Organizational Form and Performance: Evidence from the Hotel Industry

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1. Introduction

How firms organize their transactions, and what effect this has on their performance, are central issues in economics. And indeed a number of theoretical models have addressed the question of incidence, or when we should expect certain organizational forms to be used. Related empirical analyses have established a strong link among various transaction characteristics and the likelihood that the transaction is organized in house or not (the make or buy decision), and, if it is not, various characteristics of contractual agreements that might be used instead of spot transactions.[1] Much less is known, however, about the effect that organizational form decisions can have on firm performance. This may seem surprising given the fundamental interest in establishing the value of using various contractual alternatives. Indeed, as noted by Mullainathan and Scharfstein (2001), what matters at the end of the day are differences in behavior or performance: do the firms that are vertically integrated, or those that rely on particular contract forms or terms with their suppliers or retailers, behave differently or do worse or better than those that do not? And if not, why not?

Unfortunately, studies of the effects of organizational form or contract terms on firm behavior, or performance, or other outcome variables are relatively rare for a reason. Fundamentally, the effects of organizational form or of various contractual decisions are difficult to identify empirically given that firms do not make such choices randomly. Indeed, parties choose various options based on what they expect will give the best outcome in a given situation. This, of course, is exactly what the literature on incidence relies upon and tries to capture.

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[1] For a recent survey of the empirical literature on vertical integration, see Lafontaine and Slade, *Journal of Economic Literature*, forthcoming. For a review of the empirical literature on inter-firm contracts, see Lafontaine and Slade (forthcoming), "Inter-Firm Contracts: The Evidence," in Gibbons and Roberts, *Handbook of Organizational Economics*.

Unfortunately, this also raises important endogeneity issues when it comes to assessing the effects of organizational form or contractual practices.

This paper relies on a unique proprietary panel dataset on the operations of a large hotel firm to study the effect of vertical integration decisions on the performance of individual hotel properties. Confidentiality issues prevent us from identifying the firm that provided the data. This firm, however, operates several hotel chains or brands in a number of countries around the world.[2] The data we rely on are those that pertain to the properties that the firm has established in its home market. For these properties, we have monthly performance data over a period of 34 months, as well as information about the hotel itself and government data on characteristics of the market in which it operates. Assuming that the underlying omitted factors that affect both the use of a particular contractual arrangement and performance are time invariant, the introduction of hotel fixed effects in our regressions removes the influence of various unobserved hotel characteristics such as the quality of hotel management, specific hotel characteristics, and so on, that are likely to give rise to the selection problem. Moreover, our data have the unique advantage of including information on what we argue is a valid instrument for organizational form, namely a hotel's distance from firm headquarters. This variable affects agency costs and thus theory suggests it should be correlated with organizational form, but we have no a priori reason to expect that it would be correlated directly with performance.

But why focus on the hotel industry? First, service industries represent an important part of the economy in developed as well as many developing countries. For example, in the US in 2004, services accounted for approximately 89 million jobs, or 80% of all employment and 63%

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[2] We sincerely thank the director of franchising of this corporation for access to these data. For confidentiality reasons, we have agreed not to reveal the number of chains nor the markets in which the firm operates.

of GDP. Of these 89 million jobs, 13 million were in the leisure and hospitality sector.[3] Second,

the hospitality and leisure industry is a vital economic engine, and in many countries it represents

the largest services export industry. In the US, for example, the hospitality and leisure industry is

expected to grow by 2.1 million jobs (17.8%) between 2002 and 2012, a rate that is larger than

the expected 14.8% job growth for all industries (International Society of Hospitality

Consultants). In other words, understanding how franchising as an organizational form affects

the performance of franchised chains is not only an important academic question, but also one

that speaks to the competitiveness of this and other related industries. Finally, given our interest

in comparing outcomes for units that firms choose to operate differently, we need a context

where franchising and corporate ownership coexist, as indeed they typically do in this industry.[4]

We find statistically significant differences in performance, in the form of lower

occupancy rates and higher prices, when we compare simple averages between franchised and

company owned hotels in our data. However, when we control for various hotel characteristics,

as indeed one should, we instead find lower revenues per unit of capacity (RevPar) and lower

prices in franchised compared to company-owned hotels. Yet these differences all become

statistically insignificant when we explicitly model the selection of organizational form in our

performance estimation using distance from headquarters as an instrument. Thus we conclude

that the firm franchises hotels in markets where occupancy rates tend to be lower, and prices

higher, on average due to various hotel and market characteristics. Once we control for these,

revenues per unit of capacity and prices in franchised hotels become lower than those in

company owned properties. However, once we further recognize that the firm chooses which

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[3] This is to be compared to 15 million employees in the U.S. in all of manufacturing that same year, and another15
million employed in retailing. The total labor force was 110 million. (Bureau of Labor Statistics, Table B-3)
[4] In fact, most hotel chains also include a number of hotels under management contracts. There are very few of these
in our data, and for that reason we combine those with corporately owned and operated hotels. See below.

hotels to own and franchise, and we therefore treat this decision as endogenous, we find that the firm makes these decisions in a way that yields no differences in performance, in the end, between the two sets of hotels.

The paper is organized as follows. In the next section, after a brief overview of existing evidence on the effect of organization on firm behavior and outcomes, we discuss in particular the reasons why one might expect performance differences among franchised and corporate units of a given chain, and the fundamental problem of selection that complicates analyses of the performance effects of organizational form. In section 3, we describe our data and present some preliminary evidence on performance differentials. In Section 4, we present our empirical model and estimation results, followed by a short summary of various robustness tests we conducted. Section 5 concludes.

2. Organizational Form and Performance

2.1 A Brief Overview of Literature

In their paper on the effect of vertical integration on capacity investment, Mullainathan and Scharfstein (2001) note that little attention has been given to the question of whether firm boundaries empirically matter for firm behavior and other outcomes. And indeed only a few authors have considered various aspects of this question. To our knowledge, Shelton's (1967) was the first to do so, specifically considering the effect of franchising on outcomes in a fast-food chain. In particular, he measured the effect of switching from franchising to company ownership, and from company ownership back to franchising, on outlet costs, revenues, and profits. He found no tendency for revenues to differ across the two governance regimes.

However, under company ownership, costs were higher, and hence profits lower, than under franchising.

The main advantage of Shelton's study was that its within-outlet design held much constant as the mode of organization changed. Its main drawback, however, was that units in the chain he studied were operated under company ownership only during transition periods. In other words, franchising was the preferred mode of organization in that chain, and company ownership only a transitory phase. Consequently, company ownership was likely to be implemented rather poorly in this chain. Still, Shelton's findings suggested that franchising was a more efficient mode of organization, in that it led to lower costs.

A number of other authors also have analyzed the effects of governance form on firm performance or behavior using instead the "natural experiments" that arise when local governments prohibit the use of particular organizational forms. Perhaps the most famous is the case of gasoline divorcement in the US, where divorcement means that oil companies have had to divest all their company stations. Divorcement laws, which have been passed by a number of state legislatures, usually occur as a result of lobbying on the part of franchised dealers who claim that, when a company acts as both supplier and horizontal competitor, its behavior is influenced by considerations of foreclosure. The empirical literature (e.g., Barron and Umbeck (1984), Vita (2000), and Blass and Carlton (2001)), in contrast, has shown that prices and costs have gone up, and hours of operation, a dimension of quality, became shorter after oil companies were prevented from operating stations directly. In his study of the effect of state laws protecting the territories of car retailers, Smith II (1982) similarly finds that car prices and dealership values rose, while hours of operation fell, after the state laws were enacted. Finally, Slade (1998a) examines the forced move that occurred in the UK beer industry from franchising with two--part tariffs to market interaction under linear prices. In the UK beer industry, similar to the US

gasoline industry, tenanted pubs are owned by the brewer but operated by the publican under exclusive--purchasing contracts. She finds that draft beer prices rose after pub owners were prevented from charging fixed fees.

Though limited, the empirical evidence above suggests that firm behavior and performance are affected by organizational form. However, this evidence is obtained under conditions where it is clear that firms would have chosen a particular mode of organization that is different from the one they have to operate under given legislative intervention. In other words, it is likely that the legislated form of organization is sub-optimal from the upstream firms' perspective as it was not chosen before the local government intervened. The observed effects then confirm the sub-optimal nature of alternative modes that were not initially chosen by the firms, and in that sense provide evidence that organizational form clearly matters. But it remains to be seen whether differences in outcome or performance among firms that are free to choose the ways in which they organize their transactions, as was the case for example for the VCM (vinyl chloride monomer) producers whose investment behavior was examined by Mullainathan and Scharfstein (2001). These authors found that integrated VCM producers' investments in capacity did not respond to changes in market demand like those of non-integrated producers. Their results thus suggest that governance form matters even when firms are free to choose.

The problem with such comparisons, however, is that it does not consider why some VCM producers are integrated and others are not. It is possible that in this industry, the integration decision is random or unrelated to factors that affect outcomes, in this case investment behavior. But in general, from the literature on the incidence of various organizational forms, we know that this is not the case. Shepard (1993) for example notes that if market or other firm characteristics affect the decision to vertically integrate, and the same characteristics affect investment decisions, estimates of the relationship between organizational

form and investments will be biased unless the underlying market and firm characteristics –

some of which are likely to be unobserved - are controlled for in the regression. This, in turn, is

what made Shelton's analyses, or those that rely on exogenous changes in the law to generate

exogenous changes in organizational form, appealing. In neither case did markets or outlets

change when organizational form did, so that one can then examine the effect on outcome

holding these other factors constant. However, as noted above, results from such analyses may

not correctly capture how organizational form affects outcomes when firms choose

organizational form optimally without facing any institutional constraints.

In what follows, we address this question in the context of the more than one thousand

hotels, grouped among various chains, that a single company operates in its home market. The

joint ownership of the chains in our data holds various policies and other firm related variables

constant across the different chains and hotels in our data. Beyond this, we rely on the fact that

the firm chooses to operate some of its hotels as corporate entities while franchising others, as

many franchisors do, to ask how the choice of organizational form affects occupancy rates,

pricing and revenues for the different properties. We address identification directly, first by

controlling for numerous market and hotel characteristics, including hotel specific effects.

Moreover, we rely on information on distance from headquarters to identify organizational form

separately from outcome. We discuss our identification strategy further below, in section 4.

2.2 Franchising versus Company Ownership

There are a number of reasons to expect behavior and performance to differ between

franchised (separated) and company owned (integrated) units of the same chain. As is well

known, the incentives of hired managers and of franchisees, and their objectives, can differ

importantly, leading them to put forth different levels of effort that, in turn, will affect quantities

and other outcomes. Theories also differ, however, in their predictions depending on the behavior or outcome of interest.

The traditional principal agent model, with its emphasis on the high-powered incentives that franchisees have, suggests in particular that output should be higher, and costs lower, in franchised than in corporately owned and operated outlets. At the same time a franchisee's ownership of its outlet may lead him to free ride on the value of the brand. This in turn could lead to lower quality levels and/or higher prices in franchised outlets, both of which, everything else the same, might then lead to lower rather than higher output in franchised units. In other words, economic theory leads to different predictions for various performance outcomes depending on whether the outcome is most affected by the basic incentive issue (too little effort) that is solved by having a franchisee own his outlet, as per the traditional agency model, or by the fact that profit maximizing franchisees *who own their outlet* can then increase their individual profits through free-riding.

When it comes to prices specifically, the outcome variable that has attracted the most attention empirically, many arguments imply that they should be higher in the franchised hotels in our data. First, contracts written with franchisees are typically more complex and thus costlier to write and enforce than those written with employee managers, and this in turn might increase costs and prices more generally in franchised units. Second, if outlets have some market power, and the franchise contracts involves royalty payments, the typical double-marginalization problem might arise, giving rise again to higher prices in franchised than in company owned hotels.[5] Third, the existence of spillovers can lead franchisees to choose prices above those that maximize the chain's profits. Finally, a franchisee who successfully increases demand at his hotel through his effort might well price higher as a result as well.

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[5] See Blair and Lafontaine (2005).

Given all these potential sources of differences among franchised and company owned units in franchised chains, a number of studies of the effect of organizational form beside Shelton (1967) indeed have relied on data from franchised companies. Among these, Krueger (1991) found that employees in company units of franchised fast-food chains were paid slightly more, and faced somewhat steeper earnings profiles, than employees in franchised units. He argued that the lower powered incentives of managers in company restaurants made it necessary to offer greater incentives to employees, in the form of efficiency wages and steeper earnings profiles. Similarly, Shepard (1993) and Hastings (2004) considered how price differed between gasoline stations that were franchised versus those that were owned and operated by oil companies. Shepard (1993) found that prices of some products were higher in franchised gasoline stations, but Hastings (2004) found no such difference. Similarly, Bradach (1998: 109) found that most of the franchisees and company managers he interviewed about quality differences in the five fast-food chains he studied "agreed that the two arrangements exhibited similar levels of (standard adherence) uniformity." For the two firms in his sample that used third-party evaluators to assess quality, the average score was 94.6 (out of 100 points) for the franchised units and 93.9 for the company units in the first chain, and 89.7 and 90.6, respectively, in the other chain. Thus, he concluded that there was no meaningful quality difference between the two types of units. Michael (2000), on the other hand, used data on quality ratings published by Consumer Reports for samples of restaurant and hotel chains to assess the relationship between franchising and quality. He concluded that quality was negatively associated with franchising in both industries, and hence that free-riding was indeed a problem for franchised chains. Similarly, Jin and Leslie (2005) document differences in quality in that the average hygiene scores were greater among company owned restaurants of franchised chains than among the franchised units of the same chains in their data. The evidence, on both pricing and quality, remains mixed though suggestive

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still that differences arise between the two types of outlets in these chains, and this despite the fact that franchisors can choose which outlets in their chain are franchised, and which are operated directly.

3. The Data

We rely on two complementary data sources in this paper. The first is a confidential data set provided by the Company, which includes data on occupancy rates, average prices and total revenues for all the firm's hotels in its home market, on a monthly basis, from January 2001 to October 2003, yielding 34 monthly observations for most of the hotels in our data. All the 1,194 hotels are branded, but the Company owns several brands, with each brand belonging to a particular category of hotel, from budget to luxury properties.[6] For each of the hotels, we also know whether the hotel is operated by the franchisor or belongs to a franchisee, and if so, who the franchisee is.[7] A third form of organization used in this industry is also present here, that is a few hotels are operated under what are called management contracts (see also Kehoe, 1996). In these cases, a third party owns the hotel, but the chain hires managers to operate it. We can identify hotels operated under this type of arrangement in the data but we lump them with other hotels operated by the company as there are too few of them to treat them as a separate category.[8] In addition, we have information on the location of the hotel, the date at which it began its operations or joined the chain, the brand under which it operates, its size (in number of

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[6] In reality this firm operated 1305 hotels in its home country at the time we obtained the data. However, one set of hotels operated under a particular brand is fully corporate, so we had to eliminate those hotels from our analyses. After removing a few more hotels with missing data, our final data set contains information on 1194 hotels.

[7] We only know who owns each hotel at the end of our data period, however, and so can only identify multi-unit ownership on this basis. See the data appendix for more on this.

[8] Only 4% of the hotels in our data, or 48 of them in our final sample of 1194 hotels, operate under such contracts. We treat management contracts as equivalent to company ownership because, although the company does not own the property in this case, the hotel manager is still hired by the Company and as such, the Company exerts significant control at such properties just as it does under company ownership. We have verified that our results are unaffected if we exclude these hotels from our analyses.

rooms), and a number of characteristics such as whether there is a restaurant, outdoor café, fitness facility, pool, and so on, on the premises, and whether the hotel offers air conditioned rooms, is near an airport, or near a train station. (See the data appendix for more details.)

Second, we have local market data on population (in 1999), median household income (in 2000), unemployment (in 1999), and tourism (in 1998), all from government sources. The latter is a monthly indicator of tourism intensity on a scale of 0 (none) to 4 (very high) for each local market. Finally, we measure the intensity of competition in each local market using the number of hotels in the market as of 1998, again per government data.[9] (See the data appendix for details.)

Performance in the hotel industry is typically measured one of two ways, either in terms of occupancy rate, but even more often in terms of what the industry refers to as RevPar, which is the average amount of revenue per unit of capacity (i.e. room) per day. This differs from standard price (or room rate) in that it represents also the level of occupied capacity: it amounts to price multiplied by occupancy rate, and as such represents a measure of yield. Alternatively, RevPar is total revenues for the hotel for the month divided by the number of room/days offered by the hotel that month (i.e. the size of the hotel times the number of days in the month).[10]

Table 1 shows descriptive statistics for all the variables above. In this table, we treat each hotel as a single observation. Since we have an almost balanced panel, the descriptive statistics are basically the same if we use a hotel/month as our observation. However, hotel level information is somewhat easier to interpret since many of our variables are fixed over time.

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[9] In addition, to even better control for competition in local market in our regressions we also include restaurant competition intensity dummy variables. (See the data appendix for more details)

[10] As we cannot reveal the company name or country, we also cannot indicate the currency used to measure these.

TABLE 1: DESCRIPTIVE STATISTICS, BY HOTEL

	Mean	Standard Deviation	Minimum	Maximum
Price (Room Rate)	53.67	31.45	20.38	292.54
Revpar	37.23	21.73	10.51	196.79
Occupancy Rate (%)	70.43	10.94	32.25	101.39
Revenues/Month (000's)	172.31	251.47	20.15	3118.99
Number of Rooms	91.24	67.35	29.94	782
Hotel Age	13.41	8.37	1	73.94
Distance from Headquarters	300.55	221.32	0	917.18
Number of Hotels in Market [a]	22.19	33.19	0	266
Tourism intensity	1.71	1.08	0	4
Population	193383	498502.6	192	2125851
Income	9993.03	2110.97	4161.71	23021.63
Franchised	0.34	0.47	0	1
Restaurant on Site	0.44	0.50	0	1
Outdoor Cafe	0.27	0.44	0	1
Air Conditioning	0.47	0.50	0	1
Fitness Facility	0.05	0.23	0	1

[a] This information is only available for 1015 of the 1194 hotels in our data. The other hotels operate in very large cities, and the government data do not contain this type of variable for very large markets.

Table 2 shows the same information for different groups of hotels, where we group the company's brands in six main categories based on their prices. The data are shown first for the group with the highest average price down to the lowest average price. This table shows that group 6, with the lowest average price, is least franchised of all, while group 1, with the highest prices, is where the firm has the second lowest amount of franchising. These data suggest a potentially non-monotonic relationship between franchising and price. They also imply that our empirical strategy to assess the effect of organizational form must control for potential brand-specific effects. On the other hand, ordering the brand groups by average RevPar, monthly revenues, average size of hotels, and even average income in the market is completely equivalent to ordering by price. Many other variables, such as distance from headquarters, and tourism intensity or population, also follow the same general ordering though there are some exceptions

in these cases. Average occupancy rates, however, are clearly inversely related to average price

when we examine the data across brand groups as is done here.

TABLE 2: DESCRIPTIVE STATISTICS, PER BRAND GROUP AND HOTEL; MEANS (STANDARD DEVIATION)
(BRAND GROUPS ORDERED BY AVERAGE PRICE OF ROOM FROM THE HIGHEST TO LOWEST)

	Group 1	Group 2	Group 3	Group 4	Group 5	Group 6
Number of Hotels [b]	33	119	236	331	193	284
% Franchised	9.98	16.81	50.47	51.69	45.45	2.8
	(29.36)	(37.55)	(50.01)	(49.76)	(49.78)	(15.90)
Price	158.97	82.36	77.39	54.10	32.91	23.40
	(54.14)	(16.15)	(19.30)	(8.73)	(4.15)	(1.70)
Revpar	105.12	53.64	49.47	39.65	24.89	17.82
	(42.19)	(16.23)	(17.86)	(10.29)	(5.45)	(3.07)
Occupancy Rate (%)	64.55	63.97	62.23	72.02	74.95	75.55
	(9.89)	(8.81)	(9.88)	(9.42)	(11.02)	(8.85)
Revenues/Month	904.91	371.71	233.24	153.93	67.37	46.51
(000's)	(658.24)	(322.27)	(191.92)	(172.03)	(60.61)	(32.11)
Number of Rooms	187.09	127.52	96.63	88.53	75.96	74.17
	(155.33)	(83.93)	(61.27)	(70.39)	(48.59)	(29.83)
Hotel Age	19.60	22.42	13.10	14.93	5.7	12.67
	(14.81)	(9.34)	(9.62)	(7.05)	(3.87)	(2.58)
Distance from Headquarters	337.93	291.87	311.63	300.02	295.99	294.23
	(291.92)	(223.40)	(232.48)	(211.01)	(233.35)	(205.11)
Number of Hotels in Market [a]	59.24	26.26	34.54	25.68	16.78	8.68
	(48.72)	(36.64)	(43.48)	(32.95)	(28.22)	(13.22)
Tourism Intensity	2.24	1.74	1.91	1.86	1.74	1.25
	(1.09)	(1.11)	(1.06)	(1.03)	(1.11)	(0.99)
Population	668184	212248	303613	240994	102683	49352
	(861976)	(501337)	(628190)	(555206)	(320425)	(191733)
Income	11484	10532	10305	9956	9750	9544
	(2197)	(2082)	(2267)	(2073)	(2079)	(1879)
Restaurant on Site	0.97	1	0.68	0.64	0	0
	(0.17)		(0.47)	(0.48)		
Outdoor Cafe	0.48	0	0.50	0.57	0	0
	(0.51)		(0.50)	(0.50)		
Air Conditioning	1	0.88	0.79	0.56	0.30	0
		(0.32)	(0.41)	(0.50)	(0.46)	
Fitness Facility	0.58	0.12	0.13	0	0	0
	(0.50)	(0.32)	(0.34)			

[a] This information is only available for 1015 of the 1194 hotels in our data. The other hotels operate in very large cities, and the government data do not contain this type of variable for very large markets.

[b] The number of hotels across all brands adds to 1196 rather than 1994 because 2 hotels changed brand during our sample period. In the above statistics we simply include them in both groups.

TABLE 3: FRANCHISED AND CORPORATELY RUN HOTELS, MEANS (STANDARD DEVIATIONS)

	Franchised: 406 hotels out of 1194=34%	Corporate: 788 hotels out of 1194=66%.	Difference is significant at: *(10%), ** (5%), *** (1%).
Price (Room Rate)	56.35	52.29	**
	(20.60)	(35.71)	
Revpar	38.60	36.52	
	(15.35)	(24.36)	
Occupancy Rate (%)	68.31	71.52	***
	(11.51)	(10.48)	
Revenues/month (000's)	126.89	195.71	***
	(100.24)	(298.46)	
Number of rooms	74.24	100	***
	(36.41)	(77.26)	
Hotel Age	10.25	15.04	***
	(7.92)	(8.13)	
Distance from Headquarters	322.06	289.47	**
	(221.64)	(220.47)	
Number of hotels in market [a]	23.77	21.36	
	(33.51)	(33.01)	
Tourism intensity	1.92	1.60	***
	(1.00)	(1.11)	
Population	225,612	176,777	
	(564,669)	(460,226)	
Income	9929	10026	
	(2051)	(2141)	
Restaurant on site	0.46	0.43	
	(0.50)	(0.50)	
Outdoor Cafe	0.40	0.21	***
	(0.49)	(0.41)	
Air Conditioning	0.60	0.41	***
	(0.49)	(0.49)	
Fitness Facility	0.03	0.06	**
	(0.183)	(0.244)	

[a] These data are available only for 1015 of the hotels in our data, out of which 349 are franchised and 666 are corporately operated. The other hotels operate in very large cities, and the government data do not contain this type of variable for very large markets.

Finally, given our interest in the effect of organizational form, Table 3 compares the characteristics of franchisee and franchisor owned and operated (corporate) hotels. These mean comparisons show that price is higher on average among franchised properties, while occupancy rates are lower. Both of these differences are statistically significant, but being of opposite signs, the combination results in almost equivalent Revenues per unit of capacity (RevPar). In addition, we see that corporate hotels are much larger (and older) on average. Given no statistical

difference in RevPar, it is most likely the larger size of corporate hotels that explains the significant difference in total monthly revenues between the two groups of hotels that we see in this table. The data in Table 3 moreover show that on average franchised properties operate in markets that are further away from headquarters, and where tourism intensity is on average higher. Finally, franchised hotels tend to offer more amenities such as outdoor cafes or air conditioning than corporate properties. This last pattern is most likely due to the very large number of corporate hotels in Groups 5 and 6 above, all of which are very low price hotels that offer almost no amenities.

Though these aggregate data patterns are suggestive of several differences in performance between the two organizational forms, simple mean comparisons do not take into account the impact of market or hotel factors as well as unobserved hotel level heterogeneity. To explore more systematically whether organizational form really triggers differences in performance, we turn to regression analyses in the next section.

4. Methodology and Results

4.1 Baseline Specifications and Results

Our goal is to estimate the relationship between organizational form and hotel performance outcomes, which we measure in three different ways: revenues per unit of capacity (RevPar in industry jargon), price (room rate) and occupancy rate. As noted above, given aggregate data patterns one can expect hotel and market characteristics to affect these outcomes directly as well as indirectly via their influence on organizational form. Hence we begin our analyses by estimating the following equation:

$$Y_{it} = f(F_{it},\ X_{it},\ Z_i,\ \varepsilon_{it})$$

where: i and t index hotel and months respectively (1 through 34). Y_{it} stands for the (log) of our outcome variable of interest, F_{it} describes the organizational form, where each hotel in a given month can either be a franchise ($F_{it} = 1$) or company operated ($F_{it} = 0$, i.e. control group), X_{it} represents time-varying hotel and market characteristics, and Z_i stands for time-invariant hotel and market characteristics. We take $\varepsilon_{it} = \mu_i + u_{it}$ to be a composite error term, where μ_i represents hotel-level unobserved heterogeneity that, for now, we assume uncorrelated with observed characteristics, and u_{it} represents an idiosyncratic error term. In all our empirical specifications we control for hotel-level unobserved and uncorrelated heterogeneity (μ_i) either by correcting standard errors for hotel-level clusters, or by relying on standard random effects (RE) model specifications.[11] In addition, in all specifications we correct standard errors for (potential) heteroscedasticity using the White/Huber estimator of the variance-covariance matrix.

In all our regressions, except for dummy variables, all variables are in logarithmic form rather than levels as this allows for non-linear relationships between regressors and performance outcomes. Hence, the coefficients on these variables can be interpreted directly as elasticities.

The results from estimating the above equation by OLS for each of the three dependent variables of interest are shown in columns 1, 4 and 7 of Table 4. Also, when the dependent variable is price (room rate) or occupancy rate, we include the lagged value of occupancy rate (room rate) among the regressors. We do this because of the standard relationship between price and quantity (occupancy rate) that we want to take into account. However, using the lag of each variable in the regression for the other explicitly reflects our assumption that in this industry, customers most often reserve rooms in advance, based on posted prices at the time of the

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[11] The difference between clustering in OLS estimations and a random effects specification is that the random effects model imposes an 'equal correlation' structure between hotel observations, while clustering allows for flexible/unstructured correlations. If the 'equal correlation structure' assumption is correct, RE model provides more efficient estimates, but if not then OLS with clustered standard errors provides more robust results. Hence, we report the results from both specifications.

reservation, or decide whether or not to go to a hotel in part based on their expectations about price, which are formed using past and posted prices in earlier periods. At the same time, we expect the hotel management to change the price more or less depending on past results, that is depending on past occupancy rates. As the lag of occupancy rate (price) is pre-determined, our specifications are not subject to endogeneity problems at least when it comes to these variables.

One potential concern with the OLS estimation we present below is that although we control for the effect of various hotel and market characteristics on hotel performance explicitly, and we also control for hotel unobserved heterogeneity in the error term, some of this unobserved hotel heterogeneity, such as, for example, the quality of hotel management, might be correlated with organizational form or other regressors. In that case, our random effects and OLS results still would be biased. To address the issue of possible *correlated* unobserved hotel heterogeneity, in addition to correcting standard errors for *uncorrelated* hotel heterogeneity, we control for hotel fixed effects following the methodology proposed by Mundlak (1978).[12] We use this approach because our main variable of interest, organizational form, and many other hotel characteristics change very little (if at all) in our data over time. Hence estimating standard fixed effects models, which amounts to relying within hotel time variation only in the data, would prevent us from separately identifying the impact of organizational form.

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[12] Mundlak (1978) shows that the results from standard fixed-effects models can be obtained via random effects estimations when firm-level means of time-varying regressors are added as additional controls. Hence we include the means of the following variables: number of rooms, age, and tourism intensity dummy variables, all of which vary over time in our data. When the dependent variable is room rate (or occupancy rate), we also include the mean of lagged occupancy rate (room rate). Since other variables do not vary over time within hotels, their means cannot be included. See also Wooldridge (2002) for more discussion. We include these means not only in random effect specifications (as proposed by Mundlak), but also in our standard OLS estimations because, as discussed previously, OLS specifications with clusters allow for more robust correlation structures between hotel observations.

TABLE 4: UNBALANCED SAMPLE, FRANCHISE STATUS TREATED AS EXOGENOUS

	Dep. var= log(RevPar)			Dep. var= log(Price)			Dep. var= log(Occupancy Rate)		
	controlling for hotel FE#			controlling for hotel FE#			controlling for hotel FE#		
	OLS(cluster)	OLS(cluster)	RE	OLS(cluster)	OLS(cluster)	RE	OLS(cluster)	OLS(cluster)	RE
Franchised	-0.046***	-0.039**	-0.042***	-0.022**	-0.018*	-0.013*	-0.013	-0.007	-0.013
	[0.017]	[0.017]	[0.016]	[0.011]	[0.011]	[0.007]	[0.009]	[0.009]	[0.010]
Lagged Occupancy				0.142***	0.044***	0.043***			
				[0.013]	[0.005]	[0.003]			
Lagged Price							0.306***	0.218***	0.206***
							[0.029]	[0.022]	[0.015]
Number of rooms	-0.015	-0.268***	-0.266***	0.024	0.002	0.0001	-0.039***	-0.268***	-0.266***
	[0.024]	[0.069]	[0.048]	[0.015]	[0.028]	[0.015]	[0.012]	[0.041]	[0.030]
Hotel Age	0.081***	0.240***	0.222***	0.004	-0.022***	-0.005	0.057***	0.193***	0.168***
	[0.011]	[0.022]	[0.016]	[0.007]	[0.008]	[0.005]	[0.007]	[0.019]	[0.013]
Restaurant on site	-0.069**	-0.074***	-0.068***	-0.045***	-0.040**	-0.033**	-0.006	-0.01	-0.012
	[0.028]	[0.028]	[0.026]	[0.017]	[0.017]	[0.015]	[0.015]	[0.015]	[0.015]
Air Conditioning	0.103***	0.100***	0.087***	0.067***	0.064***	0.067***	0.013	0.006	0
	[0.020]	[0.020]	[0.021]	[0.012]	[0.011]	[0.012]	[0.011]	[0.011]	[0.012]
Outdoor Cafe	0.042*	0.043*	0.036	0.02	0.018	0.003	0.011	0.01	0.014
	[0.024]	[0.024]	[0.023]	[0.015]	[0.015]	[0.014]	[0.014]	[0.013]	[0.013]
Fitness Facility	0.145***	0.144***	0.152***	0.053*	0.037	0.046	0.058**	0.059**	0.066**
	[0.044]	[0.044]	[0.048]	[0.032]	[0.032]	[0.030]	[0.024]	[0.023]	[0.027]
Population	0.049***	0.044***	0.047***	0.020***	0.018***	0.017***	0.017***	0.011***	0.014***
	[0.007]	[0.007]	[0.007]	[0.005]	[0.005]	[0.005]	[0.004]	[0.004]	[0.004]
Income	0.243***	0.260***	0.255***	0.169***	0.154***	0.162***	0.006	0.018	0.016
	[0.031]	[0.032]	[0.032]	[0.019]	[0.018]	[0.018]	[0.020]	[0.021]	[0.019]
Tourism Intensity =1	0.004	0.051***	0.050***	0.014**	0.017***	0.017***	-0.015*	0.026***	0.025***
	[0.012]	[0.011]	[0.005]	[0.006]	[0.003]	[0.002]	[0.009]	[0.009]	[0.004]
Tourism Intensity =2	0.039***	0.138***	0.137***	0.027***	0.038***	0.039***	-0.001	0.080***	0.079***
	[0.014]	[0.015]	[0.006]	[0.007]	[0.004]	[0.002]	[0.010]	[0.011]	[0.005]
Tourism Intensity =3	0.171***	0.339***	0.338***	0.067***	0.089***	0.090***	0.061***	0.209***	0.208***
	[0.018]	[0.020]	[0.007]	[0.010]	[0.006]	[0.003]	[0.012]	[0.014]	[0.006]
Tourism Intensity =4	0.207***	0.411***	0.410***	0.103***	0.114***	0.115***	0.060***	0.257***	0.255***
	[0.023]	[0.027]	[0.010]	[0.013]	[0.009]	[0.004]	[0.013]	[0.019]	[0.008]
Constant	0.276	0.177	0.262	0.988***	0.458**	0.584***	3.091***	2.900***	3.000***
	[0.318]	[0.327]	[0.338]	[0.185]	[0.197]	[0.212]	[0.186]	[0.198]	[0.191]
Brand Dummy Variables	Yes**	Yes**	Yes**	Yes**	Yes**	Yes**	Yes**	Yes**	Yes**
Observations	39226	39226	39226	37936	37936	37936	37936	37936	37936
# of hotels	1194	1194	1194	1194	1194	1194	1194	1194	1194
R2	0.74	0.75	0.85	0.93	0.93	0.93	0.42	0.44	0.48

#Notes: Robust standard errors in brackets. If 'cluster' appears in the title, the standard errors are corrected not only for heteroscedasticity but also for correlation within hotels. Significant at: * 10%; ** 5%; *** 1%.
All specifications include 33 month dummy variables, 9 hotel competition intensity dummy variables, 5 local restaurant competition intensity dummy variables, as well as dummy variables reflecting other hotel characteristics, namely presence of rental car counter, swimming pool, or conference room, and proximity to airport and to train station. Our results remained the same if we excluded all but the month dummy variables. Specifications that control for hotel level fixed effects include the hotel level means of the following variables: number of rooms, age, and tourism intensity dummy variables. In addition, when the dependent variable is room rate (or occupancy rate), we include the mean of lagged occupancy rate (room rate). Since other variables do not vary over time within hotels, their means cannot be included. For tourism intensity, the lowest level (=0) is the control group.

The results for each of our three dependent variables also are shown in Table 4, in columns 2-3, 5-6, and 8-9 respectively. These results are very consistent with our OLS results. In all cases, we find that franchisees choose lower prices but obtain similar occupancy rates than corporate hotels. This in turn leads to lower revenues per unit of capacity among franchised hotels, as per the first three columns of Table 4.[13]

Looking at the effect of lagged occupancy rate in columns 4 to 6, we find, as expected, that hotels increase room rates, or prices, when they have high occupancy rates. These effects are smaller, however, "within" hotels, or when we control for hotel heterogeneity in columns 5 and 6. Still, a 10 percent increase in occupancy rate, which given a mean occupancy of 70%, would correspond to a 7 percentage point increase in occupancy rate, is associated with a .4% increase in price. Interestingly, a high price in the previous period is also associated with a sizable increase in occupancy rate the next period, per our results in Columns 7 to 9. We suspect that this is also a result of yield management practices in this industry which price and occupancy rates increasing and then decreasing together during high and low demand periods. This, in turn, suggests that our tourism intensity dummy variables, while clearly capturing at least some of the effects of increased demand on prices and occupancy rates, per the increasing coefficients as one moves from low intensity (the control group, which has intensity = 0, or even tourism intensity =1) to high intensity (=4), leave some within period variance in demand unaccounted for.

Finally, results in Table 4 highlight the fact that older hotels tend to have higher occupancy rates, and higher RevPar, while larger hotels obtain lower occupancy rates and RevPar. In particular, estimated coefficients (elasticities) from OLS and RE specifications (both controlling for hotel FE) suggest that increasing hotel capacity by 1% (which, given the mean

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[13] Since including the lag of price (occupancy rate) when the dependent variable is occupancy rate (price) reduces the sample compared to when we use RevPar, we re-estimated the results for RevPar using the reduced sample of 37936 obs. The results were consistent with those reported here.

size of hotels in our data, corresponds to an average increase of 1 room) reduces both occupancy

rate and RevPar by around 0.27%. Similarly, increasing hotel age by 1.3 years (which, given our

sample mean of 13. 4 year represents a 10% increase) leads to an increase in RevPar of, on

average, 2.2 to 2.4% and in occupancy rate of 1.7 to 1.9%. We also find, not too surprisingly,

that air conditioned hotels with fitness facilities command higher prices and obtain higher

RevPar. Finally, and also not surprisingly, hotels in high-population and high-income areas

obtain better results.

While our regressions above control for many observed hotel and market characteristics,

as well as unobserved hotel characteristics to the extent we can, it remains that our approach may

not control for all potential sources of correlation between the idiosyncratic shock (u_{it}) and

organizational form. In particular, it is possible that demand shocks and other changes over time

in unobserved hotel-level characteristics will trigger changes in both performance and

organizational form decisions. For this reason, in Table 5, we present results obtained when we

endogenize organizational form and estimate the performance equation using an instrumental

variable (IV) methodology.[14] We rely on distance from headquarters as the instrument for

organizational form in these regressions. From a theory perspective, this variable should affect

organizational form as it affects monitoring costs. Specifically, agency theory would predict that

hotels that are further away from firm headquarters should be franchised. Statistically these

assumptions are confirmed in our data: distance from the company's headquarter has a positive

impact that is statistically significant in the first-stage regressions across all our performance

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[14] Our goal is to correct for what is called the "endogeneous dummy" problem. As discussed by Heckman (1978, 1990) and Wooldridge (2002, p. 622), there are no special considerations in estimating an equation such as our performance equation by standard 2SLS (or IV method) when the endogenous variable is binary, as is the case here. However, our approach does involve using a linear probability model for the first-stage regression,

measures.[15] On the other hand, we have no reason to expect that this distance affects hotel

performance directly – in other words, from a theoretical or practical perspective, we would

argue that there is nothing in being close or far from this company's headquarters that should

affect revenues or occupancy rates directly. This was also confirmed empirically in our data, as

we found no effect of this distance variable when we included it directly in our performance

equations. [16]

Also, again to fully control for both correlated and uncorrelated unobserved hotel

heterogeneity we report results from IV estimations where we also control for hotel specific

effects (per the methodology described previously) and control for correlations between

observations via hotel-level clusters or random effects.

Results, in Table 5, imply that once we fully endogenize the organizational form

decision, franchising no longer leads to worse or better performance outcomes than company

operation. In other words, the positive correlation between franchising and RevPar in our

descriptive statistics in Table 3 disappeared, and in fact became negative, after we eliminated

omitted variable bias via controls for various hotel and market characteristics, both observed and

unobserved, in Table 4. However, further estimations endogenizing the organizational form

choice suggest that even this 'seemingly' negative effect of franchising on RevPar is actually not

due to the choice of organizational form, but rather reflects remaining bias due to other market or

hotel variables that we could not control for due to lack of data.

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[15] First-stage regression results are available upon request.

[16] Note that the company's headquarter in fact is located in a large city that is a major tourist destination. However, the company operates many hotels in other high tourism intensity areas, as seen in the tourist intensity dummy variables and the difference in the average level of these dummy variables shown in Table 3.

TABLE 5: UNBALANCED SAMPLE, INSTRUMENTING FOR ORGANIZATIONAL FORM

	Dep. var= log(RevPar)		Dep. var= log(Price)		Dep. var= log(Occupancy Rate)	
	All specifications control for hotel level FE					
	IV(cluster)	RE - IV	IV(cluster)	RE-IV	IV(cluster)	RE-IV
Franchised	-2.352	-2.276	-1.774	-0.923	0.313	0.707
	[2.567]	[2.276]	[2.140]	[0.621]	[0.909]	[1.338]
Lagged Occupancy			0.039***	0.041***		
			[0.009]	[0.003]		
Lagged Room Rate					0.223***	0.208***
					[0.026]	[0.012]
Number of rooms	-0.293***	-0.292***	-0.373	-0.029	-0.264***	-0.257***
	[0.076]	[0.044]	[0.492]	[0.026]	[0.043]	[0.034]
Hotel Age	0.199***	0.219***	-0.038	-0.005	0.200***	0.168***
	[0.062]	[0.012]	[0.035]	[0.005]	[0.029]	[0.010]
Restaurant on site	-0.611	-0.576	-0.454	-0.278	0.067	0.158
	[0.598]	[0.545]	[0.503]	[0.198]	[0.218]	[0.317]
Air Conditioning	0.333	0.297	0.243	0.143***	-0.03	-0.08
	[0.268]	[0.220]	[0.224]	[0.053]	[0.104]	[0.147]
Outdoor Cafe	0.08	0.091	0.051	-0.008	0.003	-0.002
	[0.098]	[0.111]	[0.076]	[0.059]	[0.025]	[0.038]
Fitness Facility	-0.288	-0.277	-0.274	-0.123	0.115	0.192
	[0.508]	[0.449]	[0.398]	[0.163]	[0.158]	[0.236]
Population	0.065*	0.080**	0.035	0.029*	0.007	0.001
	[0.034]	[0.038]	[0.028]	[0.015]	[0.012]	[0.025]
Income	0.186	0.173	0.117	0.121	0.017	0.016
	[0.146]	[0.145]	[0.107]	[0.094]	[0.030]	[0.031]
Tourism Intensity =1	0.052***	0.051***	0.019***	0.018***	0.025***	0.025***
	[0.011]	[0.005]	[0.004]	[0.002]	[0.009]	[0.004]
Tourism Intensity =2	0.138***	0.137***	0.042***	0.039***	0.080***	0.079***
	[0.015]	[0.006]	[0.007]	[0.002]	[0.011]	[0.005]
Tourism Intensity =3	0.338***	0.336***	0.093***	0.090***	0.208***	0.208***
	[0.020]	[0.007]	[0.009]	[0.003]	[0.015]	[0.006]
Tourism Intensity =4	0.409***	0.407***	0.119***	0.115***	0.256***	0.255***
	[0.027]	[0.009]	[0.012]	[0.003]	[0.019]	[0.007]
Constant	4.582	4.547	4.42	2.409*	2.201	1.469
	[4.937]	[4.571]	[4.880]	[1.383]	[2.019]	[2.926]
Brand Dummies	Yes**	Yes**	Yes**	Yes**	Yes**	Yes**
Observations	39226	39226	37936	37936	37936	37936
# of hotels	1194	1194	1194	1194	1194	1194

Notes: See Table 4.

In sum, our results imply that organizational form differences among the units of these chains does not lead to differences in performance, occupancy rate or RevPar, nor in prices. This contradicts some other results in the literature where authors have found differences. But many of these, as mentioned earlier, were obtained under conditions where firms were

constrained to choose an alternative form of governance, either because of new laws being put in place, or because of temporary issues (as in the case of Shelton, 1967). Within firms, and in contexts where upstream firms could choose to operate outlets under franchising or not, Bradach (1989) and Hastings (2004) found results similar to ours, namely that organizational form did not lead to significant differences in prices or quality.

Our result that there are no direct effects of organizational form is perhaps to be expected as a firm that would find that quality is too low, or prices too high, for example, in its franchised outlets could remedy this situation by choosing to operate the outlets corporately. Yet choosing organizational form optimally does not guarantee that behavior or outcomes will be rendered equivalent across modes of organization. Further, while one might expect equivalence at the margin, it need not hold on average. Our results, however, suggest that this equivalence holds on average as well in the hotel industry, at least when it comes to the important variables that are prices, RevPar and occupancy rates.

4.2 Robustness Checks

Balanced sample.

Though we have observations for all 34 months for most of the hotels in our sample (the average number of observations per hotel is approximately 32), there are 122 hotels for which the time series are incomplete, and in some of these cases the number of observations can be as small as three. To verify that the presence of hotels with such short time series in our sample does not affect any of our results, we replicated both Tables 4 and 5 for the sub-sample of 1072 hotels for which we have full time series data. The results, in Appendix Tables A1 and A2, imply that our conclusions are not affected by the presence or absence of these few hotels.

To further verify that our key finding - that organizational form does not lead to different performance outcomes when it is fully endogenized - is robust overall, we performed several other analyses whose results we briefly summarize in the remainder of this section.[17]

Total hotel revenues per month as a dependent variable

As described earlier, RevPar is a standard measure used to assess hotel performance in the industry. However, since it is a construct (room rate multiplied by occupancy rate) rather than a direct measure of hotel outcome, we re-estimated our regression equations using "total monthly revenues" as our outcome measure.[18] The results from both unbalanced and balanced samples confirmed our results in Tables 5 and A2, confirming again that franchised hotels on average do not show significantly different monthly revenues compared to corporately-owned hotels.

Controlling for multi-unit ownership among franchised hotels

Some recent studies in the franchising literature consider how multiple-unit ownership by franchisees can alter the effect of franchising on firm performance (e.g. Brickley, 1999, Kalnins and Lafontaine, 2004). In this literature, authors note that franchisees with a higher number of franchised units may not be able to monitor manager behavior in these units much better than the franchisor can. This in turn could lead to poorer outcomes for franchised units, and bias our estimates of differences between franchised and corporate hotels downward. To control for this possibility, we re-estimated all our regressions with an additional variable, namely the number of other franchised hotels of the Company that a franchisee owns, where we calculate this variable

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[17] These results are not reported here or in the appendix for space reasons, but are available upon request.

[18] In the data, this variable was not exactly equal to RevPar times number of rooms times number of days in a month. This is because the hotel can be closed for a few days, or some subset of rooms may be unavailable at a given point in time. In that sense RevPar is in fact a better measure. Nonetheless, we were able to verify with these regressions that reported Monthly Revenues are also not affected by organizational form.

across all the company's brands. These analyses confirmed our previous findings as we found - across all the specifications for both balanced and unbalanced data - that multi-unit ownership had no significant impact on performance and, as such, its absence in our main specifications did not drive our results.

Excluding outliers

To avoid the possibility that our results might be driven by particularly large – and thus potentially erroneous - values for our dependent variables, we replicated Table 5 after removing from our sample all observations where the dependent variable was greater than the 95th percentile in each case. The results were very similar to those we report, and in particular the franchising dummy variable continued to have no significant impact on any of the dependent variables in the specifications corresponding to those shown in Table 5.

Testing for possibly noisy and redundant explanatory variables

As described in the Data Appendix, when we constructed the hotel and restaurant competition intensity dummies, the values for the largest cities were missing in the government data. As a result, we assigned the highest hotel and restaurant competition intensity categories to hotels in these cities. To verify whether our reliance on such dummy variables affects our results, we re-estimated all our regressions first after excluding restaurant competition intensity dummy variables, and then after excluding both restaurant and hotel competition intensity dummy variables. Finally, we considered the role of several hotel characteristic dummy variables (whose coefficients were unreported in the tables for space reasons, and because their effects were basically never significant) namely: the presence of a rental car counter, of a swimming pool, of a conference room, and proximity to airport and to train station. None of these changes in the set of regressors we used affected our results.

5. Conclusion

In this paper, we used proprietary data from a multi-chain hotel Company to examine the effect of organizational form, specifically franchising and company ownership, on outlet-level outcomes such as RevPar, Occupancy Rates, and Price, as well as Total Revenues, which we observe monthly for 34 months in our data. We found significant differences in prices and occupancy rates in our descriptive summaries. Without controlling for hotel and market characteristics, the mean comparisons of these performance measures between the two organizational forms suggested higher prices among franchised hotels, combined with lower occupancy rates. Once we controlled for hotel and market characteristics, but before we endogenized the organizational form decision, we again found evidence of performance differences, in the form of lower revenues – total per month or per unit of capacity (RevPar) - and lower prices, but not significantly lower occupancy rates, in franchised compared to company-owned hotels. Yet all these differences became statistically insignificant when we modelled the selection of organizational form along with our performance equations. This finding, that there was in fact no performance or price difference between hotels operated under these two modes of organization, was very robust across a number of different specifications we estimated.

One way to interpret our results is that the Company whose data we rely on has optimally chosen which outlets to franchise and own such that, conditional on all their characteristics, it achieves consistent results – in terms of revenues, occupancy rates, and prices – across both sets of hotels. At this point, however, we cannot rule out the possibility that organizational form may 'matter' still even when such choices are optimal in that its effect may be indirect. In particular,

organizational form might alter the effect of some other hotel characteristics, e.g. size or hotel

age. We are currently exploring this issue empirically.

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Data Appendix

This appendix describes in more detail how we obtained some of the data we use in our analyses and measured certain variables.

Qualitative Hotel Information

Some of the qualitative information about each hotel was obtained from hotel directories. This was the case in particular for the data relating to the presence or not of a restaurant within or near the hotel, the presence or not of a rental car counter, of conference rooms, the availability of air conditioning, the presence of an outdoor cafe, the presence or proximity of a swimming pool, and the proximity of a train station, and of an airport.

Restaurant and Hotel Competition Intensity Dummies. (The coefficients for these are not reported in the tables, but these variables were included in all regressions.)

To control for the possibility that greater/smaller levels of concentration for hotels and/or restaurants in a market may affect observed hotel performance, we created two sets of dummy variables based on government census data, namely: *hotel* and *restaurant* competition intensity dummy variables. While government information on hotel concentration in a given market was numeric in nature, the information on restaurant concentration was categorical. Also, since the government did not gather this type of information for large cities, we created dummy variables (instead of using the continuous measures) and were thus able to assign the highest concentration category to all hotels located in large cities. In particular, for the *hotel competition dummy variables*- we divided the total number of hotels in markets into 10 deciles, with a dummy for each decile. The hotels in large cities were all put in the highest 10th decile. Similarly, for the *restaurant competition dummy variables* - we created a dummy variable for each of the categories in the government data (6 categories in total). All observations with missing values, which corresponded to hotels in large cities, were assigned the highest competitive intensity category.

TABLE A1: BALANCED SAMPLE, FRANCHISE STATUS TREATED AS EXOGENOUS.

	Dep. var= log (RevPar)			Dep. var= log(Price)			Dep. var= log(Occupancy Rate)		
		controlling for hotel FE			controlling for hotel FE			controlling for hotel FE (a)	
	OLS(cluster)	OLS(cluster)	RE	OLS(cluster)	OLS(cluster)	RE	OLS(cluster)	OLS(cluster)	RE
Franchised	-0.051***	-0.044**	-0.040**	-0.026**	-0.023**	-0.012*	-0.011	-0.004	-0.01
	[0.018]	[0.018]	[0.017]	[0.011]	[0.011]	[0.007]	[0.010]	[0.009]	[0.010]
Lagged Occupancy				0.155***	0.039***	0.039***			
				[0.014]	[0.004]	[0.003]			
Lagged Room Rate							0.313***	0.197***	0.197***
							[0.031]	[0.023]	[0.015]
Number of rooms	-0.012	-0.326***	-0.326***	0.015	-0.015	-0.015	-0.027**	-0.287***	-0.287***
	[0.025]	[0.050]	[0.035]	[0.016]	[0.034]	[0.016]	[0.012]	[0.038]	[0.029]
Hotel Age	0.060***	0.133***	0.133***	0.015	0.007	0.007	0.029***	0.090***	0.090***
	[0.015]	[0.023]	[0.018]	[0.009]	[0.012]	[0.007]	[0.008]	[0.021]	[0.015]
Restaurant on site	-0.060**	-0.066**	-0.057**	-0.041**	-0.036**	-0.026	-0.004	-0.008	-0.009
	[0.029]	[0.029]	[0.027]	[0.018]	[0.017]	[0.016]	[0.015]	[0.015]	[0.015]
Air Conditioning	0.121***	0.119***	0.118***	0.068***	0.061***	0.067***	0.023**	0.016	0.016
	[0.021]	[0.021]	[0.020]	[0.013]	[0.012]	[0.011]	[0.011]	[0.011]	[0.012]
Outdoor Cafe	0.03	0.033	0.022	0.02	0.019	0.002	0.003	0.002	0.003
	[0.025]	[0.024]	[0.023]	[0.016]	[0.015]	[0.014]	[0.014]	[0.013]	[0.013]
Fitness Facility	0.129***	0.128***	0.127***	0.049	0.032	0.041	0.052**	0.053**	0.051*
	[0.046]	[0.047]	[0.047]	[0.035]	[0.035]	[0.028]	[0.025]	[0.025]	[0.027]
Population	0.044***	0.040***	0.041***	0.020***	0.017***	0.018***	0.013***	0.008**	0.008**
	[0.008]	[0.008]	[0.007]	[0.005]	[0.005]	[0.004]	[0.004]	[0.004]	[0.004]
Income	0.254***	0.268***	0.271***	0.171***	0.152***	0.162***	0.008	0.017	0.019
	[0.032]	[0.033]	[0.032]	[0.019]	[0.019]	[0.018]	[0.020]	[0.021]	[0.019]
Tourism Intensity =1	0.007	0.045***	0.045***	0.012**	0.014***	0.014***	-0.011	0.023**	0.023***
	[0.012]	[0.011]	[0.005]	[0.006]	[0.003]	[0.002]	[0.009]	[0.009]	[0.004]
Tourism Intensity =2	0.036**	0.121***	0.121***	0.024***	0.033***	0.033***	-0.001	0.072***	0.072***
	[0.014]	[0.014]	[0.006]	[0.007]	[0.004]	[0.002]	[0.010]	[0.011]	[0.005]
Tourism Intensity =3	0.167***	0.316***	0.316***	0.066***	0.085***	0.085***	0.056***	0.196***	0.196***
	[0.019]	[0.019]	[0.007]	[0.010]	[0.006]	[0.003]	[0.012]	[0.015]	[0.006]
Tourism Intensity =4	0.191***	0.368***	0.368***	0.097***	0.101***	0.101***	0.053***	0.236***	0.235***
	[0.023]	[0.024]	[0.009]	[0.014]	[0.007]	[0.003]	[0.013]	[0.019]	[0.007]
Constant	0.122	0.031	0	0.879***	0.256	0.276	3.056***	2.863***	2.902***
	[0.319]	[0.329]	[0.307]	[0.191]	[0.207]	[0.205]	[0.189]	[0.201]	[0.187]
Observations	36448	36448	36448	35376	35376	35376	35376	35376	35376
R2	0.76	0.76	0.76	0.93	0.94	0.95	0.44	0.46	0.46
# of hotels	1072	1072	1072	1072	1072	1072	1072	1072	1072

Notes: See Table 4. Also, though these are not reported here, all regressions include brand dummies in this table as well.

TABLE A2: BALANCED SAMPLE, IV ESTIMATIONS, FRANCHISE STATUS TREATED AS ENDOGENEOUS.

	Dep. var= log(RevPar)		Dep. var= log(Price)		Dep. var= log(Occupancy Rate)	
	All specifications control for hotel level FE					
	IV(cluster)	RE -IV	IV(cluster)	RE-IV	IV(cluster)	RE-IV
Franchised	-1.83	-1.681	-1.277	-0.815	0.249	0.256
	[1.525]	[1.519]	[1.122]	[0.520]	[0.559]	[0.534]
Lagged Occupancy			0.035***	0.038***		
			[0.006]	[0.003]		
Lagged Room Rate					0.197***	0.197***
					[0.023]	[0.012]
Number of rooms	-0.345***	-0.343***	-0.275	-0.037*	-0.284***	-0.284***
	[0.055]	[0.040]	[0.266]	[0.022]	[0.038]	[0.031]
Hotel Age	0.116***	0.117***	0.006	0.0002	0.092***	0.092***
	[0.039]	[0.022]	[0.023]	[0.008]	[0.023]	[0.014]
Restaurant on site	-0.509	-0.465	-0.35	-0.256	0.057	0.06
	[0.381]	[0.409]	[0.281]	[0.183]	[0.144]	[0.139]
Air Conditioning	0.322*	0.294*	0.209	0.160***	-0.017	-0.019
	[0.185]	[0.175]	[0.139]	[0.058]	[0.074]	[0.071]
Outdoor Cafe	0.051	0.05	0.033	-0.023	-0.001	-0.001
	[0.074]	[0.093]	[0.051]	[0.059]	[0.018]	[0.018]
Fitness Facility	-0.201	-0.186	-0.189	-0.102	0.096	0.096
	[0.311]	[0.310]	[0.216]	[0.146]	[0.096]	[0.094]
Population	0.032	0.033	0.014	0.014	0.008	0.008*
	[0.023]	[0.023]	[0.016]	[0.017]	[0.005]	[0.005]
Income	0.246**	0.244**	0.149**	0.155*	0.009	0.012
	[0.103]	[0.122]	[0.074]	[0.091]	[0.030]	[0.030]
Tourism Intensity =1	0.044***	0.044***	0.014***	0.014***	0.023**	0.023***
	[0.011]	[0.005]	[0.003]	[0.002]	[0.009]	[0.004]
Tourism Intensity =2	0.121***	0.121***	0.033***	0.033***	0.072***	0.072***
	[0.014]	[0.006]	[0.004]	[0.002]	[0.011]	[0.005]
Tourism Intensity =3	0.315***	0.315***	0.085***	0.084***	0.196***	0.196***
	[0.019]	[0.007]	[0.006]	[0.003]	[0.015]	[0.005]
Tourism Intensity =4	0.365***	0.366***	0.100***	0.100***	0.236***	0.236***
	[0.024]	[0.008]	[0.008]	[0.003]	[0.019]	[0.007]
Constant	3.28	3.038	2.99	1.958	2.321*	2.346**
	[2.879]	[3.110]	[2.543]	[1.272]	[1.251]	[1.173]
Observations	36448	36448	35376	35376	35376	35376
# of hotels	1072	1072	1072	1072	1072	1072

Notes: See Table 4. Also, though these are not reported here, all regressions include brand dummies in this table as well.