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San Francisco's Proposed City Minimum Wage Law: A Prospective Impact Study

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Executive Summary

San Francisco's Mayor, members of the Board of Supervisors, and labor, business and community leaders recently agreed to place an initiative on the November 2014 ballot that would raise the minimum wage in the city to $15.00 an hour by 2018, phased in over four steps. This study examines the effects of the minimum wage proposal on San Francisco workers and businesses. Drawing on a variety of government data sources, we find the following:

About 142,000 workers – or 23 percent of San Francisco's workforce – would receive a pay raise under the proposed law.

- 26 percent of female workers and 21 percent of male workers would receive pay increases.

Workers' hourly wages and annual incomes would rise, resulting in a total increase in aggregate earnings of $397 million (in 2014 dollars) by 2018.

- Hourly wages of affected workers would rise by an average of $1.69 per hour.

- Average annual earnings would increase by about $2,800 per year.

Adults, workers of color, and working poor families would see significant benefits of a pay increase.

- 97 percent of affected workers are in their twenties or older, and 63 percent of the workers receiving raises are in their thirties or older.

- The average worker who would benefit from the law contributes 59.5 percent of their family's income.

- Workers of color (black, Hispanic, Asian and other) make up about 54 percent of the total workforce in San Francisco, but represent about 71 percent of workers affected by the proposed minimum wage increase.

- The affected workers have a wide range of educational backgrounds—59 percent have at least some college and 26 percent have a bachelor's degree or higher.

- Over three-fourths of working poor families in San Francisco will receive an increase in income from the proposed law.

- The current median annual earnings of affected workers are about $19,000, or 35 percent of the median annual earnings in San Francisco ($54,000).

Previous economic research, including research on San Francisco's 2003 minimum wage ordinance, has found little to no measurable effect on employment or hours from minimum wage policies.

- Instead, research evidence indicates that the costs of San Francisco's 2003 minimum wage law were absorbed through reduced worker turnover, improved worker performance and small, one-time increases in restaurant prices.

The proposed minimum wage law would have a modest impact on business operating costs and consumer prices.

- About half of all affected workers are employed in three industries: retail trade (14.6 percent); restaurants (19.3 percent); and education, health and social services industries (17.8 percent).

- Operating costs would increase by 0.2 percent for retailers and by 3.0 percent for restaurants by the time the proposed law is fully implemented in 2018.

- Restaurant prices would increase by 2.7 percent by the time the law is fully implemented. A $10 meal would increase by 27 cents, to a total of $10.27. For retail and the local economy as a whole, price increases would be negligible.

The size of the proposed minimum wage increase lies within the range of existing laws as well as other measures of a local economy's capacity to absorb higher wage standards.

- Compared to existing law, the proposal would raise San Francisco's minimum wage by 36.4 percent over 4 years. The 13 existing local minimum wage laws in the U.S. have mandated an average total increase of 42.8 percent, with a range of 13.3 percent to 84.5 percent.

- The proposed policy would increase the minimum wage to 46 percent of the San Francisco median wage for full-time workers. This ratio is well within the historical range of the ratio of the federal minimum wage to the national median wage.

Our review of a recent study by San Francisco's Office of Economic Analysis (OEA) finds that the report's estimation model is a flawed tool for understanding minimum wage effects, and that key inputs used in the analysis are inaccurate.

Introduction

Residents of San Francisco, California will soon be voting whether or not to adopt a new citywide minimum wage policy. The proposal under consideration would establish a minimum wage of $15 an hour for businesses operating in the city by 2018. The minimum wage would be raised to $12.25 an hour on May 1, 2015; to $13 on July 1, 2016; to $14 on July 1, 2017; and to $15 on July 1, 2018 (see Table 1). It would then be indexed to inflation in subsequent years. As is already the case, the proposed law would cover everyone who works in San Francisco (except state and federal government employees and the self-employed).

In this report, we first estimate the number of workers that would be affected by the law and describe their demographic and job characteristics. We next estimate the resulting increase in wages and analyze their likely impacts on business costs, prices and employment, drawing in part on previous research. We then compare the magnitude of the proposed increase to those in existing local minimum wage laws.

Table 1. San Francisco's Proposed Minimum Wage Increase

Year	Nominal Dollars	Constant 2014 Dollars
2015	$12.25	$11.98
2016	$13.00	$12.44
2017	$14.00	$13.10
2018	$15.00	$13.73

Notes: Constant dollar values are calculated using the average annual change for the past ten years of the San Francisco-Oakland-San Jose Consumer Price Index for All Urban Consumers (CPI-U).

Background

San Francisco adopted the first universal municipal minimum wage law in the United States in November 2003. The minimum wage was set at $8.50 an hour and indexed to inflation, a 26 percent increase above the state minimum wage at the time. The current rate is $10.74 an hour. An estimated 54,000 workers benefited from the pay increase, 11 percent of the city's workforce (Reich, Jacobs and Dietz 2014). As we will discuss in more depth later in the report, Dube, Naidu and Reich (2007) found no statistically significant negative effects on either employment or the proportion of full-time jobs as a result of the San Francisco law.

The San Francisco economy is currently booming. Employment growth during the economic recovery has outpaced California as a whole (see Figure 1) and the city's unemployment rate of 4.5 percent is well below the state average of 7.4 percent.[1]

But the city's robust growth has not resulted in shared prosperity for its residents. Between 2007 and 2012, median annual earnings (adjusted for inflation) fell by 4.9 percent for workers in San Francisco,[2] at the same time that the tech boom triggered a rapid escalation in housing costs, and living costs more generally. According to the Census Bureau, income inequality in San Francisco—as measured by the city's Gini coefficient—has risen by 1.65 percent since 2008, a more rapid increase than in the U.S. as

a whole.[3]   As a result, according to a recent Brookings Institution report, inequality in San Francisco ranks second among U.S cities, well above cities like New York (Berube 2014).

San Francisco is one of many localities that are currently looking to set their minimum wages at levels that reflect local economic conditions and living costs. To date, 13 cities and counties have approved local minimum wage laws, with Seattle capturing national attention this spring when it approved a minimum wage of $15 an hour, to be phased in over several years. In the Bay Area, San Jose voters approved a minimum wage initiative in 2012, and Berkeley and Richmond both adopted city minimum wage laws this summer. Oakland will vote on a $12.25 minimum wage in November.

Figure 1. Quarterly Employment Growth (Indexed to 2007)
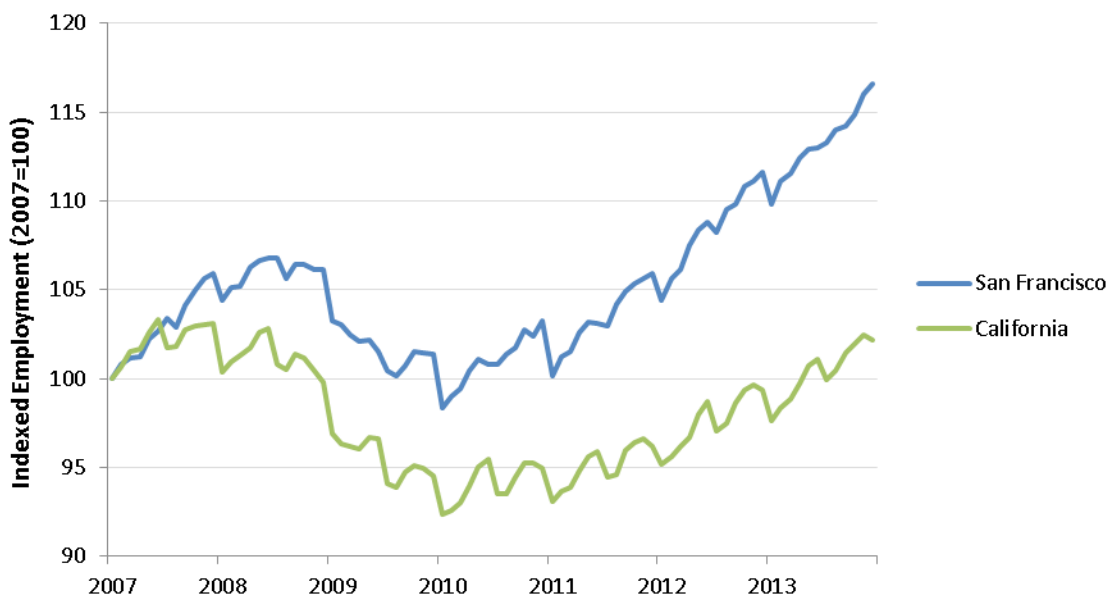
Source: Quarterly Census of Employment and Wages (not seasonally adjusted)

Impacts on Workers

Estimated Number of Affected Workers

To estimate the number of workers affected by the proposed minimum wage increase, we analyze the wage distribution of workers in San Francisco using survey data on individual workers in the 2012 place-of-work files of the U.S. Census Bureau's American Community Survey (ACS), scaled to approximate more accurate employment counts for San Francisco from the U.S. Bureau of Labor Statistics' Quarterly Census of Employment and Wages. We do not include self-employed workers or federal or state government employees in our sample, since these groups of workers are not covered by the proposed San Francisco law.[4]

After simulating the wage distribution in San Francisco just before the proposed minimum wage law would go into effect in May 2015, we estimate, for each yearly phase-in step, the number of workers

that would be affected by the increase and the additional wages they would receive as a result. We also project the wage distribution if the proposed law is not adopted, adjusting the city's current minimum wage for increases in the cost of living. Our impact estimates are therefore a comparison of wages under the proposed minimum wage law to wages under existing law. In constructing these estimates, we also adjust for expected employment growth and wage growth (see Welsh-Loveman, Perry and Bernhardt (2014) for more details).

Our model produces a low and a high estimate to account for measurement error. Both estimates include a directly affected group (workers who make less than the proposed minimum wage) and an indirectly affected group (workers who make slightly more than the proposed minimum wage, but who are also likely to receive a small raise via what is known as the "ripple effect"). The two estimates differ in their assumptions about the size of the ripple effect and the number of very low-wage earners (workers making less than the minimum wage). More information on our methodology is available in the online technical appendix (Welsh-Loveman, Perry and Bernhardt 2014). In this report we present the average of the two estimates, unless otherwise noted.

Table 2 shows the estimated number and percent of workers affected by San Francisco's proposed minimum wage increase.[5] By 2018, 23.4 percent of San Francisco's workforce will receive pay raises, which translates into about 142,000 workers. The majority of the affected workers are directly affected workers – that is, those earning less than $15 when the law is fully implemented in 2018.

Table 2. Number of Workers Affected by San Francisco's Proposed Minimum Wage Increase

Year	Average Estimate		Low Estimate		High Estimate	
	Workers	Percent of Workforce	Workers	Percent of Workforce	Workers	Percent of Workforce
2015	111,000	19.3	104,000	18.1	118,000	20.6
2016	117,000	19.9	106,000	18.1	127,000	21.7
2017	128,000	21.4	115,000	19.2	141,000	23.6
2018	142,000	23.4	125,000	20.5	160,000	26.2

Source: Authors' analysis of ACS, OES, and QCEW data.
Note: The average estimate is the average of the low and high estimates.

Estimated Size of Wage Increases

We also estimate the additional earnings that affected workers would receive as a result of the proposed minimum wage law, relative to their earnings under San Francisco's current minimum wage law. Table 3 presents four measures: the average increase in hourly wages, the average increase in annual earnings, the average percentage increase in annual earnings, and the total projected increase in earnings. By full implementation in 2018, we estimate that hourly wages of affected workers will have risen by about $1.69 and that their annual earnings will have risen by about $2,800, an increase of about 16.3 percent. In total, workers will earn about $397 million more in the first year of full implementation as a result of the higher wage rate. All estimates are expressed in 2014 dollars.[6]

Table 3. Cumulative Pay Increases for Workers Affected by San Francisco's Proposed Minimum Wage Law (in 2014 dollars)

	2015	2016	2017	2018
Average Hourly Wage Increase	$0.66	$0.95	$1.34	$1.69
Average Annual Earnings Increase	$1,100	$1,500	$2,200	$2,800
Average Percent Annual Earnings Increase	6.7	9.4	13.1	16.3
Total Increase In Earnings (millions)	$116	$175	$278	$397

Source: Authors' analysis of ACS, OES, QCEW, and BLS data.
Notes: Results are cumulative across the phase-in years. Estimates are the average of low and high estimates.

Demographics of Affected Workers

Table 4 profiles key demographic characteristics of the workers affected (both directly and indirectly through the ripple effect) by the proposed San Francisco minimum wage law.

The first column of Table 4 displays the distribution of affected workers among demographic groups. For example, 51.4 percent of affected workers are women and 48.6 percent are men. Column 2 shows the same breakdown for all workers in San Francisco. The last column shows the percentage of workers in each demographic group that will be affected by the proposed law. For example, 26.3 percent of female workers and 20.8 percent of male workers will receive a wage increase under the proposed law.

Contrary to the common perception that minimum wage workers are mainly teens, we estimate that 97 percent of affected workers are in their twenties or older, and that 63 percent of the workers receiving raises are in their thirties or older. Close to a third (29 percent) of affected workers have children and 34 percent are married. On average, affected workers contribute 59.5 percent of family income.

Workers of color will disproportionately benefit from the proposed law compared to white workers. Close to half are immigrants (49.3 percent). The families of affected workers are disproportionately low-income (with 46.0 percent at or below 200 percent of the federal poverty level). Over three-fourths of working poor families will receive an increase in income from the proposed law. Compared to the overall workforce, affected workers are less likely to hold a Bachelor's degree.

Job Characteristics of Affected Workers

In Table 5, we profile the job characteristics of workers affected by the proposed minimum wage law. The median of annual earnings among the affected workers is less than half of the median for the San Francisco workforce as a whole. Affected workers are also more likely to work part-time and part-year than the overall workforce, and are less likely to have health insurance provided by their employer.

Table 4. Demographic Characteristics of Workers Affected by San Francisco's Proposed Minimum Wage Increase
(all figures are percentages unless otherwise noted)

	% of All Affected Workers	% of All Workers	% of Group Affected
Gender			
Male	48.6	54.4	20.8
Female	51.4	45.6	26.3
Median Age	35	38	
Age			
18-19	2.6	0.8	
20-29	34.2	22.8	35.1
30-39	21.5	29.4	17.0
40-54	25.9	32.7	18.5
55-64	15.7	14.2	25.6
Race/Ethnicity			
White (Non-Hispanic)	29.1	45.6	14.9
Black (Non-Hispanic)	5.9	5.0	27.9
Hispanic	25.4	16.4	36.0
Asian (Non-Hispanic)	33.9	29.0	27.3
Other (Non-Hispanic)	5.7	4.0	33.3
Education			
Less than High School	19.2	7.4	60.1
High School or G.E.D.	21.9	12.2	42.1
Some College	25.3	16.7	35.3
Associate's Degree	7.8	6.3	28.6
Bachelor's Degree or Higher	25.8	57.4	10.5
Country of Birth			
U.S. Born	50.7	62.7	18.9
Foreign Born	49.3	37.3	30.8
Family Structure			
Married	33.7	44.5	17.7
Have Children	29.0	33.0	20.4
Family Income Relative to Poverty Level (FPL)			
Less than 100% of FPL	13.0	4.0	76.9
100% to 150% of FPL	17.8	5.0	82.7
150% to 200% of FPL	15.3	5.2	68.0
Greater than 200% of FPL	53.3	85.7	14.6
Average Worker Share of Family Income	59.5	70.6	

Source: Authors' analysis of ACS, OES, and QCEW data.
Notes: Estimates for affected workers are the average of low and high impact estimates.

Table 5. Job Characteristics of Workers Affected by San Francisco's Proposed Minimum Wage Increase
(all figures are percentages unless otherwise noted)

	% of All Affected Workers	% of All Workers	% of Group Getting a Raise
Median Individual Annual Earnings (in 2014 Dollars)	$19,000	$54,000	
Full-Time / Part-Time Worker			
Full-Time (35 or More Hours per Week)	63.8	83.5	17.9
Part-Time (Fewer than 35 Hours per Week)	36.2	16.5	51.0
Full-Year / Part-Year Worker			
Full-Year (50-52 Weeks per Year)	79.3	85.3	21.7
Part-Year (Fewer than 50 Weeks per Year)	20.7	14.7	33.0
Sector			
Private Sector Employer	83.8	80.1	24.4
Non-Profit Employer	11.2	12.7	20.8
Local Government	5.0	7.2	16.3
Health Insurance Provided by Employer			
Yes	57.7	80.9	16.7
No	42.3	19.1	51.6
Industry			
Agriculture, Forestry, Fishing, Hunting, and Mining	0.2	0.1	
Construction	2.8	3.8	16.9
Manufacturing	4.2	4.3	22.4
Wholesale Trade	2.0	1.7	27.5
Retail Trade	14.6	9.3	36.4
Transportation, Warehousing, and Utilities	2.9	3.8	18.2
Information and Communications	1.3	5.0	6.2
Finance, Insurance, Real Estate, and Rental and Leasing	4.9	12.4	9.2
Professional, Scientific, and Management	5.9	18.2	7.7
Administrative and Waste Management Services	6.1	4.0	35.5
Educational, Health and Social Services	17.8	17.4	23.9
Arts, Entertainment, Recreation	3.0	2.8	25.6
Accommodation	5.7	3.1	42.3
Restaurants	19.3	6.6	67.9
Other Services (except Public Administration)	8.9	5.4	37.9
Public Administration	0.5	2.0	5.9

Source: Authors' analysis of ACS, OES, and QCEW data.
Notes: Estimates for affected workers are the average of low and high impact estimates. Blank value for "% of Group Getting a Raise" indicates less than 50 observations for that category.

The industry breakdown is also instructive. About half of all affected workers are employed in three industries: retail trade (14.6 percent); restaurants (19.3 percent); and education, health and social services industries (17.8 percent). (The latter set of industries includes teachers' assistants, childcare workers and private-pay home health aides). Several smaller industries also have a disproportionate number of affected workers, such as administrative and waste management services (largely temporary workers), accommodation, and other services.

Impacts on Businesses

Impact on Costs for Business Owners

We next estimate the impact of San Francisco's proposed minimum wage law on the operating costs of businesses. Our strategy compares the estimated increase in total labor costs resulting from the proposed law to the existing labor costs paid by employers, drawing on our estimates in Table 2 and Table 3 above.

Table 6 shows our analysis of the estimated increase in business operating costs in two traditionally low-wage industries, retail and restaurants. By 2018, businesses' total payroll costs will increase by 1.8 percent in the retail industry and by 9.0 percent in the restaurant industry, compared to payroll costs under current San Francisco law. However, operating costs will rise by a much smaller amount, since labor costs only make up a portion of total operating costs that businesses face. Labor costs excluding health benefits currently account for 11 percent of retail operating costs and 31 percent of restaurant operating costs (these percentages will increase over time as labor costs rise due to the proposed minimum wage increase).[7] We therefore estimate that by 2018, total operating costs will increase by 0.2 percent for retail and 3.0 percent for restaurants, as a result of the proposed minimum wage law.

Table 6. Cumulative Impact of San Francisco's Proposed Minimum Wage Increase On Business Operating Costs

	2015	2016	2017	2018
Retail Industries				
% Change in Payroll Costs	0.6	0.9	1.3	1.8
Labor Costs as % of Operating Costs*	11.0	11.1	11.1	11.3
% Change in Operating Costs	0.1	0.1	0.1	0.2
Restaurant Industries				
% Change in Payroll Costs	3.0	4.3	6.7	9.0
Labor Costs as % of Operating Costs*	31.0	31.6	32.6	34.0
% Change in Operating Costs	0.9	1.4	2.2	3.0

Source: Authors' analysis of ACS, OES, QCEW, U.S. Census Monthly and Annual Retail Trade and BEA data.
* Labor costs exclude health insurance.

Business Responses

As discussed in detail by Reich, Jacobs and Bernhardt (2014), businesses absorb the costs of a higher minimum wage in a variety of ways. One mechanism, as discussed next, involves increases in prices. Others include improved worker performance and reduced turnover.

Impact on Restaurant Prices

Firms may adjust to increased costs by passing on some or all of the increases to consumers through higher prices. Since the minimum wage applies to all employers, individual firms such as restaurants that serve the local market will be able to pass costs through to consumers without experiencing a competitive disadvantage within their industry.

Research by Aaronson, French and MacDonald (2008) has found that for every percentage point increase in the minimum wage, restaurant prices rise by 0.072 percent. Preliminary results from a study of San Jose's recent minimum wage increase (from $8 to $10 in March 2013) arrive at a similar estimate (Allegretto and Reich 2014). An earlier study (Lee et al. 2000) showed that restaurant operating costs increase by about 0.1 percent for each percentage increase in the minimum wage (see also Benner and Jayaraman 2012). These studies together thus suggest that 70 to 75 percent of cost increases are passed on as higher restaurant prices.

In Table 7 we provide our estimates of the impact on restaurant and retail prices under the proposed San Francisco minimum wage law.[8] For restaurants, we predict a cumulative increase in prices of 2.7 percent by 2018, which is very similar to the prediction from the research literature above. The price of a $10 menu item would thus increase very modestly, to $10.27. (Prices in the restaurant industry overall have increased about 2.1 percent per year in recent years.) For retail trade and the local economy as a whole, price increases would be negligible.

Table 7. Cumulative Percentage Increase of Restaurant and Retail Prices Under San Francisco's Proposed Minimum Wage Law

	2015	2016	2017	2018
Retail Industry	0.1	0.1	0.1	0.2
Restaurant Industry	0.8	1.2	1.9	2.7

Source: Authors' analysis of ACS, OES, QCEW, U.S. Census Monthly and Annual Retail Trade and BEA data.
Note: Estimates are the average of low and high estimates.

Other Business Responses

Paying workers more can affect morale, absenteeism, the number of grievances, customer service, and work effort among other metrics (Reich, Jacobs and Dietz 2014; Hirsch, Kaufman and Zelenska 2011).

Increasing the minimum wage can also reduce the high levels of job churning that characterize low-wage labor markets. The National Restaurant Association estimates that annual employee turnover in restaurants approaches 75 percent in some restaurant classifications (National Restaurant Association 2010). Turnover levels are high because workers often leave to find a higher-wage job, or because they are unable to stay in their jobs due to poverty-related problems such as difficulties with transportation, child care, or health. Dube, Naidu and Reich (2007) found that worker tenure increased substantially in San Francisco restaurants after the 2003 minimum wage law, especially in fast-food restaurants. Dube, Lester and Reich (2013) found that a 10 percent increase in the minimum wage results in a

2.1 percent reduction in turnover for restaurant workers. Turnover can be quite costly to firms, even for low-wage workers. Boushey and Glynn (2012) find that the median cost of replacement for a job paying $30,000 a year or less is 16.1 percent of an employee's annual earnings. As a result, raising the minimum wages can reduce turnover and increase job stability. The associated reduction in employers' recruitment and retention costs offsets about 20 to 25 percent of the costs of minimum wage increases (Dube, Lester and Reich 2013).[9]

Impact on Employment and Hours

The above research on prices, turnover and work performance helps to explain why an extensive body of research has found few to no measurable impacts on employment or hours from minimum wage increases in the United States. Belman and Wolfson (2014) provide the most extensive recent summary of the minimum wage research literature. They conclude that minimum wage employment effects in the U.S. are "both vanishingly small and not statistically significant in even the most generous test" (p. 168). A separate review of minimum wage research by Schmitt (2013) similarly finds "the minimum wage has little or no discernible effect on the employment prospects of low-wage workers."

Allegretto, Dube, Reich and Zipperer (2013) looked at every state and federal minimum wage increase in the U.S. between 1990 and 2012 and identified several hundred pairs of adjacent counties that were located on different sides of a state border with a minimum wage difference. This research design compares the employment trends of the most affected groups – teens and restaurants – across adjacent counties with different minimum wage levels. The comparison across county borders provides a close proxy for what can be expected from local minimum wage laws. The study finds no statistically significant effects of minimum wage increases on either employment or hours in restaurants and other low-wage industries, controlling for a range of regional and local differences. Using the border county pair method, Aaronson, French and Sorkin (2013) obtained similar results.

Several rigorous studies have analyzed the impact of local minimum wage laws, with similar results. Dube, Naidu and Reich (2007) studied the impact of San Francisco's minimum wage law after it increased from $6.75 to $8.50 an hour in 2004. The authors surveyed a sample of restaurants before and after the wage increase. The sample included restaurants from San Francisco as well as neighboring East Bay cities that were not covered by the policy.

The authors found no statistically significant negative effects on either employment or the proportion of full-time jobs as a result of the San Francisco law. This finding holds for both full-service and fast-food restaurants (one might expect more sensitivity to a higher minimum wage in the latter). Figure 2 shows the results from their follow-up study (Reich, Jacobs, and Dietz 2014). Restaurant employment in San Francisco rose slightly faster than in surrounding counties after the minimum wage increase, and again after San Francisco implemented two additional policies (paid sick leave and a health spending requirement).

Potter (2006) studied the impact of Santa Fe's minimum wage law after it increased from $5.15 to $8.50 in 2004, a substantial increase of 65 percent. Potter compares changes in employment at Santa Fe businesses before and after the ordinance went into effect, and to changes in employment in nearby Albuquerque over the same time period. (Albuquerque did not have a city minimum wage law at that

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time.) Potter found no statistically significant negative impact of Santa Fe's minimum wage increase on the city's employment. This finding also held for accommodation and food services, the industries with the highest proportion of minimum wage workers.

Schmitt and Rosnick (2011) studied the impact of city minimum wage laws in San Francisco and Santa Fe, comparing employment trends in these cities before and after their minimum wage increases to control groups of surrounding suburbs and nearby metropolitan areas. The authors focused on fast-food restaurants, food services, retail trade, and other low-wage industries, and found no discernible negative employment effects, even three years after the ordinances were implemented.[10]

In summary, the best research studies find that minimum wage mandates (in the range implemented to date) do not have a statistically significant negative effect on employment or hours.

Figure 2. Bay Area Restaurant Employment
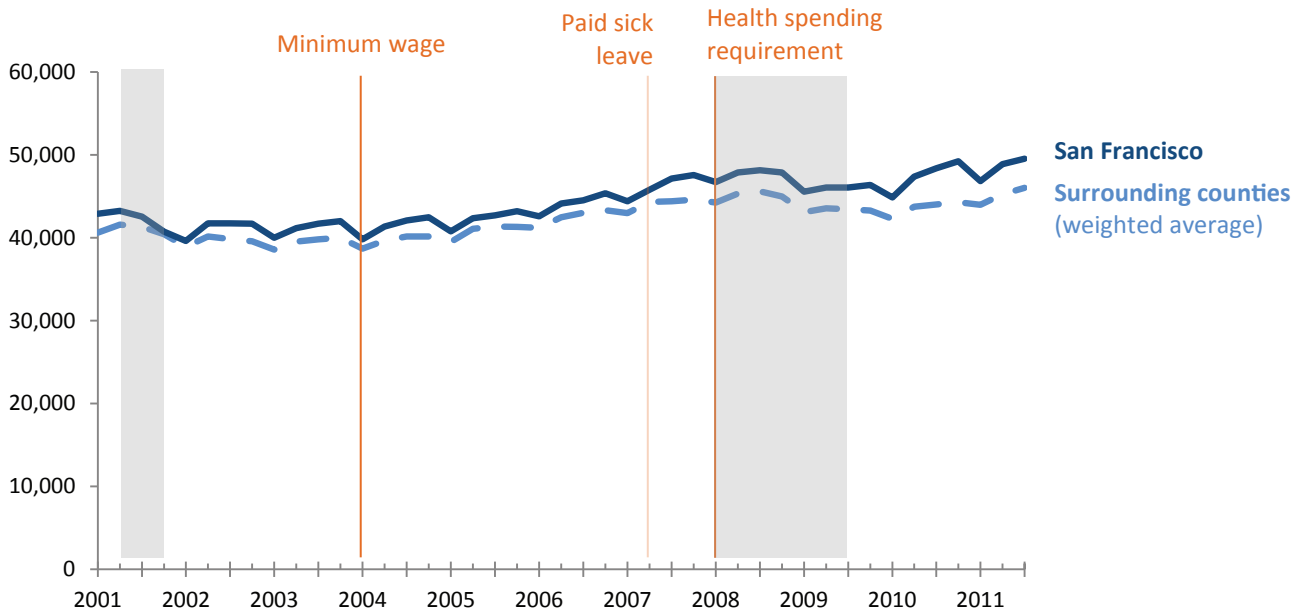
Source: Reich, Jacobs and Dietz (2014)
Notes: Shaded areas indicate recessions. Surrounding counties include San Mateo, Santa Clara, and Alameda Counties.

Comparison to Other Minimum Wage Increases

It is important to emphasize that the economic research summarized above is necessarily limited to studying the minimum wage laws that have been implemented to date. While these studies are suggestive, they cannot tell us definitively what might occur when minimum wages are increased significantly beyond existing local, state, or federal mandates. It is therefore useful to ask how San Francisco's proposed minimum wage increase compares to those that have been implemented in the past.

As shown in Table 8, at the point of full implementation in 2018, the proposed ordinance will have increased San Francisco's minimum wage by 36.4 percent relative to its level under the city's existing law in 2015, which we estimate will be $11.00 an hour based on past increases. The size of the proposed increase is well within the range of other local minimum wage laws. The 13 other local minimum wage laws in the U.S. have mandated a total average increase of 42.8 percent in their minimum wage, with a range of 13.3 to 84.5 percent.[11] A number of these laws were also phased in over time. Across all existing local laws, first-year increases ranged from 6.7 to 65.0 percent, with an average of 22.8 percent. The first-year increase in San Francisco would be 11.4 percent, so again, San Francisco's proposed increase falls within the range of other cities' laws.

Table 8. Proposed San Francisco Minimum Wage Increase Compared to Existing Local Minimum Wage Increases

	Proposed San Francisco Increase	Existing Local Minimum Wage Laws	
		Average Increase	Range of Increases
Overall Increase	36.4	42.8	13.3 – 84.5
First-Year Increase	11.4	22.8	6.7 – 65.0

Source: Authors' analysis of statutory increases in 13 existing local minimum wage laws.

The ratio of the minimum wage to the median full-time wage provides another measure used by economists to determine the ability of an economy to absorb higher minimum wage levels. The proposed final 2018 wage of $15.00 (converted to 2014 dollars) equals 45.9 percent of the 2014 median full-time wage in San Francisco of $29.91 an hour. This ratio is well within the historical range of the federal minimum wage/median ratio, which reached 55 percent in 1968 (Dube 2013) and it is less than the 59 percent ratio in the new Seattle law (Weissman 2014). Moreover, new research by Zipperer (2014) shows that the overall effects of past minimum wage increases were no greater at 55 percent of the median wage than at lower percentages. The San Francisco proposal can also be compared to current California minimum wage law. The minimum wage/median wage ratio will increase to just less than 50 percent when California's minimum wage increases to $10 on January 1, 2016. The proportion of workers projected to receive increases under the San Francisco proposal by 2018 (23.4 percent) is close to the 21.8 percentage of all state workers projected to receive increases (Allegretto, Reich and West 2014).

While these perspectives on past increases are instructive, caution is called for. As we have mentioned in the context of the restaurant industry, San Francisco's proposed minimum wage increase could increase restaurant prices by about 2.7 percent, which could have a small effect on restaurant employment. On the other hand, we have not attempted to estimate the job growth created by increases in spending in other industries that would result from enhancing the purchasing power of workers in San Francisco. Reich's (2012) prospective study of a 25 percent increase in San Jose's minimum wage increase found that this increased spending was likely to increase the number of jobs in the city.

The Report of the San Francisco Office of Economic Analysis

On July 17, 2014, San Francisco's Office of Economic Analysis (OEA) released a report offering a different analysis of the effects of the proposed minimum wage law on San Francisco's economy (Office of Economic Analysis 2014). OEA finds that the proposal would result in the loss of over 15,000 jobs by 2019. We examine here the OEA report to illuminate why its results differ from ours. To do so we first discuss the very different method used by OEA.

The OEA report draws upon a model created by Regional Economic Modeling, Inc. (REMI). While REMI and similar models are often useful for a variety of regional planning purposes, the REMI model has only recently been applied to study minimum wage effects.[12] Since 2012, the REMI model has been used by REMI itself, by the National Federation of Independent Businesses, and others to calculate minimum wage effects in at least eight states, including California.[13] In every one of these states, the model generates substantial negative employment and economic effects. Our review indicates that these negative effects result mechanically from the assumptions made in the model. In particular, we question several key assumptions and whether the REMI model takes sufficient account of the known effects of minimum wage increases.

The REMI model simulates the effects of minimum wage increases upon overall employment and economic activity by focusing on two effects of minimum wages on the local economy. First, the cost side of the REMI model computes how labor cost increases translate into reduced employment and into price increases for every industry. It also assumes that even small price increases reduce each industry's competitiveness, relative to other regions, which further reduces employment. Second, the benefit side of the REMI model computes how the same wage increases translate into increased purchasing power and spending and then estimates the proportion of this increased spending that would take place within the local economy.[14] The model then compares the policy's estimated costs and benefits.

Several key issues arise in these REMI minimum wage simulations. Most important, REMI's production model assumes that, for a given level of output, a 1 percent increase in wage costs translates into a 1 percent reduction in employment.[15] The REMI finding that minimum wage increases *always* have negative impacts on employment and competitiveness thus depends on whether this assumption is correct. Moreover, REMI does not take account of (a) the research literature findings that wage increases are partly offset by savings to employers, such as reduced employee turnover costs, increased labor supply effects and enhanced worker productivity; (b) that price increases are concentrated mainly in restaurants, and secondarily in retail and social assistance services, which do not compete with their counterparts in other regions;[16] and (c) that low-wage workers in San Francisco and other locales spend higher proportions of their income than do upper income groups, and that low-wage workers are more likely to work and live in the city than are higher-wage workers.[17] These problems imply that REMI overstates the costs of minimum wage increases and understates their benefits. Finally, the REMI model predicts that minimum wage increases reduce the number of restaurant jobs, even though careful research on the industry has not detected a substantial negative effect.

Unless REMI is adjusted to address these issues, its model does not provide a useful tool for analyzing the effects of minimum wage increases.

Moreover, OEA has applied the REMI model in a manner that compounds the model's flawed impact estimation. Specifically, OEA has not accurately estimated a fundamental input into the REMI model: namely, how much the proposed minimum wage law will increase average wage costs at the industry level. Every other user of the REMI model that we know of computes changes in average wages in much the same way that we do here, using individual wage data from the American Community Survey or the Current Population Survey. In contrast, OEA uses an *ad hoc* wage estimating model, based on aggregate employment and wage data from all counties in California back to 1990, to arrive at their estimated effects of a San Francisco-specific policy on future average wages increases for San Francisco workers. Using an *ad hoc* aggregate model is unnecessary, since San Francisco-specific data are available. More importantly, it leads to implausibly high estimated average wage increases, which in turn exaggerate the negative employment impacts in the simulation. As shown in Table 9, the OEA's estimated average wage increases using aggregated data are significantly larger than ours, reaching nearly ten times as high as ours in the case of retail and social assistance services. In contrast, our estimates using survey data on individual workers are close to the increases observed in previous empirical research (Dube, Naidu and Reich 2007; Belman and Wolfson 2014).[18]

Table 9. Percentage Increase in Average Wages by Industry, UC Berkeley and San Francisco Office of Economic Analyses

Industry	UC Berkeley Study	San Francisco Office of Economic Analysis Study
Food Services	9.0	16.2
Retail	1.8	10.5
Social Assistance	2.3	21.8

Source: Authors' analysis of ACS, OES, QCEW, and BLS data, and estimates provided by the San Francisco Office of Economic Analysis.
Note: Percentage increase is calculated as the increase in the average wage under the proposed minimum wage law compared to the average wage under the current minimum wage law.

We conclude that the REMI model offers a flawed tool for understanding minimum wage effects and that the OEA has applied it using significantly overstated average wage increase predictions that compound the problems with the model.

Conclusion

San Francisco, the first city to implement a citywide minimum wage in the U.S., currently has the highest minimum wage in the nation. With a dozen other cities now having followed its lead, San Francisco residents will soon be voting on whether to adopt an even higher minimum wage. Drawing on a variety of government data sources, we estimate that 140,000 workers would benefit from the proposed minimum wage law, with the average worker earning an additional $2,800 a year (once the law is fully implemented). Our analysis of the existing economic research literature suggests that businesses will adjust to modest increases in operating costs mainly through reduced employee turnover costs, improved work performance, and a small, one-time increase in restaurant prices.

That research is based upon minimum wage increases between 1990 and 2012, which did not reach the levels now being proposed or enacted by San Francisco, Seattle and other localities. Prudence therefore suggests that the actual effects should be monitored during the phase-in period. At the same time, our comparisons of the proposed San Francisco minimum wage law relative to the median wage in the city and to the percentage increases enacted in other cities indicates that the proposed increases are well within historical experience. These comparisons provide confidence that past experience will in this case provide a guide to future results.

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Endnotes

[1] Bureau of Labor Statistics, Quarterly Census of Employment and Wages and Local Area Unemployment Statistics. Data are not seasonally adjusted.

[2] U.S. Census Bureau, American Community Survey, 2007 and 2012, 1-Year Estimates, Table B08521. For 2007, earnings were adjusted to 2012 dollars using the average annual change for the past ten years of the San Francisco-Oakland-San Jose Consumer Price Index for All Urban Consumers (CPI-U).

[3] U.S. Census Bureau, American Community Survey, 2008 and 2012, 1-Year Estimates, Table B19083.

[4] We include In-Home Supportive Services (IHSS) workers employed by the county in our sample; we note, however, that these workers are undercounted in the ACS.

[5] The sampling margin of error for the percent of workforce affected is +/- 1.8 percent for the average estimate.

[6] Constant dollar values are calculated using the average annual change for the past ten years of the San Francisco-Oakland-San Jose Consumer Price Index for All Urban Consumers (CPI-U).

[7] To determine the labor share of operating costs in retail trade, we use data from the U.S. Census Monthly and Annual Retail Trade Reports, which provide data on retail sales, payroll costs, merchandise purchased for resale, and detailed operating expenses. We add payroll, operating expenses and purchases together to determine total operating costs. We add the costs of fringe benefits (minus health insurance) to annual payroll to estimate total labor costs. Health benefits are excluded since, unlike payroll taxes and workers' compensation insurance, the costs of the benefits will not change if wages are increased. Dividing labor costs by operating costs gives us the labor share in retail trade. For the restaurant industry, we use industry data on gross operating surplus available from the Bureau of Economic Analysis Input-Output Account Data (Use Table, 2012, Before Redefinitions, Producer Value). We subtract gross operating surplus from sales to get total restaurant operating costs, and then proceed as was done for retail.

[8] The table shows the average of the low and high estimate. The low estimate uses the estimated increase in operating costs from Table 6, and assumes that 75 percent of those costs are passed through to consumers. The high estimate also uses the estimate for increases in operating costs, but assumes that 100 percent of the costs are passed through to consumers.

[9] An increased minimum wage may also lead to greater firm turnover in the time period immediately following the increase as well. A recent study at the Chicago Federal Reserve Board (Aaronson, French and Sorkin 2013) estimates that while a larger number of restaurants exit the industry after a minimum wage increase, they are replaced by an equal number of new and similarly-sized entrants, and that overall employment does not change.

[10] The restaurant industry-backed Employment Policies Institute has produced three studies of Santa Fe and San Francisco (Yelowitz 2005a; 2005b; 2012). In our assessment, these studies suffer from serious methodological problems that make the results unreliable. They also offer contradictory results; see Reich, Jacobs and Bernhardt (2014) for details.

[11] These calculations include recent laws passed in Seattle, Richmond, Berkeley and San Diego.

[12] The structure of the REMI model is similar to those of the widely-used IMPLAN models and the Regional Input-Output Modeling System (RIMS II) of the U.S. Department of Commerce's Bureau of Economic Analysis.

[13] For California, see Chow (2013a). For Maryland, see Nystrom (n.d.) and Fuller, Bedsole and Nystrom (2014). For Illinois, see Chow (2012a). For Mississippi, see Walley 2014. For New York, see Chow (2012b). For New Jersey, see Chow (2013b). For Pennsylvania, see Chow (2014). For Vermont, see Kavet, Rockler and Brighton (2014).

[14] In contrast, our analysis finds that any loss of competitiveness is too small to be detectable. As we report in Table 3, aggregate earnings among low-paid workers will increase by $397 million, which in turn is likely to generate a small net increase in economic activity and employment. Quantifying this effect is beyond the scope of our report.

[15] Thanks to Joseph Persky, a regional economics professor at the University of Illinois Chicago, for pointing this out to us and to George Treyz, CEO of REMI, Inc. for confirming it. This assumption is several orders of magnitude higher than any estimates in the minimum wage literature. Moreover, the model makes questionable assumptions about the effects of higher wages on reduced profitability.

[16] REMI's model assumes that demand will be filled first at the lowest price location, implying that people would drive to another county to eat out-- even for very small menu price differences.

[17] A personal communication from George Treyz, CEO of REMI, as well as the documentation for REMI's Policy Insight model (www.remi.com/resources/documentation) indicate that REMI does not take into account the effects of wage increases on employee turnover, productivity or absenteeism, and ignores higher spending propensities at lower income levels, which inject further stimulus into the local economy. In contrast, Aaronson and French (2013) find that differing spending propensities are crucial for stimulus calculations. REMI also ignores that San Francisco's low-wage-workers are more likely than high-wage workers to live in the city and therefore are more likely to spend their increased earnings within the city (based upon our calculations using http://onthemap.ces.census.gov).

[18] Our own estimates may understate the baseline (without the minimum wage) growth in real wages at the 10th and higher percentiles. A recent Chicago Federal Reserve paper predicts these are likely to occur under San Francisco's current conditions of low and falling unemployment (Aaronson and Jordan 2014). For this reason both the policy's benefits and costs may be lower than our average estimate. On the other hand, because of time limitations we have not included in our analysis any estimated economic stimulus that would be generated by San Francisco's minimum wage proposal, which would increase the impact above our estimates. Aaronson and French (2013) conservatively estimate that a federal minimum wage increase of about 27 percent would increase economic output by about 0.25 percent.