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SIEPR Discussion Paper No. 06-22

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The Case Of McDonald's Dollar Menu**

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February 2007

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Price Control In Franchised Chains: The Case Of McDonald's Dollar Menu*

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January 2007

Abstract

We present new evidence on the ability of chains to improve control over prices set in their franchised outlets. We construct and analyze panel data of fast food outlets from 1999 and 2006 to quantify price differences between franchised and corporate-owned outlets, and to test whether the introduction of low-priced items is an effective tool to control prices in franchised chains. Our main finding is that since 1999, McDonald's franchisees' price premium over corporate-owned outlets has fallen by 70%, and that this drop has occurred only in items with good substitutes in the Dollar Menu, introduced by McDonald's in 2002. We also test how competition and repeat customers affect pricing in franchised and corporate-owned outlets. We find that whereas the existence of repeat customers affects prices, competition does not.

JEL classification: L42; K21; L14

Keywords: Franchising; Fast food; Free riding; Vertical restraints

*We are thankful to Liran Einav for encouragement and support from the early stages of this paper. We also thank Raphael Thomadsen for his comments and for kindly providing us the 1999 data used in the paper. We also received helpful comments from Ran Abramitzky, Susan Athey, Tim Bresnahan, David Genesove, Philip Leslie and the I.O. workshop participants at Stanford University. Ater gratefully acknowledges financial support from Stanford John M. Olin Law and Economics Program.

1 Introduction

How can managers control the level of their subordinates' efforts? How can firms prevent employees from free riding on their peers' efforts and consequently harming the group outcome? We address these fundamental questions, first motivated by Alchian and Demsetz (1972), by investigating empirically the franchising industry and in particular the largest franchising chain, McDonald's.

Most franchising chains operate under both company-owned outlets and franchised outlets. In the former, a manager is paid a salary while the chain is the residual claimant of the profits. In the latter, the franchisee keeps the profits after paying the applicable fees to the chain. Thus, franchising has been long recognized as providing franchisees high powered incentives which are essential in large organizations, particularly when production is decentralized. Yet this high-powered incentive scheme comes with a price, which can degrade a chain's brand and reputation. The standard free riding argument in franchised chains focuses on the different incentives of small franchisees and the chain with respect to the chain brand name and the importance of patrons' future visits. While the chain considers future customers as an important source of future profits regardless of the specific outlet they visit, a franchisee cares about future customers only as long as they visit her own outlet. Hence, franchisees focus on maximizing short-term profits rather than providing consumers the experience the chain would choose to offer. Implications of these differing incentives are higher prices and lower quality at franchised outlets relative to corporate-owned outlets.¹ The relevant questions are then, how big the franchisee free riding problem is, and how chains can improve their control over franchisees and mitigate franchisees' incentives to set higher prices than the prices the chain would.

¹More formally, in order to derive these testable implications with respect to prices at franchised outlets, we assume that customers do not observe the prices prior to entering an outlet. Once a customer enters an outlet she is partially captive due to high search costs. Moreover, we assume that patrons decisions on future visits to any of the chain outlets depends on previous experiences, and that they do not necessarily visit the same outlet. These assumptions, together with the observation that a significant share of corporate-owned outlets exists, result in the different incentives for the franchisees and the chain. While a franchisee has little incentives to fully consider how her pricing decision affects customers' future visits, the chain internalizes the externality imposed by its pricing decision. Consequently, franchisees free-ride on the chain by setting higher prices.

Our findings suggest that free riding at franchised outlets accounts for 70% of the price difference between franchised and corporate-owned outlets. We argue that introducing low-priced items (e.g. McDonald's Dollar Menu²) not only attracts patrons with low willingness to pay but also constrains the ability of franchisees to set high prices. The introduction of low-priced items can thus be viewed as a managerial tool to improve the chain's control over its franchisees.³ This tool enables chains to achieve a higher degree of price uniformity across outlets, while still retaining some level of franchisees' flexibility to adjust to local demand conditions.

Three basic features of the fast food franchising industry make it most suitable to test free riding and chain reputation theories. First, the importance of a standard experience across chain outlets has been a basic ingredient of franchising success and growth over the last fifty years. Thus, it is natural to focus on chains' efforts to achieve uniformity across outlets, and on ways to maintain the chain reputation. In addition, the mixed structure of chains, operating both through independently-owned franchised outlets and through corporate-owned outlets, offers a unique opportunity to test whether and how a chain achieves its goal, by comparing the two types of outlets. Lastly, the 1997 Supreme Court decision on the matter of *State Oil Company v. Khan* legalized the use of maximum price agreements between a chain and its franchisees, thereby expanding the set of potential controls a chain can use to enhance uniformity across its outlets.

We use unique panel data of fast food outlets located in Santa Clara County, and employ Difference-In-Difference regressions to analyze the changes in prices charged in McDonald's franchised and company-owned outlets between 1999 and 2006. The main finding is that franchisees' price premium, defined as the price difference between franchised and corporate-owned outlets, fell substantially only in a subset of McDonald's items. For example, in 1999 the observed franchisee's premium for the Big-Mac meal price was 12.5%, in 2006 the premium dropped to 3.5%. Yet the price premiums for the Chicken McNuggets meals, which do not have good substitutes in the Dollar Menu, have only slightly changed. Since a significant drop occurred only in items with good substitutes in the Dollar Menu, we claim that the

²McDonald's Dollar Menu is a collection of menu items that are being sold for one Dollar each.

³Lafontaine and Shaw (2005) offered an alternative and potentially complement explanation for how chains improve their managerial control.

Dollar Menu introduction curtailed the profitability of high prices and resulted in a smaller franchisee premium. Moreover, when we test how prices at Jack in the Box, an additional large hamburger chain which introduced low priced items, we also find that franchisees' price premium has fallen substantially since 1999.

An underlying assumption in the free riding argument is that customers do not necessarily revisit the same outlet every time. Alternatively, if each customer always visited the same outlet then the franchisees' and the chain's incentives with respect to customers' future visits would be the same and incentives to free ride on the chain would disappear. To further explore the different weights a chain and a franchisee assign to future consumers, we test how the tendency of customers to revisit the same outlet (henceforth: 'repeat customers') affects pricing. The empirical findings of the repeat customers analysis, proxied by outlet distance from a highway, the presence of a playground and a wireless service offered at the outlet, are consistent with our predictions: prices were significantly lower in franchised outlets with more repeat customers. Moreover, following the Dollar Menu introduction, price premiums in these outlets have fallen less than in outlets with few repeat customers. Thus, for example, prices at franchised outlets located near a highway are higher than franchised outlets located further away from a highway. Furthermore, the premium drop in these outlets was higher than the drop at franchised outlets located not near to a highway. As expected, these correlations do not hold for corporate-owned outlets.

Several papers have discussed the concerns of chains over franchisees potential free riding, and how chains try to mitigate this problem.⁴ Other papers have used cross sectional data to explore how franchisees' product quality and prices differ from quality and prices in corporate-owned outlets.⁵ Yet none of these papers use panel price data and a quasi exper-

⁴For example, Rubin (1978) analyzed the franchise contract in the context of agency problems. Brickley and Dark (1987) examined how repeat customers patterns affect decisions on the location of franchised outlets vs. corporate-owned outlets. Shane (1998) examined different monitoring costs of free riding in franchised and company-owned outlets. Sorenson and Sorensen (2001) took the view that free riding affects the firm ownership structure by hampering the standardization of routines procedures required for efficiency. Other papers addressing the free riding problems are Klein and Leffler (1981), Brickley (1999).

⁵For example, Barron and Umbeck (1984) found that a change in the contractual arrangement at gasoline stations from refiner-controlled to a franchise operation reduces the hours of operation. Lafontaine and Slade (1997) is a survey of the empirical evidence for the different pricing patterns: Shepard (1993) looked at gasoline

imental setup as we do here. Furthermore, we are not aware of previous papers performing repeat customers analysis using detailed outlet level data such as the one undertaken here. Most closely related to this paper is Jin and Leslie (2006), who study hygiene quality of restaurants and used a policy intervention in the form of posting hygiene grade cards to study the effect of reputational incentives in maintaining good hygiene quality. Their main findings were that chain-affiliated restaurants had a higher level of hygiene, whereas that franchised restaurants provided a lower level of hygiene than company-owned outlets. Moreover, they found that following an exogenous regulatory intervention this disparity across franchised and corporate-owned outlets disappeared. Unlike Jin and Leslie, we focus on prices, and exploit the large number of observed price items to further investigate aspects of the chain-franchisees relationship, in particular how a chain can gain better control over its franchisees.

This paper also contributes to the empirical literature on vertical price restraints by providing unique evidence on the effect of a legal change on the marketplace.⁶ Indeed, the ability of a franchisor and a franchisee to agree on items' maximum resale price, like the Dollar Menu items, became legal only in 1997 after the U.S. Supreme Court decision in *State Oil Company v. Khan*. In this decision the U.S. Supreme Court overruled a previous decision from 1968 and determined that maximum price restraints should be examined under the rule of reason standard and not be considered as illegal per-se.⁷ Thus, our paper examines the avenue through which the U.S. Supreme Court decision in *State Oil Company v. Khan* affected the marketplace. Finally, this paper contributes to the literature on transaction cost economics by exploring how an exogenous change in the set of possible (legal) contractual arrangements has resulted in a different preferred outcome. The results imply that chains had found it difficult to contract around the legal restrictions prior to the Supreme Court decision in 1997.

The rest of the paper is organized as follows. Section 2 describes the data used in the paper. The estimation results of the Dollar Menu effect on prices and the repeat customer stations in eastern Massachusetts. In the food industry, Lafontaine (1995) provided evidence on fast food chain restaurants in Pittsburgh and Detroit metropolis, and Graddy (1997) found similar patterns in fast-food chains in New Jersey.

⁶For an excellent review of the empirical literature on vertical restraints, see Lafontaine and Slade (2005).

⁷For a detailed review of the legal history of maximum resale price restraints see Blair and Lafontaine (1999). For discussions on the potential effects of resale price maintenance see Ippolito (1991), Klein (1999) and Gilligan (1986).

analysis are presented in section 3. In section 4 we discuss alternative explanations for the observed patterns. Section 5 offers concluding remarks.

2 Data and Descriptive Statistics

2.1 Data

We use an original panel data set collected in July 1999 and July 2006 of the location, price menu, outlet characteristics⁸ and competition level⁹ of all hamburger outlets that are chain-affiliated in Santa Clara County.¹⁰ An observation in the data set is outlet i in year t . The 1999 data were collected by Thomadsen (2005). The 2006 data were collected accordingly: observed characteristics and prices of the outlet were gathered by in-person visits to each of the outlets;¹¹ ownership data were obtained by crossing several public records.¹² In addition, outlets data are supplemented by zip code demographics data.¹³

2.2 Descriptive Statistics

Descriptive statistics of McDonald's signature meal price, the Big-Mac meal, are presented in table 1. Franchisee's premium, defined as the difference between the average franchised price and the average corporate price, decreased from 41 cents in 1999 to 22 cents in 2006. The standard deviation of the Big-Mac meal dropped from 24 cents and 27 cents in 1999

⁸The observed outlet characteristics are: number of seats, existence of a playground, existence of a drive-thru, wireless service offered at the outlet, and whether the outlet is located in a mall.

⁹Competition level for an outlet is defined as the number of outlets in different perimeters around it that are affiliated with an hamburger chain.

¹⁰The dataset includes the following chains: Burger-King, Carl's Jr., Jack In The Box, McDonald's and Wendy's. The data on the chains apart from McDonald's and Jack In The Box are used to determine the competition level.

¹¹Outlet locations were obtained from chains web sites as well as business locator services such as Google Maps and Yahoo Local Maps. Prices were photographed (when permitted) and a subset of prices were copied when taking photographs was not possible.

¹²For each outlet we observe whether it is franchised or corporate-owned and the franchisee's identity in case of a franchised outlet. Ownership data were assembled from the Assessor Office and the Public Health Department in Santa Clara County.

¹³Zip code demographics were taken from the 2000 Census data and 2005 Community Sourcebook America. We use data on median household income, median rent contracts and dine out spending potential index.

for corporate-owned and franchised outlets, to 12 cents and 17 cents in 2006, respectively. Moreover, the price range decreased from \$1.10 for both types of outlets in 1999 to 50 cents in corporate-owned and 80 cents in franchised outlets in 2006.

To provide additional descriptive evidence of the change in the price distributions from 1999 to 2006 we define an outlet normalized price in year t as the ratio of Big-Mac meal price in the outlet to the average Big-Mac meal price in the corporate-owned outlets in that year. Kernel density of the normalized price of franchised and corporate-owned outlets in both time periods are presented in Figure 1, which illustrates well how the two price distributions approached each other from 1999 to 2006. Lastly, entry and exit patterns of McDonald's and Jack In The Box restaurants are summarized in table 2 and provide a glance at the changes in the industry between 1999 and 2006.

3 Empirical Analysis

Our objective in the data analysis is twofold. First, employing a Difference-In-Difference approach to document the decrease in the premium charged by franchisees between 1999 to 2006. We show that this is the case only for a subset of the meals offered both in 1999 and 2006, and argue that the decline occurred only in menu items that have good substitutes in the Dollar Menu items. We also present similar evidence for price premium changes at Jack In the Box outlets.

The second empirical objective is to link customer visiting patterns to the observed level of prices. According to the maintained hypotheses, a negative correlation should be observed between the level of repeat customers and prices; a larger pool of repeat customers implies higher incentives to set low prices. Moreover, this regularity should hold only for franchised outlets and not for corporate-owned outlets. We also test how the Dollar Menu introduction affected franchisees' price premiums in outlets with different levels of repeat customers. We expect to observe a larger premium drop in outlets where franchisees initially charged higher prices, i.e., outlets facing a low level of repeat customers.

3.1 Dollar Menu Introduction

The McDonald’s Dollar Menu is a collection of 6 to 10 menu items that are being sold for one dollar each. It usually includes two main dishes - Double Cheeseburger and McChicken, together with side dishes and desserts including Small Fries, Small Soft Drink, Side Salad, Apple Pie and Sundae.¹⁴

Following a six quarter-period of relatively poor sales performance, McDonald’s first introduced the Dollar Menu regionally in Southern California on November 2001 as an ”Overtly aggressive value tactic”.¹⁵ Obtaining a positive incremental sales effect, the Dollar Menu was extended nationwide on September 2002. To promote the new menu, McDonald’s spent \$20 million in the last quarter of 2002 advertising it.¹⁶ McDonald’s also announced partial compensation for franchisees in case they suffered a gross profit reduction following the introduction of the menu. The following specification is used to test for the franchisee’s premium decrease:

$$\ln(p_{it}) = \alpha + \gamma * D_{2006,i} + \delta * D_{franchised,i} + \eta * D_{2006,i} * D_{franchised,i} + \beta * X_{it} + \epsilon_{it} \quad (1)$$

where p_{it} is the price in outlet i in year t . $D_{2006,i}$ is a dummy variable equal to 1 if outlet i operates in 2006. $D_{franchised,i}$ is a dummy variable equal to 1 if outlet i is a franchised outlet. X_{it} is a vector containing outlet i characteristics in year t including number of seats, existence of a drive-thru, existence of a playground, whether wireless service is offered at the outlet, whether the outlet is located in a mall, the number of nearby competitors¹⁷ and demographic variables of the zip code area in which the outlet is located.

¹⁴There exists a very small variation in the items included in the Dollar Menu. Moreover, all the outlets in Santa Clara County offer the Dollar Menu except the franchised outlet at Stanford Shopping Center. There exists some cross-regional variation in the Dollar Menu items. For example, in New York, the Dollar Menu usually includes a Chicken McNuggets item while in the Santa Clara County it does not.

¹⁵As was written in a memo to 550 McDonald’s franchisees in Southern California, see Parry and Jones (2003).

¹⁶Interestingly, one can view the large advertisement campaign as creating consumers’ expectations and consequently resulting in franchisees adopting the Dollar Menu even without an explicit contractual commitment. This can explain why outlets located at airports and train station, where not fulfilling consumers’ expectations has smaller ramifications on franchisees’ profits, usually do not offer Dollar Menu items.

¹⁷We present estimation results for two competition variables; close competitors, defined as the number of competitors within 0.1 mile from the outlet; far competitors, defined as the number of competitors within 0.1-0.5 mile. Moreover, using other criteria for the level of competition (e.g. perimeters around each outlet) and various specifications have not changed our results.

Table 3 presents the estimation results for the Big-Mac meal as the dependent variable.¹⁸ We find that conditional on outlet characteristics and demographics, the franchisee's premium charged for Big-Mac meal significantly decreased from 12.47% in 1999 to 3.63% in 2006. All other outlet and demographic characteristics were insignificant except the coefficient on the dine-out spending potential index which is positive.¹⁹ We perform the same analysis for all the meals that were offered both in 1999 and 2006. The results in table 4 demonstrate two interesting patterns: for the Quarter Pounder and the Double Quarter Pounder meals we find statistically significant reductions of the premiums from 7.1% to 1% and 7.4% to 2.8% respectively. However, for the regressions of the Fillet-O-Fish, Chicken McNuggets 6 pc. and Chicken McNuggets 20 pc. as the dependent variables we find the following statistically insignificant price changes: 2.6% to 1.4%, 5.4% to 6.2% and 2.1% to 3.17%, respectively. We interpret these contrasting results as support for the argument that the Dollar Menu introduction resulted in a lower franchisee's premium in menu items with good substitutes in the Dollar Menu. Moreover, under our interpretation, the items in the Dollar Menu were chosen because of their substitution patterns with items for which franchisees enjoyed initially high premiums.

To further test that the price premium drop is not driven by unobserved changes at McDonald's, and in order to provide additional evidence for the effect of low-priced items, we perform the same basic empirical analysis for Jack In The Box, another major hamburger chain.²⁰ We find that the introduction of its Dollar Menu had a similar qualitative effect, and report the estimation results for the Jumbo Jack Meal in table 5:²¹ the average premium charged by Jack In The Box franchisees dropped significantly from 5.7% in 1999 to -0.1% in 2006.

¹⁸We provide a complete list of coefficients only for that regression

¹⁹The insignificant effects of the competition proxies are consistent with the findings of Kalnins (2003), see also Thomadsen (2006). Moreover, this validates the assumption that customers do not observe the price prior to entering an outlet.

²⁰We perform the empirical test only for Jack In The Box and not other chains since Jack In The Box (and McDonald's), are the only chains in our data set which have a mix of corporate-owned and franchised outlets.

²¹The Jumbo Jack is Jack In The Box's signature dish.

3.2 Repeat Customers Analysis

In this section we demonstrate how an outlet level of repeat customers affects prices. We first test for a correlation between a proxy for high level of repeat customers and low price in franchised outlets. In addition, the fact that the chain internalizes the externality imposed by its pricing decision on future visits implies that the level of repeat customers should not be negatively correlated with prices at corporate-owned outlets. We test for this hypothesis as well. Finally, we test how the Dollar Menu introduction affected outlets which initially enjoyed a high level of repeat customers compared to outlets which exhibited a low level of repeat customers. In particular, we examine whether the decrease in the premium charged by franchisees is smaller in outlets with more repeat customers.

3.2.1 Repeat Customers Proxies

Examining the level of repeat customers in an outlet requires detailed data on customers' visiting habits. Since such data are not available, we use three different proxies for the level of repeat customers at a specific outlet, and define accordingly a dummy variable indicating whether an outlet is characterized by repeat customers or not. The first proxy is an outlet distance from the nearest highway.²² An outlet is considered to face a low level of repeat customers if it is located near a highway. The second proxy is the presence of a playground in the outlet. The claim behind this proxy is that playground presence at an outlet is likely to attract local families with children, and these families are likely to revisit these outlets, due to the added value gained by the existence of playground.²³ The third proxy is the existence of a wireless internet service offered at the outlet.²⁴ Thus, an outlet is also characterized as facing

²²Using distance from a highway as a proxy to customers' tendency to repeat was mentioned few times in the theoretical literature and is known as the "Superhighway Problem". See Klein and Saft (1985) and Brickley and Dark (1987) for early references. We were not able to find any empirical work testing this hypothesis using prices charged by outlets located near highways.

²³A claim against the use of this proxy is that the added value of the playground increases the demand for the outlet, and thus prices at these outlets are likely to be higher. Our results suggest that the interpretation of repeat customers is more likely.

²⁴Wireless service is likely to attract local high school students or technology professionals to stay longer at an outlet and to potentially revisit it. Although wireless service was not offered in 1999, we view outlets that chose to offer wireless service in 2006, as catering both in 1999 and 2006 to consumers with a tendency to repeat.

high level of repeat customers if it has a playground or a wireless service. A nice feature of these proxies is that each accounts for a different segment of fast food consumers: travelers, families with young children, and local high school students and workers. Table 6 contains the number of outlets that are characterized as outlets with repeat customers for each of the proposed proxies used in the analysis.

3.2.2 Franchised vs. Corporate-Owned - Repeat Customer's Analysis

We use the following specification to test whether or not repeat customers patterns are a significant determinant of prices charged at franchised outlets but not an important factor in corporate-owned outlets:

$$\ln(p_{it}) = \alpha + \gamma * D_{repeat,i} + \delta * D_{franchised,i} + \eta * D_{repeat,i} * D_{franchised,i} + \beta * X_i + \epsilon_i \quad (2)$$

where $D_{repeat,i}$ is a dummy variable equal to 1 if outlet i is categorized as an outlet with repeat customers.

We use the Big-Mac meal price from 1999 as the dependent variable and employ separately the proxies and the combined proxy in four separate regressions. We expect to observe prices charged in franchised outlets with repeat customers proxies to be lower than those charged in franchised outlets with no repeat customers proxies. In corporate-owned outlets, however, we do not expect to observe this negative correlation. It should be noted that while the effect of repeat customers' on price is γ in corporate-owned outlet, it is $\gamma + \eta$ in franchised outlet.

The results for the regressions are displayed in table 7 and support our conjectures. When we used the joint proxy, we found that prices at franchised outlets characterized by repeat customers are statistically significantly lower by 12% relative to prices at franchised outlets not characterized by repeat customers. Conversely, prices at corporate-owned outlets characterized by repeat customers are 6% higher than at outlets not characterized by repeat customers. When we use only the distance from a highway as a proxy we find that prices are 1.4% lower in franchised outlets, whereas they are 3.6% higher in corporate-owned outlets. Similarly, using the playground proxy, prices are 2.6% lower in franchised outlets and 3.3% higher in corporate-owned outlets. A decrease of 1.8% in franchised outlets and an increase

of 4.8% in corporate outlets are obtained when the wireless service proxy is used.²⁵ Yet the coefficients of the proxies in the separate proxy regressions are statistically insignificant.

3.2.3 Franchisee's Premium - Repeat Customer's Analysis

Since free-riding is more likely to occur in the absence of repeat customers, one would expect to observe a larger drop in franchisees premium from 1999 to 2006 in franchised outlets with a lower level of repeat customers. We test this hypothesis by employing a Difference-In-Difference-In-Difference approach. The specification is as follows:

$$\begin{aligned}
 \ln(p_{it}) = & \alpha + \gamma_1 * D_{repeat,i} + \gamma_2 * D_{franchised,i} + \\
 & \gamma_3 * D_{2006,i} + \gamma_4 * D_{repeat,i} * D_{franchised,i} + \\
 & \gamma_5 * D_{repeat,i} * D_{2006,i} + \gamma_6 * D_{franchised,i} * D_{2006,i} + \\
 & \gamma_7 * D_{repeat,i} * D_{franchised,i} * D_{2006,i} + \\
 & \beta * X_{it} + \epsilon_{it}
 \end{aligned} \tag{3}$$

The parameter of interest is γ_7 which is the difference between the change in franchisee's premium from 1999 to 2006 in outlets with repeat customers to outlets with no repeat customers. Formally, the test is whether $\gamma_7 > 0$. The results are shown in table 8 and are again consistent with the hypothesis. Using the joint proxy and a significance level of 80%, we find that the price premium at franchised outlets facing high level of repeat customers has fallen only by 3% (γ_6), whereas at franchised outlets with low level of repeat customers the price premium has fallen by 10.4% ($\gamma_6 + \gamma_7$). Using distance from a highway as a proxy, the drop in the franchisee's premium is 11.5% in franchised outlets located near a highway, while only 7.7% in other franchised outlets. We obtain similar qualitative results for the playground and wireless service proxies.

²⁵A possible interpretation of the price results at corporate-owned outlets is that McDonald's wishes to offset the higher prices set by franchisees at outlets facing low level of repeat customers, and thus sets lower than average prices in corporate-owned outlets with similar characteristics.

4 Alternative Explanations

The purpose of the empirical analysis is to demonstrate that a chain can curtail the profitability of high prices charged by franchisees. Specifically, we show that this curtailing is the effect of the Dollar Menu introduction. To further support our conjecture we discuss alternative explanations for the patterns found in the data, and argue that these explanations are less plausible.

At the outset, it should be emphasized that using panel data with observations from the same geographic area enables us to use a Difference-In-Difference approach, and rule out alternative explanations which rely on time invariant unobservable determinants of price. Thus, a possible alternative explanation should be based on a change in unobservables affecting differently franchised and corporate-owned outlets. Indeed, a major shortcoming of previous empirical papers that have examined price and quality differences across corporate-owned and franchised outlets was their dependence on cross-section data rather than on panel data.

4.1 Maximum Price Restraints

Imposing explicit maximum price restraints by McDonald's on menu items other than Dollar Menu items may lead to similar observable implications. Yet such an alternative explanation can be questioned by simply looking at the 2006 kernel density of the Big-Mac meal price plotted in figure 1. One can observe that McDonald's does not set a maximum price for the Big-Mac meal. Moreover, anecdotally we know that McDonald's does not set a maximum price for any meal. In fact, setting maximum prices only for Dollar Menu items can be an optimal solution for the chain, by restraining franchisees' incentives to set high prices, while still maintaining some of the franchisees' flexibility to adjust to local demand conditions.

4.2 Higher Costs In Franchised Outlets or Double Marginalization

Higher costs borne by franchised outlets compared to costs incurred by corporate-owned outlets might also lead to similar observable implications: the higher costs led franchisees to set higher prices in 1999. Yet the Dollar Menu introduction led franchisees to set lower prices and consequently earn lower margins. Though this alternative explanation does not conflict with our interpretation that introducing low-priced items can enhance uniformity across out-

lets and constrain the profitability of high prices, it does imply that franchisees did not free ride on the chain but rather incurred higher costs. It is important to mention that this alternative explanation does not square with the repeat customer analysis presented in this paper. Moreover, we provide two pieces of evidence why franchised outlets might actually incur lower costs than corporate-owned outlets. First, Krueger (1991) found evidence for higher wages in corporate-owned fast food outlets compared to franchised outlets in McDonald's and other fast food chains.²⁶ Second, we know that McDonald's franchisees buy their inputs in a competitive supplier market and are not forced to buy them in an inferior position from the chain.²⁷ These two sources of evidence suggest that it is less likely that franchised outlets incur substantially higher costs than corporate-owned ones.²⁸

4.3 Decrease In The Demand For McDonald's Products

Under certain assumptions, the observed patterns in the data might be a result of a drop in demand for McDonald's products: in 1999 franchisees found it optimal to set higher prices than the chain due to better local demand conditions. However, a drop in demand since 1999 led high-priced franchised outlets to lower their prices more than low-priced corporate-owned outlets. Although theoretically possible, it is unlikely that a decrease in demand occurred only for items with favorable substitutes in the Dollar Menu but not in items with poor Dollar Menu substitutes. Furthermore, the comparable sales in U.S. McDonald's restaurants increased from 1999 by 24%.²⁹ We interpret these findings as evidence of an increase in demand for McDonald's products, and conclude that it is unlikely that demand has dropped; even if it has dropped, it is unlikely to result in the observed patterns.

²⁶Specifically, he found that low-level managers earn 9% higher wages in corporate-owned outlets, whereas crew workers earn 1%-2% more in corporate-owned outlets.

²⁷This evidence is supported by the 1968 U.S Supreme Court ruling in *Siegel v. Chicken Delight* that bans chains from requiring franchisees to purchase inputs exclusively from the chain.

²⁸Franchisees do pay royalties to the chain, which could lead to higher prices in franchised outlets. Blair and Lafontaine (2005) found that these royalties range between 2% to 4% and thus are more likely to result in higher prices of about the same range. Additional payment franchisees pay to the chain is rent as a share of revenues. McDonald's corporation usually owns the properties on which most McDonald's franchises are located. A Franchisee pays 8.5% of sale revenues for rent.

²⁹McDonald's annual reports provide the annual increase in comparable sales.

4.4 Change In McDonald's Franchisees Contractual Agreement

A fourth alternative explanation might be a change in the contractual agreement between McDonald's and its franchisees: a decrease in the royalty fees charged by the chain may have caused franchisees to lower the prices they set relative to the prices charged in corporate-owned outlets. We provide a several piece of evidence against this argument. First, Kaufmann and Lafontaine (1994) provided multiple figures suggesting that there is a substantial excess supply of potential McDonald's franchisees.³⁰ In addition, McDonald's offers franchisees uniform contracts in the form of "Take it or leave it".³¹ Accordingly, we conclude that McDonald's has strong bargaining power with respect to its franchisees, thereby making it unlikely that a drop in royalty fees has occurred.

5 Concluding Remarks

The difficulties faced by organizations to control their organs and to monitor their activities are a major impediment to their future growth and success. These obstacles are likely to be exacerbated in environments where production is decentralized and when reputation plays an important role. In this paper we show, in the context of the franchising industry, how franchisees exploited the inability of chains to monitor their pricing decisions and examine how chains can, and actually do, exert better control over their franchisees. We argue that following a U.S. Supreme Court decision in 1997, the uniform introduction of low-priced items was legalized. These low-priced items, in turn, constrained the ability of franchisees to degrade the chain reputation and brand name by charging high prices. Using an original panel data set of fast food restaurants in 1999 and 2006, we show that the price differences between franchised and corporate-owned outlets have fallen from 12.5% to 3.5%, and that the drop occurred only for the items with good substitutes in the Dollar Menu items. We also provide evidence suggesting that franchised outlets facing more repeat customers charged lower prices than franchised outlets facing fewer repeat customers, and that this negative correlation does not hold for corporate-owned outlets.

³⁰They cited different sources claiming that the admission rate to become a McDonald's franchisee is only 2%-7.5%.

³¹The existence of fixed contract was also found by Lafontaine (1992).

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Table 1: Descriptive Statistics - Big-Mac Meal Price

	1999		2006	
	Corp.	Fran.	Corp.	Fran.
Mean	3.07	3.48	4.32	4.54
Std.	0.24	0.27	0.12	0.17
Min.	2.99	2.99	3.99	4.29
Max.	4.09	4.09	4.49	5.09
<i>N</i>	22	39	21	37

The table presents descriptive statistics for the nominal Big-Mac meal prices that were collected in July 1999 and July 2006 from all McDonald's outlets in Santa Clara County. Franchisee's premium, defined as the difference between the average franchised price and the average corporate price, decreased from 41 cents in 1999 to 22 cents in 2006. The standard deviation of the Big-Mac meal price dropped from 24 cents and 27 cents in 1999 for corporate-owned and franchised outlets, to 12 cents and 17 cents in 2006, respectively.

Table 2: Ownership Structure and Exit/Entry Patterns

	1999		Exit		Entry		2006	
	Corp.	Fran.	Corp.	Fran.	Corp.	Fran.	Corp.	Fran.
McDonald's	22	39	1	5	2	4	23	37
Jack In The Box	29	6	1	2	2	2	30	6

The table presents entry and exit patterns in McDonald's and Jack In The Box franchised and corporate-owned outlets.

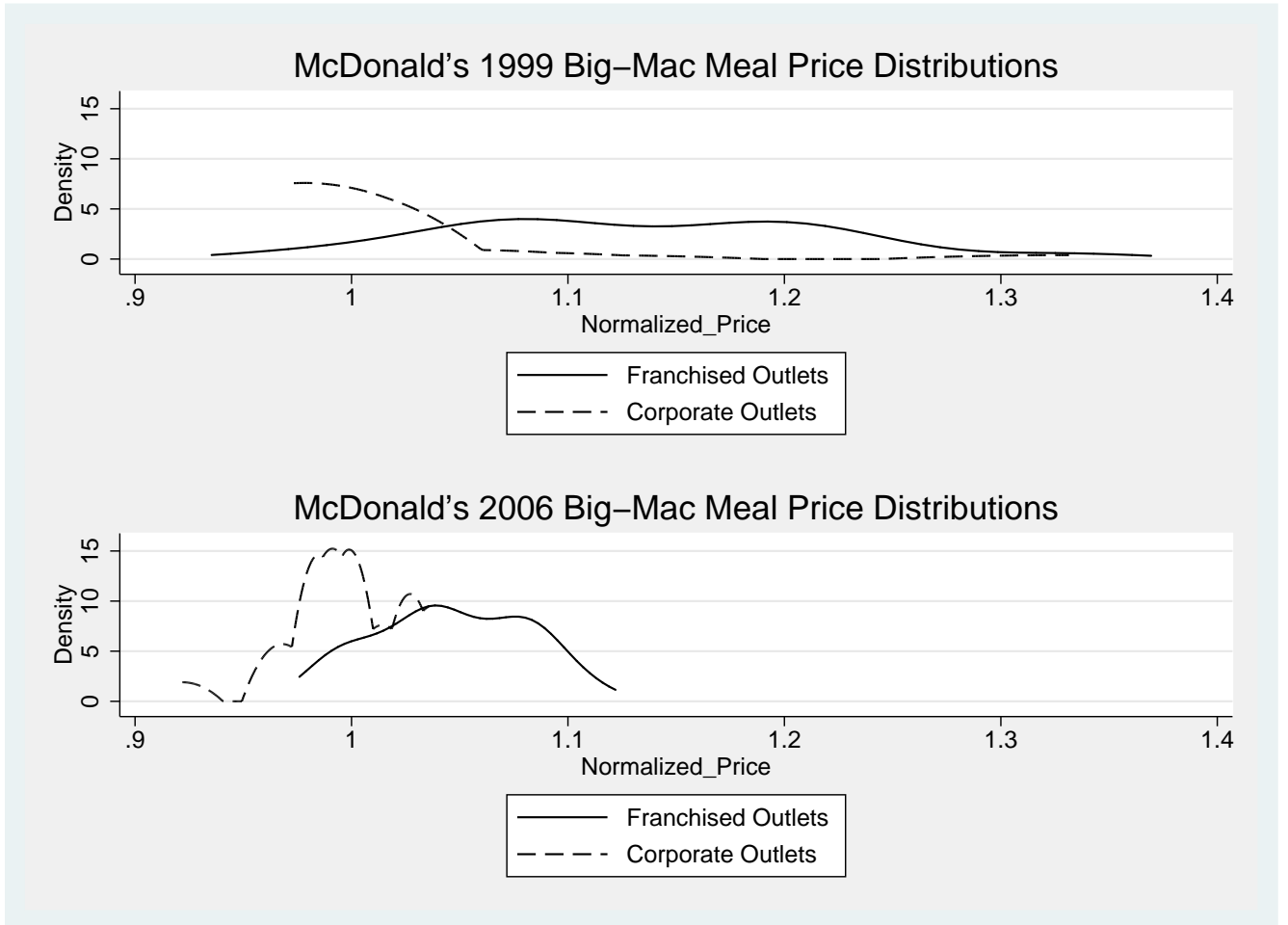


Figure 1: McDonald's Big-Mac Meal Price Distributions

The figure plots kernel density of Big-Mac meal normalized price, estimated separately for franchised and corporate-owned outlets for the time periods 1999 and 2006. An outlet normalized price is the ratio between the outlet nominal price and the average price set in corporate-owned outlets in the same year. The figure illustrates well how the two price distributions approach each other from 1999 to 2006.

Table 3: Franchisees' Premium for the Big-Mac Meal - Full Estimation Results

Dependent Variable	Big Mac Meal	Dependent Variable	Big Mac Meal
D_{2006}	0.348*** (0.016)	<i>Median – Household – Income</i>	0.0063 (0.063)
$D_{franchised}$	0.1247*** (0.021)	<i>Median – Contract – Rent</i>	-0.059 (0.068)
$D_{2006} * D_{franchised}$	-0.0884*** (0.018)	<i>Dineout – Spending – Potential – Index</i>	0.0006** (0.003)
<i>Seats</i>	0.00001 (0.00001)	<i>Close – Competitors</i>	-0.0069 (0.011)
<i>Mall</i>	-0.0776 (0.049)	<i>Far – Competitors</i>	-0.0017 (0.0068)
<i>Drive – Thru</i>	0.0111 (0.012)	<i>Wireless</i>	0.0067 (0.011)
<i>Playground</i>	-0.0116 (0.013)		
R^2	0.89	N	117

Standard errors are in parenthesis.

Errors are clustered by outlet.

** significant at 5% confidence level, *** significant at 1% confidence level.

The table contains the full set of estimators from specification 1. The dependent variable is the logarithm of Big-Mac meal price. It shows that the franchisee's premium has significantly decreased from 12.47% in 1999 to 3.63% in 2006. Moreover, most included outlet characteristics are insignificant determinants of the Big-Mac meal price.

Table 4: Franchisees Premium

Dependent Variable	Big Mac Meal	Double Quarter Pounder Meal	Quarter Pounder Meal	Fillet-O-Fish Meal	McNuggets 6 pc.	McNuggets 20 pc.
$D_{franchised}$	0.1247*** (0.021)	0.074*** (0.017)	0.071*** (0.017)	0.026** (0.013)	0.054*** (0.012)	0.021 (0.014)
$D_{2006} * D_{franchised}$	-0.0884*** (0.018)	-0.0460** (0.019)	-0.0614*** (0.0182)	-0.012 (0.015)	0.008 (0.028)	0.0107 (0.013)
R^2	0.89	0.88	0.53	0.91	0.84	0.78
N	117	96	96	113	90	93

Standard errors are in parenthesis.

Errors are clustered by outlet.

** significant at 5% confidence level, *** significant at 1% confidence level.

The table contains the coefficients of the franchisee's premium in 1999 and the change in the premium from 1999 to 2006 for all meals offered both in 1999 and in 2006. Each column presents regression results using logarithm of a different meal price as the dependent variable. Using a meal that has good substitutes in the Dollar Menu as the dependent variable (i.e. Big Mac meal, Quarter Pounder meal and Double Quarter Pounder meal) results in a significant decrease in the premium, while using a meal that has poor substitutes in the Dollar Menu (i.e. McNuggets meals and the Fillet-O-Fish meal) results in an insignificant change in the premium. These findings support the argument that the Dollar Menu introduction resulted in a lower franchisee's premium.

Table 5: Franchisees Premium for Jack In The Box Signature Meal

Dependent Variable	Jumbo Jack Meal
D_{2006}	0.195*** (0.005)
$D_{franchised}$	0.0568*** (0.0204)
$D_{2006} * D_{franchised}$	-0.0581** (0.024)
R^2	0.94
N	71

Standard errors are in parenthesis.

Errors are clustered by outlet.

** significant at 5% confidence level, *** significant at 1% confidence level.

The table contains coefficients of franchisee's premium in 1999 and the change in the premium from 1999 to 2006 using the logarithm of Jumbo Jack meal price as the dependent variable. Jumbo Jack is Jack In The Box signature dish, the equivalent to McDonald's Big-Mac.

The main finding is that similar to the pattern observed in McDonald's, the introduction of Jack In The Box Dollar Menu was followed by a significant drop in the franchisee's premium for the Jumbo Jack meal.

Table 6: Outlets Characterization by Repeat Customers - 2006

Proxy	Corporate-Owned Outlets	Franchised Outlets
Far from Highway	16	30
Playground	8	15
Wireless Service	19	27
All Proxies Combined	6	7
<i>N</i>	23	37

The table presents the number of outlets characterized as outlets with repeat customers in 2006 using the proxies used in the analysis. Outlets are divided by ownership structure. For example, in 2006 six out of the twenty three corporate-owned outlets are located not near a highway, have playgrounds and have wireless connectivity. Furthermore, only seven out of the thirty seven franchised outlets have all these properties.

Table 7: Repeat Customers Premium in 1999

Proxy	Distance From Highway	Playground Presence	Wireless Service	All Proxies Combined
D_{repeat}	0.036 (0.039)	0.033 (0.035)	0.048 (0.049)	0.061 (0.037)
$D_{franchised}$	0.158*** (0.043)	0.146*** (0.03)	0.175*** (0.052)	0.149*** (0.025)
$D_{repeat} * D_{franchised}$	-0.049 (0.05)	-0.058 (0.045)	-0.066 (0.058)	-0.124** (0.049)
R^2	0.56	0.56	0.56	0.61
N	52	52	52	52

Standard errors are in parenthesis.

Errors are clustered by outlet.

** significant at 5% confidence level, *** significant at 1% confidence level.

The table presents how 1999 franchisee's premium varied between outlets with and without repeat customers proxies. Each column contains results using a different proxy for repeat customers. In the first column an outlet is characterized by repeat customers if it is not located near a highway. In the second column an outlet is characterized by repeat customers if it has a playground, whereas in the third column wireless service is used as a proxy for repeat customers in an outlet. The fourth column is a combination of all other proxies, i.e. an outlet is characterized with repeat customers only if it is characterized as such by the other three proxies.

When we use the joint proxy, the price in franchised outlets with repeat customers is significantly lower by 6.3% compared to the price in franchised outlets with no repeat customers proxy. This negative relationship does not hold for corporate owned outlets, where the price at outlets with repeat customers proxy is higher by 6.1%. When distance from a highway proxy is used the observed price in franchised outlets with repeat customers is insignificantly lower by 1.3% compared to the price in franchised outlets with no repeat customers. However, when the same analysis is performed on corporate-owned outlets the observed price in outlets with repeat customers is higher by 3.6% compared to outlets with no repeat customers. Likewise, when we use the playground and wireless service proxies presence as a proxy for repeat customers we get similar qualitative results for the franchised and corporate-owned outlets.

Table 8: Franchisee's Premium Drop - Repeat Customer Analysis

Proxy	Distance From Highway	playground Presence	Wireless Service	All Proxies Combined
D_{repeat}	0.034 (0.026)	0.029 (0.039)	0.036 (0.024)	0.056 (0.057)
$D_{franchised}$	0.161*** (0.031)	0.147*** (0.016)	0.154*** (0.021)	0.145*** (0.015)
D_{2006}	0.37*** (0.005)	0.359*** (0.009)	0.378*** (0.014)	0.364*** (0.008)
$D_{repeat} * D_{franchised}$	-0.05 (0.042)	-0.062 (0.047)	-0.039 (0.036)	-0.105 (0.066)
$D_{repeat} * D_{2006}$	-0.035 (0.026)	-0.028 (0.039)	-0.035 (0.023)	-0.057 (0.055)
$D_{franchised} * D_{2006}$	-0.115*** (0.03)	-0.103*** (0.015)	-0.12*** (0.022)	-0.104*** (0.014)
$D_{repeat} * D_{franchised} * D_{2006}$	0.038 (0.041)	0.041 (0.044)	0.041 (0.032)	0.074 (0.056)
R^2	0.90	0.89	0.89	0.91
N	108	117	110	110

Standard errors are in parenthesis.

Errors are clustered by outlet.

*** significant at 1% confidence level.

The table presents the premium drop (from 1999 to 2006) difference between outlets with and without repeat customers. Each column contains the regression estimators using a different proxy for repeat customers. In the first column an outlet is characterized by repeat customers if it is not located near a highway. In the second column an outlet is characterized by repeat customers if it has a playground. Wireless service offered at the outlet is used as a proxy for repeat customers in the third column. The fourth column uses the intersection of the three proxies as a proxy for repeat customers. The main finding is that franchised outlets with no repeat customers (e.g. near highways or outlets with no wireless connectivity) exhibited a larger drop in the franchisee's premium between 1999 and 2006. For example, when the intersection of the three proxies is used to proxy for repeat customers, a drop of 10.4% is observed in outlets with no repeat customers while only 3% in outlets with repeat customers.