The Elasticity of Franchising

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ABSTRACT. This paper creates a model to test whether franchising functions as product differentiation and estimates its elasticity. Using data on the average franchisee in thirty restaurant chains, the elasticity of franchising is measured at 0.252, which is similar in magnitude to values found in previous research for the elasticity of advertising of consumer product goods. The results suggest that, at least for some franchisees, the franchise system is providing product differentiation.

Franchising is an organizational form used widely in retail trade and services. Existing research has shown that the owner of a trademark and a production technology might choose to become a franchisor to circumvent capital constraints and to solve the agency problem associated with operating a network of decentralized production outlets (Caves and Murphy, 1976; Rubin, 1978; Lafontaine, 1992; Martin and Justis, 1993; Dnes, 1996). From the standpoint of the prospective franchisee-entrepreneur, purchasing a franchise is argued to bring competitive advantages relative to independent operation. One source of such advantage is that purchasing a franchise adds differentiation to a small business's product or service. Rather than developing a business identity de novo, the budding restauranteur, printer, or hair stylist purchases from the franchisor the right to use an established business identity, the franchise, with its associated trademarks. Thus the prospective franchisee achieves the differentiation associated with the business identity. The franchisor has typically developed a significant level of product differentiation in the identity through exploiting economies of scale in promotion, advertising, and other marketing activities (Caves and Murphy, 1976; Shane, 1996).

This paper examines the effectiveness of franchising as an instrument for differentiation for the franchisee. Measuring the effectiveness of differentiation can be done in various ways; for an extensive review and catalog of such techniques see Lilien et al. (1992). In this paper we use one well-established concept, elasticity, and estimate an elasticity of spending for the right to use the franchise system's established identity, hereafter the elasticity of franchising. Elasticity is a measure of the percentage change in one variable with respect to another variable. An elasticity of franchising is the change in quantity demanded with respect to franchisee spending for the right to employ the business identity, signaled through the trademark.[1] Informally, it is one measure of the sensitivity of customers to the spending of the franchised small business on the business identity of the franchise system. Measuring the elasticity of franchising gives one measure of the value of purchasing a franchise. Results suggest that the effect of differentiation through franchising in the restaurant industry is comparable in magnitude to another instrument of differentiation commonly used in consumer markets, advertising.

The paper is organized as follows. In the first section we derive the optimal spending by a business on differentiation through franchising as a function of the elasticity of franchising, and then manipulate the result to derive a testable equation. In the second section the data sources are described and measurement issues discussed. Results are then reported in the third section, and a discussion follows.

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1. Modeling the choice of differentiation

We begin by deriving a model for the expected effect on quantity demanded by spending on differentiation through franchising. What is the appropriate level of spending on differentiation for a business? Following Dorfman and Steiner (1954), the problem can be modeled as follows. Assume demand is a function of both price and differentiation, such that $q = q(p, D)$, and that differentiation is measured in dollars spent. Costs of the business contain three components: a constant marginal cost of production C per unit; a quantity of capital K, with a cost of j and a depreciation rate of d; and the cost of differentiation, D, measured directly in dollars, analogous to the treatment of advertising in Dorfman-Steiner. So the profit function of the firm is:

$$\Pi(p, D) = p \times q(p, D) - C \times q(p, D) - (j + d)K - D \quad (1)$$

The first order conditions for the problem are as follows:

$$\frac{\partial \Pi}{\partial p} = q + p \times \frac{\partial q}{\partial p} - C \times \frac{\partial q}{\partial p} = 0$$

$$\frac{\partial \Pi}{\partial D} = p \times \frac{\partial q}{\partial D} - C \times \frac{\partial q}{\partial D} - 1 = 0$$

Rearranging, the optimal spending on differentiation can be expressed as:

$$\frac{D}{p \times q} = \eta_D \left[\frac{(p - C)}{p} \right] \quad (2)$$

The left side of the equation is the amount to be spent on differentiation (D) as a percentage of sales revenue ($p \times q$). On the right side, η_D is the elasticity of quantity demanded to spending on differentiation, $(D/q) \times \partial q/\partial D$.[2] The expression in brackets is the price-cost margin, price minus marginal cost as a percentage of price.

In the franchise system, the franchisee customarily pays a percentage of gross sales, termed the royalty, to the franchisor as compensation for the use of the trademark (Rubin, 1978; Lewis, 1991). Therefore the franchisee's spending on differentiation generated through the franchise system is directly measured as the royalty rate paid from franchisee to franchisor times unit sales. The left side of Equation (2) could therefore be estimated directly with royalty expressed as a percentage of sales and finding data on price-cost margins for franchisees. Such data are not available for this study; the available accounting data from the franchisee permits an alternative route to a testable equation, however.

We can write the profit function of the franchisee given that he or she has chosen to purchase the franchise, and is therefore expected to pay royalties. If the franchise is purchased, spending on differentiation $D = r \times p \times q$, where r is royalty as a percentage of sales paid from franchisee to franchisor.[3] Suppressing arguments of quantity demanded, Equation (1) can be rewritten as:

$$\pi = \{(1 - r)(p \times q)\} - (C \times q) - (j + d)K \quad (3)$$

The formula can be rewritten as:

$$\frac{\pi}{p \times q} + (j + d)\frac{K}{p \times q} = \frac{p \times q - C \times q}{p \times q} - r \quad (4)$$

The left hand side can be interpreted as franchisee operating income before capital cost over sales. The first term on the right hand side is an alternative phrasing of the price-cost margin (PCM).[4]

From Equation (2) above, substitute into Equation (4) for PCM:

$$\frac{\pi}{p \times q} + (j + d)\frac{K}{p \times q} = \left(\frac{1}{\eta_D} - 1 \right) \times r \quad (5)$$

This equation relates franchisee operating income before capital cost as a percentage of sales to the royalty rate and the elasticity of franchising. Again, the elasticity of franchising measures the change in quantity demanded with respect to differentiation through spending on franchising.

In equilibrium, the elasticity of spending on any differentiation device, including franchising, is between zero and one. A value higher than one implies increasing returns to differentiation, which cannot persist in equilibrium. A value lower than zero suggests that differentiation decreases quantity demanded. So no one would choose to buy a franchise. Therefore, in equilibrium $0 \leq \eta_D \leq 1$, and the model predicts that the operating income before capital cost as a percentage of sales for a franchise system should be a linearly increasing function of the royalty. This equation depends crucially on our interpretation of franchising as purchasing product differentiation.

Otherwise, royalty paid from the franchisee to the franchisor would reduce operating income before capital cost and produce a negative relation.

2. Data and measurement

Data to test the linear relationship between royalty and operating income before capital cost as a percentage of sales come from the earnings claims included in franchise offering circulars. The Federal Trade Commission requires the franchisor to provide prospective franchisees with an offering circular that explains the terms and conditions of the franchise contract and describes the franchise system to the franchisee. At the franchisor's option, an earnings claim may be included in that circular. "An earnings claim is any information which states or suggests to the prospective franchisee any past or potential level of sales, costs, profits, or growth" (Lewis, 1991, p. 9). Earnings claims typically report historical yearly systemwide average levels of sales, costs of goods sold, payroll, rent, royalties, and other selling and administrative expenses. The franchisor does not wish to assume a particular capital structure for franchisees, so expenses of capital such as interest or depreciation are generally excluded.

The thirty earnings claims analyzed in this paper come from two sources. Warren Lewis' 1991 compilation of earnings claims (Lewis, 1991) provided most of the claims. In addition, examination of public records in Maryland and Virginia yielded eight additional circulars that contained earnings claims. All claims assembled were valid in 1989 or 1990. The representativeness of this sample has been compared to two other populations of franchisors in the restaurant industry. The thirty firms included here do not differ in their financial characteristics of royalty rate, franchise fee, or initial investment required from the population of franchisors listed as offering Restaurants or Fast Food in the Entrepreneur 500 of January 1990. Second, the sample is compared with the same population in the listings of the *Franchise Annual* of 1990. Again, no significant differences were found. Therefore, the sample of firms appears to be representative of the population of franchisors offering franchises at the time of the study.

The thirty franchisors included in this study compete in the restaurant industry. The restaurant industry is chosen because it is the largest industry using franchising (1990 gross sales equal $64 billion dollars); franchise systems account for 47 percent of all sales of food and drink away from home. By analyzing firms within a single industry, technological and industry specific factors are controlled, such as investment levels. The data set is described in more detail in Michael and Moore (1995). The franchise systems in the data set and their industry and franchising experience are listed in Table I.

Because franchisors voluntarily make an earnings claim, self-selection bias is a risk in a database of earnings claims. If franchisors know their franchisees' performance relative to competitors, it is possible that franchisors with good results are more likely to claim than those with poor results.[5] Countering this effect, it is well known that information structures of markets respond to competition (Caves, 1986). The rational franchisee is more likely to interpret "no claim" as an admission of unprofitability if competitors provide claims. Franchising industry sources acknowledge this force: "It is expected that competitive pressures will continue to increase the number of franchisors that make earnings claims" (*Franchise Annual*, 1993, p. H8). Competition for franchisees among franchisors should lower the threshold and reduce selection bias. To test for this possibility, a larger sample of 102 restaurant franchisors were analyzed to see which ones made earnings claims. The only significant variable explaining the decision to claim was the percentage of other competitors in the segment (chicken, hamburgers, pancakes/waffles) who made claims. For example, in the fast food hamburger segment, virtually all franchisors made earnings claims for their franchisees. A number of proxies for profitability, such as advertising, unit sales, geographic coverage of the franchise system, number of units in the franchise system, and age, were not significant.[6] If the reason for reporting an earnings claim is not superior profitability but competitive response, bias is not introduced.

Earnings claims must be based on reliable factual information known to the franchisor. The FTC and state regulations require that all data used to make a historical claim must be made avail-

TABLE I
The franchisors providing claims

Franchise name	Year business started	Year begun franchising
1 Potato 2	1977	1978
Al's Diner	1986	1990
Alonti Deli	1989	1990
Bassett's Original Turkey Restaurant	1987	1989
Boston Chicken	1988	1989
Brown's Chicken	1964	1965
Burger King	1954	1954
Central Park	1982	1986
Coco's	1955	1990
D'Angelo Sandwich Shops	1973	1988
Del Taco	1965	1984
Diamond Dave's Taco Co.	1980	1983
Dunkin Donuts	1954	1954
Golden Corral	1973	1986
Hardee's	1960	1961
Huddle House	1964	1966
Jack in the Box	1951	1982
Long John Silver's	1969	1969
Macayo	1952	1986
Mazzio's Pizza	1961	1966
McDonald's	1955	1955
Olga's Kitchen	1975	1983
P.D. Quix	1984	1986
Panda Express	1986	1990
Perkins Family Restaurant	1958	1966
Roy Rogers	1967	1968
Skolnik's	1981	1988
Sub Station II	1961	1976
Taco Bell	1962	1964
Wings To Go	1985	1989

able to the franchisee (as well as federal and state regulators) upon request. Therefore, prospective franchisees, their accountants, and their attorneys are more likely to have scrutinized historical claims and their supporting data, making misrepresentation more difficult. Practicing attorneys note the heavy penalties associated with fraud or misstatement in an earnings claim. "If your franchisor client makes an unauthorized or an inaccurate earnings claim, franchisee suits for rescission, restitution, damages, or other relief may follow. And, in many states, your client will not only be guilty of a crime, but may find itself a party defendant in state actions seeking to recover monies, seeking injunctions, and, unfortunately, seeking headlines." (Kaufmann, 1991, p. 7). These penalties may even cause franchisors to be overly conservative in their earnings claim (Mancuso and Boroian, 1993, pp. 105–106). Although there are heavy penalties for fraud, a truthful claim is a shield against litigation. Courts have held that earnings claims are an estimate and not a guarantee (Lambert, 1992; Lambert, Dienelt and Becnel, 1995; Glickman, 1997). As a result, franchisors are not liable if franchisees do not achieve the results reported in the claim. Given that a properly prepared claim incurs little if any risk of litigation, while the penalties for misrepresentation are stiff, a rational franchisor facing these costs and benefits of veracity who chooses to provide a claim would make a truthful one.[7]

One formal study of earnings claims is supportive of these conclusions. Lewis (1988) examined litigation surrounding earnings claims by examining all UFOC's registered with the State of Maryland. He found that 64 of 557 chains across all industries offered earnings claims. Of the 64, all but one based their data on historical and actual data obtained from operation of either franchised or corporate units. He concludes that, "Few lawsuits appear to have been brought against franchisors involving allegations of misrepresentations in written earnings claims" (Lewis, 1988, p. 2).

In each claim, the franchisor reports average sales and expenses. The figures may be from company-owned or franchisee-owned stores; where possible the sample uses sales and results from franchised units. In some cases an average is not available but a median is. On the presumption that sales per year are distributed symmetrically, mean should equal median. One of the largest franchisors did give a breakdown across hundreds of units; sales exhibited a bell-shaped curve.

The earnings claims provide easy measures of the terms in Equation (5), relating the ratio of franchisee operating income before capital cost per dollar of sales to the royalty rate paid by the franchisee. The dependent variable of franchisee operating income before capital cost (OICC) is measured in the following fashion:

$$\frac{\pi}{p \times q} + (j + d)\frac{K}{p \times q} = \frac{\text{Sales} - \text{COGS} - \text{S\&A}}{\text{Sales}} \equiv \frac{\text{Franchisee OICC}}{\text{Sales}} \qquad (6)$$

where COGS is cost of goods sold and S&A is selling and administrative expenses, both reported in the earnings claim. The claim also directly reports the independent variable, royalty. Both are percentages, so no adjustment for inflation is needed.

Almost all earnings claims allow the construction of franchisee operating income before capital cost as defined above. For five of the firms, rent for land and building is not given. For these firms, the franchisee operating income before capital cost as a percent of sales is reduced by an industry standard occupancy cost as a percent of sales, obtained from an average of two industry sources, *Financial Studies of the Small Business* and *Robert Morris Associates* (both various years). Further, seven of the firms embedded a managerial salary in the calculation of operating income which could not be separately identified and removed. For these firms, an industry standard managerial compensation as a percent of sales from the same sources is added to the franchisee operating income before capital cost as a percent of sales. This adjustment captures all cash flows to the franchisee as both owner and manager. The sensitivity of results to these corrections is explored below. No claim in the data set both excludes rent and includes managerial compensation, so no figure is based on a double correction.

3. Results

Using the variable definitions described above, the estimate of Equation (5) relating franchisee operating income before capital cost as a percentage of sales to royalty is presented in Table II.

Column 1 reports the base model of Equation (5). The *F*-test demonstrates a significant equation, and an examination of diagnostics revealed no heteroskedasticity or omitted variables. The estimated coefficient on royalty is significant and positive. Using the coefficient on royalty from Table I, we solve for the elasticity; the estimated elasticity of demand to product differentiation through franchising is 0.252, between zero and one as theory requires.

The entrepreneur's alternative to franchising is to build differentiation using another instrument, such as advertising. In equilibrium, the estimates of elasticity for various instruments of differentiation should be equal. In a review and meta-analysis of advertising research, Assmus, Farley, and Lehmann (1984) reported that the average elasticity of quantity demanded to advertising across 128 published studies of various consumer goods in the U.S. and Europe was 0.221. The closeness of the two estimates suggests an equilibrium exists in the market for instruments of differentiation.

TABLE II
Estimate of the elasticity of differentiation through franchising

Variable	(1)	(2)	(3)
Royalty	2.97***	4.00**	2.91**
	(1.40)	(2.05)	(1.44)
Constant	3.50	–0.95	2.78
	(5.86)	(8.45)	(5.96)
Number of firms (observations)	30	21	27
F-stat	4.49***	3.78**	4.07**
Adj R^2	0.107	0.122	0.106

Column 1: Full Sample; Column 2: Franchisors founded before 1982; Column 3: Franchisors surviving until 1998.
Notes: Standard error is in parentheses under coefficient estimate. Significance levels are noted with asterisks: *** is 5%, ** is 10% in two tailed tests. Both royalty and franchisee operating income before capital cost over sales measured as percentages.

I explored the sensitivity of results to alternative specifications of the model. First, I changed the dependent variable's allowance for rent for the claims that required an adjustment; I used twelve percent uniformly as the ratio for rent, as suggested in the *Shopping Center Development Handbook* (1986). Also, the dependent variable's allowance for managerial compensation used the average wages of comparable workers taken from the U.S. Department of Labor's *Employment and Earnings* (various years). In addition, I reran the equation without observations requiring the rent adjustment, and then without observations requiring the compensation adjustment. Results did not change. Second, other variables were added such as age of the franchise, the investment/sales ratio, and the number and log of units in the system, and an indicator variable marking whether

the franchise was fast food or full service. None of these alternative explanatory variables had a significant coefficient. Third, heteroscedasticity was controlled by using weighted least squares with the number of units employed to generate the earnings claim as the weight. In all cases, the coefficient on royalty remained positive and significant, with a similar value.

Given the controversy above regarding problems of franchisee and franchisor failure, two subgroups of the sample are of special interest: those franchisors who have a history of successful operations, and those who will soon cease operations. To examine these franchisors, I create two subgroups: those who have survived eight years prior to the time of the reported earnings claim and those that have survived eight years after the earnings claim. First, we have restricting the analysis to restaurants founded before 1982. This includes many of the largest and best known franchise chains in the restaurant industry, such as McDonald's and Taco Bell. The equation is fitted and results reported in the second column of Table II. Signs and overall significance patterns remain the same, although significance levels drop ($p < 0.07$) as the sample size declines. Again, the royalty rate is positive and significant. The computed elasticity for this group is 0.200, as opposed to 0.252 for the full sample. As Shane (1996) has documented, young franchise chains face very high risk of survival. The higher elasticity derived from performance documented in the earnings claims of these chains may be a return for higher risk.

Second, the data are reanalyzed using only firms known to survive until 1998. To identify survivors, following Lafontaine and Shaw (1996), I examine the leading franchise directories such as Entrepreneur magazine's Franchise 500 (1998) and Bond's Franchise Guide (1998). Three of the firms in the data set are not listed in either source, and are therefore presumed to have ceased franchising. The slightly smaller sample yields similar coefficients and similar conclusions, as reported in column 3. Again significance levels drop slightly as the sample size declines. The elasticity for this subgroup is similar to that of the full sample.

4. Discussion

Using data for the average franchisee in thirty franchise systems, this paper tested whether franchising functioned as an instrument of differentiation, and estimated its elasticity. The results indicate that, in the restaurant industry, franchising did function as differentiation, with an elasticity similar to that of the elasticity of advertising for consumer goods. Spending on an established business identity, the franchise, yields an increase in quantity demanded.

The study is subject to several limitations. First, bias possibly remains among the sample of franchise systems that choose to claim. Second, the sample size is small. The tight theoretical model and testable equation as well as the high number of degrees of freedom of Equation (5) mitigate but do not eliminate this concern. Third, the estimate applies only to the restaurant industry; it is simply inappropriate to conclude that spending on franchising expands quantity demanded in other industries without further research. Fourth, franchisee quality is not explicitly observed in the above regressions. An alternative explanation for these results might be grounded in selection on quality by franchisors and franchisees. Franchisees capable of generating higher operating income before capital costs (and higher income) may be attracted to franchisors with high royalties, presumably because of the greater opportunities for differentiation. Defining and measuring the quality of individual franchisees is beyond the scope of this study. One proxy for quality might be the franchisor's age or size, however, presuming that older or larger franchisors attract higher-quality franchisees. But neither age of the franchisor nor number of units in the system (nor its logarithm) significantly affected franchisee operating income before capital cost as a percent of sales when added to the empirical estimation of Equation (5).

On balance, the results support the theory that, at least in the restaurant industry, franchising is providing product differentiation to entrepreneur-franchisees. However, these results should not be interpreted as a guarantee; franchising's well documented risks preclude such a facile interpretation. In this data set, on average, systems offer differentiation, but that will certainly not hold true with respect to each franchise system in the data

set. Even if, on average, a system provides differentiation to its franchisees, the effectiveness of that differentiation will vary among franchisees, perhaps based on location, competitive conditions, and managerial abilities. Instead, it is appropriate to conclude that, on average, the typical franchisee in the data set is attaining some differentiation. And no entrepreneur-franchisee in any system is guaranteed differentiation.

Contrasting the results for the full sample and the subgroup suggests that older, more established franchisors offer less differentiation, and therefore less reward. Since franchisee income is computed after royalty, this would presumably reflect the franchisor extracting higher profit from the franchisee. This supports the idea, discussed in Lafontaine and Shaw (1998) that some blue chip franchise systems offer a more secure opportunity, while younger ones are more rewarding and more risky. Whether the reward is proportional to the high risk of franchising is a question for further research.

The model employed in this paper assumes that franchising functions as an instrument of differentiation, and has yielded one measure of differentiation's effects. It would certainly be valuable to extend the model by applying it to other industries and settings. For example, casual observation suggests that customers are less mobile in their shopping habits than in their eating habits, so participation in the franchise system may have a higher value in the restaurant industry. Future research should consider that franchising as an organizational form probably serves different purposes in different industries. For example, franchise systems in other industries may offer gains in other operational areas to the franchisee, perhaps from economies of scale in purchasing, centralized inventory control, or specialized training. Previous research has not recognized this possibility; empirical work has simply pooled observations of franchise systems across industries. Research needs to examine franchising in industry and competitive context to further illuminate its effect on participants and on market structure.

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Notes

[1] The most common use of elasticity in economics is price elasiticity, the percentage change in quantity demanded given a one percent change in price. But elasticities have been defined and measured for many decision variables of the firm, including quality and advertising as well as price. Dorfman and Steiner (1954) define an elasticity of advertising and an elasticity of quality. Lambin (1976) computes elasticities of advertising and quality as well as price for various products and markets.

[2] This is the Dorfman Steiner result, originally employed for advertising, but equally applicable to any kind of spending on differentiation.

[3] This stylized accounting equation is commonly employed in the literature to generate testable equations; see Pugel (1980) or Harris (1988) as an example.

[4] The assumption of constant marginal cost allows us to employ average variable cost in empirical estimation. Regardless of the assumption, in the long run, both are equal. The use of AVC and AC in lieu of MC is common in empirical work; for a discussion see Schmalensee (1989).

[5] A model by Milgrom (1981) counters this common-sense claim, however. There a seller with a good of uncertain (to the buyer) quality confronts a buyer with rational expectations. In equilibrium, the seller reveals quality regardless of level. The model illustrates that making a claim is rational, regardless of performance, when faced with a "skeptical" franchisee, and suggests that other managerial factors that are independent of performance, such as costs, competition, or even management's fear of lawsuits, might affect the decision and reduce bias.

[6] This analysis is available from the author upon request.

[7] The veracity of franchisors has certainly been questioned in the ongoing controversy over franchise failure rates, reviewed in Bates (1995a). The franchise trade association has consistently trumpeted that failure rates of franchisees are lower than those of small business generally. These results seem to depend on a sampling bias; when exhaustive census records are employed, as in Bates (1995a, b; 1998), franchise failure rates are higher in retailing industries and comparable to small business generally in other industries. Moreover, Shane (1996), further supported by Lafontaine and Shaw (1998), noted that 75% of new franchisors typically go out of business in a decade, casting further doubt on the appropriateness of the use of the trade association's statistic. Such controversy does not seem to surround earnings claims, a

much more regulated area. In the trade press, a recent review of controversial issues did not list the veracity of earnings claims (Asbill, 1997).

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