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by

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Decision Structures in Franchise Systems of the Plural Form

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Abstract

Many successful franchise chains directly own a positive fraction of stores — a structure referred to as plural form. We propose that this ownership structure is chosen as a commitment not to expropriate franchisees. The theoretical model is based on an empirical analysis of contract and interview data from the US fast-food sector and well known stylized facts: First, franchisees typically have strong contractual obligations to implement activities selected by the chain. Second, franchisees pay a revenue-based royalty to the chain. Therefore, the chain has incentives to select inefficient activities that yield high revenues but are too costly. If uniform standards require that activities must be the same in company-owned and franchise stores, a substantial fraction of company-owned stores works as a commitment device to select more efficient activities. The theoretical analysis further predicts that a strong contractual commitment to uniform standards is preferable if the fraction of company-owned stores is sufficiently high. This prediction is supported by our data.

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1 Introduction

Franchising is a widespread phenomena. According to estimates for the year 2001 (IFA and PWC, 2004), there were more than 760,000 franchised businesses in the US, which generated a total economic output of more than $1.53 trillion.

One puzzling empirical regularity in franchising is the stable coexistence of franchised and company-owned stores within a chain. Following Bradach & Eccles (1989), we call this arrangement a *plural form.*[1] In an extensive panel-data study Lafontaine and Shaw (2005) show that after some adjustment period the fraction of company-owned stores remains relatively stable in most franchise chains and seems to be deliberately targeted.[2] On average 15% of stores of established franchise chains are directly company-owned, but this numbers varies considerably between and within sectors. Several alternative explanations for the plural form have been discussed in the existing literature, which we will review in Section 2.

We have collected contract, interview and background data from the US fast-food industry to motivate a game-theoretic analysis that illustrates an additional reason for the plural form. The analysis is based on two stylized facts about franchise contracts, which hold in our sample and are more generally observed in franchising (see e.g. Bradach, 1998, or Blair & Lafontaine, 2005, for overviews): First, contracts typically give the chain strong power to decide upon certain activities, like introduction of new products or changes in building requirements. Once a chain selects such an activity, it must be implemented by franchisees. Second, franchisees have to pay royalties, which are fraction of sales-revenues, to the chain.[3]

These two contractual features create a source of inefficiencies in decision making. Since royalties are based on revenues, and costs are born only by franchisees, the chain has incentives to choose inefficient activities that lead to high revenues but can be very costly for a store. A substantial fraction of company-stores can function as a commitment device for the chain to select more efficient activities, however. Such a commitment effect is present when the chain is obliged to uniform standards that require that the same activities must be selected for company-owned stores as for franchise stores. The reason is simply that for the fraction of the chain's total income that is contributed by company-owned stores, the cost of activities are fully internalized. Therefore, inefficient activities that lead to high revenues — but are very costly — become less attractive as the fraction

[1] This arrangement is also known as *dual distribution* or *contract mixing.*

[2] For previous empirical studies, see e.g. Lutz (1992), Lafontaine (1992), Thompson (1994), Scott (1995) and Lafontaine and Shaw (1999).

[3] The literature discuss several reasons for royalties on revenues, which we review in Section 2.

of company-owned stores increases.[1]

In Section 3, we perform the game theoretic analysis in which we consider three cases. In the first case, we assume that the chain is obliged to uniform standards between company-owned and franchise stores and chooses endogenously the optimal fraction of company-owned stores. We model the interaction between the chain and franchisees via a three stage game. In the first stage, the chain commits to a fraction of company-owned stores and offers a franchise contract that specifies the royalty. When franchisees accept the contract in Stage 2, nature draws a state of the world that determines revenues and costs, as well as the optimal chain-wide activities. In Stage 3, the chain observes the state of the world and selects a chain-wide activity. Finally revenues and costs are realized and split according to the franchise contract. We show that the chain may select a positive fraction of company-owned stores, even if company-owned stores are run less efficiently than franchise stores. Thus, the plural form endogenously results from our model.

In the second case, the chain selects not only the fraction of company-owned stores, but also decides whether to commit to uniform standards between franchise and company-owned stores. The analysis straightforwardly shows that in this case it is always optimal for the chain to contractually commit itself to such uniform standards.

Finally, we analyse the case where the optimal fraction of company-owned stores is determined by factors outside our model (the literature review in Section 2 summarizes several such factors). We consider the extreme case where the fraction of company-owned stores is completely exogenous and analyse when it is optimal for the chain to have a contractual commitment to uniform standards. We show that for a sufficiently high fraction of company-owned stores, it is optimal to include such a commitment into the contract whereas for a sufficiently low fraction of company-owned stores, it is optimal not to have such a commitment.

This prediction is supported by our empirical analysis in Section 4. We find a significant correlation between the fraction of company-owned stores and the strength of a contractual commitment to uniform standards in the data. We confirm in an ordered probit regression that this positive relation is robust to the inclusion of several control variables like a chain's size, age or its main product. Furthermore, Section 4 gives a descriptive overview of the contract contents and interview responses with respect to questions about the plural form, decision structures, and commitment to uniform standards. Section 5 briefly concludes. Unless stated otherwise, all proofs can be found in the appendix.

[1]The basic idea that company-owned stores may lead to to selection of more efficient activities has already been previously examined in two unpublished papers, including a case study of 5 franchise chains, by the second author — see Lewin-Solomons (2000a and 2000b).

2 Background and Related Literature

Company-owned Stores and Franchise Stores

Before we can explore how the mix of franchised and company-owned stores affects a chain's dynamic efficiency, we must understand the defining characteristics of these two forms.

Probably the most important distinction can be found in the different incentives induced by franchise contracts and employment contracts of company-stores manager: A franchisee has to pay a fraction of revenues to the chain as a royalty. (Often there is also an initial fee upon opening a store, which is mainly used to cover setup and training costs — see Scott, 1995 or Lafontaine, 1992.) The remainder of profits are hers to keep, however. By contrast, a company manager is an employee with a mainly fixed salary.

Therefore, franchisees' incentives for profit maximization are very strong, whereas a company manager's incentives are quite weak. In result, as even company representatives often readily admit,[1] franchised stores typically outperform those that are company-owned.

A second issue is whether company-owned stores substantially differ from franchise stores in so far that direct ownership grants additional residual rights of control. Such residual rights of controls are an key element if ownership structures are compared from a perspective of incomplete contracts, see e.g. Grossman and Hart (1986).

Overall, differences in control rights seem not to be very pronounced in franchise chains, however, because the chain has typically also very strong control rights over franchise stores. A franchisee is contractually bound to adhere to the chain's "operations manual", which specifies how the store is to be run. Any deviation from this manual occurs only with the permission or acquiescence of the chain, and most chains have the power to change this manual unilaterally (more on this later in the empirical section).

Reasons for Royalties on Revenues

Although royalties on revenues yield high powered incentives for franchisees, similar incentives could also be created by alternative contractual arrangements like royalties on profits or fixed annual fees. Considering the drawbacks outlined in the introduction, it

[1] Profit statistics are not readily available due to their sensitivity. However, among five chains studied in an in-depth case study by Lewin-Solomons (2000a), the staff of two chains reported unambiguously that franchised units were more efficient (in terms of profit), one chain claimed that franchisee profits were more variable, one gave ambivalent answers, and in the final chain, no company units existed for comparison. Franchisees themselves almost uniformly claimed that franchises were more efficient.

seems therefore somewhat puzzling that royalties on revenues are the standard arrangement in franchising.

One important reason for their popularity is the impossibility to effectively monitor costs (see e.g. Rubin, 1978 or Maness, 1996). Therefore, royalties on profits are usually not implementable. Fixed annual payments are suboptimal when both franchisees and the chain must exert costly effort to increase chain wide profits, as is analysed by Lal (1990) and Bhattacharyya & Lafontaine (1995). Royalties can also be preferable when franchisees are risk-averse (see e.g. Norton, 1988 or Mathewson and Winter, 1992). For an general overview on the topic see e.g. the surveys by Dnes (1996) and Lafontaine & Raynaud (2002) or Chapter 3 in Blair & Lafontaine (2005). To keep our theoretical analysis simple, we do not include these factors that make revenue-based royalties optimal, but rather take the empirical fact that royalties are revenue-based as given.

Alternative Explanations for the Plural Form in the Literature

The literature discusses several alternative explanations for the plural form, which we briefly review. An early branch of literature (e.g. Oxenfeldt & Kelly, 1969) considered franchising and the plural form to be transitory phenomena that facilitate access to initially scarce resources like capital (Caves & Murphy, 1976), managerial talent (Norton, 1988) or local information (Minkler, 1990). In the model of Gallini and Lutz (1992) the transition is reversed: chains start with company-ownership to signal profitable business to franchisees but once signalling is successful they can move towards a higher fraction of franchised stores.

To explain the long-run coexistence of company-owned and franchised stores, some literature focus on differences between locations of individual stores. For example, Brickely and Dark (1987) find empirically that a smaller distance to chain headquarters or a lower proportion of repeat business makes a store more likely to be company-owned. Chakrabarty et. al. (2002) theoretically analyze how the plural form can arise if the chain has better information about the profitability of different store locations.

Affuso (2002) adopts a different approach where the plural form can be optimal when managers are heterogeneous and self-select into franchise or company-employment contracts. She shows empirically that characteristics of store managers indeed significantly differ between franchise and company-owned stores.

Other papers focus on chain wide implications of the decision to have some company-owned stores. Scott (1995) and especially Lafontaine and Shaw (2005) have strong empirical arguments that company ownership is important to protect a chain's brand value. Bai and Tao (2000) provide a corresponding theoretical model for the plural form, where

goodwill-effort of company-owned stores protects a chain's brand name, while franchise stores have higher sales efforts. Sorensen and Sorensen (2001) explain the plural form by focusing on the different roles of franchise and company-owned stores in exploration and organizational learning.

Our analysis, which focuses on the role of the plural form as a commitment device for the chain and on the interaction with contractual commitments to uniform standards, is definitely not targeted to substitute those existing explanations about the plural form, but is meant to complement the previous insights.

3 Theoretical Analysis

We first model the case where the chain decides endogenously on the fraction of company-owned stores, but is obliged to uniform standards between franchise and company-owned stores. Then, we briefly verify that within this set-up, it is indeed, optimal for the chain to always make a contractual commitment to uniform standards. Finally, we assume that the fraction of company-owned stores is exogenously given and examine under which conditions the chain prefers to commit to uniform standards.

Case 1: Endogenous fraction of company-owned stores when uniform standards are obligatory

We assume a store's revenues and costs depend on external factors like customers' preferences or input prices, and on the chain's activities such as its choice of products, advertisement, price-policy and the appearance of stores. The actual state of the world, which characterizes all external factors, is denoted by x. Ex-ante, x is unknown and will be randomly drawn from a commonly known distribution on a set of states X.

The chain headquarters observes the state and can decide on chain wide activities. For a given state x a real number a is assigned to each activity, which can be interpreted as the "size" of an activity. Activities of higher size yield higher revenues, but also lead to higher costs. For all franchise stores, costs are identically given by a function $C(a|x)$ that is twice differentiable, strictly increasing and strictly convex in a for all x, i.e. $C'(a|x) > 0$ and $C''(a|x) > 0$. Furthermore, the Inada conditions $C'(0|x) = 0$ and $\lim_{a\to\infty} C'(a|x) = \infty$ shall hold for all x. A store's revenues are given by a twice differentiable, strictly increasing, and concave function $R(a|x)$.

A chain consists of a continuum of stores with mass normalized to 1 (thus a chain's total size is fixed). The fraction of company-owned stores in the chain is denoted by γ, so that the fraction of franchised stores is $1 - \gamma$.

Following the arguments given in Section 2, we assume that company-owned stores are run less efficiently than franchise stores. This is incorporated simply by assuming that profits of a company-owned store are by a fixed amount L lower than profits of a franchise store.

When the state of the world is x and all stores of a chain implement activities a, total profits are thus given by

$$\pi(a|x) = R(a|x) - C(a|x) - \gamma L. \tag{1}$$

An activity that maximizes total profits at a state x is called *efficient* and denoted by $a_e(x)$. It follows from the assumptions on the cost and revenue functions that the efficient size of activity is uniquely defined by the condition that marginal cost equal marginal revenues, i.e.

$$C'(a_e|x) = R'(a_e|x). \tag{2}$$

We model the interaction between the chain headquarters H and a representative franchisee F by an extensive form game with the following timing:

1. The chain-headquarters H chooses a fraction of company-owned stores γ. Furthermore, H chooses a royalty $\rho \in [0, 1]$, which denotes the share of revenues that franchisees have to pay to the chain.

2. F accepts or rejects the offered franchise contract. If F rejects, H and F get both an outside payoff of 0.

3. Nature draws the state of the world x. H observes the state and chooses an activity $a_u \leq \overline{a}(x)$, which is uniformly implemented in all company and franchise stores.

Franchisee's final payoffs are its profits net of the royalty payments:

$$\pi_F = (1 - \rho)R(a_u|x) - C(a_u|x) \tag{3}$$

The chain's payoff consists of the royalty income from franchisees plus the profits from company-owned stores:

$$\pi_H = (1 - \gamma)\rho R(a_u|x) + \gamma(R(a_u|x) - C(a_u|x) - L) \tag{4}$$

We assume that both F and H are risk-neutral and maximize their expected payoff.

Depending on the state of the world x, there is an upper limit $\overline{a}(x)$ on the maximal possible size of an activity. Without such a limit, the chain could impose activities of arbitrarily high costs upon the franchisees, which is surely unrealistic, since franchisees

always have the option to breach the contract or to drop out of the chain. Furthermore, reputational concerns of the chain may impose a limit on activities' size even if the state of the world is imperfectly observable by the franchisees. We implicitly capture these considerations by imposing this upper bound $\overline{a}(x)$.

We now solve this game via backward induction.

Stage 3

Since π_H is concave in a, the activity that maximizes the chain's payoff, denoted by a_u^*, is implicitly given by the first order condition

$$C'(a_u^*|x) = \left(1 + \frac{(1-\gamma)\rho}{\gamma}\right) R'(a_u^*|x) \tag{5}$$

Comparing with Equation (2), we find that the chain's preferred level of activity a_u^* is weakly higher than the efficient level of activities a_e, and strictly higher whenever there are positive royalties ($\rho > 0$) and some franchised stores ($\gamma < 1$). The gap between a_u^* and the efficient activity, is decreasing in the fraction of company-owned stores γ. Especially, a_u^* converges to the efficient activity as the fraction of company-owned stores γ converges to 1.

The intuition behind these results is that an increased level of activity increases franchisees' revenues and thereby royalty payments to the chain, which gives H incentives to demand activity levels above the efficient level a_e. On the other hand, an activity level above a_e reduces profits of company-owned stores. A higher fraction of company-owned stores makes the chain therefore prefer more efficient activities. H selects a_u^* unless the upper bound on activities' size $\overline{a}(x)$ is binding. The selected activity is thus given by

$$a_u(x,\gamma,\rho) = \begin{cases} a_u^*(x,\gamma,\rho) & \text{if } a_u^* \leq \overline{a} \\ \overline{a}(x) & \text{if } a_u^* > \overline{a} \end{cases} . \tag{6}$$

Stage 2

Franchisees accept the contract if and only if their expected payoff, denoted by $\Pi_F(\gamma,\rho)$ is non-negative, where expectations are taken over the possible states of the world x and the choice of a_u at Stage 3 is rationally predicted.

Stage 1

We denote the expected payoff of the chain, conditionally on the contract being accepted, by $\Pi_H(\gamma,\rho)$. To avoid tedious case distinctions about whether it is profitable to open up a chain or not, the following regularity condition is imposed:

Condition 1 *There exist a combination of γ and ρ such that franchisees accept the contract and H's expected payoff $\Pi_H(\gamma, \rho)$ is strictly positive.*

Lemma 1 characterizes the selected royalty rate ρ given γ :

Lemma 1 *For any given fraction of compand-stores $\gamma < 1$ it holds true that*

1. *the chain's expected payoff (conditional on the contract being accepted) $\Pi_H(\gamma, \rho)$ is strictly increasing in the royalty ρ,*
2. *the franchisee's expected payoff $\Pi_F(\gamma, \rho)$ is strictly decreasing in the royalty ρ,*
3. *there is a unique royalty $\rho_u(\gamma)$ such that F's expected payoff is zero,*
4. *H chooses $\rho_u(\gamma)$ at Stage 1.*

Since the royalty is set to the level $\rho_u(\gamma)$ where franchisees have zero expected payoff, the chain's expected payoff is identical to the expected total profit in the chain. The optimal choice of the fraction of company-owned stores γ now balances two factors: On the one hand, company-owned stores are less profitable than franchise stores, but on the other hand, a higher fraction of company-owned stores leads to the selection of more efficient activities at Stage 3. The second effect is especially pronounced when the upper bounds on sizes of activities $\overline{a}(x)$ are high, since without company-owned stores inefficiencies would be quite large for high $\overline{a}(x)$. One the other hand, the marginal gains from more efficient activities converge to zero as the fraction of company-owned stores goes to 1. That is the intuition behind the following result:

Proposition 1 *If there is an obligation to uniform standards and the upper bounds on the size of activities $\overline{a}(x)$ are sufficiently large, the chain will be of the plural form, i.e. H chooses $\gamma \in (0, 1)$.*

We thus have shown that the plural form can endogenously arise in our model, even though company-owned stores are less profitable than franchise stores.

Case 2: Both commitment to uniform standards and fraction of company-owned stores are endogenously determined

To see whether the chain prefers a commitment to uniform standards, we briefly examine the outcome of our model when the chain can select different activities for franchise stores than for company-owned stores. The previous model is modified such that at Stage 3 the

chain headquarters can select different activities for company-owned stores and franchise stores.

Now, the chain selects for company-owned stores the efficient level of activities a_e at Stage 3, in order to maximize company-owned stores' profits. For franchise stores the chain selects the maximum activity $\overline{a}(x)$ in order to maximize royalty payments (unless the royalty ρ is 0). As before, franchisees accept the contract at Stage 2 if and only if their expected payoff is non-negative.

The analysis of Stage 1 is straightforward because the selected activities in Stage 3 do neither depend on the fraction of company-owned stores γ nor on the royalty ρ. Obviously, the chain sets the royalty on that level where expected payoff of franchisees is zero. Thus, the headquarters' expected income from a franchise store is given by $E_x[R(\overline{a}|x) - C(\overline{a}|x)]$ and from a company-owned store by $E_x\left[(R(a_e|x) - C(a_e|x)) - L\right]$. Neither of the two expressions does depend on the fraction of company-owned stores γ. Hence, the chain will be completely franchised if expected income from franchise stores is higher than that of company-owned stores, and completely company-owned if the reverse is true. A plural form can at most be equally profitable, but this happens only in the non-generic case where both types of stores make the same expected profits.

This implies that it is weakly dominant for the chain to include a commitment to uniform standards into the contract. Without uniform standards either complete franchising or complete ownership is the optimal structure, but in those cases a commitment to select the same activities for franchise and company-owned stores has obviously no effect. This means a commitment to uniform standards can never harm. Furthermore, it directly follows that whenever the plural form is strictly optimal under a commitment to uniform standards, making such a commitment is also strictly optimal. We summarize this result in Proposition 2:

Proposition 2 *When the fraction of company-owned stores is endogenously selected at Stage 1, it is always optimal for the chain to include a commitment to uniform standards into the franchise contract.*

Proof. (see derivation above) ■

Case 3: Fraction of company-owned stores is exogenously given

We now analyse the case where the optimal fraction of company-owned stores is determined by factors outside our model, like those factors reviewed in Section 2. We consider the extreme case where the fraction of company-owned stores is completely exogenously given and examine under which conditions the chain optimally includes a commitment to

uniform standards between franchise and company-owned stores into the franchise contracts at Stage 1. We especially analyse whether — ceteris paribus — such a commitment is optimal rather for a low or for a high fraction of company-owned stores.

Since the fraction of companies stores is exogenously given, it does not matter for the analysis whether franchise stores are more efficient than company-owned stores. To simplify the exposition, we therefore assume that both type of stores are equally efficient (i.e. $L = 0$).

Behavior in Stages 2 and 3 with uniformity requirement is the same as analyzed in Case 1 and without a uniformity requirement the same as analyzed in Case 2. Furthermore, royalties are again uniquely determined by the condition that franchisee's expected payoff at Stage 2 is zero. The headquarters' expected payoff is therefore given by the expected profits of franchised restaurants plus expected profits of company-owned restaurants and can be written as

$$\Pi_H^u(\gamma) \equiv E_x[\pi(a_u|x)] \tag{7}$$

$$\Pi_H^n(\gamma) \equiv E_x[(1-\gamma)\pi(\overline{a}|x) + \gamma\pi(a_e|x)] \tag{8}$$

for the cases with (superscript u) and without (superscript n) a commitment to uniformity standards, respectively. A commitment to uniform standards is optimal whenever $\Pi_H^u(\gamma) \geq \Pi_H^n(\gamma)$.

Before presenting the general results, consider a simple example. Assume costs and revenues do not depend on the state of the world and are given by $R(a|x) = a$ and $C(a|x) = a^2$. The efficient size of activities is then given by $a_e = 0.5$. Assume the chain can force activities up to a maximum size of $\overline{a} = 0.75$. Figure 1 shows the chains' payoff with and without uniformity requirement as a function of the fraction of company-owned stores.

Two features of the example are generally true: First, if the chain is completely franchised or completely company-owned then uniform standards are obviously irrelevant and have no effect on the chains' expected payoff. Second, the chains' expected payoff (weakly) increases in the fraction of company-owned stores in both cases: with and without a uniformity requirement.

With a uniformity requirement the chain's payoff $\Pi_H^u(\gamma)$ increases in γ because a higher fraction of company-owned stores leads to the selection of more efficient activities a_u at Stage 3. This effect occurs whenever the fraction of company-owned stores is sufficiently high, such that the headquarter sets at Stage 3 activity $a_u = a_u^*$. For a small fraction of company-owned stores (in the example for $\gamma \leq 0.25$) we find that $\Pi_H^u(\gamma)$ is constant, because $a_u^* > \overline{a}$. This means the chain selects activities of maximal possible size $\overline{a}(x)$, which does not depend on γ.

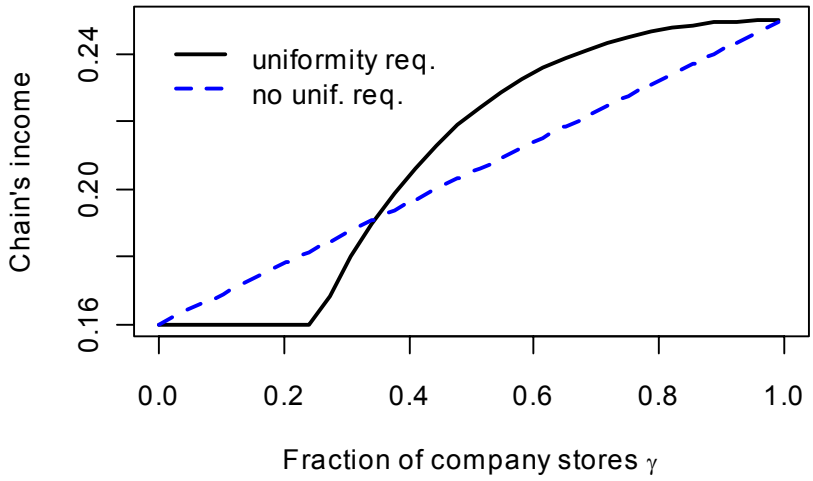

Figure 1: Example: Chain's income in cases with and without uniformity requirement as a function of the fraction of company stores.

Without a uniformity requirement, the chain's payoff $\Pi_H^n(\gamma)$ increases in γ because company-stores implement efficient activities whereas franchised stores are forced to implement the inefficient activities $\overline{a}(x)$. In the example $\Pi_H^u(\gamma)$ crosses $\Pi_H^n(\gamma)$ from below at $\gamma = \frac{1}{3}$.

Thus, it is optimal for the chain to include a uniformity requirement into the contract whenever the fraction of company-owned stores is higher than a third.

Parts of this result carry over to the general case. Under the sufficient condition that the upper bound on activities is higher than the efficient level of activities, i.e. $\overline{a}(x) > a_e(x)$, for all possible states x, we can show that for sufficiently high levels of γ it is optimal to commit to uniform standards and that for sufficiently low levels of γ it is optimal not being committed to uniform standards. We cannot, however, generally exclude the possibility that $\Pi_H^u(\gamma)$ and $\Pi_H^n(\gamma)$ cross more than once. Proposition 3 states this result:

Proposition 3 *If the fraction of company-owned stores γ is exogenously given, there are thresholds $\overline{\gamma} < 1$ and $\underline{\gamma} > 0$, such that for all sufficiently high γ, i.e. $\overline{\gamma} < \gamma < 1$, committing to uniform standards is strictly optimal for the chain and for all sufficiently low γ, i.e. $0 < \gamma < \underline{\gamma}$, it is strictly optimal not to be committed to uniform standards.*

This result suggests a positive correlation between the fraction of company-owned stores and the existence of a uniformity requirement in contracts. This is one of the questions we analyse in the following section.

4 Empirical Analysis

Data

The data of our empirical analysis is derived from a study of franchise systems that were selected using Entrepreneur Magazine's 1997 Franchise 500. The data was collected in the year 1999. Chains were limited to the food industry, and were also included only if they contained a minimum number of franchised stores (40), had begun franchising no later than 1987, and were reasonably stable in that they remained in the Franchise 500 for at least three consecutive years. Chains that began franchising in 1985 or later were included only if the ratio between franchised and company-owned stores was stable. Of the 70 chains fitting these criteria, 24 were entirely franchised or almost entirely franchised (5 or fewer company-owned stores or more than 99.5% franchised). Due to the time-consuming nature of data collection and processing, we included only 12 of such chains, chosen at random, resulting in a stratified sample of 58 chains. For these chains, we attempted to obtain the UFOC (Uniform Franchise Offering Circular) and other documents. This information proved impossible to obtain or inadequate in 21 chains (36.2%). The dataset therefore consists of 37 chains.

For each of these chains, the UFOC and other documents were analysed in order to obtain measures for the decision power of the chain headquarters and the strength of a contractual commitment to uniform standards. Different measures were created for changes related to new products and changes related to building work. Furthermore, for each chain two franchisees were chosen at random to be interviewed by telephone or fax.[1] These interviews focused on the extent of chain's headquarters' decision power and franchisees influence, as well as the role of uniform standards between franchise and company-owned stores. To avoid selection bias, the same franchisees were contacted repeatedly until a response was obtained; thus the participation rate was close to 100%. Basic statistics on each chain were also collected, including the numbers of franchised and company-owned stores for 1998. Table 1 shows the distribution of fraction of company-owned stores in the sample.

Table 1: Distribution of fraction of company stores in the sample

$\gamma \in$	0	(0,.1]	(.1,.2]	(.2,.3]	(.3,.4]	(.5,.6]	(.6,.7]	(.7,.8]	(.8,.9]	(.9,1]
No. of chains	6	11	5	2	4	3	2	3	0	1

[1] In one chain, only one such interview could be obtained.

Structure of the analysis

We first give a descriptive overview of the contract analysis and the interview results that shows that the decision power of the chain headquarters is indeed very strong in most chains. Then we analyze whether a commitment to uniform standards between franchise and company-owned stores appears in franchise contracts and how such a commitment is related to a chain's fraction of company-owned stores.

Decision power within a chain

Franchise contracts were classified according to the chain's decision power in two areas: the introduction of new products and changes in building requirements. Table 2 summarizes the results:

Table 2: Decision power according to franchise contracts	prod.	build.
1: Nothing can be found in the contract suggesting that franchisees play a role in decisions about changes in products / building requirements. No franchise association exists.	70%	62%
2: Contract indicates that changes must be reasonable or that a franchisee body (such as a franchise association) exists (that must be consulted or is normally consulted as a matter of routine)	24%	32%
3: Contract indicates that the chain cannot enforce changes of this sort on franchisee unless franchisees agree, or unless a representative franchisee body agrees.	5%	5%

The left column shows the classification category and the right columns the fractions of chains whose contracts fall into these categories with respect to product and building decisions. Overall, franchisees have slightly more rights with respect to changes in building requirements, but nevertheless in most chains the contracts give very strong or exclusive decision rights to the chain.

Note that although contracts usually grant franchisees only little decision power, the chain nevertheless often seeks advice from franchisees. Table 3 summarizes results of an interview question addressing this issue.

Table 3: Influence of franchisees on product decisions

Q: In deciding whether to introduce new products or change existing products, how much does your chain rely on advice from franchisees? Which of the following statements comes closest describing your chain?	
1: Franchisees do not provide important advice. The chain relies on its own experts.	9%
2: Franchisees sometimes provide important feedback, but our influence is limited.	36%
3: The chain actively seeks out feedback from franchisees because often they are very critical and/or knowledgeable and the chain appreciates that. Our influence is substantial.	35%
4: The chain always seeks advice from our franchisees, and a change rarely takes place if franchisees don't think it's a good idea. Our influence is tremendous.	19%
Rank order correlation (Spearman's ρ) between the two interviews of a chain: 0.62	

More than half of the answers state that franchisees chain often seeks advice from franchisees, which can also give franchisees influence on actual decisions. Nevertheless, still 45% of franchisees characterize their actual influence in the decision process as limited or not existent. Also, in our opinion such forms of informal influence provide no guarantee that franchisees will not be exploited by the decisions made by the franchise chain.

An important question for actual decision power in a chain is how strictly franchisees must adhere to decisions made by the chain headquarters. Corresponding interview results are summarized in Table 4.

Table 4: Leeway in diverging from official requirements

Q: I want to understand how much informal leeway franchisees have when the chain makes a decision about new products or a change in an existing product. Suppose that such a change takes place and a franchisee does not like the change. Which of the following statements comes closest describing your chain?	
1: He has to go along with the change because that's part of the deal when you become a franchisee.	39%
2: If he doesn't want to implement the change, he can request an exemption and occasionally such exemptions are granted.	38%
3: If he doesn't want to implement the change, he can request an exemption, and very often such exemptions are granted.	12%
4: The chain trusts its experienced franchisees and often looks the other way when they do their own thing because it knows that they must have good reasons for doing so.	11%
Rank order correlation (Spearman's ρ) between the two interviews of a chain: 0.76	

The answers suggest that in most chains, franchisees have to follow the chain's decisions quite strictly, although in some chains exemptions are regularly granted.

Our theoretical analysis focuses on diverging interests of the chain and its franchisees in the selection of activities. Is dissatisfaction about chains' decisions a commonly observed element in franchise relations? Table 5 shows that indeed some, but also not overwhelming much, dissatisfaction is reported by franchisees.

Table 5: Franchisees' satisfaction with chain's decisions

Q: In some chains, franchisees are very satisfied with decisions made by the chain. In others, there is some conflict over certain decisions, or franchisees might quietly not like some of the things the chain asks them to do. I want to understand how much conflict exists. (There may be none at all.) Read all of the following choices and tell me which is closest to being your opinion:	
1: The chain is pretty much always right on. I hardly even have any problem with their policies, and I wouldn't object, even if I could.	30%
2: I hardly ever have a problem with the chain's policies, but occasionally, they ask me to do something that I'd rather not do.	49%
3: They often ask me do something I would rather not do. It's happened quite a few times.	22%
Rank order correlation (Spearman's ρ) between the two interviews of a chain: 0.09 (not signifcant)	

The low correlation of the answers from the interviewed franchisees of the same chains, suggests, that satisfaction levels are specific for each franchisee and are not necessarily a characteristic element of certain chains. We also do not find a significant correlation between dissatisfaction and the fraction of company-owned stores in a chain.

Uniform standards between franchise and company-owned stores

Next, we examined whether a clause on uniform standards can be found in the franchise contract and how strong is the commitment to uniform standards with respect to product innovations and building requirements. The analysis is based on those 31 chains in our sample that have a positive number of company-owned stores. Table 6 summarizes the results.

Table 6: Uniformity requirement in franchise contracts

	prod.	build.
1: Nothing in the contract indicates a commitment to uniformity. No mentioning of a system of uniform units.	13%	13%
2: The contract mentions a system of uniform units.	23%	16%
3: Contract indicates that the chain cannot enforce activities on franchisees unless those activities are chain wide. Typically the contract includes a commitment by the chain to maintain uniform standards.	55%	52%
4: The contract is explicit about its statement connected to uniform standards, with no room for interpretation.	10%	19%

Overall, uniformity is mentioned in 83% of contracts and a commitment to uniform standards can be found in a majority of chains, although often with some room for interpretation.

We now examine the theoretical prediction that a commitment to uniform standards is more likely to be beneficial when the fraction of company-owned stores is high. There are indeed positive rank order correlations (Spearman's ρ) between the fraction of company-owned stores and our measures of commitment to uniform standards of 0.54 (product)

and 0.53 (building), which both are significant at a one percent level. To control for additional factors, like the royalty or the main product of the chain, we perform ordered probit regressions, summarized in Table 7.

Table 7: Ordered probit regression for contractual commitment to uniform standards

Independent variables	Product		Building requirements	
	(1)	(2)	(3)	(4)
Fraction of company stores γ	3.85***	5.12***	3.37***	3.53***
	(1.23)	(1.64)	(1.10)	(1.27)
Royalty	-14.62	-9.88	-21.35	-10.94
	(23.88)	(31.95)	(23.41)	(29.93)
Number of stores (100s)	.001	-.004	.004	.003
	(.010)	(.012)	(.010)	(.011)
Age of chain	.010	.006	.006	.001
	(.015)	(.019)	(.015)	(.019)
Chain's main product				
Hamburger		-.345		-.525
		(1.042)		(1.00)
Sandwich		-.074		-.731
		(1.11)		(1.09)
Chicken		.447		.008
		(.743)		(.704)
Pizza		.311		-.082
		(.774)		(.749)
Familiy food		-.096		1.25
		(.928)		(.971)
Steak		-.691		.431
		(1.103		(1.21)
Ice cream		2.29*		1.16
		(1.39)		(1.21)
Mexican food		.141		.662
		(.993)		(.936)
Pseudo R^2	0.22	0.30	0.19	0.27

Notes: Estimated standard errors in parentheses. Number of observations: 31
*** / ** / * indicate statistical significance at the 1, 5 and 10 percent level, respectively.

Despite the small sample size, we find for all four specifications a strongly significant impact of the fraction of company-owned stores on the strength of a commitment to uniform standards. Except for the weakly significant dummy for chains with ice cream as main product (which may be due to spurious correlation), no other factor can significantly explain the degree of contractual commitment to uniform standards.

We also investigate the role of uniformity in our interview questions. Franchisees were asked whether uniform treatment of franchisees and company-owned stores is often

violated or not.

Table 8: Uniform standards, interview results

Q: Most of the time when a chain introduces a product, the introduction is system-wide, in both company stores and franchised stores. I want to understand whether this is just the way things happen, or whether the chain actually has to do things this way, contractually. Which of the following statements comes closest to describing your chain?	
1: There is no policy to maintain uniform standards. Sometimes franchisees must adopt practices that are different from those adopted in company stores.	12%
2: The chain does not legally have to maintain uniform standards, but they do so as a matter of policy.	2%
3: The chain does maintain uniform standards (between company stores and franchised stores), but I'm not sure if they legally have to do this.	56%
4: The chain must maintain the same standards in franchised and company-owned stores. Franchisees cannot legally be forced to adopt any practice that is not also adopted in company stores.	31%
Rank order correlation (Spearman's ρ) between the two interviews of a chain: 0.57	

The results (see Table 8) show that uniformity standards generally seem quite strong, although still 12% of franchisees report that they sometimes have to adopt different practices than company-owned stores. Somewhat surprising, from our theoretical perspective, the answers to this question are neither significantly correlated with our contractual measure of uniformity, nor is there a significant correlation with the fraction of company-owned stores in a chain. This indicates that — at least for most decisions — adherence to uniform standards is driven also by alternative factors of the business-environment that seem to be to some degree independent of the actual contractual clauses.

In line with our model it is generally true, however, that the maintenance of uniform standards plays an important role for franchisees:

Table 9: Importance of uniform standards

Q: How important is it to you that the chain maintain uniform standards?	
1: This policy is not very important.	0%
2: This policy is moderately important.	35%
3: This policy is very important.	65%
Rank order correlation (Spearman's ρ) between the two interviews of a chain: -0.06 (not signif.)	

5 Summary

We presented a formal model that analyses the optimal choice of the fraction of company-owned stores and contractual commitments to uniform standards. The main idea is based

on the well known fact that franchisees pay revenue-based royalties, which can lead to selection of inefficient activities by the chain. Since company-ownership allows the chain a credible commitment to select activities that are more efficient, a positive fraction of company-owned stores can arise in our model where franchise stores are always run more efficiently. This mechanism only works if the chain must maintain uniform standards that require to select the same activities in franchise and company-owned stores.

If the fraction of company-owned stores is determined by exogenous factors, the analysis showed that it is optimal for a chain to include a commitment to uniform standards into franchise contracts if the fraction of company-owned stores is high, but to omit such a commitment if the fraction of company-owned stores is low.

An empirical analysis of contract and interview data from the US fast-food industry gave an descriptive overview of the distribution of decision power within the chains and the importance of uniform standards and tested whether uniform standards are more often observed in chains where the fraction of company-owned stores is high. There is indeed a significantly positive correlation between the fraction of company-owned stores and the occurrence of a commitment to uniformity standards in the analysed franchise contracts. The positive relationship remained significant when controlling for additional chain-specific characteristics.

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Appendix: Proofs

Proof of Lemma 1: 1. We have the definition $\Pi_H(\lambda,\rho) := E_x[\pi_H(a_u(x,\gamma,\rho),\gamma,\rho|x)]$. Differentiating w.r.t. ρ we find

$$\frac{\partial \Pi_H}{\partial \rho} = E_x\left(\frac{\partial \pi_H(a|x)}{\partial a}_{|a=a_u}\frac{\partial a_u}{\partial \rho} + \frac{\partial \pi_H}{\partial \rho}\right).$$

Recall that for a given state of the world, H either selects $a_u = a_u^*$ or $a_u = \overline{a}$ (if $a_u^* \geq \overline{a}$). In the first case, we have $\frac{\partial \pi_H(a|x)}{\partial a}_{|a=a_u} = 0$, since a_u^* maximizes $\pi_H(a|x)$. In the second case, we have $\frac{\partial a_u}{\partial \rho} = 0$. In both cases the first term vanishes and hence,

$$\frac{\partial \Pi_H}{\partial \rho} = E_x\left(\frac{\partial \pi_H}{\partial \rho}\right) = (1-\gamma)E_x R(a_u|x) > 0.$$

2. Differentiating $\Pi_F(\gamma,\rho)$ w.r.t. ρ we find

$$\begin{aligned}\frac{\partial \Pi_F}{\partial \rho} &= E_x\left(\frac{\partial \pi_F(a|x)}{\partial a}_{|a=a_u}\frac{\partial a_u}{\partial \rho} + \frac{\partial \pi_F}{\partial \rho}\right)\\ &= E_x\left(\left((1-\rho)\,R'(a_u|x) - C'(a_u)\right)\frac{\partial a_u}{\partial \rho} - R(a_u|x)\right)\end{aligned}$$

If $a_u = \overline{a}$ then the derivative $\frac{\partial a_u}{\partial \rho}$ is zero. We then find $\frac{\partial \Pi_F}{\partial \rho} = -E_x R(a_u|x) < 0$. If $a_u = a_u^*$ we can use Equation (5) $C'(a_u^*|x) = \left(1 + \frac{(1-\gamma)\rho}{\gamma}\right)R'(a_u^*|x)$ to find $\frac{\partial \Pi_F}{\partial \rho} = -E_x\left[\frac{\rho}{\gamma}R'(a_u|x)\frac{\partial a_u^*}{\partial \rho} + R(a_u|x)\right] < 0$.

3. F's expected payoff $\Pi_F(\gamma,\rho)$ is non-positive for $\rho = 1$ (franchisees do not keep any revenues) and non-negative for $\rho = 0$ (follows from Condition 1 and the fact that efficient activities a_e are selected at Stage 3 if $\rho = 0$) . Since, furthermore, for every given γ the function $\Pi_F(\gamma,\rho)$ is continuous in ρ and strictly decreasing in ρ, there exists for every fraction of company-owned stores a unique royalty rate $\rho_u(\gamma)$ such that $\Pi_F(\gamma,\rho_u(\gamma)) = 0$.

4. As last step, we show that for H always selects a royalty of $\rho_u(\gamma)$. If $\Pi_F(\gamma,\rho) < 0$ then F would reject the contract, which cannot be optimal for H, since by Condition 1 there exists a contract under which H makes strictly positive profits. If $\Pi_F(\gamma,\rho) > 0$ then by continuity there exists a small increase in ρ such that $\Pi_F(\gamma,\rho)$ is still non-negative. Such a small increase in ρ, however, strictly increases $H's$ expected payoff.■

Proof of Proposition 1: We first show that the chain will not be completely franchised. Assume by contradiction H maximizes payoff with a completely franchised chain ($\gamma = 0$). In this case, H sets maximum activities $\overline{a}(x)$ at Stage 3 whenever there is a positive royalty $\rho > 0$. However, when these activities $\overline{a}(x)$ are sufficiently big, franchise stores' profits before royalties are paid, i.e. $R(\overline{a}(x)|x) - C(\overline{a}(x)|x)$, are already negative. This follows directly from our assumptions on cost and revenue functions. Thus, for sufficiently big $\overline{a}(x)$ and no company-ownership, franchisees accept a contract if and only if the royalty is $\rho = 0$. But for $\rho = 0$ and $\gamma = 0$, the chain has a payoff of zero. This cannot be optimal, since we assumed that there is a combination of γ and ρ such that contracts are accepted and the chain has a strictly positive expected payoff.

We now show that it is also not optimal to have a completely company-owned chain, since it always increases H's expected when at least a small fraction of stores is franchised. For any $\gamma < 1$, the royalty is set such that franchisees expected profits are 0. Thus, H's payoff per store equals the average profits per store, given by

$$\pi(\gamma|x) = R(a_u|x) - C(a_u(x,\gamma,\rho)|x) - \gamma L$$

Differentiating $\pi(\gamma|x)$ w.r.t. γ yields

$$\frac{d\pi(\gamma|x)}{d\gamma} = \left(R'(a_u|x) - C'(a_u|x)\right)\frac{da_u}{d\gamma} - L$$

Consider first the case where the efficient activities can be implemented, i.e. $a_e(x) < \overline{a}(x)$. In a fully company-owned chain, efficient activities are selected at Stage 3, i.e. $a_u(x|\gamma = 1) = a_e(x)$. Since $R'(a_e|x) - C'(a_e|x) = 0$ (Equation 1), we find

$$\frac{d\pi(\gamma|x)}{d\gamma}_{|\gamma=1} = -L < 0$$

The same formula holds in the case $a_e(x) > \overline{a}(x)$, since then $a_u = \overline{a}$ and thus $\frac{da_u}{d\gamma} = 0$. In summary, a small decrease of γ below 1 strictly increases the chain's expected payoff.■

For the proof of Proposition 3, let

$$D(\gamma) \equiv \Pi_H^u(\gamma) - \Pi_H^n(\gamma)$$

denote the difference in the chain's payoff from the optimal contract with uniformity requirement compared to the optimal contract without uniformity requirement. We first establish Lemma 2:

Lemma 2 *The derivative of $D(\gamma)$ is given by*

$$\begin{aligned} D'(\gamma) &= E_x[(1-\rho_u + (1-\gamma)\frac{d\rho_u}{d\gamma})R(a_u|x) - C(a_u|x) \\ &\quad -(1-\rho_n)R(a_e|x) - C(a_e|x))]. \end{aligned}$$

Proof of Lemma 2: The proof is based on straightforward calculation. First note that D can be written as

$$\begin{aligned} D(\gamma) &= E_x[(1-\gamma)\rho_u R(a_u|x) + \gamma(R(a_u|x) - C(a_u|x) - L)] \\ &\quad -E_x[(1-\gamma)\rho_n R(\overline{a}|x) + \gamma(R(a_e|x) - C(a_e|x) - L)] \end{aligned}$$

Differentiating w.r.t. γ yields

$$\begin{aligned} D'(\gamma) &= E_x[(1-\rho_u + (1-\gamma))\frac{d\rho_u}{d\gamma}R(a_u|x) - C(a_u|x) \\ &\quad + \left(((1-\gamma)\rho_u + \gamma)\,R'(a_u|x) - \gamma C'(a_u)\right)\frac{da_u}{d\gamma} \\ &\quad - ((1-\rho_n)R(a_e|x) - C(a_e|x))] \end{aligned}$$

To evaluate this expressions we need two distinguish two sets of states. For those states where $a_u^*(x) \geq \overline{a}(x)$, we find $a_u(x) = \overline{a}(x)$ and thus $\frac{da_u}{d\gamma} = 0$, i.e. the term in the second line becomes 0. For those states with $a_u^*(x) < \overline{a}$ we find $a_u(x) = a_u^*(x)$ and the identity $C'(a_u|x) = \left(1 + \frac{(1-\gamma)\rho_u}{\gamma}\right) R'(a_u|x)$ holds. Inserting this equality into the expression for $D'(\gamma)$ above, we find that the term in the second line again becomes 0. Therefore, the equality stated in the Lemma holds.■

We can now proof Proposition 3. As noted in the text, we assume that the condition $\overline{a}(x) > a_e(x)$ holds for all states x.

Proof of Proposition 3: Note that $D(\gamma)$ is a continuous function with $D(0) = D(1) = 0$. Therefore, it suffices to show that $D'(0) < 0$ and $D'(1) < 0$. First consider the case $\gamma = 0$. We then have $a_u = \overline{a}$, $\rho_u = \rho_n$ and $\frac{d\rho_u}{d\gamma} = 0$. Inserting into the expression of $D'(\gamma)$ from Lemma 2 yields

$$D'(0) = E_x \left[(1 - \rho_n) R(\overline{a}|x) - C(\overline{a}|x) - ((1 - \rho_n)R(a_e|x) - C(a_e|x))\right] < 0$$

This is the difference of F's payoff under the maximum size of activities and F's payoff under efficient activities. This difference is clearly negative.
Now consider the case $\gamma = 1$. Then $a_u = a_e$ and $\rho_u > \rho_n$, which gives

$$\begin{aligned} D'(1) &= E_x \left[(1 - \rho_u) R(a_e|x) - C(a_e|x) - ((1 - \rho_n)R(a_e|x) - C(a_e|x))\right] \\ &= -(\rho_u - \rho_n) E_x R(a_e|x) < 0.\blacksquare \end{aligned}$$