Minimum Wage Impact on Low-Wage Employment: Does Concentration Matter?

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Abstract

Conventional wisdom holds that an increase in the minimum wage reduces employment as it becomes more expensive for companies to hire workers. This paper examines how an increase in the minimum wage could impact employment, accounting for employer labor concentration in the two largest U.S. low-wage markets: Food Service and Drinking Places and General Merchandise Stores. Using establishment-level data and county Herfindahl-Hirschman indexes for jobs in these two sectors, we find that increases in the minimum wage decreases employment in less concentrated (more competitive) labor markets, whether employers belong to the Food Service and Drinking Places or General Merchandising industries. Moreover, in highly concentrated labor markets, usually located in rural areas, raising the minimum wage leads to higher employment. In essence, the impact of a higher minimum wage on jobs is not uniform and depends on employer oligopsony power as reflected by the Herfindahl-Hirshman index for labor in the same industry. Therefore, to avoid unintended negative consequences, when labor markets are competitive federal and state policymakers should factor in local labor market structure when considering minimum wage policies or consider second-best aspects of raising the minimum wage in concentrated or oligopsonistic labor markets, which may be more prevalent in rural or isolated areas.

Keywords: Minimum wage; Employment; Labor policy; Concentration; Oligopsony

1 Introduction

Conventional wisdom holds that an increase in the minimum wage reduces employment as it becomes more expensive for companies to hire workers. This premise, based on competitive labor markets, has been challenged since the seminal work of Card and Krueger (1994), who found no evidence of reduction in employment after an increase in the minimum wage in fast food restaurants in New Jersey. Since then, many studies have corroborated a lack of impact or nonnegative impact of an increase in the minimum wage on employment in different contexts (Cengiz et al., 2019). In fact, reviews of studies point in three directions: the minimum wage can reduce, increase, or have a negligible impact on employment (Addison et al., 2009; Belman and Wolfson, 2014; Wolfson and Belman, 2019).

However, the mechanisms that explain such different outcomes have not been thoroughly explored in literature. A few studies examine whether minimum wages are non-binding, that is, whether labor market clearing wages exceed the minimum wage. In such cases imposing them may be inimical in certain industries or areas (Addison et al., 2012; Caliendo et al., 2025). In other cases, the ultimate impact depends on whether firms can pass the increased cost of labor on to output prices (Allegretto and Reich, 2018; Kunaschk, 2024). However, a growing consensus in recent literature suggests that many firms and industries operate with monopsonistic power in labor markets (Bonanno and Lopez, 2012; Wiltshire, 2023; Yeh et al., 2022). Although the effects of monopsony power on wages have been well documented in the literature, there is a scarcity of studies explicitly accounting for monopsony power to measure the effects of minimum wage increases on employment.

This paper makes three contributions to the literature. First, it contributes to the small but growing literature on measuring the impact of minimum wages on employment that accounts for labor market concentration as a proxy for monopsony power, in the spirit of (Azar et al., 2020; Corella, 2020). Second, unlike (Azar et al., 2023) and others, who typically use job postings or number of firms in a market or industry, we use establishment employment to compute labor market concentration. More specifically, we compute the Herfindahl-Hirshmann index (HHI) for employment to assess the impact of concentration on firm-level employment. Third, we provide new evidence for the two largest U.S. sectors [1] with a high share of low-wage workers: the Food Service and Drinking

[1] As of January 2023, the General Merchandise Stores sector had approximately 3.057 million employees, while the Food Service and Drinking Places sector employed about 12.173 million people, as reported at

Places sector (NAICS [2] code 722) and the General Merchandise Stores sector (NAICS code 452). Thus, our definitions are broader than fast food industry (included in NAICS 722) as we consider that labor market boundaries are broader than specific sector definitions if workers can apply their skills and move within those specific sectors.[3]

Accounting for monopsony power or concentration is crucial for understanding the impacts of minimum wage increases. **Figure 1** illustrates alternative outcomes of minimum wage effects on employment in competitive and monopsonistic labor markets. In a competitive market without a minimum wage floor, the market clears at wage W_C and employment level E_C. Any minimum wage floor above W_C will reduce employment, and any minimum wage below it will be nonbinding. Under monopsony power, the market clears at wage W_M and employment level E_M. Any minimum wage between W_M and W_1 will increase employment, any minimum wage above W_1 will reduce employment, and if set at W_1 the minimum wage will not have an impact on the level of employment.[4] Our analysis employs labor market concentration as a proxy for the extent of monopsony power. As (Azar et al., 2019) show, there is a negative correlation between labor market concentration and labor supply elasticity, implying a positive relation between labor market concentration and monopsony power.

In this paper, we utilize establishment-level employment data from the National Establishment Time Series (NETS) to construct a labor Herfindahl-Hirschman Index (H) at the county level from 2005 to 2020. We exploit the variation in minimum wage increases at state and county levels, as well as across sectors and years. This allows us to assess the impact of labor market concentration on the effects of minimum wage increases in different local contexts. To the best of our knowledge, we are the first to use employment data at the individual establishment level to investigate the employment effects of minimum wage increases, considering the varying levels of concentration in U.S. labor markets.

We follow a traditional approach that controls heterogeneous time trends at the county level. Our

https://www.bls.gov/iag/tgs/iag452.htm.

[2]The North American Sector Classification System (NAICS) is the standard used by federal statistical agencies in classifying business establishments for the purpose of collecting, analyzing, and publishing statistical data related to the U.S. business economy.

[3]Note that our focus is not on impacts of concentration on wages, which has been well established (Azar et al., 2022; Rinz, 2020). Rather, we focus on impacts on employment.

[4]The magnitude of the impact on employment will also depend on the labor supply elasticity and whether firms are able to pass an increased cost of labor on to output or retail prices, which would shift the marginal revenue product curve.

model includes current minimum wages across the country, and we focus on the interaction between the minimum wage and labor market concentration. This interaction allows us to capture how the effects of minimum wage increases might differ across counties with varying levels of concentration. Second, no-poach agreements, common in franchise contracts, increase employer concentration by limiting employee mobility between franchisees (Krueger and Ashenfelter, 2022). We adjust the HHI by treating all establishments within the same franchise chain as a single firm, a conservative adjustment that impacts both current and prospective employees (Callaci et al., 2023). Third, we use a canonical two-way fixed effect, addressing concerns raised by (Neumark et al., 2014a,b), who criticized local area controls for inadequately handling pre-existing trends.

Empirical results indicate that increases in the minimum wage decrease employment in less concentrated (more competitive) labor markets, whether employers belong to the Food Service and Drinking Places or General Merchandising industries. Moreover, in highly concentrated labor markets, usually located in rural areas, raising the minimum wage leads to higher employment. In essence, the impact of a higher minimum wage on jobs is not uniform and depends on employer oligopsony power as reflected by the Herfindahl-Hirshman index for labor in the same industry. This underscores the necessity for federal or state policymakers to factor in local labor market structures when considering minimum wage policies to avoid unintended negative consequences when labor markets are competitive, or to consider second-best aspects of raising the minimum wage in oligopsonistic markets, which may be more prevalent in rural or isolated areas.

Further results by industry show that the impact of a minimum wage increase on wage earnings is more pronounced in the Food Service and Drinking Places sector compared to the General Merchandise Stores sector, where it decreases employment for low concentration levels and increases it for high concentration labor markets. Robustness checks confirm that the main results remain unaffected.

The rest of this paper is organized as follows. Section 2 presents the data and discusses the empirical approach used to identify the effects of the minimum wage increases. Section 3 presents the main results and several robustness checks. Section 4 concludes.

2 Data and Empirical Model

The main data source for employment and wages is the Quarterly Census of Employment and Wages (QCEW) from the Bureau of Labor Statistics (BLS).[5] This data source offers valuable insights into yearly county-level payroll information[6] for various sectors, categorized according to the North American Industrial Coding System (NAICS). The dataset encompasses employment and earnings data from all business establishments within the Unemployment Insurance (UI) system, covering more than 95 percent of jobs in the United States since 1990. Since QCEW omits reporting sector-specific observations on employment and earnings in cases where the number of establishments in a county falls below a certain threshold in a given year, we utilize both balanced (that is, excluding counties with missing values for any year due to censorship) and unbalanced samples in the analysis to ensure reliability.

The data to compute labor market concentration comes from National Establishment Time Series (NETS) [7], a proprietary dataset provided by Walls & Associates and Dun and Bradstreet. NETS is a panel dataset that tracks specific business lines at unique locations from 1990 to 2021 for all establishments that have a Data Universal Number System (DUNS) identifier assigned by Dun and Bradstreet,[8] which is used to monitor each business employment and sales over time and location. We use a one-year lag, reporting 2021 data as if it were from 2020 to align NETS data with the QCWE database since NETS reports in January of each year. We calculate the Herfindahl-Hirschman Index (HHI) based on NETS employment data at the firm (not establishment) level for each county and year.

For comparison, we also compute concentration as a fraction of total employment held by the largest firm (CR1), the four largest firms (CR4), and the 20 largest firms (CR20). We focus on firms categorized under 3-digit NAICS codes for the two sectors in question, based on the reasonable assumption that employees typically search for jobs within their sector and county due to specialized skills and job search costs. In addition, we will estimate concentration measures by accounting for

[5] https://www.bls.gov/cew/downloadable-data-files.htm

[6] Average weekly earnings include most wage-like compensation, including tips, bonuses, stock options, and employer contributions to retirement plans.

[7] Walls & Associates. 2021. "National Establishment Time-Series (NETS) Database: 2021 Database Description." Internal document provided to the authors.

[8] While there is no legal obligation for establishments to participate or report truthfully, D&B has strong profit-based incentives to compile accurate data, and individual businesses' access to credit and other business relationships may depend on the quality of the information they provide (Barnatchez et al., 2017).

no-poach agreements, which are embedded in many franchise contracts and restrict employees within a chain from obtaining jobs from other franchisees within the same chain. In the fast food sector, for instance, 58 percent of major franchises in the United States employed no-poach agreements among their franchisees in 2016, a significant increase from 36 percent in 1996 (Krueger and Ashenfelter, 2022). We identify franchises with no-poach agreements using data from (Callaci et al., 2023) and (Krueger and Ashenfelter, 2022). We treated all establishments within the same chain as a single firm in the HHI and concentration measure estimates.

The prevailing minimum wage for each county is determined by the higher value between the county's minimum wage (if it exists) and the federal minimum wage. We obtained information on state and county minimum wages from (Vaghul and Ben, 2022), and use the Consumer Price Index for All Urban Consumers (CPI-U) by census region (Northeast, Midwest, South, and West) to adjust earnings and minimum wage figures, reporting them in 2020 dollars (U.S. Bureau of Labor Statistics, 2023).

Figure 2 shows how many states had minimum wages above the federal minimum wage and the average minimum wage gap (percentage) between the federal- and state-level for each quarter. After 2005, most states had minimum wages above the federal one, and their average wage gap increased from 10 to 30 percent between 2005 and 2020. Our data set is supplemented with demand and supply covariates, including employment and average weekly earnings for the total private sector from QCWE; population and per capita income from the U.S. Census Bureau and the Bureau of Economic Analysis;[9] unemployment rates from the Local Area Unemployment Survey;[10] and the state-level housing price index from the Federal Housing Finance Agency.[11] **Table 1** summarizes the variables used and their data sources, while **Table 2** presents descriptive statistics.

To specify our main econometric model, we follow a traditional approach that controls heterogeneous time trends, as advocated by (Allegretto et al., 2017) and conventionally adopted by previous wage studies:

$$y_{icst} = \alpha + \beta_1\, mw_{icst} + \psi_1\, HHI_{icst} + \beta_2\, mw_{icst} \times HHI_{icst} + \rho X_{icst} + \phi_c + \tau_t + \xi_{ct} + \epsilon_{it}, \quad (1)$$

[9] https://www.bea.gov/data/income-saving/personal-income-county-metro-and-other-areas
[10] https://www.bls.gov/lau/
[11] https://www.fhfa.gov/DataTools/Downloads/Pages/House-Price-Index.aspx

where y_{icst} is the log of employment for sector i in county c of state s in census division d ($c \subseteq s \subseteq d$) in year t; mw_{icst} is log of the minimum wage, HHI_{icst} is the labor Herfindahl index, and X_{icst} is a vector of covariates: log of the total population, log of total employment in the private sector (across all sectors), log of total average weekly earnings (across all sectors), log of the county unemployment rate, log per capita income, and the State House Price index. In this specification β_1 measures the effect of the minimum wage under perfect competition ($HHI = 0$), and β_2 is the estimation of the difference between the effect of the minimum wage in monopsonistic labor markets ($HHI = 1$) and the effect on a competitive market ($HHI = 0$). The regression includes county fixed effects ϕ_i, year fixed effects τ_t, and county-specific linear time trends ξ_{ct}.

In an alternative specification we separate labor markets following the Department of Justice/Federal Trade Commission 2010 horizontal merger guidelines,[12] under which local labor markets with $HHI \geq 0.25$ are considered highly concentrated:

$$y_{icst} = \alpha + \beta_1 mw_{icst} + \psi_1 (HHI_{icst} \geq 0.25) + \beta_2 mw_{icst} \times (HHI_{icst} \geq 0.25) + \rho X_{icst} + \phi_c + \tau_t + \xi_{ct} + \epsilon_{it}. \tag{2}$$

In another specification we separate labor market concentration into HHI terciles to check for monotonicity and whether the effect of HHI on employment is linear or exhibits a different pattern. The results, along with evidence on labor market concentration, are presented below.

3 Results and Discussion

3.1 Labor Concentration Results

The estimated labor concentration measures are found in **Table 2** and **Figure 3**. Overall, our results reveal prominent disparities between the General Merchandise Stores and Food Service and Drinking Places sectors. The former showcases notable labor market concentration, with dominant firms wielding considerable influence, while the latter portrays a landscape of highly fragmented markets, with a discernible trend towards decreasing concentration. These distinctive market structures align with the oligopsony model in the case of General Merchandise Stores and with the ideal competitive model in the food service sector, providing an excellent backdrop for rigorously examining the

[12] https://www.justice.gov/atr/horizontal-merger-guidelines-08192010

impact of a minimum wage increase on employment.

The General Merchandise Stores sector presents a clear picture of labor market concentration, as shown in **Table 2 Panel A**. This sector showcases a remarkable concentration of employers, with around 78 percent of counties registering an HHI surpassing the 0.25 threshold, thus categorizing them as "highly concentrated" labor markets over the period 2005–2020. The largest firm (CR1) consistently holds a commanding 61 percent share of the market, while the top four firms together command an impressive 90 percent. Moreover, as shown in **Figure 3**, labor market concentration in this sector has been increasing significantly over time. Particularly noteworthy is the ascent of the largest firms in the labor markets. Walmart emerged as the dominant employer, with over 40 percent of the sector's employment. Target was found to be the second largest employer, holding roughly 11 percent of employment in this sector, while the remaining top 10 firms collectively share about 5 percent of the market with a myriad of even smaller employers. [13] Walmart dominance is particularly stark in rural areas. [14]

In sharp contrast, the Food Service and Drinking Places sector tells a different story, one of local labor markets that lean more towards perfect competition, as shown in **Panel A** of **Table 2**. Notably, a mere 5 percent of counties exhibit an HHI exceeding 0.25, with the largest firm's concentration ratio averaging a 14 percent share of the labor market from 2005 to 2020. Moreover, the combined market share of the top four firms amounts to 33 percent, depicting labor markets that are highly fragmented and atomistic. In addition, rather than increasing overtime like the General Merchandise Stores sector, this sector exhibits a declining trend in concentration. The sole exception is 2020, which saw an uptick following establishment closure due to stay-at-home ordinances and fear of infection during the Covid-19 pandemic (**Figure 3**).

Panel A of **Table 2** shows the concentration measures in the Food Service and Drinking Places sector after adjusting for no-poach agreements. The results show an average 0.01 increase in the HHI (0.07 vs 0.08), which is much lower than the 0.06 reported by (Callaci et al., 2022). [15] For the largest firms, the gains are more significant: a two percentage point gain in the share of labor used by the largest firms.

[13] Computed from NETS 2021.

[14] The dominance of Walmart in rural areas is consistent with the "superstar firms" model of Autor et al. (2020), and the work of Basker (2007), Bessen (2017) and Bonanno and Lopez (2012).

[15] Most no-poach agreements, especially in the fast-food sector, were voluntarily terminated by the end of 2020 due to antitrust scrutiny.

3.2 Econometric Results

Table 3 shows that, on average, an increase in the minimum wage results in an increase in workers' earnings in both sectors. For a 10 percent increase in the minimum wage, labor earnings in the General Merchandise Stores sector increase by 0.5 percent, and by 1.8 percent, on average, in the Food Service and Drinking Places sector. This greater impact in the latter sector is due to a larger proportion of workers earning close to the minimum wage. When accounting for concentration and its interaction, we observe that an increase in concentration, moving from a competitive market to a monopsony ($HHI = 1$), results in a 13 percentage point decrease in average wages in the General Merchandise Stores sector and a 33 percentage point decrease in the Food Service and Drinking Places sector. These results are consistent with the expected effect of market power, while the interaction between the minimum wage and concentration does not appear to be significant. Since our measure of average wage accounts for hours worked multiplied by the average wage per hour, we interpret the lack of a significant interaction as suggesting that hours worked do not change significantly when moving from monopsony markets to more competitive markets.

As **Table 4** shows, an increase in the minimum wage in competitive markets ($HHI = 0$) results in a decline in employment in both sectors. When we examine the impact of the minimum wage accounting for concentration we observe a significant variation in the impact of the minimum wage on employment. While increases in the minimum wage results in higher employment when HHI is high in the General Merchandise Stores sector, concentration does not play a significant role in shaping the impact of an increase of the minimum wage in the more competitive Food Service and Drinking Places.

Considering the General Merchandise Stores sector, employment increases significantly (by 2.3 percent for a 10 percent increase in the minimum wage) for a monopsony ($HHI = 1$). Model specification (3) provides further insight into industries that surpass the critical threshold of high concentration at $HHI = 0.25$. While oligopolistic market structure is captured by the $HHI > 0.25$ variable, it is clear that raising the minimum wage does not have any disemployment effect in these industries. Model specification (4) provides more detail for the top and middle terciles further confirming monopsony power effects on decreasing employment as well as the increasing employment effect of a hike in the minimum wage in concentrated labor markets in the General Merchandise

Stores sector.

In contrast, in the Food Service and Drinking Places sector, the impact of the minimum wage on employment remains consistently negative, and concentration plays a non-statistically significant role, as shown in As **Table 4**. As a caveat and as stated in the previous section, high levels of concentration in this sector only occur in a minority of cases throughout the U.S., making those cases more sporadic than in the General Merchandise Stores sector. All four scenarios indicate that a 10 percent increase in the minimum wage reduces employment by 1 percent. The interaction terms between the log minimum wage (mw) and the HHI are consistently insignificant.

Overall, the main findings suggest that in sectors where employers have more buying power, minimum wage increases can have both positive wage and job effects. But in more competitive labor sectors, when minimum wages increase, a decrease in employment follows, particularly when where labor costs represent a significant share of the total costs, in line with what traditional economic textbook theory predicts.

3.3 Robustness checks

3.3.1 Alternative model specifications

The tables in **Appendix A** summarize our robustness checks. Following (Neumark et al., 2014a,b), who suggest using a basic two-way fixed-effects (TWFE) regression without county-specific linear trends, we estimated this model for comparison with our main results. The results are presented in **Table A.1** For both the General Merchandise Stores sector and the Food Service and Drinking Places sector, concentration appears to have the same effect as in the main results. However, in competitive labor markets, the main effect of the minimum wage on employment, while still negative, is smaller in magnitude and not statistically significant. Following (Allegretto et al., 2017)'s more traditional approach, we employ a model that includes census division-by-period fixed effects and state-specific linear time trends. Again, the results show that concentration plays a similar role in both sectors, as described in the main results, and that the main effect of the minimum wage on employment, while still negative, is smaller in magnitude and not statistically significant. In essence, our main results are robust with respect to the main specification (**Table A.2**).

3.3.2 Omitted variable bias

It is possible that a variable or variables not included in the empirical model may be related to HHI and influence how the minimum wage affects employment accounting for concentration. A potential source of omitted variable bias is that labor markets in rural areas may be more concentrated, such that their economic conditions and productivity evolve differently compared to urban areas. To address these concerns, our main specification includes measures of productivity and other economic conditions that influence wages and HHI. Specifically, we incorporate the log of average weekly earnings across all sectors in a county, the log of real per capita income at the county level from the Bureau of Economic Analysis, and the housing price index at the state level from the Federal Housing Finance Agency as indicators of economic conditions (Meer and Tajali, 2023).

While including these controls in the main results allows the employment level to be different in less dynamic economic areas or lower productivity counties, and partially addresses the omitted variable bias channel, there is an additional question of whether the minimum wage–HHI interactions remain significant and positive when also controlling for the way these additional characteristics moderate the minimum wage employment response. **Table A.3** allows for interactions of the minimum wage with all control variables in our regression. The results show that a higher HHI continues to be linked to a more favorable impact of the minimum wage on employment within the General Merchandise Stores sector, while positive or no discernible effect is observed within the Food Service and Drinking Places sector. Whether some of these effects were picked up by county and time fixed effects or not, the main results remain robust to missing variable specification.

3.3.3 Sample definition

As noted, before, the Quarterly Census of Employment and Wages (QCEW) from the Bureau of Labor Statistics (BLS) omits sector-specific data on employment and earnings when the number of establishments in a county drops below a certain threshold each year. To maintain the credibility of our results, we employ unbalanced samples in our analysis. In other words, we include all counties in the analysis, even if some were excluded temporarily due to data limitations. **Table A.4** confirms that the main findings remain consistent: a higher HHI is linked to a more positive minimum wage impact on employment in the General Merchandise Stores sector, while there is no effect on

employment in the Food Service and Drinking Places sector.

4 Conclusion and Limitations

This study explores the impact of the minimum wage, accounting for employer labor market concentration as measured by employer Herfindahl-Hirshman indexes for labor. It utilizes establishment-level data of the two largest low-wage sectors in the U.S. economy: the Food Service and Drinking Places and the General Merchandise Stores sectors.

The results point to a wide range of concentration in these years, sectors and space, from mostly low levels of labor concentration for the Food Service and Drinking Places to widespread high levels of concentration for the General Merchandise Stores sector, where Walmart often accounts for up to 40 percent of employment in many counties. The econometric results confirm the conventional wisdom that without concentration, a minimum wage increase alone leads to a reduction in employment. The results also confirm the conventional wisdom that high levels of concentration alone lead to a reduction in employment, as a monopsonistic labor market predicts.

However, when concentration is considered, raising the minimum wage leads to increased employment for high levels of concentration in the General Merchandise Stores sector, but for low levels of concentration, raising the minimum wage leads to lower employment in this sector. However, in highly competitive labor sectors like Food and Drinking Places, concentration did not appear to play a significant role beyond its direct impact of monopsony power, nor as a modifier of the impact of the minimum wage on employment. These establishments operate mostly in low concentration markets where workers have other opportunities.

From a policy standpoint, policymakers should recognize the unique characteristics of each labor market as well as labor market concentration when formulating or implementing minimum wage policies. Such measures can guide policymakers in identifying markets where increasing the minimum wage is likely to have no adverse, and perhaps even beneficial, effects on employment and workers.

This study has limitations that provide opportunities for future research. First, the data sets used do not distinguish between part-time and full-time employment, and we do not have a measure of hours worked. Part-time work is more prevalent in low-wage industries. However, this concern

is alleviated because our first-stage regression shows a positive and significant increase in weekly earnings, suggesting that even if there was a reduction in worked hours, it may not have been significant enough to offset the increase in the hourly wage. Another data issue is that the wages used in this study do not include employer-sponsored health and disability insurance, retirement, and other fringe benefits, although these types of benefits are less likely to exist for part-time and low-wage work.

Another limitation pertains to the definition of labor markets. Due to data necessity, we defined them at the county and 3-digit NAICS sector level. Our analysis could be extended by considering different geographic definitions, such as at the Metropolitan Statistical Area (MSA) level or at the Commuting Zone (CZ) level, and consider narrower sector definitions, such as 4- or 5-digit NAICS codes to provide a more granular analysis of minimum wage impacts. In addition, beyond the reduced form regressions utilized in this study, which are the common tools for studies of this type, recent structural models of monopsony power in labor markets could be extended to include minimum wages, explicitly estimating labor supply elasticities (reviewed by (Card, 2022)). Such approaches may need access to microdata, such as the Census data, or administrative data. However, such research investments appear promising.

In sum, while this study makes some contributions to understanding the effects of minimum wage adjustments on employment and business dynamics, these limitations highlight areas for further exploration and refinement in future research. Addressing these limitations can contribute to a more comprehensive and nuanced assessment of minimum wage policies and their implications for various labor markets and sectors.

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Figure 1. Labor Market: Competitive vs. Monopsony Equilibrium.
Figure 2. Number of States with Minimum Wage above Federal Level and Average Minimum Wage Differential.
Figure 3. Average Local Labor Market Concentration, 2005-2020.

Table 1. Definition of Variables and Data Sources

Definition	Data Source
Average yearly weekly wage by sector ($)	QCEW
Average yearly employment by sector	QCEW
Average yearly weekly wage total private sector ($)	QCEW
Average yearly employment total private sector	QCEW
Yearly county minimum wage ($)	U.S. Department of Labor
Yearly census-level urban consumers price index (CPI)	BLS
Yearly average county-level unemployment rates	Local Area Employment Survey
Yearly mid-average population	CENSUS
Yearly Herfindahl Index	NETS
Yearly CR1/CR4/CR20	NETS
Yearly per capita income	BEA/CENSUS
House Price Index (state level)	Fed. Housing Finance Agency

Note: All information used is available at the county level, except where noted.

Table 2. Descriptive Statistics 2005–2020

	452 [1]		722 [2]		722 [2] (No poach agreements)	
	Mean	s.d.	Mean	s.d.	Mean	s.d.
Panel A: Concentration Measures						
Herfindahl Index (HHI) [0, 1]	0.48	0.25	0.07	0.12	0.08	0.12
Percentage counties ($HHI > 0.25$)	78.28		5.27		5.33	
CR1 [0%, 100%]	60.79	22.86	13.63	14.02	14.82	13.70
CR4 [0%, 100%]	90.31	11.91	33.53	23.82	35.55	22.79
CR 20 [0%, 100%]	99.60	1.64	67.55	27.92	69.67	25.93
Weighted HHI [0, 1] [3]	0.25	0.02	0.01	0.00	0.01	0.00
Weighted CR1 [0%, 100%] [3]	40.21	1.97	4.61	0.57	6.22	0.74
Weighted CR4 [0%, 100%] [3]	73.27	1.14	11.42	1.72	14.68	1.96
Weighted CR 20 [0%, 100%] [3]	97.43	0.22	27.93	4.11	33.22	4.47
N	47,980		50,077		50,077	
Panel B: Balance Panel [4]						
Population (Thousand)	201.47	460.02	156.20	406.86	156.20	406.86
Private employment (Thousand)	74.57	188.86	57.14	166.67	57.14	166.67
Private weekly earnings (2020 $)	833.63	211.34	813.29	201.92	813.29	201.92
Sector employment [5]	1989.26	3852.97	5204.97	14448.28	5204.97	14448.28
Sector weekly earnings (2020 $)[5]	448.96	70.67	296.64	64.84	296.64	64.84
Herfindahl Index (HHI) [0, 1]	0.34	0.18	0.03	0.05	0.03	0.05
Percentage counties ($HHI > 0.25$)	59.73		0.58		0.61	
CR1 [0%, 100%]	49.09	18.87	8.52	7.41	10.04	7.32
CR4 [0%, 100%]	82.78	12.58	22.33	14.51	25.07	13.84
CR 20 [0%, 100%]	99.15	2.31	53.57	24.72	56.73	22.85
Per capita income (2020 $000s)	49.16	112.07	52.14	196.46	52.14	196.46
Minimum wage (2020 $)	8.26	1.12	8.26	1.13	8.26	1.13
Unemployment rate (%)	6.51	2.80	6.29	2.74	6.29	2.74
Annual house price indexes	201.39	38.43	206.82	43.20	206.82	43.20
Number of counties	1402		1857		1857	
Number of States + DC	51		51		51	
N	22,342		29,712		29,712	

Notes:
[1] General Merchandise Stores Sector.
[2] Food Service and Drinking Places Sector.
[3] Weighted HHI/CR by 3-digit NAICS sector are calculated as follows: $HHI_t = \sum_{i=1}^{N} S_{it}^L HHI_{it}$, *where* S_{it}^L *denotes the employment share of county* i *at year* t *over national employment in year* t, *and* HHI_{it} *represents county HHI at year* t *(replace* HHI_{it} *by* CR_{it} *to get the weighted CR ratios).*
[4] The sample includes only counties that appear in all 16 years.
[5] Specific sector displays the information for sectors 452 and 722, respectively.

Table 3. Minimum Wage Effects on Earnings (2005–2020)

	452		722	
	(1)[1]	(2)	(3)[1]	(4)
Dependent Variable: Ln Earnings				
mw	0.05***	0.09*	0.18***	0.17***
	(0.02)	(0.05)	(0.02)	(0.02)
HHI		-12.83***		-33.11***
		(1.10)		(5.27)
HHI × mw		-0.14		-0.07
		(0.21)		(0.47)
Year FE	Y	Y	Y	Y
County Years Linear Trends	Y	Y	Y	Y
Additional Controls	Y	Y	Y	Y
R^2	0.942	0.972	0.990	0.991
N	22,432	22,432	29,712	29,712

Notes: All specifications apply equation (1) to the balanced sample. County fixed effects are included, and the following control variables: log of total county population, log of total average weekly earnings (across all sectors) in the county, log of total employment (across all sectors) in the county, log of the county unemployment rate, log per capita income, and State House Price index. Standard errors (in parentheses) are clustered at the state level, and the regression is weighted by average employment in the sector during the sample period. $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$.

[1] The specification excludes the Herfindahl-Hirschman Index (HHI) and its interaction term with the minimum wage.

Table 4. Main Results: Impact of the Minimum Wage on Employment via Concentration, 2005–2020

	(1)	(2)	(3)	(4)
Panel A: 452 General Merchandise Stores Sector				
Dependent Variable: Ln Employment				
mw	-0.09** (0.04)	-0.16*** (0.04)	-0.11*** (0.04)	-0.10*** (0.04)
HHI		-0.66*** (0.20)		
HHI × mw		0.39*** (0.09)		
High HHI (≥0.25)			-0.22*** (0.06)	
High HHI × mw			0.11*** (0.03)	
Middle HHI				-0.10 (0.07)
Top HHI				-0.21*** (0.08)
Middle HHI × mw				0.05 (0.04)
Top HHI × mw				0.11*** (0.04)
Year FE	Y	Y	Y	Y
County years linear trends	Y	Y	Y	Y
Additional controls	Y	Y	Y	Y
R^2	0.998	0.998	0.998	0.998
N	22,432	22,432	22,432	22,432
Panel B: 722 Food Service and Drinking Places Sector				
Dependent Variable: Ln Employment				
mw	-0.10*** (0.03)	-0.10*** (0.04)	-0.10*** (0.03)	-0.10*** (0.04)
HHI		-0.44 (0.97)		
HHI × mw		0.26 (0.47)		
High HHI (≥0.25)			0.45 (0.32)	
High HHI × mw			-0.21 (0.15)	
Middle HHI				-0.02 (0.04)
Top HHI				-0.04 (0.06)
Middle HHI × mw				0.01 (0.02)
Top HHI × mw				0.03 (0.03)
Year FE	Y	Y	Y	Y
County years linear trends	Y	Y	Y	Y
Additional controls	Y	Y	Y	Y
R^2	0.999	0.999	0.999	0.999
N	29,712	29,712	29,712	29,712

Notes: All specifications use the balanced sample, including county fixed effects and the following additional control variables: log of total county population, log of total average weekly earnings (across all sectors) in the county, log of total employment (across all sectors) in the county, log of the county unemployment rate, log per capita income, and State House Price index. Column (1) applies equation (1) without including HHI or the interaction term with minimum wage. Column (2) applies equation (1). Column (3) applies equation (2), and Column (4) separates labor markets into HHI terciles. Standard errors (in parentheses) are clustered at the state level, and the regression is weighted by average employment in the sector during the sample period. $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$.

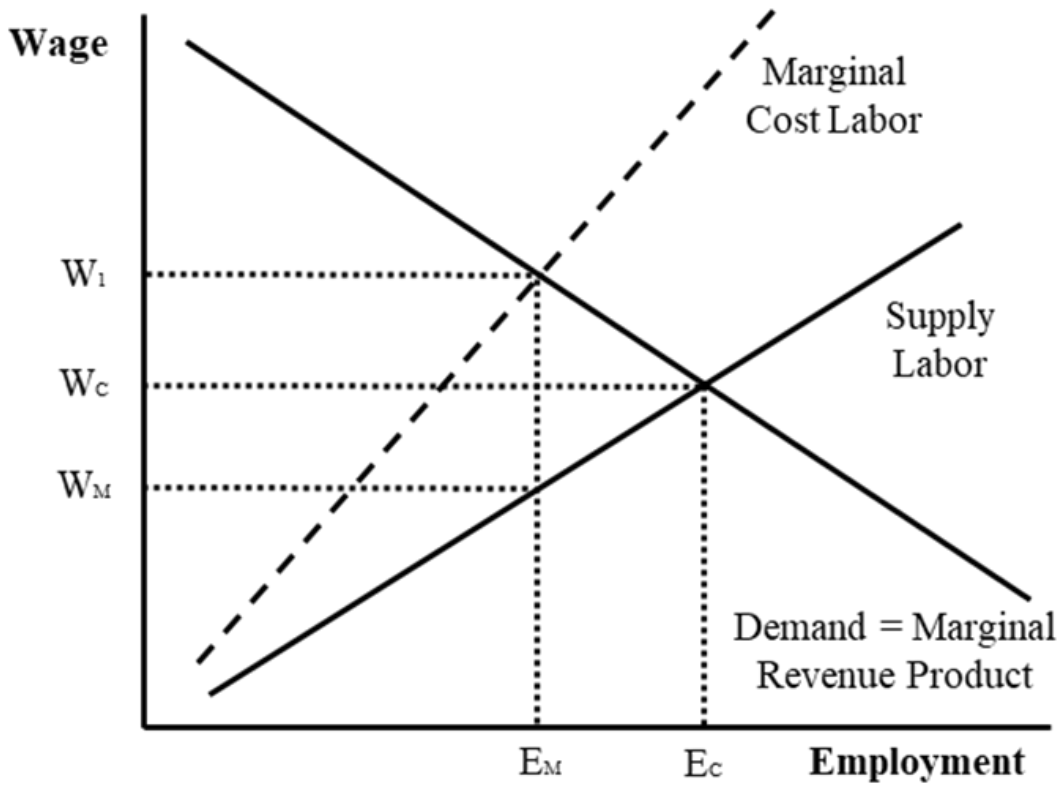

Figure 1. Labor Market: Competitive vs. Monopsony Equilibrium.

Note: E_C and W_C represent employment and wage levels where the market clears in a competitive market; while E_M and W_M represent employment and wage levels in a monopsony equilibrium.

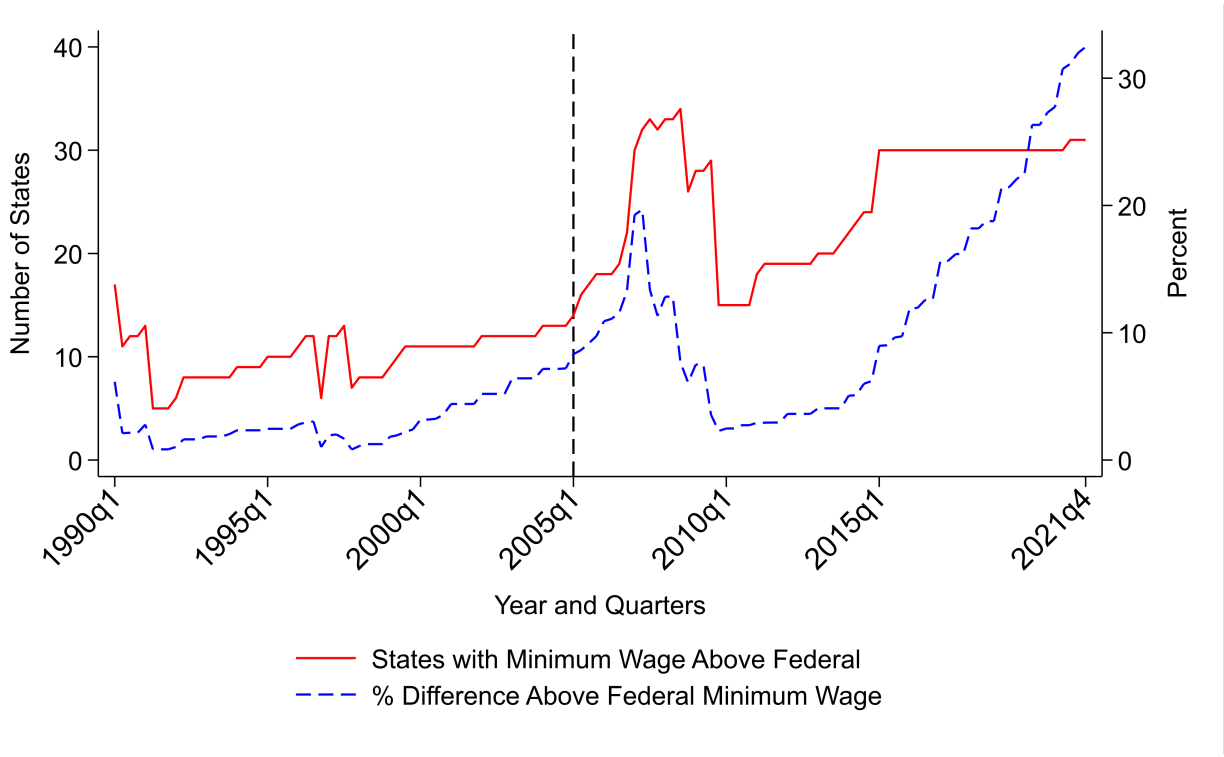

Figure 2. Number of States with Minimum Wage above Federal Level and Average Minimum Wage Differential.

Note: Includes all 50 states and the District of Columbia.

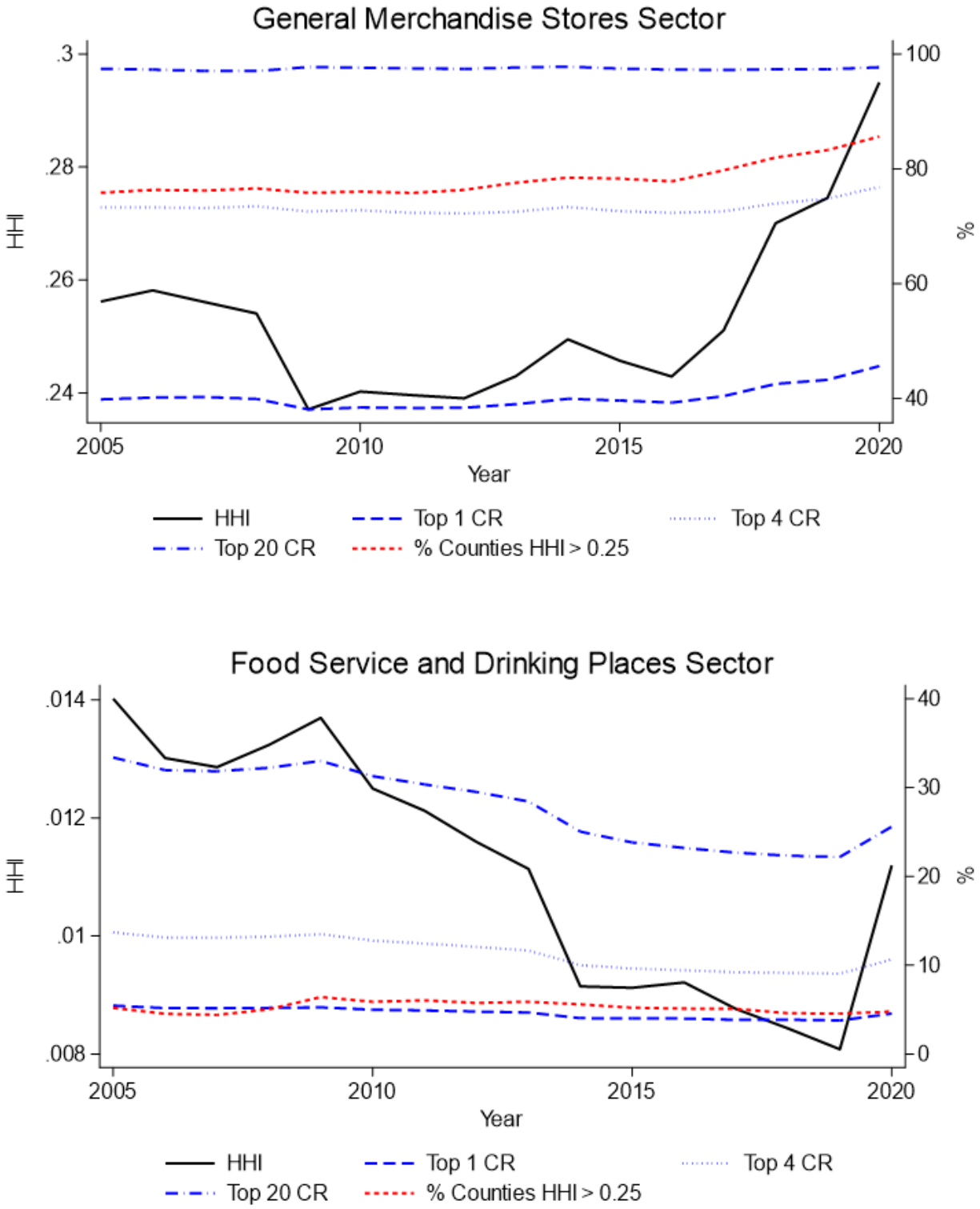

Figure 3. Average Local Labor Market Concentration, 2005-2020.

Notes: HHI is computed using the formula $HHI_t = \sum_{i=1}^{N} S_{it}^{L} HHI_{it}$, where S_{it}^{L} denotes the employment share of county i at year t over national employment in year t, and HHI_{it} represents county HHI at year t. For the Concentration Ratio (CR), replace HHI_{it} by CR_{it}.The percentage of counties with HHI > 0.25 is shown.

Appendix A: Additional Details

Table A.1. Effects of the Log of the MW Interacted with the HHI on the Log of Employment, TWFE (2005–2020)

	(1)	(2)	(3)	(4)
Panel A: 452 General Merchandise Stores Sector				
Dependent Variable: Ln Employment				
mw	-0.03 (0.03)	-0.08* (0.05)	-0.06 (0.04)	-0.05 (0.04)
HHI		-0.55** (0.24)		
HHI × mw		0.30*** (0.11)		
High HHI (≥0.25)			-0.27*** (0.08)	
High HHI × mw			0.13*** (0.04)	
Middle HHI				-0.15** (0.07)
Top HHI				-0.28*** (0.10)
Middle HHI × mw				0.07** (0.04)
Top HHI × mw				0.14*** (0.05)
Year FE	Y	Y	Y	Y
Additional controls	Y	Y	Y	Y
R^2	0.995	0.995	0.995	0.995
N	22,432	22,432	22,432	22,432
Panel B: 722 Food Service and Drinking Places Sector				
Dependent Variable: Ln Employment				
mw	-0.02 (0.03)	-0.01 (0.03)	-0.02 (0.03)	-0.02 (0.03)
HHI		3.71** (1.64)		
HHI × mw		-1.71** (0.76)		
High HHI (≥0.25)			0.23 (0.22)	
High HHI × mw			-0.11 (0.10)	
Middle HHI				0.09 (0.06)
Top HHI				0.15 (0.09)
Middle HHI × mw				-0.04 (0.03)
Top HHI × mw				-0.07 (0.04)
Year FE	Y	Y	Y	Y
Additional controls	Y	Y	Y	Y
R^2	0.999	0.999	0.999	0.999
N	29,712	29,712	29,712	29,712

Notes: All specifications use the balanced sample and apply a simplified TWFE model without county linear trends, but include county and year fixed effects and the following additional control variables: log of total county population, log of total average weekly earnings (across all sectors) in the county, log of total employment (across all sectors) in the county, log of the county unemployment rate, log per capita income, and State House Price index. Column (1) applies TWFE equation (1) without including HHI or the interaction term with minimum wage. Column (2) applies TWFE equation (1). Column (3) applies TWFE equation (2), and Column (4) separates labor markets into HHI terciles. Standard errors (in parentheses) are clustered at the state level, and the regression is weighted by average employment in the sector during the sample period. $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$.

Table A.2. Effects of the Log of the MW Interacted with the HHI on the Log of Employment, State-Level Trends and Division Year Fixed Effects (2005–2020)

	(1)	(2)	(3)	(4)
Panel A: 452 General Merchandise Stores Sector				
Dependent Variable: Ln Employment				
mw	-0.00 (0.03)	-0.08** (0.04)	-0.04 (0.03)	-0.03 (0.03)
HHI		-0.79*** (0.21)		
HHI × mw		0.43*** (0.10)		
High HHI (≥0.25)			-0.31*** (0.06)	
High HHI × mw			0.15*** (0.03)	
Middle HHI				-0.19*** (0.06)
Top HHI				-0.33*** (0.10)
Middle HHI × mw				0.09*** (0.03)
Top HHI × mw				0.16*** (0.04)
Division Year FE	Y	Y	Y	Y
State Linear Trends	Y	Y	Y	Y
Additional controls	Y	Y	Y	Y
R^2	0.996	0.996	0.996	0.996
N	22,432	22,432	22,432	22,432
Panel B: 722 Food Service and Drinking Places Sector				
Dependent Variable: Ln Employment				
mw	-0.03 (0.03)	-0.03 (0.03)	-0.03 (0.03)	-0.03 (0.03)
HHI		1.25 (1.00)		
HHI × mw		-0.57 (0.46)		
High HHI (≥0.25)			0.13 (0.20)	
High HHI × mw			-0.06 (0.09)	
Middle HHI				-0.01 (0.05)
Top HHI				0.05 (0.07)
Middle HHI × mw				0.00 (0.02)
Top HHI × mw				-0.02 (0.03)
Division Year FE	Y	Y	Y	Y
State Linear Trends	Y	Y	Y	Y
Additional controls	Y	Y	Y	Y
R^2	0.999	0.999	0.999	0.999
N	29,712	29,712	29,712	29,712

Notes: All specifications use the balanced sample and apply a modified model that includes state linear trends, county and division-year fixed effects, along with the following additional control variables: log of total county population, log of total average weekly earnings (across all sectors) in the county, log of total employment (across all sectors) in the county, log of the county unemployment rate, log per capita income, and State House Price index. Column (1) applies modified equation (1) without including HHI or the interaction term with minimum wage. Column (2) applies modified equation (1). Column (3) applies modified equation (2), and Column (4) separates labor markets into HHI terciles. Standard errors (in parentheses) are clustered at the state level, and the regression is weighted by average employment in the sector during the sample period. $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$.

Table A.3. Effects of the Log of the MW Interacted with the HHI on the Log of Employment, including Minimum Wage Interactions with Income Per Capita, Total Earnings and Housing Price Index (2005–2020)

	(1)	(2)	(3)
Panel A: 452 General Merchandise Stores Sector			
Dependent Variable: Ln Employment			
mw	1.49 (0.94)	1.63 (0.98)	1.63 (0.98)
HHI	-0.29 (0.29)		
HHI × mw	0.21 (0.14)		
High HHI (≥0.25)		-0.13* (0.07)	
High HHI × mw		0.07** (0.03)	
Middle HHI			-0.04 (0.06)
Top HHI			-0.05 (0.10)
Middle HHI × mw			0.02 (0.03)
Top HHI × mw			0.03 (0.04)
mw × Control Variables	Y	Y	Y
Year FE	Y	Y	Y
County Linear Trends	Y	Y	Y
Additional controls	Y	Y	Y
R^2	0.998	0.998	0.998
N	22,432	22,432	22,432
Panel B: 722 Food Service and Drinking Places Sector			
Dependent Variable: Ln Employment			
mw	2.46*** (0.67)	2.52*** (0.68)	2.43*** (0.69)
HHI	-1.19 (0.98)		
HHI × mw	0.60 (0.47)		
High HHI (≥0.25)		0.39 (0.29)	
High HHI × mw		-0.18 (0.14)	
Middle HHI			-0.04 (0.04)
Top HHI			-0.11 (0.07)
Middle HHI × mw			0.02 (0.02)
Top HHI × mw			0.06* (0.03)
mw × Control Variables	Y	Y	Y
Year FE	Y	Y	Y
County Linear Trends	Y	Y	Y
Additional controls	Y	Y	Y
R^2	0.999	0.999	0.999
N	29,712	29,712	29,712

Notes: All specifications use the balanced sample, including county fixed effects and the following additional control variables and their interactions with minimum wage: log of total county population, log of total average weekly earnings (across all sectors) in the county, log of total employment (across all sectors) in the county, log of the county unemployment rate, log per capita income, and State House Price index. Column (1) applies equation (1) without including HHI or the interaction term with minimum wage. Columns (2) and (3) apply equations (1) and (2), respectively. Standard errors (in parentheses) are clustered at the state level, and the regression is weighted by average employment in the sector during the sample period. $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$.

Table A.4. Effects of the Log of the MW Interacted with the HHI on the Log of Employment, Unbalanced Sample (2005–2020)

	(1)	(2)	(3)	(4)
Panel A: 452 General Merchandise Stores Sector				
Dependent Variable: Ln Employment				
mw	-0.08*** (0.04)	-0.16*** (0.04)	-0.11*** (0.04)	-0.11*** (0.04)
HHI		-0.68*** (0.18)		
HHI × mw		0.40*** (0.09)		
High HHI (≥0.25)			-0.24*** (0.06)	
High HHI × mw			0.12*** (0.03)	
Middle HHI				-0.26*** (0.07)
Top HHI				-0.22** (0.08)
Middle HHI × mw				0.13*** (0.03)
Top HHI × mw				0.12*** (0.04)
Year FE	Y	Y	Y	Y
County years linear trends	Y	Y	Y	Y
Additional controls	Y	Y	Y	Y
R^2	0.998	0.998	0.998	0.998
N	27,857	27,857	27,857	27,857
Panel B: 722 Food Service and Drinking Places Sector				
Dependent Variable: Ln Employment				
mw	-0.10*** (0.03)	-0.10** (0.04)	-0.10*** (0.03)	-0.10** (0.04)
HHI		-0.31 (0.70)		
HHI × mw		0.20 (0.33)		
High HHI (≥0.25)			0.25 (0.26)	
High HHI × mw			-0.11 (0.12)	
Middle HHI				-0.02 (0.05)
Top HHI				-0.05 (0.06)
Middle HHI × mw				0.01 (0.02)
Top HHI × mw				0.03 (0.03)
Year FE	Y	Y	Y	Y
County years linear trends	Y	Y	Y	Y
Additional controls	Y	Y	Y	Y
R^2	0.999	0.999	0.999	0.999
N	37,023	37,023	37,023	37,023

Notes: All specifications use the unbalanced sample, including county fixed effects and the following additional control variables: log of total county population, log of total average weekly earnings (across all sectors) in the county, log of total employment (across all sectors) in the county, log of the county unemployment rate, log per capita income, and State House Price index. Column (1) applies equation (1) without including HHI or the interaction term with minimum wage. Columns (2) and (3) apply equations (1) and (2), respectively. Column (4) separates labor markets into HHI terciles. Standard errors (in parentheses) are clustered at the state level, and the regression is weighted by average employment in the sector during the sample period. $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$.