An Empirical Analysis of Self-Enforcement Mechanisms:

Evidence from Hotel Franchising

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Abstract[*]

The relational contracts literature suggests that a principal can improve contract self-enforceability by specifying initial conditions/requirements that increase the agent's ex-post rents. Initial requirements specified in hotel franchise agreements — size and quality-tier of hotel — offer a unique empirical setting to test this. Using 2000-2008 data on 5,547 new franchised hotels and their revenues, we find that hotels far away from their franchisor's headquarters are larger, more likely to be high-quality, and generate higher revenues ex-post. This supports the idea that the agent's ex-post rents can serve as a substitute to the principal's monitoring intensity in the mitigation of agency problems.

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1. Introduction.

Self-enforcement agreements are characterized by the ability of one party (the principal) to terminate the contract with the other (the agent), following the detection of an undesired action by the latter. In this type of agreements, the threat of contract termination prevents the agent's misbehavior if the agent generates higher rents in the relationship with the principal than outside of such relationship. An extensive theoretical literature (e.g. Telser, 1980; Klein and Leffler, 1981; Williamson, 1983, 1985; Klein and Murphy, 1988) argues that the party acting as the principal can improve the self-enforcement mechanism of the agreement by specifying conditions/requirements in the contract that ultimately increase the rents that the agent forgoes in case of contract termination.[1] The empirical validity of this argument, however, remains pretty much unexplored.

The reason is that testing such argument requires a very detailed dataset and a suitable empirical setting. The data needs to contain information on the conditions/requirements that the principal imposes on the agent at the time when the agreement is made (henceforth "initial requirements"). The data also needs to contain information on the agent's ex-post rents. Additionally, there needs to be an identifiable source of systematic variation in the data which can explain the principal's need to rely on the initial requirements in the agreement to generate higher ex-post rents for the agent. Moreover, all of these data requirements need to be satisfied in a setting in which it is possible to isolate the self-enforcing mechanism from other confounding factors, including market and establishment characteristics, both observed and unobserved.

Our goal is to fill this gap in the literature by bringing more light on the relationship between the principal's monitoring costs, the initial requirements the principal specifies in the agreement, and the ex-post rents the agents generate on those requirements. We do so by exploiting detailed data on franchised hotel properties. Our data and franchising features of the hotel industry make our

[1] This argument applies to a moral hazard problem, not a hold-up problem, as the agent is the investing party.

empirical setting quite unique. We have detailed data on market and property characteristics for more than 5,500 new hotels that entered the market as franchised outlets across 85 brands, belonging to 18 parent companies. We also have detailed revenue information for these properties, not only for their initial year, but also for their subsequent years of operation during period 2000-2008. This is important as revenue management industries, such as the lodging industry, are characterized by high initial fixed costs and small marginal costs. Thus, variation in hotels' revenues reliably captures variation in the hotel's ex-post rents received by an agent. Importantly, as we demonstrate, the costs of contract termination are proportional to hotel revenues that a franchisee (the agent) generates under the franchise agreement.

Additionally, unlike in other contexts, hotel franchising offers an important distinctive feature which makes it an ideal setting to test for self-enforcement agreements: one can more easily identify and measure the initial conditions/requirements specified by the principal to the agent when the agreement is made that directly affect the stream of the agent's ex-post rents in future. We specifically exploit hotel size (number of rooms) and quality-tier of the hotel. Both are typically specified by the principal (franchisor) to the agent (franchisee) when the new hotel property is launched and are positively correlated with losses in hotel revenues if the franchise contract is terminated.

Moreover, our data set also contains information that can be used to explain the principal´s need to modify the contract initial conditions and ex-post rents, from a self-enforcing perspective. In particular, we can exactly identify the location of a hotel property and the region where the franchisor's headquarters is located. Based on this information we can construct a measure of distance between a franchisor's headquarters and its franchised hotels. Following the agency theory and franchising literatures (e.g. Rubin, 1978; Brickley and Dark, 1987) we then exploit this variation in the distance to capture the franchisor's monitoring costs and study differences in the initial

requirements — size and quality-tier (high vs. low) of the hotel — and their link to hotel revenues. The intuition is that when franchisees are far from their franchisor, monitoring of franchisees' activities and whether the level of services they provide is consistent with franchisor's desire might be too costly. In that case, franchisees may shirk on their services and free-ride on franchisor's brand-name. As a result, franchisor might be inclined to take further actions, such as modifying the initial requirements in the contract in order to improve contract self-enforceability and reduce the potentially free-riding incentives of franchisees.[2]

Our results indicate that controlling for observable market and hotel characteristics as well as unobserved parent/brand, state, and year fixed-effects, franchised hotels are larger and more likely to be high-quality when they are far away from the franchisor's headquarter. In particular, we find that hotels that are more than 1,500 miles away from their headquarters, tend to be about 2-3 rooms larger (the average sample size is 92 rooms), and are 18% more likely to be designed as high-quality tier hotels. We also find that on average the far away properties generate between 2-5% more revenues than properties that are located closer to the franchisor's headquarters. Yet we find that such revenue premium among far away hotels is, in turn, largely explained by the size and quality requirements specified by the franchisor when the hotel starts its operations.

These results are echoed by our analysis from a large single parent company, which opened the largest number (more than 1,100) of franchised hotels during our sample period 2000-2008, and for which we were able to obtain the exact zip-code distances between its headquarter and individual hotels. Using this continuous measure of distance, our regressions again show that franchised hotels far away from their headquarters are typically larger, more likely to be of high-quality, and generate higher revenues ex-post.

[2] See Betancourt (2004) for a broader discussion of these issues in the context of franchise systems.

Overall, our findings suggest that the principal (franchisor) is indeed able to utilize the initial conditions/requirements of the agreement (in this case the size and quality tier of the property) to increase the agent's ex-post rents when franchisor's monitoring costs are higher. This pattern is consistent with a bonding strategy and the idea that the agent's ex-post rents can serve as a substitute to franchisor's monitoring intensity in the mitigation of agency problems.

To eliminate alternative hypotheses that could potentially confound our conclusions we conducted several robustness checks. First, for the single-parent subsample mentioned above we also obtained the exact location of the parent's regional offices and explored whether being close to franchisor's regional offices might be more important than the distance to headquarters (emphasized in the literature) when resolving the agency issues. We find that the distance to headquarters remains relevant while the distance to the closest regional office is always insignificant. Second, using again the single parent analysis we verify that our measure for far away hotels from the headquarters used in our overall sample regressions is reliable. Third, using our rich data on nearly entire population of US hotels we construct a dataset —similar to our franchised sample — on new company managed hotels that were opened during the same time period. We use this dataset to perform "placebo" regressions. If farther away hotels are larger and more likely to be of high-quality for reasons unrelated to a self-enforcing mechanism pertinent to franchise contracts only, the positive association between hotel distance and hotel size and quality-tier should hold for company managed hotels as well. The results show that unlike franchised hotels, company managed hotels far away from their parents are not significantly larger and if anything, they are actually less likely to be of higher quality. Such important differences in findings for company managed hotels further document that it is quite unlikely that alternative hypotheses rather than self-enforcement mechanism in franchised contracts would be driving our conclusions.

Our findings bring important implications for the relational contract and franchising literatures. We contribute to the literature on relational contracts by being among the first ones to document that the principal can utilize the initial conditions/requirements specified in the contract to increase the agents' ex-post rents and boost self-enforcing conditions of the contract.[3] Prior studies (see e.g., Kaufman and Lafontaine, 1994; Michael and Moore, 1995) have documented that ex-post rents, which could act as disciplinary device to control the agent's behavior, indeed exist. To our knowledge, however, no previous study has been able to explore empirically the link between the self-enforcing implications of the initial requirements of the agreements, and the agent's ex-post rents. In that sense, our paper represents the first comprehensive empirical study of the use of self-enforcing mechanisms.

Moreover, our paper highlights a new channel through which the principal can boost the agent's ex-post rents. Prior theoretical literature proposes that the principal (franchisor, manufacturer, etc.) can give the agent (i.e., franchisee, distributor, etc.) exclusive territories, or ask for retail price maintenance clauses (e.g., Klein and Murphy, 1988; Klein 1996) to improve the agent's ex-post rents.[4] We show that, at least in the case of hotel franchising, the requirements on hotel size and quality-level of the property can generate a similar effect. The franchisees are the ones who invest up-front, and are also the residual claimants on the ex-post rents that the up-front investments generate. To the extent that contract termination represents a loss to the franchisee, proportional to the rents generated by the hotel, a larger and higher-quality hotel should guarantee better self-enforcing conditions, for any given level of asset specificity in the investments. The bonding strategy we document is consistent with the results from Sertsios (2013), who finds that higher amounts of

[3] Malcomson (2012) provides an extensive survey of relational contract theory and Lafontaine and Slade (2012) survey empirical evidence on various interfirm contracts.

[4]Although exclusive territories and resale price maintenance are likely to be related to self-enforcing conditions, it is empirically challenging to test whether that is the case, for at least two reasons. First, detailed information on exclusive territories and resale price maintenance is proprietary. Second, even if such information was available, it is unlikely that there would be variation in those requirements between retailers/franchisees that operate for the same manufacturer/franchisor.

initial investments required from franchisees are associated with franchisors that have weaker termination rights. Our results shed light on the manner in which up-front investment requirements — that can increase the ex-post rents an agent generates under a contractual relationship — are utilized in self-enforcing agreements.[5]

The rest of the paper is organized as follows. Section 2 describes hotel industry structure and organizational forms, including franchising. Section 3, building on the prior literature, develops the hypotheses to be tested. Section 4 describes the data. Section 5 lays out our empirical methodology. Sections 6 and 7 present the results from our main analyses. We discuss robustness checks and alternative hypotheses in Section 8. Section 9 concludes.

2. Industry Structure and Organizational Forms in the Hotel Industry.

2.1. Hotel Industry Overview

Hospitality, travel and tourism represent a vital sector of the US economy. In 2011, this sector generated more than $1.4 trillion in U.S. annual sales — about 2.6% GDP; supported 7.5 millions of U.S. jobs and accounted for about 7% of all U.S. exports.[6] The importance of this sector to the US economy has been recently emphasized by the U.S. Department of Commerce, which in an open letter to the President Obama and Congress (September 5, 2011) endorsed this sector as one of the six key job creators for the economy.[7]

The accommodation/lodging industry is the largest industry in this sector, representing 19% of total travel sales in 2011. In the U.S. branded hotels dominate the market, but surprisingly few hotels are actually owned by the company that owns the brand (e.g., Marriott International, Starwood Hotels &

[5] Prior studies, notably Klein and Leffler (1981) and Williamson (1983), have analyzed, from a theoretical perspective, the role of initial investments on self-enforcement mechanisms. However, they focused on how higher asset specificity can decrease the value of the agent's option of not complying with the principal's desired action, rather than studying how up-front investments can increase the ex-post rents that the agent generates if she/he complies with the principal's desired action.

[6] See http://selectusa.commerce.gov/industry-snapshots/travel-tourism-and-hospitality-industry-united-states.

[7] See http://www.uschamber.com/sites/default/files/110905_jobs_letter.pdf.

Resorts, etc.). Instead, hotels are typically owned by individuals, partnerships or LLCs (limited liability companies), who either operate the hotels themselves or hire management companies. In terms of ownership of hotels, the industry appears to be quite competitive, with more than 30,000 owners and proprietors. However, as Kalnins (2006) notes, the 10 largest brands control 50% of the market. Based on Smith Travel Research (STR) hotel census database, covering about 98% of all U.S. hotel properties, by the end of 2009 there were 23 brands with 50,000 rooms or more. Overall, branded hotels represented about 57% of hotel population.[8]

While branded hotels operate under nationally (or even globally) recognized brand-names belonging to one of the large parent hotel companies (e.g. Marriott International, Hilton Worldwide), unbranded hotels are local properties, owned and operated by independent owners without nation-wide recognition. Also, branded hotels are typically classified into standardized quality-tiers (or segments) according to the quality level of the service and amenities offered by a given chain/brand. Unbranded hotels, on the other hand, have no quality benchmark. Hence their quality can vary to a large extend across independent owners (see Canina et al., 2005).[9]

2.2. Contracts and Organizational Forms.

When it comes to contracts and organizational forms of branded hotels, even two hotels that bear the same brand name, and are indistinguishable from customer perspective, may operate under different organizational forms: franchise agreement, management contract, or be company owned and operated.

[8] STR is an independent research firm that collects information about hotel properties in the U.S. and internationally. Its census of hotels represents the most comprehensive data source on the hotel industry available.

[9] E.g. the VP of an independent hotel, who decided to affiliate with DoubleTree brand by Hilton said: "A lot of times travelers may be nervous about staying in an independent hotel. They're not sure what they're going to get. But with DoubleTree they know they'll get a high quality and service" (www.azcentral.com - "Gilbert Legado Hotel changes name to DoubleTree").

Under a franchise agreement, the parent company of a hotel brand (the franchisor) grants to an owner or developer (the franchisee) the right to use its brand name.[10] In this case, the franchisor itself does not manage the hotel property, but rather leaves most day-to-day management decisions (e.g. staffing, pricing or employee pay) to the franchisee (see e.g., Freedman and Kosová 2013).[11] Under this type of contract, the franchisee is the residual claimant to the profits from the hotel's operations (net of royalty payments and other fees paid to the franchisor).[12] Franchise contracts are usually for 20 years. After that, the contract is usually renewed if both parties are satisfied with the relationship. The benefits of brand affiliation for a franchisee include customer name recognition, assistance from the parent company in developing management policies and procedures, training programs, supplier discounts, chain advertising, as well as centralized reservation and referral systems. These benefits come at the cost of paying royalties, advertisement fees and an initial franchise fee.

Under a management contract (again typically 20 years) on the other hand, a hotel parent company contracts with a developer or real estate owner and manages/operates the property for the sake of the local owner, using its own personnel. Thus, the parent hotel company (not a third party as in case of franchise) handles day-to-day operations and all the management decisions at the given hotel, including all personnel, pricing, and other decisions (Kehoe, 1996). Contracts also generally state that the owner cannot interfere with the operator's management of the property and thus parent company fully keeps the control over its brand (see Eyster and deRoos, 2009 for more details).

The last form, which however is quite rare in the US, is that hotel parent company not only operates but also owns the hotel property (typical examples in food & beverage industry are Starbucks' coffee

[10] Hotels operate under so called "business-format" franchising. I.e. the franchisor not only allows a franchisee to use its brand name, but also transfers the entire business format and methods to its franchisees and provides continuous support. For this, the franchisee usually pays in the form of royalties and advertising fees, both set as a percentage of outlet revenues. See Blair and Lafontaine (2005) for more details on franchising contracts.

[11] Sometimes a franchisee can be an asset management company or a real estate company. E.g., Archon Hospitality, one of the specialized divisions of Archon Group, L. P., which is a global, commercial real estate investment management and mortgage loan company serves as a franchisee to Marriott, Hilton and IHG hospitality firms.

[12] Parent companies do not typically offer direct financial resources to their franchisees. Being able to expand without the need of financial resources is one of the major advantages of franchising for a franchisor.

shops). In this case, similarly as in case of management contract, parent hotel companies hire own managers who then, as company employees, make the management, pricing, personnel or other day-to-day operations decisions.

According to STR census data, in 2009 franchised hotels represented 80% of all branded hotels in the US. Importantly, hotel parent companies as well as individual hotel brands vary in the degree to which their properties are franchised. According to STR statistics, several hotel companies including Hilton Worldwide, Marriott Corporation, Wyndham Worldwide, Starwood Hotels & Resorts or ICH Group franchise 70% or more of their hotel properties.[13] Alternatively, some brands are entirely franchised (e.g. Ramada, Clarion, Microtel, Travelodge, and Howard Johnson), while others are entirely company managed (e.g. Extended Stay America, Fairmont, and Four Seasons — see Lodging Hospitality, 2009).

2.3. Incentives under Franchised Contracts.

Under management contracts the decision makers (i.e., managers) are salaried employees of the parent company. Under a franchise agreement, on the other hand, the decision makers are the franchisees, which are the residual claimants on the assets. Thus, franchising, as an organizational form, has the advantage that it can better align the incentives of decision agents. As Fama and Jensen (1983) and Brickley and Dark (1987) point out, given that "agents bear most wealth effects of their actions, agency costs can be reduced."

However, as Kosová et al. (2012) point out, contracts written with franchisees are typically more complex and thus costlier to write and enforce than those written with employee managers. The reason is that despite the residual claimant status on profits from its property, franchisees' interests can be still misaligned with the interests of the franchisor (i.e. principal) due to externality problem

[13] Based on the presentation and supporting data materials we received from STR.

among units within a given brand. Intuitively, franchisees may exert less effort in preserving the franchisor's brand-name than what the franchisor would like them to exert, due to the fact that a fraction of their customers are more likely to repeat their business in *other* outlets that belong to the same brand, rather than in the same property of a given franchisee (e.g. Brickley & Dark, 1987; Klein, 1995).

3. Self-enforcement Mechanism and Initial Requirements in Hotel Franchise Agreements.

In this Section, we discuss the relevant literature and develop our main hypothesis in the broad context of relational contracts theory. After that, we explain why hotel franchising is particularly well suited to study the role that initial conditions/requirements play in self-enforcement agreements.

Suppose two parties, whose incentives are not perfectly aligned, i.e. a principal and an agent in traditional principle-agent theory, engage in an on-going relationship. If certain aspects of the agreement are not easily verifiable in court (e.g. agent's effort) the parties have to rely on self-enforcement to support their agreement (see Telser, 1980; Klein and Leffler, 1981; Williamson, 1983, 1985; Klein and Murphy, 1988; Levin, 2003; Malcomson, 2012).[14] Namely, an opportunistic agent will behave according to the principal's desire if the agent's expected future benefit from doing so is larger than the expected benefit from not complying with the principal's desired action.

The party acting as the principal has in general two options to boost the self-enforceability of the agreement (see Lafontaine and Raynaud, 2002). First, the principal can increase her/his monitoring intensity in order to increase the likelihood of an underperforming agent being caught, terminating the contract and thus decreasing the agent's expected payoff from deviation. Second, the principal

[14] Compared to the earlier papers, Levin (2003) relates classical self-enforcing mechanisms to a broad range of settings with informational problems. See Malcomson (2012) for a survey of the theoretical literature on relational contracts.

can try to increase the stream of rents that the agent receives in the relationship, but forgoes if the relationship is terminated. When one of these options becomes relatively more costly to implement, the principal, will most likely substitute one option for the other to maintain the self-enforceability of the agreement.

In this paper, we study the interplay between the principal's options to induce contract self-enforceability. In particular, how variations in the principal's monitoring costs relate to the variations in the (verifiable) initial requirements/conditions specified in the agreement, and how variations in those initial requirements can alter the agent's cost-benefit analysis of her/his (non-verifiable) ex-post actions. We expect that higher monitoring costs will be associated with such initial conditions/requirements specified by the principal that ultimately increase agent's ex-post rents. To the extent that the rents the agent forgoes in case of termination are proportional to the rents generated under cooperation, increasing the expected rents under the agreement widens the gap between complying with the principal's desired action and deviating from it, and realigns the agent's incentives with those of the principal.

Hotel franchising offers the ideal setting to test this hypothesis. For one, as mentioned above, there is a potential conflict of interest between the parent company and the franchisee that operates the hotel, as the franchisee may free-ride on the parent's brand-name. The franchisee can refrain to comply with the brand's quality-standards in terms of cleanliness, customer service, hotel ambiance, maintenance of amenities, etc. Actually, franchisees' underperformance in terms of revenues and/or quality level (i.e. brand standards) is one of the most common reasons for contract termination (Freed, 2008). As the representative from Crowne-Plaza similarly points out (HotelNewsNow.com, 2012), the threat of contract termination is very realistic:

> *"If properties aren't hitting quality-assurance or customer-satisfaction metrics, can they be booted from the system even if they're under a longterm contract? For the most part, yes,*

because contracts require franchisees to make necessary property improvements and meet certain performance goals."

Although the parent company can gather some information about the hotel's performance without necessarily going on site, it is still the case that certain actions of the franchisee need on-site monitoring. For example, as mention above, property improvements need to be verified on site. Additionally, anecdotal evidence (Cooper, 2012) as well as our discussions with industry practitioners reveal that on-site inspections while pretending to be customers are also used. As standard agency theory suggests (e.g. Rubin, 1978; Norton, 1988) the costs of monitoring local operations will be higher the more distant the operation is from the monitor. Franchising literature typically points to the parent company headquarters as the monitor.[15] Hence, franchisees that are located farther away from their headquarters will be inspected less often (see e.g. Brickley and Dark 1987).[16] We use this variation in monitoring costs to study the franchisors' variation in the initial conditions/requirements specified in their agreements with the franchisees.

Unlike in other contexts, in hotel industry one can more easily identify and measure initial conditions/requirements specified by the principal (franchisor) to the agent (franchisee) when the agreement is made that directly affect the stream of the franchisee's ex-post rents. In particular, the hotel size (number of rooms) and quality-tier are the underlying property characteristics that are directly linked to franchisees' ex-post rents. These conditions/requirements differ from others, e.g. resale price maintenance or exclusive territories — emphasized by the prior literature on self-enforcing agreements (see e.g. Klein and Murphy, 1988) — mostly because they vary across different franchisees/outlets of the same parent, rather than being uniform across all the franchisees. This allows us to directly link monitoring costs and initial conditions/requirements at the property level.

[15]Kalnins and Lafontaine (2013) also show that distance from parent's HQ reduces the survival of business outlets.
[16] Our discussions with industry practitioners confirm this statement.

Both hotel size and quality-tier of the hotel are typically specified by the franchisor to the franchisee when the new hotel property is launched. This is also apparent from the prototype franchise contract for two brands — "Hampton Inn" and "Hampton Inn & Suites" — franchised by parent company Hilton Hotels Corporation.[17] For each brand the contract specifies in details the "Initial capital investments" associated with requested hotel sizes, namely 81 rooms for Hampton Inn and 102 rooms for Hampton Inn & Suites. The contract also specifies the quality level and associated pricing strategies for each brand in the basic description of the franchise offer.

Important to note is also the fact that there is variation in hotel sizes within brands as well. As Table 1 shows, in our sample the average size of the new hotel property is 92 rooms. But when averaged at the brand level (among 85 brands) the average brand's size is 117 rooms and the average (normalized) within-brand standard deviation in size is 33 rooms. This substantial variation in hotel sizes, even within brands, can be further used to influence franchisees' ex-post rents.

Initial requirements of larger and/or higher-quality hotels increases contract self-enforceability as these characteristics make the franchisees' payoffs more back-loaded: they invest more up-front, but have more ex-post rents to lose in case of contract termination. Of course, asking for larger and higher quality hotels may come at a cost to a franchisor — otherwise parents would always prefer hotels with such characteristics. By requiring larger up-front investments, franchisors may drive away potential franchisees, limiting thus the pool of applicants the parent company can partner with.[18] Hence, the franchisor should modify the initial conditions of the contract — size and quality-tier — when boosting self-enforcement of the contract through this channel is more valuable; in

[17] See www.franchisedirect.com/travelfranchises/hampton-inn-suites-franchise-07063/ufoc/. The entire copy of the document can be provided as a pdf file on request.

[18] Real estate developers may still be willing to accept a contract in which they are required to invest larger amounts if two conditions are satisfied: 1) The contract still offers some ex-ante rents; 2) Brands have certain degree of market power in some local markets. Kosová et al. (2013) show that, on average, hotel projects are NPV positive — (NPV/Investment) is approximately 11%. Thus, real estate developers in general do obtain ex-ante rents. The second condition is also likely to be satisfied given that the 10 largest hotel brands control about 50% of the market (see Section 2.1.).

particular when monitoring becomes more costly. Thus, we expect that when a franchisor decides to open a franchised hotel far away from the headquarters, the hotel is more likely to be larger (more rooms) and/or of a higher quality brand. Moreover, conditional on opening a particular brand (i.e. within a brand), the hotel is also likely to be larger when it is located far away from the franchisors' headquarters.

Compared to other empirical settings, hotel franchising allows us to go one step forward in testing self-enforcement. This is mostly due to the fact that lodging is a revenue management industry, characterized by high initial fixed costs and small marginal costs. Thus, variation in hotel revenues reliably captures variation in the hotel ex-post rents. Following the logic of self-enforcing agreements, we expect that franchised hotels that are far away from their headquarters will generate higher revenues. However, consistent with the idea that monitoring intensity and initial requirements are likely to be used as substitutes, we would also expect that such revenue premiums, in turn, should be largely explained by the initial conditions the parent company specifies in the contract when the new franchised hotels are opened.

The above argument implicitly assumes that higher hotel revenues also widen the franchisees' expected payoffs between complying with — and deviating from — the franchisor's desired actions. In other words, the cost of contract termination is assumed to be proportional to the rents that the agent generates under the franchise agreement. This assumption holds well in case of hotel franchising. When a franchised contract is terminated the franchisee can either find another parent company to operate with, or operate the property as an independent hotel.[19] In both cases, the value of forgone earnings during the *transition period* (i.e. period during which a franchisee changes the

[19]Using 2000-2008 STR data (including both new and existing properties), we find that, in any given year, the probability that a franchised hotel changes its parent company is 3.2%; and the probability that it is converted into an independent hotel is 2.5%. An alternative outcome for franchise termination is that the parent company takes over the management and hotel becomes company managed. This usually occurs when the franchisee decides to terminate the contract voluntarily. However, based on STR data, the annual probability of such event is low, about 0.4%.

operation from one parent to another one, or to be independent) is proportional to the revenues hotel generates during *normal* operation periods.

Figure 1 illustrates the magnitude of the losses that a franchisee suffers in the *transition period*. Panel A shows the monthly dynamics in average number of rooms supplied for 638 franchised hotels that experienced a change in parent company. Panel B describes the dynamics in revenues for these properties.[20] The month in which the hotel property begins to operate under the new franchisor is normalized as "time 0". As Figure 1A shows, there is a large drop in the average number of rooms that the hotel can offer that starts 6 months before and continues 2 months after a hotel changes its parent. This is mostly due to the fact that hotels typically do not fully close their operations during renovations. Instead, they close only some parts of the hotel. The drop in room supply, in turn, materializes into lower revenues during the *transition period* (Figure 1, Panel B). In unreported regressions (available upon request), controlling for hotel and time fixed effects; we find that the total revenue-loss during the *transition period* is slightly more than two months of revenues that hotel earns during *normal* operation periods. For the average hotel in our sample (see section below), this translates into a financial loss of about $370,000.[21]

The direct costs of renovation are also proportional to the size and quality-tier of the hotel. According to HVS's Hotel Cost Estimation Guide, in 2011 the costs *per room* of renovating a low-quality hotel were between $3,443 - $9,434, while the costs *per room* of renovating a high-quality hotel were almost double, between $6,124 - $18,050.[22] Thus, for the average hotel in our sample (92 rooms; low-quality), the direct costs of hotel renovation amounts to additional $316,000 - $868,000.

[20] Though parent changes happen among franchised chains, it is not so often (see also Kosová, et al., 2011). In the STR census data only about 2,900 (or 21%) of all franchised hotels changed their parent company during 2000-2008. However, for only 638 of them we have information on the exact month when a parent company changed.

[21] The evidence presented in Figure 1 reinforces the notion that franchisors have no incentives to terminate contracts without a good cause. They would not only loose royalties from a terminated franchisee, but also lose money through lower royalty revenue collection during the *transition* period.

[22] See http://www.hospitalitynet.org/file/152004649.pdf. The estimates reported include renovations of the guestroom, bathroom and corridor to each guestroom. The classification of low-quality hotels includes the economy

All in all, the necessary assumptions to test for the use of self-enforcing mechanisms are satisfied relatively well in the context of hotel franchising: conflicts of interest; on-going relationship; complex contracts; measureable variations in monitoring costs; measurable initial requirements; measureable variations of ex-post rents; and agents' losses from contract termination which are proportional to ex-post rents. Thus, we now turn to describe the data we use to empirically test our predictions.

4. Data.

4.1. Data Sources.

We obtained our dataset by combining several data sources. The first one is the hotel census compiled annually by Smith Travel Research (STR). As already mentioned in Section 2, STR is a market research firm that collects property characteristics for about 98% of entire population of US hotels, including branded and independent hotels. For each property, STR provides a hotel identifier, number of rooms, opening date, hotel quality-tier (segment), location (state, county and zip code); information on hotel's operation/organizational form (chain management, franchised or independent), amenities each hotel offers (restaurant, convention or conference facilities, spa, ski facilities, golf course, extended stay rooms and whether the hotel is an all suite property), specifics of hotel location (is hotel near the airport, interstate, part of a resort, in urban, suburban or small town area); as well as brand and parent company of each hotel.[23] In addition, we also obtained information about the headquarters location for each parent company. There are 27 hotel companies (both domestic and international) with headquarters in the U.S.. In several states there is only one hotel company registered.[24] Hence, due to confidentiality reasons, STR could not provide us the state (or county) where the headquarters is located. However, STR was willing to provide us information

and midscale properties, while high-quality hotels include the upscale, upper upscale and few luxury properties in our sample.

[23] The name of hotel, brand, and parent company have been coded in the data to maintain their confidentiality.

[24] In addition, there about 6 foreign hotel companies that also operate hotels in the US, but their headquarters is located outside the US (e.g. Fairmont Hotels & Resorts has headquarters in Canada).

about the geographic division (there are 9 divisions as defined by U.S. Census) in which each company's headquarters is located. Table A, in the Appendix, shows the distribution of parent companies' headquarters for the 9 U.S. geographic divisions. As the table shows headquarter-offices are distributed pretty much all over the country.

The second data source is the STR hotel revenue database that provides data on monthly room-revenues for nearly all branded hotels. We obtained revenue data for months during 2000-2008 and constructed the annual averages of monthly revenues for each hotel. Annual averages help us to smooth the monthly seasonality and better compare the hotel performance over the years. Due to this, in our final sample we also drop those years in which a hotel does not have revenues reported for all 12 months. Merging hotel census and hotel revenue data gave us a starting set of 14,017 franchised hotels.[25]

Our other data sources are the Census Bureau and the Bureau of Labor Statistics (BLS), which provide annual information on county demographics and employment. For each county, these variables include population (from the Census Bureau's annual population estimates), the unemployment rate (from the BLS), median household income (from the Census Bureau), and the number of establishments in accommodation industry and two related industries — arts, recreation & entertainment, and food & beverage (all from the Census Bureau's County Business Patterns data). We rely on county-level market characteristics for two reasons. First, counties represent the best available approximation to the relevant geographic area in which hotels interact with each other, and which consumers typically consider when looking for alternative lodging options around their target destination (see Freedman and Kosová, 2012 for a discussion). Second, county-level data is also the lowest level of aggregation at which time-varying market characteristics are regularly reported on annual basis.

[25] STR provided us access to all their data under strict confidentiality agreement.

To test our hypotheses outlined in Section 3, we use the data for the 5,739 new hotels that enter the market sometimes during our sample period 2000-2008 and began their operations as franchised properties. Out of these, however, we drop 185 hotels with missing covariates and 7 hotels that were opened in Alaska and Hawaii. We dropped these since being too far away from the U.S. mainland they represent outliers and could thus introduce a potential bias into our analyses. At the end, our final sample consists of 5,547 franchised hotels that started their operations sometimes during 2000-2008. These hotels are geographically distributed across 48 states and 1,369 counties, representing 85 brands that belong to 18 different parent companies headquartered in the U.S..[26] For these we also have information about their average monthly revenues in subsequent years and time-varying market characteristics. Though most new hotels operate under one parent company during 2000-2008, to avoid outlying revenue observations associated with the changes in parent as discussed in Section 3 (Figure 1), for the few new hotels that changed parent we included in our sample only years before the parent change occurred.[27] Our revenue sample represents an unbalanced panel, containing 20,240 hotel-year observations.[28]

4.2. Descriptive Statistics of Our Sample

Table 1, Panels A-D, show various descriptive statistics of our sample. Panel A shows hotel characteristics — notably, a newly opened franchised hotel has about 92 rooms, but variation in size is relatively high; some hotels are as small as 20 rooms, but some are as large as 1,100 rooms. The dummy variable *Far*, which proxies for franchisor's monitoring costs, shows that about 23% of newly franchised hotels in our sample are more than 1,500 miles away from their headquarters' office. Since information about exact location of the companies' headquarters is unavailable due to confidentiality reasons noted earlier, we rely on information on the parent's geographic division and

[26] D.C. area is coded separately, so we have 48 states and D.C. area.
[27] Nevertheless, including also the years after a parent change occurred does not change our results.
[28] The data is unbalanced as hotels enter in different years and several county-years have missing market characteristics.

information on the state in which a given hotel operates to construct this variable. Precisely, the dummy *Far* takes a value of 1 if the distance between the midpoint of the hotel's parent geographic division and the hotel's state is more than 1,500 miles, and 0 otherwise.[29] Given that our actual division-based measure of distance is noisy, instead of using it directly we prefer to use the dummy, dividing hotels into two categories (*Far* – yes and no).

To better clarify the logic behind our approach, consider the following example. Suppose a franchisor is coded as having its headquarters in the Pacific division, which includes the states of California, Oregon and Washington, and a hotel is located in California.[30] The distance between the midpoints of the division and California is about 400-500 miles. However, it might well be the case that the hotel is located just two blocks away from the actual headquarters' location, or it can be 1,200 miles away if, let's say, the parent company is in Seattle and the hotel is in San Diego. Thus our division-based measure of distance can quite differ from the actual hotel distance to its headquarters for those hotels that operate directly in the parent's division or divisions nearby. Therefore, to minimize the biases, we prefer to simply classify all relatively far-away properties into one category, Far=1, using a certain threshold, while classifying the relatively not so far properties as Far=0.

We choose 1,500 miles as the threshold for the circle distance from the hotel's state to the parent headquarters' division, because given the relatively large sizes of the U.S. divisions, this cutoff assures that only the properties that are indeed far away from the parent headquarters belong to such category. We have also experimented with cutoffs of 1,200 and 1,800 miles. Though these gave us similar results, important to note is the fact that smaller cutoffs imply a higher likelihood of

[29] None of the hotels has the distance exactly at the cutoff value of 1,500 miles. We prefer to use the hotel's state rather than its county because given the relatively large sizes of the geographic divisions, the exact location of the county within a state makes a little difference when determining whether a hotel is far or not from the company's headquarters.

[30]The Pacific division also includes the states of Alaska and Hawaii, but we verified with our data provider that none of our parent companies are located in those states.

misclassifying far-away hotels, while larger cutoffs leave too few properties in the far-away category. We further verify the reliability of 1,500 miles cutoff in the robustness checks (Section 8) using data for a single parent company, for which we obtained the exact location of its headquarters (HQ) and can construct thus continuous measure of hotel distances to HQ. These results confirm that hotels' initial conditions importantly differ for hotels that are more than 1,500 miles away from their HQ.

Panel A also shows that about 23% of our franchised hotels were opened as high-quality hotels (i.e. upscale, upper upscale and few luxury properties) and the distribution of different amenities that hotels offer. For example, more than 10% of new franchised hotels have a restaurant and about 24% of them are all suites properties (i.e. rooms are a bit larger and have attached kitchen and/or living room). At the same time, other amenities such as spa, golf course, ski, convention or conference facilities are less common among our franchised hotels.

Meanwhile, Panel B provides the distribution of hotels in our sample across different location types. It shows that much more franchised hotels were opened in suburban (44.3%) and small town (23.6%) areas than urban areas (6.7%). Fewer hotels were also opened near highway (16.5%), airport (6.4%) or resort areas (2.3%). These differences across locations indicate that controlling for hotel location-type will be important in our empirical specification.

Panel C further shows the frequency of new franchised hotel openings for each year in our sample. Not surprisingly, entry of new hotels slowed down after the terrorist attacks in 2001, but then started to increase again in 2007-2008 right before financial crisis started. Overall, the distribution of hotel entry in our sample is relatively similar across the years.

Finally, Panel D depicts time-varying characteristics for 20,240 hotel-year observations in our sample during 2000-2008. As the panel shows, the franchised hotels in our sample are on average 4 year old — consistently with the entry patterns in Panel C — and earn about $187,200 in room

revenues each month per year. Regarding market characteristics, our franchised hotels operate in counties in which there are about 3 other franchised hotels of the same parent, but almost no company managed hotels of the same parent (mean is 0.3 hotels). This pattern is quite consistent with Kalnins and Lafontaine (2004) who find that franchisors tend to cluster franchised hotels together (and similarly for corporate hotels). The summary statistics also suggest that our new franchised hotels operate in fairly competitive markets. In particular, an average franchised hotel operates in a county together with 25 hotels of other hotel companies,[31] more than 100 other accommodation establishments (not just hotels), more than 1,200 food and beverage establishments, and about 275 art, recreation and entertainment establishments. When it comes to economic conditions, the average new franchised hotel operates in a county with about 650K people, a median household income of $48,300 and an unemployment rate about 5%. The standard deviations in these variables also point out noticeable heterogeneity across market-years, highlighting the importance of controlling for such market variation in our analyses.

To motivate our analyses Table 2 compares the means of hotel rooms, quality-tier, as well as several market characteristics in the first year of operation between franchised hotels that are far away (*Far=1*) and hotels that less than 1,500 miles (*Far=0)* from their company headquarters. Additionally, we compare the average monthly revenues for the initial and subsequent years of operations, between these two categories in the last row of Table 2. As the last column shows there are significant differences in almost all variables. In particular, hotels that are far away from their headquarters are about 19 rooms larger and more likely to be of high-quality than closer franchised hotels. Such hotels also operate in more competitive markets characterized by about 2-3 more hotels from other hotel companies, significantly higher number of establishments in accommodation as well as other two related industries, compared to those franchised hotels that are less than 1,500 miles from their headquarters. In addition, far away hotels also command by about $97,000 more in

[31] The counts of hotels were constructed based on the full STR hotel census, not just our sample.

average monthly revenues per year. These mean comparisons support our hypotheses discussed in Section 3. However, these aggregate data patterns represent just simple correlations, not controlling for other factors. Thus to shed more light on the relationship between initial conditions (rooms and quality tier), distance from parent company headquarters and ex-post revenue rents, we conduct the empirical analyses described in the next section.

5. Empirical Methodology.

Our empirical approach consists of two types of analyses. First, we estimate the relation between franchisors' monitoring costs, measured by the dummy variable *Far*, and hotels' rooms and quality tier (i.e. initial conditions/requirements specified by a franchisor) at the time the hotels were opened. Second, we study whether being far away from the parent company headquarters has implications on the hotels' revenues, and if so, whether that effect can be attributed to the initial requirements. Both types of analyses can be described by a general empirical specification of the following form:

$$(1) \qquad y_{igct} = \alpha + \beta * Far_{ig} + \mathbf{Q}'\boldsymbol{\Omega}_{ct} + \boldsymbol{Z}'\boldsymbol{\Gamma}_i + \boldsymbol{M}'\boldsymbol{\Psi}_{igct} + \mu_t + \gamma_g + \varepsilon_{igct}$$

In our first type of analysis, the dependent variable *y* is the number of rooms (in logs) or quality tier (high vs. low) of hotel i in the year of opening *t*; whereas g indexes hotels' affiliation with a parent or brand, and *c* indexes the county in which a hotel was opened. The distinction between brand vs. parent is important as the decision on some initial hotel requirements can be solely made at the parent level whereas other decisions can, in principle, be made both at the parent or brand level. For example, the hotel quality-tier is a corporate decision made at the parent level, as brands are characterized by a uniform quality level. The hotel size, on the other hand, can vary not only among hotels within the same parent, but also among hotels within the same brand (see Section 3).

Hence, in our empirical estimations we exploit both types of decision-making variation: within brands and within parents. Precisely, following our argument above, when the dependent variable is

number of rooms we exploit within brand — as well as within parent — variation. When the dependent variable is quality tier of the hotel we exploit only within parent variation. In our analysis, we focus on the number of rooms and the quality-tier of hotels as the initial requirements, mostly because other hotel characteristics that might be similarly specified by a franchisor upfront (e.g. amenities such as spa, restaurant) have very limited variation, even within parents. Also, though our dependent variable is indexed by time *t*, our first type of analysis is basically cross-sectional as *t* denotes the year in which the hotel was opened. Thus we have just one observation per hotel in these regressions.

The variable of interest in all estimations is the dummy *Far*, which takes a value of 1 if the hotel is located more than 1,500 miles from the parent company's headquarters, and 0 otherwise (see also Section 4.2.). One advantage that helps our identification strategy is that variation in this dummy relies on the unique combination of locations between parent and hotel. Thus potential endogeneity bias due to omitted market characteristics should be reduced. To further minimize potential endogeneity biases that could affect our estimate of *Far* dummy, we include a vector of detailed market characteristics at the county-level, $\boldsymbol{\Omega}$, to control for different economic conditions across markets. These include county median household income (in logs), population (in logs) and unemployment rate. Capturing the living costs these variables also help us to control for differences in hotel clientele between the markets (e.g. business travelers often stay in richer or highly populated areas). To further control for attractiveness (or intensity) of the market as business or tourist destination that could affect hotel size or its quality and be potentially correlated with *Far* dummy, we control for the number of establishments in three hotel-related industries: arts, entertainment and recreation; food and beverage, and total accommodation (not just hotels).

Other set of important controls, Γ, represents hotel specific variables. These include state fixed effects (48 states and D.C. area),[32] and dummies for 6 location-types of our hotels (urban, suburban, small town, resort, near highway or airport). These dummies help us to further control for market characteristics that might not be captured by the county-level controls, such as unobserved differences in state-level regulations including the franchising laws, or specifics of hotels' location, which might be correlated with hotel's clientele (e.g., business travelers are more likely to stay near the airport than family/leisure travelers).

To even better capture the competitiveness of the market in which the hotels are opened, vector Ψ, contains the variables that help us to control for the degree of internal competition (within-parent) and external competition (from hotels of other parents). Our two measures of internal competition are the number of company managed hotels of the same parent in the same county as the focal hotel, and the number of other franchised hotels of the same parent within the same county. It is important to control for these variables as the encroachment of a market, especially from other same-parent franchisees (as per franchising literature), could have implications on the size and quality-tier of the new franchised hotel.[33] The measure of external competition is the number of hotels of other parent companies (than the parent company of the focal hotel), which can affect hotel size or quality-tier by reducing its residual demand. All these effects could be more/less profound for franchised hotels that are far away (and thus more costly to monitor by the franchisor). Finally, we control for year fixed effects, μ, to capture unobserved macroeconomic or policy shocks that could affect the size and quality-tier of the new franchised hotels in different years; and hotel brand or parent fixed effects, γ, to control for unobserved differences across parents or brands (e.g. different levels of popularity).

[32]Though we define market at the county — rather than a state — level, given our sample size and the large number of counties in which our hotels operate (more than 1,300) we cannot include county-fixed effects in addition to all other controls.

[33] See, e.g. Blair and Lafontaine (2005) for more discussion on encroachment.

Our second type of analysis is longitudinal and it studies the performance of our new hotels since the year they opened until the end of our sample in 2008. The dependent variable for this analysis (y) is the logarithm of average monthly revenues per year. Both revenues and all the control variables contained in the sets Ω and Ψ are now time-variant.

In the baseline panel revenue regression we explore whether hotels that are far away from their parents generate higher revenues, while controlling for hotel age and the same set of controls as in our first type of analysis above. Then we expand the set of covariates by including also the initial hotel requirements, i.e. number of hotel rooms and quality-tier, as well as various hotel amenities (whether a hotel has a restaurant, spa, conference/convention facilities, etc.) that could affect the differences in revenues between hotels that are/are not far away from the parent headquarters. As discussed earlier, our intuition is that, under a self-enforcing mechanism hypothesis, if there is a revenue premium for far away properties, such premium should vanish once the initial conditions/requirements are controlled for.[34]

In both types of analyses (i.e. initial requirements and revenue panel regressions) we first estimate the empirical specifications controlling for brand fixed effects. Then we replicate the estimations controlling for parent fixed effects. Exploiting within brand variation has the advantage that it allows us to better control for potential unobserved heterogeneity at the brand level. For example, royalty rates and other fees usually vary among brands of the same parent, but they tend to be stable within brands. Controlling for parent fixed effects, on the other hand, allows us to analyze the differences in hotel quality-tier that usually does not vary within brands.

To obtain conservative robust standard errors, in all estimations we adjust standard errors for heteroscedasticity and cluster at the brand level when controlling for brand fixed effects; while

[34] The hotels' initial requirements are precisely what Angrist & Pischke (2009) refer as good controls. "Good controls are variables that we can think of having fixed at the time the regressor of interest was determined." (p. 64).

cluster at the parent level when controlling for parent fixed effects. This keeps consistency between the conceptual level of decision making we described and the level of clustering we use empirically. As we discuss in next section our results hold regardless the level of clustering.[35]

Given the panel nature of our revenue analysis, we also explore whether unobserved hotel heterogeneity (e.g. high/low performing hotel) could bias our results. Since whether a hotel is far from the parent's headquarters or not does not change over time, we cannot estimate the standard hotel-level fixed effects model. Thus we rely on Mundlak's (1978) approach and model hotel unobserved (correlated) heterogeneity as a vector of hotel-level means of time varying county characteristics included as controls that could also boost hotel's long-term efficiency/performance, namely: income, population, unemployment and number of establishments across the three related industries. This correction attempts to emulate hotel fixed effects by allowing for at least partial correlation between hotel unobserved heterogeneity and time-varying market covariates that could potentially bias the estimate of the *Far* dummy. At the same time it also helps us to better identify impact of these time varying variables on hotel revenues.[36]

We discuss the results from both types of analyses described above in Section 6. Then, in Section 7, we replicate our analyses for the subset of hotels affiliated with the largest parent in our sample, for which we were able to obtain the exact zip-code location of the company's headquarters. After that, in Section 8, we further exploit the data for the single parent as well as our overall sample to conduct various robustness checks and eliminate alternative hypotheses.

[35] We also experimented with clustering at the geographic (county)- level rather than decision-making (brand or parent) level. However, given that we have only about 4 hotels per county, clustering on more than 1,300 counties provides less conservative estimates than clustering on much smaller number of brands or parents.

[36] Notably, while other unobserved factors could potentially affect hotel performance or choice of initial conditions, for our purposes, in order to obtain reliable estimate of *Far* dummy, we need to only ensure that we do not omit those hotel or market characteristics that might be potentially correlated with both *Far* dummy and our dependent variables.

6. Results.

6.1. Hotel Size and Quality Tier of New Franchised Hotels.

Table 3 shows the estimations of the determinants of the size of the new hotels and whether a new hotel is high-quality or not, as a function of the variable *Far* and other controls in the year of opening, for the 5,547 franchised hotels that were opened during 2000- 2008. The dependent variable in columns I and II is the logarithm of number of rooms. While column I shows brand fixed effects regressions, column II exploits within parent variation. Column III shows the results from a standard logit model using the dummy *High-quality* as a dependent variable, exploiting again within parent variation.[37] As column I shows, controlling for hotel state, location-type and year fixed effects, as well as other hotel-market characteristics, new franchised hotels within a given brand, have about 2.6% more rooms when they are farther than 1,500 miles from their parent company's headquarters. A similar result gave also the parent fixed effects regression in column II; hotels, within a given parent, have about 1.7% more rooms when they are farther than 1,500 miles from their parents' headquarters than franchised hotels that are closer. Given that the average hotel size in our sample is 92 rooms, these semi-elasticities can be interpreted as far-away hotels having about 2-3 more rooms than their closer counterparts.[38] Col. III reveals another interesting pattern: Evaluated at the sample means, far away properties are about 18% more likely to be designed as high-quality hotels than properties that are closer to their parent company's headquarters.

The estimated coefficients of the control variables have also sensible economic interpretations. As one would expect, larger and more high-quality hotels are built in counties where the median household income is higher and unemployment rates are lower. Hotels are also more likely to be larger and of higher quality in the more attractive travel destinations, as captured by positive

[37] As discussed in Section 5, since brands perfectly determine whether a hotel is high or low quality, we cannot include brand dummies in the logit regression.

[38] Though this effect may seem not so large in terms of rooms, in terms of revenues it does represent an important impact. Specifically, on average a hotel in our sample generates about 187,200 revenues per month a year and has about 92 rooms (Table 1), i.e. $2,035 per room in a month, which is about $24,500 per year. So extra 2-3 rooms represent between $49,000-74,000 extra annual revenues on average for a hotel in our sample.

coefficients of the number of food and beverage establishments, number of total accommodation establishments and arts, entertainment and recreation establishments (though not all the coefficients are statistically significant). Finally, potential market encroachment also seems to play an important role as the size and quality-tier of new franchised hotels are both negatively related to the number of other franchised hotels of the same parent in a given county.

Overall, these results support the idea that a self-enforcement mechanism is at work, as initial conditions/requirements for new hotels specified by franchisors are set such that they increase the hotels' ex-post rents. In other words, larger hotels and hotels of higher quality are more likely to generate larger rents for the franchisees in the future. However, if this is the case, we should also observe that hotels characterized by higher monitoring costs of their parents (i.e. hotels that are far) are indeed systematically generating higher rents. Moreover, if the channel through which the higher ex-post rents are generated is the initial conditions, we should also observe that the revenue premium associated with being far away should disappear once such initial conditions/requirements are controlled for in the revenue regressions. We discuss the results from this type of analysis below.

6.2. Panel Revenue Regressions.

In Tables 4 and 5 we study the determinants of hotel revenues, proxying for hotel ex-post rents as per our discussion in Section 3. Table 4 shows the results from brand fixed effects regressions for all our hotels in the sample that operate under one of the 85 brands. Table 5 replicates the same analysis, but exploiting within parent (rather than within brand) revenue variations across hotels of the 18 parents in our sample. All estimations use revenues for hotel-years starting in the year the hotel was opened until 2008.[39] Our variable of interest is again the dummy *Far*, which proxies for the franchisor's monitoring costs.

[39] The number of hotel-year observations varies from 1 to 9, depending on when the hotel has been opened.

Consistent with the self-enforcing mechanism hypothesis, column I of Table 4 shows that far away hotels within the same brand command a revenue premium of about 4.5%, even after controlling for time-variant market characteristics, hotel age, differences in hotel location and state and year fixed effects. Columns II and III include additional hotel characteristics that could potentially explain the revenue premium of far away hotels. Precisely, in column II we control for various hotel amenities (All Suites, Convention, Conference, Spa, Golf, Ski and Restaurant) and in column III we add hotel size. Consistent with initial conditions capturing/explaining the revenue premium of far away hotels, the magnitude of the estimate of *Far* dummy drops once we control for hotel amenities. However, the drop in the estimate is very small, from 4.5% to 4.4%. Such a small drop is not surprising, as there is very little within brand variation among these amenities. Nevertheless, more serious drop in the estimate of *Far* dummy — from 4.4% to 1.6% — occurs in column III when we add the logarithm of number of rooms as a control. This pattern supports our discussion above that the revenue premium of hotels that are far from their parent HQ (and thus more difficult to monitor) basically captures extra ex-post rents generated by the initial conditions. This also suggests that ex-post rents can serve as a substitute to franchisor's monitoring intensity. In the last column we replicate the specification from column III, but now including also Mundlak's (1978) correction for hotel unobserved (correlated) heterogeneity. Our findings are quite robust to this correction as well.

Finally, Table 5 replicates our analyses from Table 4, but exploiting within parent variation. In the baseline specification (column I), which does not control for hotel size or quality level yet, the dummy *Far* has a positive association with hotel revenues, similarly as in Table 4 (column I). In columns II-IV we sequentially introduce measures of hotel quality and size as explanatory variables (i.e. dummy High-quality in column II, amenity dummies in column III, and logarithm of number of rooms in column IV). Including these reduces the estimate of *Far* dummy from 2.3% in column I to 1.4% in column IV. Including Mundlak's correction for hotel fixed effects in column V does not change these findings either. These results once again confirm the idea that the revenue premium

generated by more distant properties is largely explained by the initial requirements (hotel size and quality tier) that franchisors ask of their new franchised hotels.

7. Continuous Measure of Distance: Single-Parent Analysis.

Our previous results show that the dummy *Far* is positively and significantly associated with revenue-generating hotel characteristics — hotel size and quality — and revenues. As discussed earlier we use the dummy variable *Far* to minimize potential measurement error in our proxy for distance between hotels and their parents' headquarters as for confidentiality reasons we could only obtain the geographic region, but not the exact location, in which the parents' headquarters operate. However, one may wonder whether our results are not by any chance driven by the fact that we use a simple dummy as a proxy for distance. To eliminate this concern, we conducted additional discussions with industry experts that allowed us to determine the exact zip-code of the headquarters for the largest parent company in our sample (hereafter Parent A). This company opened 1,177 franchised hotels during 2000-2008 across 8 different brands. Thus, we could compute the zip code distances between new franchised hotels of Parent A and its company's HQ. Table 6 shows the results from the analyses of hotel size and quality tier for the new franchised hotels of Parent A. Table 7 replicates our panel revenue regressions. The variable of interest in both tables is the continuous measure of distance in 1000s of miles *(Distance*).[40]

Table 6 replicates the results from Table 3, but using only the sample of hotels of Parent A. Column I shows the results from brand fixed effects regressions for number of hotel rooms. These results show that for every extra 1,000 miles of distance between hotel's zip-code and Parent A's headquarters zip-code, the franchised hotels are on average 6% larger, in terms of rooms (about 6 rooms given Parent's A mean). This result is statistically significant at the 5% level. In columns II and III we

[40] When only hotels of Parent A are included in the regressions, the state dummies almost completely determine the distance to the parent's headquarters. Thus, we cannot include state-dummies in these regressions. In other words, regressions with state fixed effects would give us the within-state impact of distance rather than the actual impact of distance from the headquarters to the hotels.

exploit the overall variation for Parent A (as in columns II and III of Table 3) rather than variation within its 8 brands. Despite different variation, the results in column II are very similar to those in column I. In column III, we find that Parent A is 10% more likely to request a high-quality hotel per every 1,000 miles of extra distance from its headquarters although this result is statistically insignificant. Overall, the results in Table 6 support our prior findings (Table 3): Far away properties are more likely to be larger and of higher-quality, even after controlling for hotel and market characteristics.

Table 7 shows the results from the panel revenue regressions for franchised hotels of Parent A, exploiting within-brand variation (equivalent to Table 4). We do not show the results exploiting the within parent variation (equivalent to Table 5) for space reasons, as these results were very similar to those in Table 7.[41] Consistent with a self-enforcing mechanism, column I shows that more distant hotels generate higher revenues: on average 12.4% more per 1,000 miles of extra distance from Parent A's headquarters. This result is statistically significant at the 1% level. Consistent also with our other finding that the revenue premium of far away hotels is in turn explained by higher requirements on hotel's revenue generating characteristics, we again find that once we control for hotel size and quality (captured by hotel brands and amenities), the magnitude of the estimate for *Distance* drops from 12% to only 1.9% and becomes statistically insignificant.

8. Robustness Checks and Elimination of Alternative Hypotheses.

So far our results suggest that franchisors as principals try to boost the self-enforcing mechanism in hotel franchisee contracts through strategically choosing hotel revenue generating characteristics — size and quality — above and beyond what market specifics alone may suggest. To further verify robustness of our findings and eliminate alternative hypotheses that could potentially explain our findings we perform several additional analyses described below.

[41] The results are available on request.

8.1. Does Distance to Regional Offices Matter?

Traditional franchising literature refers to the "distance to headquarters (HQ)" when it comes to franchisor's monitoring costs. However, one may wonder whether being close to franchisor's regional office is not more important than a distance to HQ when resolving the agency issues. In that case, the estimates of our "distance to headquarters" measures, might be biased. To exploit this alternative hypothesis we use the single parent sub-sample from Section 7. For this parent we were able to obtain also the exact locations of its regional offices — 6 in total. Using the zip-to-zip code information for each hotel of this parent and each regional office we compute the distance between all hotels and all regional offices. Then, we compute the minimum distance between a given hotel and the parent's regional offices[42] and include it as an additional regressor into the single-parent specifications described in Section 7. The results in Table 8 show that the association with the hotel distance to parent's HQ is still relevant, but the estimates of the distance to the closest regional office are always insignificant. (The results from our revenue regressions in Table 7 also remain, with minimum regional office distance being insignificant; we do not report these for space reasons). These results not only confirm our findings so far, but give support to the arguments in the literature suggesting that the distance to HQ is what really matters when it comes to franchisee monitoring.

8.2. Distance Decomposed into Several Ranges: Is 1,500 miles a reliable cutoff for our Far dummy?

The above analysis confirms that when it comes to the relationship with initial hotel requirements — size and quality tier — it is the distance to parent's HQ rather than the distance to regional offices that is relevant. However, one may still worry whether in our previous estimations using 1,500 miles as the cutoff for our *Far* dummy (to capture high vs. low monitoring costs) is reliable. As we discuss in Section 4.2., this cutoff helps us to minimize the misclassification of too close/far away hotels. Here we provide additional evidence to support such cutoff. To do so we again exploit our single-parent analysis and replicate the results from Table 6, while dividing hotel's continuous distance

[42] If the HQ office is closer than any other regional office, we specify the HQ office as the closest regional office.

measure to parent's HQ into 5 exclusive ranges (by 500 miles) — represented by dummy variables. The results are reported in Table 9. Overall, they confirm that hotels more than 1,500 miles far away are significantly different from hotels that are relatively closer to their parent's HQ. While the relationship between hotel's distance to HQ and hotel size/rooms is quite monotonic, the relationship between distance and hotel quality-tier is less monotonic. This is perhaps not surprising given that *High-quality* dependent variable is a dummy variable too. Moreover, the estimate of a dummy indicating 500<Distance<=1000 (Col. III) is only marginally significant at 10%; the p-value is 9%.

8.3. *Initial Hotel Requirements and being Far among Company Managed Hotels.*

To further eliminate alternative hypotheses that could potentially explain our findings we utilize our rich data on nearly the entire population of US hotels and construct a dataset on new company managed hotels. We use this dataset to perform "placebo" regressions. Being salaried employees — rather than residual claimants on initial investments — managers in company managed hotels have no incentives that bear a strong relation with the real estate developers' ex-post rents. Thus, if we find that farther away hotels are more likely to be larger and of high-quality for company managed hotels as well, the positive association between hotel distance and hotel size and quality-tier that we found for franchised hotels should not be interpreted as evidence of initial conditions being used to boost contract self-enforceability.

In the absence of a self-enforcing explanation, a positive association between hotel distance and hotel size and/or quality-tier could arise, for example, if only larger and/or higher quality hotels were worth of the company's effort and thus only these hotels would be monitored in distant locations.[43] It could also be that for hotels far away from parent's HQ only business travelers (who typically travel long distances and stay in larger/higher quality hotels) might be aware of the brand. Hence, it would be natural to open higher-quality and/or larger hotels far away from parent's HQ. Though our control

[43] It might also be that higher quality or larger hotels impose fewer externalities to other hotels of the same brand or parent, and thus actually require less monitoring.

variables including brand, parent and hotel location fixed effects should capture such effects to some extent it might be that these alternative explanations are not fully captured by our rich set of controls.[44]

Our regression sample on company managed hotels contains information for 488 new properties opened during 2000-2008. Although this sample is smaller than our sample of new franchised hotels, it is important to note that the distribution of the *Far* dummy is very similar between the two samples: hotels classified as being *Far* from their parent's HQ represent 26.6% of the observations in the company managed sample and 22.9% in the franchised sample.

The results for company managed hotels are provided in Table 10. In all the specifications the control variables (e.g., other franchised hotels) were adjusted to reflect that the focal hotel is now company managed and not franchised.[45] The results show that unlike franchised hotels, company managed hotels far away from their parents are not significantly larger, and if anything, they are actually less likely to be of higher quality. Such important differences in findings for company managed hotels further document that it is quite unlikely that alternative hypotheses, other than a self-enforcement mechanism in franchised contracts, are driving our previous results.

9. Conclusion.

An extensive theoretical literature in relational contracts (e.g. Telser, 1980; Klein and Leffler, 1981; Williamson, 1983, 1985; Klein and Murphy, 1988) argues that the party acting as the principal can improve the self-enforceability of the agreement by specifying conditions/requirements in the contract that ultimately increase the rents that the party acting as the agent forgoes in case of contract

[44] For example, brand/parent fixed effects should capture differences in monitoring intensity/efforts between brands or parents of different sizes and quality; location fixed-effects and our market controls should capture different types of clientele as business travelers are more likely to stay near an airport or in highly populated locations.

[45] Due to perfect failure/success determination (i.e., many parents operate only low/high quality hotels as company managed) several hotels were dropped in Column III. Our conclusions remain if we do not include parent fixed effects.

termination. This argument — and its interplay with the principal's monitoring intensity — have not been empirically explored yet, due to the lack of detailed data and suitable empirical setting necessary to test such hypotheses.

In this paper, we utilize a very detailed proprietary data on hotel franchising to test for the use of initial conditions/requirements, such as size and/or quality-tier of establishment, in self-enforcing mechanisms. Our sample contains information on 5,547 new franchised hotels that started their operations between the years 2000 and 2008, and their subsequent revenue information. We find that controlling for observable hotel and market characteristics, as well as unobserved differences (i.e. fixed effects) across states, hotel location (e.g. urban vs. rural), brands (or parents) and years, franchised hotels that are far away from their parents' headquarters (and thus are more costly to monitor) tend to be required to have more rooms, are more likely to be a high quality property, and generate higher revenues. However, we also find that such revenue premium of far away hotels is, in turn, largely explained by the size and quality requirements specified by the franchisor when the hotel starts its operations. These results are robust across various alternative specifications we estimate. Overall, our findings are consistent with a bonding strategy and the idea that the agent's ex-post rents can serve as a substitute to franchisor's monitoring intensity in the mitigation of agency problems.

Our paper contributes to the literature on relational contracts by providing one of the first evidence that initial conditions/requirements can be strategically used to modify the ex-post rents in the agreements. In much broader context, our findings also relate to the recent literature on the role of trust in self-enforcement agreements (see Malcomson 2012). This literature suggests that trust can affect the amount of rents needed to sustain the agreement. Thus, one may expect that trust could also affect the initial requirements/conditions such as size and quality of an establishment that the

principal asks of the agent. We leave the analysis of the interplay between trust, monitoring intensity and rents for future research.

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Figure 1: Room Supply and Revenues of Franchised Hotels before and after Parent Change

Figures 1A and 1B are constructed using hotel-level monthly data for franchised hotels that changed a parent company during our sample period (2000-2008), regardless whether they opened during this period or not. There are 638 franchised hotels that changed a parent and for which we have the data on the exact month when a parent company changed. In the figures the attention is restricted to those franchised hotels for which we have data for at least 24 months before, and 12 months after, the parent change. There are 354 such hotels, but there are only 35 hotels for which the monthly data is complete (no missing observations). In the figures, we define period 0 as the month in which a hotel started to operate under a new parent. Figure 1A plots the average number of supplied rooms that hotels offer in the months before and the months after the change of a parent. The blue (upper) line shows the average number of rooms supplied for all 354 hotels for which there is information for the period of [-24, 12] months. The brown (lower) line shows the average number of rooms supplied for the 35 hotels for which there is information for the period of [-24, 12] months, and for which we have non-missing observations during all 37 months. Figure 1B plots the average monthly revenues. In both figures, two yellow vertical lines indicate the periods of [-6, +2] months, during which both room supply and revenues experienced the largest drop.

Figure 1A

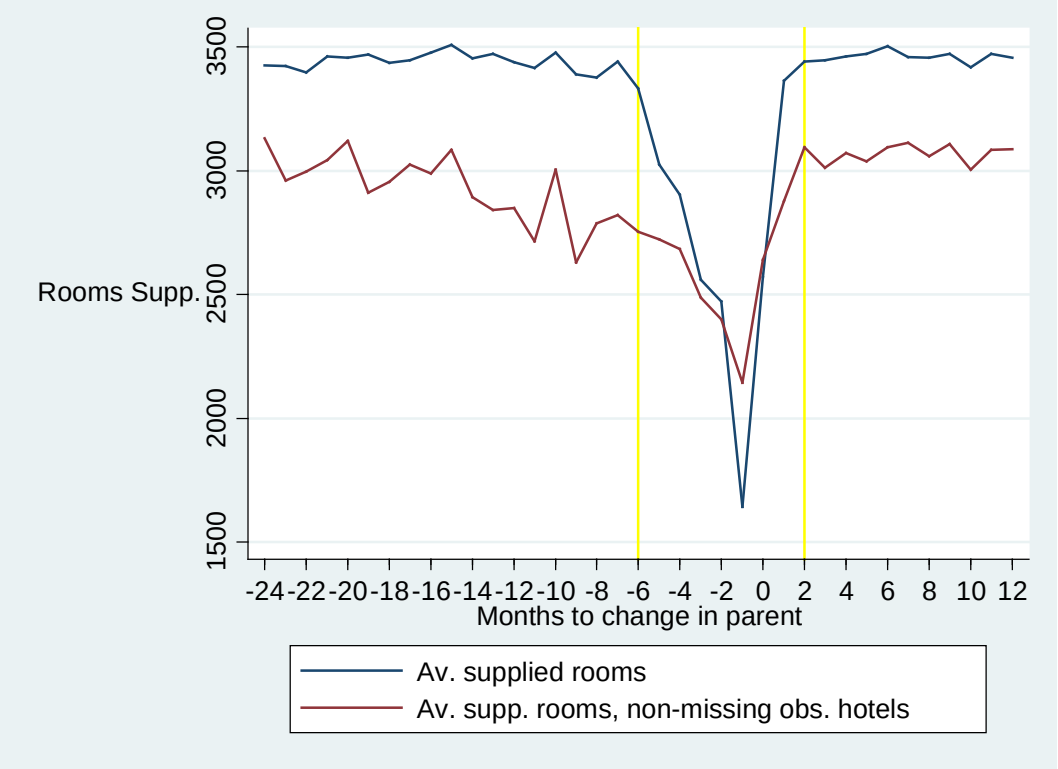

Figure 1B

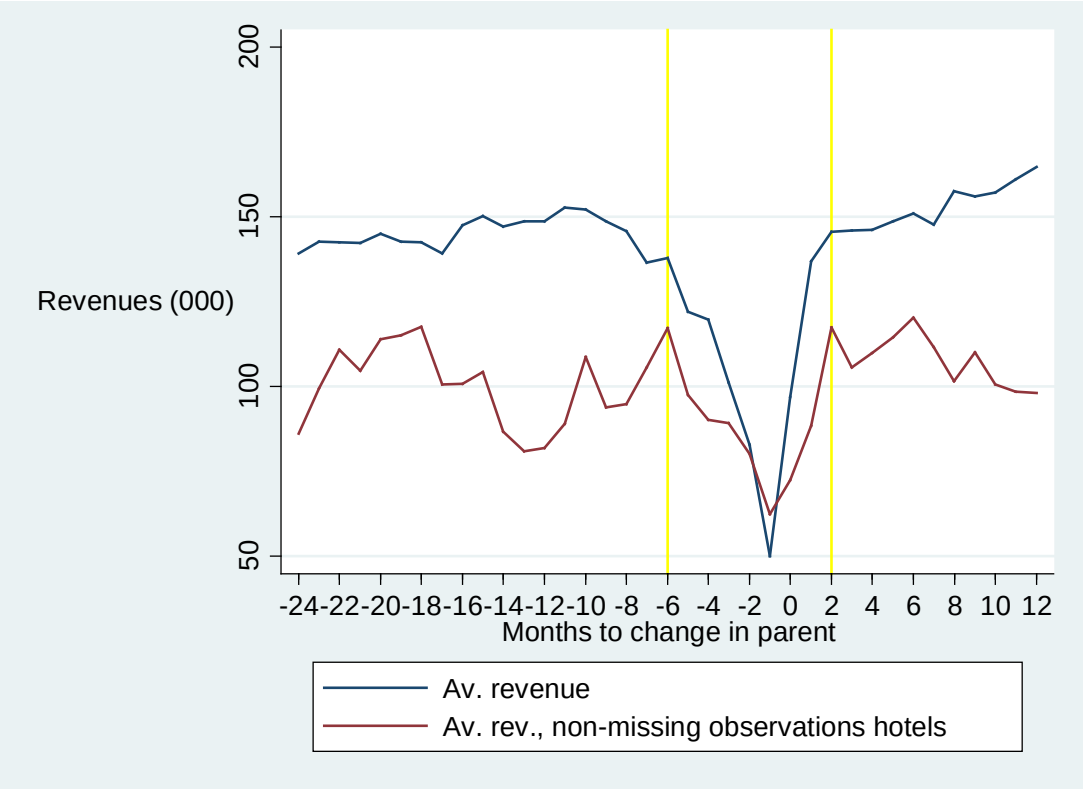
Revenues (000)
50
100
150
200
-24 -22 -20 -18 -16 -14 -12 -10 -8 -6 -4 -2 0 2 4 6 8 10 12
Months to change in parent
Av. revenue
Av. rev., non-missing observations hotels

Table 1: Summary Statistics

Panels A-D show descriptive statistics of our sample. Panel A shows the hotel characteristics of 5,547 new franchised hotels opened during 2000-2008. The dummy Far takes a value of 1 if the distance between the midpoint of the hotel's parent region and the hotel's state is more than 1,500 miles, and 0 otherwise. The dummy High-quality takes a value of 1 if the hotel is High-quality (upscale, upper upscale and few luxury properties) and 0 otherwise (economy and midscale properties). Panel B describes the distribution of hotels in our sample across different type of locations. Panel C shows the frequency of entrants for each year in our sample. Panel D shows the age and yearly averages of monthly revenues for the 5,547 hotels, from the year of opening until the end of our sample in 2008, together with the market characteristics (at county level). In total there are 20,240 hotel-year observ. in Panel D.

Panel A

Variable	Mean	St. Dev.	Min	Max	N Parents	N Brands	N Hotels
Rooms	91.8	49.95	20	1100	18	85	5547
Far	0.229	0.42	0	1	18	85	5547
High-quality	0.230	0.42	0	1	18	85	5547
All Suites	0.243	0.43	0	1	18	85	5547
Convention	0.003	0.06	0	1	18	85	5547
Conference	0.001	0.02	0	1	18	85	5547
Spa	0.006	0.08	0	1	18	85	5547
Golf	0.001	0.03	0	1	18	85	5547
Ski	0.001	0.02	0	1	18	85	5547
Restaurant	0.113	0.32	0	1	17	83	5418

Panel B

Location	N	% of total
Urban	373	6.7%
Suburban	2460	44.3%
Airport	356	6.4%
Interstate	918	16.5%
Resort	130	2.3%
Small Town	1310	23.6%
Total	5547	100%

Panel C

Year Opened	N	% of total
2000	765	13.8%
2001	768	13.8%
2002	533	9.6%
2003	438	7.9%
2004	395	7.1%
2005	465	8.4%
2006	412	7.4%
2007	763	13.8%
2008	1008	18.2%

Panel D

Variable	Mean	St. Dev.	Min	Max	N
Monthly Revenues (000)	187.2	204.6	5.7	4913.5	20240
Age	4.4	2.1	1	9	20240
Other Hotels of the Same Parent (Franchised)	2.9	4.6	0	40	20240
Other Hotels of the Same Parent (Company Managed)	0.3	0.9	0	8	20240
Hotels of Different Parents	25.2	34.4	0	205	20240
Median HH Income (000)	48.3	12.7	19	112	20240
Population (000)	648.2	1130.8	4	9808	20240
Unemployment Rate (%)	5.09	1.52	1.5	22.4	20240
Art, Recreation and Entertainment Establishments	275.4	886.9	1	11464	20240
Food and Drinking Establishments	1207	2048.5	2	18280	20240
Accommodation Establishments	104.4	148.4	1	1260	20240

Table 2: Mean Comparisons between Close and Far Away Hotels

The table shows franchised hotel rooms, whether a hotel is High-quality or not, and county market characteristics in the year of hotel entry, sorted by the dummy Far. The end the table also shows the average monthly revenues for the initial years of operations of the entering properties, sorted by the dummy Far. Significant at: *10%, **5% and ***1%.

Variable	Far=0 (N=4278)	Far=1 (N=1269)	Difference (Far=1-Far=0)
Rooms	87.54	106.15	18.61***
High-quality	0.20	0.35	0.15***
Other Hotels of the Same Parent (Franchised)	2.64	2.72	0.08
Other Hotels of the Same Parent (Company Managed)	0.28	0.28	0.00
Hotels of Different Parents	22.10	24.60	2.5**
Median HH Income (000)	45.87	48.53	2.66***
Population (000)	563.57	800.91	237.37***
Unemployment Rate	4.78	5.17	0.39***
Art, Recreation and Entertainment Establishments	217.2	407.2	190***
Food and Drinking Establishments	1014.7	1466.8	452.1***
Accommodation Establishments	91.1	127.3	36.2***
Monthly Revenues (000)	165.7 (N=15768)	262.6 (N=4472)	96.9***

Table 3: Hotel Size and Quality Tier of New Franchised Hotels

The table shows the cross-sectional estimations of the determinants of the size (number of rooms) of the new hotels and whether a new hotel is high-quality or not. The sample contains 5,547 new franchised hotels opened during 2000- 2008. Column I exploits the within brand variation, while Column II exploits the within parent variation. Column III estimates a standard logit model using the variable High-quality as dependent variable, exploiting within parent variation (Note: some observations are dropped from the regression in Column III to avoid perfect success/failure determination problem as some parents opened only High-quality hotels. For the same reason we cannot estimate the probability that a given brand is High-quality; brands perfectly determine whether a hotel is High-quality or not). Significant at: *10%, **5% and ***1%. Standard errors are adjusted for heteroscedasticity and clusters at brand (Col. I) or parent level (Col. II-III).

Variable	log(rooms)	log(rooms)	High-quality
Far	0.0258*	0.0174**	0.1785***
	(0.0132)	(0.0075)	(0.0533)
Other Hotels of the same parent (Franchised)	-0.0055***	-0.0090***	-0.0071
	(0.0016)	(0.0016)	(0.0071)
Other Hotels of the same parent (Company Managed)	0.0105	0.0097	0.1435**
	(0.0068)	(0.0074)	(0.0631)
Hotels of different parents	-0.0000	0.0002	-0.0053*
	(0.0003)	(0.0004)	(0.0030)
Log(Income)	0.0386*	0.0865**	0.1337*
	(0.0196)	(0.0376)	(0.0770)
Log(Popul.)	0.0104	0.0052	-0.1749*
	(0.0156)	(0.0124)	(0.0984)
Unemployment	-0.0002	-0.0038	-0.1319*
	(0.0030)	(0.0031)	(0.0703)
Log(AE&R estab.)	0.0036	0.0057	-0.1317
	(0.0119)	(0.0119)	(0.1392)
Log(F&D estab.)	0.0357**	0.0535*	0.6632***
	(0.0169)	(0.0260)	(0.1244)
Log(Acc. estab.)	0.0133	0.0239*	0.1982**
	(0.0084)	(0.0132)	(0.0833)
Location Dummies	Yes	Yes	Yes
Parent Fixed Effects	No	Yes	Yes
Brand Fixed Effects	Yes	No	No
Year-Fixed Effects	Yes	Yes	Yes
Hotel State Fixed Effects	Yes	Yes	Yes
R-squared	0.7	0.492	0.4139
N	5547	5547	5243

Table 4: Revenue Panel Regressions: Within Brand Variation

The table shows the brand fixed effects estimations of the determinants of the revenues, for 5,547 new franchised hotels opened during 2000-2008, using 20,240 hotel-year observations. The dependent variable is the logarithm of a hotel's yearly average of monthly revenues. Column IV also includes the Mundlak's (1978) correction for hotel unobserved (correlated) heterogeneity that we model as a vector of hotel-level means of time varying county market characteristics included as controls, namely: income, population, unemployment and number of establishments across the three related industries. Columns II-IV contain fewer observations as the dummy variable Restaurant have some missing values. Significant at: *10%, **5% and ***1%. Standard errors are adjusted for heteroscedasticity and clusters at brand level.

Variable	log(rev)	log(rev)	log(rev)	log(rev)
Far	0.0464**	0.0447**	0.0165	0.0158
	(0.0187)	(0.0184)	(0.0131)	(0.0129)
Other Hotels of the Same Parent (Franchised)	-0.0140***	-0.0142***	-0.0075***	-0.0076***
	(0.0027)	(0.0027)	(0.0019)	(0.0019)
Other Hotels of the Same Parent (Company Managed)	0.0287**	0.0294**	0.0051	0.0052
	(0.0117)	(0.0118)	(0.0075)	(0.0075)
Hotels of Different Parents	-0.0009**	-0.0008**	-0.0006*	-0.0007*
	(0.0004)	(0.0004)	(0.0004)	(0.0004)
Log(Income)	-0.0232	-0.0236	-0.0550**	0.0951
	(0.0290)	(0.0288)	(0.0212)	(0.0760)
Log(Popul.)	-0.0440	-0.0441	-0.0266	0.4641***
	(0.0344)	(0.0343)	(0.0210)	(0.0746)
Unemployment	-0.0232***	-0.0232***	-0.0236***	-0.0404***
	(0.0052)	(0.0054)	(0.0044)	(0.0041)
Log(AE&R Estab.)	0.0247	0.0290*	0.0309**	-0.0119
	(0.0182)	(0.0174)	(0.0145)	(0.0120)
Log(F&D Estab.)	0.1348***	0.1285***	0.0483*	-0.0500
	(0.0426)	(0.0430)	(0.0266)	(0.0343)
Log(Acc. Estab.)	0.0161	0.0122	0.0112	-0.0230
	(0.0141)	(0.0155)	(0.0114)	(0.0142)
Age	0.0110**	0.0118***	0.0102***	0.0069***
	(0.0043)	(0.0043)	(0.0018)	(0.0023)
All Suites		0.1161**	0.0803**	0.0810**
		(0.0550)	(0.0400)	(0.0400)
Convention		0.5108***	0.0575	0.0591
		(0.0823)	(0.0741)	(0.0741)
Conference		-0.4310*	-0.2376	-0.2375
		(0.2319)	(0.1791)	(0.1789)
Spa		0.0454	0.0228	0.0244
		(0.1431)	(0.0868)	(0.0874)
Golf		0.3611	0.0967	0.0978
		(0.2451)	(0.1637)	(0.1625)
Ski		0.2206***	0.0255	0.0297
		(0.0748)	(0.0501)	(0.0506)
Restaurant		0.1618***	0.0101	0.0101
		(0.0508)	(0.0210)	(0.0211)
log(rooms)			1.0185***	1.0181***
			(0.0200)	(0.0200)
Location Dummies	Yes	Yes	Yes	Yes
Parent Fixed Effects	No	No	No	No
Brand Fixed Effects[#]	Yes	Yes	Yes	Yes
Year-Fixed Effects	Yes	Yes	Yes	Yes
Hotel State Fixed Effects	Yes	Yes	Yes	Yes
Mundlak Unobs. Heter. Correction	No	No	No	Yes
R-squared	0.8	0.8	0.89	0.89
N	20240	19950	19950	19950

Brand fixed effects perfectly determine whether a hotel is High-quality or not, so High-quality dummy is not included.

Table 5: Revenue Panel Regressions: Within Parent Variation

The table shows the parent-company fixed effects estimations of the determinants of the revenues for 5,547 new franchised hotels opened during 2000-2008, using 20,240 hotel-year observations. The dependent variable is the logarithm of a hotel's yearly average of monthly revenues. Column V also includes the Mundlak's (1978) correction for hotel unobserved (correlated) heterogeneity that we model as a vector of hotel-level means of time varying county market characteristics included as controls, namely: income, population, unemployment and number of establishments across the three related industries. Columns III-V contain fewer observations as the dummy variable Restaurant have some missing values. Significant at: *10%, **5% and ***1%. Standard errors are adjusted for heteroscedasticity and clusters at parent level

Variable	log(rev)	log(rev)	log(rev)	log(rev)	log(rev)
Far	0.0228*	0.0214	0.0204	0.0143	0.0138
	(0.0122)	(0.0136)	(0.0128)	(0.0090)	(0.0089)
Other Hotels of the Same Parent (Franchised)	-0.0174***	-0.0174***	-0.0157***	-0.0072***	-0.0073***
	(0.0030)	(0.0025)	(0.0024)	(0.0020)	(0.0020)
Other Hotels of the Same Parent (Company Managed)	0.0416***	0.0342***	0.0362***	0.0077	0.0078
	(0.0089)	(0.0069)	(0.0077)	(0.0067)	(0.0067)
Hotels of Different Parents	-0.0010	-0.0011*	-0.0012**	-0.0008**	-0.0008**
	(0.0007)	(0.0006)	(0.0005)	(0.0004)	(0.0004)
Log(Income)	0.0354	0.0144	0.0004	-0.0644***	0.1366*
	(0.0513)	(0.0474)	(0.0469)	(0.0200)	(0.0745)
Log(Popul.)	-0.0575	-0.0480	-0.0475	-0.0224	0.4784***
	(0.0564)	(0.0525)	(0.0528)	(0.0236)	(0.0741)
Unemployment	-0.0268**	-0.0225**	-0.0228**	-0.0242***	-0.0385***
	(0.0093)	(0.0092)	(0.0094)	(0.0061)	(0.0049)
Log(AE&R Estab.)	0.0498**	0.0451**	0.0467**	0.0375**	-0.0094
	(0.0195)	(0.0204)	(0.0207)	(0.0147)	(0.0074)
Log(F&D Estab.)	0.1622**	0.1481**	0.1371**	0.0405	-0.0472*
	(0.0656)	(0.0590)	(0.0626)	(0.0265)	(0.0260)
Log(Acc. Estab.)	0.0137	0.0165	0.0122	0.0073	-0.0214
	(0.0187)	(0.0141)	(0.0136)	(0.0091)	(0.0162)
Age	0.0047	0.0089*	0.0110**	0.0098***	0.0054
	(0.0050)	(0.0050)	(0.0049)	(0.0020)	(0.0031)
High-quality		0.4690***	0.2846***	0.1130*	0.1136*
		(0.0308)	(0.0607)	(0.0539)	(0.0538)
All Suites			0.0933	0.0449	0.0450
			(0.0640)	(0.0338)	(0.0338)
Convention			0.9469***	0.0300	0.0328
			(0.1058)	(0.1140)	(0.1132)
Conference			-0.3456***	-0.2417***	-0.2411***
			(0.0497)	(0.0801)	(0.0790)
Spa			0.3965**	0.1029	0.1047
			(0.1430)	(0.0613)	(0.0615)
Golf			0.3360***	0.0656	0.0651
			(0.0492)	(0.0814)	(0.0795)
Ski			0.3003**	0.0955**	0.0992**
			(0.1297)	(0.0449)	(0.0434)
Restaurant			0.3840***	-0.0020	-0.0018
			(0.0580)	(0.0321)	(0.0318)
log(Rooms)				1.1001***	1.0994***
				(0.0441)	(0.0436)
Location Dummies	Yes	Yes	Yes	Yes	Yes
Parent Fixed Effects	Yes	Yes	Yes	Yes	Yes
Brand Fixed Effects	No	No	No	No	No
Year-Fixed Effects	Yes	Yes	Yes	Yes	Yes
Hotel State Fixed Effects	Yes	Yes	Yes	Yes	Yes
Mundlak Unobs. Heter. Correction	No	No	No	No	Yes
R-squared	0.66	0.7	0.73	0.87	0.87
N	20240	20240	19950	19950	19950

Table 6: Hotel Size and Quality Tier of New Franchised Hotels - Single Parent Analysis

This table replicates the results from Table 3, but using data of a single parent company for which we were able to obtain both - the zip code of its headquarters and the zip code of the franchised hotels. The sample contains 1,177 new franchised hotels opened during 2000-2008, under 8 different brands of this parent. The dependent variable of Columns I and II is the logarithm of number of rooms. Column III shows standard logit model estimates, using the dummy High-quality as a dependent variable. The main explanatory variable is the variable "Distance", which measures in 1000s of miles the distance between the franchisor-headquarters' zip code and the hotel's zip code. Column I exploits within brand variation. Columns II and III exploit the overall variation for this parent. Significant at: *10%, **5% and ***1%. Standard errors are adjusted for heteroscedasticity in all columns and clusters at brand level in Column I.

Variable	log(rooms)	log(rooms)	High-quality
Distance (000)	0.0591**	0.0454***	0.1003
	(0.0171)	(0.0141)	(0.1027)
Other Hotels of the Same Parent (Franchised)	0.0021	-0.0042	-0.0215
	(0.0051)	(0.0055)	(0.0389)
Other Hotels of the Same Parent (Company Managed)	0.0060	-0.0020	0.1065
	(0.0120)	(0.0171)	(0.1216)
Hotels of Different Parents	-0.0009	-0.0002	-0.0023
	(0.0010)	(0.0007)	(0.0052)
Log(Income)	0.0987**	0.1056**	0.0638
	(0.0364)	(0.0505)	(0.3706)
Log(Popul.)	0.0079	-0.0167	-0.2468
	(0.0306)	(0.0371)	(0.2828)
Unemployment	-0.0026	-0.0159**	-0.2339***
	(0.0065)	(0.0074)	(0.0625)
Log(AE&R Estab.)	-0.0148	-0.0139	-0.2427
	(0.0134)	(0.0292)	(0.2211)
Log(F&D Estab.)	0.0838*	0.1274***	0.7068*
	(0.0399)	(0.0486)	(0.3758)
Log(Acc. Estab.)	-0.0044	-0.0042	0.1621
	(0.0177)	(0.0224)	(0.1737)
Location Dummies	Yes	Yes	Yes
Brand Fixed Effects	Yes	No	No
Year-Fixed Effects	Yes	Yes	Yes
R-squared	0.64	0.32	0.1
N	1177	1177	1177

Table 7: Revenue Panel Regressions - Single Parent Analysis

This table replicates the results from Table 4, but using data of a single parent company for which we were able to obtain both - the zip code of its headquarters and the zip code of the franchised hotels. The sample contains 4,044 hotel-year observations for 1,177 new franchised hotels opened during 2000-2008, under 8 brands of this parent. The dependent variable is the logarithm of a hotel's yearly average of monthly revenues. The main explanatory variable is the variable "Distance", which measures in 1000s miles the distance between the franchisor-headquarter's zip code and the hotel's zip code. All columns exploit within brand variation. Column IV also includes the Mundlak's (1978) correction for hotel unobserved (correlated) heterogeneity that we model as a vector of hotel-level means of time varying county market characteristics included as controls, namely: income, population, unemployment and number of establishments across the three related industries. The dummy variable Ski is dropped, as this parent has no hotels near a ski resort. Columns II-IV contain fewer observations as the dummy variable Restaurant have some missing values. Significant at: *10%, **5% and ***1%. Standard errors are adjusted for heteroscedasticity and clusters at brand level

Variable	log(rev)	log(rev)	log(rev)	log(rev)
Distance (000)	0.1213***	0.1187***	0.0172	0.0181
	(0.0229)	(0.0223)	(0.0199)	(0.0192)
Other Hotels of the Same Parent (Franchised)	-0.0007	-0.0013	0.0002	0.0001
	(0.0042)	(0.0035)	(0.0033)	(0.0035)
Other Hotels of the Same Parent (Company Managed)	0.0610***	0.0575***	0.0139*	0.0121*
	(0.0142)	(0.0139)	(0.0061)	(0.0061)
Hotels of Different Parents	-0.0030***	-0.0029***	-0.0020***	-0.0020***
	(0.0007)	(0.0007)	(0.0004)	(0.0004)
Log(Income)	0.1282*	0.1311*	0.0819***	0.0772
	(0.0624)	(0.0649)	(0.0233)	(0.1532)
Log(Popul.)	0.0029	-0.0007	0.0415	0.7422***
	(0.0382)	(0.0392)	(0.0231)	(0.1277)
Unemployment	-0.0390***	-0.0378***	-0.0288**	-0.0326***
	(0.0100)	(0.0105)	(0.0083)	(0.0056)
Log(AE&R Estab.)	0.0214	0.0230	0.0362*	-0.0349
	(0.0340)	(0.0318)	(0.0157)	(0.0347)
Log(F&D Estab.)	0.1191	0.1221	-0.0519	-0.1877*
	(0.0635)	(0.0645)	(0.0392)	(0.0817)
Log(Acc. Estab.)	0.0407	0.0354	0.0783***	-0.0481***
	(0.0270)	(0.0267)	(0.0166)	(0.0087)
Age	0.0147*	0.0173*	0.0098**	0.0090
	(0.0077)	(0.0075)	(0.0038)	(0.0056)
All Suites		0.3441	0.2883***	0.2878***
		(0.1997)	(0.0737)	(0.0733)
Convention		0.4527**	0.1790	0.1791
		(0.1530)	(0.1417)	(0.1422)
Conference		-0.4620*	-0.2033	-0.2004
		(0.2335)	(0.1510)	(0.1505)
Spa		0.2369***	-0.1044**	-0.1034*
		(0.0482)	(0.0439)	(0.0447)
Golf		0.4628***	0.2510***	0.2482***
		(0.0422)	(0.0422)	(0.0439)
Restaurant		0.0961**	-0.0099	-0.0097
		(0.0278)	(0.0155)	(0.0154)
log(Rooms)			1.0376***	1.0384***
			(0.0170)	(0.0172)
Location Dummies	Yes	Yes	Yes	Yes
Brand Fixed Effects[#]	Yes	Yes	Yes	Yes
Year-Fixed Effects	Yes	Yes	Yes	Yes
Mundlak Unobs. Heter. Correction	No	No	No	Yes
R-squared	0.69	0.7	0.87	0.87
N	4044	4036	4036	4036

Brand fixed effects perfectly determine whether a hotel is High-quality or not, so High-quality dummy is not included.

Table 8: Does Distance to Regional Offices Matter?

This table replicates the single-parent results from Table 6, while including "Min. Distance to Regional Office" - the minimum distance between a hotel and the parent's 6 regional offices – in addition to variable "Distance" (the distance between the franchisor-headquarters' zip code and the hotel's zip code in 1000s miles). "Controls" represent the vector of control variables included in Table 6. The sample contains 1,177 new franchised hotels opened during 2000-2008, under 8 different brands of this parent. The dependent variable of Columns I and II is the logarithm of number of rooms. Column III shows standard logit model estimates, using the dummy High-quality as a dependent variable. Columns II and III exploit the overall variation for this parent. Significant at: *10%, **5% and ***1%. Standard errors are adjusted for heteroscedasticity in all columns and clusters at brand level in Column I.

Variable	log(rooms)	log(rooms)	High-quality
Distance (000)	0.0672**	0.0536***	0.1558
	(0.0196)	(0.0151)	(0.1106)
Min. Distance to Reg. Off.	0.0723	0.0755	0.5136
	(0.0612)	(0.0509)	(0.3737)
Controls	Yes	Yes	Yes
Location Dummies	Yes	Yes	Yes
Brand Fixed Effects	Yes	No	No
Year-Fixed Effects	Yes	Yes	Yes
R-squared	0.64	0.31	0.11
N	1177	1177	1177

Table 9: Distance Measure Decomposed into Several Ranges

This table replicates the single-parent results from Table 6, while dividing the continuous measure of distance between hotels and their parent's headquarters into 5 exclusive ranges - represented by dummy variables (omitted range represent hotels located in a distance up to 500 miles from the headquarters). "Controls" represent the vector of control variables reported in Table 6. The sample contains 1,177 new franchised hotels opened during 2000-2008, under 8 different brands of this parent. The dependent variable in Columns I and II is the logarithm of number of rooms. Column III shows standard logit model estimates, using the dummy High-quality as a dependent variable. Columns II and III exploit the overall variation for this parent. Standard errors are adjusted for heteroscedasticity in all columns and clusters at brand level in Column I. Significant at: *10%, **5% and ***1%. (Note: In Col. III, the coefficient for dummy 500<Distance<1000 is only marginally significant at 10%; p-value is 9%).

Variable	log(rooms)	log(rooms)	High-quality
500<Distance<=1000	0.0300	0.0338	0.5670*
	(0.0770)	(0.0447)	(0.3307)
1000<Distance<=1500	0.0259	0.0471	0.3472
	(0.0675)	(0.0393)	(0.2900)
1500<Distance<=2000	0.0774	0.1007***	0.6582**
	(0.0519)	(0.0372)	(0.2733)
Distance>2000	0.1182*	0.1024***	0.3895
	(0.0506)	(0.0357)	(0.2619)
Controls	Yes	Yes	Yes
Location Dummies	Yes	Yes	Yes
Brand Fixed Effects	Yes	No	No
Year-Fixed Effects	Yes	Yes	Yes
R-squared	0.64	0.32	0.11
N	1177	1177	1177

Table 10: Hotel Size and Quality Tier of New Company Managed Hotels.

This table replicates our size and quality tier results in Table 3, but now for 488 new hotels that were opened as company managed during 2000-2008. The control variables "Controls" (reported in Table 3) are adjusted to reflect that the focal hotel now is a company managed rather than franchised. Column I exploits the within brand variation, while column II exploits the within parent variation. Column III estimates a standard logit model using High-quality dummy as the dependent variable and exploiting within parent variation. Significant at: *10%, **5% and ***1%. Standard errors are adjusted for heteroscedasticity and clusters at brand level (Col. I) or parent level (Col. II-III).

Variable	log(rooms)	log(rooms)	High-quality
Far	0.0115	-0.1578	-0.6480*
	(0.0565)	(0.1119)	(0.3498)
Controls	Yes	Yes	Yes
Location Dummies	Yes	Yes	Yes
Parent Fixed Effects	No	Yes	Yes
Brand Fixed Effects	Yes	No	No
Year-Fixed Effects	Yes	Yes	Yes
Hotel State Fixed Effects	Yes	Yes	Yes
R-squared	0.83	0.58	0.44
N	488	488	251

Appendix

Table A: Parent Companies' Headquarters location by U.S. Census Regional Divisions.

U.S. Census Regional Divisions	Divison name	States	# parent companies operating in the U.S.
1	New England	Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, Connecticut	0
2	Mid-Atlantic	New York, Pennsylvania, New Jersey	3
3	East North Central	Wisconsin, Michigan, Illinois, Indiana, Ohio	2
4	West North Central	Missouri, North Dakota, South Dakota, Nebraska, Kansas, Minnesota, Iowa	4
5	South Atalntic	Delaware, Maryland, District of Columbia, Virginia, West Virginia, North Carolina, South Carolina, Georgia, Florida	7
6	East South Central	Kentucky, Tennessee, Mississippi, Alabama	3
7	West South Central	Oklahoma, Texas, Arkansas, Louisiana	3
8	Mountain	Idaho, Montana, Wyoming, Nevada, Utah, Colorado, Arizona, New Mexico	0
9	Pacific	Alaska, Washington, Oregon, California, Hawaii	5
Total			**27**