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Fuels sales through retail chains and their store traffics and revenue

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Abstract

Purpose – Using panel data on gasoline and grocery transactions in Korea, the purpose of this paper is to empirically explore the effect of a retail chain store's establishment of on-site fuel sales. The empirical analyses present strong empirical evidence that the sale of fuel had statistically and economically significant effect on retail store traffic and revenue in the short run. However, the effect did not remain significant in the longer run. To explain the dramatic decrease in the effect of the fuel sale, the authors consider the enhanced competition in the local gasoline retail industry and examine cross-sectional price variations at the station level. The results suggest that the increased competition led to the reduction in the price dispersion across stations and thereby to an increase in consumer welfare.

Design/methodology/approach – Using a linear specification that has traditionally been used to model retail chain data, the authors developed a series of difference-in-differences models. This technique is ideal for estimating the effect of a treatment in the presence of possible selection bias and has been widely employed in many social-science studies on policy intervention.

Findings – In a certain environment, introducing fuel sales did not increase retail chain store traffic or revenue in the long run, despite having statistically and economically significant effects in the short run. The results document empirical evidence of myopic management in a common marketing practice, which often leads to a negative impact on the firm value in the long run.

Research limitations/implications – The span of data and sample size were limited to meet the company's data protection policy.

Practical implications – Considering that many of developed countries are characterized by a gasoline retail environment similar to that which is investigated in this paper, the authors believe that the implications of the results are particularly valid for practitioners and policy makers.

Social implications – The findings document empirical evidence of myopic management in a common marketing practice, which often leads to a negative impact on the firm value in the long run. Marketing researchers should make efforts in establishing metrics to help identify myopic management decision.

Originality/value – This paper addresses an interesting and practical issue related to the effects of the introduction of gasoline sales by a supercenter store on its store traffic.

Keywords Promotions, Gasoline price dispersion, Grocery expenditures, Store traffic

Paper type Research paper

1. Introduction

Grocery retailing is a highly competitive industry in the USA. Dozens of different types of store formats now operate to gain their shares of consumers' food expenditures, and conventional grocers have lost their shares to retailers in the new formats. In particular, convenience stores have dramatically expanded their reach to customers, and supercenter stores such as Walmart and Costco have become the largest sellers of food. Although the competitive environment in the grocery retail industry is not a worldwide phenomenon, other industrialized nations exhibit similar patterns. For example, in Korea, which we will

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explore in this paper, traditional supermarkets are facing a decline in revenues as alternative shopping formats continue to attract value-driven customers.

As a result, retailers have actively engaged in developing and implementing a wide variety of marketing strategies to enhance their profits. Among such efforts, a notable strategy commonly practiced by US retail chains is to offer competitively priced fuel to increase the traffic to stores. For example, Costco, on average, sells gasoline at between 6 cents and 12 cents below the market price with the hope that its gasoline stations, usually located adjacent to its "warehouse" stores, will bring more customers to its stores (Peterson, 2014).

An interesting feature of this practice is that it not only enhances the traffic to Costco's warehouses but also creates competition for gasoline retailers. In the retail gasoline industry, the major oil companies have largely withdrawn from retail operations, and independent entrepreneurs operate the remaining branded locations. In the USA, more than 58 percent of fuel retailers are single-store operators, and these small businesses are often not capable of competing with low-cost retail chain operators. Accordingly, sales at independent gasoline stations have decreased considerably, and sales through retail chains account for an increasing share of the total fuel sales.

However, this pattern of fuel distribution through retail chains has not developed in many countries, and gasoline stations instead typically operate under the nameplate of oil companies. For example, in Korea, supercenter stores operating gasoline stations on-site were not introduced until 2008. Thus, given the fact that there are considerable differences in shopping environments, such as station density, only restricted implications for other regions can be extrapolated from the implementation of fuel sales by retail chains in the USA or from the case of countries without fuel sales through retail chains. Considering that the gasoline retail industry is of great importance to the economy, examining how the establishment of gasoline stations by grocery retail chains influences consumers and competitors in the gasoline and grocery retail industries in this region could provide effective guidance to researchers and practitioners.

In this paper, we present results from analyses of a scanner-panel data set of gasoline and grocery transactions with the following focuses. First, we investigate how the introduction of an on-site gasoline station impacted a retailer's store traffic in the short and longer run, and, second, explore whether the increased competition in the gasoline retail market influenced the cross-sectional variation in gasoline prices and consumer welfare.

Our empirical analyses document strong empirical evidence that a supercenter store built strong store traffic when it first began offering gasoline. In particular, the establishment of fuel sales, on average, increased monthly store traffic to the store by 18.86 percent for the first three months after implementation and increased monthly revenue by 21 percent. However, this effect did not remain significant in the longer run, and the change in store traffic turned out to be null. To understand why the effect diminished dramatically, we considered how competing gasoline stations in the same local cluster responded. We found that increased competition lowered the price differentials across stations considerably and thereby increased consumers' welfare. Thus, our results caution that the marketing strategy heavily employed in the US retail industry may not be appropriate for retailers in other developed countries.

2. Literature review

Two major issues in marketing and economics are related to our paper. The first is a vast literature in marketing on store choice decisions, which addresses a wide range of retailers' efforts to attract customers using different econometric techniques. For example, this stream explores variable costs of shopping such as price promotions, price formats and product assortments (e.g. Bell and Lattin, 1998; Briesch *et al.*, 2013; Choi, 2017; Hampl and Loock, 2013; Mulhern and Leone, 1990; Walsh *et al.*, 2011), along with the fixed cost of shopping associated with consumer store choice decisions such as store location and

the associated travel costs (e.g. Brown, 1989; Huff, 1964). Yet, the establishment of fuel sales by a grocery retail chain is qualitatively different from such variables addressed in the past research. For example, unlike many consumer goods, customers tend to shop for a single homogeneous product on a given trip to a retailer and can determine the actual prices from the displayed list before visiting the station. Thus, due to unique characteristics of the shopping environment, only a restricted perspective about the effect of the fuel sale can be extrapolated from the extant studies on store traffic, and our research adds substantive empirical knowledge to the grocery retail sales.

Apart from the different decisions retailers engage in, the studies on customer store choice decisions also consider different model specifications. First, the standard models focus on the contemporaneous effect of current variables on the current variable of key interests. However, in these efforts, the impact on future traffic is not explicitly incorporated in the model, and the grocery sales are inelastic to the changes in the retailers' decisions (Neslin and Shoemaker, 1983). As these findings imply that myopic decisions would not best describe the optimal outcome that maximize the long-term profitability of retailers, researchers introduce the effect of important variables on the future store traffic. For example, Fox *et al.* (2009) develop a model for category pricing based on the idea that variables in the current period can affect future patronage and highlight the importance of the dynamic effect of the retailers' decisions. Olshavsky and Mackay (2015) empirically compare different choice models and find that consumers' store choice is made in a conjecture fashion. As a result, our paper explicitly incorporated the short- and longer-run effect of an establishment of the on-site fuel sale and provided comprehensive understanding about how its effect differs.

Despite a weak link between retail prices and store traffic described in some empirical studies (e.g. Walters and MacKenzie, 1988), a converging conclusion in this stream is that the retailers' efforts are made to build store traffic (Berman and Evans, 1986). Thus, conventional wisdom about the retailers' practice is that retailers lower prices to enhance store traffic (Dhar and Hock, 1997; Dreze, 1995) and that increases in sales of promoted products are primarily attributed to competition across retailers (Chevalier, 1975; Epstein *et al.*, 2016). This is consistent with our findings, described in Section 4, that the establishment of fuel sales by a dominant retail chain has a statistically and economically significant effect on its store traffic in the short run.

Second, our findings include the fact that over a longer time horizon, allowing retailers time to respond, the operation of a gasoline station by the supercenter store increased competition in the local market and resulted in significantly lower prices at competing stations. Such findings suggest that enhanced competition among sellers results in less price dispersion and improves consumer welfare, supporting a large number of studies on price differentials across gasoline stations (Cooper and Jones, 2007; Eckert and West, 2004; Hosken *et al.*, 2008; Pennerstorfer, 2009).

The gasoline retail industry is of extreme and growing importance to the economy, and extensive studies have been conducted to understand the relevant issues. For example, researchers estimate gasoline demand using a wide variety of functional forms, model assumptions and specifications, motivated by concerns about energy security and examine the competition across gasoline stations (e.g. Eckert, 2013; Eckert and West, 2004; Hosken *et al.*, 2008; Lee *et al.*, 2015; Pennerstorfer, 2009; Borenstein and Shepard, 1993). Given ample evidence about how cross-sectional price variations arise at the station level in a large number of studies, our paper not just replicated their results but also provided a unique opportunity to witness how a gasoline retail market adjusted to an external shock.

The remainder of this paper proceeds as follows. In Section 3, we describe the data. In Section 4, we investigate the short- and long-run effects of the introduction of gasoline

sales by a supercenter store on its store traffic. In Section 5, we discuss why the supercenter store saw initial positive effects and then a significant decrease in such effects, and discuss the implications of our findings. Section 6 concludes.

3. Data

The data were drawn from the largest consumer-rewards program in Korea. The data contained information on gasoline and grocery transactions for 100,000 households between 2008 and 2010[1]. The households were randomly selected from one of the satellite cities neighboring Seoul. This city is a primarily residential commuter town, from which most of the workforce commutes out to Seoul.

For each gasoline transaction, available information included customer and station identifiers, the date, the quantity purchased, the amount paid and the grade of gasoline (the unit price of gasoline was calculated as the ratio of amount paid to quantity purchased). Each grocery transaction included customer and station identifiers, the date, and the amount paid. In summary, our data set allowed us to observe how customers shopped across different gasoline retailers and to construct measures of key constructs describing consumers' behaviors and industrial features.

The focal supercenter store, which established a gasoline station on-site in December 2008, appeared in our data along with three other supercenter stores in the same city. These stores operate under the nameplate of the largest supercenter chain in Korea and, therefore, share central management by the same company. Although none of supercenter stores, except the focal store, operate on-site gasoline stations, the data confirmed that there were three other gasoline stations within a 1.5-mile radius of the focal supercenter store among 93 stations in the same city.

Table I and Figure 1 summarize the average monthly revenues and store traffic for the four supercenter stores in the city before the establishment of fuel sales by the focal supercenter store.

	Average monthly revenue	Average monthly store traffic
Focal store	108,152,300 won	4,032
Control store 1	250,344,600 won	8,398
Control store 2	98,339,200 won	3,104
Control store 3	251,041,500 won	8,209

Note: As of October 25, 2015, the US$–Korean won exchange rate was approximately 1,128 Korean won to $1

Table I.
Average monthly revenue and store traffic

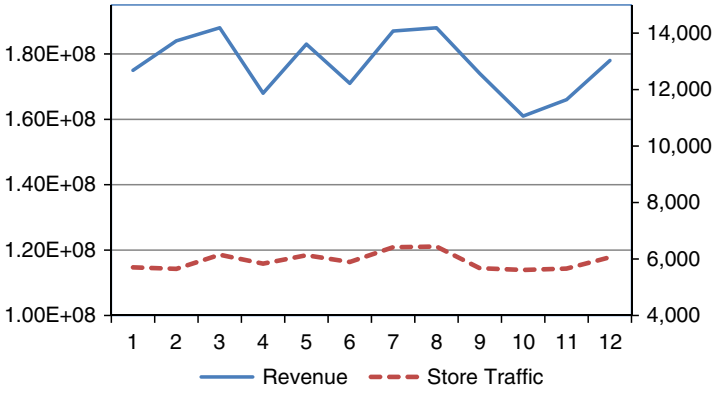

Figure 1.
Average monthly revenue and store traffic in 2008

We found that there was considerable heterogeneity across stores in both revenue and store traffic and that seasonality was considerable in the revenues of these stores. More specifically, Stores 1 and 3 exhibited the largest revenues, which exceed those of the focal store and Store 2 by more than 200 percent, and revenues at all the stores dropped significantly during October and November.

Finally, Figure 2 reports gasoline prices in Korea, and Table II illustrates consumers' shopping behaviors at the gas pump. Gasoline prices are considerably high in Korea, and consumers maintain substantial gasoline expenditures. For example, the median price of gasoline in Korea exceeded 1,800 won during June and July of 2008 but subsequently dropped during December 2008 and January 2009 to under 1,600 won for the first time since 2006. Customers, on average, spent 207,572 won per month over 4.22 gasoline shopping trips, and their average monthly gasoline expenditures were equivalent to approximately 11 percent of the consumption expenditures of an average Korean customer. We believed that substantial gasoline prices and fuel expenditures together assured that reduced fuel prices would give consumers strong incentives to switch between retailers.

4. Store traffic and revenue

To study the effect of the introduction of fuel sales at a supercenter store, we first focused on the traffic to the supercenter store. Using a linear specification that has traditionally been used to model retail chain data, we developed a difference-in-differences model of store traffic. This technique is ideal for estimating the effect of a treatment in the presence of possible selection bias and has been widely employed in many social-science studies on policy intervention (e.g. Athey and Imbens, 2002). Thus, we calculated the effect of fuel sales

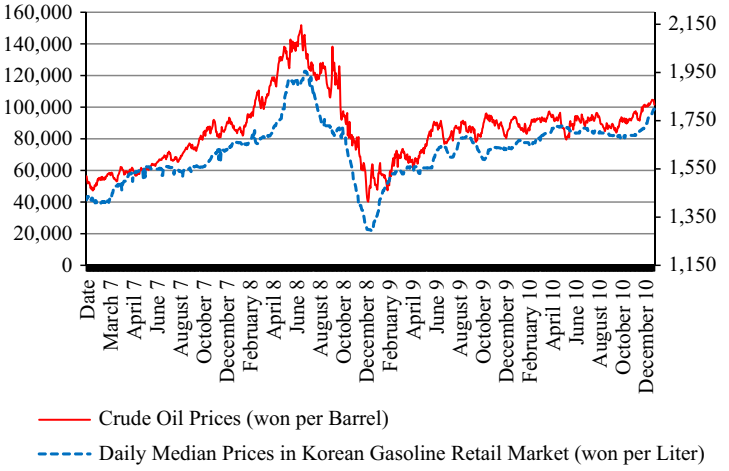

Figure 2.
Gasoline prices in Korea

Gasoline purchasing behaviors	
Total gasoline expenditures	207,572 won
Average expenditures per trip	49,842 won
Average monthly number of shopping trips	4.22
Average distance traveled for a shopping trip	1.81 miles
Average percentage of purchases at most frequently visited station	77.84%
Number of customers	100,000

Table II.
Consumer shopping behaviors – descriptive statistics

by a supercenter store on its store traffic by comparing changes in the focal supercenter store's average store traffic over a short and longer time horizon with the changes in store traffic for the other supercenter stores in the control group.

Our model of store traffic is specified in log-linear form because we observed considerable variation in the magnitude of traffic across supercenter store and over time. Thus, we used the following model specification:

$$\log\ Traffic_{it} = \alpha^0 + \sum A^1 I^i_{store} + \sum A^2 I^t_{time} + \alpha^1 FuelSales_t \times Short_t + \alpha^2 FuelSales_t \times Long_t + \varepsilon^1_{it}. \quad (1)$$

$Traffic_{it}$ is store i's number of consumers' visits during week t; I^i_{store}s and I^t_{time}s are dummies identifying stores and weeks; $FuelSales_t$ is a dummy indicating the establishment of the fuel sales by the focal supercenter store at week t; and $Short_t$ and $Long_t$ are dummies indicating the time period (with the short-term and longer-term periods defined as three months within and after, respectively, the implementation of fuel sales at the focal supercenter store).

With explicit controls for time trends and heterogeneity across stores, α^1 and α^2, this specification distinguishes between the effects of the fuel sales over the short and longer time horizons. In particular, α^1 estimates the short-run effect and α^2 estimates the longer-run effect of the establishment of the fuel sales.

In addition to the model of store traffic, we also estimated a model of store revenue and investigated whether any increase in store traffic due to fuel sales also enhanced store sales. The regression for the store revenue and its explanatory variables are defined similarly to those in the previous models for store traffic:

$$\log\ Revenue_{it} = \beta^0 + \sum B^1 I^i_{store} + \sum B^2 I^t_{time} + \beta^1 FuelSales_t \times Short_t + \beta^2 FuelSales_t \times Long_t + \varepsilon^2_{it}. \quad (2)$$

$Revenue_{it}$ is store i's total revenue during week t; I^i_{store}s and I^t_{time}s are dummies identifying stores and weeks; $FuelSales_t$ is a dummy indicating the establishment of the fuel sales by the focal supercenter store at week t; and $Short_t$ and $Long_t$ are dummies indicating the time period. Accordingly, β^1 estimates the short-run effect and β^2 estimates the long-run effect of the establishment of fuel sales on the supercenter store's revenue.

Table III gives the coefficient estimates of the two models and their standard errors. In the presence of significant heterogeneity in traffic across stores, described in the coefficient estimates, A^1's, the results of the store-traffic model, shown in the left column,

	Store traffic	Revenue
$FuelSales_t \times Short_t$	0.1886** (0.0532)	0.1956** (0.0788)
$FuelSales_t \times Long_t$	0.0663* (0.0333)	0.0626 (0.0430)
Intercept	7.8413** (0.0269)	18.1233** (0.0353)
Control for store heterogeneity		
Store1	0.7434** (0.0222)	0.8119** (0.0290)
Store2	−0.0256 (0.0221)	−0.1659** (0.0290)
Store3	0.7479** (0.0220)	0.8518** (0.0287)
Adjusted R^2	0.9629	0.9433
Observations	208	208

Notes: Standard errors are shown in parentheses. *$p < 0.05$; **$p < 0.01$

Table III. Store traffic/revenue model results

present a significant effect of fuel sales. In particular, for the first three months after the establishment of an on-site gasoline station, the supercenter store's store traffic increased by 18.86 percent. The results of the revenue model, reported in the right column, also confirm its significant effect on retailer's revenue, showing that the enhanced store traffic increased store revenue by 19.86 percent during the same time period.

In contrast, we found that the establishment of fuel sales at the supercenter store did not have a significant effect on its store traffic and revenue in the longer run. More specifically, none of the α^2 and β^2 coefficients is economically significant, indicating that "the establishment of fuel sales had only a limited effect on the supercenter's store traffic after the first 3 months."

To evaluate the robustness of our findings, we replicated the analysis using varying periods to define the short- and longer-run effects of fuel sales. In particular, we conducted the analysis using periods of two, four and six months to specify the short-run effect. Our findings for these three model specifications are reported in Tables IV and V. The results were qualitatively unchanged, and the primary findings of the first and second models in Table III survived our robustness checks: the short-run effect of fuel sales was statistically significant on store traffic and revenue and fuel sales turned out to increase store traffic and revenue by approximately 20 percent in the short run. However, the effect was not significant or much smaller in the longer run.

This pattern of results is particularly interesting. Although there is mixed empirical evidence concerning the effect of promotions and reduced prices on store traffic, the statistically and economically significant short-run effect of fuel sales in our findings gave little reason for their null effect over the longer time horizon.

	Replication 1 (2 months)	Replication 2 (4 months)	Replication 3 (6 months)
$FuelSales_t \times Short_t$	0.1901** (0.0605)	0.1886** (0.0532)	0.1746** (0.0385)
$FuelSales_t \times Long_t$	0.0732* (0.0330)	0.0663* (0.0333)	0.0223 (0.0362)
Intercept	7.8410** (0.0271)	7.8413** (0.0269)	7.8405** (0.0263)
Control for store heterogeneity			
Store1	0.7437** (0.0223)	0.7434** (0.0222)	0.7442** (0.0217)
Store2	−0.2567** (0.0222)	−0.2568** (0.0222)	−0.2555** (0.0217)
Store3	0.7482** (0.0220)	0.7479** (0.0220)	0.7489** (0.0215)
Adjusted R^2	0.9626	0.9629	0.9644
Observations	208	208	208

Notes: Standard errors are shown in parentheses. *$p < 0.05$; **$p < 0.01$

Table IV.
Replications of store-traffic model

	Replication 1 (2 months)	Replication 2 (4 months)	Replication 3 (6 months)
$FuelSales_t \times Short_t$	0.1956** (0.0788)	0.2135** (0.0691)	0.2021** (0.0497)
$FuelSales_t \times Long_t$	0.0626 (0.0430)	0.0498 (0.0433)	−0.0150 (0.0467)
Intercept	18.1233** (0.0353)	18.1226** (0.0350)	18.1211** (0.0340)
Control for store heterogeneity			
Store1	0.8119** (0.0290)	0.8114** (0.0288)	0.8124** (0.0281)
Store2	−0.1659** (0.0290)	−0.1663** (0.0288)	−0.1644** (0.0280)
Store3	0.8518** (0.0287)	0.8513** (0.0285)	0.8525** (0.0278)
Adjusted R^2	0.9433	0.9440	0.9470
Observations	208	208	208

Notes: Standard errors are shown in parentheses. *$p < 0.05$; **$p < 0.01$

Table V.
Replications of store-revenue model

We understand that our analysis does not explicitly incorporate the effect of promotions practiced by different stores. However, note that the supercenter stores are operated by the same management, and their marketing strategies are often implemented interdependently. For example, we confirmed that exactly the same information was often contained in online and paper flyers for the supercenter stores that appeared in our data. Thus, our difference-in-differences model sought to remedy the current concerns and control for the possible bias from omitted variables.

Competition in the gasoline retail industry

The significant heterogeneity in the effects of fuel sales over the short and longer time horizons prompted us to explore what led to such an unexpected pattern. In this section, we focus on the competition in the gasoline retail industry and examine how competing gasoline stations responded to the introduction of fuel sales by the supercenter store.

To examine the responses of gasoline stations in the same local cluster, we employed a linear model, with the dependent variable measuring the price advantage of the supercenter store over the competing gasoline stations. To ensure the robustness of our findings, we varied the specification of the dependent variable, using the following specifications:

$$\text{Price Advantage 1: } \sum_{n} \frac{price_{it}}{n} - price_F^t,$$

$$\text{Price Advantage 2: median}(price_{it}) - price_F^t.$$

The model is linear and takes the following specification:

$$advantage_t = \gamma^0 + \gamma^1 Short_t + \varepsilon_{it}^3 . \quad (3)$$

Note that the model provides coefficients in absolute terms rather than in percentages, unlike the previous models. The explanatory variables are similarly defined. In turn, $\gamma^0 + \gamma^1$ estimates the average price advantage of the focal supercenter store over the station i within three months of the establishment of fuel sales, and γ^0 estimates the average price advantage afterward. Given the significant heterogeneity in the effects of fuel sales across different time horizons, we predicted that the price advantage should be predominant in the short run but should not remain significant in the longer run as a result of the responses by competing gasoline stations.

Table VI reports the results from two models. Consistent with our expectation, γ^1 is statistically and economically significant and positive. In contrast, the fairly small estimate of γ^0 suggests the limited influence of fuel sales in the longer run, supporting the argument

Dependent variable: Price Advantage 1	
$Short_t$	133.3846** (5.0224)
Intercept	35.0860** (4.9712)
Adjusted R^2	0.7419
Observations	665
Dependent variable: Price Advantage 2	
$Short_t$	139.6942** (5.0267)
Intercept	27.9531** (4.9754)
Adjusted R^2	0.7366
Observations	665

Notes: Standard errors are shown in parentheses. *$p < 0.05$; **$p < 0.01$

Table VI.
Price advantage model

that competing gasoline stations in the local market made sufficient adjustments in their prices. More specifically, the coefficient estimates imply that the focal superstore offered its fuel at approximately 168 won below the market median and average prices, for the first three months after its establishment. This pattern turned out to be predominant in all replications with varying lengths defining the short-run effect, as reported in Table VII.

One way to interpret the magnitude of $\gamma^0 + \gamma^1$ is as follows: Customers, on average, purchased 34.5 liters of gasoline per gasoline purchase occasion during the data period we investigated in this analysis. The estimate of $\gamma^0 + \gamma^1$ for the first model specification suggests that a gasoline purchase of this size at the supercenter store would save consumers 4,588 won compared to a purchase at an average station in the same local market.

Our findings strongly suggest that the significant increase in the store's traffic was largely attributable to its sales of gasoline at reduced prices. However, the substantially enhanced competition among local gasoline stations that resulted led those stations to respond by reducing their prices significantly. The difference between average gasoline prices in the same local cluster and in an independent control area, described in Figure 3, further support our argument. More specifically, the average prices in the region of our focal

	Replication 1 (2 months)	Replication 2 (4 months)	Replication 3 (6 months)
Dependent variable: Price Advantage 1			
$Short_t$	113.3969** (7.1170)	136.1846** (4.1542)	141.8006** (3.8050)
Intercept	53.8254** (6.2510)	26.4139** (4.4191)	7.9701 (4.3212)
Adjusted R^2	0.6131	0.7971	0.8284
Observations	665	665	665
Dependent variable: Price Advantage 2			
$Short_t$	120.7077** (7.1851)	137.2658** (4.3755)	131.5912** (4.5922)
Intercept	46.4315** (5.3109)	22.5807** (4.6545)	12.9958** (5.2151)
Adjusted R^2	0.5983	0.7707	0.7453
Observations	665	665	665

Notes: Standard errors are shown in parentheses. *$p < 0.05$; **$p < 0.01$

Table VII.
Replications of price advantage model

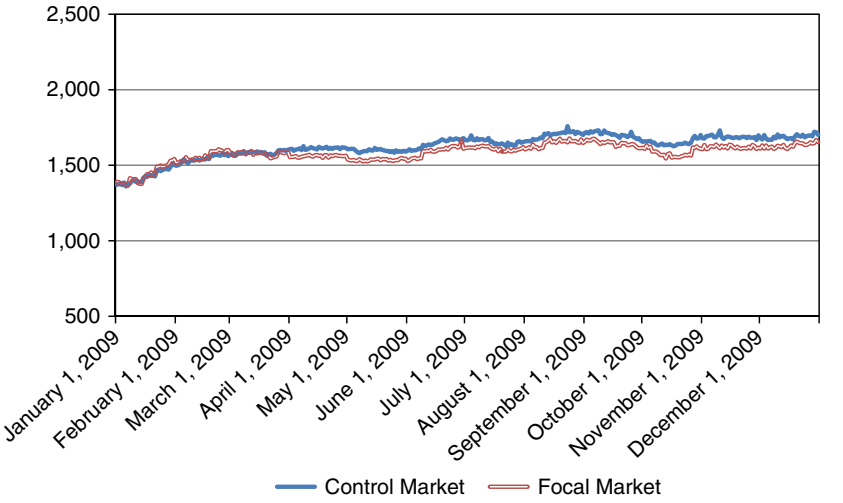

Figure 3.
Gasoline prices in focal and control regions

interest decreased gradually but to a considerable extent after the establishment of fuel sales by the supercenter store, and they have remained approximately 2.88 percent below those in the control region since April 2009. A series of our analyses advise that fuel sales by a retail chain do not increase its store traffic in the long run; instead, the increased competition in the gasoline retail industry just increases consumers' welfare.

5. Discussion

We found that the effect of fuel sales on supercenter store traffic did not remain significant in the long run. However, such findings contradict what has been observed in the USA. For example, gasoline stations attached to US retail chains maintain gasoline prices that are lower than those of local competitors by a considerable margin, and fuel sales through retail chains account for an increasing share of total gasoline sales.

To understand the reasons for such a discrepancy between our findings and implications from the US market, we focus on the local concentration in the gasoline retail industry. The population density in the USA is relatively low compared to that in the local market explored in this paper, and US customers, on average, face lower station density. The extensive literature on cross-sectional price variations suggests that price dispersion at the station level is associated with competition in the local market. Considering that many of developed countries are characterized by a gasoline retail environment similar to that which we investigated in this paper, we believe that the implications of our results are particularly valid for practitioners and policy makers. More specifically, grocery retail chains under high population and station density should focus on more traditional marketing practices such as product selection, price competitiveness, ease of access or courtesy of personnel particularly given the fact that such on-site fuel sales appear to be ineffective.

Our results and proposed explanation for why such a dominant marketing practice in the USA is not appropriate for other parts of the globe document empirical evidence of myopic management in a common marketing practice, which often leads to a negative impact on the firm value in the long run. As, in theory, the overemphasis on short-term goals and inefficient decision making arises from imperfect information (Mizik, 2010), marketing researchers should make efforts in establishing metrics to help identify myopic management decision.

6. Conclusion

In this paper, we have explored the effect of fuel sales by a retail chain. Given that gasoline sales through retail chains account for an increasing and substantial share of total fuel sales in the USA, we predicted that this strategy should enhance the store traffic of retail chains. However, introducing fuel sales did not increase retail chain store traffic or revenue in the long run, despite having statistically and economically significant effects in the short run.

To understand what might have triggered such an unexpected pattern, we investigated how competing gasoline stations responded to the reduced price of gasoline offered by the focal supercenter store. Interestingly, we found that the supercenter store maintained gasoline prices lower than at other stations in the same local cluster when it first established its fuel sales. However, the supercenter store failed to preserve the price advantage over the competing stations over a longer time horizon, as these stations reduced their prices in turn.

Our findings caution that the establishment of fuel sales may not a workable method for enhancing the store traffic and revenues of retail chains in particular. In light of the prevalent presence of on-site gasoline stations among retail chains in the USA, we believe that the unexpected outcome primarily arose from the environmental differences between the two regions. Given the absence of such a marketing practice in the other markets, the implications of the current findings are important for managers and policy makers in other regions.

Note

1. The span of data and sample size were determined to meet the company's data protection policy.

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