TECHNICAL APPENDIX

Estimating Employment Loss from an Increase in the Minimum Wage in St. Louis City, Missouri.

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This paper describes how we estimate the employment loss from a proposed increase in the minimum wage to $11.00 on January 1, 2018 in St. Louis City, Missouri.

**Data and Sample**

We use data from the Current Population Survey (CPS) Outgoing Rotation Groups (ORG) from January 2014 through December 2016 and identify those who are in St. Louis County in Missouri. The minimum wage increase would apply only to workers inside of the City of St. Louis. Since the CPS does not separately identify residents of the city of St. Louis from those in St. Louis County, we compute the percentage of St. Louis County that resides inside the city.[[1]](#footnote-1) Our analysis of number of workers affected and cost is done for the entire county and we multiply this by the percentage inside the city of St. Louis (29.9 percent). This assumes that the wage distribution and private/public status of workers within the county is similar for those inside and outside the city of St. Louis City. Supporting this assumption, the American Fact Finder data for 2015 suggests that the average earnings of workers in St. Louis City are lower than those outside of the city limits.[[2]](#footnote-2) As a result, our employment loss estimates are likely understated.

 For each private sector worker in the sample, we estimate an hourly wage. The group of potentially affected workers is restricted to those private sector workers whose wage is at or above the minimum wage (less 25 cents) during the year of the sample survey. For example, in the 2015 data, since the minimum wage was $7.65, anyone earning at or above $7.40 is included in our group of potentially affected workers.

To project the distribution of wages in 2018 without passage of the new legislation, we assume that every potentially affected worker has wage growth of 2.9 percent annually until 2018 and that the labor force will grow by 1.56 percent annually. This assumption is based on the CBO’s own forecast of wage growth for low skill workers in their study of the employment effects of minimum wage hikes, and their projection of employment growth.[[3]](#footnote-3) Also, given that Missouri indexes its minimum wages for inflation, we assume that the minimum wage would increase to $7.88 by 2018 based on the CBO forecast of inflation averaging 2.36 percent per year between 2017 and 2018.[[4]](#footnote-4) For any worker who earned at or above the minimum in the year of the survey (2014 to 2016) and whose predicted wage in 2018 was below the projected minimum of $7.88, we increase their wage to $7.88. For workers who earned up to $.25 below the minimum in the year of the survey, we increase by the amount that the minimum wage increased. This means, for example, that a person who earned $.15 less than the minimum wage in 2016 would still earn $.15 below the new minimum in 2018.

**Estimating Affected Workers and Employment Loss**

After generating the forecast of the 2018 distribution of wages reflecting wage growth and the effects of indexing in Missouri on the minimum wage, we identify workers who would be affected by the new law mandating a $11.00 minimum as those with wages between the predicted minimum wage legislated for 2018 ($7.88) and the new minimum ($11). We also include those workers who were slightly below (up to $.25) below the old and new minimum.

To estimate the number of affected workers, we estimate the number of affected workers for 2018 based on the 2014-2016 data. To do so, we adjust the weights in the data for each year’s data so that it reflects the projected employment growth that year’s employment and employment in 2018. After we adjust the weights, we estimate the number of affected workers by summing their earnings weights and dividing the total by 36 (the number of months of data).

To estimate employment loss, for each affected worker we compute:

L = e \*(New Min Wage /Min Wage 2018 – 1)

where e is an assumed elasticity of employment with respect to changes in the minimum wage, Min Wage 2018 is the minimum wage currently legislated for 2018 (which we estimate to be $7.88 with indexing), and New Min Wage is the $11.00 minimum that is being proposed for 2018. To estimate the aggregate employment loss in the economy, we use earnings weights to sum L across workers. We also follow the Congressional Budget Office (2014) and use an elasticity of 0.15 for non-teenagers and 0.45 for teenagers.

Our tables summarize the number of affected workers, employment loss, and the distribution of employment loss by sex, education, race, age and industry in the private sector. A rule of thumb for minimum sample size required to achieve a reasonably accurate estimate of the employment loss is to require at least 30,000 people be in the relevant category. For example, if there are fewer than 30,000 people projected to be in a particular industry category, the Bureau of Labor Statistics would not report the estimate due to a lack of reliability based on the variance of the estimate relative to its mean.

1. We estimate the percentage of the St. Louis County employed inside the city of St. Louis using 2015 employment statistics from the Census Bureau’s Fact Finder. The data can be found at [http://factfinder.census.gov/faces/nav/jsf/pages/index.xhtml](http://factfinder.census.gov/faces/nav/jsf/pages/index.xhtml%20) [↑](#footnote-ref-1)
2. Within the city of St. Louis City, MO median earnings are $27,491; and $33,870 for St. Louis County. [↑](#footnote-ref-2)
3. The CBO report can be found at <http://www.cbo.gov/sites/default/files/44995-MinimumWage.pdf>. See page 20. [↑](#footnote-ref-3)
4. The CBO forecast for inflation can be found at <https://www.cbo.gov/sites/default/files/recurringdata/51137-2017-01-potentialgdp-2.xlsx> [↑](#footnote-ref-4)