

Dissertation Awards

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Essays on the Redistributive Effects of the Minimum Wage

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Essay 1

Minimum Wages and Racial Inequality

(with Ellora Derenoncourt)

One of the most striking dimensions of inequality in the United States is the persistence of large racial economic disparities (Bayer and Charles 2018; Chetty et al. 2020). A major aspect of these disparities is the earnings difference between black and white workers. There is a 25 percent gap between the average annual earnings of white and African American workers today.¹ Over the past 70 years, this gap fell significantly only once, during the late 1960s and early 1970s, when it was reduced by a factor of about two. What made the white-black earnings gap fall? Understanding the factors behind this historical improvement may provide insights for reducing the large racial disparities that still exist today.

A large literature has put forward various explanations for the decline in racial inequality during the 1960s and 1970s, including federal antidiscrimination legislation (Freeman 1973) and improvements in education (Card and Krueger 1992; Smith and Welch 1989). The magnitude of the decline, however, remains a puzzle (see Donohue and Heckman [1991]).

This chapter provides a new explanation for falling racial earnings gaps during this period: the extension of the federal minimum wage to new sectors of the economy. The Fair Labor Standards Act of 1966 introduced the federal minimum wage (as of February 1967) in sectors that were previously uncovered and where black workers were overrepresented: agriculture, hotels, restaurants, schools, hospitals, nursing homes, entertainment, and other services. These sectors employed about 20 percent of the total U.S. workforce and nearly a third of all black workers. Perhaps surprisingly, the role of this major reform in the much-studied decline in racial inequality during the Civil Rights Era has not been analyzed before. We show that it had large positive effects on wages for low-wage workers and that the effects were more than twice as large for black workers as for white. Our estimates suggest that the 1967 extension of the minimum wage can explain more than 20 percent of the decline in the racial earnings gap between 1965 and 1980. Moreover, we find that this reform did not have large adverse employment effects on either black or white workers. The extension of the minimum wage thus not only reduced the racial earnings gap (the difference in earnings for employed

individuals) but also the racial income gap (the difference in income between black and white individuals, whether working or not). To our knowledge, this chapter provides the first causal evidence on how minimum wage policy affects racial income disparities.

Our contribution in this chapter is twofold. First, we provide an in-depth analysis of the causal effect of the 1967 extension of the minimum wage—a large natural quasi-experiment—on the dynamics of wages and employment. To conduct this analysis, we use a variety of data sources and research designs that paint a consistent picture. A key data contribution of this chapter is to assemble a novel dataset on hourly wages by industry, occupation, gender, and region. In the 1960s, 1970s, and 1980s, the Bureau of Labor Statistics (BLS) published regular industry wage reports with detailed information on the distribution of hourly wages by \$0.05 and \$0.10 bins, including the number of workers employed in each of these bins. For the purposes of this research, we digitized more than 1,000 of these tabulations. This new data source allows us to provide transparent and robust evidence on the effects of the 1967 minimum wage extension on wages and employment. We also rely on microdata from the March Current Population Survey (CPS), which allow us to investigate how the effects of the reform vary with race and other socioeconomic characteristics such as education. Taken together, the CPS and BLS data enable us to provide consistent and clear graphical evidence of the short- and medium-term impacts of the extension of the minimum wage.

The analysis proceeds in two steps. First, we show that the 1967 reform had a large effect on wages for workers at the bottom of the earnings distribution. Our newly digitized BLS data reveal clear evidence of an immediate and sharp hourly wage increase for low-paid workers: a large mass of workers paid below \$1 in 1966 (the level of the minimum wage introduced in 1967) bunches at \$1 in 1967. To quantify the magnitude of the wage effect, our baseline empirical approach is a cross-industry difference-in-differences research design: we compare the dynamics of wages in the newly vs. previously covered industries, before and after 1967. In the CPS data, the average annual earnings of workers in the industries covered in 1967 (our treated group) evolve in parallel with the annual earnings of workers in the industries covered in 1938 (our control group) before the reform. In 1967, they jump by 5.3 percent relative to the control industries, and the effect persists through the late 1970s. The magnitude of the increase is consistent with the predicted effect of the minimum wage hike estimated using the prereform CPS. We obtain a similar increase in average hourly wage in the newly covered industries using the BLS data. We estimate that 16 percent of workers in the treated industries are affected by the reform and that they receive a 34 percent wage increase on average in 1967. The wage effect on treated workers is large because before 1967, many of them (predominantly black workers) were employed at

wages far below the federal minimum wage of \$1 introduced in 1967. The wage increase in the newly covered industries is concentrated among workers with a low level of education. The magnitude of the wage effect is robust to a series of tests and to controlling for a wide range of observable characteristics and time trends.

In the second step, we study the effect of the 1967 minimum wage extension on employment. We first estimate employment's effect using geographic variation in the bite of the reform. Just as today, some states had their own minimum wage laws (on top of the federal minimum wage) in the 1960s while others did not. This variation made the 1967 reform more or less binding across states. We build a minimum wage database by state, industry, and gender spanning the 1950–2016 period. We compare states without a state minimum wage law as of January 1966 (strongly treated) to other states (weakly treated). Because the federal minimum wage was high in the late 1960s (much higher than today relative to the median wage), the 1967 reform is a particularly large shock in the strongly treated states. Using this research design, we show that the 1967 reform had a near-zero effect on employment. We are able to rule out employment elasticities with respect to average wages greater (in absolute sense) than -0.16 . The results hold for black workers in isolation, for whom employment elasticities greater than -0.24 can be ruled out.

We build on these analyses by using our BLS data and implementing a bunching estimator following Harasztsosi and Lindner (2019) and Cengiz et al. (2019). Within treated industries, we compare the number of workers paid strictly below the minimum wage and those paid at or slightly above the minimum wage in the observed 1967 wage distribution to those in a counterfactual distribution with no minimum wage reform. We first present estimates of the employment effect of the reform for an important case study—laundries in the U.S. South—where the reform was particularly binding (over one-third of workers were paid below the minimum wage prior to the reform) and where black workers were overrepresented (40 percent of the workforce). We document a near-zero effect on employment in this sector and region. We then demonstrate that this near-zero effect holds across many industry and region subgroups. Overall, our bunching results suggest low employment responses in treated industries in the United States as a whole. Our findings are robust to considering alternative assumptions on the extent of spillover effects from the minimum wage.²

The second—and most important—contribution of this chapter is to uncover the key role of minimum wage policies in the dynamics of racial inequality. We show that the extension of the minimum wage during the Civil Rights Era can explain more than 20 percent of the decline in the unadjusted black-white earnings gap observed during this critical time period. The reform reduced the gap through two channels. First, the gap between the average wage in the treated industries and the rest of the economy fell. Because

black workers were overrepresented in the treated industries, this between-industry convergence reduced the U.S.-wide racial gap. Second, within the newly covered industries, the wage increase is much larger for black than for white workers, and hence the reform sharply reduced the unadjusted racial gap within the treated industries. This within-industry effect accounts for more than 80 percent of the impact of the reform on the economy-wide racial gap. The reform also sharply reduced the adjusted racial earnings gap (i.e., the difference in earnings between black and white workers conditional on observable characteristics) within the treated industries, from 25 log points prior to 1967 to about 0 after. That is, within agriculture and laundries, for example, black workers were paid 25 log points less than white workers with similar observables (such as education, experience, and number of hours worked) when the federal minimum wage did not apply, and this difference falls to close to zero after the introduction of the federal minimum wage. Combined with the evidence of limited effects on black employment, these results suggest that the 1967 reform was effective at advancing black economic status.

Conceptually, our results are consistent with competitive models of the labor market characterized by low elasticity of demand for workers in the newly covered industries and inelastic demand for black workers, in particular.³ We provide evidence that substitution toward white workers was extremely limited in the newly covered industries after the reform. This may stem in part from the high degree of occupational segregation prevalent in the labor market at the time. Black workers were concentrated in low-status jobs throughout our period of analysis, and white workers may have been unwilling to assume these positions at the wages prevailing postreform. Under these conditions, the minimum wage can improve black workers' relative wages without resulting in their significant relative disemployment.

Essay 2

The Pass-Through of Minimum Wages into U.S. Retail Prices: Evidence from Supermarket Scanner Data

(with Tobias Renkin and Michael Siegenthaler)

In recent years, a number of U.S. states and municipalities have increased their minimum wage, in a context of low wage growth and stagnation of the federal minimum wage. Similarly, several European countries have introduced a national minimum wage (e.g., Germany) or hiked their minimum wage (e.g., the United Kingdom).

A large body of research in economics shows that moderate increases in the minimum wage have no or limited disemployment effects (see, for example, Card and Krueger

[1994]; Belman and Wolfson [2014]; Cengiz et al. [2019]), suggesting that such a policy can raise nominal incomes of low-wage workers. However, there is much less evidence on how changes in the minimum wage affect consumer prices (see Lemos [2008] for a literature review) and therefore *real* incomes. In principle, it is possible that nominal wage increases for low-wage workers may be partly offset by increases in the prices of the goods and services consumed by the poorest households. To assess the economic impact of minimum wage changes on real incomes, it is thus central to understand the pass-through of minimum wage increases into prices.

We exploit a large number of changes in the minimum wage between 2001 and 2012 and leverage scanner-level data from weekly price observations of 2,500 distinct grocery and drug stores. We make three main contributions. First, we provide new evidence on how minimum wages affect prices in the grocery sector, which has not been previously studied in the literature.⁴ The grocery sector is especially important because the share of minimum wage labor costs in groceries' marginal cost is sizable, and because groceries make up a large share of consumer expenditure, up to 15 percent for low-income households. Second, we take advantage of the high frequency of scanner data to study the dynamics of the price response over time. Since minimum wage laws are usually passed several months before implementation and typically set a schedule of increases rather than one-off hikes, firms may increase prices in anticipation of higher future minimum wages. We use a newly collected dataset with legislation dates for every minimum wage increase in our sample period, and we find strong evidence for anticipation effects. Third, we use a large consumer panel data linked to the store-level information to investigate how the price response varies across household income groups. This allows us to better understand the implications of minimum wage changes for real incomes.

Our main finding is that there is a full pass-through of minimum wage increases into grocery prices. Our main research design compares monthly price movements across states exploiting time variation in state-level minimum wage hikes. We supplement this approach by using a second identification strategy that exploits within-state variation in the bite of the hikes. We find that a 10 percent minimum wage hike translates into a 0.36 percent increase in grocery prices. Importantly, there is no statistically significant difference between the average price elasticity of 0.036 and our estimate of the minimum wage elasticity of groceries' costs, which suggests a full pass-through of minimum wage cost increases into prices. We do not find evidence that the demand for grocery products changes, nor do we find evidence that stores reduce employment. Taken together, these results suggest that consumers, rather than firm owners or workers, bear the bulk of the burden of minimum wage increases in the grocery sector.

Another important finding of this paper, with implications for macroeconomic models, is that price adjustments occur mostly in the three months following the passage of a minimum wage legislation, rather than after implementation. In other words, grocery and drug stores appear to be forward-looking in their pricing decisions. Using Google Trends data, we show that the legislation of minimum wage increases represents a very salient event in the public. Based on flexible event study regressions tracking prices around the months in which minimum wage hikes are legislated, we find that grocery stores respond to future cost increases by increasing prices months before the minimum wage is actually implemented. This type of forward-looking behavior of firms is qualitatively consistent with the predictions of purely rational models, where firms think about the future as well as the present (i.e., they are not myopic). The rise in prices occurs mostly through an increase in the frequency of price changes.

Last, we quantify the welfare consequences of minimum wage hikes after accounting for our estimated pass-through of minimum wages into prices. We estimate that the price effects of minimum wage increases are similar for goods usually consumed by low-income and high-income households. Low-income households are nevertheless disproportionately affected by the rise in grocery prices since a larger share of their expenditures is on groceries. The rise in grocery store prices reduces real income by about \$24 a year for households earning less than \$10,000 a year, and by about \$78 a year for those earning more than \$150,000.

The price increases in grocery stores offset only a relatively small part of the gains of minimum wage hikes. Minimum wage policies thus remain a redistributive tool, even after accounting for price effects in grocery stores.

This chapter contributes to a body of work in labor economics and macroeconomics. First, this chapter provides novel insights into the redistributive effects of minimum wages and into the price effects of minimum wages in low-wage sectors. A small literature studies the product market effects of minimum wage increases. This literature has focused on restaurants (see, e.g., Aaronson [2001], Allegretto and Reich [2018]).⁵ Our contribution to this literature is to study the impact of minimum wage changes in a new sector, the grocery sector. This sector employs a high and rising share of workers at or just above the minimum wage; therefore, the effect of minimum wage hikes is potentially large.

Moreover, groceries are an important component of households' cost of living, particularly for poor households. Groceries make up 11 percent of household expenditures, two to three times more than spending on restaurant meals, depending on household income.

We break new ground in documenting the price response in the retail sector, thanks to the availability of high-quality scanner-level data. These data enable us to overcome certain shortcomings in studies of the price effects of minimum

wages. These limitations include classical measurement error (Aaronson 2001; Card and Krueger 1994), the use of city-level CPI data that are only available in the largest U.S. metro areas (Aaronson 2001; Aaronson and French 2007; Aaronson, French, and MacDonald 2008), and the fact that price and wage changes in restaurants may not be well measured due to tipping and quality changes (e.g., size of portions served). These concerns do not apply to retail scanner data, as products in grocery stores are very standardized and retail workers are not tipped. Compared to official BLS price indexes, our microdata allow us to compute price changes by income group (as well as price changes conditional on nonzero price adjustments).⁶

Most closely related to our work are the contemporary papers by Leung (forthcoming) and Ganapati and Weaver (2017), who also study the pass-through of minimum wage changes into retail prices. These papers focus on a different period (2006–2015 and 2005–2015, respectively, vs. 2001–2012 in our study), are based on another dataset (the Nielsen data), and use different identification strategies. Ganapati and Weaver (2017) find a zero pass-through of minimum wage increases into prices, and Leung (forthcoming) more than a full pass-through. We reconcile our findings with these two studies in our appendix.

The main substantial difference between our work and these two studies is that we document the forward-looking pricing decision of grocery stores by studying the effect of minimum wage legislation (before implementation) on subsequent price changes. Two other distinctive features of our work include studying in detail whether our results are consistent with full pass-through of prices into costs, and quantifying the extent to which the price increases in grocery stores affect the redistributive effects of minimum wage policies.

Second, this chapter contributes to the macroeconomic literature on price-setting. We provide causal evidence of the effect of a rise in labor costs on retail price inflation. This adds to the macro literature that has mainly focused on the effects of rising wholesale costs on pricing decisions.⁷ Our detailed microdata allow us to document a price response to a future cost shock at the time it becomes known and several months before it actually occurs. Because minimum wage changes can be seen as a shock to grocery store activities, which is plausibly exogenous, these shocks can help identify the effect of movements in costs on prices. Our results highlight the role of expectations in the propagation of shocks.⁸ Forward-looking price setting is a central prediction of state-dependent models (i.e., menu cost models), as well as time-dependent models with nominal frictions. These latter models include the Calvo (1983) model of staggered price setting and models with adjustment costs such as Rotemberg (1982). In the macroeconomics literature, these models have been used as a microeconomic foundation for the New Keynesian Phillips Curve (see, e.g., Gali [2015]).

Finally, we contribute to the research on price rigidity in retail chains. We provide evidence that chains try to maintain uniform prices across grocery stores in the United States. We find that, within interregional chains, a minimum wage hike in one state affects prices in stores within the same chain located in another state. These results suggest that minimum wage hikes can affect consumer welfare in other states. Consistently, we find that grocery prices are more responsive to local minimum wage hikes in regional chains than in national chains. This is consistent with Dellavigna and Gentzkow (2019), who document uniform pricing decisions in the retail sector in response to local economic shocks in general, and to Leung (forthcoming), who documents this behavior in the case of local minimum wage hikes.

Essay 3

The Economic Effect of a \$15 Minimum Wage in the United States: A Simulation Approach

(with Sylvia Allegretto and Michael Reich)

In April 2017, Senators Bernie Sanders (D-VT), Patty Murray (D-WA), and Chuck Schumer (D-NY) announced legislation that would raise the federal minimum wage to \$15 an hour in the United States by 2024. In this bill, the minimum wage increases are phased in over eight years, starting with \$9.25 an hour on July 1, 2017, and reaching \$15 an hour in 2024. The minimum wage would be indexed to the median wage growth thereafter. The goal of this chapter is to connect research with policy by providing an ex ante evaluation of this bill.

The minimum wage is a recurrent policy issue, and there are many analyses of the effects of minimum wage increases on incomes of families with members who receive a raise (Congressional Budget Office 2014; Cooper 2013, 2017), and the effects on incomes of families with members who lose their jobs (Congressional Budget Office 2014). Here, we attempt to evaluate the employment effects of minimum wage policies that take into account how all economic agents—not just workers, but workers, businesses, and consumers—are affected and respond to such a policy, and we integrate their responses in a unified manner. In particular, we take into account the effects of minimum wage increases on aggregate demand, and how they boost consumer spending and GDP. In what follows, we estimate a calibrated labor market model that we created specifically to analyze the effects of a \$15 minimum wage. We compare employment numbers if policy were adopted to employment numbers if the policy had not been adopted.

We find that the proposed policy would result in substantial benefits to low-wage workers and their families, raising wages for 41.5 million workers by 2024. Annual pay for these workers will increase by 17.3 percent, or \$3,470

by 2024. These pay increases will raise overall wages in for-profit businesses by only 0.6 percent in the United States. This amount is surprisingly small because many of the workers who are now paid below \$15 are already paid above the current minimum wage, and because the pay of low-wage workers makes up a small share of total payroll costs. Businesses will absorb the additional payroll costs partly through savings on employee turnover costs, higher worker productivity gains, and some automation. Most of the increase in costs will likely be passed on to consumers via increased prices. Since labor costs make up only about one-fourth of operating costs, consumer prices will increase only slightly—about 0.6 percent over the entire phase-in period. Prices will be most affected in the restaurant industry, where they will increase by 4.3 percent over the entire phase-in period. These higher prices by themselves would somewhat reduce consumer sales and reduce the demand for labor. But simultaneous positive effects on increased consumer spending from workers receiving wage increases will offset these negative effects. After taking into account all these factors, we estimate that the proposed minimum wage policy would increase overall U.S. employment (as a percent of total employment) by 0.1 percent by 2024, over the baseline. This estimate is cumulative (and so will be spread over the phase-in period). In comparison, U.S. employment is projected to grow 0.45 percent annually in the same time period. We also find a similar employment effect for Mississippi. In sum, we find that a \$15 minimum wage by 2024 would substantially improve living standards for nearly 30 percent of the U.S. workforce (and 44 percent of Mississippi’s) without generating a significant net adverse employment effect. The minimum wage increase will be paid for primarily by induced efficiencies (more automation, productivity gains, and turnover savings) and slight price increases borne by all consumers. Based on our analysis, we conclude that the proposed minimum wage will have its intended effects in improving incomes for low-wage workers. Any effects on employment and overall economic growth are likely to be small. The net impact of the policy will therefore be positive.

Notes

1. The racial earnings gap is measured here as the mean log annual earnings difference between white and black workers (i.e., conditional on working) using two data sources with information on earnings: decennial U.S. census data, from which we measure earnings from 1949 onwards; and an annual data source: the Annual Social and Economic Supplement of the Current Population Survey, from which we measure earnings from 1961 to 2015. Both data sources paint a consistent picture.
2. Under the assumption of spillovers up to 115 percent (120 percent) of the minimum wage, we calculate an employment elasticity of 0.06 (−0.21) in the treated industries as a whole, qualitatively similar to our CPS estimates and well in the range of those in the broader minimum wage literature.

3. Our results are also consistent with monopsonistic models of the labor market in which the minimum wage falls above the monopsonist’s but below the perfect competitor’s wage.
4. In this chapter, we use “grocery sector” for grocery and drug stores. Likewise, we sometimes use “grocery stores” throughout the chapter for grocery stores and drug stores.
5. Outside of the United States, Fougere (2010) analyzes the response of restaurant prices to an increase in the French minimum wage. Harasztosi and Lindner (2019) analyze the price response of a large minimum wage increase in Hungary in the manufacturing sector.
6. The official BLS indexes, although less detailed than microdata, also have a number of strengths to study the effect of minimum wage changes: they are weighted at all levels of aggregation, rely on case-by-case adjustments for item turnover, and the BLS has established procedures for dealing with missing price observations.
7. For instance, Eichenbaum, Jaimovich, and Rebelo (2011) find that pass-through is complete but somewhat delayed. Nakamura and Zerom (2010), using variation in the market price of commodity coffee, find that the pass-through into wholesale prices is about one-third, but that the increase of wholesale prices is completely passed through to consumers by retail stores.
8. Relatedly, Leduc and Wilson (2013) show that public infrastructure projects have both announcement and disbursement effects. Infrastructure spending shocks and minimum wage shocks operate on different margins (supply versus demand shocks), but the propagation of both kinds of shocks appear to draw on expectation channels.

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