RAND Journal of Economics
Vol. 23, No. 2, Summer 1992

Agency theory and franchising: some empirical results

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This article provides an empirical assessment of various agency-theoretic explanations for franchising, including risk sharing, one-sided moral hazard, and two-sided moral hazard. The empirical models use proxies for factors such as risk, moral hazard, and franchisors' need for capital to explain both franchisors' decisions about the terms of their contracts (royalty rates and up-front franchise fees) and the extent to which they use franchising. In this article, I exploit several new sources of data on franchising to construct a cross section of 548 franchisors involved in various business activities in the United States in 1986. The data are most consistent with a model based on two-sided moral hazard. The empirical models are also more successful at explaining the extent to which franchisors choose to franchise stores than at explaining the terms of franchise contracts. Finally, contrary to the predictions of several theoretical models, I find that royalty rates and franchise fees are not negatively related.

1. Introduction

■ Over the last two decades, considerable advances have been made in the area of contract theory. However, empirical analyses of existing contractual arrangements in the light of these theoretical developments remain scarce. In industrial organization, examples of empirical work on contractual arrangements include Joskow (1987) and Crocker and Masten (1988). These typically rely on a transaction cost approach. The present article relies on agency-theoretic arguments to analyze franchising arrangements. Other empirical work in this or related areas includes Caves and Murphy (1976), Brickley and Dark (1987), Martin (1988), Norton (1988), Brickley, Dark, and Weisbach (1991), and Krueger (1991).

Franchising offers a rare opportunity to assess theories concerning firms' contractual decisions. First, most franchisors operate some of their stores directly and franchise the others, mixing the two types of contracts in varying proportions. For example, in 1986, McDonald's franchised 76% of its 9,060 stores, whereas Burger King franchised 82% of its 4,635 outlets. As a result, one can ask whether existing models can explain variations in

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I would like to thank Mukesh Eswaran, Margaret Slade and Ken White for their continuous support. This article has also benefited from the comments of Sugato Bhattacharyya, John Cragg, Nancy Gallini, Steve Garber, Ashok Kotwal, John Londregan, Scott Masten, Robert Miller, Hugh Neary, two anonymous referees, and the Coeditor James Poterba. Finally, I thank Robert Picard for his assistance. All remaining errors are of course mine.

firms' propensity to franchise, i.e., in their proportion of franchised stores. Indeed, this has been the focus of most of the recent empirical work on franchising.

In addition, franchise contracts generally involve the payment, from franchisee to franchisor, of a lump-sum franchise fee as well as a proportion of sales in royalties, with the latter usually constant over all sales levels. At a given point in time, the royalty rate and franchise fee required by a franchisor tend to be the same for all potential franchisees.[1] This is not to say that these fees do not vary over time or across franchisors, but that they are fixed for certain periods of time for new contracts offered in a franchised chain. Because these fees are constant in this way, it is possible to examine whether existing theoretical models can explain the chosen royalty rates and franchise fees across franchisors. This article is the first to address this issue.

To carry out the analysis, data were gathered on a cross section of 548 individual franchisors in 1986. These franchisors are involved in a variety of business activities in the United States, including fast-food restaurants, business aids and services, construction and maintenance, and nonfood retailing.

The main results from the empirical analysis are as follows: First, in terms of the theories considered here, a model that assumes moral hazard on the part of the franchisor as well as the franchisee is best supported by the data. Second, I find that factors such as risk, moral hazard, and franchisors' need for capital are better able to explain the extent to which franchisors choose to franchise stores than they do the terms of the franchise contracts. This is interesting because the theoretical models themselves do not really address the issue of contract mixing but rather concentrate on the determinants of the share parameter.[2] Finally, observed royalty rates and franchise fees are not negatively (or positively) related in these data, even when one controls for various other factors. Yet models in which the participation constraint of the franchisee is binding would predict a negative correlation between these two fees.

The article is organized as follows. In the next section I describe some relevant characteristics of the franchising phenomenon. In Section 3, the main theoretical explanations for share contracts are briefly reviewed. Section 4 summarizes the empirical implications of these models in terms of the royalty rate, the franchise fee, and the proportion of franchised stores. The data are described in Section 5, and results are found in Section 6. Finally, Section 7 contains concluding remarks.

2. The nature of franchising

■ A franchise agreement is defined as a contractual arrangement between two independent firms, whereby the franchisee pays the franchisor for the right to sell the franchisor's product and/or the right to use his trademark at a given place and for a certain period of time. Business format franchising, that is, according to the U.S. Department of Commerce, the kind of franchising where the relationship between franchisor and franchisee "includes not only the product, service, and trademark, but the entire business format itself—a marketing strategy and plan, operating manuals and standards, quality control, and continuing two-way communication,"[3] is a growing phenomenon.[4] The U.S. Department of Commerce (1988) estimates that the number of business format franchisors has grown from 909 in

[1] This is not clear from the Entrepreneur survey, which is the main source of the data used here. See the data section for more details on this.

[2] One exception is Gallini and Lutz (1992). They provide a signalling model of contract mixing.

[3] U.S. Department of Commerce (1988), p. 3

[4] The other type of franchising, "product and trade name franchising" or "traditional franchising," is in decline. It is characterized by franchised dealers who "concentrate on one company's product line and to some extent identify their business with that company" (U.S. Department of Commerce, p. 1 (1988)). It is limited to car dealers, gasoline service stations, and soft-drink bottlers. The number of outlets in these sectors declined from

1972, to 1,584 in 1980, and to 2,177 in 1986. Total nominal sales through outlets of business format franchisors grew by 442% between 1972 and 1986, and in the same period the number of outlets grew by 65%, from 189,640 to 312,810. This growth was highly visible in the 1960s, mostly in the restaurant or fast-food industry. In the 1970s, the greatest growth levels were achieved in the sectors of business aids and services and automotive products and services. In the 1980s, franchising has continued to grow mostly in the service sector, in areas such as maid services, day-care facilities, lawn-maintenance businesses, and both eat-in and take-out restaurants. Despite such activity, little is known about this business phenomenon.[5]

In the next section I present a brief overview of the theoretical literature on share contracts and on franchising. As a unifying framework for the models, it is useful to think of an upstream manufacturer deriving some monopoly power from a trade name. This firm can operate company-owned units, or it can sell the right to sell its products and use its trade name to independent retailers (franchising). I assume that the franchise contract provides the franchisee with more incentives than the manager of the company-owned store receives.[6] I also assume that, given the price of the outlet's output, demand at the retail level in any given period is increasing in the value of the franchisor's inputs, most notably the trade name, and in the amount and quality of local inputs provided by the franchisee, namely managerial activities and local advertising.[7] Finally, I assume that demand is also affected by a random term.

The franchise contract offered at a point in time by the franchisor, which is taken as identical for all the potential franchisees of a given franchisor, entails the payment of a franchise fee F, paid only once for the duration of the contract, and of royalties on sales r, where $0 \leq r < 1$.[8] In some cases, the franchise contract involves no royalties, but this is not very common: only 7% of the sample of franchisors studied here required no variable payments. Conceptually, a company-owned outlet is equivalent to a contract where the royalty rate is 100% and the franchise fee is negative.

3. An overview of the theoretical literature on share contracts

■ Factors that have been put forth to explain the existence and persistence of share contracts, and thus of franchising, include risk, moral hazard on the part of the agent (franchisee), moral hazard on the part of the principal (franchisor), the franchisor's need for capital, and information asymmetries on either the agent's or the principal's side. Models based on information asymmetries do not really have testable implications in the context of a single cross section of franchisors, such as the one used here. As a result, they are not discussed in this section. However, I note some results relevant to these models as they arise in the results section.

Theoretical explanations for franchising typically have been developed in the context of single franchisor-franchisee pairs. As a result, their comparative statics, and hence their

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262,100 to 149,313 between 1972 and 1986. Most of this decline is attributable to gasoline station closings (111,000 of them). In the remainder of this article, the term "franchising" is used to denote business format franchising.

[5] See Vaughn (1979), Mendelsohn (1985), and Justis and Judd (1989) for more on the institution of franchising, including discussions of the pros and cons of franchising from the franchisor's and the franchisee's perspective. For a historical account on McDonald's, see Love (1986). For a different and more critical appraisal of franchising, see Luxenberg (1985).

[6] As noted by Brickley, Dark, and Weisbach (1991), given the property rights, this will necessarily be the case.

[7] In what follows, the term "trade name" is used to signify all of the franchisor's contribution to the franchise, including such things as training, manuals, consulting, etc.

[8] Royalties on sales are found only in business format franchising. In traditional franchising, franchisors derive their revenues from input mark-ups. Royalty rates are also usually constant over all sales levels, as assumed here. In Lafontaine (1992), 93 of the 113 franchisors who said they levied royalties as a percentage of sales said that this percentage was constant over all sales levels, 18 said it was decreasing, and another 2 said it was increasing.

empirical implications, center on the terms of the optimal (linear) contract, and more precisely on the royalty rate.[9] In that sense, none of these models can directly explain contract mixing as it occurs in franchising. In fact, the models typically imply a different optimal royalty rate for each franchisor-franchisee pair, even for a given franchisor. Since there is really only one royalty rate per franchisor at a point in time, in what follows I discuss the implications of the models for this single royalty rate along with the models themselves. This is done under the assumption that the single royalty rate represents some average of the outlet-specific royalty rates. The implications for the franchise fee and the franchisor's propensity to franchise are addressed in the next section.

□ **Pure risk-sharing models.** Risk sharing was first proposed in the 1960s by Cheung (1969) to explain the existence of sharecropping. Assuming that both parties are risk averse, they both benefit from the insurance that arises from the use of a share contract. Stiglitz (1974) formalized this argument in the context of sharecropping arrangements, while Martin (1988) put forth a similar argument to explain franchising. The main empirically testable result from this model in the context of a linear contract is that the optimal royalty rate will increase as the amount of risk increases if the franchisor is less risk averse than the franchisee.[10] If the franchisor is risk neutral, this model implies that the chain should be wholly company-owned.

□ **One-sided moral-hazard models.** A second type of model assumes that franchisors cannot observe the behavior of franchisees in terms of their provision of local inputs (see Stiglitz (1974) on sharecropping contracts and Mathewson and Winter (1985) and Norton (1988) on franchising). They also cannot infer it from the observed level of sales, since there is a random component in the demand equation.[11] Thus, there is a moral-hazard problem on the franchisee's side, and the optimal contract involves only fixed payments. However, because the franchisee is assumed to be risk averse and the franchisor risk neutral, it is not optimal to have the former bear all the risk. A share contract emerges in this context as a compromise between the need to provide the franchisee with insurance and the need to motivate her.

Restricting the analysis to linear contracts, Stiglitz (1974) finds that the royalty rate will be lower the more important local inputs are and/or the more difficult it is to monitor their provision. On the other hand, the royalty rate will be increasing in risk as in the pure risk-sharing case.

□ **Two-sided moral-hazard models.** A third explanation for share contracts relies on moral-hazard problems for both parties. In this case, sharing occurs strictly as a result of both parties' need for incentives. Examples of this view, as it applies to sharecropping, are found in Reid (1977) and Eswaran and Kotwal (1985). Rubin (1978) was the first to develop this type of argument to explain franchising, while Lal (1990) provides a more formal analysis. In this model, since the royalty rate is the component of the contract that gives

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[9] As noted earlier, one recent exception is Gallini and Lutz (1992).

[10] Martin (1988) assumes instead that the franchisor is more risk averse than the franchisee. But since franchisees typically invest a large proportion of their wealth in their franchise (in a survey of the franchisees of four major franchised chains by Jensine Hough, reported in Mendelsohn (1985), franchisees borrowed only an average of 25.6% of their initial funding from a bank), and since franchisors and their shareholders can diversify their portfolios, it seems more plausible for the franchisee to be the more risk-averse party.

[11] In a multiagent setting, as we really have here, if the random terms were perfectly correlated across outlets, the franchisor could infer a perfect ranking for effort from the achieved sales levels and devise an optimal contract by including a measure of other agents' performance in it. With independent random terms, no such ranking is possible, and the optimal contract for each agent depends on her output alone, as is the case in franchising. See Mookherjee (1984).

the franchisor an ongoing interest in the success of the franchisee, it will be larger the more important the franchisor's inputs and the harder it is to monitor his behavior. But, as in the one-sided moral-hazard case, the royalty rate will decrease with the importance of the franchisee's inputs and the cost of monitoring her.

□ **Capital-market-imperfection arguments.** Finally, the traditional explanation for franchising is that franchisors face a binding capital constraint and resort to franchising to overcome it. (See Oxenfeldt and Kelly (1969), Ozanne and Hunt (1971), and Caves and Murphy (1976).) There are several difficulties with this explanation. First, the notion that franchisors use franchising only when they do not have access to capital on their own implies that they should reduce their reliance on franchising as they mature and gain access to capital. Hence we should observe a trend toward more company operation: yet such a trend has not been established empirically.[12] Second, it is not unusual for franchisors to provide financing to their franchisees. In the 1986 survey by the magazine *Entrepreneur,* 223 out of 1,114 franchisors said they might provide financing to their franchisees. These franchisors surely do not use franchising as a source of capital. Finally, as Rubin (1978) points out, investing in a single outlet is riskier than investing in a portfolio of shares from all outlets in a chain. Hence a risk-averse franchisee would require a higher return on his investment in a single outlet. This implies that the franchisor could obtain cheaper capital by offering shares of all his outlets to his store managers.

Thus, on its own, the capital-market-imperfection argument cannot explain the use of franchising. Combined with an incentive problem at the downstream level, however, this argument makes more sense: With a portfolio of shares from all stores, every retailer benefits only marginally from increasing her own effort. Consequently, each one chooses a low effort level. Knowing this, the store managers are likely to demand a higher rate of return on portfolios of shares, even if they are less risky, than they would on a single store that they would manage themselves. Thus the upstream firm could benefit from cheaper capital through franchising. But the existence of an incentive problem on the franchisee's side is central to this argument. In addition, if firms use franchising to obtain capital in the face of a franchisee incentive problem, they should opt for a fixed-rent contract (i.e., one where $r = 0$); this is the optimal contract in the case of franchisee moral hazard, and at the same time it maximizes the amount of capital franchisors get upon signing the contract. For sharing to arise, incentive problems on the franchisor's side, or the need for the franchisor to insure his franchisees, are also necessary.

The empirical implications of this explanation are that the contract should require a higher franchise fee and a lower royalty rate when the franchisors' need for capital increases. At the same time, one must observe the kinds of patterns dictated by either a one-sided or two-sided moral-hazard model of franchising.

4. Empirical implications

■ Table 1 summarizes the empirical implications for the royalty rate of the above four models. For each model, all of the effects on the corresponding line must occur simultaneously to give support to the theory (except for those in parentheses, where only one of the two is required). The models are not mutually exclusive: while incentive issues might be very important, the optimal royalty rate may also depend on a firm's financial situation and on the amount of uncertainty it faces. The model to be estimated empirically for the royalty rate nests all of these explanations.

In terms of the franchise fee, assuming a competitive market for franchisees, the participation constraint of the franchisee, on average, should be binding. This implies that the

[12] For empirical evidence, see, for example, Caves and Murphy (1976), Hunt (1973), and Martin (1988).

TABLE 1 Expected Effects of Each Factor on the Royalty Rate

Model	Riskiness	Franchisee Moral Hazard	Franchisor Moral Hazard	Franchisor's Need for Capital
Pure risk sharing	+*			
One-sided moral hazard	+*	−		
Two-sided moral hazard		−	+	
Capital market imperfection	(+)	−	(+)	−

* Assuming the franchisee is the more risk-averse party.
Note: Parentheses indicate that one and/or the other effect should occur.

franchise fee should on average extract all downstream surplus given the royalty rate. In other words, the franchise fee should be calculated as the present value of all future profits left downstream given the amount of royalties paid, and for a given level of sales, the franchise fee should be inversely related to the royalty rate.

Existing empirical work on franchising has examined the way in which franchisors mix company-owned and franchised outlets. (See Goldberg (1983), Brickley and Dark (1987), Brickley, Dark, and Weisbach (1991), Martin (1988), and Norton (1988).) But none of the models discussed above can directly explain contract mixing: with homogeneous outlets, the models all lead to chains that are fully franchised or fully company-owned, not to a mixture of contracts. With heterogeneous outlets, one should find firms using a variety of contracts, one for every different situation, not simply one franchise and one "wage" contract for managers of company-owned outlets. In Lafontaine (1992), franchisors justified offering only one franchise contract by saying that developing and enforcing a variety of contracts would be too costly. Similarly, federal and state disclosure requirements might have influenced franchisors to adopt this practice. Franchisors may also reduce their need for a variety of contracts by choosing the location and density of stores (and other elements of the contract) appropriately. Whatever the reason, the fact that franchisors choose a single "average" share contract for all their franchisees at a point in time could explain contract mixing: at some point, the adjustment for differences among outlets and operators may be achieved through the company-own versus franchise decision, rather than through the use of different contract terms.

The notion that company-owned outlets are "different" from franchised outlets is supported by at least three pieces of information. First, Brickley and Dark (1987) found that outlets physically close to monitoring headquarters were more likely to be company-owned than outlets further away from these headquarters. Second, from the U.S. Department of Commerce Publication *Franchising in the Economy,* one finds that average sales of company-owned outlets are greater than average sales of franchised outlets in the vast majority of franchising sectors (see Table 2). Finally, Hunt (1973) conducted a survey of franchisees and found that 13% of them had received inquiries from their franchisors who wanted to buy back their outlets. Hunt tested the hypothesis that "the franchisors were primarily seeking to buy back the more profitable units" and found that this hypothesis was supported by the data. Hence, distance from headquarters, size, and (potential) profitability seem to be three dimensions over which company-owned outlets differ from franchised outlets.

In the context of heterogeneous outlets and a single franchise contract, given the royalty rate, the implications of the various models for the proportion of franchised stores will be the opposite of those found for the royalty rate. For example, in the risk-sharing model, an increase in riskiness will lead to less reliance on franchising, since there will be more cases where the franchisor will find it best to insure the manager of the outlet completely. Similarly, in a model with downstream moral hazard, increases in the value of local inputs or in the difficulty of monitoring their provision will increase the number of cases where the franchisor

will choose to use a contract that gives more incentives downstream. Hence the proportion of franchised outlets should increase.

5. The data

■ The equations to be estimated relate the contract terms, namely the royalty rate and the franchise fee, as well as the proportion of franchised stores, to riskiness, franchisee moral hazard, franchisor moral hazard, and franchisor's need for capital. This section discusses the way in which each of these are measured. I have used two main data sources. The first, Entrepreneur Magazine's *1986 Franchise 500,* provided most of the data on individual franchisors. The second, the U.S. Department of Commerce's *Franchising in the Economy,* contained information on franchising sectors.

The Entrepreneur survey covers a total of 1,114 franchisors, giving information on the number of outlets (company-owned and franchised) from 1984 to 1986, royalty rates, advertising rates, franchise fees, the amount of capital required, the type of business the franchisor is involved in, the number of years since the franchisor began his operations, the number of years since he started franchising, whether he requires franchisees to have previous experience in the business, and finally, whether he provides financing to his franchisees. *The Franchise Annual,* by Info Press Inc., and Venture's *The Franchise 100* were also used to corroborate or complement the information found in this survey. Complete and consistent information for these variables was available for 890 of the initial 1,114 franchisors. Additional information on the number of states in which each franchisor has established outlets, the number of foreign outlets it has, and the length of the initial training period was found in Entrepreneur Magazine's *Franchise Yearbook* for 1987 and the U.S. Department of Commerce's *Franchise Opportunities Handbook* for 1985 and 1986. Because of coverage problems, this reduced the sample size from 890 to 548 franchisors.

It is not clear from the Entrepreneur survey that franchisors tend to require the same royalty rate and franchise fee from all potential franchisees at a given point in time. In fact, 32% of the franchisors in that survey either give a range for one or more of their fees or say that the fee varies. However, a survey I conducted (see Lafontaine (1992)), as well as discussions with franchisors and a detailed look at disclosure statements provided to me by franchisors (56 of them), reveals that varying fees or ranges are not the norm, and that they generally mean one of a variety of things. First, some franchisors offer different types of businesses, e.g., a full-scale restaurant and a food-mart version of the same, which call for different contracts. Second, a range for the royalty rate (68 occurrences out of 1,114 franchisors) often means that the franchisor uses a sliding scale to calculate royalties (for example, Molly Maid, Inc. now charges 8% for the first 250K in revenues, 6% for amounts between 250K and 500K, and 4% for 500K and up) or that a different rate will be charged for the first few years of operation. When franchisors say that their royalty rate "varies" (66 occurrences), this generally means that different services are offered to franchisees and that they are assigned different rates. Varying advertising fees (38 occurrences) or ranges in fees (30 occurrences) tend to mean that they will change over time, not across franchisees, as the need arises during the period of the contract. Finally, fixed fees usually vary because different franchise options (sizes) are offered (141 franchisors gave a range for this fee, while 38 said it varied). Notice that some franchisors gave a range or answered "varies" for more than one of the fees. Cases where fees were simply said to vary were eliminated from the data, since it is impossible to assign fees to these firms. However, assuming that the average fee represents the average outlet in the chain, averages were used for those that indicated a range.

Since the royalty rate in the theories represents the whole sharing component of the contract, advertising fees stated as a percentage of sales were added to reported royalty rates to generate the notion of royalty rates used in this article. Similarly, the present value of all

TABLE 2 Sectoral Statistics

Sector	Number of Franchisors (1986)	Number of Outlets (1986)	% Franchised (1986)	% Discontinued Outlets Co-own (1984–1985)	% Discontinued Outlets Franch. (1984–1985)	Sales/Outlet Co-owned (K$ 1985)	Sales/Outlet Franchised (K$ 1985)	Inputs/Franchisee (% Sales) (1984–1985)	Contract Length (Years) (1985)
Auto services	174	36763	86.8	1.3	3.2	783	221	30.3	15.1
Business aids	436	52718	87.3	0.6	4.6	315	229	1.0	12.9
Accounting	18	1914	98.8	n/a	n/a	400	76	n/a	13.2
Employment	82	5605	61.5	n/a	n/a	688	500	n/a	12.9
Printing & copying	30	4905	97.5	n/a	n/a	241	203	n/a	18.6
Tax preparation	12	8274	56.5	n/a	n/a	65	36	n/a	8.0
Real estate	41	14016	99.0	n/a	n/a	202	336	n/a	7.7
Miscellaneous	253	18004	96.5	n/a	n/a	730	165	n/a	13.3
Construction & maintenance	184	18900	96.0	0.8	3.7	1860	168	7.1	13.6
Convenience stores	27	15524	42.2	3.0	2.8	750	668	5.0	11.9
Educational	68	8625	93.8	4.5	4.4	230	81	7.9	14.5
Restaurants	488	78203	68.8	1.8	2.7	732	605	4.5	16.8
Chicken	33	8968	64.9	n/a	n/a	522	443	n/a	n/a
Hamburgers	111	31511	78.2	n/a	n/a	879	734	n/a	n/a
Pizza	105	16221	67.4	n/a	n/a	518	397	n/a	n/a
Mexican	36	4460	53.9	n/a	n/a	704	481	n/a	n/a
Seafood	17	2518	42.9	n/a	n/a	524	471	n/a	n/a
Pancakes	12	1830	67.0	n/a	n/a	612	632	n/a	n/a
Full menu	117	9628	51.5	n/a	n/a	1010	790	n/a	n/a
Other	57	3067	90.8	n/a	n/a	258	256	n/a	n/a
Hotels & motels	50	8203	86.0	3.3	4.3	4112	1622	0.2	17.1
Laundry & dry cleaning	19	2297	95.5	0.9	2.8	225	122	1.9	16.5
Recreational	45	7901	94.7	0.4	1.9	1739	220	0.3	13.7
Auto rental	27	9528	74.3	0.5	2.4	1366	270	0.1	18.1
Equipment rental	36	2718	75.5	1.8	4.8	512	203	10.8	9.7
Nonfood retailing	339	45456	75.3	1.8	4.0	585	415	27.7	13.5
Food sales, nonconvenience	198	19852	82.3	1.5	2.4	801	480	10.7	12.7
Miscellaneous	86	6122	92.2	3.1	1.9	252	165	5.2	14.7
Total	2090	312810	78.8	1.8	3.4	762	390	9.5	14.4

Source: U.S. Department of Commerce, *Franchising in the Economy,* for the periods 1984–1986, 1985–1987, and 1986–1988. Last column compiled from table 28 in the 1985–1987 version; perpetual assumed to be 30 years on average, others excluded.

Note: The complete names for the subsectors are as follows. Restaurants: (1) Chicken, (2) Hamburgers, Franks and Roast Beef, (3) Pizza, (4) Mexican, (5) Seafood, (6) Pancakes & waffles, (7) Steak & full menu, and (8) Sandwich & other. Business aids: (1) Accounting, credit, collection agencies and general business systems, (2) Employment services (3) Printing and copying services, (4) Tax preparation services, (5) Real estate, and (6) Miscellaneous business services.

future fixed payments was added to the initial franchise fee to generate the measure of franchise fee used here.[13]

Data available strictly on a sectoral basis were all obtained from *Franchising in the Economy.* These include the average proportion of discontinued company-owned and franchised outlets, average sales per franchised and per company-owned outlet, input sales by franchisors, and the average length of franchise contracts. These variables are summarized in Table 2 for each of the business format franchising sectors and subsectors defined by the Department of Commerce.

For the 548 franchisors in the sample, Table 3 gives the number of franchisors per main Department of Commerce sector, as well as the total number of outlets they represented in 1986. This table also presents sectoral summary statistics about contract terms and contract mix. Finally, summary descriptive statistics for all the variables over the whole sample are found in Table 4.

Quantifying exogenous risk, supervision costs, the importance of the inputs provided by the two parties, and capital needs presents many challenges. First, such concepts are complex and multifaceted. As a result, except for risk, many variables are used to measure each. In addition, one must rely on proxies and hope that the assumptions made to establish a relationship between the proxy and the concept to be measured are reasonable. Clearly, one must also be cautious in interpreting the results. The remainder of this section details the ways in which the data were used to measure the different concepts.

□ **Measuring risk.** Risk is measured on an aggregate basis by the average proportion of discontinued outlets in 1984 and 1985 in the franchising sector[14] in which the franchisor

TABLE 3 Sectoral Summary Statistics for the 548 Franchisors

Sector	Number of Franchisors	Number of Outlets	% Franchised Mean	% Franchised Standard Deviation	Royalty Rate[a] Mean	Royalty Rate[a] Standard Deviation	Franchise Fee[b] Mean	Franchise Fee[b] Standard Deviation
Auto services	45	7407	83.7	19.8	9.2	3.5	19.7	15.0
Business aids	96	19593	89.9	18.7	6.6	3.9	21.7	17.9
Construction & maintenance	50	12922	92.4	13.4	6.2	4.4	16.3	12.1
Convenience stores	8	2682	84.0	9.4	5.9	5.4	12.8	7.3
Educational services	29	5727	81.7	17.6	7.5	4.5	32.9	50.6
Restaurants	121	54295	71.9	23.9	6.6	2.2	21.2	12.2
Hotels & motels	10	5298	83.5	19.0	6.3	1.6	24.7	10.6
Laundry & dry cleaning	3	1281	84.6	15.6	0.3	0.6	52.5	12.6
Recreational	11	1097	86.0	21.2	5.8	2.9	34.3	37.0
Auto rental	6	5905	98.2	2.1	6.8	1.9	18.7	10.2
Equipment rental	1	373	81.5	n/a	2.7	n/a	20.0	n/a
Nonfood sales	99	14635	83.4	21.6	5.7	3.0	19.9	16.9
Food sales, nonconvenience	52	15323	80.0	25.1	6.0	2.4	20.0	21.9
Miscellaneous	17	3246	86.6	16.5	6.9	3.7	26.0	23.2
Total	548	149780	82.8	21.6	6.5	3.4	21.5	20.3

Note: The assignment of franchisors to sectors was done by the author on the basis of the sectoral descriptions offered in *Franchising in the Economy,* as well as the index of franchisors in *Franchise Opportunities Handbook,* also published by the U.S. Department of Commerce.

[a] Royalty rates include the advertising fee when this fee is specified as a percentage of sales or gross revenues. Averages were used when ranges were given.

[b] Franchise fees are in thousands of 1986 U.S. dollars. They include the present value of all future payments specified for the duration of the contract (using the average length of agreements in Table 2). The discount rate used was 10%. Averages were used when ranges were given.

[13] Only 39 out of 548 franchisors in this sample require ongoing fixed payments. Since these are nominal figures, I used a 10% discount rate. Results were not sensitive to this choice.

[14] The measure used here is a weighted average of the proportions of discontinued outlets shown in Table 2, where the weights are the percentages of franchised and company-owned outlets.

TABLE 4 Descriptive Statistics for the 548 Franchisors

Variable	Mean	Standard Deviation	Minimum	Maximum
% franchised	82.75	21.55	1.62	100.00
Variable fee (%)	6.54	3.42	0.00	25.00
Fixed fee ($K)	21.49	20.32	0.00	286.17
Avg. % discontinued[a]	3.13	0.75	1.83	4.38
Foreign outlets (%)	3.36	10.25	0.00	96.63
Number of states	15.95	16.29	1.00	50.00
(Avg. sales$_f$ − inputs)/avg. sales$_f$ (%)[a]	89.00	10.85	69.73	99.89
Avg. sales/outlet ($100K)[a]	3.94	2.80	0.52	19.28
Franchisee experience	0.30	0.46	0.00	1.00
Weeks of training	2.95	2.55	0.00	19.00
Outlets in 1986 (100s)	2.73	7.84	0.02	90.60
% time not franchising	31.55	27.22	0.00	96.30
Years in business	17.82	14.41	3.00	110.00
Growth in outlets	0.24	0.33	−0.28	1.87
Capital required ($K)	97.45	172.91	0.50	2000.00
Franchisor financing	0.21	0.41	0.00	1.00
Franchisor input sales ($K)[a]	38.34	38.72	0.27	110.27
Contract length in years (L)[a]	14.49	1.90	7.70	18.60
L · Avg. sales$_f$ ($100K)[a]	51.31	40.66	3.16	269.24

[a] Data available only on a sectoral basis from the U.S. Department of Commerce's *Franchising in the Economy*, 1984–1986 and 1985–1987. Means and standard deviation are therefore weighted as a function of the number of firms in the sample that belong to each sector.

operates. This is not a direct measure of the effect of the random term in the demand equation. In that respect, a measure of variance would have been more customary (in the franchising literature, see for example Martin (1988) and Norton (1988)). But the rate of discontinuation reflects the probability of bankruptcy, and in that sense it measures downside risk. One advantage it has over measures based on the variance of sales is that franchisors are known to resist closing down outlets. When a unit is not doing well, if the franchisor feels it has any potential, he will generally prefer to take it over rather than discontinue it.[15] In that sense, the franchisor will not discontinue the outlet if the poor performance is due to bad management on the part of the franchisee, and the proportion of discontinued outlets may better capture "exogenous" risk as opposed to the endogenous or moral-hazard-induced variation in the level of sales. Also, if franchisors buy back failing outlets at very low prices and sell them again or continue to operate them from there, discontinuation rates will be lower than "real" failure rates. In that sense this measure gives a lower bound on the risk faced by franchisees. Variance measures, because they incorporate the moral-hazard component of the variance, should be viewed as overestimating the amount of risk. Finally, because data on sales of individual outlets or franchisors are unavailable for even a subset of outlets for each franchisor, variance-based measures must be calculated using sectoral data on average sales per outlet, as in Martin (1988), or some other aggregate sales data, as in Norton (1988). Because the variance of an aggregate depends on the correlations among its various components as well as the individual variances, a measure based on the variance of average sales need not be representative of the variance of sales for individual outlets.[16]

However, since data on average sales per outlets are available on a sectoral basis, I used two alternative measures of risk in the empirical analysis. The first was the variance over

[15] See Thompson (1971).

[16] For more on this, see Lafontaine (1988).

time of average sales per outlet, which is the measure used by Martin (1988), while the second was the same variance divided by the number of outlets in the sector.[17] The latter is an appropriate measure of the variance of sales for an outlet if one assumes that the sales levels of all outlets in the sector are independent. The former is appropriate if one assumes that sales at the various outlets are perfectly correlated. Though I report only the results for the discontinuation rates, all three measures lead to the same qualitative results.

□ **Measuring franchisee moral hazard.** There are two main components to measuring franchisee moral hazard: first, there is the notion of how important the franchisee's inputs are in the downstream sales process, and second, there is the cost of monitoring the provision of these local inputs. Consistent with previous work on franchising, I use measures of geographical dispersion to capture the latter (see Rubin (1978), Brickley and Dark (1987), and Norton (1988)), including the proportion of foreign outlets in each chain and the number of states in which the franchisor has established outlets. For the former, one measure of the importance of the downstream operator's inputs is the value added per unit of output at the outlet level. Unfortunately, these data are unavailable. However, data on average sales per franchised outlet and on inputs sold by franchisors to franchisees are available on a sectoral basis. Thus I use average sales per franchised outlet minus inputs sold by franchisors per outlet, as a proportion of average sales per franchised outlet ((avg. sales_f − inputs)/avg. sales_f), as a measure of the scope of the franchisees' jurisdiction. Values of this measure for 1984 and 1985 are averaged.[18]

Also, as in Norton (1988), I use the average size of outlets in the sector to measure the importance of the franchisee's inputs. This assumes that larger outlets are more demanding to manage, and that the average size of outlets is driven by technological considerations. I use average sales per outlet in the industry as a measure of size.[19]

Finally, a dummy variable—indicating whether or not the franchisor requires potential franchisees to have previous experience in the business—is taken as another indicator of the importance of the franchisee's inputs. The majority of franchisors do not require this: in these data, 30% of them did. In fact, franchisors often argue that individuals with no previous experience are preferable because they are not yet "set in their ways." The interpretation of this variable as an indicator of the importance of the franchisee's role is based on the fact that we observe high rates of such requirements in businesses that demand a particular type of expertise or even possibly some form of accreditation, such as the real estate industry, accounting, credit, collection and general business systems, and computer retailing. However, another area in which these rates tend to be high is the fast-food and restaurant industry. One could argue that these are more likely to reflect some form of rationing device on the part of highly successful franchisors.[20] If this requirement is a rationing device, and if franchise contracts also serve as rationing or screening devices, as argued by Norton (1988), then the two could be substitutes. In that case, this requirement might have a negative effect on the franchisor's propensity to franchise and a positive one on the royalty rate. These effects are the reverse of those predicted when this requirement is interpreted as a measure of the importance of the franchisee's role.

□ **Measuring franchisor moral hazard.** The franchisor's role in business-format franchising is twofold. First, he provides a trade name and sees to it that its value is preserved or enhanced. This includes ongoing advertising as well as monitoring of both franchisees and

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[17] Average sales per outlet here refers to the weighted average of those found for franchised and company-owned outlets, as reported in Table 2.

[18] Note that this variable uses average sales per franchised outlet, as given in Table 2, column 6, not the overall average sales per outlet described in footnote 17.

[19] Again, these are weighted average sales per outlet, as described in footnote 17.

[20] I thank an anonymous referee for making this point.

outlet managers. Second, he assists his franchisees in starting up and managing their businesses. I use the number of weeks of initial training specified in the franchise contract as a measure of the latter type of input. As for the former, since franchising occurs in types of businesses where a trade name becomes more valuable the more people are exposed to it, I assume the value of the trade name will increase with the number of outlets displaying it. The trade name is also assumed to be more valuable for well-established franchisors, so that the number of years in business is another measure of the franchisor's input. Finally, I take the number of years during which the firm did not franchise, divided by the total number of years in business, as an indicator of the difficulty and cost of developing the franchise package.[21]

□ **Measuring the franchisors' capital constraint.** Whether or not a franchisor faces a "binding" capital constraint depends on his access to capital as well as his capital needs. The former can be approximated again by the number of years in business. The more established a firm is, the easier its access to capital should be. Whether we interpret this variable as a measure of the importance of the franchisor's trade name or as a measure of his access to capital, its effect on the three dependent variables should be the same. Hence these two interpretations are indistinguishable empirically. A second indicator of the firm's access to capital is given by whether or not it provides financing to its franchisees. Clearly, a franchisor must already have access to capital if it is he who provides financing to his franchisees. Furthermore, growth in the total number of outlets in the chain over the last two years, a proxy for franchisors' desired growth, provides a measure of a franchisor's need for capital.[22] Finally, as in Caves and Murphy (1976), I use the amount of capital required to open an outlet as another measure of franchisor capital needs.

□ **Additional control variables.** When downstream firms produce with a fixed-proportion technology, they cannot substitute away from the manufacturer's product. In this case, selling inputs to franchisees at a price greater than marginal cost becomes equivalent to royalties (or a tax) on output.[23] Thus such sales should be treated as an additional decision variable for the franchisor. However, data on the value of these sales in each franchise chain are not available. Only sectoral data on the total value of these sales (in thousands of dollars per franchised outlet) can be obtained. For this reason, rather than treating these sales as a dependent variable, I introduce them as a control variable in the estimated equations.[24]

Since input sales may contribute to the franchisor's revenues, one can expect a negative correlation between such sales and the royalty rate and franchise fee. Similarly, since franchisors should decide on whether or not to franchise an outlet by comparing what their profits from the outlet would be under both cases, the proportion of franchised outlets is a negative function of the royalty rate: the higher the royalty rate, the more similar franchising becomes to company ownership and hence the smaller the advantages of franchising over company ownership. As a result, the effect of input sales on the proportion of franchised stores should also be negative.

Finally, total sales over the duration of the contract must be included in the equation for the fixed fee. Given a royalty rate, higher total sales imply that more revenues are

[21] The estimations were also done using simply the difference in years. The results were equivalent.

[22] Growth is measured as one-half the difference in the log of the number of outlets in 1986 and 1984.

[23] These, however, remain different from royalties on sales unless the price is also controlled by the franchisor. See Caves and Murphy (1976).

[24] The need for upstream firms to monitor quality at the downstream level has been used to explain these input sales. See, for example, Klein and Saft (1985). This is not incompatible with upstream firms deriving revenues from doing so.

transferred to the franchisor in the form of royalties, leading to a lower fixed fee if the franchisees' participation constraint is binding.

6. Methodology and results

■ Many firms included in the sample (117 out of 548) franchise all their outlets. Similarly, 37 firms use a fixed-rent contract (royalty rate = 0), while 7 rely on a pure share contract (franchise fee = 0). Thus, for all the equations to be estimated there is some degree of censoring, that is, observations on the dependent variables that take on limit values. As a result, the maximum likelihood Tobit estimator is used in the regressions. The equations are estimated under both a linear and a partially logarithmic specification. The partiality here is dictated by the fact that some of the independent variables go to zero or below zero for some observations. Tests for heteroskedasticity were performed using the method suggested by Maddala (1983), and for all equations, the hypothesis of homoskedasticity could not be rejected.[25]

Several of the proxies used to measure each of the factors of interest are to some extent endogenous to decisions concerning the contractual mix or the contract design. For example, geographical dispersion and growth could increase when firms use franchising more, and the proportion of discontinued outlets may depend on the contract design. For that reason, past values were used for all explanatory variables except the number of outlets, the number of years in business, the proportion of time during which the firm was not franchising, and the dummy variables. Of course, this does not solve the simultaneity problem, but it may help to alleviate it somewhat.

Results obtained under a linear specification are given in Table 5, while those obtained under the partially logarithmic specification are found in Table 6. The two sets of results are quite similar. In both tables, the first column describes the royalty rate equation, the next two columns are concerned with the franchise fee, and the last two columns relate to the proportion of franchised stores. In the latter two cases, the first of the two columns gives results when the equations are estimated taking the royalty rate as exogenous, and the second column describes the reduced-form results. Note that the effect of the variables on the proportion of franchised stores should be the same whether one looks at the reduced-form equation or at the equation where the royalty rate is treated as exogenous. As noted above, higher royalty rates reduce the advantages of franchising over company ownership, leading to less franchising. Hence the direct effects of risk, moral hazard, and capital constraints on the proportion of franchised stores are simply reinforced by the indirect effects of the same variables through the royalty rate.

The results shown in Tables 5 and 6 are not significantly affected by the removal of firms with the largest number of outlets, or largest number of years in business, or greatest number of weeks of training, or unusually high capital requirements, or, finally, very large franchise fees or variable fees. Similarly, when the equations are estimated separately for groups of firms defined on the basis of their size (measured in number of outlets), or their age, or their sector of operation, the coefficients vary significantly across groups of firms (and the explanatory power of the model is significantly greater within these subsamples), but the qualitative results remain the same. Finally, the introduction of sectoral dummy variables does not significantly affect the results either. In that sense, the results presented in the two tables are quite robust.

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[25] See Maddala (1983). The two independent variables used in the tests were the number of outlets and the number of years in business.

TABLE 5 Tobit Results Under a Linear Specification

	Dependent Variables				
Independent Variables	Royalty Rate	Franchise Fee	Franchise Fee	Proportion Franchised	Proportion Franchised
Avg. % discontinued[a]	−0.32		0.40	3.60**	3.69**
	(−1.44)		(0.31)	(2.61)	(2.67)
Foreign outlets (%)	−0.01		0.00	0.17	0.17†
	(−0.77)		(0.03)	(1.63)	(1.67)
Number of states	−0.00		0.08	0.33**	0.33**
	(−0.41)		(1.22)	(4.44)	(4.44)
(Avg. sales$_f$ − inputs)/avg. sales$_f$ (%)[a]	−0.20**		−0.14	0.00	0.06
	(−5.52)		(−0.68)	(0.00)	(0.27)
Avg. sales/outlet ($100K)[a]	0.07		−2.36	−1.06**	−1.08**
	(1.11)		(−1.46)	(−2.72)	(−2.75)
Franchisee experience	0.26		1.61	−1.21	−1.30
	(0.76)		(0.81)	(−0.57)	(−0.61)
Weeks of training	0.04		0.60	−1.93**	−1.93**
	(0.57)		(1.50)	(−4.77)	(−4.77)
Outlets in 1986 (100s)	0.09**		−0.17	−0.29*	−0.32*
	(4.16)		(−1.34)	(−2.02)	(−2.26)
% time not franchising	0.03**		−0.01	−0.33**	−0.34**
	(3.91)		(−0.32)	(−7.89)	(−8.14)
Years in business	−0.04**		−0.03	0.12	0.14†
	(−3.35)		(−0.33)	(1.55)	(1.72)
Growth in outlets	−1.67**		4.25	6.93*	7.46*
	(−3.21)		(1.42)	(2.14)	(2.33)
Capital required ($K)	0.00		0.02**	−0.02*	−0.02*
	(0.08)		(3.39)	(−2.56)	(−2.56)
Franchisor financing	0.82*		6.13**	4.64†	4.41†
	(2.15)		(2.76)	(1.90)	(1.81)
Franchisor input sales ($K)[a]	−0.05**	−0.04†	−0.05	−0.02	−0.00
	(−5.15)	(−1.85)	(−0.87)	(−0.30)	(−0.05)
Length · avg. sales$_f$ ($100K)[a]		0.01	0.14		
		(0.64)	(1.22)		
Variable fee (%)		−0.26		−0.31	
		(−1.00)		(−1.07)	
Constant	27.20**	23.92**	30.41	89.84**	81.52**
	(7.08)	(9.59)	(1.39)	(3.61)	(3.45)
Limit observations	37.00	7.00	7.00	117.00	117.00
Nonlimit observations	511.00	541.00	541.00	431.00	431.00
Squared Cor (Y, $E(Y)$)	0.12	0.01	0.07	0.35	0.35
LR test (all slope coeff. = 0)	66.34**	4.56	38.36**	221.04**	219.92**

[a] Data available only on a sectoral basis from *Franchising in the Economy*, 1984–1986 and 1985–1987.

Significance levels: ** = 0.01, * = 0.05, † = 0.10. Asymptotic t-values in parentheses.

Note: The estimated model in the first three columns of this table is given by $Y_i = \beta_{i0} + \sum_{j=1}^{n_i} \beta_{ij} X_{ij} + u_i$, if $RHS > 0$, and $Y_i = 0$ otherwise, where Y_i is either the royalty rate or the franchise fee. For columns 4 and 5, $Y_i = \beta_{i0} + \sum_{j=1}^{n_i} \beta_{ij} X_{ij} + u_i$, if $RHS < 100$, and $Y_i = 100$ otherwise, where Y_i is the proportion of franchised outlets. The first independent variable, avg. % discontinued, is a measure of risk. The following five independent variables are all direct measures of franchisee moral hazard, and the next four are direct measures of franchisor moral hazard. However, years in business is also an inverse measure of the franchisor's capital needs. The next three independent variables relate to the franchisor's capital needs, with franchisor financing as an inverse measure of it. The remaining variables are control variables.

□ **Implications for the agency models.** In terms of the various models of franchising discussed in Section 3, the results for the royalty rate and the proportion of franchised stores can be summarized as follows. First, the proportion of discontinued outlets, which measures

TABLE 6 Tobit Results Under a Partially Logarithmic Specification

Independent Variables	Dependent Variables				
	Royalty Rate	Franchise Fee	Franchise Fee	Proportion Franchised	Proportion Franchised
Log. avg. % discontinued[a]	−0.27		0.67	5.28	5.34
	(−0.37)		(0.16)	(1.18)	(1.19)
Foreign outlets (%)	−1.09		0.79	11.98	12.34
	(−0.72)		(0.09)	(1.19)	(1.22)
Log. number of states	−0.78**		0.72	3.94**	4.14**
	(−4.12)		(0.69)	(3.36)	(3.59)
(Avg. $sales_f$ − inputs)/avg. $sales_f$ (%)[a]	−0.06*		−0.22	−0.15	−0.14
	(−2.25)		(−1.43)	(−0.95)	(−0.87)
Log. (avg. sales/outlet) ($100K)[a]	−0.45		−10.37†	−3.13†	−2.98
	(−1.51)		(−1.86)	(−1.72)	(−1.64)
Franchisee experience	0.11		0.70	−1.28	−1.33
	(0.31)		(0.36)	(−0.61)	(−0.62)
Weeks of training	0.02		0.56	−1.72**	−1.72**
	(0.34)		(1.42)	(−4.12)	(−4.12)
Log. outlets in 1986 (100s)	0.87**		−0.26	−0.41	−0.65
	(5.28)		(−0.29)	(−0.40)	(−0.65)
% time not franchising	0.02**		−0.01	−0.33**	−0.34**
	(3.49)		(−0.24)	(−7.61)	(−7.80)
Log. years in business	−0.83**		−0.69	3.96*	4.17*
	(−2.71)		(−0.41)	(2.12)	(2.25)
Growth in outlets	−1.78**		4.91	7.97*	8.45*
	(−3.09)		(1.55)	(2.28)	(2.44)
Log. capital required ($K)	0.25†		5.05**	−3.81**	−3.86**
	(1.69)		(5.90)	(−4.18)	(−4.24)
Franchisor financing	0.89*		7.12**	3.18	2.96
	(2.24)		(3.23)	(1.29)	(1.20)
Log. franchisor input sales ($K)[a]	−0.33	−1.38*	−2.36*	−1.07	−0.98
	(−1.59)	(−2.18)	(−2.01)	(−0.85)	(−0.79)
Log. (length · avg. $sales_f$) ($100K)[a]		0.41	6.20		
		(0.29)	(1.12)		
Variable fee (%)		−0.24		−0.27	
		(−0.92)		(−0.95)	
Constant	16.16**	25.30**	12.51	111.03**	106.77**
	(4.77)	(4.84)	(0.59)	(5.27)	(5.19)
Limit observations	37.00	7.00	7.00	117.00	117.00
Nonlimit observations	511.00	541.00	541.00	431.00	431.00
Squared Cor (Y, $E(Y)$)	0.10	0.01	0.12	0.37	0.37
LR test (all slope coeff. = 0)	50.16**	6.08	69.24**	232.58**	231.68**

Note: See the footnotes to Table 5.

risk, has an effect that is opposite of what one would expect in a risk-sharing or a one-sided moral-hazard model (assuming that the franchisee is the more risk-averse party).[26] As can be seen from the data in Table 2, this unexpected result cannot be explained by a few sectors in the data in which the rate of discontinuations is high and the royalty rate (proportion of franchised stores) is low (high). In fact, this result, where risk increases the use of franchising and decreases the franchisor's share, also occurred when risk was measured by the two

[26] Under the assumption that franchisors with only a few outlets could be more risk averse than their franchisees, the sample of franchisors was divided into subgroups based on the number of outlets. Even for the sample of largest firms, the effect of the risk variable was still inconsistent with risk sharing or one-sided moral hazard.

measures of variance mentioned earlier. Also, it is consistent with the data reported in Table 2, where the proportion of discontinued outlets is larger for franchised than for company-owned outlets, and with results obtained by Martin (1988) as well as some from Norton (1988). This set of results lends little support to the notion that risk sharing or one-sided moral hazard can explain the existence of franchising. Of course, as discussed previously, this interpretation depends crucially on the capacity of the measures to capture exogenous risk, as opposed to capturing the variability that is due to franchisee moral hazard. But even assuming that the measures do capture exogenous risk, it remains that in a model with franchisee moral hazard, increases in sales variability automatically compound the unobservability problem. This confuses issues empirically, and it can affect the observed effect of any measure of risk. In particular, results obtained with respect to risk could be reinterpreted to mean that increased unobservability of franchisees implies a greater reliance on franchising. And indeed it is on this basis that Norton (1988) expected risk to have a positive effect on franchisors' use of franchising. Martin (1988) makes a similar argument. This interpretation, however, implies that the need to give incentives to franchisees overwhelms insurance considerations in the design of the franchise contracts.

Second, except for the effect of the size variable, results generally support the notion that geographical dispersion and increases in the importance of the franchisee's inputs increase franchisors' propensity to franchise and lead to contracts that give more residual claimancy rights to franchisees. This is consistent with results obtained by Brickley and Dark (1987), Norton (1988), Martin (1988), and Brickley, Dark, and Weisbach (1991) for the proportion of franchised stores, as well as, in an indirect way, results reported by Krueger (1991).[27] In some cases, such as the number of states variable, the adjustment seems to take place mostly through the proportion of franchised stores, while in other cases, such as the franchisee's jurisdiction in the business ((avg. sales − inputs)/avg. sales), the variable affects mostly the royalty rate. Also, the results relative to the franchisee experience dummy are never significantly different from zero, but they suggest that the requirement for franchisees to have experience in the business is used as a rationing device and is not really an indicator of the importance of the franchisee's inputs.

The effect of the size variable on the proportion of franchised stores is the opposite of what one would predict in the presence of franchisee moral hazard, and it is also the opposite of results obtained by Norton (1988) for the restaurant and hotel industries. In the present data, this effect can largely be explained by an endogeneity problem: looking at Table 2, one finds that average sales per franchised outlet are lower, and in some sectors significantly lower, than average sales per company-owned outlet. Hence in any given sector, a franchised chain that is highly franchised is likely to have smaller outlets on average. But this begs the question: the data in Table 2 are inconsistent with the notion that franchising is used when outlets are bigger and thus harder to manage. Franchisors explain the larger size of company-owned outlets by saying that it reflects "a higher concentration of company-owned outlets in major urban centers, and with it a higher investment cost per outlet" (IFA Educational Foundation (1990)). As noted in Brickley and Dark (1987), Norton (1988), and Brickley, Dark, and Weisbach (1991), the fact that stores in urban areas would be company-owned is quite consistent with franchisee incentive arguments (increased concentration makes monitoring less costly). As a result, if one accepts franchisors' explanation for the difference in outlet size, a negative correlation between size and the proportion of franchised stores need not be inconsistent with an explanation for franchising that relies on franchisee moral hazard.

[27] Krueger (1991) finds that employees of company-owned stores are paid slightly higher wages than those of franchised outlets. This is consistent with downstream moral hazard.

Third, the empirical results support the idea that the contract mix and the contract terms are chosen to give incentives to the franchisor: royalty rates generally increase, and the proportion of franchised stores decreases, with measures of the importance of the franchisor's role. Of all the variables that were meant to capture the value of the franchisor's inputs, the only one whose effects were the reverse of what was expected under double-sided moral hazard is the number of years in business. The regression results for this variable indicate that older franchisors use franchising more than younger ones, and that they opt for lower royalty rates as well. This goes against one's intuition, which is to expect franchising to be especially beneficial to young start-up firms with limited resources.

In terms of the proportion of franchised stores, this result is driven at least in part by the difficulties franchisors first encounter when they begin to sell franchises. This is borne out in a recent survey conducted by a franchise consulting company, Growth Decisions Inc. (See Seid (1988).) They examined 1,490 franchisors who had begun franchising since 1978 and had established 66,297 franchisees since that time. They found that on average, these new franchisors sold 3.1, 4.3, and 4.3 franchises respectively in each of their first three years of selling franchises. In the following years, the average was generally around 10. Combined with the fact that franchisors typically start out as fully company-owned chains, and that during the first few years in franchising their number of company-owned outlets tends to remain fairly constant while the number of franchised outlets increases (see Lafontaine (1990)), this implies that the proportion of franchised stores increases gradually as a firm matures.

While the above is in some sense an "observational" explanation for the unexpected effect of the age variable on the proportion of franchised stores, which I believe is very important, there are also two theoretical arguments one could give to explain not only the effect of the age variable on the use of franchising, but also its surprising negative effect on the royalty rate. The first relies on the dynamics of a double-sided moral-hazard model: in the context of such a model, it is possible that as franchised systems mature, success becomes more and more a function of the franchisee's performance and less a matter of the franchisor's. In that case, the royalty rate should go down, and the use of franchising up, as the number of years in business increases. The second is based on the dynamics of a signalling explanation for franchising (Gallini and Lutz (1992) and Tirole (1988)). In this type of model, franchisors have private information about the value of their franchise that they try to communicate to potential franchisees. In a separating equilibrium, high-value franchisors successfully convey to potential franchisees the information that they are of high quality by choosing a franchise contract with a high royalty rate and/or by operating many stores directly. Low-value franchisors in this model require no royalties and do not operate stores directly. Over time, as information about their type is revealed, the high-value franchisors will want to revert to their first-best contract, which also involves no royalty payments and no company-owned stores. This would lead to a reduction in the royalty rate and an increase in the proportion of franchised stores over time. However, Lafontaine (1990) does not find support for signalling as an explanation for franchising.

Fourth, and finally, results relative to the capital-market-imperfection arguments are quite mixed. For example, those obtained for franchisor growth do support this explanation. However, the effect of growth on the proportion of franchised stores can be interpreted to mean that franchising relaxes some sort of constraint on growth, but this constraint need not be financial. It could be managerial, as suggested by Norton (1988).[28] On the other

[28] In Lafontaine (1992), when asked about the advantages of franchised outlets, 76 out of 130 franchisors answered that franchising allows for faster expansion because it increases the funds available to them. Another 18 said that franchising reduces corporate overhead.

hand, the capital-need explanation predicts the observed negative effect of growth on the royalty rate, while the managerial argument cannot. The amount of capital required to open an outlet has a negative effect on the use of franchising, which is not consistent with the capital explanation. Caves and Murphy (1976) and Brickley and Dark (1987) also obtained a negative relationship between the use of franchising and the amount of capital required. The latter authors, however, expected this result. With risk-averse franchisees, they argue, higher capital requirements imply more investment risk to the franchisees, who then demand higher risk premia (they refer to this as an inefficient risk-bearing cost of franchising). Thus franchising becomes less attractive to franchisors. In other words, this result is supportive of the idea that there is an insurance component to franchise contracts after all. But while this argument can explain the negative relation between the proportion of franchises and the amount of capital required to open a store, it cannot explain the positive effect of the latter on the franchise fee. The franchisor could reduce the total initial investment the franchisee must make by asking for a smaller fixed fee, thus reducing the risk premia required by franchisees. But franchisors do not do this. Instead, the franchise fee goes up as the amount of capital required increases, as one expects it to if the franchisor is using franchising to obtain capital. Finally, the fact that franchisors who offer financing have a greater proportion of franchised stores than others, as can be seen from the positive coefficient of the financing dummy variable, suggests that those firms that provide financial assistance to their franchisees find franchising appealing for reasons that have nothing to do with a need for capital.[29] Interestingly, these franchisors also require both a higher royalty rate and a higher franchise fee from their franchisees. This suggests that part of those fees may be required as payment for the franchisor's capital.

□ **General comments.** In general, the empirical results suggest that franchisors' responses in terms of their royalty rates are usually the reverse of those relative to their proportion of franchised stores. This is as expected. Exceptions include the dummy variable on financing, which increases simultaneously all three dependent variables, and the franchisor input sales variable, which has a negative effect on all three of them. The latter result is consistent with the notion that the sale of inputs by the franchisor is a substitute for the other two fees. As for the effect of financing on the fees, as noted above, it is most likely due to the inclusion in these fees of part of the remuneration the franchisor receives for contributing capital.

In addition, two interesting stylized facts arise from the empirical analysis. First, the extent to which variations in the exogenous variables explain the proportion of stores that are franchised is much greater than the extent to which they explain the terms of the contract.[30] It appears that franchisors choose to adjust to differences in risk, supervision costs, and capital constraints by relying on franchising to varying degrees rather than by opting for different contract terms. This is an interesting result. Because it has typically focused on single principal-agent pairs, theory suggests that most of the adjustments should be done through the terms of the contract. However, as franchisors typically offer a single franchise contract at a point in time, and as this contract even tends to be relatively stable over time (see Lafontaine (1990)), franchisors in fact adjust on another margin, namely through their contract mix.

Second, the effect of the royalty rate on the franchise fee is negative but insignificant and negligible. In addition, no systematic negative (or positive) correlation was found between

[29] Separate sets of regressions were estimated for franchisors that do and franchisors that do not provide financing. The hypothesis that the coefficients were the same between the two groups could not be rejected at the .05 level.

[30] The degree of explanatory power is measured by the correlation between the dependent variables and their expected values given the parameter estimates.

the two fees over the whole sample, or within sectors, or age or size cohorts. Furthermore, none of the variables that explain the royalty rate has a significant and opposite effect on the franchise fee, as should have occurred had the two fees been chosen to keep the franchisee at her reservation level of utility. Finally, total sales over the length of the contract do not have a significant effect on the franchise fee. All of these results suggest that the reduced-form equation for the franchise fee is not appropriate. This would be the case if the franchise fee did not extract all surplus downstream. For example, if the franchise fee is chosen simply as a way to remunerate the franchisor for services offered in starting out the franchise, then there would be no need for any relationship between the franchise fee and the royalty rate. The results obtained here with respect to both the number of weeks of training variable and the financing dummy to some extent support the notion that the franchise fee is a price for services rendered. In general, it is also possible that the fees are chosen in a way that purposefully leaves rents downstream. Mathewson and Winter (1985) found that the optimal franchise contract, in a principal-agent framework where the franchisee has limited wealth, would yield positive expected rents to franchisees. They interpret the existence of queues of potential franchisees for major chains as evidence that there are downstream rents. Testimonies of franchisees from the major chains seem to support this notion.

7. Conclusion

■ This article provides an empirical assessment of recent developments in the area of agency theory in the context of the franchising phenomenon. In terms of the theoretical models discussed here, the empirical results are broadly consistent with a two-sided hidden-action or moral-hazard explanation of franchising, suggesting that there really are incentive issues on both sides. This result is consistent with previous empirical work such as Brickley and Dark (1987) and Norton (1988), who found that the incidence of franchising was greater when there was an incentive or monitoring problem downstream. This result also makes sense in the context of arguments found in the trade literature on franchising. The notion that franchisees are more highly motivated than hired managers, and that this is a major advantage of franchising, is pervasive in that literature. Similarly, the idea that providing franchisors with incentives is important is illustrated by the following quote from John F. Love's *McDonald's: Behind the Golden Arches* (p. 63):

> Kroc understood that selling high priced territorial franchises and profiting on the sales of supplies to franchisees shared a fundamental weakness: the franchisor made most of his money before the franchisee's restaurant opened and thus was less dependent on that restaurant's success for his profits.

The results are also consistent with the idea that firms use franchising more when they want to grow faster, implying that franchising allows franchisors to relax some form of constraint on their growth. Some of the results are consistent with the notion that this constraint may be financial, while others are not.

In addition, it was found that the factors considered here have more explanatory power with respect to the proportion of franchised stores than they do for the terms of the franchise contract. In other words, franchisors adjust at the margin more often through their contract mix decisions than through their contract terms. In that sense, this article validates previous empirical work on franchising in which authors focused on explaining the proportion of franchised stores rather than the terms of the franchise contract. Finally, the royalty rates and the franchise fees were not found to be negatively related in these data, as they should be if they were chosen to bring the franchisee down to her reservation utility level. Why franchisors would choose not to extract all downstream rents is an interesting question. Mathewson and Winter (1985) find that an optimal contract in the context of franchisee moral hazard and limited wealth will involve leaving rents with the franchisee.

This empirical analysis suggests interesting directions for future research. First, at the empirical level, one would want to know how individual franchisors' choices of contract mix and contract terms evolve over time, and as a function of what variables. This work is being pursued by the author at this point. A second interesting empirical issue is whether results obtained in this article are specific to franchising, or whether they apply to other types of contractual arrangements such as, for example, licensing contracts. At a theoretical level, it would be interesting to analyze firms' choices of contract mix as well as their decisions concerning the terms of the contract. Similarly, franchisors' tendency to use simple linear sharing rules is puzzling. On the basis of existing theoretical models, one would have expected these firms to design much more complex (nonlinear) contracts and to use a variety of them. Why they do not is an interesting question.[31]

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[31] Linear contracts, or rather menus of them, can be optimal in the context of information asymmetries on the agent's side. See McAfee and McMillan (1987) and Rogerson (1987).

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