table 4: Employment Difference from Baseline (Number of Employees) under California Senate Bill No. 935, Retail Trade

Firm Size	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	Percent of Total (2024)
1-4 Employees	-172	-471	-830	-1,174	-1,473	-1,731	-1,943	-2,119	-2,268	-2,392	5.2%
5-9 Employees	-199	-545	-961	-1,359	-1,706	-2,005	-2,250	-2,454	-2,626	-2,771	6.0%
10-19 Employees	-214	-585	-1,034	-1,461	-1,834	-2,154	-2,418	-2,637	-2,822	-2,978	6.5%
20-99 Employees	-386	-1,057	-1,866	-2,637	-3,310	-3,889	-4,365	-4,760	-5,095	-5,375	11.7%
100-499 Employees	-267	-732	-1,292	-1,826	-2,292	-2,694	-3,023	-3,296	-3,529	-3,723	8.1%
500 + Employees	-2,064	-5,658	-9,990	-14,116	-17,721	-20,822	-23,373	-25,490	-27,278	-28,785	62.5%
< 20 Employees	-585	-1,601	-2,825	-3,994	-5,013	-5,890	-6,611	-7,210	-7,716	-8,141	17.7%
< 100 Employees	-971	-2,658	-4,691	-6,631	-8,323	-9,779	-10,976	-11,970	-12,811	-13,516	29.4%
< 500 Employees	-1,238	-3,390	-5,983	-8,457	-10,615	-12,473	-13,999	-15,266	-16,340	-17,239	37.5%
All Firms	-3,302	-9,048	-15,973	-22,573	-28,336	-33,295	-37,372	-40,756	-43,618	-46,024	100.0%

Table 5: Employment Difference from Baseline (Number of Employees) under California Senate Bill No. 935, Food Services and Drinking Places

Firm Size	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	Percent of Total (2024)
1-4 Employees	-119	-230	-356	-455	-542	-620	-686	-744	-796	-842	3.1%
5-9 Employees	-236	-457	-707	-901	-1,076	-1,230	-1,361	-1,475	-1,579	-1,671	6.2%
10-19 Employees	-425	-824	-1,273	-1,623	-1,937	-2,215	-2,451	-2,656	-2,844	-3,010	11.1%
20-99 Employees	-1,051	-2,035	-3,147	-4,011	-4,787	-5,475	-6,059	-6,567	-7,029	-7,441	27.5%
100-499 Employees	-552	-1,067	-1,651	-2,105	-2,512	-2,872	-3,179	-3,446	-3,688	-3,904	14.4%
500 + Employees	-1,434	-2,779	-4,297	-5,478	-6,538	-7,476	-8,275	-8,968	-9,599	-10,162	37.6%
< 20 Employees	-780	-1,511	-2,336	-2,979	-3,555	-4,065	-4,498	-4,875	-5,219	-5,523	20.4%
< 100 Employees	-1,831	-3,546	-5,483	-6,990	-8,342	-9,540	-10,557	-11,442	-12,248	-12,964	48.0%
< 500 Employees	-2,383	-4,613	-7,134	-9,095	-10,854	-12,412	-13,736	-14,888	-15,936	-16,868	62.4%
All Firms	-3,817	-7,392	-11,431	-14,573	-17,392	-19,888	-22,011	-23,856	-25,535	-27,030	100.0%

Table 6: Real Output Difference from Baseline (Billions of 2005 \$) under California Senate Bill No. 935

Firm Size	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	Percent of Total (2024)
1-4 Employees	-\$0.170	-\$0.440	-\$0.787	-\$1.136	-\$1.467	-\$1.772	-\$2.044	-\$2.287	-\$2.512	-\$2.717	6.9%
5-9 Employees	-\$0.148	-\$0.394	-\$0.712	-\$1.033	-\$1.337	-\$1.617	-\$1.864	-\$2.087	-\$2.288	-\$2.472	6.3%
10-19 Employees	-\$0.176	-\$0.472	-\$0.856	-\$1.245	-\$1.614	-\$1.953	-\$2.254	-\$2.523	-\$2.766	-\$2.987	7.6%
20-99 Employees	-\$0.424	-\$1.128	-\$2.039	-\$2.957	-\$3.822	-\$4.616	-\$5.317	-\$5.939	-\$6.504	-\$7.021	17.8%
100-499 Employees	-\$0.344	-\$0.938	-\$1.698	-\$2.467	-\$3.185	-\$3.842	-\$4.418	-\$4.931	-\$5.396	-\$5.821	14.7%
500 + Employees	-\$1.031	-\$2.967	-\$5.423	-\$7.909	-\$10.193	-\$12.264	-\$14.073	-\$15.679	-\$17.132	-\$18.462	46.8%
< 20 Employees	-\$0.494	-\$1.306	-\$2.355	-\$3.414	-\$4.418	-\$5.342	-\$6.162	-\$6.897	-\$7.566	-\$8.176	20.7%
< 100 Employees	-\$0.918	-\$2.434	-\$4.394	-\$6.371	-\$8.240	-\$9.958	-\$11.479	-\$12.836	-\$14.070	-\$15.197	38.5%
< 500 Employees	-\$1.262	-\$3.372	-\$6.092	-\$8.838	-\$11.425	-\$13.800	-\$15.897	-\$17.767	-\$19.466	-\$21.018	53.2%
All Firms	-\$2.293	-\$6.339	-\$11.515	-\$16.747	-\$21.618	-\$26.064	-\$29.970	-\$33.446	-\$36.598	-\$39.480	100.0%

California Jobs Lost (Employment Difference from Baseline) by 2024, by Employee-Size-of-Firm

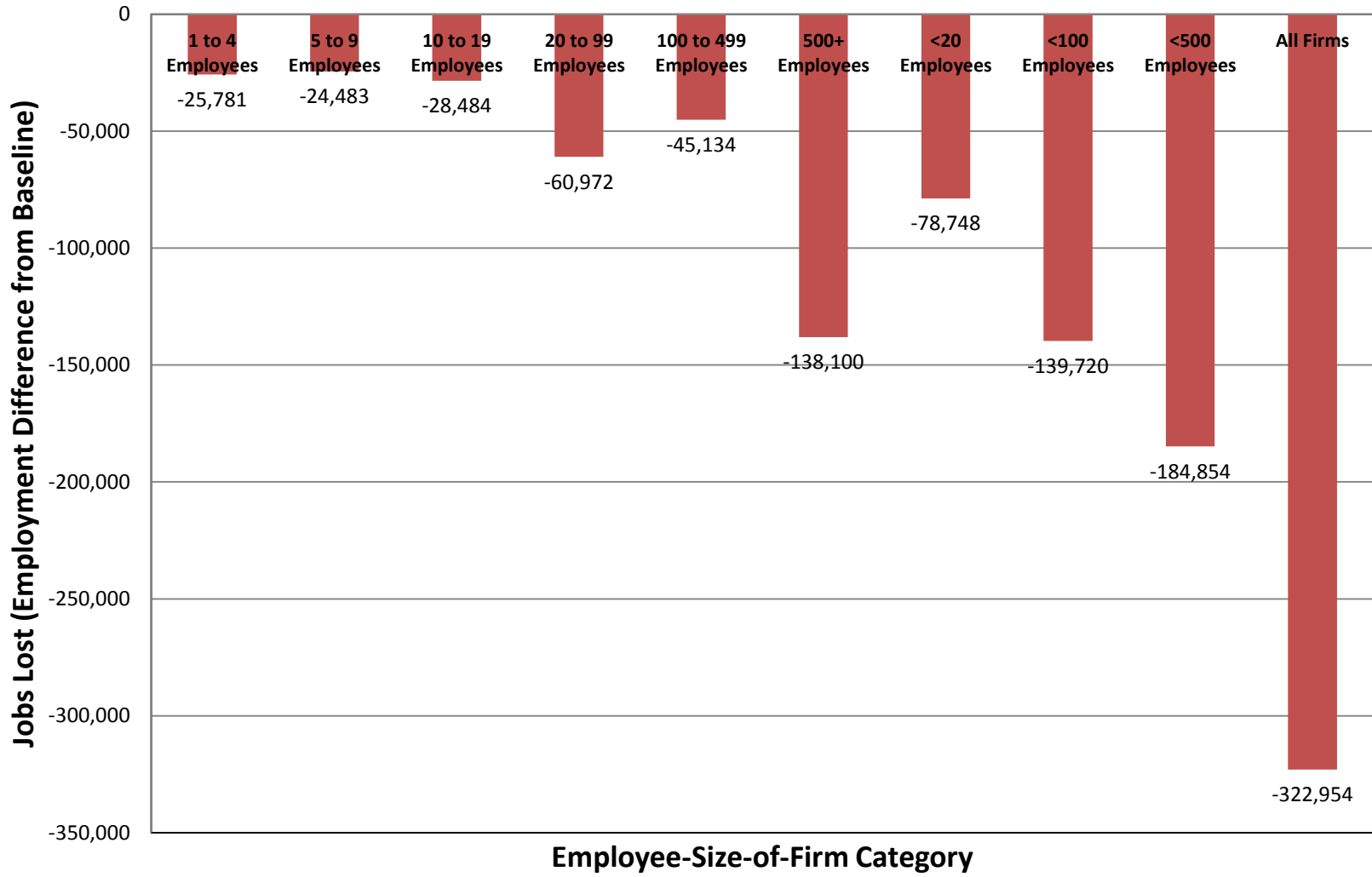


Figure 1

Cumulative California Real Output Lost from 2015 to 2024, by Employee-Size-of-Firm

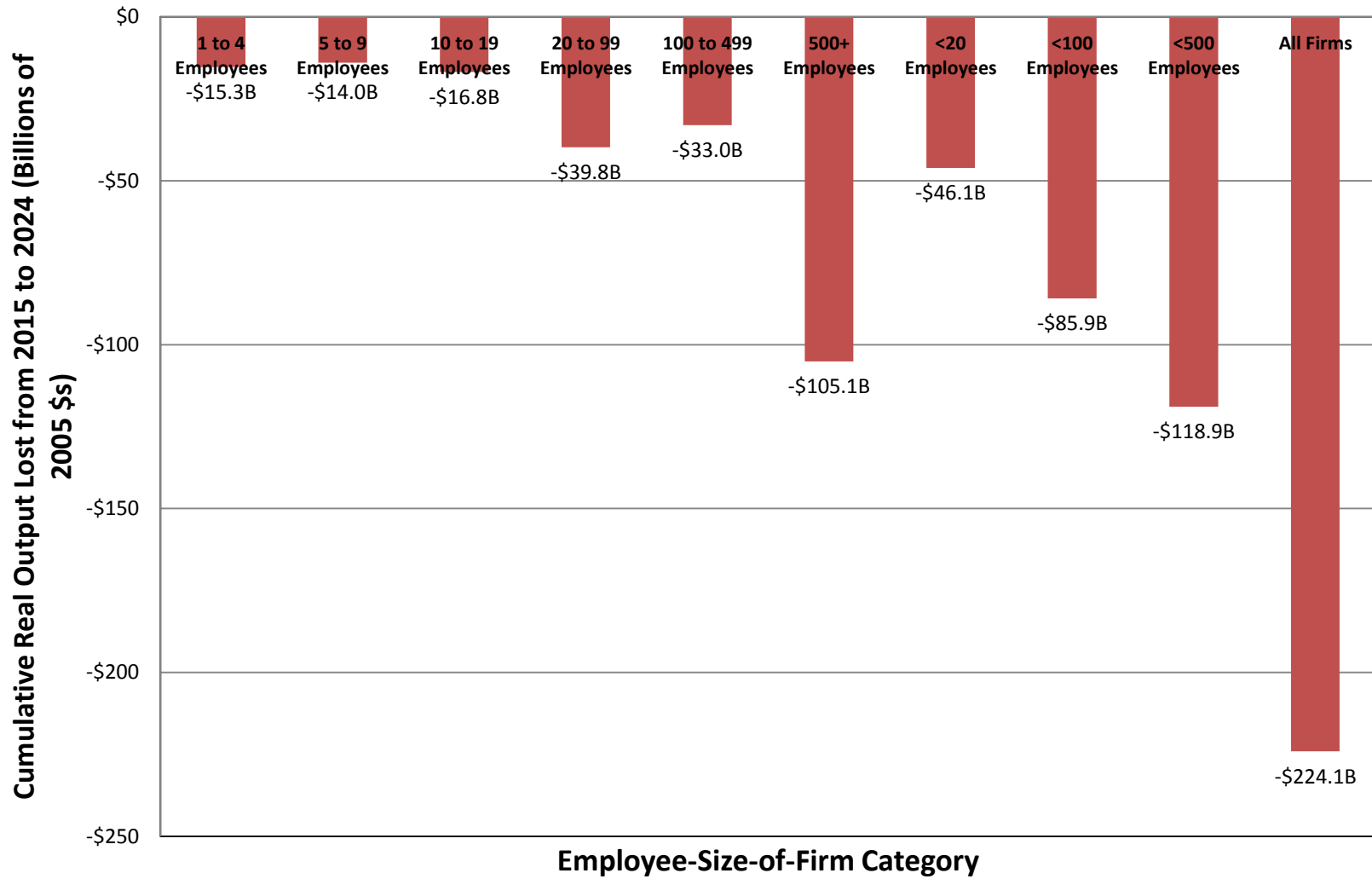


Figure 2

Percentage Shares of Jobs Lost and Cumulative Real Output Lost Attributable to Different Employee-Size-of-Firm Categories

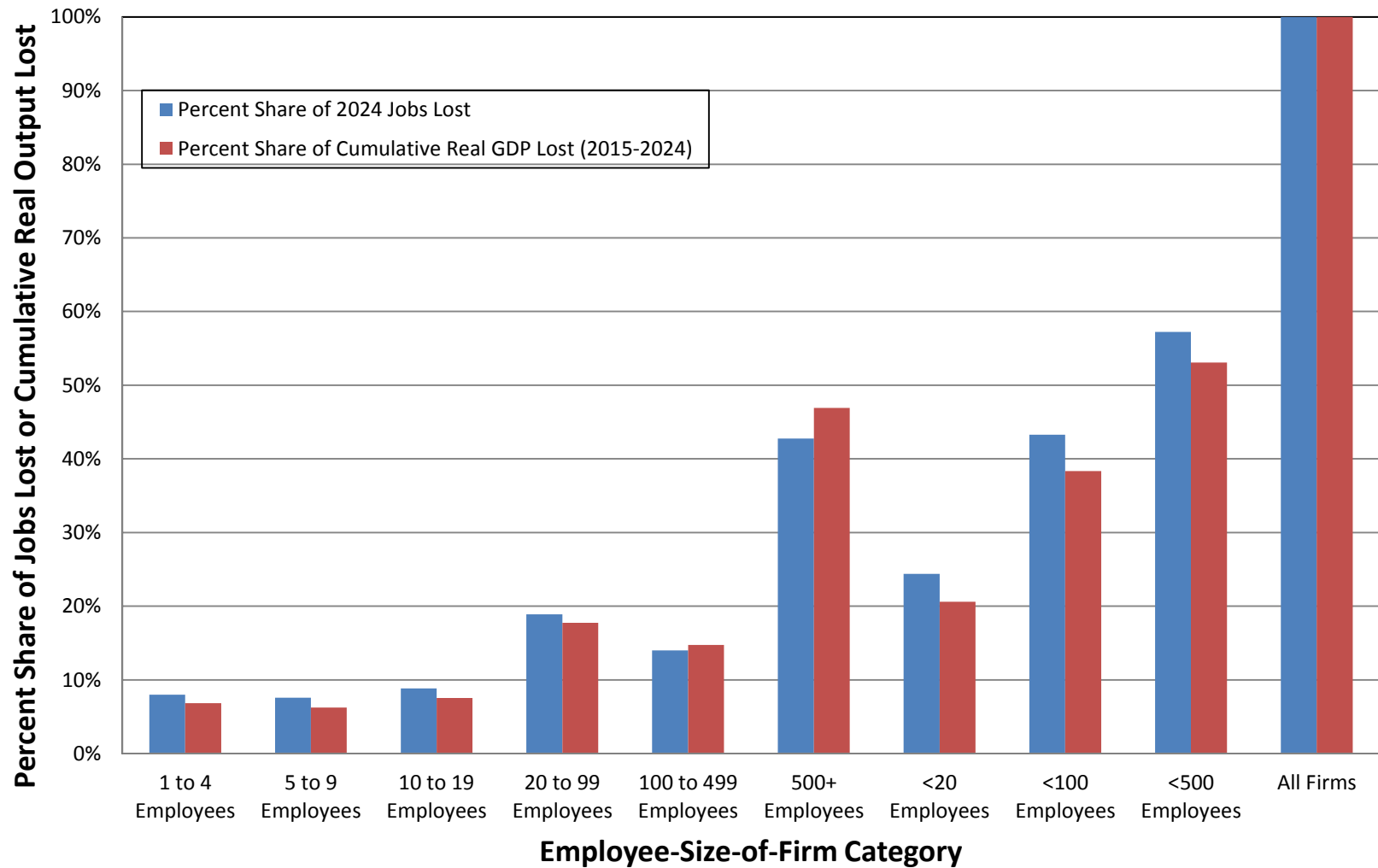


Figure 3

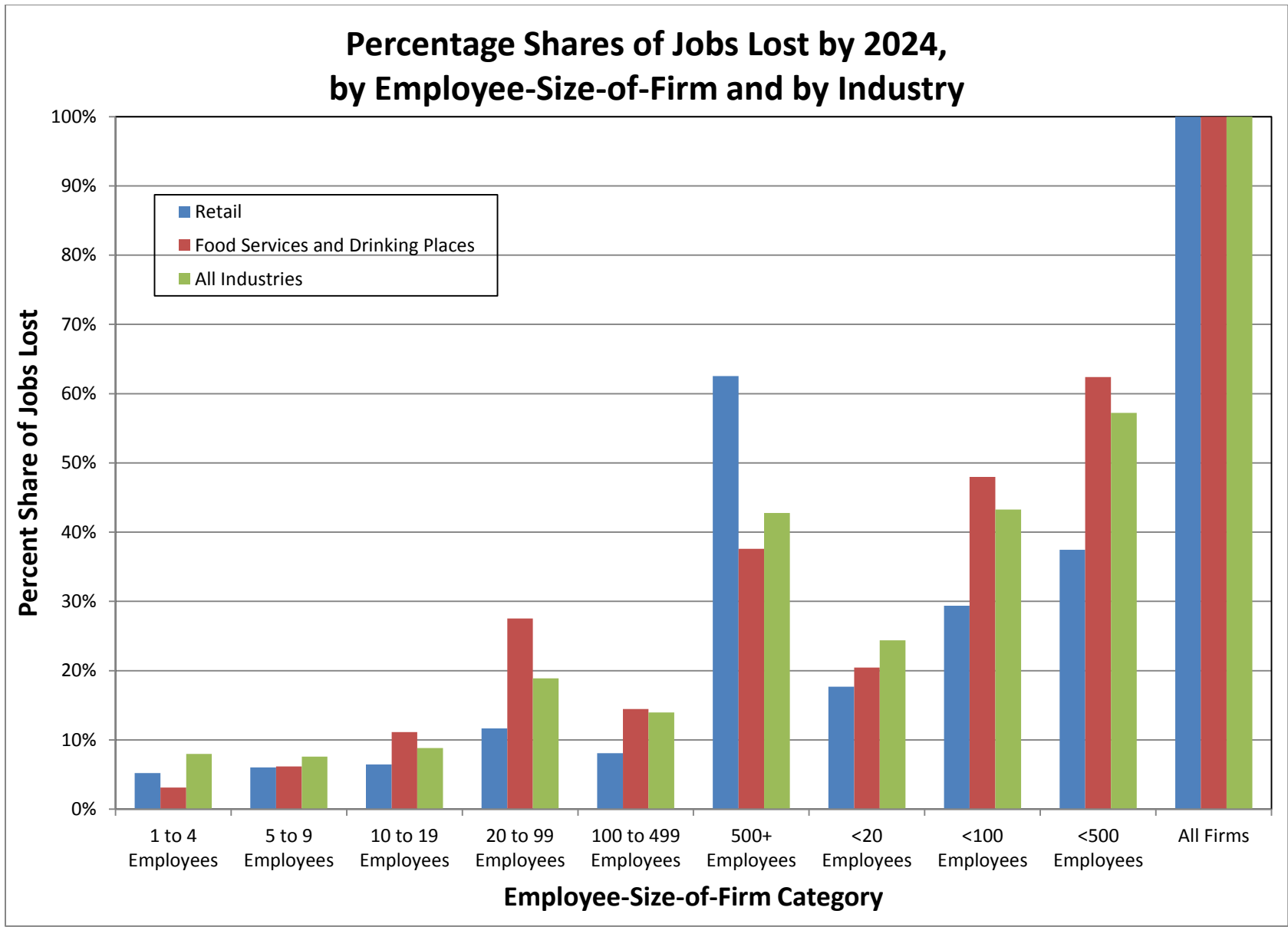


Figure 4

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.¹⁴ 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."¹⁵

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."¹⁶ 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,

¹⁴ 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.

¹⁵ 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.

¹⁶ 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 Kruger 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 Kruger may be biased upward. Fifth, Card and Kruger 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").¹⁷ 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."¹⁸ 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

¹⁷ 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.

¹⁸ 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.

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.¹⁹ 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.”

¹⁹ 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 18.