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## **MOTIVATIONS FOR SUB-FRANCHISING IN THE RESTAURANT INDUSTRY: AN EMPIRICAL EXAMINATION**

**Yae Sock Roh  
and  
William P. Andrew**

### **ABSTRACT**

The purpose of this research is to examine why certain restaurant franchisors utilize sub-franchising agreements while others do not. The research tests capital market, agency, and brand name capital explanations for the existence of sub-franchising in the restaurant industry. Proxies for measuring the franchisor's use of the capital markets, agency costs, and brand name capital are developed and described. Logit analysis is employed to examine the relationship between these factors and the use of sub-franchising. The empirical results are mixed. The results support the use of sub-franchising when the costs of monitoring franchisees are high and when franchisors wish to overcome weak brand name capital. The research found no evidence to support use of sub-franchising as an alternate to raising equity capital.

### **Introduction**

The purpose of this paper is to identify what motivates franchisors to enter into sub-franchise agreements. Sub-franchising is a provision whereby a franchisor grants the right to a sub-franchisor to assume the role and rights of the franchisor in selling to prospective franchisees the ability to establish and operate franchised units within a specified region. Simply put, the sub-franchisor becomes a virtually autonomous franchisor in the designated region. To date, the sub-franchisor's role has not been clearly defined in the hospitality literature and what motivates franchisors to seek sub-franchise arrangements is still an open question.

Historically, in explaining the existence of various franchising arrangements, capital market (Oxenfeldt & Kelly, 1969; Hunt, 1973; Caves & Murphy, 1976) and agency theories have been emphasized (Rubin, 1978; Brickley & Dark, 1987). In addition, both of these theoretical explanations have incorporated the issue of brand name capital (Fong, 1987; Norton 1988a, 1988b).

With respect to the existence of sub-franchising from the capital market theoretic perspective, the same rationale can be applied as has been applied to general franchising: sub-franchising (like franchising) may be seen as a more efficient mechanism for certain franchisors to raise capital (Matusky, 1992). Franchisors may effectively utilize the "franchisee's capital" to build units (i.e., let the franchisee finance and build the units) thereby eliminating the need for franchisors to raise investment capital for expansion (Whittlemore, 1994; Lowell, 1991). In addition, franchisors are able to obtain additional funds from other sources associated with sub-franchise contracts. First, a sub-franchisor pays

area development fees to the franchisor to acquire exclusive territorial rights. Second, sub-franchisors share the franchisee's initial fees and royalties with the franchisor.

As another explanation for sub-franchising, agency theory focuses on the efficiency of the incentive features of the franchise relationship (Carney & Gedajlovic, 1991). Agency theory arguments suggest that while franchising may in general be an efficient form of organization, it can also present a unique set of potential costs (Brickley et al., 1991). Franchisors are interested in the performance of the whole franchise system while franchisees are focused on their individual establishments. Therefore, franchisees need to be monitored. When franchisors perceive that monitoring individual franchised units is difficult or administratively costly, they may grant permission to the franchisees to own multiple units or even transfer the monitoring duty to a sub-franchisor (Carney & Gedajlovic, 1991; Brickley & Dark, 1987). Sub-franchising may therefore be appropriate when the marginal cost of utilizing a sub-franchise contract is lower than the marginal cost of monitoring individual franchised units.

From a brand name capital perspective, it has been suggested that a firm's tendency to franchise may be inversely related to the value of the firm's brand name capital (Norton, 1988a; Caves & Murphy, 1976). Likewise, the tendency to utilize sub-franchising may be inversely related to the franchise system's ability to deliver quality consistent with the franchisor's brand name capital. Since there is little involvement by the franchisor in sub-franchise/franchisee contracts, reliance on sub-franchising can make the franchisor vulnerable to quality chiseling by its franchisees.

This paper will explore whether there is empirical support for these theoretical constructs in relation to sub-franchising. The paper is organized as follows: Section II will review the literature pertinent to the theory of sub-franchising; Section III will present the research methodology, models, and data used in the study; Section IV will provide a statistical analysis and discussion of the empirical results; and Section V will conclude with a summary and suggestions for future research.

## **Literature Review**

### ***Capital Market Explanations***

The capital market explanation of franchising may also apply to sub-franchising as it depicts franchising as a vehicle designed to provide franchisors with financial capital when the firm cannot obtain financing due to imperfections in the capital markets (Lowell, 1991). The financial resources supplied by each franchisee are viewed as an indirect method of raising capital that can then be used to accelerate growth and accomplish scale efficiencies and build brand name capital (Lundberg, 1994; Caves & Murphy 1976; Oxenfeldt & Kelly, 1968-1969; Mathewson & Winter, 1985). A survey by Lafontaine (1992) reported that 76 out of 130 franchisors who responded said that franchising provided funds that allowed their firm to expand more rapidly than otherwise would have been the case.

Jensen (1989) noted that franchising is a hybrid capital instrument which is different from capital raised through the public equity market. Stated differently, internally-

generated funds from franchisees allow franchisors to minimize the price of capital because franchisees supply funds at implicit interest rates that are below the going market price. This capital supplied by the franchisee has no ready substitute (Caves & Murphy, 1976).

Financial capital supplied by the franchisee has many features of private placements and venture capital (Norton, 1995). Capital raised through private placement can be advantageous due to the lower transaction costs involved in raising it (Brealy & Myers, 1991). A franchisor may prefer to utilize franchising as a source of capital when the transaction costs associated with using conventional capital markets are high. Norton (1995) suggests that private placement can be a significant source of capital to firms when growth opportunities are high and where intangible assets are important. This may also be the case for franchisors, for similar reasons. When franchisors have difficulty raising capital in traditional capital markets, they may seek to acquire financial capital through the use of strong sub-franchisors. The resources supplied by sub-franchisors are used to build the franchisor's business and enable the franchisor to achieve increased market penetration with a minimum amount of investment (Laurie, 1995).

Acquisition of funds through sub-franchising may be especially important when franchisors have limited ability to raise capital through traditional public equity markets. In that case, a franchisor can raise capital through the sale of territorial rights to a sub-franchisor. When a sub-franchisor obtains the right from the franchisor to sign contracts with franchisees, the sub-franchisor pays a large lump sum fee to the franchisor which may be as much as \$250,000 (Matusky, 1992).<sup>1</sup>

Some researchers view franchising as a transient strategy to alleviate financial constraints of the franchisor. As the franchisor's scarcities of capital diminishes and if the franchisor's operations are successful, the franchisor may no longer need the franchisee as a source of funds (Caves & Murphy, 1976). Consequently, the franchisor may buy back profitable franchised units and gradually transform the firm into a wholly owned distribution system (Hunt, 1973; Martin, 1988). Thus, from a capital market point of view, sub-franchising may not be a permanent solution. Rather, the franchisor prefers to own and operate whole units when possible to maximize profit and control but when constrained by a lack of capital may turn to franchising and sub-franchising (Lowell, 1991).

In contrast to the capital market explanation for the existence of sub-franchising, the concept of market efficiency would seem to imply that if transaction costs are negligible, capital market considerations should be of little concern to franchisors because they should be able to raise capital equally well through either the public financial markets or via sub-franchise relationships. Efficient market theory would argue that franchisors should be able to raise capital for any positive net present value decisions whatever approach to financing that they chose to take. If efficient markets prevail in the capital markets, we

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<sup>1</sup>Justis & Judd (1986) indicated that franchisors require a fee payment of 6–10 cents per person in the territory's population in a master franchise case.

would not expect to find any difference in the use of sub-franchising by firms that raise equity capital through the public financial markets and those that do not.

Whether or not there is a relationship between a firm's decision to sub-franchise and its involvement in the public equity markets is a testable hypothesis. If sub-franchising is an alternative means for a firm to generate capital, a greater use of sub-franchising may be observed among firms that do not have publicly traded stock.

### *Agency Theory Explanations*

Mathewson and Winter (1985) argued that the costs associated with monitoring and enforcing franchise contracts provide an incentive for the franchisee to default on his or her contractual responsibilities. Since a franchisee's level of effort and performance is very difficult and costly to measure by the franchisor, profit-seeking franchisees have an incentive to take advantage of any unspecified elements in the contractual relationship that allow them to act in an opportunistic fashion. Given the unspecified or unenforceable elements of franchise contracts, the likelihood of a franchisee engaging in opportunistic behavior is high (Klein, 1995).

The first problem is the incentive franchisees have to "free ride" on the value of franchisor's brand name capital at the expense of the franchisor or other franchisees in the same franchise system. The free rider problem is an agency problem that sub-franchising may help to alleviate. Franchisees can free ride on the quality of other franchisees within the same franchise system (horizontal free ride). Horizontal free ride problems occur when a franchisee does not deliver the guaranteed quality prescribed by the franchise agreement. With inferior products and service, the franchisee can reduce the cost of his individual operation, with savings directly transferred to him. In the meantime, costs are borne by other franchisees who do not engage in such practices.

Given the possible free ride problem, Brickley and Dark (1987) suggest selling exclusive territorial rights to a single investor such as a sub-franchisor to prevent franchisees from free riding. The sub-franchisor will monitor, control, evaluate, and analyze the sales and performance of each of the franchised units in the same fashion that the franchisor would. This practice allows the franchisor to minimize agency costs with respect to bonding and monitoring the franchise system.

"Under investment" by franchisees is the second significant agency problem that sub-franchising may help to control. Since franchisees will have more of their wealth concentrated in single units than the franchisor, franchisees may have an incentive to under-invest in certain assets (Carney & Gedajlovic, 1991). Such under-investment typically takes place more frequently when franchise units are clustered together. For example, franchisees may be less likely to engage in local market advertising campaigns when such expenditures provide benefits to other nearby outlets not owned by the franchisee. When a franchisor has difficulty monitoring under-investment by franchisees, an alternative is to grant geographically concentrated exclusive oversight rights to a sub-franchisor to insure optimal investment decisions (Carney & Gedajlovic, 1991).

Sub-franchise contracts specify that a sub-franchisor becomes a residual income recipient in exchange for using the franchisor's resources. The agreements also stipulate

that a sub-franchisor is responsible for developing new markets and monitoring new and existing franchisees on behalf of the franchisor. In return, a sub-franchisor is entitled to the margin difference between the amount received from the franchisees and the amount he/she pays to the franchisor. Being a residual income\_recipient, a sub-franchisor has an incentive to monitor and evaluate the performance of franchisees carefully.

In the economic literature, the royalty rate has been widely approximated to explain agency theory in risk sharing (Cheung, 1969; Blair & Kaseman, 1982), and moral hazard and sharecropping (Stiglitz, 1974). The franchisee's royalty serves not only to allocate risk and to motivate hard work, but also to direct the allocation of the agents' attention among their various duties (Lafontaine, 1992; Holmstrom & Milgrom, 1991). As such, agency explanations have led researchers to use the royalty rate to measure monitoring costs (Lafontaine, 1992; Wimmer, 1992). More specifically, Lafontaine (1992) indicates that the royalty rate will be *inversely* related to the importance of the franchisee's input and the difficulty in monitoring the franchisee. Since franchisees are the residual claimants of their own units, smaller royalty rates provide them with an incentive to exert greater efforts. Likewise, Wimmer (1992) suggests that as the need for a franchisor's monitoring increases, the royalty rate is expected to decrease. This would lead to the expectation that franchisors with a sub-franchise system could charge higher royalty rates due to the fact that financial incentives (i.e., lower royalty rates) are not needed to insure that franchisees conform to the franchisor's standards and requirements (due to the monitoring role played by the sub-franchisor).

Labor-intensiveness also strongly affects the amount of monitoring in the restaurant industry. The amount of labor required by the restaurant differs from one segment to another. For instance, quick serve food operations heavily utilize mechanization to conform to product standardization and generate economies of scale (Lundberg, 1994). Compared to full service restaurants, the simplicity and standardization of quick serve food operations reduces costs associated with monitoring and training unit managers and employees. When costs of monitoring are high, franchisors are likely to pass monitoring problems to sub-franchisors (Carney & Gedajlovic, 1991). Thus, it is reasonable to expect that the higher labor to output ratio of family-style restaurants may result in more franchisors relying on sub-franchising agreements to lower the costs of monitoring than franchisors of quick service restaurants. This also represents a hypothesis.

### ***Brand Name Capital Explanations***

Among the major challenges encountered by a franchisor is the need to maintain its brand name reputation. A primary purpose of a franchisor's brand name is to convey a message to customers about the quality and consistency of the franchisor's product. For instance, customers expect the same quality of food, service, and ambiance throughout a restaurant franchise system. Sub-franchising systems may increase the difficulty of maintaining the franchisor's brand name capital because of the minimal involvement between franchisor and franchisee.

Since brand name capital is an intangible asset, it can be difficult to quantify and measure directly. However, several researchers have theorized and empirically

demonstrated that a relationship exists between brand name capital and the franchise fee structure, i.e., the initial fee and subsequent periodic royalty payments (Sen, 1993; Rubin, 1978). Rubin argued that royalties represent the proportion of the present value of the intangible franchise resources that cannot be incorporated into the initial franchise fee (since the franchisor is not able to predict the franchisee's future profits). Rubin's arguments suggested that initial fees and royalties should work as substitutes for each other.

Blair and Kaserman (1982) made a similar observation and stressed the financial aspects of franchising in which the franchisor extracts all rents attributable to their brand name capital by making use of initial franchise fees and subsequent royalties. A combination of a fixed initial fee and future royalties would constitute an optimal contract strategy. In other words, the value of the franchisor's brand name can be derived by capitalizing its stream of earnings due to initial fees and future royalty payments from its franchisees (Caves & Murphy, 1976). Thus, if franchisors that utilize sub-franchising systems have significantly lower brand name capital than franchisors that utilize traditional franchising systems, the sum of initial fees and present value of all the future royalties paid by a franchisee will be lower for the sub-franchising systems.

## Research Methodology

### *Data and Sample Description*

The 1993 Source Book of Franchise Opportunities (Bond, 1993) was utilized to determine whether or not an individual franchisor offers sub-franchise contracts and to obtain proxy information to test the franchisors' motives for entering into sub-franchise contracts. Initially, a sample of 136 fast food restaurants and 74 family restaurants were obtained from the *Source Book*. Restaurant franchisors headquartered in Canada and franchisors with only company-owned units were then excluded. The remaining sample consisted of 136 firms containing a total of 91 fast food restaurant franchisors and 45 family-style restaurant franchisors. Among these, 26.4% of quick serve food companies (n=24) and 36% of family restaurants (n=16) were involved in sub-franchise agreements. Table 1 provides a breakdown of the sample.

Table 1  
Sample Description

	Franchisor w/o sub-franchisor	Franchisor w/o franchisor	Total
Quick Service Restaurant	24	67	91
Family Style Restaurant	16	29	45
Total	40	96	136

### *Methodology and Model*

To test the prediction of a franchisor's decision to sub-franchise requires the assessment of the explanatory power of a single variable holding constant the explanatory

power of other independent variables. When the outcome variable is binary or dichotomous, the logit model is one of the most appropriate methodologies for solving the classification problem involving two or more attributes (Gujarati, 1991). A logit model can identify a single model that is most significant in discriminating between the characteristics of franchisors who engage in sub-franchise contracts and those that do not. Logit estimation allows a comparison of the relative importance of the explanatory variables by delineating the differences in the two groups. Additionally, the use of a logit model permits analysis of the impact of a series of explanatory variables on the probability that firms use sub-franchising.

The predictive ability of the model is measured by the percentage of franchisors classified correctly. The classification of accuracy percentage is a useful measure of goodness-of-fit in a logit model (Maddala, 1992). Another indicator measuring the significance of the model, the likelihood ratio test, offers explanatory information on the strength of the model. For large samples, the likelihood ratio test statistic has an  $X^2$  distribution with K degrees of freedom where K is the number of parameters specified in the model. The null hypothesis can be rejected if  $\lambda_{LR} \geq X^2$ .

To test the variables related to the choice of sub-franchising agreements, the following empirical logit specification is estimated:

$$\text{SUB} = \alpha + \beta_1 \text{STOCK} + \beta_2 \text{ROYAD} + \beta_3 \text{BRAND} + \beta_4 \text{DUM} + e.$$

Where

SUB : 1 if a firm has sub-franchise contract, 0 otherwise

$\alpha$  : the constant term

$\beta_1$ – $\beta_4$  : represents the sub-franchise likelihood coefficients.

STOCK: 1 if a specific franchise firm has shares in the stock markets and 0 otherwise

ROYAD: Effective royalty rates

BRAND: Brand name capital measured by the franchisor's ability to extract rents from the franchisees.

DUM : Dummy variable: 1 if a fast food restaurant, 0 for family style restaurant.

If one of the economic functions of sub-franchising is to provide a means of raising capital for franchisor companies, companies that do not access publicly traded capital markets should be less likely to subfranchise. The STOCK variable indicates whether or not the firm utilizes publicly traded equity (as reported in stock section of *Nation's Restaurant News*). Therefore, the coefficient of the STOCK variable is expected to be negative.

The royalty rate, ROYAD (as reported in 1993 *Source Book*), is measured as a percentage of a franchisee's revenue. However, as in Lafontaine (1992) and Sen (1993), royalties plus advertising cost as a percentage of sales are used as a proxy for the effective royalty



rate. The rationale behind this approach is that franchisees have little information as to whether their advertising contribution is actually spent for advertising purposes. Since it is hypothesized that the cost of monitoring is lower in a sub-franchise system, we would expect that the tendency to sub-franchise would be associated with higher effective royalty rates. The expected sign of the coefficient of ROYAD is thus positive.

As indicated previously, brand name capital is measured by the franchisor's ability to extract rents from the franchisees. The initial franchise fee and present value of effective royalties as a percentage of sales are summed as a proxy for brand name capital. The purpose of this variable is to capture the franchisees' financial obligations which result from renting the franchisor's brand name capital. It is reasonable to assume that the strength of a franchisor's brand name capital is positively related to higher initial fees as well as higher present value of effective royalties.

In order to calculate the present value of the royalties, average sales of franchised units are calculated by taking the industry median total sales per full-time equivalent employee and multiplying by the average number of full-time employees required to run a franchised unit. *Restaurant Industry Operations Report* (1993)<sup>2</sup> provided the data for median total sales per full-time equivalent employee. Brand name capital (BRAND) is in \$1,000 increments. Since it is hypothesized that franchisors with strong brand name capital are less likely to utilize sub-franchising, the coefficient of brand name capital is expected to be negative.

The variable DUM (1 if a fast food restaurant, 0 for family style restaurant) is a dummy variable that provides an opportunity to investigate behavioral differences between different types of restaurants as far as monitoring motives to undertake sub-franchise agreements are concerned. As stated previously, the cost of monitoring is assumed to be positively related to labor intensity. A quick serve food operation is, in many ways, more like a manufacturing enterprise than a traditional restaurant (Power, 1992). The systematic substitution of equipment for people reduces labor in fast food operations (Levitt, 1976) and consequently, reduces the costs of monitoring labor. On the other hand, family restaurants offer a variety of menu items along with personal service and thus require more labor than fast food restaurants. It is reasonable to expect that the higher labor to output ratio of a family-style restaurant encourages franchisors to rely on sub-franchising agreements to lower costs of monitoring. Thus, the expected sign of the coefficient for the dummy variable is negative.

Table 2 defines the independent variables (STOCK, ROYAD, BRAND, DUM) used in the analysis and summarizes the measures along with the hypothesized direction of the relationship between the variable and the use of sub-franchising.

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<sup>2</sup> *Restaurant Industry Operations Report* is prepared on the basis of financial and operating data supplied by members of National Restaurant Association and members of various state restaurant associations.

Table 2  
Dependent variable: Sub-franchise (1 = yes, 0 =no)

	Description	Measured as	Expected sign
STOCK	One if a firm is publicly traded on NYSE, AMEX, or NASDAQ, zero otherwise.	Dummy variable 1=yes 0= no	(-)
ROYAD (%)	Royalty rates plus advertising costs as a percentage of sales	Effective royalty rates	(+)
BRAND (K\$)	Initial franchise fee plus present value of all future effective royalties.	Franchisor's ability to extract rent from franchisees	(-)
DUM	Dummy variable 1=fast food 0=family style	Type of restaurant	(-)

## Empirical Analysis

### Descriptive Statistics

Initially, descriptive statistics are utilized to see if there are any statistical differences in these variables between firms engaged in sub-franchised contracts (S) and those not engaged in sub-franchise contracts (NS). Table 3 provides the mean value of the variables and the net group differences between firms engaged in sub-franchise contracts and those that are not. The net group differences are derived by subtracting each group mean of S from mean of NS. Table 3 also summarizes the univariate results that include individual group means and the t-statistics for testing the difference of the means in the two groups along with the significance level.

Comparing franchisors that undertake sub-franchise agreements with those that do not, a glance at Table 3 shows that on average the mean values of the STOCK, FEE, BRAND, and PVROY variables are lower for those franchisors that undertake sub-franchise contracts. In contrast, franchisors engaged in sub-franchise contracts have a higher mean value of ROYAD (effective royalty rates). Since brand name capital consists of the initial franchise fee (FEE) and the present value of effective royalty rates (PVROY), they are included in the descriptive statistics to examine separate effects on a firm's decision to sub-franchise.

Twenty-one percent of franchisor without sub-franchise contracts were able to issue equity in the public markets while only 6.4% of franchisor with sub-franchise contracts were capable of raising equity through the stock markets. This suggests that franchisors with sub-franchise agreements have relatively a poor ability to raise capital through equity markets.

The mean value of the STOCK variable for the franchisor without sub-franchising agreements is higher than that of the franchisor with sub-franchisor contracts. Only 13%

(0.13) of the franchisors with sub-franchise agreements raise capital through public capital markets while 19% (0.19) of the franchisors without sub-franchised contracts are listed in the stock market. However, the STOCK variable is statistically insignificant in the univariate test.

Table 3  
Group means and differences between franchisors with  
and without sub-franchise contracts

Variables	Sub (S)	Non-Sub (NS)	Net Difference NS minus S	T - Ratio
Stock	0.13	0.19	0.06	0.88
Royad (%)	6.70	6.17	-0.53	-1.69*
Fee (\$K)	19.53	22.84	3.31	1.72*
Pvroy (\$K)	204.73	337.00	132.27	2.09**
Brand (\$K)	224.28	359.85	135.57	2.12**

\*\* Significant at the 5%

\* Significant at the 10%

ROYAD measures monitoring cost. The mean value of the ROYAD is 6.70% for firms that are engaged in sub-franchise contracts and 6.17% for franchisors who do not practice sub-franchise contracts. The second hypothesis predicts that firms with higher royalty rates are more likely to sub-franchise. The sign of the royalty rate is consistent with the hypothesized direction and ROYAD is statistically significant at the 10% level. This suggests that sub-franchised firms are associated with lower costs of monitoring than firms that do not sub-franchise.

With respect to brand name capital, the hypothesis predicts that the dependence on sub-franchising is lower if a franchisor has a strong brand name capital. The brand name capital variable is statistically significant at the 5% level and supports hypothesis. The present value of royalties is also an important variable for distinguishing between franchisors engaged in sub-franchise contracts and those that are not. PVROY shows a difference that is statistically significant (at 5% level) and in the direction hypothesized. This empirical evidence is consistent with that found by previous researchers who suggested that the value of intangible assets (i.e., brand name capital) is associated with capitalizing its stream of earnings and is optimized by owners who combine it with other inputs (Caves & Murphy, 1976).

### *Logistic Analysis*

The logit estimate results, using 136 observations, are reported in Table 4. The prediction results are robust. The likelihood ratio test statistic for the logit equation is -75.62 and

is significant at the 99% confidence level. All the variables included in Model have the predicted signs and the classification accuracy is 73.5%.

The STOCK variable has the expected sign; however, the explanatory power of the stock variable is statistically insignificant and hence does not offer support for the capital market explanation for the utilization of sub-franchising.

The monitoring variable ROYAD does discriminate between franchisors engaged in sub-franchise contracts and those that are not. Costs of monitoring are positively related to a franchisor's decision to sub-franchise and are statistically significant at the 2% level. The empirical results are consistent with Lafontaine (1992) and Lal (1990) who asserted that royalty rates will be less when it is difficult to monitor the franchisees. The result supports the agency explanation of sub-franchising.

Table 4  
Coefficient estimate results of logit analysis

VARIABLES	INTERCEPT	STOCK	ROYAD	BRAND	DUM
Coefficient	-1.560	-0.552	0.327	-0.002	-1.178
t-ratio	1.97*	0.91	2.48**	-1.98**	-2.47**

N = 136

% predicted correctly 73.5%

Log likelihood for logistic -75.62 \*\*\*

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Note : t statistics were obtained by dividing the parameter estimate by the standard error of each variable of interest.

\*\*\* Significant at the 1% level

\*\* Significant at the 5% level

\* Significant at the 10% level

The negative coefficient of the brand name capital variable indicates that when franchisors have strong brand name capital, the probability of a firm's decision to sub-franchise decreases. BRAND is statistically significant at the 5% level and hence offers strong support for the brand name capital explanation of sub-franchising.

The sign of the coefficient of the restaurant dummy variable (DUM) is negative and is statistically significant at the 1% level. This negative and significant value indicates that fast food restaurants are less likely to enter into sub-franchise contracts than family style restaurants.<sup>3</sup> This supports the agency explanation that sub-franchising is more common with higher labor to output ratio type operations.

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<sup>3</sup> The Model assumed that there were no interaction effects in the model. However, the statistically significant coefficient for the dummy variable suggested that the type of restaurant has a significant effect on a franchisor's decision to undertake sub-franchise contracts. The appendix shows a final model estimation with interaction terms.

## Summary and Implications for Future Research

The findings of this research offer significant practical implications to industry practitioners and hospitality educators. The results support the use of sub-franchising as a more efficient form of organization when the costs of monitoring franchisees are high and when franchisors have weak brand name capital. Sub-franchise contracts are one of the choices that franchisors can select to deal with these problems.

The research found no evidence to support sub-franchising as a substitute for raising public equity capital. This would be the expected result if financial markets are assumed to be efficient. The results offer support that the franchisor is indifferent whether capital is raised through publicly traded markets or via sub-franchising.

In addition to the areas addressed in this paper, there are a number of other areas related to sub-franchising that may provide fertile ground for future empirical research. It should be noted that the results in Table 4 showed that restaurant type may have an important impact on the franchisor's decision to enter into sub-franchise contracts. In discussing the statistical significance between quick service and family restaurants, this research discussed labor intensity as an explanation for the behavioral differences between the two restaurant types. Future research is needed to examine other differences between restaurant types that may play an important role in determining the franchisor's decision to undertake sub-franchise contracts. Therefore, a further avenue of research would be to identify possibly differing motivations for entering into sub-franchise contracts based on a specific restaurant type.

Finally, future studies might investigate the issue of risk sharing between the franchisor and sub-franchisor. Issues regarding financial and human resources risk in franchising are particularly relevant in the sub-franchise system. Typical sub-franchise agreements require that the sub-franchisor adhere to a development schedule for a specified time period and/or geographic area. The extent to which this shifts risk from the franchisor to the sub-franchisor may have significant implications for the value of the franchising firm. Additionally, the franchisor may attempt to share human resource risk with sub-franchisors who are able to more economically manage such risk. Future research could explore this issue by examining the per unit output or productivity of individual units in sub-franchise systems in comparison to those franchise operations with no sub-franchising.

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### Appendix: Final Model Estimation and Analysis

In order to examine the effect of restaurant type on a firm's decision to undertake sub-franchise agreements, interaction terms between the industry dummy variable and each related variable were considered in a model of the following construction:

$$Y = \alpha + \beta_1 \text{STOCK} + \beta_2 \text{ROYAD} + \beta_3 \text{BRAND} + \beta_4 \text{DUM} + \beta_5 \text{DSTOCK} + \beta_6 \text{DROYAD} + \beta_7 \text{DBRAND} + e.$$

In this setting, the coefficients of  $\beta_5$ - $\beta_7$  indicate the effect of the STOCK, ROYAD, and BRAND variables on the tendency to use sub-franchise contracts for fast food restaurants.

One of the problems associated with the addition of new variables of this type in the regression model is multicollinearity among the independent variables (Neter et al., 1989). To quantify the existence of multicollinearity, the variables included in the model were tested using correlation analysis. A high correlation between STOCK and DSTOCK ( $r = 0.76$ ), and DUM and DBRAND ( $r = 0.92$ ) were found. Highly intercorrelated regressor variables can often generate illogical results such as instability in the size and sign of a regression coefficient. As a result, intercorrelated data may play a disruptive role and lead to model misspecifications. Hence, DSTOCK and DROYAD variables were discarded and only the DBRAND variable was added to Model 1 to examine if inclusion of this interaction term significantly improves the power of the model. The interaction term DBRAND is equal to the product of the value of the DUM multiply by value of BRAND. Table 5 shows estimated coefficients along with the log-likelihood and deviance for each model.

When the interaction term DBRAND is added in Model 2 changes in the deviance (i.e., the likelihood ratio test statistic) is only 0.1. Comparing the results to the chi-square distribution with 1 degree of freedom fails to show statistical significance. This suggests that brand name capital is an important consideration in the franchisor's decision to engage in sub-franchise agreements. However there is no significant difference in brand name capital effects between quick service and family restaurants.

Table 5  
Comparison of models with and without interaction term

Variables	Intercept	Stock	Royad	Brand	Dum	Dbrand
Model 1	-1.560	-0.552	0.327	-0.002	-1.178	
	(-1.97)*	(0.91)	(2.48)**	(-1.98)**	(-2.47)**	
Model 2	-1.447	-0.4088	0.312	-0.0022	-1.3206	0.0006
	(-1.641)	(-0.674)	(2.389)**	(-1.833)*	(-2.004)**	(0.300)

Note : t ratios appear in parentheses.

N = 136

Model 1 : Log likelihood for logistic -75.62 \*\*\*

Model 2 : Log likelihood for logistic -75.57 \*\*\*

Likelihood Ratio Test Statistics (G) : 0.1 (-2 times the difference between the log-likelihood of model 1 and model 2)

\*\*\* Significant at the 1% level

\*\* Significant at the 5% level

\* Significant at the 10% level