Appendices

Appendix I

The Effect of a Minimum Wage Increase on the Poverty Rate

Chapter 5 discusses our goal of lifting 800,000 people out of poverty or near poverty over the next decade. An increase in the minimum wage accounts for approximately 750,000 of this number, with the remaining 50,000 projected to stem from the array of City anti-poverty efforts, including those that lower economic burdens, such as affordable housing, and initiatives that increase earning potential, such as sector-based job training programs, improving college graduation rates of city residents, and broadening access to economic opportunities.

The CEO poverty measure has consistently shown that wages are inadequate relative to the poverty threshold, to the point where the poverty rate continues to rise even among families with two full-time workers. In 2014, the most recent year for American Community Survey (ACS) data, the minimum wage was $8 per hour in New York State (New York City was subject to state law in setting the minimum wage), a $0.75 increase from $7.25 per hour in 2013. After having reached a historic agreement with the state legislature, in April 2016 Governor Cuomo signed a $15 minimum wage plan into law.[1] For workers in New York City, the minimum wage is scheduled to rise incrementally, reaching $15 for employees of firms of 11 or more by December 13, 2018, and a year later for employees of smaller firms. Employing the 2014 and 2013 ACS, CEO simulated the effects of a $15 per hour minimum wage on the poverty rate. We first undertook this analysis last year, with the release of the annual CEO poverty report. That report included data from 2005 to 2013, the most recent data available at the time. We found strong evidence that a $15 minimum wage could lift many families above the poverty and/or near poverty lines. This year, we repeat our analysis, incorporating data from 2014. We also revisit our 2013 analysis. The CEO poverty rate for 2013 has been slightly revised to include recently available data for that year (see Appendix J for details). For this reason, the data presented below includes our work with the revised 2013 data and the more recent 2014 file.

1 New York State Governor. Governor Cuomo Signs $15 Minimum Wage Plan and 12 Week Paid Family Leave Policy into Law, 2016. See: https://www.governor.ny.gov/news/governor-cuomo-signs-15-minimum-wage-plan-and-12-week-paid-family-leave-policy-law

Methods and Assumptions

We began the simulation by identifying those workers in 2013 who earned the then current minimum wage of $7.25. The ACS, our primary data set, provides an annual wage income but not an hourly one. Consequently, an hourly variable was constructed utilizing the annual wage income, the number of weeks worked, and the number of hours worked in a given week. With this new variable, an hourly wage rate for all workers between the age of 16 and 64 was derived, excluding the self-employed. This allowed us to raise the wages of those earning between $7.25 and less than $15.

We then incorporated a spillover effect into the model, a standard practice in estimating wage effects. We assumed workers making anywhere between one dollar under the current minimum wage and one dollar over the new minimum wage would receive the new minimum wage or a commensurate increase in their wage. We repeated the same exercise for 2014, using the minimum wage in that year of $8 instead of $7.25. Table I.1 shows the earnings of workers who would receive the benefit of the new minimum wage, including the spillover effect, for 2013 and 2014. We include the new upper and lower bounds around each wage option. Wage growth increases from one dollar below the current minimum, and slows until the wage reaches one dollar above the new minimum of $15.

Several other assumptions were made:

- We made the assumption that income-dependent benefits, such as SNAP and WIC, would decline as wages rose, and tax credits would change with income.

Table I.1
Minimum Wage, Spillover Range, and Wage Parameters, 2013 and 2014

2013					
	Minimum Wage	Spillover	Threshold	New Low Wage	New High Wage
$15 per Hour Scenario					
Current	7.25	1.00	**6.25**	**6.25**	**15.00**
Proposed	15.00	1.00	**16.00**	**15.89**	**16.00**
2014					
	Minimum Wage	Spillover	Threshold	New Low Wage	New High Wage
$15 per Hour Scenario					
Current	8.00	1.00	**7.00**	**7.00**	**15.00**
Proposed	15.00	1.00	**16.00**	**15.88**	**16.00**

Source: American Community Survey Public Use Micro Sample as augmented by CEO, 2013 and 2014.

Table I.2

Minimum Wage Simulation: Effect on Poverty and Near Poverty Rates, 2013 and 2014

Poverty Rate: Poverty units below 100% of poverty threshold
Near Poverty: Poverty units below 150% of threshold
(changes in poverty rates are percentage point changes)

	New Wage Per Hour	
	2013 $15.00	2014 $15.00
A. Workers with Wage Change		
Population	**1,214,723**	**1,134,255**
Poverty Rate Before Wage Increase	22.1%	21.1%
Poverty Rate After Wage Increase	10.5%	9.9%
Poverty Rate Change	-11.6%	-11.2%
B. Individuals in Poverty Unit with at Least One Worker with Wage Change		
Population	**" 3,023,633**	**2,857,643**
Poverty Rate Before Wage Increase	21.3%	20.4%
Poverty Rate After Wage Increase	11.1%	10.4%
Poverty Rate Change	-10.2%	-10.1%
C. Citywide Poverty Rates		
Poverty Rate Before Wage Increase	21.1%	20.7%
Poverty Rate After Wage Increase	17.3%	17.2%
Poverty Rate Change	-3.8%	-3.5%

Source: American Community Survey Public Use Micro Sample as augmented by CEO, 2013 and 2014.

- No job loss effects were incorporated into the model.[2]
- We also made the assumption that there would be no short-run behavioral changes with respect to housing choice or medical-out-of-pocket (MOOP) expenses, and decided to hold those components of the model constant. An increase in expenditures on either component could erase some of the gains in moving out of poverty. In a long-run simulation, new minimum wage recipients would have more options and more discretionary income for housing and medical care. For housing, we expect, especially in the case of

2 For research supporting the zero job loss assumption, see: Institute for Research on Labor and Employment, Minimum Wage Effects Across State Borders: Estimates Using Contiguous Counties. California, 2010. http://escholarship.org/uc/item/86w5m90m. See also: Center for Economic and Policy Research, 2014 Job Creation Faster in States that Raised the Minimum Wage. Washington, D.C., June 30, 2014. http://www.cepr. net/index.php/blogs/cepr-blog/2014-job-creation-in-states-that-raised-the-minimum-wage

younger workers, that there would be more household formation. In other cases, some of the higher wage recipients may make a discretionary choice to increase their housing expenditures at some future date. In the case of medical care, the change is less predictable. The Affordable Care Act changed available options starting in 2014, but more data points are required in order to assess its impacts. Consequently, we do not yet know how much this would differ from the out-of-pocket medical expenditures that we have estimated using the 2013 or 2014 data.

We incorporated our assumptions and the increased wage estimates into family incomes in our model and re-estimated the poverty rate given this additional resource. The results have a notable effect. Table I.2 shows the impact of the new minimum wage on the poverty rates, at 100 percent and 150 percent of the threshold (poverty and near poverty). Panel A shows the number of workers affected and the decline of the in-group poverty and near poverty rates. Panel B shows the total number of individuals in these families and how their in-group poverty rate changes as family incomes rise. The reduction in the poverty rate for families with wage increases (Panel B) remains over 10 percent in both 2013 and 2014. The citywide poverty rate (Panel C) in both years falls to similar levels, 17.3 percent and 17.2 percent in 2013 and 2014, respectively.

Table I.3 shows in detail how New Yorkers move from poverty to near poverty after the simulated wage increase. Panel A shows the total number of workers with a wage change declined from 1.2 to 1.1 million between 2013 and 2014. The decline is not due to a weakening effect of the wage. It stems from the nature of the model and the minimum wage increase between 2013 and 2014:

- The wage simulation gives a raise to all those earning one dollar less than the minimum wage in a given year and all those earning one dollar over the new minimum wage, as described in the discussion of spillover effects above. To keep our year-to-year comparisons consistent, we maintained the same rule about the behavior of wage changes. Table I.1 shows that the bottom threshold for receiving a new wage that was $6.25 in 2013 rose to $7 in 2014, eliminating some workers from the wage increase.[3] This will happen in any year with a minimum wage increase.

- We first assign wage increases to current minimum wage earners in the ACS. In 2013, the minimum wage was $7.25. In 2014, the minimum wage increased to $8. This added seventy-five cents per hour to the cash earnings of minimum wage workers. For a full time worker, this amounts to $1,560 annually and over $3,000 to families with two minimum wage workers. But it effectively removed that same amount from the impact of an increase to $15 per hour.

3 There are many individuals in the ACS who, after our computation of an hourly wage, appear to earn well under the legal minimum. There are many reasons for this – salaried workers, small business owners, and others who are not paid on an hourly basis. Because this is self-reported data, there may also be an undercount in wage reporting.

Table I.3, Panel A

Minimum Wage Simulation: Moved From Poverty or Near Poverty, 2013 and 2014

Poverty Rate: Poverty units below 100% of poverty threshold
Near Poverty: Poverty units below 150% of threshold
(changes in poverty rates are percentage point changes)

A. Workers with Wage Change			
2013	**Frequency**	**Percent (%)**	**Cumulative Percent (%)**
Stayed in Poverty	125,037	10.3	10.3
Poverty to Near Poverty	127,097	10.5	20.8
Poverty to Non-Poor	16,079	1.3	22.1
Stayed in Near Poverty	206,125	17.0	39.0
Near Poverty to Non-Poor	216,555	17.8	56.9
Stayed in Non-Poor	520,797	42.9	99.8
Poverty Increased	3,033	0.2	100.0
Total	**1,214,723**	**100.0**	
Total Improved Poverty Status	**359,731**	**29.6%**	
2014	**Frequency**	**Percent (%)**	**Cumulative Percent (%)**
Stayed in Poverty	110,071	9.7	9.7
Poverty to Near Poverty	122,674	10.8	20.5
Poverty to Non-Poor	6,266	.6	21.1
Stayed in Near Poverty	245,242	21.6	42.7
Near Poverty to Non-Poor	169,937	15.0	57.7
Stayed in Non-Poor	476,354	42.0	99.7
Poverty Increased	3,711	.3	100.0
Total	**1,134,255**	**100.0**	
Total Improved Poverty Status	**298,877**	**26.4%**	

Source: American Community Survey Public Use Micro Sample 2013 and 2014 as augmented by CEO

Table I.3, Panel B

Minimum Wage Simulation: Moved From Poverty or Near Poverty, 2013 and 2014

Poverty Rate: Poverty units below 100% of poverty threshold
Near Poverty: Poverty units below 150% of threshold
(changes in poverty rates are percentage point changes)

B. Individuals in Poverty Unit with at Least One Worker with Wage Change			
2013	**Frequency**	**Percent (%)**	**Cumulative Percent (%)**
Stayed in Poverty	330,632	10.9	10.9
Poverty to Near Poverty	295,587	9.8	20.7
Poverty to Non-Poor	18,439	.6	21.3
Stayed in Near Poverty	596,310	19.7	41.0
Near Poverty to Non-Poor	437,929	14.5	55.5
Stayed in Non-Poor	1,334,570	44.1	99.7
Poverty Increased	10,166	.3	100.0
Total	**3,023,633**	**100.0**	
Total Improved Poverty Status	**751,955**	**24.9%**	
2014	**Frequency**	**Percent (%)**	**Cumulative Percent (%)**
Stayed in Poverty	289,978	10.1	10.1
Poverty to Near Poverty	285,249	10.0	20.1
Poverty to Non-Poor	8,212	.3	20.4
Stayed in Near Poverty	715,375	25.0	45.5
Near Poverty to Non-Poor	323,266	11.3	56.8
Stayed in Non-Poor	1,223,160	42.8	99.6
Poverty Increased	12,403	.4	100.0
Total	**2,857,643**	**100.0**	
Total Improved Poverty Status	**616,727**	**21.6%**	

Source: American Community Survey Public Use Micro Sample 2013 and 2014 as augmented by CEO

Table I.3 shows the total number of New Yorkers who would move out of poverty or near poverty as a result of the simulated wage increase of $15. The total of 359,731 workers with a wage change and whose poverty status is improved in 2013 (Panel A) stems from 127,097 workers who would move from poverty to near poverty, 16,079 workers who would move from poverty to non-poor, and 216,555 workers who would move from near poverty to noon-poor.

The total of 751,955 New Yorkers in a poverty unit with at least one worker with a wage change and whose poverty status is improved in 2013 (Panel B) stems from 295,587 people who would move from poverty to near poverty, 18,439 people who would move from poverty to non-poor, and 437,929 people who would move from near poverty to noon-poor.

Appendix J

Accuracy of the Data and Changes to the CEO Model

The principal data set for CEO's poverty estimates is the American Community Survey (ACS) Public Use Micro Sample (PUMS). The ACS is designed to sample three percent of the households in the U.S. each year. The PUMS is a subset of the full ACS sample. It provides information collected from roughly 26,000 households in New York City annually. Because the ACS is a survey, it is subject to two types of error: nonsampling error and sampling error.

Nonsampling Error: Nonsampling error is the error within survey data that is not specifically associated with the statistical sampling procedures of the sample data. Nonsampling error may occur because of erroneous responses by survey respondents, for example. Another source of nonsampling error may come from mistakes in the processing of the data by the Census Bureau, such as when data are edited or recoded.

Nonsampling error may affect the data in two ways: either randomly, which increases the variability of the data, or systematically, which introduces bias into the results. To minimize bias in the survey, the Census Bureau conducts extensive research of sampling techniques, questionnaire design, and data collection and processing procedures. For instance, after identifying a systematic underreporting of Supplemental Nutritional Assistance Program (SNAP) receipt and benefit dollar values in the ACS, the Census Bureau researched methods to increase the reported participation rate. The Census Bureau concluded through this research that changing the wording of the SNAP question to include "SNAP benefit card," as well as not asking about the SNAP benefit value, would significantly increase the number of households responding to whether they have received SNAP. [1]

1 John Hisnanick, T. Loveless, and J. Chesnut. U.S. Bureau of the Census. 2006 American Community Survey Content Test Report H.6-Evaluation Report Covering Receipt of Food Stamps. January 3, 2007. See: https://www.census.gov/content/dam/Census/library/working-papers/2007/acs/2007_Hisnanick_01.pdf

Sampling Error: Sampling error occurs in the ACS, as in other sample survey data, because inferences about the entire population, such as the poverty rate for New York City, are derived from a sample of individuals and housing units. Another sample drawn from the same population would provide a different estimate of the poverty rate. The sampling error is estimated by the standard error, which can be thought of as a measure of the deviation of an estimate drawn from one sample from the average estimate of all possible samples.

For this report, CEO employed the replicate weight method recommended by the Census Bureau to compute direct standard errors for our estimated poverty rates. The standard errors provide a measure of sampling error and some types of nonsampling error.[2] Using the standard errors, we tested the statistical significance of differences and changes in the report's poverty rates at the 10 percent level of significance. In the report's tables, we highlight, in bold, statistically significant differences between poverty rates.

An additional source of error in the data results from CEO's need to impute information on items such as the value of SNAP benefits, housing status, childcare expenditures, and medical out-of-pocket expenditures from other survey data into the ACS sample. We do not, however, account for the imputation error in this report.

Changes to the Poverty Model in This Report

Readers may notice that many of the statistics shown for the 2010-2013 period are slightly different from what we had reported in the previous editions of this report. We made small adjustments to our methodology and corrected some minor errors. These changes were incorporated into the model this year. In several instances, we adjusted which years of the administrative data were matched with the ACS data in the imputation models. The goal was to match on files with the most similar time period possible. The cumulative effect of these upgrades created small changes in our results.

These changes were applied to our 2014 estimate and also to the prior years, when appropriate. While each revision was small, the combined result generated changes in some of the poverty statistics. Because of the notable, combined impact, we detail the changes below:

Medical Out-of-Pocket Spending (MOOP): There is a recurring revision in the prior year of data using the current Medical Expenditures Panel Survey (MEPS) data. In order to estimate medical out-of-pocket expenses, we use data from the MEPS, which typically lags one year behind the ACS survey year. For example, 2014 MEPS data are scheduled to be released in September 2016. As a result, our report, which utilizes the ACS as our primary data set, has a one-year lag with respect to the MEPS data set. In order to keep dollars constant between the survey time periods, we use

2 U.S. Bureau of the Census. PUMS Accuracy of the Data (2013). Available at: http://www2.census.gov/programs-surveys/acs/tech_docs/accuracy/ACS_Accuracy_of_Data_2014.pdf

the Consumer Price Index for Medical Expenditures to adjust the variables derived from the MEPS data set.

At the same time, we take the opportunity to revise the prior year's data with what is now the matching MEPS data for that year. For example, the 2013 MEPS data is used with the 2014 ACS, which is also used to update the 2013 estimates. As a result, the 2013 poverty rate published in the previous report is slightly different from the same rate published in this report. The 2014 poverty estimate will be revised in the future to include 2014 MEPS data.

School Meals and WIC: School meals and the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) estimates use several combined years of data (see Appendix E). For this report, we made adjustments in the combined Current Population Survey Annual Social and Economic Supplement (CPS ASEC) data set years, causing a change in the regression coefficients. For 2014, the WIC and school meals coefficients are now derived from the combined 2010 through 2015 CPS ASEC data sets.

We also changed the model for matching administrative data for WIC to the 2010 through 2013 ACS. We incorporate into the model new WIC population totals included in administrative data from the New York State Department of Health. This allowed us to improve the match of the population count of eligible women, infants, and children receiving WIC payments. In previous reports, a fixed percentage of women, infants, and children were flagged as receiving WIC benefits based on characteristics derived from 2008 administrative data. For 2013, with the new model, there are approximately 93,000 more weighted poverty units receiving WIC than under the previous model for 2013.

Childcare: Revised Consumer Price Index (CPI) series were used for inflation adjustments to the values taken from the U.S. Census Bureau's Survey of Income and Program Participation (SIPP) data. A new wave of the SIPP survey data was used in imputation of childcare expenses in the 2014 data set. The new wave incorporates data from 2011, the latest year available of SIPP data covering childcare.

Housing: A new 2014 release of the New York City Housing and Vacancy Survey was incorporated into the 2014 ACS data set. The data are used in CEO's estimation of housing expenses and control status of the housing that New Yorkers live in – a detail that is not covered in the ACS. The 2013 poverty rate was based on the 2011 release of the HVS, inflation adjusted to 2013.

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The need for an alternative poverty measure is seen in the increasing interest in a new measure. In recent years, New York City has been joined by other state and local poverty measurement initiatives. To date, state-level NAS-style poverty measures have been developed for New York, Connecticut, Georgia, Illinois, Massachusetts, Minnesota, Wisconsin, California, and the city (and metropolitan area) of Philadelphia. In addition, longitudinal estimates for the U.S. have been developed by the Population Research Center at Columbia University. All these projects have been enormously helpful to our work. We have benefited from the wisdom of many: Linda Giannarelli, Laura Wheaton, and Sheila Zedlewski at the Urban Institute; Julia Isaacs and Timothy Smeeding at the University of Wisconsin's Institute for Research on Poverty; Irv Garfinkel, Jane Waldfogel, and Christopher Wimer at Columbia; and Marybeth Jordan Mattingly at the Stanford Center of Poverty and Inequality.

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