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How Much Would Increasing the Minimum Wage Affect Food Prices?

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Abstract

Will increasing the minimum wage increase food prices as well? This study shows that a simulated $0.50 increase in the minimum wage, if entirely passed on to consumers, would have increased food prices by less than 1 percent for most of the foods at foodstores and by 1 percent at eating and drinking places. Because these estimates were simulated using an economic model that assumed that firms did not alter their production processes when faced with higher minimum wages, these estimates are likely "upward bounds" of the price effects of a minimum wage increase.

Introduction

How does increasing the minimum wage affect food prices? Since food-related industries have a larger share of lower wage workers than other industries, food prices are likely to be more affected by increases in the minimum wage than are prices for other goods. This analysis examines the effects of a minimum wage increase on output prices in the food processing industry and the food-service industry (eating and drinking places) when these industries pass higher labor costs along to consumers in the form of higher prices.

Most analyses of minimum wage effects have focused on the likelihood of employment reductions. An employer faced with raising the minimum wage of the firm's workforce has several options. The firm can absorb the higher labor cost by keeping its prices steady and accepting a lower profit level; the firm can attempt to pass on the higher costs by raising the price of products; or the firm could decide it could not afford the higher labor costs, adjust its production process, and employ fewer workers.

Supporters of minimum wage increases usually argue that a higher minimum wage will raise the earnings of low-income workers and primarily benefit the poorest working families. Opponents assert that the basic laws of supply and demand suggest that raising the minimum wage will increase the price of labor, and firms will naturally hire fewer workers. If this occurs, the wage increase could lead to widespread job losses among the very workers the legislation was intended to help. Countering supporters' arguments that the minimum wage primarily benefits the poorest working families, recent research by MaCurdy and O'Brien-Stain [6] provides evidence that minimum wage workers are not concentrated in low-income families. They found that one in four California families had a minimum wage worker and that families with minimum wage workers were pretty evenly distributed across the income distribution.

Could a Higher Minimum Wage Lead to Higher Food Prices?

Card and Krueger [2,3] did the best-known study of the potential for a minimum wage increase to result in higher prices of meals at fast-food restaurants. They surveyed 410 fast-food restaurants in New Jersey and eastern Pennsylvania before and after New Jersey's 80-cent minimum wage increase in April 1992. They found that, in New Jersey, average

prices rose enough to cover the costs of the higher minimum wage [3; p. 390]. Aaronson [1] also explored the price effect of minimum wage hikes in Canada and the United States. He analyzed the effect of an increase in the price of labor on prices of food away from home. His analyses suggest a 1.2- to 1.6-percent increase in hamburger and chicken prices for every 10-percent increase in the minimum wage [1; p.14].

Four key factors influence how a minimum wage increase might affect the prices of food and kindred products:

■ First, the percentage increase in the legislated minimum wage itself.

■ Second, the share of total workers in the minimum wage bracket. We derived this number from data obtained from the Current Population Survey.

■ Third, the share of wages and salaries in the total cost of producing food products or services. For this purpose, we used the most recent (1992) input-output table of the U.S. economy [8].

■ Fourth, the share of wage and salary cost in total employee compensation. When the minimum wage is raised, total compensation does not necessarily increase proportionally with the minimum wage. We used data from the 1992 Census of Manufactures [9] to determine the wage and salary portion of total compensation.

Recent Legislation Dealing with the Minimum Wage

When President Clinton signed H.R. 3448, the "Small Business Job Protection Act of 1996," into law, he stated that "this legislation provides a badly needed pay raise for millions of Americans and their families who struggle to make ends meet while working at the minimum wage." The act boosted the minimum wage in two steps — a 50-cent increase from $4.25 to $4.75 an hour that took effect October 1, 1996, followed by an additional 40-cent raise to $5.15 an hour on September 1, 1997. President Clinton proposed a $1 increase in February 1998, a move that was rejected by Congress on September 22, 1998. On January 19, 1999, the Fair Minimum Wage Act was introduced which would raise the minimum wage by $1 over the next 2 years, essentially setting the national wage floor at $6.15 by the year 2000. On November 9, 1999, the Senate passed a revised version of the minimum wage legislation and on March 9, 2000, the U.S. House of Representative passed its version.

Nature of the Production Processes

The nature of production and the wage structure within a firm can influence the effect of the minimum wage increase. A firm's adjustment depends in part on its ability to modify its production techniques in light of higher labor costs. As the cost of labor rises, the firm may be able to move to cheaper inputs, such as capital equipment, to lessen its need for labor. Our analysis assumed that such capital for labor substitution is not possible in the short run.

Table 1 — Scenarios analyzed ranged from a rise in the minimum wage to more complex effects on labor costs

Scenario	Minimum wage increased	Second tier (3-percent spillover)	Third tier– (1-percent spillover)	Supplemental compensation increased	$1 increase in minimum wage
1 - 1992 1 - 1997 }	Yes	No	No	No	No
2. 1992 2 - 1997 }	Yes	Yes	No	No	No
3 - 1992 3 - 1997 }	Yes	Yes	Yes	No	No
4 - 1992 4 - 1997 }	Yes	Yes	Yes	Yes	No
5 - 1997	Yes	Yes	Yes	Yes	Yes

Source: Compiled by ERS.

Spillover Effects

Spillover effects may occur if employers increase the wages of workers who already were earning slightly more than the old minimum wage in order to maintain wage differences between groups of workers. Or firms that traditionally start workers at above the minimum wage may raise their starting pay to maintain their wage premium.

Card and Krueger [3] explored this spillover effect.

"Restaurants with higher starting wages prior to the April 1991 minimum wage increase were more likely to grant raises to workers who were already earning $4.50 per hour. Among restaurants with the lowest initial starting wages, only 9 percent granted wage increases to workers earning $4.50 per hour when the minimum wage rose to $4.25. Among restaurants with higher starting wage rates, the corresponding fractions are higher. Thus, there is some evidence of wage spillovers for workers who were earning more than the new minimum wage..." [pp.161-2]

The Scenarios – Simplest to the More Complex

We analyzed an increase in the minimum wage under four scenarios for 1992 and five scenarios for 1997 (table 1). In scenario 1, we analyzed an increase of 50

Table 2 — Distribution of U.S. workers by wage category, 1992 and 1997

1992		1997	
Wage category	Percentage of workers	Wage category	Percentage of workers
$4.25 or less	10.33%	$5.15 or less	8.12%
$4.26-4.75	4.08%	$5.16-5.65	3.47%
$4.76-5.25	5.67%	$5.66-6.15	4.52%
$5.26-5.75	3.30%	$6.16-6.65	3.49%
Over $5.76	76.62%	Over $6.66	80.40%

Source: Calculated by ERS using the Current Population Survey.

cents — from $4.25 to $4.75 (or 12-percent) in the 1992 minimum wage and from $5.15 to $6.15 (or 9.7-percent) in the 1997 minimum wage. Scenario 2 was the same as scenario 1, but added a 3-percent spillover effect into the next wage category (see table 2 for wage categories.) Scenario 3 was scenario 2 with an additional 1-percent spillover into the third wage category. In scenarios 1 through 3, we increased only wage and salary compensation, leaving unchanged supplemental compensation, such as health care, leave, and life insurance. In scenario 4, we assumed proportional increases in both wage and salary and supplemental compensation. In scenario 5 (1997 only) we analyzed a $1.00 increase instead of a $0.50 increase.

In 1992, 76.6 percent of U.S. workers were in the highest wage category shown in table 2. By 1997, this number had increased to 80.4 percent. This upward drift in the wage distribution could reflect, in part, the relative tightening of the labor market during the late 1990's.

Results are similar when looking at food processing firms. Approximately 10.6 percent of their workers earned the minimum wage in 1992 versus 4.8 percent in 1997. Each subsector of the industry had a smaller percentage of workers earning minimum wage in 1997 than in 1992 (fig. 1). The most extreme changes were in canned goods (16 percent in 1992 vs. 4 percent in 1997), oil milling (17 percent vs. 6 percent), and miscellaneous foods (17 percent vs. 6 percent). The smallest differences occurred in the bakery and confectionery sectors, which recorded a difference of just 0.01 percent between 1992 and 1997 (9.47 percent vs. 9.46 percent). For food processors overall, the drop in the percentage of workers at the minimum wage and below in 1997 versus 1992 was matched by the increase in workers in the highest wage category. Compared with the national workforce's rise from 77 percent in 1992 to 80 percent in 1997, table 2, the proportion of food processing workers in the highest wage category increased from 79 percent in 1992 to 85 percent in 1997.

The wage distribution for the eating and drinking places industry differs from that of food processors. In 1992, 23 percent of workers in this industry were earning minimum wage or below. By 1997, this number had increased to 28 percent. As a result, the trend in eating and drinking places was opposite that for food processors over the time period. Because of the higher proportion of minimum wage workers in eating and drinking places, we expect that an increase in labor costs would likely have the most impact on food prices at restaurants.[1]

How Much Could Food Prices Increase?

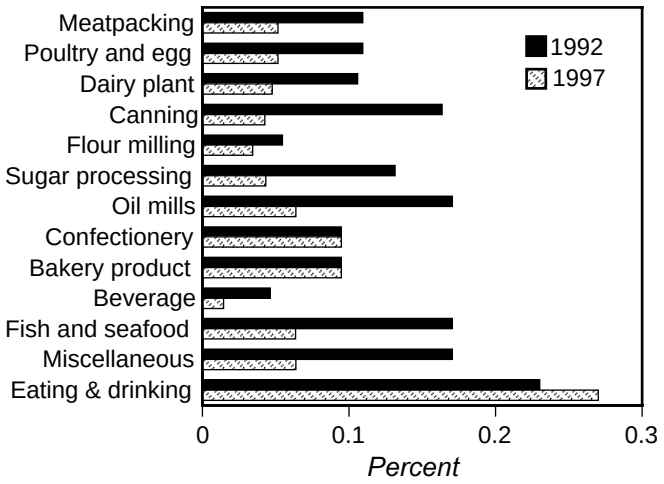
We estimated the effect of an increase in the minimum wage for 1992 and 1997 using an economic model. A simulated $0.50 increase in the 1992 minimum wage of $4.25 with no spillover effects and no increase in supplemental compensation raised wholesale food prices by about one-third of a percentage point and consumer prices by slightly less (table 3 and fig. 2).

With spillover effects and increases in supplemental compensation, food prices increased. In our most liberal scenarios (a 3-percent spillover on the second wage category, a 1-percent spillover on the third category, and raising supplemental compensation by the same percentage increase as the minimum wage

[1] The present law may exempt some small food and kindred products firms and food-service firms and some tipped employees [10].

Figure 1

Share of minimum wage workers in the food subsectors



Source: (7).

increase), food prices rose less than 1 percent at the consumer level.

Repeating the simulation using the 1997 distribution of workers by wage category results in smaller food price increases (table 4 and fig. 3). For example, a simulated $0.50 increase in the 1997 minimum wage of $5.15 per hour raised food prices by less than one-quarter of a percentage point at the retail level. As expected, simulated food price increases were higher at eating and drinking places than for food processing industries. The $0.50 increase in the 1992 minimum wage of $4.25 was estimated to have raised eating and drinking places prices by 1 to 1.4 percentage points depending on the extent of spillover effects and supplemental wage compensation.

As detailed previously, there are four key factors affecting how a minimum wage increase might affect prices of processed foods. The first two are of primary concern at this point. First is the percentage increase in the minimum wage itself, resulting from legislation. In comparing a $0.50 increase in 1992 and a $0.50 increase in 1997, the higher percentage increase occurs in 1992. Because of this, we should see prices rise more in 1992 if our intuitive predictions are correct. This is what happens in our simulations, as figures 2 and 3 demonstrate. For every food processing sector, prices changed by a greater amount in 1992, when the percentage increase was 12 percent (50 cents over a $4.25 minimum wage), than in 1997 where the percentage increase was only 9.7 percent (50 cents over a $5.15 minimum wage).

The effect of the second key factor (the share of total workers earning the minimum wage) importantly influenced simulated prices in eating and drinking places. While prices in eating and drinking places were simulated to rise slightly more in 1997 than in 1992, the difference was only 0.002 percent. The larger share of the industry's workers in the minimum wage bracket can explain the slightly higher estimated price effect. Industries with a higher proportion of minimum wage workers (restaurants and fast-food places, for example) do indeed feel more pressure to increase prices after a minimum wage hike. Eating and drinking places employ a high proportion of minimum wage workers. Consequently, our simulated minimum wage increase caused a greater increase in food prices at eating and drinking places than in food stores.

However, even in the food processing industry, sectors with larger dependence on minimum wage workers display larger price increases. For instance, in 1992, in the fish and seafood and miscellaneous sectors, 17 percent of the workforce earned minimum wage or less. Our simulated increase in the 1992 minimum wage caused these industries to raise their prices by 0.437 and 0.383 percent, which were the largest simulated price increases in the processed food sectors for 1992. In 1997, the sectors with the highest proportion of minimum wage workers reflected the same simulated behavior. The confectionery sector had the largest percentage of minimum wage workers in the 1997 food processing industry, 9.5 percent. The simulated price increase by this sector was also the largest in the industry, at 0.27 percent.

Figure 2

Percentage increase in prices for 1992

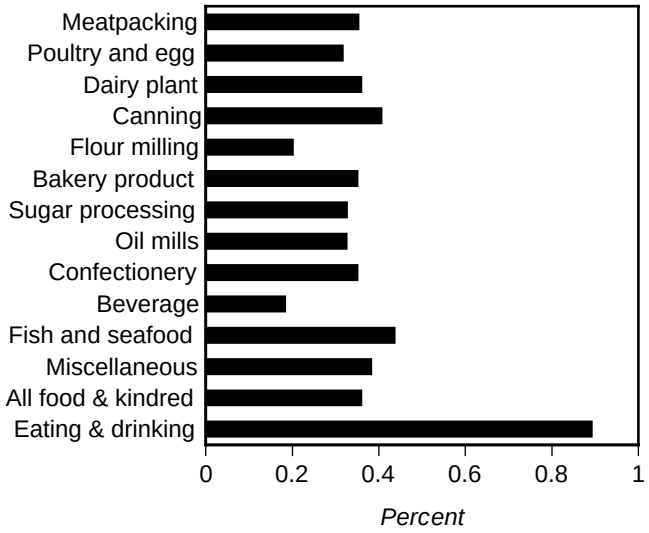


Figure 3

Percentage increase in prices for 1997

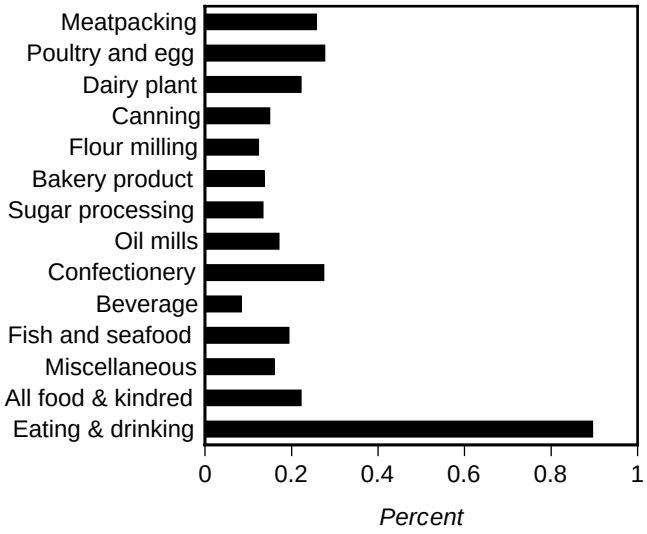


Table 3 — Percentage increase in prices due to a minimum wage increase, 1992

Industry	Producer prices				Consumer prices			
	Scenario				Scenario			
	1	2	3	4	1	2	3	4
	Percent				*Percent*			
Meatpacking	0.353	0.389	0.413	0.497	0.288	0.315	0.332	0.408
Poultry and egg	.317	.345	.380	.459	.267	.290	.315	.389
Dairy plant	.360	.383	.405	.497	.295	.314	.329	.412
Canning and preserving	.407	.442	.446	.571	.314	.340	.343	.445
Flour milling	.202	.221	.234	.288	.181	.198	.206	.263
Bakery product	.351	.394	.397	.517	.284	.315	.314	.418
Sugar processing	.327	.340	.361	.445	.258	.271	.284	.359
Oil mills	.326	.355	.361	.450	.270	.293	.298	.378
Confectionery	.351	.394	.397	.517	.284	.315	.314	.418
Beverage	.184	.200	.214	.263	.171	.182	.192	.246
Fish and seafood	.437	.466	.487	.601	.321	.342	.355	.443
Miscellaneous	.383	.415	.418	.593	.307	.331	.334	.431
Food processing	.360	.383	.405	.497	.295	.314	.329	.412
Eating and drinking	.893	1.045	1.084	1.364	.893	1.045	1.084	1.364

Scenario 1: A $0.50 increase (12-percent) over 1992 minimum wage, $4.25 with no increase in supplemental compensation.
Scenario 2: Scenario 1 plus a 3-percent spillover effect on the second wage category.
Scenario 3: Scenario 2 plus a 1-percent spillover effect on the third wage category.
Scenario 4: Scenario 3 but with increases in total compensation (wage and salary plus supplemental).

Table 4 — Percentage increase in prices due to a minimum wage increase, 1997

Industry	Producer prices					Consumer prices				
	Scenario					Scenario				
	1	2	3	4	5	1	2	3	4	5
	Percent									
Meatpacking	0.257	0.290	0.306	0.366	0.673	0.209	0.240	0.254	0.303	0.552
Poultry and egg	0.276	0.320	0.343	0.413	0.746	0.226	0.265	0.284	0.341	0.612
Dairy plant	0.222	0.252	0.265	0.318	0.585	0.186	0.216	0.228	0.273	0.496
Canning and preserving	0.149	0.178	0.188	0.231	0.414	0.134	0.163	0.173	0.210	0.373
Flour milling	0.124	0.148	0.157	0.189	0.337	0.117	0.144	0.153	0.182	0.323
Bakery product	0.137	0.163	0.173	0.208	0.373	0.128	0.155	0.165	0.197	0.351
Sugar processing	0.133	0.163	0.174	0.214	0.378	0.124	0.153	0.163	0.198	0.348
Oil mills	0.170	0.203	0.214	0.258	0.462	0.150	0.180	0.192	0.230	0.410
Confectionery	0.274	0.294	0.311	0.400	0.753	0.218	0.241	0.256	0.323	0.601
Beverage	0.084	0.101	0.109	0.133	0.235	0.094	0.116	0.125	0.150	0.263
Fish and seafood	0.193	0.221	0.233	0.279	0.510	0.158	0.186	0.198	0.236	0.424
Miscellaneous	0.159	0.187	0.200	0.244	0.439	0.142	0.170	0.182	0.220	0.393
Food processing	0.222	0.252	0.265	0.318	0.585	0.186	0.216	0.228	0.273	0.496
Eating and drinking	0.896	1.007	1.042	1.219	2.266	0.896	1.007	1.042	1.219	2.266

Scenario 1: A $0.50 increase (9-percent) over 1997 minimum wage, $5.15 with no increase in supplemental compensation.
Scenario 2: Scenario 1 plus a 3-percent spillover effect on the second wage category.
Scenario 3: Scenario 2 plus a 1-percent spillover effect on the third wage category.
Scenario 4: Scenario 3 but with increases in total compensation (wage and salary plus supplemental).
Scenario 5: Same as scenario 4 but a $1.00 increase (19.4-percent) over the 1997 minimum of $5.15 (from $5.15 to $6.15).

Our simulations also show that, in 1992, the smallest price increase, at 0.18 percent, was in the beverage sector, where only 4.6 percent of workers earned the minimum wage. The same pattern repeated in 1997. The beverage sector again had the lowest share of minimum wage workers (1.4 percent) and the smallest simulated price increase, 0.08 percent. Flour milling and sugar processing also had low percentages of minimum wage workers, 3.4 percent and 4.3 percent, respectively, in 1997. They also had the second and third smallest simulated price increases in the industry.

Tables 3 and 4 show the percentage changes from the unit base year price to the new price for the particular scenarios in columns 1 through 4 and 5. The first column, for example, shows the estimated percentage changes in sector prices in the food processing industries and the eating and drinking places with a $0.50 increase in the minimum wage (scenario 1). An interesting aspect of the increase in the wage floor is the impact of a larger step-up on prices. For instance, columns 5 and 10 of table 4 look at the price increases with a $1.00 increase in the minimum wage rather than a $0.50 increase. Comparing this with columns 4 and 9 reveals that, as expected, the larger the increase in the minimum wage, the greater the percentage increases in prices.

During 1989-99, the CPI for all food, both food at home and food away from home, rose about 2.8 percent annually. Our one-time minimum-wage-induced price increase under our most liberal scenario is about one-third of that annual increase.

Thus, despite their interest in raising the living standards of low-wage workers, minimum wage advocates do not propose a $10-an-hour increase in the minimum wage.

Conclusions

If food processing and food services industries pass on the full cost of a minimum wage increase to consumers, a $0.50 increase in the minimum wage (an increase of 12 percent in 1992 from $4.25 to $4.75) was simulated to have increased prices at eating and drinking places less than 1 percent (0.9 percent) and less than four-tenths of 1 percent for average processed food prices. When the minimum wage increase of $0.50 is applied to the 1997 level (a 9-percent increase from $5.15 to $5.65) food prices were simulated to increase 0.9 percent at eating and drinking places and less than three-tenths of 1 percent for processed foods.

Let's put our minimum-wage-induced price increases in context. During 1989-99, the CPI for all food, both food at home and food away from home, rose about 2.8 percent annually. Our one-time minimum-wage-induced price increase under our most liberal scenario is about one-third of that annual increase. There were other food-price shocks during the 1990's. The midwestern drought of 1995-96, in concert with rising foreign

How We Made Our Estimates

1. We used an economic model based on the 1992 U.S. Input-Output Table constructed by the Bureau of Economic Analysis, U.S. Department of Commerce. The model reflects the linkages among industries in the United States. Consumer price increases were estimated by first estimating the direct cost to a sector of the increase in a minimum wage and then using the economic model to estimate how these individual sector direct costs affected total costs for all sectors of the economy. The change in total costs was converted to changes in sector prices that would allow each sector to maintain the income position it had before the minimum wage increase.

2. We used earnings data from the 1992 and 1997 Current Population Survey to identify the importance of minimum wage workers in an individual sector's labor force.

3. In order to examine spillover effects, we made alternate assumptions about how the wages of workers in adjoining wage groups would be raised.

4. In several scenarios, we assumed increases in supplemental compensation to be first independent of and then proportional to increases in the minimum wage.

5. Because our model assumes the higher labor costs are passed through in their entirety to food consumers, our estimates are likely upward bound estimates of actual food price increases from a minimum wage increase.

6. Readers interested in additional detail are referred to [4].

demand for U.S. feed grains, drove up feed grain prices. For example, farm-level corn prices rose over 43 percent. Feed grain price changes were accompanied by a 3.3-percent change in the CPI for all food, slightly higher than the trend for the decade [5].

Higher minimum wages do exert economic forces that could increase prices, particularly in the short run. In this study, we used an economic model that allowed all the higher labor cost of a higher minimum wage to be passed through to consumers. That is because our simulation does not allow for the substitution of nonlabor inputs such as machinery for labor when wages rise. Thus our simulated estimates can best be interpreted as "upward bounds" of the price effects of minimum wage increases.

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Current Issues
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Current Issues synthesizes economic analyses of the complex relationships in food markets of interest to officials responsible for public policy, decisionmakers in the industry, and researchers. Future topics may include the increasing vertical coordination and integration of the industry; expanding consolidation and concentration of food industries; higher minimum wage and its effects on food prices; expansion of non-traditional retail outlets and the food-away-from-home market; and the changing attributes of available food such as wider choices, better labeling information, greater time savings, and improvements in nutritional characteristics.

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