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Labor Monopsony in the Food Retailing Industry

Introduction

There is growing concern over the causes and consequences of imperfect competition in labor markets, particularly labor markets with many lower-skilled, lower-paid employees. Some show that rising monopsony power accounts for wage stagnation and rising wage inequality (Deb, Eeckhout, Patel, & Warren 2022, 2023) and for an income redistribution away from rural households (Rubens 2023). As a result, understanding the channels and dynamics of employer market power remains key from welfare standpoint and for designing appropriate policies to address labor market inequities (Executive Order, The White House 2021). In this paper, we study one channel using a production function estimation approach (De Loecker & Warzynski 2012) to quantify and characterize labor markdowns in the US food retail sector.

Studying monopsony power in the US food retailing is important for several reasons. First, there were a number of merger and acquisition (M&A) transactions in the food retailing industry in our sample period (2004-2022, TDLinx Data). M&A transactions are quasi-experimental shocks that can lead to changes in market structure, raising market concentration and may be responsible for a rise in monopsony power. Second, the aggregate retail sector, which includes food and beverage retailers, employs about 10 percent of the US workforce (which amounted to 15.5 million employees in October 2023) according to US BLS (2023), so labor markdowns can affect a sizeable portion of the country's population.¹ Third, in contrast to other sectors of the economy, fully 25% of employees in the food retailing sector earn at or near the minimum wage, so are more likely to be subject to the exercise of employer market power than workers in other industries.² Fourth, very little of the existing literature on labor monopsony power addresses workers in food retailing, despite growing concerns about rising retail concentration and market power (Smith & Ocampo 2021; Kelloway 2022) coupled with inequivalent retail wage growth (Hortacsu & Syverson 2015).

We define a firm's labor monopsony power or simply labor market power as the ratio of marginal revenue product of labor and wage. In a perfectly competitive market, this wage-productivity markdown ratio is 1, and the firm's labor supply is perfectly elastic. Absent enough competition amongst the employers, the dominant ones can leverage buyer power in the labor market as workers have heterogeneous preferences for non-wage amenities (like commuting distance or paid time-off) or have frictions to move between jobs. As workers cannot easily exercise their outside options due to market imperfections, the firms tend to pay wages less than the workers' marginal productivity. Hence, firms face upward sloping labor supply curve, and higher monopsony power reflects as lower wages and higher markdowns.

We estimate the extent of monopsony power in the food retailing labor market using both reduced-form and structural models developed in the empirical industrial organization literature, and applied elsewhere to study similar problems of imperfect competition in other labor markets.

Data and Empirical Strategy

We start the analysis of labor monopsony power by providing two-parts descriptive evidence for the effects of mergers and acquisitions (M&A) on labor market outcomes: wages, employment, and total compensation. To this end, we define a *labor market* to be a tuple of occupation, commuting zone, and quarter-of-a-year.³ In the first part of our reduced-form analysis, we use difference-in-difference (DiD) estimation approach and find that consolidation due to mergers and acquisitions lead to adverse effects on firm-level employment and market-level wages and employment. These effects are more prominent in highly concentrated markets, a result similar to Arnold (2021) which studies a near universe of private sector firms using US Census micro datasets. For the first step of our model-free evidence on M&A effects, because M&A affects different stores at different times and treatment effects are likely heterogeneous across time and cohort, we augment the

¹ According to [Textkernel's Jobfeed](#), nearly 7.5 million workers (half of the retail workforce) resigned in 2021, attributing to factors such as low pay, unfavorable working conditions, among others.

² Author's calculation based on [IPUMS data for 2023](#).

³ Commuting Zones are defined by the US Census Bureau to be the lowest geographic units where people live and commute for work (US Census Bureau 2017). Widely used in rest of the labor economics literature (Arnold 2021; Azar, Berry, & Marinescu 2022), they provide a better measure of geography of a local labor market in contrast to counties which are often only political divisions and do not reflect local economic conditions.

canonical two-way fixed effects and event-study designs with heterogeneity-robust DiD and event-study methods developed in Callaway & Sant'Anna (2021), Sun & Abraham (2021), Chaisemartin, & D'Haultfoeuille (2022), & Borusyak, Jaravel, & Spiess (2024). In the second part of our reduced-form analysis, we use causal machine learning literature on heterogeneous treatment effects (Athey & Wager 2018; Chernozhukov, et al. 2018; Athey & Imbens 2021) and test how these effects vary across variables like firm's age and size, and worker's gender, age, and education, all aggregated to the CZ-occupation level. Together, these two-part analyses inform us how a potential rise in buyer power due to mergers and acquisitions in the US food retail affect labor outcomes (wage & employment) and how such effects vary across important market characteristics.

To understand the underlying mechanism behind the M&A effects, we construct a structural model based on the production function estimation approach from the industrial organization literature. Under no assumption about a firm's labor supply curve, the wedge between output elasticity and revenue share of labor gives the firm's aggregate market power on the product markets (markups) and on the labor markets (markdowns). To separately identify and estimate markups and markdowns, we follow rest of the IO literature and assume the retailers have at least one additional input which is *flexible*, that is without monopsony power and adjustment costs. As we show in the empirical section, these assumptions are fundamental for identification but are reasonable in our setup and let us disentangle markdowns (labor market power) from markups (product market power).

Our structural approach is well understood and follows the production function approach developed and expanded in Hall (1988), Olley & Pakes (1996), Levinsohn & Petrin (2003), De Loecker (2011), De Loecker & Warzynski (2012), & Akerberg, Caves, & Frazer (2015). Some of the papers using this approach to estimate markdowns focus on US manufacturing (Yeh, et al. 2022), Chinese tobacco industry (Rubens 2023), and Indian manufacturing (Brooks, et al. 2021), and find economically and statistically significant wage-productivity gaps. Others use this approach to quantify markups in international trade (De Loecker & Warzynski 2012), macroeconomy (De Loecker, Eeckhout, & Unger 2020), and retail (Chenarides, Richards, et al. 2023). Our paper focuses on quantifying and characterizing labor markdowns in the US food retail industry.

We estimate the both reduced-form and structural models by combining multiple data sources of retailers and workers. Our primary data on food retailers comes from NielsenIQ's TDLinX for the period 2004-2022. In the dataset, we observe store level information on its identification code, store type, location, size, grocery channel, parental code, sales revenue, and employment. We use store's county location to find its commuting zone, which is the geographic unit in our labor market definition. Second, we use Quarterly Census of Employment and Wages (QCEW), Bureau of Labor Statistics, which provides county- and MSA-level wage and employment data for different industries within food retail (NAICS=445). We aggregate this data up to the commuting zone level, which is the geographic unit in our labor market definition, using a county-CZ crosswalk file.⁴ For the MSA level QCEW data, since we cannot map a MSA to a CZ as both comprise of possibly different set of counties, we follow Azar, et al. (2020) and first derive county level data using weights of each county's population in its MSA, and then use the county-CZ crosswalk file.

Results, Contribution, and Conclusion

We find that in most labor markets for workers in the food retail, marginal product of labor is about 50 percent higher than the wages, implying an average markdown of 1.5 and a significant exercise of labor monopsony power. The markdowns are increasing throughout the sample period 2004-2022, although at a slower pace after 2015, and we document a robust correlation on markdowns and average employer size (relative share of employment).

Our study makes three contributions. First, we analyze how retail consolidation impacts the labor market outcomes and complement prior works on the topic (Lehto & Bockerma 2008; Arnold 2021; Prager & Schmitt 2021). Second, we contribute to the literature on labor market monoposony (Manning 2021; Card, et al. 2018; Azar, Berry, & Marinescu 2022; Berger, Herkenhoff, & Mongey 2022). Third, we contribute to the IO literature on production function estimation approach by applying it to study the labor market power in the US food retailing industry.

⁴ The crosswalk file is made available by the USDA at <https://www.ers.usda.gov/data-products/commuting-zones-and-labor-market-areas/>.