This study investigates how ownership forms affect managerial incentives and pricing in different competitive contexts. We explore how the difference in ownership form between franchised and company-owned units influences the incentives of the managers who take the day-to-day decisions that constitute interfirm rivalry. We argue that chains with company-owned units may restrict decision-making of local units as a credible commitment device to maintain high prices. Furthermore, we argue that the payment of royalty fees reduces the net available revenues of franchisees, which provides an incentive to increase the price they charge to customers. Using a proprietary dataset of the Texas hotel industry, our findings confirm these hypotheses and form one of the first empirical confirmations of what is called strategic incentives theory. By elucidating the competitive consequences of ownership forms, this study allows managers to take these consequences into consideration when determining the ownership structure of local units.
1. Introduction

This paper studies how ownership structure may affect managerial incentives, and how these, in turn, may affect interfirm rivalry. Research in competitive strategy has studied phenomena such as rivalry, entry and exit, strategic commitment, pricing, and other related topics. In this research stream, the firm is generally depicted as if it consists of a unitary actor. The firm is said, for example, to make product market decisions, to create a competitive advantage, or to compete with its competitors. In fact, decisions that bind firms vis-à-vis their environment are taken by managers, and, as is well known, the interests of managers are determined by interorganizational incentive systems that may, or may not, fully align with the interests of the organization as a whole. Consequently, we study the effect of individual incentives on managerial, and thus firm, behavior, and how this, in turn, influences competitive interaction.

Incentives may be shaped by managerial compensation schemes, organizational structure and culture, and other organizational characteristics. In this study, we focus on how different ownership forms may influence incentives. We distinguish three different ownership forms: independent firms, company-owned units, and franchised establishments.

Ownership may affect incentives in several ways. The ownership forms studied differ in terms of who the residual claimant is and the degree of local control over competitive decision-making. The professional manager of a company-owned unit or division is not the residual claimant. Corporate headquarters delegate certain competitive decisions to the local manager, usually within a nationwide overall marketing strategy. In contrast, the owner of an independent establishment, being the residual claimant, is typically closely involved in the management of the unit, even if a man-
ager is hired to take care of day-to-day operations. Finally, franchised units have characteristics that resemble those of both company-owned and independent establishments. These units use the trade name, certain systems, processes, and procedures of branded chains, but at the same time the franchisee owns the local unit, is the residual claimant, and independently determines many aspects of its competitive behavior. How do the constraints that are imposed by the different ownership forms affect the actions of the managers?

This study explores these different aspects in the light of competitive interaction. The main research question is whether the differences in unit ownership and management affect the way these units compete in their local market. Do establishments compete more or less aggressively, depending on their ownership form? This question is especially intriguing when it is conceptually independent from customer demand. That is, when comparing franchised and company-owned units of a same chain, customers typically do not know the ownership form of the units.

We develop hypotheses that compare the managerial incentives of these ownership forms. Specifically, we hypothesize how the particular incentives of managers in these different ownership forms affect pricing decisions. We test the above hypotheses using a unique dataset of the Texas hotel industry. This panel dataset includes virtually all hotels in Texas, competing in more than 800 local markets. The data allow us to explore the relationship between ownership forms and strategic pricing in a wide variety of competitive contexts.

This paper is the first to empirically investigate how incentive divergence caused by ownership forms affects pricing in different competitive contexts. We find evidence that company-owned units react differently to the competitive context than franchised units of the same chain. Specifically, as the number of rivals decrease (i.e.,
the market becomes more oligopolistic as opposed to perfectly competitive), the price of company-owned units increases relative to the price of franchised units. This finding, as we will explain, supports strategic incentives theory. Furthermore, we study how franchise fees may distort managerial incentives and affect pricing behavior. We find that only in situations in which franchised establishments have market power, are they able to pass the costs of royalty fees on to customers.

2. Ownership structures and managerial incentives

In the past decades, many industries, such as retailing, hotels, and restaurants, have moved from a situation in which most market participants are independent firms to one in which national chains with company-owned and franchised units dominate the market to benefit from national branding. For example, chains such as McDonald’s and Pizza Hut have created a strong nationwide presence in the fast food industry. U.S. malls are populated with closing stores such as Gap, LL Bean, and Tommy Hilfiger. Several studies have shown the benefits and importance of chain affiliation (Ingram & Baum, 1997; Chung & Kalnins, 1999).

Independent, company-owned, and franchised establishments differ in terms of their managerial incentives. Independent establishments are typically operated by the owner/manager, who is the residual claimant. The owner independently determines the marketing and pricing strategy. Some independent establishments may have a brand name that is known outside the local market, but for most independents the brand has limited recognition. Independent establishments often have local roots. A family-owned store, for example, may be present in the same town during several generations.

Many chains operate both company-owned and franchised units, while some only
operate one of these forms. A company-owned unit is typically managed by a professional manager. While the manager’s salary may include a bonus based on the unit’s performance, the manager is not the residual claimant. The chain normally sets a nationwide pricing strategy, restricting the scope of action of the local manager. It may delegate part of the pricing decisions, such as discounting, to the local manager.

Franchising has become a popular business practice: more than 35% of US retailing is conducted through franchised establishments (Lafontaine & Shaw, 1999). While the franchisor may provide advice on pricing strategies, the franchisee, who generally owns the establishment, ultimately sets its price independently.

Two different kinds of franchising can be distinguished: traditional franchising and business format franchising (Lafontaine & Slade, 1997). The difference between these two categories is that, in the case of traditional franchising, the franchisee buys a (semi-)finished good from the franchisor, while in the case of business format franchising, the franchisee only uses the brand name and business procedures. The significance of the latter category has increased considerably during the last decades (Lafontaine & Shaw, 1999).

Payments from franchisee to franchisor may include the following components: an initial fee, cost of goods sold (in the case of traditional franchising), a royalty fee, a marketing fee, and miscellaneous other fees. The royalty fee is a compensation for the use of the trade name and goodwill of the company. Marketing fees are used to promote the chain. Both royalty and marketing fees are typically based on revenues. Other fees may include a compensation for used software, training, assistance, and reservations systems. While royalty fees contain a significant profit for the franchisor, marketing and other fees, which are often held in separate, audited funds, do not (Rushmore & Lee, 2002).
The next two sections discuss how the above-described characteristics of company-owned and franchised establishments affect managerial incentives.

2.1 Strategic incentives in company-owned establishments

A theory of interest to our study of the relationship between incentives and competition is strategic incentives theory. In its core, this theory argues that delegation, i.e., separation between ownership and management, could constitute a credible commitment device (Vickers, 1985; Fershtman & Judd, 1987; Sklivas, 1987). Thus, delegation could be used to commit to certain behavior with the objective of benefiting from the strategic reaction of rivals. The idea that one could benefit from the delegation of decision-making authority to an agent who has different incentives (strategic delegation) was already suggested by Schelling (1960).

In particular, in the case of price competition in an oligopolistic market where the threat of new market entry is low, firms may want to commit to abstaining from aggressive competition (Fudenberg & Tirole, 1984). The logic behind this idea is that if a firm commits to behaving less aggressively vis-à-vis its competitors, e.g., by setting a relatively high price, this will provide an umbrella that allows competitors also to set a higher price, ultimately increasing both firm and industry profitability. The problem is that firms cannot credibly commit to behaving softly. Game theoretical reasoning explains that it is in each firm’s interest to renege on this commitment. Particularly in the case where fixed costs are high, firms have a strong incentive to lower the price for marginal customers in order to gain extra market share. Delegation of decision-making authority to an agent with “distorted” incentives, strategic incentives theory argues, constitutes the desired credible commitment device.

Fershtman and Judd (1987) show that firms may benefit from the strategic effect of delegation by providing more or less aggressive incentives, depending on the stra-
tegic nature of product-market competition. Fershtman and Judd develop a game-theoretical, two-stage duopoly model. In the first stage, the firm owner determines the compensation scheme assigned to its manager. This scheme is a weighted average of firm profits and sales. In the second stage, managers compete on the product market. Competition can take either the form of strategic complements (price competition) or strategic substitutes (quantity competition). Fershtman and Judd show that, in equilibrium, owners incentivize their managers to produce more than in a similar one-stage game if product-market competition takes place in strategic substitutes, and to produce less if competition takes place in strategic complements. In other words, the strategic use of incentive systems makes firms behave more aggressively in the case of strategic substitutes and less aggressively in the case of strategic complements.

The effect of strategic incentives in the case of strategic complements can be elucidated by the reaction functions of the managers in the second stage of the game (see Figure 1, adapted from Fershtman and Judd).

\[ \text{Figure 1. Incentives scheme moves the reaction curve out (strategic complements).} \]

From this figure, it is clear that if the focal firm provides softening incentives to its manager, its reaction curve moves out, which, in equilibrium, increases the price of the focal firm and its rival (moving from A to B in the figure). Both firms’ profits increase.
We argue that strategic incentives theory applies to chains with company-owned units in the following way. Chains set pricing strategies and provide incentives to managers of local company-owned units to keep prices relatively high and refrain from excessive discounting, which may dampen the intensity of rivalry. This contrasts with firms in which no delegation of pricing decisions occurs. Such firms may want to commit to maintaining high prices, but could not credibly do so.

The benefit of strategic commitment depends on the industry structure. As the number of firms increases and strategic interaction decreases, the benefit of strategic commitment dissipates. In a market with a large number of competitors, communication and coordination become more difficult, which decreases the potential gain of commitment (Stigler, 1964). In the extreme case of perfect competition, there is no strategic interdependence, and firms would not set incentives that differ from profit maximization. Thus, we argue that the price premium resulting from strategic delegation disappears as the number of firms in a market increases.

The following hypothesis can be deduced from the strategic incentives effect that is caused by delegation of pricing decisions to local managers.

\[ H-1: \text{ The fewer the number of competitors, the higher the price company-owned units charge, relative to franchised units of the same brand.} \]

2.2 Incentives distortion in franchised establishments

In the previous section, we discussed the modification of incentives because of strategic reasons, i.e., to benefit from the effect of modified incentives on rivals’ behavior. In this section, we explore whether different ownership forms may affect managerial incentives for non-strategic reasons. More specifically, we examine how franchise fees may distort managerial incentives.

The initial fee franchisees pay to the franchisor should not affect the incentives of
the franchisee at the margin, because these fees are sunk costs. Typically, there is a markup included in the price franchisees pay for the (semi-)finished good they buy from the franchisor. The effect of this markup is well known under the name *double marginalization*. In a review paper of the traditional franchising practice, Lafontaine & Slade (1997) show that franchised outlets charge a higher price than otherwise identical company-owned outlets because of double marginalization. While Lafontaine and Slade focus on the traditional franchise form, this paper concentrates on business format franchising.

The revenue-based fees for royalty, marketing, and other purposes may affect managerial incentives in two distinct ways. First, if these fees contain a profit margin, the double marginalization effect that is described above may occur. Second, these fees may constitute what could be called a *cost conversion*. While marketing costs, for example, should normally be considered fixed, i.e., independent of the output volume, in the case of franchising, these costs are calculated as a percentage of revenues and, thus, become variable. The conversion from fixed to variable costs may affect managerial incentives.

Royalty fees typically contain profits for the franchisor, while the other revenue-dependent fees do not. Consequently, the double marginalization effect should only occur as a result of royalty fees, not as a result of other revenue-dependent fees. In contrast, the cost conversion argument applies equally to all fees that depend on sales.

The following figure shows that a decrease in marginal revenues increases the optimal or equilibrium price.
Figure 2. Decrease in marginal revenues increases price.

The above conclusion, obviously, only holds in situations of imperfect competition, in which each individual firm faces a downward sloping (residual) demand curve. In the case of perfect competition, where residual demand becomes perfectly elastic, changes in marginal revenues would only affect the output quantity not the price. We believe that imperfect competition is an accurate description of most of the local, differentiated markets in which franchised units operate. However, as markets comprise more firms, the effect of franchise fees on pricing should become less important.

A second necessary condition is that the royalty fee is a percentage of revenues, as opposed to profits. If the fee were a percentage of profits, it would not change the relationship between marginal costs and revenues and, thus, it would not change the price a manager would choose.

The distortion of incentives as a result of the franchise fees leads to the following hypotheses.
H-2a: The price difference is proportional to the magnitude of the royalty fee.

H-2b: The price difference is proportional to the magnitude of other revenue dependent fees, such as marketing and reservation fees.

H-2c: The fee – price elasticity is smaller in markets in which more firms operate.

3. Methods

3.1 Empirical setting

The empirical setting of this study is the Texas hotel industry. The hotel industry is characterized as local competition, i.e., hotels compete directly with establishments that are located in the same area, but not with hotels that are located in a completely different part of the country or state (Baum & Mezias, 1992). Hotel services are differentiated goods that differ both in terms of their quality (“vertical differentiation”) and their location (“horizontal differentiation”). In this study, we focus on the short-run competitive interaction between hotel establishments, where the capacity of each hotel is taken as given, and competition therefore takes place in terms of quality and price. Since we measure the intensity of rivalry by price, the formal way to represent the competitive interaction in the hotel industry is in a differentiated Bertrand price competition model with capacity constraints, controlling for quality (Vives, 1999).

In Texas, approximately 3,500 hotel establishments compete in more than 800 local markets. During the time period of our sample, 1997-2002, the number of hotels in Texas grew by 4.8% annually. The total capacity increased by slightly less, 4.2% annually, from 243,000 rooms at the beginning of 1997 to 311,000 rooms at the end of 2002. The average price of an occupied room increased from $50.84 in 1997 to $57.68 in 2002 (2.6% annual growth). The average quarterly occupancy in the total state of Texas was between 48 and 58% during this period. Franchising has grown
steadily. At the beginning of 1997, 29.9% of all hotels in Texas were franchised, which grew to 34.2% by the end of 2002. The number of company-owned units has grown slightly, from 13.3% to 15.3%. Independent hotels formed 56.7% in 1997, and 50.5% in 2002.

The two primary sources of data we use are a hotel tax file we obtained from the State of Texas Comptroller’s Office and the Source Strategy Inc. (SSI) database. The first database has been used among others by Chung & Kalnins (2001). The second database has been used in previous studies such as Conlin & Kadiyali (2002) and Conlin (2003).¹

All hotels in Texas with room revenues exceeding $16,300 per quarter are required to report revenues on a quarterly basis to the State of Texas Comptroller’s Office. The Comptroller’s Office makes this data publicly available. This dataset includes the hotel name, the location of the hotel, the name and address of the owner, the number of rooms available, and the quarterly revenues.

The SSI database reports quarterly about the same hotels. The data comprise the name of the hotel, the brand name if the hotel belongs to a chain, its location (town and zip code), the average quarterly occupancy rate, price, and revenue per available room (REVPAR).²

To construct a panel dataset, we have created a unique hotel identification code and we have used information about the hotel name and the hotel address to link the

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¹ Conlin (2003) studies how ownership affects competition between two establishments of the same brand. Because chains with company-owned units maximize joint profits, while franchisees maximize the profits of their single unit, company-owned units are expected to compete less aggressively with other company-owned units of the same brand, than franchised units with other franchised units of the same brand. Our study is not focused on competition between units of the same brand, but on competition between units independent of their brand.

² The average room price (“average daily rate” or ADR), the occupancy rate, and the average revenues per available room (REVPAR) are the three most commonly used performance indicators in the hotel industry. The relationship between these three measures is as follows: REVPAR = occupancy x ADR.
records of both primary databases. The final dataset spans 24 quarters (1997 through 2002) and contains 77,257 observations.

We define the local market as the zip code area in which a focal hotel is situated. This is in line with Chung & Kalnins (2001) in a study of the Texas hotel industry.

Comparing nationwide chains, consisting of company-owned and franchised hotels, with independent hotels is difficult because of the importance of the brand reputation that the national chains have built. Moreover, while quality data for national chains is publicly available, the same data is not available for independent hotels, which makes it even more difficult to compare chains with independents. We therefore limit our analysis to hotels that belong to a chain, comparing company-owned with franchised hotels.

Within-segment, across-brand differences are significant in the hotel industry. For example, a large business hotel such as Westin is in many respects different from a niche hotel such as Four Seasons, even if both are in the luxury segment. Also, a well spread brand as Motel 6 is different from Country Heart Inn, a less well-known economy chain. Moreover, systematic differences in the preference for franchising versus owning could create biased results. We therefore use brand dummies, rather than segment dummies. To be able to distinguish brand effects from ownership effects, we limit our analysis to those brands that contain both franchised and company-owned units. Obviously, market measures such as the average occupancy rate or the number of hotels operating in a local market, also include the independent hotels.

In conclusion, the Texas hotel industry is an excellent setting to study the relationship between ownership form, managerial incentives, and competitive interaction, be-

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3 Using the hotel name and address was necessary because neither one of the databases contains a permanent hotel identification that does not change as the hotel changes ownership or name.

4 Some hotel tour books, such as the one published by the American Automobile Association, report a “star” rating, but these turn out to cover only 15%, or less, of the hotels in Texas (Chung & Kalnins, 2001).
cause of the heterogeneity in ownership forms, the local nature of its competition, and the availability of detailed ownership and competition data.

3.2 Variables

Dependent variable

The dependent variable is the average quarterly price for a hotel room. We use the natural log of the price, because price follows an approximate lognormal distribution. This variable is inversely related to our concept of interest, the intensity of rivalry. Our measure of price does not capture differences in rooms within the same establishment, e.g., the room size, or price fluctuations within the time period, for example between weekend and weekday. We do not believe that this data limitation systematically biases our findings.

Independent variables

The main independent variable is ownership structure. We have created a dummy variable for franchised establishments (1 if franchised, 0 if not franchised). The company-owned ownership form is the omitted variable. We have determined whether a unit is franchised (FR) or company-owned (CO) in a certain quarter, based on the brand name, the owner address, and information from the Directory of Hotel & Lodging Companies (2003).5

There are 82 distinct brands in the dataset. The brand name for each establishment/period combination is based on the SSI database. We have crosschecked the brand code with the hotel name reported by the Comptroller’s Office.

The log of the number of hotels in the zip code (lnnrhot) is included as a measure of the market structure. This variable is centered, i.e., the overall mean is subtracted,

5 The Directory of Hotel & Lodging Companies provides the address (town and state) where the chain is situated. All hotels, whose owner is located in that town, are assumed to be company-owned. All other chain hotels are assumed to be franchised.
to facilitate interpretation of the results.

The Hotel & Motel Magazine annually publishes a Franchising Supplement (1997-2002), which includes detailed information about the franchising fees per brand. We have included a variable \textit{royalf\kern-2ptee}, which indicates the royalty fee per brand as a percentage of revenues, and a variable \textit{otherfee}, which indicates the sum of all other fees that are calculated as a percentage of revenues. The franchise fees are relatively stable during the period of observation. Changes in the fees are reflected only in the new contracts that are signed after the change took place. We therefore included average franchise fees per brand over the six-year time period. Both royalty fee and other fees are centered (the mean is subtracted).

Control variables

The mean occupancy rate of a local zip code market (\textit{meanocc}) is defined as the average number of rooms that are occupied divided over the total number of rooms that are available. The focal firm is excluded in this calculation.

We have used the “Chain Scales”, published by Smith Travel Research (2004) to determine in which segment each brand should be classified. The six segments that are distinguished are \textit{economy}, \textit{midscale without food and beverage}, \textit{midscale with food and beverage}, \textit{upscale}, \textit{upper upscale}, and \textit{luxury}.

To control for unobserved heterogeneity at the brand level, caused by perceived brand quality and access to customers, one could either use brand dummies or dummies for each of the six segments. Because of possible within-segment/across-brand differences, we choose to use brand dummies, rather than segment dummies.

Finally, we use dummies for each year-quarter to control for seasonal and macro-economic trend effects.
3.3 Methods

Out of the 82 hotel brands that are in business in Texas, 28 brands operate both franchised and company-owned hotels.\(^6\) The same number of brands (28) own at least 95\% of the units, while 26 brands focus predominantly on franchising. It is empirically impossible to separate the effect of ownership form from the one of branding for brands that are limited to either franchised or company-owned properties. Accordingly, we include only those brands that consist of both franchised and company-owned establishments (“limited sample”). These brands represent approximately 16\% of all the Texas hotels that report revenues to the Texas Comptroller’s Office. Half of the hotels in the sample are franchised, with the remaining half being company-owned. Appendix 1 contains a list of the brands, including information about the average price per room, the market segment, the percentage company-owned, the royalty fee, and other revenue-dependent fees.

Our model reflects a reduced-form price equation for each hotel, and is estimated using a panel regression. We use fixed effects for each of the approximately 600 establishments to control for unobserved heterogeneity at the establishment level, caused by the hotel’s unique quality and location. The use of establishment fixed effects clearly imposes constraints on the minimum number of observations included in the analysis. Fortunately, the availability of a panel dataset with 24 periods permits the use of fixed effects. Moreover, the Hausman test rejects the use of a random effects model in favor of a fixed effects specification.

3.4 Results

The average characteristics of hotels differ across ownership forms. The table below

\(^6\) We defined a brand to belong to this category if at least 5\% of its units are franchised and at least 5\% are company-owned.
reports the hotel capacity (number of rooms), occupancy rate, and average price per ownership category. Although this study focuses on franchised and company-owned units, for completeness, independent hotels are also included.

<table>
<thead>
<tr>
<th></th>
<th>Company-owned</th>
<th>Franchised</th>
<th>Independent</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Capacity</strong></td>
<td>153 rooms</td>
<td>161 rooms</td>
<td>52 rooms</td>
</tr>
<tr>
<td><strong>Occupancy rate</strong></td>
<td>63.8%</td>
<td>63.9%</td>
<td>48.3%</td>
</tr>
<tr>
<td><strong>Price</strong></td>
<td>$62.71</td>
<td>$73.85</td>
<td>$51.27</td>
</tr>
</tbody>
</table>

*Table 1. The average hotel per ownership form.*

The difference between hotels that belong to a chain (company-owned and franchised) and independent hotels is stark. Independent hotels are smaller, they have a lower occupancy rate, and they charge lower prices. Company-owned and franchised hotels are more similar, although the average franchised establishment is somewhat larger and charges a higher price than the average company-owned establishment.

The price difference between franchised and company-owned units is not only affected by strategic delegation and franchise fee distortion, but also by many other factors, such as location and quality differences (heterogeneity at the establishment level), brand reputation differences (heterogeneity at the brand level), market specific shocks, and economy-wide shocks. In this analysis, we seek to elucidate the effect of ownership structure after controlling for these other factors.

Table 2 (appendix) reports the mean, standard deviation, and correlations of the main variables. Note that `lnnrhot`, `royalfee`, and `otherfee` are centered on zero.

The number of hotels per zip code ranges in our sample from 1 to 54. The number of markets in which only one establishment operates equals 2.2%. In 57.3% of the markets, between 2 and 10 hotels operate. In 40.5% of the markets, more than 10 properties are present.
The average royalty fee in the sample equals 4.6% (minimum 3%, maximum 5.4%), while the average sum of other revenue-dependent fees equals 3.2% (minimum .8%, maximum 4.2%).

The franchise dummy is positively correlated with the segment variable. This is in part caused by some low end brands, such as Motel 6 and Studio 6, that are predominantly company-owned. This could explain why franchised hotels are, on average, more expensive than company-owned hotels.

The royalty fee is positively related with the segment, which suggests that royalty fees reflect, in part, the brand reputation. The correlation between other fees and segment is negative. When including royalty fees or other fees in a regression, we will have to control for segment or brand to avoid omitted variable bias.

In Table 3 (appendix), we investigate how royalty fees and market structure variables affect pricing of company-owned and franchised establishments. The dependent variable is the natural log of the price per occupied hotel room. The company-owned ownership form is the omitted variable, which means that the coefficient on the franchise dummy should be interpreted as the percentage price difference between franchised and company-owned.

Model 1 confirms the higher price for franchised establishments compared with company-owned units. In model 2, the average market occupancy is included to control for local demand shocks. As expected, the coefficient on market occupancy is positive in all models. Adding a period dummy, in model 3, does not significantly change the price difference between franchised and company-owned hotels. Adding a brand dummy (model 4), however, reverses the price order (the coefficient changes from positive .2132 to negative .0302). This confirms our earlier conjecture that the price difference could be explained (in part) by the fact that franchised hotels are, on
average, more upscale than company-owned hotels. The negative coefficient in model 4 implies that company-owned units are, on average, more expensive than franchised units within a given brand. This is confirmed by industry executives, who report that chains prefer to own the larger, more luxurious properties of a brand because of the complexity of managing these properties.

While models 1 through 4 are OLS regressions, models 5 through 8 are fixed effects regressions. The subset of brands that have both company-owned and franchised hotels includes 630 hotels with, in total, 12,142 observations. Including the establishment fixed effects (model 5) makes any price difference disappear (coefficient on franchise dummy is insignificant). This confirms our assertion that the negative coefficient in model 4 was due to a property effect. Including the brand dummies increases the $R^2$ from 17% to 83%. Including establishment dummies increases the $R^2$ further to approximately 97%.

The fixed effects specification requires changes in ownership at a specific location to provide power to the estimation of the ownership coefficients. Over the six years of observation, 15.8% of the establishments in our sample changed ownership form, which means that they moved from being franchised to being company-owned, or vice versa.

The analysis of models 1 through 5 leads to the first observation: after controlling for brand, period, and establishment fixed effects, franchised units do not price significantly differently from company-owned units.

This finding is in line with the opinion of several executives who are working in the hotel industry. Asked whether they expected franchised hotels to price differently from company-owned establishments, most executives responded negatively. They argued that company-owned and franchised hotels face the same customers and mar-
ket conditions, that the managers have had the same training and use the same systems, and, therefore, that franchise units would price the same as company-owned.

However, the observation that prices do not differ only holds at average levels of franchise fees and market structure. In model 6, we explore how the number of hotels in the market affects both franchised and company-owned properties. Because company-owned is the omitted ownership category, the coefficient on $\ln nrhot (-.0720)$ reflects the effect of the number of hotels on company-owned units, while the effect on franchised units is indicated by the sum of the coefficients on $\ln nrhot$ and $FR*\ln nrhot (-.0720 + .0368 = -.0352)$. This means that the price premium of company-owned units dissipates as the number of hotels in the market increases. In other words, when the number of firms is small and strategic interaction is most salient, company-owned units charge a higher price relative to franchised units. This supports hypothesis 1. Figure 3 depicts the relationship between the number of market participants and the price of company-owned and franchised units graphically.

![Figure 3](image-url)

*Figure 3. The price premium of company-owned hotels disappears as the number of hotels increases.*

In model 6, the effect of royalty fees and other revenue-dependent fees on the price of franchised establishments is explored. The royalty fee is set equal to 0 for
company-owned establishments. The coefficient on the royalty fee is equal to .0363, which suggests that a 1% increase in the royalty fee is associated with a 3.7% increase in the price charged to customers.\(^7\) While the royalty fee is positively related to price, the other fees that are levied as a percentage of revenues are not. The results thus confirm hypothesis 2a, but they do not confirm hypothesis 2b. The royalty fee creates an incentive difference between franchised and company-owned establishments, which the other revenue dependent fees do not. This suggests that double marginalization in business-format franchising increases the price franchised hotels charge, while cost conversion does not affect franchisee pricing.

The insignificance of the franchise dummy signifies that franchised and company-owned units do not price differently at the average level of the royalty fee (4.6%). The royalty fees range from 3% to 5.4% in the sample. The proportional relationship between the royalty fee and the percentage price difference, hypothesis 2a, is confirmed in the analysis. This means that we could extrapolate the effect of the royalty fee to calculate the price difference between a company-owned hotel and an imaginary franchise unit with a royalty fee of 0%. After controlling for the effect of the royalty fee on price, a franchised unit (with a royalty fee of 0%) would charge a price that is 15.7% lower than a company-owned property.\(^8\)

The price distortion resulting from franchise fees is argued to be more salient in imperfectly competitive markets than in markets than approach perfect competition (H-2c). The negative sign in model 8 on the interaction between the royalty fee and the number of hotels in the local market (–.0378***) confirms this hypothesis. As the market becomes more competitive, passing the royalty fee on to customers becomes less feasible. The changes in the royalty fee/price elasticity is shown in Figure 4. As

\(^7\) This percentage is calculated as follows: \(\exp(.0363) – 1 = 3.7\%\).

\(^8\) 15.7\% = \exp(–.0052 – 4.56*.0363) – 1.
the number of firms in the local market increases, the slope of the royalty fee/price relationship decreases.

![Figure 4. The royalty fee - price elasticity decreases as the number of hotels increases.](image)

4. Conclusion

While traditional research in competitive strategy treats the firm as if it consists of a unitary actor, in this paper, we explore how the inside of the firm affects the way it competes vis-à-vis its competitors. We have developed arguments that link ownership structures with managerial incentives and competitive behavior.

With this paper, we aim to contribute both to the theoretical and empirical literatures that explore the relationship between firm characteristics, incentives, and inter-firm rivalry. First, we show that strategic incentives theory may apply to situations in which ownership is separated from day-to-day competitive decision-making. More specifically, we show that company-owned establishments, through strategic delegation, may credibly commit to becoming market price leaders. Furthermore, we show that this commitment dissipates in situations in which strategic interaction becomes less salient.
While there have been ample theoretical treatments of strategic incentives theory, the empirical evidence of this theory has been scant. Two notable exceptions are Slade (1998b) and Aggarwal & Samwick (1999). Slade finds that the likelihood of vertical separation in gasoline stations increases as the benefit of separation through strategic delegation increases. Aggarwal and Samwick find in a cross-sectional study of companies that are listed on a stock exchange that the weight placed on rivals in the executive compensation scheme decreases as concentration increases. This finding is interpreted as evidence for strategic incentives theory. In this study, we show that chains may provide company-owned units with incentives to soften competition, confirming strategic incentives theory. With this analysis, we hope to improve the balance between theoretical and empirical contributions of strategic incentives theory.

Second, we demonstrate that the payment of royalty fees distorts the pricing behavior of franchisees. Royalty fees reduce the net available revenues, which provides franchisees with an incentive to increase the price they charge customers. Moreover, we find evidence that the royalty fee/price distortion decreases as competition become more intense.

Lafontaine and Slade (1997) cite six prior studies that find that franchised outlets charge a higher price than company-owned outlets. While this study focuses on business format franchising, the studies cited by Slade and Lafontaine use a traditional franchise setting: two studies deal with gasoline stations (Barron & Umbeck, 1984; Shepard, 1993), two with fast-food chains (Lafontaine, 1995; Graddy, 1997), one with pubs (Slade, 1998a), and one with soft-drink bottlers (Muris, Scheffman, & Spiller, 1992). Slade and Lafontaine list three potential reasons why franchised units may charge a higher price than company-owned units. First, costs may be higher in the case of franchising, because it creates an additional administrative layer and may thus increase the cost of transacting. Second, in markets in which there is imperfect competition, the use of exclusive territories in franchising may reduce the degree of com-
petition and thus raise prices (Rey & Stiglitz, 1995). Finally, double marginalization may arise if the units have market power in their local markets.

By contrast, in our study we find that in more oligopolistic contexts company-owned units, in fact, price higher than franchised units, leading to the conclusion that ownership form has differential effects under different competitive contexts. With the present paper, we hope to contribute to the above literature by quantifying the double marginalization effect and separating it from other reasons that potentially affect the price charged to customers. The availability of royalty fees provides the unique opportunity to accurately measure double marginalization and control for the distortion that results from it. We show that the price distortion that results from double marginalization is directly proportional to the level of the royalty fees in franchising.

The direct generalizability of our findings is limited to industries in which both franchised and company-owned establishments operate. However, the general finding that characteristics of the firm affect competition between firms may be more broadly applicable. This study has focused on ownership of the firm as one characteristic that affects managerial incentives. Before one can conclude that in general “the inside matters for competition”, future research should study other firm characteristics, such as compensation schemes and organizational structure, and their effect on inter-firm rivalry.

This paper starts exploring the effect of managerial incentives on rivalry. We explore how the number of firms in a local market influences the strategic effect of incentives. It would be valuable to refine this investigation by examining direct responses to strategic pricing. Using a structural econometric model, one could verify whether the assumption of strategic complementarity is justified and whether strategic pricing achieves its intended price response and performance effect.
REFERENCES


Table 1. Brands that operate both franchised and company-owned hotels in Texas.

<table>
<thead>
<tr>
<th>Brand</th>
<th>Price</th>
<th>Occupancy rate</th>
<th>Capacity (rooms)</th>
<th>Segment</th>
<th>Royalty fee</th>
<th>Other fees</th>
<th>Perc. FR</th>
<th>Perc. CO</th>
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<tbody>
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<td>AmeriSuites</td>
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<td>127</td>
<td>4</td>
<td>5.00%</td>
<td>3.51%</td>
<td>22%</td>
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<td>0.75%</td>
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<tr>
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<td>4.00%</td>
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<td>2.50%</td>
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<td>14%</td>
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<tr>
<td>Town Place Suites</td>
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</tbody>
</table>

Legend

Average price in US$ per night per room. Segments: (1) economy, (2) midscale without food and beverage, (3) midscale with food and beverage, (4) upscale, (5) upper upscale, and (6) luxury. Percentage franchised/company-owned: average number of units in Texas that are company-owned/franchised divided by the total number of units for the same chain.

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Table 2. Descriptive statistics

<table>
<thead>
<tr>
<th>Variable</th>
<th>avg.</th>
<th>std. dev.</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
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<td>FR*lnnrhot</td>
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</tbody>
</table>

Correlations are within the limited sample of 29 brands that have both franchised and company-owned units. All correlations are significant at the .05 level, except those that are printed in italics. The variables indicating the price and the number of hotels in a local market are logged. The following variables are centered around the sample mean: lnnrhot, royalfee, and otherfee.
### Table 3. Regression results

<table>
<thead>
<tr>
<th>Variables</th>
<th>Model 1</th>
<th>Model 2</th>
<th>Model 3</th>
<th>Model 4</th>
<th>Model 5</th>
<th>Model 6</th>
<th>Model 7</th>
<th>Model 8</th>
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<td>.2132***</td>
<td>-.0302***</td>
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<td></td>
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<td>.0202 †</td>
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<tr>
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<td>R²</td>
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<td>12,142</td>
<td>12,142</td>
</tr>
</tbody>
</table>

The dependent variable is the log of the price of an occupied hotel room. †: \( p < .1 \), *: \( p < .05 \), **: \( p < .01 \), ***: \( p < .001 \).