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## Turnover, Prices, and Reallocation: Why Minimum Wages Raise the Incomes of Low-Wage Workers

*Abstract:* The research on the minimum wage contributes insights into claims raised in legal arguments that employers and workers have equal power and that an employer's management power must be unrestricted lest the firm or the economy suffer. Mandated minimum wages, the conventional argument goes, will force firms to pay a wage higher than the market rate, resulting in job losses and, potentially, bankruptcy. But evidence from minimum wage increases and expansions finds that the policy can improve labor market conditions without causing harmful side effects because of such "channels of adjustment" as reduced worker turnover, consumer price increases, and the reallocation of low-wage workers to higher-paying establishments. In general, employer mandates can increase the prevalence of good jobs. By altering the mix of firms and reallocating workers across them, the minimum wage creates or at least shifts the composition of jobs toward those that are more productive and pay higher wages.

*Keywords:* minimum wage, equal power, employee turnover, worker reallocation, monopsony, low-wage labor market

### I. Introduction

A common defense of the assumption that employers and workers have equal power in their relationship is that abandoning this framework necessarily restricts management's prerogatives, thereby causing adverse economic consequences, perhaps even challenging the free enterprise system itself (Mishel 2022; Tomassetti 2022; Cetty 2022). Such claims can be empirically examined, and the substantial research on government-mandated minimum wages, which restrict management's prerogative to set wages, provides an informative and well-grounded case study. As shown below, restricting management's rights to set minimum wages has not led to adverse consequences for low-wage workers or for the economy as a whole.

Minimum wages are perhaps one of the most well-studied topics in economics, both because the policy generates enormous political interest and because changes in the minimum wage provide a tool to understand how real-world labor markets actually work. Through the lens of minimum wage policy and research, it is evident that employer mandates can improve conditions without necessarily causing harmful side effects. I focus on three specific mechanisms through which the labor market adjusts to higher minimum wages: employee turnover, output prices, and worker reallocation across firms.

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## II. Influential Studies on the Employment Effects of Minimum Wages

Prior to the 1990s, many empirical studies concluded that minimum wages largely destroyed jobs. The reasoning went: Minimum wage increases raise the cost of labor, employers hire fewer low-wage workers, and ultimately the policy hurts those it intended to help. In 1987, the *New York Times* editorial board summarized the prevailing liberal economic opinion: “The Right Minimum Wage: \$0.00” (*New York Times* 1987).

In a series of pathbreaking studies beginning in the early 1990s, however, David Card and Alan Krueger overturned this conclusion. Most famously, Card and Krueger (1994) compared employment in fast-food restaurants in New Jersey and nearby eastern Pennsylvania before and after New Jersey raised its minimum wage in 1992. The transparent comparison of restaurants across state lines contrasted greatly with time series studies that did not use straightforward control groups, and it found no evidence that the minimum wage reduced employment. Although the 1994 paper generated a large amount of controversy, the collection of additional studies in the authors’ 1995 book *Myth and Measurement* demonstrated that the New Jersey–Pennsylvania comparison was not a fluke. Later research further validated Card and Krueger’s findings of little or no employment effects in the wake of minimum-wage increases. Notably, Dube, Lester, and Reich (2010) generalized the 1994 Card and Krueger approach by analyzing all minimum wage increases between 1990 and 2006 in about 300 pairs of counties along state borders. The authors concluded that the policies raised restaurant worker wages without any negative effect on employment, even up to four years after the minimum wage increase.

Although there continues to be a great deal of controversy and debate around particular studies, the central tendency of recent research is that minimum wage increases have little to no effect on the total employment of low-wage workers. The most useful measure to compare estimates across different studies is the own-wage employment elasticity (OWE), the percent change in employment for a given wage change induced by the minimum wage.<sup>1</sup> For example, if the minimum wage caused employment of low-wage workers to fall by 1% but caused their wages to rise by 10%, the OWE is  $-1 / 10 = -0.1$ .

Dube (2019a), commissioned by the UK government, reviewed 55 studies for which it is possible to construct an OWE estimate and found that the median OWE is -0.17. Many economists would describe the size of this effect as small, primarily because the income gains due to policy dwarf any income losses due to employment reductions. An OWE of -0.17 implies that a 10% increase in the hourly wage reduces employment by 1.7% and raises the total wage bill by about 8.3%.<sup>2</sup> So, even after accounting for employment losses, an increase in the minimum wage raises the total wage income of low-wage workers because the OWE is smaller than -1.0 in absolute magnitude. Dube (2019a) writes

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<sup>1</sup> While much of the early research on the minimum wage attempted to measure the employment change response to a given percent change in the minimum wage, the percent change in the statutory level of the minimum is generally *not* the same as the average increase in the wage received by workers affected by the minimum wage. In practice, a 10% increase in the minimum wage increases the average wage of affected workers by less than 10% because, while all of the workers at the old minimum wage see their wages rise by 10%, those workers above the old minimum but below the new one also receive an increase but it is smaller than 10%.

<sup>2</sup> Assuming there is no change in total hours worked, the total percent change in the wage bill is approximately equal to the sum of the percent change in hourly wages and the percent change in total employment (for small changes in hourly wages and employment). For an own-wage elasticity of -0.17, a 10% increase in hourly wages would raise the total wage bill by about  $10.0 - 1.7 = 8.3\%$ .

that “we can roughly think of an [own-wage elasticity] less negative than  $-0.4$  as small in magnitude, between  $-0.4$  and  $-0.8$  as medium, and more negative than  $-0.8$  as large.”

Until very recently, most studies of the minimum wage focused on very specific subgroups of workers, like restaurant employees or teenagers, even though they are a minority of total low-wage workers. When Dube (2019a) focuses on those studies that analyze effects for the broader group of all low-wage workers, the median OWE is  $-0.04$ , or nearly zero.

One possibility for the lack of observed employment effects is that the typical minimum wage increase examined in the research literature has not been large enough to cause major disruptions. As Schmitt (2015, 576) describes, “Given the modest costs associated with historical increases in the minimum wage, it seems entirely plausible that small adjustments across a few of these margins could more than compensate for the higher wage floor.” But can firms adjust as easily to larger minimum wage increases?

Recent research suggests that, in the US at least, there is considerable scope for very large increases in the minimum wage, as some of the largest historical minimum wage increases have not led to large employment losses. The share of the workforce affected by the policy is one measure of the “bite” of the minimum wage and a proxy for the projected change in labor costs in the absence of employment changes or other adjustments. According to this statistic, the late-1960s minimum wage increases in the US were likely some of the country’s largest ever. In 1968, legislation simultaneously expanded the coverage of the minimum wage to include agriculture, nursing homes, restaurants, and other service occupations—which had previously been excluded from the minimum wage and where Black workers were often employed—and also increased the minimum wage to a level equivalent to more than \$10 per hour in today’s dollars. Derenoncourt and Montialoux (2021) have estimated that, just before the 1968 increase, about 16% of all workers and 29% of Black workers earned at or below the 1967 minimum wage. The authors found that the policy raised incomes with essentially no change in employment, with the 1960s minimum wage increases, on their own, responsible for more than 20% of the reduction in the Black–white earnings gap during the civil rights era. For Black workers, Derenoncourt and Montialoux’s preferred statistical analysis rules out, at standard levels of statistical significance, own-wage employment elasticities more negative than  $-0.24$ .

In a separate analysis of the 1960s minimum wage expansions in the US, Bailey, DiNardo, and Stuart (2021) find similarly large wage impacts, little effect on overall employment, and small employment losses concentrated on Black men. The authors estimate an employment elasticity with respect to wages of about  $-0.29$  for Black men, consistent with some disemployment but overall income gains. So, while the two papers on the largest-ever national minimum wage increase in the US disagree on the size of the employment effect, findings from both papers imply the policy raised the total wages of the overall workforce, including Black workers, because the estimated OWEs are smaller than 1 in absolute magnitude.

Cengiz et al. (2019) also found that the highest state-level minimum wage increases over the 1979–2016 period significantly raised wages without reducing the employment of low-wage workers. Using data from low-wage counties, where minimum wage increases have raised labor costs much more than in high-wage labor markets, Godoey and Reich (2021) concluded that the policies significantly reduced poverty and had essentially no employment impact. Dube and Lindner (2021) find that 21 city-level minimum wage increases raised wages in those cities with little effect on the number of low-wage jobs; many of these cities raised their minimum wage to levels considerably higher than the typical US state.

Of course, the studies explicitly cited above are only a small selection of minimum wage research. There is indeed considerable heterogeneity in the OWE estimates reviewed by Dube (2019a), with some estimates implying that the negative employment effects of the minimum wage are large enough to outweigh any wage gains. At the same time, almost 70% of the studies reviewed by Dube (2019a) imply employment losses that are small in magnitude. And while we may worry that while a large portion of the research examines only the US experience with the minimum wage, the international evidence reviewed by Dube (2019a) has essentially the same central tendency: Annual wage incomes rise after a minimum wage increase because of small to no employment effects.

### III. Firms Set Wages

Why are job losses relatively rare after minimum wage increases? To understand the likely mechanisms, it helps to begin with a “perfectly competitive” model of the labor market that predicts employment losses. Here, the market for low-wage labor is fully characterized by supply and demand: higher wages decrease labor demand and increase labor supply. The market wage for low-wage workers is determined by the wage that sets demand equal to supply, so that all workers who want a job at that wage have one and all firms hiring workers at that wage find them.

In such a world, the imposition of a minimum wage above the market wage clearly causes unemployment. Low-wage labor becomes more expensive and the demand for low-wage labor falls for two reasons. First, firms change their production practices so that they substitute away from low-wage labor and toward other, now relatively cheaper, production inputs such as machinery or higher-wage labor. Second, firms raise prices to cover the now-increased labor costs, so consumers buy fewer higher-priced goods and services and employers consequently cut back production, hiring fewer workers. The reduction in labor demand and the increase in labor supply due to higher wages causes greater unemployment among low-wage workers. This is the model that analysts like those at the Congressional Budget Office (CBO 2014) have in mind when they describe a “conventional” market, even though, as I explained above, the employment losses predicted by this model are largely inconsistent with the median estimate of employment effects in the literature reviewed by Dube (2019a).

One peculiar feature of this simple labor market is that firms take market wages as given. Different types of firms may end up hiring different kinds of workers, but individual firms do not determine the level of pay of any worker. In the perfectly competitive labor market, firms have no ability to set wages because “if an employer cuts the wage it pays its workers by one cent,” as Manning (2003, 3) compellingly describes, “all existing workers immediately leave the firm. . . . an employer faces a market wage for each type of labor determined by forces beyond its control at which any number of these workers can be hired but any attempt to pay a lower wage will result in the complete inability to hire any of them at all.”

A more realistic view of the labor market is that employers operate in an imperfectly competitive labor market where they actually have some latitude to set wages. For example, one of the more popular “imperfectly competitive” models of the labor market is the monopsonistic model extensively developed by Manning (2003).<sup>3</sup> Because it is difficult for workers to find alternative jobs due to

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<sup>3</sup> Robinson (1933) developed the first monopsonistic model of the labor market and concentrated her analysis on a static model of monopsony.

commuting costs, child care arrangements, suitable work schedules, and a plethora of other “frictions” (Edwards 2022), individual employers can set wages at a level lower than they would otherwise be able to in the absence of having some market power (Naidu and Carr 2022). The defining feature of monopsony is that, unlike the perfectly competitive model, lower wages at a firm do not cause all workers to quit immediately, but only raise by a finite amount the probability that someone quits. These lower wages make it difficult to hire workers from other firms or the unemployed, leading to higher turnover and vacancy rates. Higher offered wages to new recruits would raise labor supply, but they are costly because the new higher wages would have to be paid to incumbent workers as well.

As a result, when employers have wage-setting power, minimum wages do not necessarily decrease employment. In the absence of the minimum wage, an employer with market power will set wages low enough so that there are vacancies at the going wage rate. When an employer is compelled to raise wages by a minimum wage increase, the policy increases the supply of labor to that firm. Higher wages raise labor costs, but these costs are partially offset by reduced turnover costs, because it is now easier to retain and recruit workers at a higher wage. A minimum wage unambiguously raises workers’ hourly wages, but its effects on employment are less predetermined: minimum wages can decrease, raise, or have no effect on employment. So, while increases in the minimum wage may reduce job *vacancies*, whether they reduce the *number of people employed* is an empirical question.

Although I illustrated the mechanisms of labor flows in the context of monopsony and the minimum wage, the logic of offsets in imperfectly competitive labor markets applies more generally. When firms have wage-setting power and choose wages to maximize profits, there is not necessarily a trade-off between improving working conditions and employment, since small changes in labor costs have no first-order effect on profits. Sufficiently large increases in labor costs will reduce profits, but perhaps by not as much as they would in the perfectly competitive case, as some of the profit loss is offset by other adjustments, such as reduced turnover in the case of the monopsonistic model.

#### IV. Three Key Channels of Adjustment: Turnover, Prices, Reallocation

Hirsch, Kaufman, and Zelenska (2015) and Schmitt (2015) explore several “channels of adjustment” that firms use to respond to higher minimum wages. Below I concentrate on three channels that provide us the most insight into understanding the consequences of employer mandates such as the minimum wage: reduced worker turnover, consumer price increases, and the reallocation of low-wage workers to higher-paying establishments. In addition to illustrating how the labor market adjusts to higher minimum wages, these three channels clarify how to think about the broader consequences to workers’ welfare when employer mandates potentially change the composition of compensation and employment. Each channel also helps to explain worker support for or employer opposition to minimum wage increases.

##### A. Turnover

The first channel of adjustment is firms’ level of employee turnover. Cooper, Mishel, and Zipperer (2018) document the enormous degree of turnover in the low-wage labor market. Individuals who tend to earn low wages, as predicted by demographic characteristics, are much more likely than higher-wage workers to move between employment or nonemployment, or to switch jobs. As many as 10% of those in the lowest predicted wage quantile become newly employed or nonemployed every month. More than one in five low-wage workers experience these kinds of transitions every three months.

High turnover rates are consistent with low-wage employers exercising their labor market power. In the monopsonistic model sketched above, employers set wages at low levels, leading to high rates of workers leaving their firms. The empirical evidence on minimum wages is also consistent with this framework. In particular, Dube, Lester, and Reich (2016) convincingly demonstrate that employers hire fewer workers after a minimum wage increase, but fewer workers also leave their jobs. As a consequence, there is no overall net effect on employment.

The reduction in turnover costs is a key reason why minimum wage increases do not raise total labor costs and reduce employment as much as one might expect based on the perfectly competitive model of the labor market. In addition, the high turnover rates in the low-wage labor market also have important consequences for understanding workers' income changes when mandates do reduce employment levels.

In a high-turnover labor market, most nonemployment takes the form of spending time between jobs, rather than being permanently shut out of the labor market. As a consequence, even if the minimum wage reduces the number of people employed at any one point, the annual incomes of all low-wage workers may still rise because they earn more when they work (even with fewer annual hours). As Freeman (1996), Green (2015), and Cooper, Mishel, and Zipperer (2018) observe, the costs of disemployment in the low-wage labor market are broadly shared, and there is less of a trade-off between employed workers benefiting from the policy and unemployed workers experiencing income losses.

That the benefits of minimum wage increases are shared across all workers is consistent with survey opinion data. Cooper, Mokhiber, and Zipperer (2021) use 2019 American National Elections Studies survey data to show that minimum wage increases are both overwhelmingly popular and that the groups of individuals most likely to suffer reduced job opportunities are precisely those most supportive of raising the minimum wage. For example, 74% of unemployed adults favor raising the minimum wage, compared to 62% of the employed. The share of Black adults, a group that is overrepresented in the low-wage workforce, who want to raise the minimum wage exceeds the share of white adults, a group underrepresented among low-wage workers, by 24 percentage points.

High underlying turnover rates also suggest the need for separate policy solutions targeted directly at minimizing the costs of joblessness for low-wage workers, rather than weakening employer mandates that otherwise act to raise worker incomes. For example, those primarily concerned with the negative employment effects of minimum wages and other mandates should consider expansions in the unemployment benefit system coverage and benefit levels to provide support during longer spells of nonemployment.

## *B. Prices*

A second channel of adjustment firms use to respond to higher minimum wages and other mandates is to raise prices to cover the increase in labor costs. This is a clear prediction of the perfectly competitive model of the labor market and is consistently observed in empirical studies of the price effects of minimum wage increases. Allegretto and Reich (2018) found that San Jose's restaurant menu prices rose in response to the city's minimum wage increase, creating a sharp differential in restaurant prices just within and outside of the city's geographic borders. In a study of a very large minimum

wage increase in Hungary, Harasztosi and Lindner (2019) found that price increases absorbed 80% of the resulting wage increase.

In the perfectly competitive model, a minimum wage increase first raises prices, then lowers consumer demand, which finally reduces employment needed for production. The evidence against strong employment effects and in favor of price increases suggests that consumer demand does not fall by very much. One reason why is that consumer demand may be relatively inelastic or unresponsive to price increases when many low-wage firms are raising prices. If a single restaurant raises prices, it may be easy for consumers to substitute away toward other, cheaper restaurants. But this kind of substitution is limited when all restaurants in an area are raising prices. In this way the minimum wage solves a coordination problem: some firms would like to raise prices or even raise wages, but they cannot because the resulting price increases would drive consumers toward firms that did not raise prices. A minimum wage increase both allows and compels low-wage employers as a class to raise prices.

This outcome suggests that firms that have limited ability to raise prices may find it more difficult to accommodate higher wage mandates. Harasztosi and Linder (2019) and Cengiz et al. (2019) present some evidence that own-wage elasticities of employment are more negative in the tradable sector such as manufacturing, where prices may be determined internationally. These isolated negative effects tend to play a minor role in the aggregate effect of the minimum wage, because most low-wage workers work in nontradable sectors.

Because prices do rise somewhat after a minimum wage increase, all consumers face higher costs in restaurants, retail, and other sectors employing low-wage labor. For low-income workers and their families, research shows that income gains due to higher wages swamp the small increases in prices. For example, Dube (2019b) estimates that family incomes in the bottom 10% increase by a factor more than 10 times the size of the likely price increase (see also Rinz and Voorheis 2018). In contrast, middle-to-higher-income families pay for much of the minimum wage increase through higher prices. The minimum wage increase can therefore be thought of as a tax on consumption, largely redistributing from middle-to-higher-income consumers to low-wage workers.

Interestingly, the simple monopsonistic model described above predicts consumer prices may fall in response to a minimum wage increase, as employment and production expand, lowering output prices. Because this is inconsistent with observed price increases, Aaronson and French (2007) argue that the effects of the minimum wage are better understood using a perfectly competitive model of the labor market. I return to this point below.

### *C. Reallocation*

Productivity of firms varies greatly even among the subset of firms that hire low-wage labor. After a minimum wage increase, some low-productivity firms may see profits decline enough that they are forced to shut down. As a result, employment levels after a minimum wage increase are determined by two opposing forces: Employment falls when some low-productivity firms go out of business, but employment rises at incumbent firms that do not shut down, as higher wages increase recruitment and retention. Minimum wage increases that shift workers toward more efficient firms can raise aggregate labor productivity (see for example the job-ladder-based search model of Bontemps et al. 1999).

Indeed, there is a growing body of empirical work showing that minimum wages do affect the composition of firms. Aaronson et al. (2018) finds that, after minimum wage increases, more restaurants go out of business, but more restaurants enter into business as well. Some restaurants cannot easily change production models and operate profitably after being forced to raise wages, but, by exiting the labor market, they allow new restaurants to enter that can operate profitably in the higher-wage environment.

Dustmann et al. (2022) provide the clearest evidence of reallocation after the introduction of Germany's national minimum wage in 2015, which raised the wages of 15% of the workforce. Overall, they find that the policy led to no change in the number of low-wage workers. But the absence of employment effects masks significant churn among both firms and workers. The new minimum wage caused low-wage workers to move to establishments that paid higher wages, were larger, had more full-time jobs, and were more productive in terms of revenues per employee. Meanwhile, very small businesses were more likely to shut down, and, in areas more exposed to the minimum wage increase, there was an increase in the average number of workers employed by establishments. Some smaller but low-productivity businesses failed, but low-wage workers "upgraded" to higher-quality jobs.

Additional evidence from the US confirms that some low-productivity businesses do fail after a rise in the minimum wage. Luca and Luca (2018) found that increased minimum wages led to more exit of 3.5-star Yelp-rated restaurants than of 5-star restaurants (among which there was no effect).

The minimum wage-induced increase in business exit among low-productivity employers helps to rationalize some of the longstanding employer opposition to minimum wage increases. Some employers may oppose employer mandates such as wage floors on ideological grounds; as a class, employers may politically reject government intervention even if they can operate profitably after raising wages (Kalecki 1943). Other employers may indeed need to shut down, as their entire business model irrevocably revolves around paying exceptionally low wages. But the results in Dustmann et al. (2022)—as well as the small employment effects found in the general research literature—suggest that these business closures do not on average reduce the incomes or even the employment levels of the workers they previously employed. Instead, minimum wages upgrade workers to better-paying jobs at their current or a new establishment so that there is little change in the total employment of low-wage workers, even though there may be some increase in business closures.

More generally, employer mandates in the real world can actually increase the prevalence of good jobs, in contrast to the dour predictions of the perfectly competitive model of the labor market. By altering the mix of firms and reallocating workers across firms, the minimum wage creates or at least shifts the composition of jobs toward those that are more productive and pay higher wages. When minimum wage floors are lower and less binding, it is easier for low-road employers to operate profitably, reducing overall productivity.

Reallocation effects also help to address the puzzle, mentioned in the preceding section, regarding the presence of price increases in response to minimum wages in the context of monopsonistic labor markets. While the modest overall employment effects of the minimum wage are less consistent with a perfectly competitive model of the labor market and more consistent with a monopsonistic model, the opposite appears true of price effects. In the case of the simple monopsonistic model, a minimum wage can raise employment and production, decreasing output prices. In fact, the observed price rises after a minimum wage increase have been taken as indirect evidence against the monopsonistic model of the labor market (Aaronson and French 2007). However, reallocation in the labor market allows

prices to rise in a model with wage-setting firms that also have some power to set output prices. When wage-setting firms also have some pricing power, a minimum wage increase causes the output price markup to rise when other firms exit or shrink, increasing prices.

## V. Conclusion

Of course, worker turnover, prices, and reallocation do not fully characterize the labor market or all of its responses to minimum wages or employer mandates in general. One channel of adjustment not as well explored in the existing research literature is the possibility that workers increase their productivity after mandated improvements in working conditions because they value their job more. New research from Coviello, Deserranno, and Persico (2021) finds that higher minimum wages raised the productivity of workers at a large US retailer, particularly those that were least productive before the minimum wage increase.

The studies discussed above also fail to include the growing body of empirical research estimating downstream effects of the minimum wage that are easier to rationalize under imperfectly competitive models of the labor market. To take one important example, Ruffini (2021) finds that minimum wage increases at nursing homes raised pay and employee retention, and subsequently reduced the number of health inspection violations and nursing home mortality.

The empirical research on how labor markets have adjusted to higher minimum wages should lead us to think of imperfectly competitive models, where employers set wages, as a reasonable starting point for policy evaluation. That minimum wage increases have not historically generated large employment losses should, at a minimum, cause us to be skeptical of predictions of perfectly competitive models of the labor market.

More generally, accepting that firms set wages will help provide a better understanding of the consequences of other labor market institutions like unions and antitrust (Card 2022). For example, employer mandates like paid sick and family leave can improve job quality without large employment losses often predicted by simple perfectly competitive models. The essays in Reich, Jacobs, and Dietz (2014) demonstrate how San Francisco employers accommodated health spending mandates and paid sick leave requirements.

To be sure, employer mandates can still have negative side effects in models of the labor market where firms set wages: in the monopsonistic model of the labor market, a minimum wage will reduce employment levels when set sufficiently high. But once we acknowledge that employers have labor market power, then some countervailing institutions are necessary to prevent firms from setting wages inefficiently low, whether those institutions are minimum wages or other types of employer mandates, unions, or active macroeconomic policies to ensure tight labor markets.

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