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Supermarket Human Resource Practices and Competition from Mass Merchandisers

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Abstract

The rise of supercenters and the entry of Wal-Mart into food retailing have dramatically altered the competitive environment in the industry. This paper explores the impact of such changes on the labor market practices of traditional food retailers. We use longitudinal data on workers and firms to construct new measures of compensation and employment, and examine how these measures evolve within and across firms in response to changes in product market competition. An additional feature of the analysis is to combine rich case study knowledge about the retail food industry with the new matched employer-employee data from the Census Bureau. We compare a set of human resource practices using measures based on the matched employer-employee data to an index based on survey data and case studies. The consistency between the two approaches suggests that the measures are capturing important differences in supermarket human resource practices and policies. Analysis of administrative data combined with case study observations strengthens our understanding of the diversity of human resource practices in the retail food industry.

Introduction

In recent years, much public concern has been raised about whether industrial re-structuring has resulted in the creation of more "bad jobs" in the U.S. Critics have argued that employers have changed long-standing practices regarding the terms of employment and the way wages are set. The fear is that there are fewer jobs that offer a traditional long-term employment relationship and, at the same time, there are more low-skilled jobs with high rates of turnover and little opportunity for training and wage advancement. And some empirical evidence suggests that for workers with less education and few skills, the opportunities for advancement through job ladders are dwindling (Bernhardt et al., 2001). The objective of this paper is to use a new, very detailed, dataset to examine the impact of restructuring on human resource practices in the retail food industry.

The retail food industry is, in many ways, an ideal industry for such a study. Although the retail sector of the economy has always had a relatively flat job hierarchy, supermarket jobs were once among the most highly paid and highly coveted retail jobs. However, over time, this feature of the industry has changed, and the typical supermarket job is no longer a full-time, relatively well paid position (often unionized), but rather a part-time job with irregular hours, low pay, and limited options for training or promotion. This has occurred at the same time that the industry has undergone massive product market restructuring, as Wal-Mart and other mass merchandisers have entered the industry. Indeed, Wal-Mart is now the largest food retailer in the U.S. with its share of the grocery market estimated to be close to 20%, having expanded from only ten supercenters in 1993 to over 1,866 supercenters by 2005.

In this paper we directly examine the relationship between growing competition from mass merchandisers like Wal-Mart and changes in human resources practices within the industry. While case study evidence suggests that the proliferation of big box stores has had a substantial impact on the labor market, most empirical studies to date have focused on the changes in *county*-level employment and wages that occur after Wal-Mart entry (for example, Basker, 2005 and Neumark, Zhang and Ciccarella, 2005). There has been no large scale dataset available on both firms and workers that could be used to describe human resource practices at the *firm* level. In this study we exploit a new dataset that permits us to analyze changes in supermarket hiring, promotion, pay and turnover policies at the establishment level in response to entry of mass merchandisers in the local market. We particularly focus on the role of firm entry and exit, since such policies have been linked to firm performance and survival (Haltiwanger, Lane and Spletzer, 2006).

Background and Motivation

Measurement of shifts in human resource practices of food retailers in response to changing product market competition is a challenge. Some guidance is provided by Lazear and Oyer (2004), who use measures of promotion, hiring, and wage setting to capture key aspects of human resource practices – which they (and we) refer to as internal labor markets (ILMs). The ILM concept provides a useful construct in which to frame the analysis.

ILMs are generally characterized by long-term employment relationships, with most hiring done from within the firm for positions other than low-level "port-of entry" jobs. In firms with ILMs, wages are related to job characteristics and are relatively unresponsive to changes in the external labor market. Evidence supporting (though not

proving) the existence of ILMs includes the persistence of firm wage differentials over time, the extent of upward mobility and returns to seniority within firms, and limited external hiring other than at ports of entry. As described by Groshen and Levine (1998), numerous theories have been developed to explain why firms create internal labor markets. These models focus on the importance of firm-specific human capital, incentives and risk sharing as possible motivations.

Lazear and Oyer (2004) identify "ex post fluidity" as a key feature of internal labor markets where workers make decisions on employment and firms follow by adjusting internal human resource practices and organizational structure. The critical element is that firms adjust human resource practices and may change their ILM status in response to competitive conditions. Fairris (2004) suggests that firms choose their ILM status and these choices influence workforce quality at the firm, including the quit rate.

While food stores are generally not known for innovative or high-performance human resources practices (Ben-Ner, Kong and Bosley, 1999), there is some case study evidence of variation in human resource practices across firms in this industry. In 2006, for example, *Fortune* magazine's list of the top 100 companies to work for included several supermarket chains, with Wegmans Food Markets and Whole Foods Markets ranked in the top twenty. For some firms facing increased product market competition, customer service is seen as an important competitive edge, and long-term employment relationships may improve productivity and support the development of ILMs. Some food retailers have expanded the range of specialized services they offer, including more labor- and training-intensive services such as bakeries, delis, prepared food items and other services (Warner 2005). The historical high rate of unionization in supermarkets (relative to other types of retail) also suggests the

existence of ILMs in parts of the industry. Thus, the limited evidence available suggests that there is heterogeneity in the wage and ILM structure in the retail food industry, and that individual firms may respond only sluggishly to changes in the external market.

Data and measurement

The data used in this study are drawn from the U.S. Census Bureau's Longitudinal Employer Household Dynamics (LEHD) database that matches workers with employers. This database includes quarterly records of the earnings of almost all individuals from the unemployment insurance systems of most U.S. states starting in the 1990s. This study uses a subset of seven states (California, Idaho, Illinois, Maryland, North Carolina, Oregon and Washington) that have sufficient years of longitudinal data. These data have been extensively described elsewhere (e.g., Abowd et al., 2005).

For this study the LEHD data were matched with additional information on both firms and workers. Worker characteristics include date of birth, place of birth, race, and sex. Data from the 1997 and 2002 Economic Census include establishment characteristics such as payroll, sales and product line. We also include controls for local economic conditions from Bureau of Economic Analysis data on per capita income, county population, and employment density.

The geocoded LEHD data allow us to construct detailed establishment-specific measures of concentration and competition for the retail food industry. Measures of concentration and competition are created based on a five-mile radius around the longitude and latitude of each establishment's location (see Davis et al., 2005 for more details). We calculate both sales-based four firm concentration ratios (CR-4) and Herfindahl indices on an establishment-specific basis. The CR-4 in this case represents

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the share of sales in a given region, all of which have area $25*\pi$, accounted for by the top

four firms in that area (excluding the sales of the establishment itself). The Herfindahl

index represents the sum of the squares of sales shares in each region. Measures of threat

from outside the industry are derived in a similar fashion. The number, employment,

sales, and payroll of mass merchandisers are calculated within each grocery-store specific

5-mile circle. A key innovation of this paper is that the measures are establishment

specific and are not limited by arbitrary administratively defined geographic boundaries

such as counties.

Internal labor markets and human resource practices in supermarkets

Following Lazear and Oyer (2004), we employ measures of promotion, hiring,

and wage setting in order to capture key aspects of human resource practices of

supermarkets. For promotion practices, we measure the proportion of workers hired into

the second quintile that move to a higher quintile in five years and the wage growth of

workers starting in the second quintile over the five-year time span.[1] Hiring patterns are

captured by the churning rates[2] of all full-quarter workers in the establishment as well as

by the proportion of accessions in the fifth and fourth earnings quintile within the firm.

The pattern of wage setting is captured by the mean and standard deviation of log real

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[1] Much of the supermarket workforce is part-time and transitional by choice, with a smaller percentage of career retail food workers appearing in the data. We address this issue by focusing on full quarter workers, as well as examining the promotion and wage growth of workers who have earnings that are in the second and higher quintiles of the firm wage distribution, rather than the bottom quintile. The sample includes all establishments classified as grocery stores (SIC 54111) that have at least 15 full-quarter workers and 30 flow workers. Flow employment accounts for all workers employed by the firm at any time during the quarter, while full quarter employment measures all workers who were employed on either a part time or full time basis by the employer for the full quarter. The earnings measures reflect quarterly earnings without any adjustment for the number of hours worked during the quarter. There is no information on hours or weeks worked or the duration of employment within the quarter in the database.

[2] Churning is defined as accessions plus separations minus net job flows divided by employment.

earnings for full quarter workers in the firm, as well as by measures of earnings dispersion for full quarter workers.

Given the high correlation of these measures across establishment (with the exception of worker wage growth) we employ cluster analysis to classify the supermarkets into one of two groups, which for convenience we call ILM and non-ILM. The clustering strategy uses non-hierarchical clustering based upon the median value of the measures in each of the groups. The measures capture hiring, wage setting, and promotion practices and include measures of worker churning, mean earnings, the standard deviation of earnings, and the ratio of flow to full quarter workers. The clustering is done on pooled 1997 and 2002 data.

Table 1 (columns one and two) list 2002 summary statistics for firms identified as ILM or non-ILM based on the cluster analysis. By construction, the ILM and non-ILM firms differ greatly across the variables included in the cluster analysis. The pattern of the variables in the two clusters is consistent with ILM theory and reflects the high correlation among these measures. The ILM firms have significantly lower churning rates, higher average earnings, higher standard deviation of earnings, and a higher share of full quarter workers relative to flow employment. The measures of promotion, hiring, and wage growth clearly illustrate the diversity of human resource practices across supermarkets. In addition, the stores identified as ILM or non-ILM differ on other measures as well (not shown). Firms that are classified as ILM promote a larger portion of their workers into higher earnings quintiles, have stronger average within-firm earnings growth, and tend to promote from within rather than hire outside the firm to fill higher-earning positions.

The LEHD data provide universe data on both workers and firms and enable us to directly measure the diversity of different aspects of human resource practices at the establishment level. They do not, however, directly capture other measures commonly used to describe human resource practices, notably training opportunities and incentive pay structures. In order to validate the LEHD-based summary index, we incorporated information from an external survey, the Supermarket Panel survey conducted by The Food Industry Center at the University of Minnesota. The Supermarket Panel Survey is conducted at the store level and typically completed by the store manager (King, Jacobson and Seltzer, 2002). We use the 2002 Supermarket Panel Survey to construct an human resources (HR) practices index based on five store level indicators: training hours for new cashiers; hours of training for store managers, grocery department managers, and scanning coordinators; the proportion of full-time employees hired at the store; and two measures of the use of incentive-based compensation and non-cash compensation at the store.[3] These kinds of practices (more training, more full-time employment, and more incentive-based compensation) suggest a human resources environment emphasizing the development of firm-specific human capital and designed to reduce turnover.

To create the index, each store was ranked as to whether it was above or below the mean (calculated from the survey data) for each of the five measures. If the store was above the mean on at least three of the measures, it was coded as a high HR store. About one-third of the stores in the Supermarket Panel survey were ranked "high" according to

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[3] There are nine indicators of incentive based and non-cash compensation in the survey, including the issuance of annual bonuses, individual performance incentive pay, incentive pay based on product or category performance, an employee stock ownership plan, individual health insurance, family health insurance, disability insurance, a company funded pension plan, and a 401(k) plan. From the survey, we count the number of indicators that are typically part of the compensation of both full-time personnel and part-time personnel. This is consistent with the definition of an ILM in which benefits accrue to jobs and not individuals within the firm.

this index. Using this index as a guide, we then categorized major supermarket chains

into three groups: those at the high end of the HR scale, those at the low end, and those

that exhibited a high range of variability from one store location to another. While there

was a degree of subjectivity in this categorization, use of case study and industry

knowledge helped to inform the process.[4]

Table 1 (columns three and four) compare the LEHD measures for firms

categorized based on the Supermarket Panel as having high and low HR practices (those

in the mid-range are excluded from the table). These results show the expected

consistency with the LEHD-based classification into ILM and non-ILM categories. The

high and low HR stores show similar patterns as seen in columns one and two, though the

differences between the two groups are generally smaller. In particular, the firms with a

low score on the HR practices index as measured in the Supermarket Panel Survey have

significantly higher churning rates, lower mean earnings and less wage dispersion than do

firms identified as having a higher HR practices index score.

Comparing the high and low rankings based on the Supermarket Panel

categorization to the ranking of these stores based on the LEHD measures of ILMs, we

find a considerable degree of consistency despite the use of different data and measures

of HR practices. In 2002, 77% of firms identified as having high HR practices based on

the Supermarket survey were identified as being ILM firms using the cluster analysis.

Close to 60% of those firms marked as having low HR practices were designated as non-

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[4] We considered other store-level organizational factors, such as membership in a self-distributing chain
and unionization, but in the end did not include these in the HR index. Close to 50% of self-distributing
stores (those in which stores and distribution centers are under common ownership) are high HR
establishments while only 38% of wholesaler supplied stores pursue this strategy. In contrast, unionization
did not seem closely related to the HR measure. The proportion of high HR stores is very similar across
union and non-union stores in the survey.

ILM firms based on the cluster analysis. These results increase our confidence that the LEHD measures of ILMs are capturing important differences in store HR policies and practices.

Supermarket Response to Competition from Mass Merchandisers

Faced with growing competition from non-traditional food sellers, supermarkets have typically responded with changes in marketing and pricing, yet they may also alter employment and compensation strategies in an effort to adapt. In this section we analyze the impact of competition from mass merchandisers on two outcomes: the likelihood of firm exit and the probability of changing HR practices (from ILM to non-ILM or vice versa).

Table 2 provides first a descriptive look at the patterns of HR changes and firm exit over time, breaking out establishments into those that faced a significant competitive threat (defined as having two or more mass merchandisers within five miles) and those who did not, and categorizing establishments into those classified as ILM and those classified as non-ILM. Based on the establishment level data, it is clear that individual establishments in the retail food industry do not appear to be rapidly adjusting human resource practices despite changes in the external environment. Even in the high threat areas, of those firms that did not exit by 2002, most remained either ILM or non-ILM: only about 11% switched HR practices based on the ILM categorization. Any differential response appears to have occurred on the entry/exit margin. In the high threat areas, 341 firms exited, of which 40% were ILM, and 269 entered, of which 43% were ILM. In the low threat areas, a lower percentage of exiting establishments were ILM; of the 293 firms

that exited in low threat areas between 1997 and 2002, only 24% were ILM. Meanwhile, of the 180 that entered in low threat areas, 31% were ILM.

While both ILM and non-ILM firms are more likely to exit the industry than change human resource practices, non-ILM firms pursue an exit rather than change strategy at a much higher rate than ILM firms – and this is particularly true in high threat areas. In high threat areas, non-ILM firms are more than four times more likely to exit than change while ILM firms are just over twice as likely to record this outcome. In low threat areas, by contrast, non-ILM firms are still more than four times likely to exit than change while ILM firms are 1.5 times as likely to record this outcome. Given that an establishment does survive, the propensity to maintain the same HR policy over time is about the same for both ILM firms and non-ILM firms (near 80%).

Empirical analysis and findings

Human resource practices observed in the retail food industry show a significant amount of heterogeneity, though these practices also exhibit a large amount of persistence over time. In this section, we more closely examine the ways in which the labor market structure of the industry can change through establishments' differential reactions to the changing competition while controlling for a variety of establishment specific factors. We first examine the effect of changing competitive conditions on firm exit using a probit model for the probability that an establishment observed in 1997 exits by 2002. The key independent variables are the number of mass merchandisers within a five-mile radius (measured in 1997) – which is the measure of competitive threat – and a dummy for whether the firm uses ILM human resource practices. Thus we can compare the impacts of mass merchandisers on grocery store exit and the differential effect of

mass merchandisers on ILM versus non-ILM grocery store establishments. Variables that control for other aspects of the competitiveness and size of the local product market include the 1997 four-firm concentration ratio of grocery stores, 1997 county per capita income, and 1997 county population. Establishment-level control variables include firm size and workforce composition (age, sex, education and citizenship).

Table 3 presents the marginal effects from the probit regressions for firm exit. Focusing first on column 1, stores with greater numbers of mass merchandisers within a five-mile radius are more likely to exit while stores with ILM practices are less likely to exit. This important link between ILM structure and decreased probability of exit confirms other studies on supermarket performance. Furthermore, the large negative coefficient on ILM status is consistent with expectations, as ILM status is likely to be correlated with the age, multi-unit status, and overall economic performance of a grocery establishment. While the effect of mass merchandisers is relatively small, it is consistent with our expectations that competition from mass merchandisers adversely affects traditional grocery store survival.

The second column adds an interaction between number of mass merchandisers nearby and ILM status. The coefficient on this variable is positive and significant suggesting that grocery establishments with ILMs, relative to non-ILM grocery establishments, are more adversely affected by competition from mass merchandisers. The coefficient on mass merchandisers becomes insignificant while the coefficient on ILM status becomes larger. The size and significance of these first three coefficients remains constant as additional controls for local product market conditions and firm characteristics are added in the last two columns, despite the relatively small sample size.

The overall results from the model are particularly informative given industry discussions about how to deal with emerging competition from mass merchandisers. Information from supermarket managers who faced early entry from mass merchandisers suggested a conservative strategy in adjusting labor practices. The *Progressive Grocer* noted that grocers who are "doing battle with supercenters tend to rely on tried-and-true weapons such as service and perishables" (Garry 1993). Competitive tactics such as expanding service departments, focusing on strong customer service, and putting more emphasis on the quality of perishables were mentioned by store managers as the best methods for competing against mass merchandisers and supercenters. These strategies rely on dedicated, long-term employees who are familiar with the longtime customers and have a commitment to service and are most effectively implemented with an ILM workforce.

A second issue is to identify factors that influence changes in the internal labor structure of food retailers, restricting attention to establishments who remain in business from 1997 through 2002. This specification is restricted to food retailers identified as having an internal labor market in 1997and estimates the probability of switching from ILM to non-ILM status by 2002 using a probit model. Across all specifications presented in Table 4, the number of mass merchandisers located in the same market area as a food retailer had no statistically discernible impact on switching behavior (similarly, the number of mass merchandisers had no statistically significant correlation with switching from non-ILM to ILM status in a separate regression not shown). Food retailers with an ILM structure were significantly less likely to switch to a non-ILM structure when operated in a region with a high concentration ratio than if it operated in a region with a

low concentration ratio. A ten-percentage point increase in the CR-4 ratio is associated with a decrease in the probability of switching from ILM to non-ILM status of about four percentage points. This effect is apparent even when grocery store size is controlled for in the model, although the point estimate is reduced and statistical significance is at the 10% significance level. This result suggests that increases in the concentration ratio of grocery sales in a given region provide an insulating factor for food retailers to retain high performance human resource practices. Overall, however, the competitive presence of mass merchandisers does not appear to influence food retailers into switching either to or away from an ILM structure.

Conclusion

Technology, changing consumer preferences, and competition from non-traditional food retailers like Wal-Mart have led to major changes in supermarket operations, pricing and supply chain strategies over the past decade. Several recent empirical studies suggest that Wal-Mart's entry reduces employment and payroll in a county, yet the way in which an industry's labor market adjusts in response to such competitive shocks is not clear. The evidence presented here suggests that there is considerable heterogeneity in human resource practices across retail food establishments, and these practices are quite persistent even in the face of new external competition. While individual establishments do not appear to change HR strategies rapidly, the local labor market may be impacted through the entry and exit of particular firms, rather than changes in strategies of existing firms. Establishments with ILMs as a whole are less likely to exit, yet ILM establishments are more likely than non-ILM establishments to exit in areas with increased competition from mass merchandisers. Our analysis of

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matched employee-employer data finds that while HR practices are persistent among food retailers, local labor markets are likely to be impacted by entry of mass merchandisers through entry and exit of firms.

References

Abowd, J., F. Andersson, K. McKinney, M. Roemer, B. Stephens, L.Vilhuber, and S. Woodcock. 2005. "The LEHD Infrastructure Files and the Creation of the Quarterly Workforce Indicators." LEHD Technical User Guide.

Ai, C. and E. Norton. 2003. "Interaction Terms in Logit and Probit Models." *Economic Letters*. 80: 123-29.

Basker, E. 2005. "Job Creation or Destruction? Labor-Market Effects of Wal-Mart Expansion." *Review of Economics and Statistics*. 87 (1).

Ben-Ner, A., F. Kong, and S. Bosley. 1999. "Workplace Organization and Human Resource Practices: The Retail Food Industry." Working paper, The Food Industry Center, University of Minnesota.

Bernhardt, A., M. Morris, M. Handcock and M. Scott. 2001. *Divergent Paths: Economic Mobility in the New American Labor Market.* New York: Russell Sage Foundation.

Davis, E., M. Freedman, J. Lane, B. McCall, N. Nestoriak, T. Park, 2005. "Product Market Competition and Human Resource Practices: An Analysis of the Retail Food Sector." Working paper, The Food Industry Center, University of Minnesota.

Fairris, D. "Internal Labor Markets and Worker Quits." *Industrial Relations*. 43: 573-594. 2004.

Garry, M. 1993. "Showdown! Standing up to Supercenters." *Progressive Grocer*. 72 (February): 44-50.

Groshen, E. and D. Levine. 1998. "The Rise and Decline (?) of U.S. Internal Labor Markets." Federal Reserve Bank of New York, Research Paper Number 9819.

Haltiwanger, J., J. Lane, and J. Spletzer. 2006. "Wage, Productivity and the Dynamic Interaction of Businesses and Workers." *Labour Economics*, forthcoming

Hughes, K. 1999. "Supermarket Employment: Good Jobs at Good Wages?" IEE Working Paper No. 11. April.

King, R.P., E.M. Jacobson, and J.M. Setzer. 2002. *The 2002 Supermarket Panel: Annual Report.* The Food Industry Center, Department of Applied Economics, University of Minnesota.

Lazear, E. and P. Oyer. 2004. "Internal and External Labor Markets: A Personnel Economics Approach." *Labour Economics*. 11: 527-524.

Neumark, D., J. Zhang, and S. Ciccarella. 2005. "The Effects of Wal-Mart on Local Labor Markets." NBER working paper W11782.

Warner, M. 2005. "An Identity Crisis for Supermarkets: Stores are Losing Shoppers to Specialty Chains and Discount Giants." *New York Times*. October 6, 2005.

Table 1: Summary statistics on employment and pay practices of supermarkets

2002	Non-ILM	ILM	Low HR index	High HR index
	(1)	(2)	(3)	(4)
Sample size	1,781	1,242	82	188
Churning rate	0.20	0.11**	0.14	0.10**
Log mean earnings	8.27	8.79**	8.50	8.70**
Log std. deviation of earnings	7.86	8.53**	8.28	8.47**
Flow-to-full-quarter employment ratio	1.62	1.35**	1.36	1.37

Note: Columns one and two cluster stores based on LEHD measures. Columns 3 and 4 group stores based on external survey data on human resource practices.
**Difference between ILM (high HR index) and non-ILM (low HR index) is statistically significant at the 5% level.

Table 2: Changes in ILM status of food stores in areas with high or low threat of competition from mass merchandisers

	Number of establishments in 1997	Did not change ILM status by 2002 (%)	Changed ILM status by 2002 (%)	Exited by 2002 (%)
High-threat location				
Non-ILM	462	44.6	11.5	43.9
ILM	537	62.9	11.3	25.7
Low-threat location				
Non-ILM	511	47.4	9.2	43.4
ILM	354	66.4	13.5	20.1

Table 3: Estimation results on the probability of firm exit (probit model)

Marginal effects	(1)	(2)	(3)	(4)
Number of mass merchandisers nearby	0.0132*** (0.0048)	0.0043 (0.0062)	0.0057 (0.0062)	0.0100 (0.0076)
ILM	-0.2080*** (0.0214)	-0.2586*** (0.0306)	-0.2594*** (0.0307)	-0.2172*** (0.0365)
ILM * number of mass merchandisers		0.0168* (0.0090)	0.0169* (0.0090)	0.0166* (0.0093)
Four-firm concentration ratio			0.0792* (0.0449)	0.0465 (0.0479)
Controls for firm size and workforce composition and state dummy variables	No	No	No	Yes
Observations	1,864	1,864	1,864	1,864

Notes: Standard errors in parentheses. Marginal effects calculated including the Ai-Norton (2003) correction for the magnitudes and standard errors of the interaction effects.
*significant at 10% level; ** significant at 5%; ***significant at 1%

Table 4: Estimation results on the probability of changing HR practices (probit model of switching from ILM to non-ILM)

Marginal effects	(1)	(2)	(3)	(4)
Number of mass merchandisers nearby	0.0035 (0.0067)	0.0009 (0.0066)	0.0076 (0.0067)	-0.0200 (0.0065)
Four-firm concentration ratio		-0.1768*** (0.0636)	-0.2126*** (0.0630)	-0.0867* (0.0513)
Log per capita income			-0.2730*** (0.0664)	-0.2259*** (0.0659)
Controls for firm size, workforce composition and state dummy variables	No	No	No	Yes
Observations	668	668	668	668

Notes: Standard errors in parentheses. Models also include controls for change in ownership and log of county population.
*significant at 10% level; ** significant at 5%; ***significant at 1%