

**An Empirical Analysis of Self-Enforcement Mechanisms:
Evidence from Hotel Franchising**

Management Science, forthcoming

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May 2016

Abstract*

The relational contracts literature suggests that a principal can improve contract self-enforceability by specifying initial 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 proprietary 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 belong to a high-quality tier, 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. Our findings shed light on how formal contract terms can influence informal (relational) contracts between business partners.

* We would like to thank to Smith Travel Research for providing us the data and the Centre for Hospitality Research at Cornell University for facilitating access to the data. We thank Roger Betancourt, Praveen Kumar, Fernando Luco, Radoslav Raykov, Bruno Cassiman (Department Editor), an anonymous Associate Editor and three anonymous referees for their helpful comments. We also thank seminar participants at Universidad Finis Terrae, and participants at ISNIE and the International Industrial Organization Conference for additional suggestions. Sertsios acknowledges funding from Proyecto Fondecyt Regular #1160037.

1. Introduction.

Self-enforcing 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. As a result, the threat of contract termination prevents the agent's misbehavior if the agent generates higher rents in the relationship with the principal than outside such relationship. Even if contracts are enforceable by law, many dimensions of the parties' behavior or performance cannot be contracted upon due to numerous contingencies and information asymmetries. Thus, self-enforcing agreements are pervasive in business relations (e.g. Gil and Marion, 2013; Gil and Zanmarone, 2015), either as purely informal contracts (e.g. Levin, 2003), or in combination with formal contracts (Zanmarone, 2013). In the context of interactions between formal and informal contracting, 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 requirements in the contract that ultimately increase the rents that the agent forgoes in case of contract termination. The empirical validity of this argument, however, remains very much unexplored.

Testing such argument requires a detailed dataset and a suitable empirical context. The data has to contain information on the requirements that the principal imposes on the agent at the time when the agreement is made (henceforth "initial requirements") as well as information on the agent's ex-post rents. There also 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 these data demands need to be satisfied in an empirical setting in which it is possible to isolate the self-enforcement mechanism from other confounding factors.

Our goal is to fill this gap in the literature by bringing more evidence 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. To do so we exploit detailed data on franchised hotels. Franchising features of the hotel industry and our data make the empirical setting quite unique.

Our data contains market and property characteristics for more than 5,500 new hotels that were opened as franchised units across 85 brands, belonging to 18 parent companies. We also have detailed revenue data for these hotels, not only for their initial year, but also for their subsequent years of operation during the 2000-2008 period. This is important as revenue management industries, such as lodging, are characterized by high initial fixed costs and small marginal costs. Thus, hotels' ex-post rents are proportional to their revenues. Notably, as we show in Section 3, the costs of contract termination are in turn proportional to hotel revenues that a franchisee (agent) generates under the agreement as well. Importantly, franchised hotels by 2009 represented about 80% of all branded hotels in the U.S.

Additionally, unlike other contexts, hotel franchising makes an ideal setting to test for self-enforcing agreements: one can more easily identify and measure the initial 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. Specifically, we 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 a new hotel is launched and are either very costly or impossible to change after a hotel is built. These characteristics are positively correlated with forgone hotel revenues if the franchise contract is terminated.

Given our setting, we were also able to obtain information that can explain the principal's need to modify the contract initial requirements and ex-post rents, from a self-enforcing perspective. In particular, we can determine the location of a hotel and the geographic division where the franchisor's headquarters (HQ) is located. Based on that we construct a binary measure of distance (far vs. close) between a franchisor's HQ and its franchised hotels. Following the agency theory and franchising literatures (e.g. Rubin, 1978; Brickley and Dark, 1987) we exploit this variation to capture the franchisor's monitoring costs, and use it to 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 might be too costly and franchisees may shirk on their services and free-ride on the franchisor's brand-name. As a result, the 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 franchisees' free-riding incentives.¹

We find that controlling for observable county and hotel characteristics as well as unobserved parent/brand, hotel locations and year fixed-effects, franchised hotels are larger and more likely to belong to a high quality-tier when they are far away from the franchisor's HQ. Specifically, hotels more than 1,500 miles away from their HQ, tend to be about 2-3 rooms larger (the average sample size is 92 rooms), and are 21% more likely to be designed as high quality-tier hotels. They also generate significantly higher revenues than hotels that are closer to their parents. 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. For this company we were able to obtain the exact zip-code distances between its HQ and individual hotels and construct thus a continuous measure of distance.

Our findings suggest that the principal (franchisor) is indeed able to utilize the initial requirements of the agreement (in this case the size and quality-tier of the property) to increase the agent's ex-post rents when the 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 the 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 the franchisor's regional offices might be more important than the distance to HQ (emphasized in the literature) when resolving the agency problem. We find that the distance to HQ remains relevant while the distance to the closest regional office is always insignificant. This is actually consistent with the business

¹ See Betancourt (2004) for a broader discussion of these issues in the context of franchise systems.

practice in hotel industry; namely, that brand reviews are typically conducted by personnel working at the HQ office, while regional offices typically manage clients and deal with sales.

Second, using our rich data on nearly entire population of US hotels we construct a dataset — similar to our franchised sample — on company managed hotels opened during our sample period. We use this dataset to perform “placebo” regressions. If far away hotels are larger and more likely to be in a high quality-tier for other reasons than a self-enforcement 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 HQ are neither larger nor more likely be in a high quality-tier. Such important differences in findings further document that it is quite unlikely that alternative hypotheses, rather than self-enforcement mechanism in franchised contracts, are driving our conclusions. Third, exploiting cross-states differences in good-cause termination laws, further analyses also reject other alternative hypotheses, such as franchisee selection and court-enforcement.

Overall, our findings bring important implications for the relational contracts and franchising literatures. Empirical papers so far have shown that relational contracts help explain business patterns in several contexts, and that trust, reputation or temptation to renege on the agreement can affect such relations. Many of these studies (e.g., McMillan and Woodruff, 1999; Macchiavello and Morjaria, 2015a, 2015b; Antras and Foley, 2015) analyze relational contracts in contexts where formal contracting and its enforcement is lacking. They also largely focus on the mechanisms embedded in the value of prior interactions between the parties. We extend this literature by bringing evidence on self-enforcement mechanisms in a developed country context (similarly as e.g., Gil and Marion, 2013) and show how formal contracting can help sustain relational contracts. Precisely, we are the first to document that initial requirements specified in a formal contract can be used to increase one party’s ex-post rents and boost its

self-enforcing features.² Studies in franchising (e.g., Kaufman and Lafontaine, 1994; Michael and Moore, 1995) have documented that ex-post rents, which could act as disciplinary device to control an agent's behavior, indeed exist. However, no study has explored empirically the link between the self-enforcing role of the initial requirements of the agreements, and the agent's ex-post rents.

Our paper also 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.³ We show that, at least in the hotel franchising context, requirements on size and quality-tier of a hotel 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 generated by such up-front investments. 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-tier hotel should guarantee better self-enforcing conditions, for any given level of asset specificity in the investments. Such bonding strategy is consistent with Sertsios (2015), who finds that higher amounts of initial investments required from franchisees are associated with franchisors that have weaker termination rights. Our results shed light on how up-front investment requirements — that can increase the ex-post rents an agent generates under a contractual relationship — are utilized in self-enforcing agreements.⁴

The rest of the paper is organized as follows. Section 2 describes the hotel industry structure and organizational forms, including franchising. Section 3 discusses prior literature and the hypotheses to be

² Malcomson (2013) provides an extensive survey of relational contract theory and Lafontaine and Slade (2012) survey empirical studies on various interfirm contracts. In addition, Gil and Zanmarone (2015) derive a model to analyze the interactions between formal and relational contracting and link existing empirical work to their model.

³ Though exclusive territories and resale price maintenance are likely to be related to self-enforcing requirements, it is difficult to test whether that is the case. 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.

⁴ Prior studies, notably Klein and Leffler (1981) and Williamson (1983), analyze the role of initial investments on self-enforcement mechanisms, but from a theoretical perspective. Moreover, their focus is 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 how up-front investments can increase the agent's ex-post rents under compliance with the principal.

tested. Section 4 describes the data. Section 5 lays out empirical methodology. Sections 6 and 7 present our main results and discuss robustness checks and alternative hypotheses. Section 8 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% of GDP; supported 7.5 millions of U.S. jobs and accounted for about 7% of all U.S. exports. The lodging industry is the largest one 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 hotel parent company that owns the brand (e.g., Marriott International, Starwood Hotels & 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 hotel ownership, 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 the hotel population.⁵

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 of the service and amenities offered by a given chain/brand —all hotels of a given brand are of the same quality-tier. The quality of unbranded hotels, on the other hand, can vary to a large extend across independent owners (see Canina et al., 2005).

⁵ 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.

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.

Under a franchise contract, the parent company of a hotel brand (the franchisor) grants to an owner/developer (the franchisee) the right to use its brand name. In this case, the franchisor itself does not manage the hotel, but rather leaves most day-to-day management decisions (e.g. staffing, pricing or employee pay) to the franchisee (e.g., Freedman and Kosová, 2014). Under this type of contract, the franchisee is the residual claimant of the profits from the hotel's operations (net of royalty payments and other fees paid to the franchisor).⁶ Hotel franchise contracts are usually for 20 years. After that, the contract is renewed if both parties are satisfied with the relationship. However, contracts are frequently terminated with anticipation if one of the parties is not satisfied with the relationship – approximately 3.3% of the population of branded hotels change brands in a given year, according to STR data. The benefits of brand affiliation for a franchisee include customer name recognition, help 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 hotel for the sake of the local owner, using its own company employees. 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 a 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 the parent company fully keeps the control over its brand (see Eyster and deRoos, 2009 for more details).

⁶ 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.

The last form, which is quite rare in the U.S., is that hotel parent company not only operates but also owns the hotel property (typical examples are U.S. Starbucks' coffee 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. (Such few properties in our data are included under company managed hotels).

Importantly, hotel parent companies, as well as individual hotel brands, vary in the degree to which their properties are franchised. Some brands allow for both company managed and franchised hotels, while others are entirely franchised or entirely company managed.

2.3. Incentives under Franchise Contracts.

Under management contracts the managers/agents are salaried employees of the parent company. Under franchise contracts, on the other hand, hotels are owned and managed by the franchisees/agents that are the residual claimants of the assets. Due to that franchising, as an organizational form, should better align the incentives of the agents. i.e., agents have stronger incentives to run their business efficiently (being cost-effective). 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 Kosova et al. (2013) 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, franchisees' interests can be still misaligned with the interests of the franchisor (principal) due to externality problems among units within a given brand. Specifically, franchisees may exert less effort in preserving the franchisor's brand-name than what is desired by the franchisor. This is due to the fact that a fraction of their customers often repeat business in *other* outlets of the same brand, rather than in the same property of a given franchisee (e.g., Klein, 1995). Put differently, residual claimancy of the franchisee helps to eliminate moral hazard on the "operations" side of the daily business. But, at the same time, the fact that franchisee is rewarded based on his/her outlet's profits, increases motivations to save on outlet's costs and free-ride on the brand. Thus the franchisee can refrain

to comply with the franchisor's brand standards (e.g., cleanliness, customer service, hotel ambiance, maintenance of amenities) in order to increase its profits (see Blair and Lafontaine, 2005).

This problem of vertical externalities, when franchisee can free-ride on the investments of the other outlets associated with the same brand, appears to be particularly important in the context of globally recognized brands as the ones that operate in the hotel industry. There, uniformity of the product/service offerings and consistency of the brand standards across hotels, often dispersed across large geographic locations, is crucial. In fact, violation of brand standards is a common reason for franchise contract termination in the hotel industry. As a representative from Crowne-Plaza 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.”⁷

3. Self-enforcement Mechanism and Initial Requirements in Hotel Franchising.

Below, we first discuss the relevant literature and derive our predictions 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 requirements play in self-enforcing agreements.

3.1 Relational Contracts and Initial Requirements.

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 (e.g., Telser, 1980; Klein and Leffler, 1981; Williamson, 1983, 1985; Klein and Murphy, 1988; Levin, 2003; Malcomson, 2013). Namely, an opportunistic agent will behave according to

⁷ Among new franchised hotels in our sample, for which we observe their operations for only four years on average (see Section 4 for details), 2.3% of them had their contracts terminated with their initial parent during this rather short period of operations. Put differently, these hotels had to find other arrangements to continue their operations (other parents or became independent) quite early on, within 1/5th of their contract length. This also indicates that the threat of contract termination is quite important.

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.

In general, the party acting as the principal has two options to boost the self-enforceability of the agreement (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 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 would substitute one option for the other, to maintain the self-enforceability of the agreement.

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 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 those initial requirements specified by the principal that ultimately increase the agent's ex-post rents.⁸ 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. In Appendix A we explain this intuition more formally using a simple theoretical framework.

3.2 Initial Requirements in Franchise Hotel Agreements.

As discussed 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. Although the parent company can gather some information about franchisee's activities without necessarily going on site, it is still the case that certain actions need on-site monitoring. For example, property

⁸ Some theoretical papers have argued that discretionary bonuses can also be used by the principal in order to boost self-enforceability (e.g., McLeod and Malcomson, 1989). However, such bonuses can be considered discriminatory in many settings, including franchise contracts.

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 common. Also, as Freedman and Kosová (2014) point out, in the hotel industry - unlike in other contexts (e.g., retail or restaurants) - remote technology (e.g., video-cameras) cannot be used for monitoring in order to protect the privacy of the guests. Therefore, as per standard agency theory (e.g., Rubin, 1978; Norton, 1988) the costs of monitoring local operations will be higher the more distant the operation is from the monitor. At the same time, franchising literature, as well as our discussions with practitioners, point to the parent company HQ as the monitor. Hence, franchisees farther away from their HQ will be inspected less often (e.g. Brickley and Dark, 1987) and thus face a lower probability of anticipated termination in case they do not comply with brand standards.

Unlike in other contexts, in the hotel industry one can more easily identify and measure initial 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, hotel size (number of rooms) and quality-tier are the underlying property characteristics that are directly linked to franchisees' ex-post rents. This allows us to analyze the relation between monitoring costs (reflected in hotel's distance to HQ) and initial requirements, directly at the property level. Franchisor can also specify hotel amenities (e.g., spa, restaurant, sports facilities), however there is little variation among these characteristics.

Number of rooms and hotel quality-tier are both typically specified by the franchisor to the franchisee when the new hotel property is launched. For each brand the contract specifies in details the "Initial capital investments" associated with requested hotel sizes. The contract also specifies the quality-tier of each brand.⁹ In order to preserve brand uniformity, all hotels under the same brand are required to operate within the same quality-tier, regardless of hotel location type or market characteristics. In the end, both size and quality-tier of hotel are either very costly or impossible to change after hotel is built. Important to note is also the fact that there is variation in hotel sizes within brands as well. As Appendix

⁹ This information has to be also included in the Franchise Disclosure Document (FDD) that a franchisor needs to publicize for each franchising opportunity. An interested reader can purchase examples of FDD through various franchising organizations (e.g., www.franchisedirect.com).

Table B.1 shows, in our sample the average size of a new hotel 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 (of a uniform quality-tier), can be further used to modify franchisees' ex-post rents.

Initial requirements of larger and/or higher quality-tier hotels increase 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 a hotel that is larger and belongs to a higher quality-tier 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.

The self-enforceability argument we describe, however, does not imply that a franchisor wants to have franchisees as far as possible. On the contrary, she would rather have all the franchisees close by since then monitoring of franchisees and prevention of free-riding on the brand name would be easier. However, the demand for opening a new franchised outlet may occur in a market that is far away from franchisor's HQ. Then, the second best solution is to ask a franchisee for larger up-front investments; implicitly increasing the franchisee's potential losses from his/her misbehavior and reducing thus its incentives to free-ride on the brand. This, of course, increases the cost a franchisee needs to incur up-front and thus limits the demand from potential franchisees. However, for a franchisor, this still represents a better option than simply giving up the opportunity to expand into more distant locations or risking potential damage of the franchisor's brand name — just because monitoring is more difficult.

Hence, the franchisor should modify the initial requirements of the contract - size and quality-tier - when boosting self-enforcement of the contract through this channel is more valuable; in particular when monitoring becomes more costly. Thus, we expect that when a franchisor decides to open a franchised hotel far away from the HQ, the hotel is more likely to be larger (more rooms) and/or of a higher quality-tier 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 franchisor's HQ.

3.3 Initial Requirements and Ex-Post Rents in Franchise Hotel Agreements.

Compared to other empirical settings, hotel franchising allows us to go one step forward in testing self-enforcement. Since lodging is a revenue management industry, characterized by high initial fixed costs and small marginal costs, hotels' ex-post rents are proportional to their revenues (see Kalnins, 2006 and Povel et al., 2015). Following the logic of self-enforcing agreements, we expect that franchised hotels that are far away from their HQ should generate higher revenues. However, if monitoring intensity and initial requirements are used as substitutes, we would also expect that such revenue premiums, in turn, should be largely explained by the initial requirements the franchisor specifies in the contract when the new franchised hotels are opened.

The argument above 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 should be proportional to the rents that the agent generates under the franchise agreement. This holds well in the context 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. In both cases, the value of forgone earnings during the *transition period* (i.e. period during which a franchisee changes parent or becomes independent) is proportional to the revenues a hotel generates during *normal* operation periods.

Figure 1 (A-C), illustrate in various ways the losses that a franchisee suffers during the *transition period*. Figure 1A shows the monthly dynamics in average number of rooms supplied for franchised hotels that experienced a change in parent. Figure 1B describes the dynamics in revenues for these hotels. The month in which a hotel 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 a hotel can offer, starting six months before — and continuing two 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 1B) - the total revenue-loss during the *transition period* is slightly more than

two months of revenues that hotel earns during *normal* operation periods.¹⁰ Finally, Figure 1C shows that franchised hotels far away from their parents' HQ not only generate more revenues during normal operation times, but also lose more revenues during *transition period*, compared to hotels close to their parents' HQ. Unreported analyses also indicate that far away hotels forego about \$389,000 on average in the transition period, while hotels close to their parents' HQ lose only about \$224,000 on average.

A terminated hotel also has to incur renovation costs to start its operations under another brand (or as an independent hotel). 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-tier hotel were between \$3,443 - \$9,434, while the costs per room of renovating a high quality-tier hotel were almost double, between \$6,124 - \$18,050.¹¹ Low quality-tier hotels include economy and midscale properties, while high quality-tier hotels include upscale, upper upscale and few luxury properties in our sample. Overall, for the average hotel in our sample (92 rooms; low quality-tier), the direct costs of hotel renovation amounts to additional \$316,000 - \$868,000. However, as we show below, hotels far away tend to be not only larger, but also more likely of a higher quality-tier, so the direct cost of renovations is substantially higher for these hotels as well.¹²

All in all, the necessary assumptions to test for the use of self-enforcement mechanisms hold well in the hotel franchising context. Below we describe the data we use to empirically test our predictions.

4. Data.

4.1. Data Sources.

¹⁰ 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 lose royalties from a terminated franchisee, but also lose money through lower royalty revenue collection during the *transition period*.

¹¹ See <http://www.hospitalitynet.org/file/152004649.pdf>. The estimates reported include renovations of the guestroom, bathroom and corridor to each guestroom.

¹² Using average foregone revenues (during transition periods) discussed above and the ballpark figures for renovations costs, one can construct a proxy for what would be "a counterfactual measure" of profits lost when the relationship is terminated for far away vs. close by hotels. Our estimates suggest that a faraway hotel experiences an additional profit loss of \$334,812 relative to hotels being closer to the parents' HQ. This is quite a substantial amount when compared to, for example, the NPV of the average economy/low quality-tier hotel, which is about \$300,000 (see Povel et al., 2015 – Online Appendix). All in all, these figures clearly indicate that hotels being far from their parents' HQ have more to lose compared to their closer counterparts.

We obtained our dataset by combining several data sources. The first one is the hotel census compiled annually by Smith Travel Research (STR). As 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), geographic location (state, market tract¹³, county and zip code); information on hotels' operation/organizational form (company management, franchised or independent), amenities (restaurant, convention or conference facilities, spa, ski facilities, golf course, extended stay rooms and whether a hotel is an all-suite property), type of hotel location (near the airport, interstate, resort, urban, suburban or small town area); as well as brand and parent company codes for each hotel.¹⁴

In addition, we also obtained information about the HQ location for each parent company. There are 27 hotel companies (both domestic and international) with HQ in the U.S. In several states there is only one hotel company registered.¹⁵ Hence, due to confidentiality reasons, STR could not provide us the state (or county) where the HQ is located. However, STR was willing to provide us information about the geographic division in which each company's HQ is located. There are nine such divisions as defined by U.S. Census. HQ offices in our data are distributed pretty much across all the country.

The second data source is the STR hotel revenue database that provides data on monthly room-revenues for the universe of branded hotels. STR gave us access to all their proprietary data under a strict confidentiality agreement. 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 hotel performances 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 twelve months. Merging hotel census and hotel revenue data gave us a starting set of 14,017 franchised hotels.

¹³ Using standard US classification for MSAs - Metropolitan Statistical Areas and counties, STR also provides information on so called, Hotel Market Tracts. These are sub-areas within MSAs or groups of counties based on the proximity to the nearest largest city.

¹⁴ The name of hotel, brand, and parent company have been coded in the data to maintain their confidentiality.

¹⁵ In addition, there are about six foreign hotel companies that also operate hotels in the U.S., but their HQ is located outside the U.S. We do not have the names (or parent codes) nor country for them, so we dropped the hotels of these companies from our analyses. The proportion of such hotels in our final sample is very small, about 0.35%.

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 characteristics as counties represent the lowest level of geographic aggregation at which relevant time-varying economic and demographic conditions are regularly reported on annual basis.

To test our predictions, we use the data for the 5,739 new hotels opened sometime during our sample period 2000-2008 and began their operations as franchised properties. We use newly opened hotels, as only for these we know for sure the parent that “required” hotels’ size and quality-tier that we observe in the data. For hotels opened before our sample period, it is possible that they may have changed parent (as discussed in Section 3) before our sample began. Thus for older hotels the initial requirements could have been “required” by a different parent, located in a different geographic region, or hotels may have initiated their operations under a different organizational form.

Out of the 5,739 new franchised hotels, we drop 185 hotels with missing covariates and 7 hotels that were opened in Alaska and Hawaii.¹⁶ We dropped these since being too far away from the U.S. mainland they represent outliers and could potentially bias our analyses. Hence, our final sample consists of 5,547 franchised hotels opened during 2000-2008. These hotels are geographically distributed across 48 states and D.C.; 602 market tracts and 1,369 counties; representing 85 brands of 18 different parent companies headquartered in the U.S. Though most new hotels operate under one parent company during 2000-2008, to avoid outlying revenue observations due to the parent changes (see Section 3, Figure 1), for

¹⁶ Missing observations are very much random. These 185 hotels represent only 1.3% of our starting sample of franchised hotels. Among these, 156 hotels do not have quality segment reported; so we do not know whether they should be classified as high or low quality-tier hotels. The remaining 29 observations represent hotels in counties for which some county characteristics that we include as controls are missing. Importantly, these few hotels display very similar distribution across non-missing characteristics as the hotels without any missing covariates. Also, including hotels opened in Alaska and Hawaii do not change our results.

the few new hotels that changed their parent we included in our sample only years before the parent change occurred.¹⁷ Our revenue sample represents an unbalanced panel, containing 20,240 hotel-year observations.

4.2. Descriptive Statistics of Our Sample.

Appendix Table B.1 shows descriptive statistics of our sample. Panel A shows hotel characteristics. Notably, a newly opened franchised hotel has about 92 rooms on average, but variation in size is relatively high; some hotels are as small as 20 rooms, but some are as large as 1,100 rooms. It also shows that about 23% of our franchised hotels were opened in a high quality-tier (i.e. upscale, upper upscale and few luxury properties) and the distribution of different hotel amenities. 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). Other amenities such as spa, golf course, ski, convention or conference facilities appear to be less common. 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 HQ's office. Since information about the exact location of the companies' HQ is unavailable due to confidentiality reasons, we rely on information on the parent's geographic division and information on the state in which a given hotel operates to construct this variable. Precisely, the dummy *Far* takes a value of one if the (Euclidean) 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.¹⁸ Given that our actual division-based measure of distance is noisy, instead of using it directly we prefer to use a dummy, dividing hotels into two categories (*Far* – yes and no).

To clarify the logic behind our distance measure, consider the following example. Suppose a franchisor has its HQ in the Pacific division, which includes the states of California, Oregon and

¹⁷ Nevertheless, including also the years after a parent change occurred does not change our results.

¹⁸ We rely on Euclidean (rather than road-based) distance as on-site monitoring of faraway properties (i.e. more than 1,500 miles) typically requires air travel. No hotel has the distance exactly at the cutoff value of 1,500 miles. We prefer to use the hotel's state rather than its county. Due to large sizes of the geographic divisions, the exact county location within a state makes no difference when determining whether a hotel is far from the company's HQ or not.

Washington, and a hotel is located in California.¹⁹ The distance between the midpoints of the division and California is about 400-500 miles. However, it might be that the hotel is located just two blocks away from the actual HQ, 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-HQ distance for those hotels that operate directly in the parent's division or divisions nearby. Hence, 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 HQ's division. Given relatively large sizes of the divisions, this cutoff assures that only the hotels that are indeed far away from their HQ belong to such category. In general, smaller cutoffs imply a higher likelihood of misclassifying far-away hotels, while larger cutoffs leave too few hotels in the far-away category. Appendix Table B.2, shows what happens if we define Far for cutoffs of 1,000; 1,250; 1,500; 1,750 and 2,000 miles (using our main specification, described in Section 5). The Far estimate increases with distance (as expected), but for small cutoffs (i.e. 1,000 miles and less) it is small and insignificant. This is due to relatively high likelihood of misclassifying hotels as far, even though they may be close; or vice versa, due to the large sizes of the divisions. However, when the cutoff is too large (e.g., 2,000 miles) only few hotels (14% of the sample) are classified as far; thus the tests lose statistical power. We further verify the reliability of 1,500 miles cutoff using data for a single parent company, for which we obtained the exact location of its HQ and could construct a continuous measure of hotel distances to HQ.²⁰ All these analyses show that our Far dummy as a proxy for hotel-HQ distances is quite reliable.

¹⁹ The Pacific division also includes Alaska and Hawaii, but we verified with our data provider that none of our parent companies are located in those states.

²⁰ First, Appendix B - Figure B.1 shows the relation between our Far dummy and the actual hotel-HQ distances for all the hotels of this parent. The vertical axis shows the values for the dummy Far (0 vs. 1) and the horizontal axis shows the continuous hotel-HQ distances. The vertical dashed line indicates the 1,500 miles threshold we rely on when constructing our Far dummy. As the figure shows there is very little misclassification among hotels: Only very few hotels that are classified as being Far (i.e. more than 1,500 miles) are actually closer than 1,500 miles from the HQ, and when they are in fact "closer" they are still at least 1,350 miles away from the HQ. This is true the other way around as well: few hotels are misclassified as being close to the HQ, and when they are, they are actually no farther than 1,600 miles from the HQ. Second, we estimated the regressions (available upon request) while

Panel B depicts time-varying characteristics for 20,240 hotel-year observations in our sample during 2000-2008. The franchised hotels in our sample are on average four years old and earn about \$187,200 in room revenues each month per year (over \$2.2 million a year). They also operate in counties in which there are about three other franchised hotels of the same parent, but almost no company managed hotels of the same parent (mean is 0.3 hotels). This is consistent with Kalnins and Lafontaine (2004) who find that franchisors tend to cluster franchised hotels together (as well as corporate hotels).

To motivate our analyses, Table 1 shows various comparisons between hotels that are far away ($Far=1$) and hotels that less than 1,500 miles ($Far=0$) from their parent's HQ. Panel A, compares the means of hotel rooms, quality-tier and county characteristics in the first year of operation for franchised hotels in our sample. The last row shows the average monthly revenues for the initial and subsequent years of hotel operations. There are significant differences in almost all variables - far away hotels are about 19 rooms larger and more likely to be in high quality-tier than closer franchised hotels. Such hotels also operate in counties characterized by about two to three more hotels from other hotel companies, significantly higher number of establishments in accommodation, as well as other two related industries, compared to franchised hotels that are closer to their HQ. In addition, far away hotels also command about \$97,000 more in average monthly revenues per year.

Panel B shows the same comparisons for new hotels opened as company-managed during the same time-period. Importantly, unlike among franchised hotels, far away company managed hotels are not significantly larger or more likely to be of a high quality-tier; and they also seem to command lower (rather than higher) revenues. These data patterns are to be expected, given that the self-enforcement mechanism we focus on is applicable to franchised contracts only.

To even better compare new franchised hotels to company managed ones, and highlight the potential self-enforcing role that hotel initial requirements play exclusively in franchise contracts, Table 2 presents a difference-in-difference analysis of initial requirements using a matched sample of franchised

splitting the actual hotel-HQ distances into the several ranges. These results further confirmed that initial requirements differ for hotels that are more than 1,500 miles away from their HQ.

and company managed hotels. We use propensity score matching with replacement based on county characteristics - within hotel market tracts, location types (e.g., urban, suburban) and years of opening.²¹ The results show that while the *Far* dummy is positively associated with hotel rooms and high quality-tier for franchised hotels, this is not the case for company managed hotels opened in the same years, operating in the same markets tracts, locations types, and counties with comparable characteristics. The differences-in-differences for initial requirements are both economically and statistically significant. These findings also support our theoretical discussion in Section 3, implying that due to the fundamental differences in the nature of contracts and associated incentives, the relevant population to study self-enforcement mechanisms consists of franchised hotels.²²

To shed more light on the relationship between initial requirements, distance to parent's HQ and ex-post revenue rents among franchised properties, we conduct the empirical analyses described below.

5. Empirical Methodology.

We conduct 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 requirements specified by a franchisor) at the time of hotel opening. Second, we study whether being far away from the parent's HQ has implications on hotels' revenues, and if so, whether that effect can be

²¹ Given our sample size and the large number of counties in which our hotels operate (more than 1,300) we cannot perform matching within counties. Hence, we match within the 602 hotel market tracts where new hotels have been opened. Similarly, we cannot perform matching within brands. This is due to low within-brand variation, especially among company managed hotels (several brands have only far/close hotels opened). When matching within counties or brands we get zero matched pairs, as there is no common support in the distribution of hotel characteristics. Due to these reasons we also could not estimate a standard (unmatched) difference-in-differences analyses using our empirical specifications described in Section 5. These also include additional sets of dummies as controls, which just exacerbate all the estimations issues we describe.

²² Although distance to parent's HQ has been shown to affect franchisors' choice of organizational form in other contexts, this is not the case in our setting. Unreported results (available upon request) show that far away hotels are rather less likely to be franchised than company managed - but the difference is not statistically significant. Such lack of strong positive association between distance and choosing franchised units is perhaps not surprising: In the US hotel industry, unlike in other contexts (e.g., fast food, restaurants) where franchising and company operations are also used, the parent company needs a real estate developer as a partner even when the outlet is going to be company managed. (As per Section 2.2., US hotel companies rarely own their properties). Thus in any given market, parent companies have to find real estate developers 'willing' to build hotels under the proposed organizational form; otherwise organizational form will be changed.

attributed to the initial requirements. Both types of analyses can be described by a general empirical specification of the following form:

$$(1) \quad y_{igct} = \alpha + \beta * Far_{ig} + Q'\Omega_{ct-1} + Z'\Gamma_i + M'\Psi_{igct-1} + \mu_t + \gamma_g + \varepsilon_{igct}$$

Our first type of analysis is cross-sectional. The dependent variable y is the number of rooms (in logs) or the quality-tier dummy (high vs. low-quality) 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 operates (note: counties are nested within market tracts; and market tracts are, in turn, nested within states). The distinction between brand vs. parent helps us to account for the fact that the decision on some initial hotel requirements are made at the parent level whereas other decisions can be made both at the parent or brand level. For example, hotel quality-tier is a corporate-level decision made by the parent, as brands are characterized by a uniform quality level. Hotel size, on the other hand, can vary not only among hotels within the same parent, but also within the same brand (see Section 3). Hence, when the dependent variable is hotel quality-tier we exploit only within parent variation. When the dependent variable is number of rooms we exploit both within brand and within parent variation.

The variable of interest, Far dummy, equals to 1 if the hotel is located more than 1,500 miles from the parent's HQ, and 0 otherwise (see Section 4.2). Our identification strategy exploits 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 county-level market characteristics at time $t-1$, Ω , to control for differences in economic conditions prior to hotel opening (see Appendix Table B.1). These include county median household income (in logs), population (in logs) and unemployment rate. Capturing living costs, these variables also help us to control for differences in hotel clientele between different areas (e.g., business travelers often stay in richer or highly populated areas). To further control for attractiveness (or intensity) of the geographic location as business or tourist destination that could affect hotel size or its quality-tier and be potentially correlated with Far

dummy, we control for the number of establishments (in logs) in three hotel-related industries: arts, entertainment and recreation; food and beverage, and total accommodation (not just hotels). Including county characteristics in logs helps us to capture possible non-linear impacts on our dependent variables.²³

Other important controls, Γ , are hotel specific variables. These include 602 hotel market tract fixed effects (due to large amount of counties it is impossible to include county-dummies) and 6 hotel location type dummies (urban, suburban, small town, resort, near highway or airport). These dummies help us to control for unobserved location specifics that might not be captured by the county-controls, such as differences between coastal and non-coastal areas, regulations (zoning restrictions in big cities vs. small rural areas; local impacts of state-laws, etc.), or quality of hotels' location, reflecting 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 and the nature of industry structure prior hotel opening, 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. We include these as the potential encroachment, especially from other same-parent franchisees, could have implications on the size and quality-tier of the new franchised hotel (e.g., Blair and Lafontaine 2005). 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.

To capture unobserved macroeconomic or policy shocks that could affect the size and quality-tier of the new franchised hotels in any given year, we control for year fixed effects, μ . Finally, hotel brand or parent fixed effects, γ , control for unobserved differences across parents or brands (e.g., different levels of popularity). As Kosova et al. (2013) mention, brand fixed effects also help to capture costs differences in hotel operations. Royalty rates and other fees also may vary across brands of the same parent, but are

²³ Including county controls in levels together with their polynomials did not change our results. Similarly, whether we include time-varying controls at time t or $t-1$ (prior year) does not affect our results.

stable within brands (Blair and Lafontaine, 2005). Controlling for parent fixed effects, on the other hand, allows us to analyze the differences in hotel quality-tier that do not vary within brands.

To obtain conservative robust standard errors, we adjust standard errors for heteroscedasticity and two-way clusters at the hotel state and brand (parent) level, when including brand (parent) fixed effects. Clustering at the same affiliation level (brand/parent) as the variation provided by the fixed effects keeps consistency between the conceptual level of decision making we described and the clustering strategy. However, potential correlations in the errors may occur not only at the hotel affiliation level, but also geographically. As counties and market tracts are subsumed within states, there might be common shocks across these (e.g., due to state-law regulations), thus we cluster at the most aggregated state-level.

Our second type of analysis is longitudinal and it studies the performance of our new hotels since their year of opening until the end of our sample, 2008. The dependent variable (y) is now the logarithm of average monthly revenues per year. Both revenues and all the control variables in the sets Ω and Ψ are now measured at time t , to capture contemporaneous shocks affecting revenues. We first explore whether hotels far away from their parents generate higher revenues, while controlling for hotel age, age squared and the same controls as in our first type of analysis. We then expand the set of covariates by including also the initial hotel requirements, i.e. hotel rooms and quality-tier (captured now by brand dummies), as well as various hotel amenities (restaurant, spa, conference/convention facilities, etc.) that could affect the differences in revenues between close vs. far away hotels from the parent's HQ. As discussed earlier, under a self-enforcement mechanism we would expect that if there is a revenue premium for far away hotels, such premium should vanish once the initial requirements are controlled for.

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 HQ 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-level controls that could also boost hotel's long-term performance, namely: income, population, unemployment and number of

establishments across 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. It also helps us to better identify impact of these time varying variables on hotel revenues. Similarly, as in our cross-sectional analyses, in revenue regressions we adjust standard errors for heteroscedasticity and two-way clusters, but now having additional time dimension we cluster at brand and state-by-year level.

Below, we first discuss the results from analyses above. We then replicate these for the hotels affiliated with the largest parent in our sample, for which we were able to obtain the exact zip-code of its company's HQ. We conduct various robustness checks and eliminate alternative hypotheses in Section 7.

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 belongs to a high quality-tier or not, as a function of the variable *Far* and other controls in the year prior to hotel opening, for our sample of 5,547 new franchised hotels. The dependent variable in cols. I and II is the logarithm of number of rooms. While col. I shows brand fixed effects regressions, col. II exploits within parent variation. Col. III shows the results from a standard logit model using the dummy *High-quality* as a dependent variable, exploiting again within parent variation.

Col. I shows that, controlling for hotel market tracts, location-type and year fixed effects, as well as county-level characteristics, new franchised hotels within a given brand have about 2.8% more rooms when they are farther than 1,500 miles from their HQ. We find a similar result in the parent fixed effects regression in col. II - hotels, within a given parent, have about 2.3% more rooms when they are far away from their parent's HQ relative to 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.²⁴ Col. III in addition shows that faraway hotels are about 21% ($\exp^{0.1915}-1$) more likely to belong to a high quality-tier than hotels that are closer to the parent's HQ.

Overall, the results suggest that a self-enforcement mechanism is at work, as initial requirements of hotels far away from franchisors' HQ are set such that they increase the hotels' ex-post rents.²⁵ We thus now directly study whether faraway hotels indeed generate higher revenues; and whether such revenue premium disappears once the initial requirements are controlled for.

6.2. Panel Revenue Regressions.

In Table 4 we analyze hotel revenues that proxy for hotel ex-post rents as discussed in Section 3. The table shows the results for all franchised hotels in our sample that operate under one of the 85 brands of the 18 parents. We use revenues for hotel-years starting in the year the hotel was opened until 2008. Our variable of interest is again the dummy *Far*, which proxies for the franchisor's monitoring costs.

Col. I shows the benchmark results when pooling franchised hotels' performance across all the parents. Consistent with the self-enforcement mechanism, the results show that controlling for county-level characteristics (at year t), hotel age, age squared and rich sets of fixed effects (hotel market tracts, types of hotel location and years) on average, faraway franchised hotels command a strongly significant revenue premium, as high as 34%. In col. II we add controls for hotel quality-tier differences, captured by brand fixed effects. The revenue premium for faraway hotels now noticeably drops to only 3.8%, but remains significant even within brands. Cols. III and IV include additional hotel characteristics that could explain such revenue premium. In col. III we control for various hotel amenities (All Suites, Convention, Conference, Spa, Golf, Ski and Restaurant) and in col. IV we add hotel size. Controlling for amenities

²⁴ Though this effect may seem not so large in terms of rooms, in terms of revenues it does represent an important impact. On average a hotel in our sample generates about 187,200 revenues per month a year and has about 92 rooms (Appendix Table B.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.

²⁵ One may worry whether potential (to us) unobserved franchisee heterogeneity, such as single vs. multi-unit franchising could bias our conclusions. Such phenomenon, however, is unlikely to affect our findings. First, unlike in other contexts (e.g., fast-food) presence of multi-unit franchising is not so common in hotel industry, in part due to the complexity of hotel operations. For example, in the Texas Comptroller database (2014), which provides tax payers-id for hotels in Texas, only about 7% of franchised hotels belong to multi-unit franchisees. Second, as unreported analyses using this data showed (available upon request) - if anything, unobserved heterogeneity across franchisees would actually bias our estimates of distance towards zero, not towards finding a significant impact.

does not change the revenue premium, which is not surprising, as there is little variation in amenities within brands. However, a more serious drop in the estimate of the *Far* dummy - from 3.8% to 1.9% (and insignificant) - occurs in col. IV when we control for the logarithm of number of rooms. This supports our discussion that the revenue premium of hotels that are far from their parent's HQ (and thus more difficult to monitor) captures extra ex-post rents generated by the initial requirements. Hence, ex-post rents can serve as a substitute to franchisor's monitoring intensity. In the last column we replicate the specification from col. IV, but now including also Mundlak's (1978) correction for hotel unobserved (correlated) heterogeneity. Our findings are robust to this correction as well.

6.3. *Single-Parent Analysis: Continuous Measure of Distance.*

The results from our overall franchised sample show that the dummy *Far* has a significantly positive association with revenue-generating hotel characteristics — hotel size and quality-tier — and revenues. As discussed earlier, we use the *Far* dummy to minimize potential measurement error in our proxy for distance between hotels and their parents' HQ. For confidentiality reasons we could only obtain the geographic division, but not the exact locations of the parents' HQ. Though our sensitivity analyses in Section 4.2. indicate that our *Far* dummy is reliable, we perform additional robustness checks below.

Specifically, we asked our data provider to give us at least the zip-code of the HQ for the largest parent in our sample (hereafter Parent A). This company opened 1,177 franchised hotels during 2000-2008 across eight brands. Thus, we could compute the zip code distances between new franchised hotels of Parent A and its HQ. We obtained this information, under the strict condition that we will not attempt to identify other parents, or seek ways to obtain the exact location of other parents' HQ offices.²⁶

Table 5 – Panel A, shows the results from the analyses of hotel size and quality-tier for the new franchised hotels of Parent A. Panel B, then replicates our revenue regressions exploiting within-brand variation of this single parent. Importantly, now the variable of interest in both panels is the continuous

²⁶ Determining the exact location of other parents would be anyway unfeasible. For example, even just looking at the next three largest parents in our data, finding the identity of the parent is not possible: All three parents opened a similar number of hotels during our sample period, and they are all headquartered in the same geographic division.

measure of distance in 1000s of miles (*Distance*).²⁷ Panel A, col. 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 HQ zip-code, the franchised hotels are on average 6% larger, in terms of rooms (statistically significant) — equivalent to about six rooms given Parent A's mean. In cols. II and III we exploit the overall variation for Parent A (as in cols. II and III of Table 3) rather than variation within its eight brands. Despite the difference in variation, the results in col. II are very similar to those in column I. In col. III, we find that Parent A is more likely to request a high quality-tier the farther the hotel is from its HQ, although this result is statistically insignificant. Overall, the results in Table 5-Panel A support our findings in Table 3: Far away hotels are more likely to be larger and belong to a high quality-tier, even after controlling for hotel and county-level characteristics.

Table 5 - Panel B, col. I shows that more distant hotels of this parent generate higher revenues: On average 10% more per 1,000 miles of extra distance from parent's HQ. This result is statistically significant at the 1% level. Cols. II-IV show that the revenue premium of faraway hotels is in turn explained by higher initial requirements on hotels' revenue-generating characteristics. Controlling for brands, hotel size and amenities, the magnitude of the estimate for *Distance* drops to only 2.4% and becomes statistically insignificant. This is consistent with our findings for the overall sample (Table 4).

7. Robustness Checks and Elimination of Alternative Hypotheses.

7.1. Does Distance to Regional Offices Matter?

As per Section 3, the implications of the agency theory and traditional franchising literature point to the “distance to headquarters” when it comes to franchisor's monitoring costs. However, one may wonder whether being close to the franchisor's regional office is not more important than the distance to HQ when resolving the agency issue of franchisees' free riding on the parent's brand name. In that case,

²⁷ When only hotels of Parent A are included in the regressions, hotel market tract dummies (nested within states) completely determine the distance to the parent's HQ. Thus, we cannot include such dummies in the regressions. In other words, when running regressions using a single parent, controlling for hotel market tract fixed effects would give us the within-tract impact of distance rather than the actual impact of distance from the HQ to the hotels.

the estimates of our “distance to HQ” measures might be biased. To exploit this alternative hypothesis we use the single parent sub-sample from Section 6.3. For this parent we were able to obtain also the exact locations of its regional offices - six 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 and include it as an additional regressor into the single-parent specifications described in Section 6.3.²⁸

The results in Table 5 – Panel C, 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. These results not only confirm our prior findings, but give support to the discussed literature, namely – it is the distance to HQ what really matters when it comes to franchisee monitoring. This is also consistent with standard hotel industry practices, as brand reviews are typically executed by personnel working at the parent’s HQ office. Regional managers, on the other hand, are primarily responsible for managing hotel clients and making sure that hotels fulfill sales targets, but usually do not play a role in monitoring hotels’ compliance with brand standards.²⁹

7.2. Initial Hotel Requirements and being Far among Company Managed Hotels.

To further eliminate alternative hypotheses we utilize our rich data on nearly the entire population of US hotels and construct a dataset on new company managed hotels, opened during our sample period (Table 1–Panel B shows descriptive statistics). We use this dataset to perform “placebo” regressions, estimating the same empirical specifications as in Section 5 (i.e. including brand/parent fixed effects and other controls). Though this dataset is smaller (488 hotels) than our sample of new franchised hotels (5,547), the distribution of the *Far* dummy is comparable: Hotels being *Far* from their parent’s HQ represent 26.6% of the observations in the company managed dataset and 22.9% in the franchised sample. Being salaried employees - rather than residual claimants on initial investments - managers in company

²⁸ If the HQ office is closer than any regional office, we specify the HQ office as the closest regional office.

²⁹ Our discussions with industry practitioners, as well as various anecdotal evidence we found on the Internet (e.g., job descriptions posted on LinkedIn) confirm this practice.

managed hotels have no incentives that bear a strong relation with the real estate developers' ex-post rents. Thus, if we find that far away hotels are more likely to be larger and belong to a high quality-tier 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 requirements 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-tier hotels were worth of the company's effort and thus only these hotels would be monitored in distant locations. 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-tier hotels) might be aware of the brand. Hence, it would be natural to open higher quality-tier and/or larger hotels far away from parent's HQ. Though controlling for brand, parent and various 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.

The results on company managed hotels in Table 5 are similar to the data patterns in Table 2.³⁰ Unlike franchised hotels - company managed hotels far away from their parents are neither larger nor more likely to be in a high quality-tier, controlling for hotel brand and characteristics of their location. If anything, such associations tend to be negative rather than positive. Such important differences in findings for company managed hotels further document that it is unlikely that alternative hypotheses, other than a self-enforcement mechanism in franchised contracts, are driving our results.

7.3. Could Franchisee Selection or Court-Enforcement Explain Our Results?

We have shown that far away franchisees are required to have more revenue-generating initial requirements. This is consistent with a self-enforcement mechanism where ex-post rents are used to mitigate franchisees' incentives to free-ride on the parent's brand name. However, such evidence could be

³⁰ In Col. III, due to perfect determination issues, several hotels were dropped (many parents operate only low/high quality-tier hotels as company managed). For the same reasons also hotel market tract fixed effects had to be replaced with state fixed effects.

also explained by franchisors selecting “better” (worse) franchisees to operate higher (lower) revenue-generating outlets in locations that are hard (easy) to monitor.

However, franchisee selection is unlikely to drive our results. Such argument relies on the assumption that franchisees are mobile across locations, while most franchisees tend to operate locally — it is not easy to assign outlets to potential franchisees far from where they live, or operate other outlets. Also, as Fan et al. (2014) point out, moral hazard (the key force behind self-enforcement), rather than selection issues are typically considered to be of first order relevance in franchising.

To further allay concerns, we present an additional analysis exploiting cross-state differences in regulations where franchisees operate. By 1992, 15 US states passed good-cause termination laws (GCLs). These laws restrict franchisors’ ability to terminate contracts with underperforming franchisees at will, as courts require more detailed evidence about the cause of contract termination (e.g., Brickley 1991; Sertsios, 2015). To the extent that GCLs make termination harder, this can discourage the use of self-enforcement in faraway locations, as frequent monitoring is required to provide evidence of franchisees’ misbehavior. Then the revenue-generating initial requirements should increase by less (or not at all) in faraway locations under a self-enforcing logic. Under a selection argument, however, we expect the opposite: If termination is harder, franchisors would have even stronger incentives to assign “better” franchisees to operate higher revenue-generating outlets in hard-to-monitor (i.e. far) locations, when franchisees are located in GCL states.

We define the dummy *Hotel State G.C.L.* as equal to 1 if a hotel is located in a GCL state, and 0 otherwise. In Table 7 we repeat our most stringent (brand fixed effects) specification for the initial requirements — number of rooms (Table 3 - col. I), while introducing the interaction effect between our key variable *Far* and *Hotel State G.C.L.* The results in col. I show that the *Far* dummy, capturing the relation between distance and initial requirements in states without GCL, is significantly positive; and even stronger than in Table 3. Most importantly, the interaction term is negative and significant, supporting self-enforcing agreements rather than the selection hypothesis. (Note: since we control for ‘hotel market tract’ fixed effects that are nested within states, *Hotel State G.C.L.* dummy is dropped out in

this specification). In col. II we present a specification where instead of including ‘hotel market tract’ fixed effects we include the *Hotel State G.C.L.* dummy and find similar results: The interaction term is again significantly negative and coefficient of *Far* is positive. The coefficient of *Hotel State G.C.L.* dummy is also positive, consistent with Sertsios’ (2015) findings of higher up-front capital investments (in this case, associated with larger hotels) being required when franchisors have weak termination rights.

These analyses also rule out that our findings could be explained by court-enforcement, rather than self-enforcement. The court-enforcement hypothesis assumes that hotels’ brand review terms are contractible and verifiable, and that rents represent a court-enforced substitute for stipulated damages (say, if franchisees’ liquidity constraints limit the scope of damages). However, if this was the case, then the presence of good-cause termination laws would be irrelevant. We, on the other hand, find that in GCL states the effect of distance on revenue-generating characteristics is significantly smaller.

Overall, our analyses show that a self-enforcement mechanism best explains our findings.

8. Conclusion.

An extensive theoretical literature on 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 requirements in the contract that ultimately increase the rents that the party acting as the agent forgoes in case of contract termination. This argument — and its interplay with the principal’s monitoring intensity — had not been empirically explored, due to the lack of detailed data and a suitable empirical setting.

To fill such gap in the literature, we exploit a detailed proprietary data on hotel franchising to test for the use of initial requirements, such as size and/or quality-tier of establishment, in self-enforcement mechanisms. Our data comprise 5,547 new franchised hotels that started their operations during 2000-2008, and their subsequent revenues. We find that controlling for observable hotel and county characteristics, as well as unobserved differences (i.e. fixed effects) across hotel market tracts, location types (e.g. urban vs. rural), brands/parents and years, franchised hotels that are far away from their

parents' headquarters (and thus more costly to monitor) are required to have more rooms, tend to belong to a high quality-tier, and generate higher revenues. However, we also find that such revenue premium of faraway hotels is, in turn, largely explained by the size and quality-tier requirements specified by the franchisor when the hotel starts its operations. These results are robust across various specifications. 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.

In a broader context, our paper extends the literature on relational contracts by bringing more light on how formal contract terms can influence informal (relational) contracts between business partners. Specifically, we provide the first evidence that initial requirements can be strategically used to modify the ex-post rents in the agreements. This is relevant from a policy perspective as it helps to rationalize formal contractual clauses, which a-priori may look anti-competitive, such as exclusive territories, or zoning regulations. Such formal contract clauses can help generate quasi-rents that are necessary for sustaining relational contracts. Thus the implications of our paper complement those of Macchiavello and Morjaria (2015b). They find that in the absence of formal contracts, competition could be detrimental to welfare if it weakens the relational contracting between business partners.

Our findings also relate to the recent literature on the role of trust in self-enforcement agreements (see Malcomson, 2013). This literature suggests that trust can affect the amount of rents required to sustain an agreement. Thus, one may expect that trust could also affect the initial requirements that the principal asks of the agent in an establishment. To shed some light on this, we performed an exploratory analysis (available upon request), using a small sample of Texas hotels for which we could identify franchisees' identities. We found that while distance to the parent's HQ has a strong positive effect on hotels' size for single-unit franchisees (consistent with our main findings), it has a much moderate effect for multiple-unit franchisees (these, however, represent only about 7% of the sample). Thus, to the extent that trust can be captured by the number of hotels a franchisee operates, formal contract terms that affect relational contracting might be shaped by the degree of trust. 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 use hotel-level monthly data for franchised hotels that changed parent company during our sample period (2000-2008), regardless whether they opened during this period or not. There are 638 franchised hotels that changed parent and for which we have data on the exact month of a parent's change. The figures are 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 with no monthly observations missing. 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 parent change. Figure 1B plots the average monthly revenues. Figure 1C shows monthly revenue data for "far vs. close to parent's HQ" franchised hotels opened during our sample period (2000-2008) that changed parent or became independent. It uses all hotel-revenue data, even if a hotel has some monthly observations missing; restricting the data to new hotels with non-missing observations gives a very small sample and no hotels located faraway from the parent's HQ. In all figures, two dashed vertical lines indicate the periods of [-6, +2] months, during which both room supply and revenues experienced the largest drop.

Figure 1A

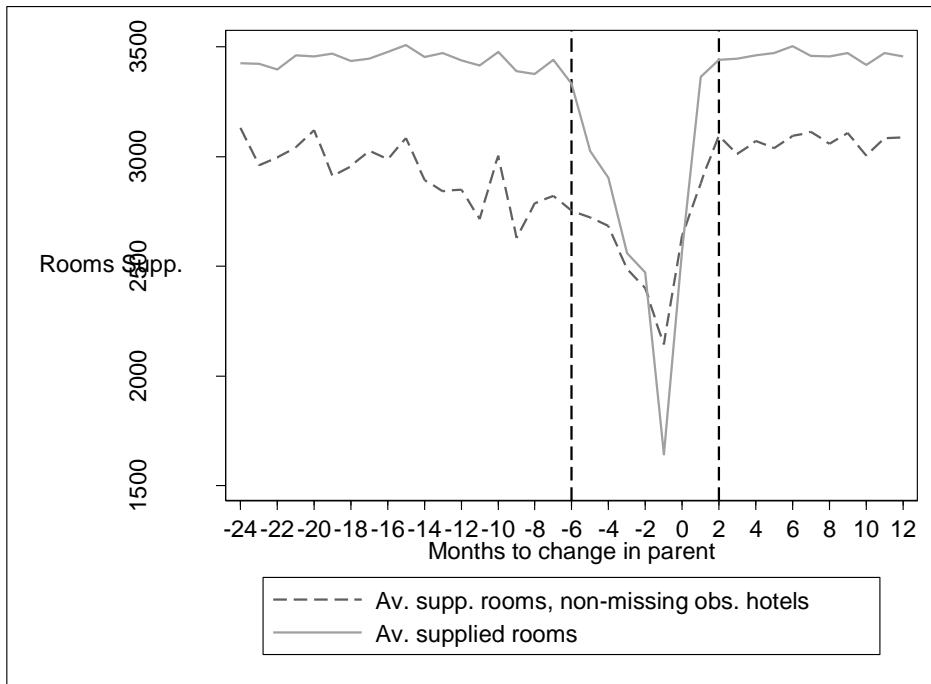


Figure 1B

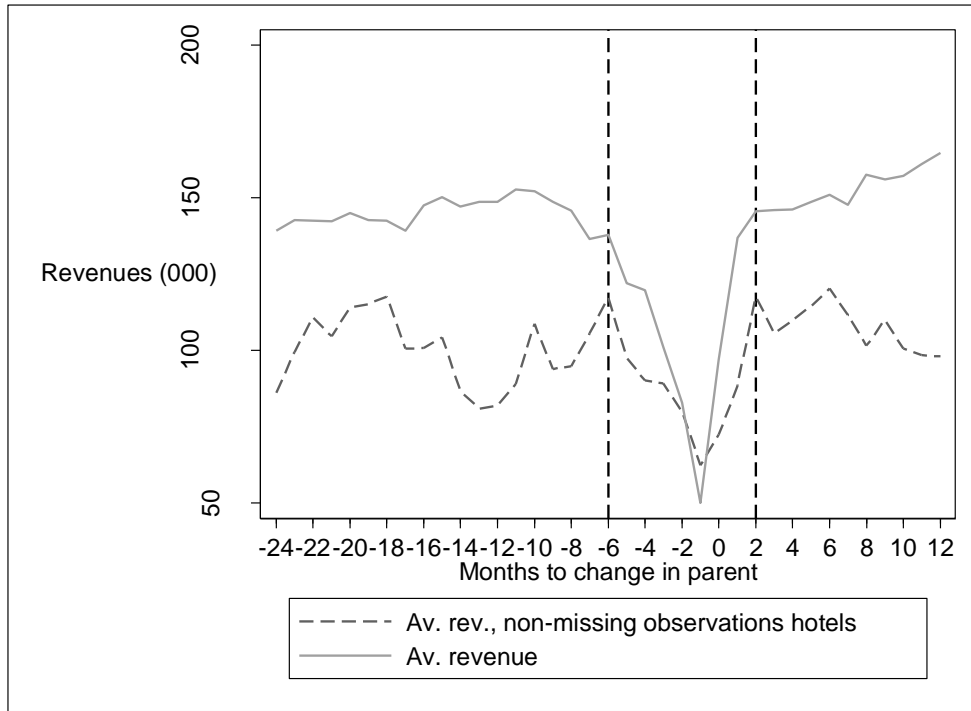


Figure 1C

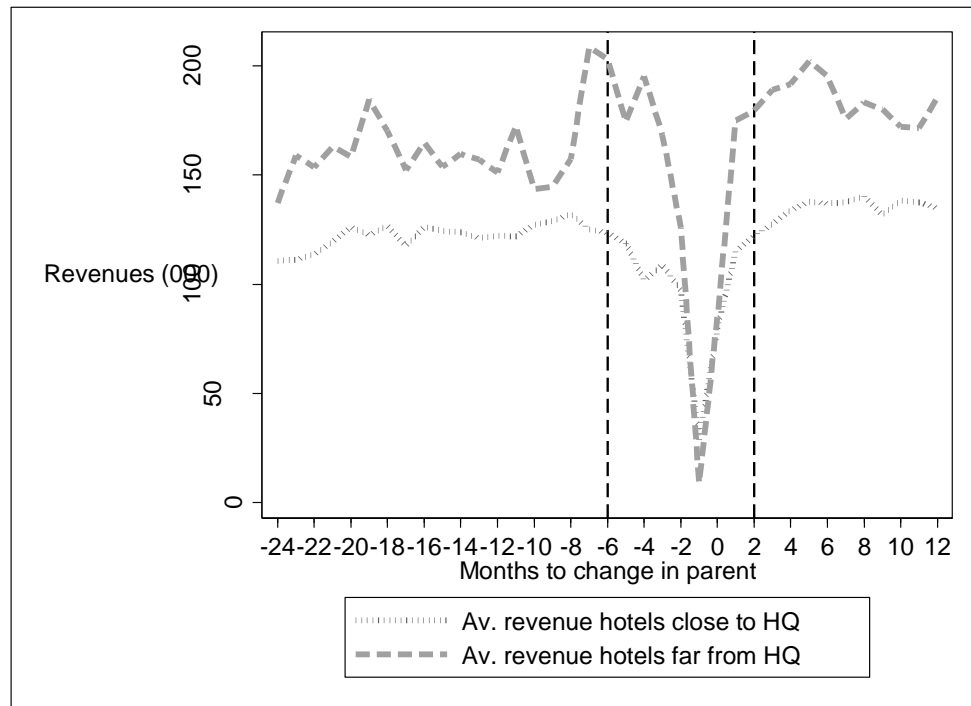


Table 1: Mean Comparisons between Close and Far Away Hotels

Panel A shows the mean comparisons for new hotels opened as franchised. Panel B shows the same comparison for new hotels opened under company management. Significant at: *10%, **5% and ***1%.

Panel A: Franchised Hotels			
Variable	Far=0 (N=4278)	Far=1 (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***
Panel B: Company Managed Hotels			
Variable	Far=0 (N=358)	Far=1 (130)	Difference (Far=1-Far=0)
Rooms	188.23	200.01	11.78
High-quality	0.50	0.52	0.02
Other Hotels of the same parent (Franchised)	1.37	1.85	0.48*
Other Hotels of the same parent (Company Managed)	0.84	1.22	0.39*
Hotels of different parents	36.14	55.75	-19.6***
Median HH income (000)	50.54	51.24	0.70
Population (000)	901.24	2048.68	1147.44***
Unemployment Rate	4.58	4.90	0.32**
Art, Recreation and Entertainment Establishments	356.3	1117.5	761.24***
Food and Drinking Establishments	1713.5	3733.2	2019.7***
Accommodation Establishments	137.5	317.9	180.45***
Monthly Revenues (000)	635.1 (N=1743)	596.5 (N=649)	-38.6

Table 2: Diff-in-Diff for Number of Rooms and Hotel Quality-Tier – Matched Sample.

The table shows a difference-in-difference analysis for initial requirements – size (number of rooms) and quality-tier (high vs. low quality) – using a matched sample of franchised and company managed hotels. We use propensity score matching with replacement based on county-level characteristics – within hotel market tracts, location types and years of opening. Significant at: *10%, **5% and ***1%.

	Rooms			High-quality		
	Company Managed	Franchised	Diff (Fran-CM)	Company Managed	Franchised	Diff (Fran-CM)
Far=0	192	98	-94***	45%	26%	-19%***
Far=1	179	112	-67***	43%	39%	-4%
Diff (Far=1-Far=0)	-13	14***	Diff-in-Diff = 27**	-2%	13%***	Diff-in-Diff = 15%***

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

The table shows cross-sectional estimations of the initial requirements for 5,547 franchised hotels opened during 2000-2008. Cols. I and II present results for size (number of rooms) and col. III shows results for a standard logit model using High-quality dummy as dependent variable. Controls include t-1 county-level characteristics: number of other hotels of the same parent split into franchised and company managed; number of hotels of different parents, the logarithm of the median household income, the logarithm of population, unemployment rate, and the logarithm of the number of establishments in three hotel-related industries — arts, entertainment & recreation; food & beverage, and total accommodation (not just hotels). Standard errors are adjusted for heteroscedasticity and two-way clusters at the state and brand level (Col. I); at the state and parent (Cols. II-III). The R-squared in logit estimation is the pseudo R-squared. Significant at: *10%, **5% and ***1%.

Variable	log(rooms)	log(rooms)	High-quality
Far	0.0284** (0.0132)	0.0234** (0.0115)	0.1915** (0.0898)
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 Mkt Tract Fixed Effects	Yes	Yes	Yes
R-squared	0.7574	0.5805	0.4655
N	5547	5547	4287

Table 4: Panel Revenue Regressions

The table shows panel estimations of revenues for 5,547 franchised hotels opened during 2000-2008. The dependent variable is the logarithm of a hotel’s yearly average of monthly revenues. Controls include age, age squared, and county level characteristics (see notes to Table 3) in year t. Col. 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 characteristics included as controls: income, population, unemployment and number of establishments across three related industries. Cols. III-V contain fewer observations due to missing values in the *Restaurant* amenity dummy variable. Standard errors are adjusted for heteroscedasticity and two-way clusters at the state-by-year and brand level. Significant at: *10%, **5% and ***1%.

Variable	log(rev)	log(rev)	log(rev)	log(rev)	log(rev)
Far	0.3386*** (0.0672)	0.0380* (0.0227)	0.0380* (0.0228)	0.0191 (0.0117)	0.0184 (0.0116)
log(Rooms)				0.9869*** (0.0204)	0.9866*** (0.0204)
Controls	Yes	Yes	Yes	Yes	Yes
Ammenities	No	No	Yes	Yes	Yes
Location Dummies	Yes	Yes	Yes	Yes	Yes
Brand Fixed Effects#	No	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes
Hotel Mkt Tract Fixed Effects	Yes	Yes	Yes	Yes	Yes
Mundlak Unobs. Heter. Correction	No	No	No	No	Yes
R-squared	0.5813	0.8536	0.8568	0.9219	0.9223
N	20240	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: Single Parent Analysis

Panels A and B replicate the results from Tables 3-4, using data of a single parent company for which we were able to obtain both the zip-code of its HQ and the zip-codes of all its franchised hotels. The key explanatory variable is “Distance,” capturing the distance between the franchisor-HQ’s zip code and the hotel’s zip code, measured in 1000s of miles. Panel C replicates the results of Panel A, while also including “Min. Distance to Regional Office” — the minimum distance between a hotel and the parent’s six regional offices. In Panels A and C, col. I, standard errors are adjusted for heteroscedasticity and two-way clusters at the state and brand level. In cols. II and III standard errors are adjusted for heteroscedasticity and clusters at the state level. In Panel B standard errors are adjusted for heteroscedasticity and two-way clusters at the state-by-year and brand level. The R-squared in logit estimations is the pseudo R-squared. Significant at: *10%, **5% and ***1%.

Panel A: Hotel Size and Quality- Tier of New Franchised Hotels

Variable	log(rooms)	log(rooms)	High-quality
Distance (000)	0.0590*** (0.0165)	0.0452*** (0.0165)	0.1003 (0.1059)
Controls	Yes	Yes	Yes
Location Dummies	Yes	Yes	Yes
Brand Fixed Effects	Yes	No	No
Year Fixed Effects	Yes	Yes	Yes
R-squared	0.6416	0.3138	0.1041
N	1177	1177	1177

Panel B: Panel Revenue Regressions

Variable	log(rev)	log(rev)	log(rev)	log(rev)
Distance (000)	0.0993*** (0.0155)	0.0977*** (0.0154)	0.0241 (0.0154)	0.0241 (0.0155)
log(Rooms)			1.0330*** (0.0134)	1.0331*** (0.0138)
Controls	Yes	Yes	Yes	Yes
Ammenities	No	Yes	Yes	Yes
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	0.7002	0.7097	0.8737	0.8730
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.

Panel C: Does Distance to Regional Offices Matter?

Variable	log(rooms)	log(rooms)	High-quality
Distance (000)	0.0670*** (0.0193)	0.0534*** (0.0168)	0.1571 (0.1138)
Min. Distance to Reg. Off.	0.0720 (0.0652)	0.0762 (0.0563)	0.5274 (0.3618)
Controls	Yes	Yes	Yes
Location Dummies	Yes	Yes	Yes
Brand Fixed Effects	Yes	No	No
Year Fixed Effects	Yes	Yes	Yes
R-squared	0.6428	0.3151	0.1054
N	1177	1177	1177

Table 6: 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. Controls include the same control variables as we report in Table 3. In the logit estimation (using the dummy High-quality as dependent variable) we include state fixed effects instead of more disaggregated hotel market tracts fixed effects; otherwise all observations would be lost due to perfect determination issues. The R-squared in logit estimation is the pseudo R-squared. Standard errors are adjusted for heteroscedasticity and two-way clusters at the state and brand level (Col. I); and at the parent and state level (Cols. II-III). Significant at: *10%, **5% and ***1%.

Variable	log(rooms)	log(rooms)	High-quality
Far	-0.0722 (0.1598)	-0.1791 (0.3186)	-0.6681 (0.5276)
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
State Fixed Effects	Yes	Yes	Yes
R-squared	0.9370	0.8129	0.51
N	488	488	251

Table 7: Hotel Size and Good Cause Laws

This table replicates our size (*log(rooms)*) brand-fixed effects results (Table 3, col. I), but now including the dummy *Hotel State G.C.L.* and its interaction with the dummy *Far* as explanatory variables. In col. I we include hotel market tract fixed effects, so the variable *Hotel State G.C.L.* drops out, as market tracts are subsumed within states. In col. II, we do not include hotel market tract fixed effects, so the dummy *Hotel State G.C.L.* can be estimated. Standard errors are adjusted for heteroscedasticity and two-way clusters at the state and brand level. Significant at: *10%, **5% and ***1%.

Variable	log(rooms)	log(rooms)
Far	0.0380*** (0.0135)	0.0467*** (0.0167)
Hotel State G.C.L.		0.0268* (0.0160)
Far*(Hotel State G.C.L.)	-0.0256** (0.0126)	-0.0673** (0.0309)
Controls	Yes	Yes
Location Dummies	Yes	Yes
Brand Fixed Effects	Yes	Yes
Year Fixed Effects	Yes	Yes
Hotel Mkt Tract Fixed Effects	Yes	No
R-squared	0.7575	0.6889
N	5547	5547

Appendix A: Theoretical Framework

We rely on a simple framework based on Malcomson's (2013) "Employment model" and adapt it to our franchise setting, as follows: Suppose a franchisee generates per-period ex-post profits $\Pi(I)_t$, where "I" represents the up-front investment. We assume that $\Pi(I)$ is an increasing and concave function in I. For simplicity we also assume that the hotel's ex-post profits are the same under any parent (as per data patterns in Figures 1A-1C). The franchisee needs to exert effort to preserve the franchisor's brand value. Suppose the (non-contractible) effort can be either high or low. High effort preserves the franchisor's brand value, while low effort destroys some of it. Let's denote the cost of exerting high effort c_H and the cost of low effort c_L . Without loss of generality, let's also assume that $c_L=0$. We abstract from the initial franchise fee and royalty rate, to focus on the incentives related to modifying up-front investments.

The franchisor monitors with probability ρ . If she finds low effort, the contract is terminated and the franchisee loses rents proportional to its per-period profits, as the hotel has to be temporarily closed for renovations. Let's assume that a proportion α of the per-period profits is lost in case of contract termination; as shown also by Figures 1A-1C. Thus, the franchisee will exert high effort in any given period if the net benefits of complying with the brand standards are higher than the net benefits of not doing so (i.e., if the franchisee's I.C. constraint is satisfied) as per equation (A1), below.

$$\Pi(I)_t - c_H + \delta(\Pi(I)_{t-1} - c_H) / (1-\delta) > \Pi(I)_t - \rho\alpha \Pi(I)_t + \delta(\Pi(I)_{t-1} - c_H) / (1-\delta) \quad (A1)$$

The left hand side of the equation shows that for any given period "t," a franchisee that exerts high effort generates ex-post profits minus the cost of effort from preserving the franchisor's brand value ($\Pi(I)_t - c_H$), plus the present value of future ex-post profits, $(\delta(\Pi(I)_{t-1} - c_H) / (1-\delta))$. The right part shows that if a franchisee were to shirk on the effort for a single period, it saves the cost of effort, but with probability ρ loses an amount proportional to the current profits. Thus, in the current period, the expected profits are: $(\Pi(I)_t - \rho\alpha \Pi(I)_t)$. Also, regardless whether a franchisee is caught or not, he/she can generate the same future ex-post rents under any parent. Hence, the earning potential depends only on the initial

investment (as again shown in the Figures). Assuming that the franchisee is evaluating a one-time deviation from exerting a high effort (if the franchisee shirks, it will still have to exert high effort under other franchisor to avoid termination) the present value of the future profits is: $(\delta(\Pi(I)_{t-C_H})/(1-\delta))$.³¹ So eq. (A1) can be simplified as follows:

$$\Pi(I)_{t > C_H} / (\rho\alpha) \tag{A2}$$

Equation (A2) clearly shows that in order to keep contract self-enforceability, the franchisees' profits need to be higher than the cost of providing high quality, divided by the probability of detection of low quality times the fraction of profits lost during the transition periods. It is also clear that when ρ decreases, "T" needs to increase, in order to preserve contract self-enforceability.³²

Moreover, to the extent that monitoring costs are increasing in distance, the probability of monitoring/detecting franchisee's misbehavior is a decreasing function of distance, $d: \rho'(d) < 0$. Suppose for simplicity that $\rho = 1/d$, where $d > 1$. Then, the per-period rents that sustain self-enforcement are: $\Pi(I)_{t > C_H} = (C_H/\alpha)d$. This shows that both per-period (average) rents, as well as the marginal rents increase with distance (i.e. the derivative is positive). Finally, as per-period rents increase with initial investment, initial investment also increases with distance under self-enforcing agreement. These are the key predictions we test in our paper.

³¹ In Malcomson's (2013) "Employment model", the principal pays a bond to the agent when the desired "quality" is produced. This future stream of bonds is forgone if an agent is found shirking. In our framework, the principal simply terminates the relationship with an agent if the agent is found shirking. This leads to a one-time loss for the agent, where the loss is proportional to the agent's per-period profits.

³² Since $\Pi(I)$ is concave, asking for a higher up-front investment decreases the marginal value of investment. Thus, while ex-post rents are higher, ex-ante rents should slightly decrease, on the margin. This, in turn, may drive away potential franchisees. In other words, while there is a benefit from the incentive side (I.C. constraint), there is a cost through the I.R. constraint, as for some potential franchisees, this restriction may no longer be satisfied. Thus, the self-enforcement mechanism we propose is a second-best solution when dealing with potential incentives to free-ride on a franchisors' brand value.

Appendix B: Sample Statistics and Robustness of the Far Dummy

Table B1: Summary Statistics of Our Sample

Panel A shows hotel characteristics of 5,547 new franchised hotels opened during 2000-2008. The dummy Far equals 1 if the distance between the midpoint of a hotel's parent division and hotel's state is more than 1,500 miles, and 0 otherwise. The dummy High-quality equals 1 if a hotel belongs to a high quality-tier (upscale, upper upscale and few luxury properties) and 0 otherwise (economy and midscale properties). Panel B 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 hotels' county-level characteristics.

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

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 B.2: Different Thresholds for the Far Dummy

The table replicates Table 3 - col. I for different thresholds of the Far dummy variable. Far (“X”) classifies a hotel as Far if it is more than “X” miles from the mid-point of a parent’s HQ division.

Variable	log(rooms)	log(rooms)	log(rooms)	log(rooms)	log(rooms)
Far (1,000)	0.0090 (0.0128)				
Far (1,250)		0.0227** (0.0105)			
Far (1,500)			0.0284** (0.0132)		
Far (1,750)				0.0306* (0.0164)	
Far (2,000)					0.0296 (0.0198)
Controls	Yes	Yes	Yes	Yes	Yes
Location Dummies	Yes	Yes	Yes	Yes	Yes
Brand Fixed Effects	Yes	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes
Hotel Mkt Tract Fixed Effects	Yes	Yes	Yes	Yes	Yes
R-squared	0.7571	0.7573	0.7574	0.7574	0.7573
# of Far Hotels	2508	1761	1269	1120	798
N	5547	5547	5547	5547	5547

Figure B.1: Single Parent — Far Dummy and Actual Distance to HQ.

The figure shows the relation between our Far dummy and the actual hotel-HQ distances for all the hotels of the single parent for which we have exact HQ office location. The vertical axis shows the values for the dummy Far (0 vs. 1) and the horizontal axis shows the continuous hotel-HQ distances for all hotels of this parent. The vertical dashed line indicates the 1,500 miles threshold we rely on when constructing our Far dummy.

