

# Asset Specificity and Vertical Integration in Franchising

ALANSON P. MINKLER

*Department Of Economics, U-63, University of Connecticut, Storrs, CT 06269, U.S.A.*

and

TIMOTHY A. PARK\*

*Department of Agricultural Economics, University of Georgia, Athens, GA, U.S.A.*

**Abstract.** This study empirically tests transaction cost hypotheses with the use of data on publicly-owned franchised firms. We employ measures of the proportion of company-owned outlets for the degree of integration and brand name capital for the degree of asset specificity. The results suggest that for the sampled firms the degree of asset specificity is positively related to the degree of vertical integration. Additionally, increases in the real interest rate and firm growth rates are found to be positively related with vertical integration, while increases in unanticipated growth and firm experience are negatively related with vertical integration.

**Key words.** Asset specificity, franchising, vertical integration.

## I. Introduction

Franchising provides a unique opportunity to empirically test transaction cost hypotheses about vertical integration. Both internal organization and contracting in the market for supplier services impose costs. But in franchising both methods are used for delivery of final product and/or services. Identifying the factors that influence a firm's decision to franchise, therefore, yields clues about the relative costs of using internal organization and market contracting. The purpose of this paper is to use franchising data to investigate the importance of these factors.

Transaction cost economics, as represented by Williamson (1985), contends that economic organization is a governance structure which economizes on bounded rationality while simultaneously safeguarding against opportunism. Fully contingent, complete, long-term contracts are costly to write, monitor and enforce. These costs are likely to be magnified if there are information asymmetries amongst transacting parties. The necessity of incomplete contracting coupled with the idea that many factors of production have few alternative uses – called “asset specificity” – suggests that asset owners may find themselves vulnerable to *ex post* quasi-rent expropriation from contractual partners. This vulnerability arises because the parties cannot credibly commit to future performance and assurances. Therefore,

common ownership (vertical integration) sometimes offers the least cost solution to the twin problems of incomplete contracting and asset specificity.

Asset specificity may be generated from investments in (1) specific physical capital, (2) specific human capital, (3) site specific capital, (4) dedicated capital, or (5) brand name capital (see Perry 1989). All of these categories have as a common feature the poor redeployability of assets in alternative uses. Specific assets are “sunk,” but also must occur in an incomplete contractual setting. Otherwise, contractual parties could protect themselves with clauses simply prohibiting or curtailing opportunistic behavior. Of all the types of specific assets, brand name capital is the most relevant for franchising.<sup>1</sup>

Consider franchising’s elements. The problem for an owner of a national trademark (or brand name capital) is to produce and distribute goods and services locally. The trademark owner has the option of either owning the geographically diffuse outlets, running them with fixed-wage managers, or entering into a contractual relationship with independent operators. If the latter option is chosen, the trademark owner is called the “franchisor”, and the independent operators “franchisees”. We adopt the convention in the literature that franchised and manager run company-owned outlets are differentiated by their different compensation schemes. Franchisees are remunerated with profit-sharing income through some combination of fees and royalties. In return, franchisees are entitled to use the franchisor’s trademark and to make decisions about marketing, distribution and production at the downstream stage.<sup>2</sup> A firm in which all local outlets are owned by the trademark owner is vertically integrated because the owner of the primary input (the trademark) also owns and controls the final stages of production and distribution. If the owner of the trademark contracts with franchisees to control final production and distribution, then the relationship is closer to one of vertical disintegration. Thus the decision of whether or not to franchise an outlet approximates the make/buy decision in the vertical integration literature. Most chains, all in this study, include both owned and franchised outlets.

The central issue in this paper involves the trademark owner’s decision to own or franchise outlets. The question is why the trademark owner doesn’t own all outlets, that is, why the firm isn’t completely vertically integrated. The literature explains the *existence* of the franchise relationship by identifying three different types of costs – capital, monitoring, and search costs – confronting the trademark owner that may be reduced by franchising rather than owning outlets. Caves and Murphy (1976) and Martin (1988) argue that the decision to franchise depends on the differential availability of capital to the franchisor and franchisee. Sometimes capital may be secured by franchisees at lower cost. Rubin (1978) and Mathewson and Winter (1985) focus on the need to monitor outlet operators to prevent “shirking” (substituting leisure for effort). The firm’s choice is between physically monitoring fixed-wage managers or giving operators profit-sharing income. In some cases, monitoring costs are reduced with franchising and profit-sharing. Finally, Minkler (1992) argues that franchisees enjoy low search costs relative to

the franchisor and that franchising allows the trademark owner to exploit a franchisee's entrepreneurial effort – local knowledge and ideas that cannot be monitored or directed by the franchisor.

But franchising also has its costs. As the value of the brand name capital increases, the cost of franchising increases (see Klein (1980); Mathewson and Winter (1985)). Marketing and advertising campaigns are examples of methods available to franchisors to increase investments in brand name capital. However, these investments increase the costs to franchisors for those franchisees who do engage in opportunistic behavior. For instance, franchisees may cut costs by supplanting low quality for promised high quality goods and services, and then free-ride on the chain's reputation. Franchisees, but not salaried managers, have this incentive to "cheat" because they can increase their profit-sharing income by lowering production costs (e.g., replacing oatmeal for high grade beef in hamburgers) while maintaining revenues, for awhile at least, with the chain's non-repeat customers.<sup>3</sup> The franchisor can monitor franchisees to reduce franchisee cheating, but such monitoring represents an additional cost. Therefore, this hazard confronted by the trademark owner is equivalent to the one posed by opportunistic behavior in asset specificity/transaction cost models. The trademark owner can avoid this hazard by owning the outlets (vertically integrate) because salaried managers cannot profit by using low quality inputs. Thus the trick is to choose the proportion of franchised outlets that balances the benefits of franchising, that is, the lower (1) monitoring costs to prevent *shirking*, (2) capital costs, and (3) search costs, with the increased cost of franchisee *cheating*. The transaction cost literature predicts that as the value of the trademark increases, the cost of franchising increases and hence the proportion of franchised to company-owned outlets will fall, *all else equal*.

## II. Literature and Hypotheses

This paper's topic covers two, sometimes related, literatures. The first seeks to empirically test hypotheses from the transaction cost literature. The second attempts to empirically test theories about franchising. In this section we briefly review these literatures, note how this study will contribute to these literatures, and specify the hypotheses that will be tested.

Empirical tests of the transaction cost literature usually involve regressing measures of asset specificity on the degree of vertical integration (see, for instance, Monteverde and Teece (1982); Masten (1984); Levy (1985); Joskow (1988); John and Weitz (1988); and Masten, Meehan, and Snyder (1989)). These studies generally support the main transaction cost hypothesis. Data limitations, however, have made it difficult to construct suitable variables. All of the tests, with the exception of Levy (1985), construct measures of asset specificity from questionnaire or index information. These measures necessitate some amount of experimenter subjectivity and are generally divorced from objective asset valuation.

The empirical franchise literature focuses mostly on hypotheses relevant for franchised firms, hypotheses about finance costs or spatial characteristics and monitoring costs, for instance (see Martin (1988); Brickley and Dark (1987); Minkler (1990)). An exception is Lafontaine (1992), where tests for the double hidden-action literature are constructed. Lafontaine notes that trademark expenditures are among the most important franchisor contribution, and that the more important is the trademark to the success of the chain, the more vulnerable are the *franchisees* to franchisor moral hazard. She finds that proxies of the value of the trademark (weeks of franchisee training, total number of outlets, and % of time before the franchisor started franchising) are negatively related to the proportion of franchised outlets, results consistent with the double hidden-action hypothesis. Lafontaine also finds qualified support for the hypothesis that franchising is a means for franchisors to acquire capital.

Lastly, a recent study by Banerji and Simon (1993) suggests that franchisors may increase trademark value in order to ensure or bond franchisee performance. By increasing the value of the trademark the franchisor increases expected future rents for franchisees, thereby reducing the *incentives* for franchisee cheating. The authors find empirical support for this hypothesis using a measure of Tobin's Q for the value of the trademark. Banerji and Simon do not, however, consider the full *costs* of this franchisor strategy. Investing in the trademark (the direct cost) may reduce the incentives for franchisee cheating, but for franchisees who do cheat an additional cost is imposed on the franchisor because the trademark is now more valuable – the transaction cost argument that we investigate.<sup>4</sup>

This study adds to both the transaction cost and empirical franchising literatures because our data and analysis permits us to: (1) construct a new, direct measure of asset specificity based upon an objective asset valuation method, (2) include firms over time and at different points in their life cycle, and (3) include measures already found in the franchising literature, thereby providing a useful contrast.

We test three central hypotheses. The first, and most important, is the transaction cost hypothesis as it relates to franchised firms. We expect a positive relationship between increases in the value of the trademark and the proportion of a franchised firm's outlets that are company-owned, all else equal. If franchisee opportunism constitutes a deterrent to franchising outlets, the transaction cost theory suggests as the proportion of brand name capital increases, ownership as opposed to franchising becomes the preferred strategy in opening new outlets and in converting old (franchised) units through buybacks, all else equal. This hypothesis applies across firms and to changes in value of the same firm's degree of brand name capital over time.

A second testable implication of transaction cost theory comes from Klein and Saft (1985) who suggest that franchisees may become vulnerable to franchisor opportunism if the chain stops growing. If the franchisor can no longer attract new franchisees, the franchisor has little incentive to fulfill promises made to existing franchisees on investments in national advertising or support services.

Such behavior on the part of the franchisor reduces the value of past and present local brand name investments which have poor redeployability potential. Thus, franchisees have the incentive to sell back their outlets to the franchisor or to quit. Potential franchisees also recognize the potential for franchisor opportunism and refuse to join the declining organization. The implication is that stagnant or negative growth is positively related to the proportion of company-owned outlets, all else equal.

The finance explanation for the existence of franchising suggests a third hypothesis. If franchising is used only as a means of securing capital, then vertical integration occurs if capital is more readily available to franchisors than franchisees and/or tight credit markets help to dissuade risk-averse franchisees from entering into or staying in the franchise relationship. Since it is more likely that a large firm, the franchisor, can attain capital during periods of tight credit (because of greater collateral, reputation), the finance hypothesis suggests that periods of tight credit should be associated with increased vertical integration.

### III. Empirical Results

The empirical model is based on firm level data on franchising decisions over the time period from 1975 to 1989. The initial set of firms for this study was identified using the *Franchise Opportunities Handbook*, published for the U.S. Department of Commerce. The sample of selected firms satisfied the following criteria. The firms had to (1) be publicly traded on the American or New York Stock Exchanges during any part of the sample period, 1975–1989, and (2) provide detailed outlet and franchising information on Disclosure (10K) reports.

The firms examined here provide a useful contrast to Levy's sample which focused primarily on firms in the manufacturing sector. First, the firms can be broadly classified into three industry groupings representing the restaurant (particularly convenience foods) industry, the hotel industry, and business and professional services industries (see Table I). Second, the sample consists of firms with different age profiles and a range of franchising strategies. Both established firms which have a continuous history of franchising and new, evolving firms that are altering and developing their franchising policies are included in the sample.

In addition, the estimation technique for analyzing franchising decisions does not require that each firm must have been in operation over the complete sample period or that each firm be observed for the same number of years. The sample is not restricted to stable, well-established firms but includes young immature firms which are adapting and developing their company franchising policies. The results from the model are based on continuous franchising decisions from 1975 to 1989. In contrast, Levy's analysis used data from non-continuous years, 1958, 1963, 1967, and 1972.

TABLE I. Sampled firms and years of operation

| <i>Restaurant firms</i>                     |           |
|---|-----------|
| Churches                                    | 1975-1988 |
| Dennys                                      | 1975-1984 |
| McDonalds                                   | 1975-1989 |
| Pizza Inn                                   | 1977-1986 |
| TCBY  | 1985-1989 |
| Uno Restaurant                              | 1986-1989 |
| Wendys                                      | 1980-1989 |
| <i>Hotel firms</i>                          |           |
| Hilton                                      | 1975-1989 |
| Holiday Inn                                 | 1975-1988 |
| Howard Johnson                              | 1975-1979 |
| Marriott                                    | 1975-1989 |
| Ramada Inn                                  | 1975-1987 |
| <i>Business service and retailing firms</i> |           |
| H&R   | 1975-1989 |
| Olsten                                      | 1980-1989 |
| Southland                                   | 1975-1986 |
| Nutrisystem                                 | 1981-1986 |
| PIP   | 1978-1988 |
| Pier 1                                      | 1979-1989 |
| Tandy                                       | 1975-1989 |

## 1. ECONOMETRIC MODEL AND SPECIFICATION OF VARIABLES

Each outlet of a given year is either franchised or owned by the company. The firm's decisions on the proportion of company-owned outlets to operate is specified as a grouped logit regression model. The dependent variable is  $\ln [PCO_{it}/(1 - PCO_{it})]$  where  $PCO_{it}$  is the proportion of company-owned outlets for the  $i^{th}$  firm at time  $t$ . The proportion of company-owned outlets is defined as the number of company-owned outlets divided by the total number of outlets ( $TOUTLT_{it}$ ).

The model was estimated with least squares using the method for proportions data outlined by Greene (1990). This method accounts for the fact that the dependent variable, the proportion of company-owned outlets, is positive and lies between zero and one. To account for heteroscedasticity in the grouped logit model, the model is estimated using weighted least squares with a variance term equal to one over  $w$ , where  $w$  is  $TOUTLT_{it}$  times  $PCO_{it}$  times  $(1 - PCO_{it})$ . Amemiya (1981) demonstrated that the weighted least squares estimates have the same asymptotic distribution as the maximum likelihood estimator.

A firm level measure of intangible assets (accumulated brand name expenditures) is used to represent the degree of asset specificity for each franchisor. Following Rosenberg (1983) an accounting measure of intangible assets is based on the "balance of purchase cost in excess of fair values assigned to all identifiable net assets". Copeland and Weston (1983) provide support for the use of accounting

measures, noting that empirical tests of the semi-strong model of efficient asset markets have confirmed that accounting data is fully reflected in stock market valuation.

The addition of this intangible asset measure represents an important innovation in testing the transaction cost model. Previous tests of the transaction cost model highlighted in the literature review have used qualitative measures of human asset specificity rather than an objective asset valuation method. The measure of intangible assets for each firm ( $INTANG_{it}$ ) is defined as the difference between the market value of owner's equity less the book value of equity. The justification follows. Recall the basic accounting equation: Assets ( $A$ ) = Debt ( $D$ ) + Owner's Equity ( $OE$ ). We postulate that the market value of a firm's assets ( $A^m$ ) equals the accounting value of its assets ( $A^a$ ) plus the unobservable value of brand name capital  $INTANG$ ; thus,  $A^m = A^a + INTANG$ . We assume the accounting measure for each firm's debt is equal to its market value, i.e.,  $D^m = D^a$ . Bowman finds that the book value of debt is a very accurate approximation for the market value of debt, at least for risk-based studies. Since we have both accounting and market measures of owner's equity, we can measure the unobservable value of  $INTANG$  with observable measures:  $INTANG = OE^m - OE^a = A^m - A^a$ . That is one advantage of this procedure – it allows us to measure an unobservable asset, the intangible asset, for which we have no verifiable information, with observable measures for which we do have verifiable, objective information (book value and market value of equity). The market value of owner's equity is obtained by multiplying the number of common shares outstanding at the end of the year by the year end share price. The measure of intangible assets is then divided by firm revenue ( $R$ ) in year  $t$ , which converts the measure into a proportion. Thus  $INTANG_{it}/R_{it}$  measures the magnitude of the firm's intangible assets relative to its revenues, that is, it measures the degree of accumulated brand name capital.<sup>5</sup> Normalization permits us to include firms of vastly different sizes into our pooled sample.

The rest of the variables in our model have been used in other studies.

To account for the effect of credit market conditions on franchising decisions a real interest rate variable ( $LRINT_{it}$ ) is incorporated into the specification. As in Martin (1988), the interest rate variable is defined as the difference between the federal funds rate and the annual percentage change in the GNP Implicit Price Deflator in time  $t - 1$ .

A measure of firm growth ( $GROWTH_{it}$ ) is included to test for the possibility of franchisor opportunism in stagnant or declining firms. Firm growth is defined as the percentage change in total outlets opened in a given year by the firm. Lafontaine (1992) used a similar variable as a proxy for the franchisor's capital needs. The hypothesis is that as the firm grows and encounters capital constraints, franchising is used as a method of raising additional funds.

Levy (1985) tests the transaction cost model by devising a measure of unanticipated demand growth ( $UNANT_{it}$ ) that accounts for the potential hazards of sup-

plier opportunism. The idea is that the more demand growth deviates from its expected path, the more vulnerable will be a downstream producer to potential opportunism by a supplier. Suppliers may exact a price for meeting a producer's changing input supply requests. Levy considered potential supplier opportunism in the manufacturing sector. Since our data are for franchised firms, we use the same approach to test for potential franchisee opportunism. Following Levy, net income for each firm was regressed on a time trend and the residual from this regression was used as a measure of unanticipated growth. The hypothesis is that greater unanticipated demand growth should be met by increased franchisor ownership of outlets.

A final implication of the transaction cost model examines the effect of firm experience on the franchising decision. Following both Lafontaine (1992) and Martin (1985), a variable measuring the number of years the firm has been franchising ( $YF_{it}$ ) is included in the model. This variable has taken on a number of different interpretations in previous studies on the franchising decision. Lafontaine uses it as a proxy for both the trademark value and for a measure for capital availability to the franchisor. Martin uses the variable to assess general trends over time in the pattern of vertical integration among franchisors.

The equation includes fixed industry and year effects. Industry specific variables are included for firms in the restaurant industry ( $REST_{it}$ ), hotels ( $HOTEL_{it}$ ), and business services and retailing ( $BUSSERV_{it}$ ). Fixed time effects for each year ( $\lambda_t$ ) capture aggregate time-specific economic factors on franchising decisions, such as growth, population trends, and business cycles. All of the variables used in this study, as well as their means and expected signs, are summarized in Table II. The panel data with fixed industry and year effects was estimated using the LIMDEP computer package (see Green (1992)).

The econometric model is specified as:

$$\begin{aligned} \ln [PCO_{it}/(1 - PCO_{it})] = & \beta_0 + \beta_1 Intang_{it}/R_{it} + \beta_2 Lrint_{it} \\ & + \beta_3 Growth_{it} + \beta_4 Unant_{it} + \beta_5 YF_{it} + \beta_6 Rest_{it} \\ & + \beta_7 Hotel_{it} + \beta_8 Busserv_{it} + \lambda_t + e_{it}. \end{aligned} \quad (1)$$

## 2. DISCUSSION OF RESULTS

The results presented in Table III examine the implications of the transaction cost approach for franchising decisions. The coefficients on each variable are significant at the 0.05 level. The proportion of company-owned outlets is positively related to the measure of intangible assets for the firm. This finding is consistent with a main implication of the transaction cost model which suggests that vertical integration is positively related to the degree of asset specificity.

This result contrasts with that of Banerji and Simon (1993), where it is found that increases in the value of the trademark are associated with decreases in the proportion of company-owned outlets. Their model differs from the one developed

TABLE II. Determinants of franchising decisions and their expected signs

| Variable                             | Mean (standard deviation) | Expected sign |
|--------------------------------------|---------------------------|---------------|
| <i>Dependent Variable</i>            |                           |               |
| Proportion of company-owned outlets  | 0.431<br>(0.286)          |               |
| <i>Explanatory variables</i>         |                           |               |
| Intangible asset                     | 3.186<br>(24.770)         | +             |
| Interest rate                        | 3.354<br>(3.041)          | +             |
| Growth                               | 0.075<br>(0.123)          | +             |
| Unanticipated growth                 | -0.293<br>(15.394)        | -             |
| Years in franchising                 | 27.026<br>(8.582)         | +             |
| Restaurant firms                     | 0.319<br>(0.467)          |               |
| Hotel firms                          | 0.298<br>(0.459)          |               |
| Business service and retailing firms | 0.382<br>(0.487)          |               |

TABLE III. Model of franchising decisions based on proportions data (weighted least squares estimates of grouped logit model)

| Variable                 | Fixed effects        | First-difference model |
|--------------------------|----------------------|------------------------|
| Constant                 | -12.772*<br>(-4.043) | -0.805<br>(-1.122)     |
| Intangible asset measure | 0.027*<br>(3.310)    | 0.015*<br>(6.504)      |
| Interest rate            | 0.152*<br>(4.290)    | 0.036<br>(1.713)       |
| Growth                   | 5.138*<br>(8.539)    | -0.134*<br>(-4.910)    |
| Unanticipated growth     | -0.039*<br>(-2.774)  | -0.014*<br>(-2.783)    |
| Years in franchising     | -0.013*<br>(-2.155)  | 0.004*<br>(5.416)      |

Total number of observations for fixed effects model = 191. Total number of observations for the first-difference model = 172.

Asymptotic t-values are in parentheses. Asterisk indicates significance at the 0.05 level.

The dependent variable is  $\ln [\text{PCO}_{it}/(1 - \text{PCO}_{it})]$  where  $\text{PCO}_{it}$  is the proportion of company-owned outlets for the  $i^{\text{th}}$  firm at time  $t$ .

here thus preventing a direct comparison of the results. Our panel data model on franchising decisions over time controls for the impact of fixed time effects for each year including changing business and economic conditions that may influence the proportion of franchised outlets. Our model uses proportions data and is

estimated using least squares methods that corrects for heteroscedasticity following Green (1990). Finally, our model is tested for specification error related to simultaneously equations bias and measurement error in the explanatory variables to examine the robustness of the results.<sup>6</sup>

The impact of tighter market conditions as measured by the real interest rate variable leads to an increase in the proportion of company-owned outlets. Martin (1988) suggested that franchisors with established brand name capital have incentives to retain and acquire outlets even during periods of restrictive credit conditions. The positive coefficient on the real interest rate variable suggests that capital is more readily available to franchisors than franchisees in tight credit markets for the sampled firms.

The positive coefficient on growth indicates that franchised firms that are growing tend to increase the proportion of company-owned outlets. This trend results from some combination of company buybacks and/or an increase in the rate at which new company-owned versus franchised outlets are opened. This result is not consistent with the hypothesis about the potential for franchisor opportunism in a stagnant firm. Possibly, franchisor opportunism is curtailed by reputation and other limiting factors. For instance, if the franchisor chooses to renege on or reduce promised brand name expenditures (e.g., national advertising), these reduced expenditures won't just adversely affect franchisees, it will also reduce revenues at the franchisor's company-owned outlets.

One explanation for the positive coefficient on growth centers on linking growth with the value of the trademark. If a franchised chain finds that its brand name expenditures have been successful then opportunities to open new outlets emerge. Given the increased value of the trademark, franchisor concern about the hazards of franchisee opportunism may be intensified and the firm will choose to grow disproportionately with company-owned outlets. Growth will be positively related to the value of the trademark. The transaction cost hypothesis implies that growth and the proportion of company-owned outlets should also be positively related, as this result indicates.

A positive coefficient is also inconsistent with the capital need theory, suggesting that franchising is not a means of attracting capital. Our result contrasts with Lafontaine's (1992) model which yielded a negative relationship between growth and company-ownership. The different results may be due to the nature of our sample which includes only large publicly-owned firms. These firms are less likely to be capital constrained.

The measure of unanticipated demand proposed by Levy (1985) is negatively related to the proportion of company-owned outlets. This result differs from Levy's finding that shifts in unanticipated demand are positively related to vertical integration. One explanation for this result may be due to the nature of franchising. Mathewson and Winter (1985) note that franchising, and specifically the profit-sharing remuneration feature of franchising, may be the cheapest way to monitor outlet operators when demand is difficult to observe. Minkler (1992) argues that

the very reason franchising exists is because franchising affords franchisors the opportunity to have on the spot entrepreneurs taking advantage of changing market conditions. Franchisees make decisions on alternatives that franchisors don't even know about. Thus the proportion of franchised outlets should be positively related to a measure of unanticipated demand, as the result here indicates.

The negative coefficient on the years in franchising variable suggests that older firms franchise a higher proportion of their outlets while newer firms choose a higher proportion of company-owned outlets. This result is similar to that found in Martin (1988). He interprets the result to show that there is no long run trend towards vertical integration. Our result is also similar to the one found by Lafontaine and does not support the notion that either the franchisor or franchisees becomes more vulnerable to opportunism over time, or that older firms are progressively freed up from capital constraints, allowing them to own more outlets over time. The result is also consistent with the search cost theory of franchising. An implication from Minkler (1992) suggests that newer franchised firms will franchise a lower proportion of their outlets if they have learned about markets from older, established franchisors.

### 3. SPECIFICATION TESTS OF THE MODEL

The results from the model are tested for robustness and validity by examining two important sources of specification error. First, the impact of simultaneous equations bias is examined. For example, the market value of the firm and the value of the intangible asset may depend on the share of company-owned outlets. The role of the time- and firm-specific dummy variables in controlling for potential simultaneous equations bias in the model of franchising is discussed. A test for simultaneous equations bias is also presented to capture any residual effects.

Second, important industry-specific characteristics that influence decisions may have been omitted from the specification, leading to biased and inefficient estimates. A test for omitted variable bias is developed and reveals no evidence that omitted variable bias is present in the model.

The source of simultaneous equations bias is linked to the possibility that the market value of the firm and its intangible asset depends on the share of company-owned outlets for each firm. The fixed effects model with time- and industry-specific factors proposed in this paper serves to mitigate the impact of the simultaneity problem in two ways.

First, it is possible that cyclical economic conditions may play a role in influencing firm decisions about the percentage of company-owned outlets. The market value of the firm would then depend on the franchising decision due to the economic conditions. However, any relationship between time-specific effects, such as nationwide economic conditions or changes in tax laws, over the sample period are reflected in a simple correlation between the time effects  $\lambda_t$  and explana-

tory variables such as intangible assets. The fixed effects estimator used here still yields unbiased estimates.

Second, franchising decisions may be influenced by economic factors and organizational patterns unique to specific industries, which in turn are reflected in the market value of firms in that industry. This again implies a correlation between the industry-specific effects and the explanatory variable of intangible assets; the fixed effects model remains a valid estimator in the presence of this correlation among the explanatory variables.

Another source of simultaneous equations bias may be due to factors that impact the franchising decision in a *particular* industry in a *specific* year, which in turn leads to changes in the market value of the firm. A Hausman specification test was used to examine the exogeneity of both the intangible asset and growth measures. The test statistic for the intangible asset was 0.072, while it was 0.044 for the growth measure. Both were below the  $\chi^2$  critical value of 3.84. Thus the test fails to reject the null hypotheses that the intangible asset or firm growth measures are exogenous.

The model is also examined for mis-specification due to the omission of industry-specific characteristics. Following Bartik (1989), the model in Equation (1) is estimated in first-difference form to eliminate firm-specific characteristics using the grouped logit method. Griliches and Hausman (1989) argue that errors in measurement will bias downward the coefficient estimates from the first-difference estimators more than the estimates based on firm and time effects used for Equation (1). The impact of measurement error in the measure for intangible assets can be assessed by comparing the two estimators.

The signs of the estimated coefficients from the first-difference model are unchanged from the original specification, with the exception of the growth variable and the years in franchising. The intangible asset measure remains positive and significant. The evidence from the first-difference model suggests that measurement error in the intangible asset variable does not severely impact the proposed tests of the transaction cost hypothesis.

#### IV. Summary and Conclusions

When a chain decides whether or not to franchise outlets, it is tacitly making a similar decision other producers confront when deciding whether to make or buy inputs. The chain can decide to either deliver final goods and services to consumers or to contract with franchisees to perform this task. Franchised chains are thus hybrid organizations which permit study of the determinants of vertical integration.

Franchising involves other features helpful for the study of vertical integration. The most important asset in a franchised firm is its brand name capital. Brand name capital is a specific asset, the key determinant of vertical integration according to the transaction cost literature. And the proportion of company-owned outlets is a direct measure of the degree of vertical integration. By using objective measures

for these variables we are able to construct a model which precisely tests the transaction cost hypotheses. The technique employed allowed the inclusion of firms in different industries in different time periods, and of different maturities.

The results presented in this paper are generally supportive of transaction hypotheses about vertical integration. Increases in the proportion of brand name capital expenditures, the real interest rate, and firm growth are found to be positively related with increases in the degree of vertical integration. Increases in unanticipated growth and firm experience are found to be negatively related with vertical integration.

As transaction cost economics gains wider acceptance it becomes increasingly important to devise measures that can accurately test its implications. We have proposed a new measure and test in this paper which overcome some of the previous weaknesses in the empirical literature. A weakness of this study is that it only includes firms that are large. Correspondingly, one extension might add smaller franchised firms to the sample, perhaps ones traded over the counter. This may be a valuable endeavor because the use of franchise data allows economists the opportunity to ask detailed questions about the transaction cost literature in ways previously not possible.

## Notes

\* We thank Richard Langlois and Scott Masten for helpful comments on earlier versions of this paper. Michael Everett and Jon Vilasuso provided excellent research assistance. The usual disclaimer applies.

<sup>1</sup> Caves and Murphy (1976) suggest that the central feature of a franchise is the "rental of an intangible proprietary asset and the operation of a decentralized production and distribution process". This intangible asset, or trademark, is sunk in the sense that it becomes worthless if the firm goes bankrupt. If McDonald's fails, the trademark cannot be resold to help another firm sell hamburgers, mufflers, cars or any other product or services.

<sup>2</sup> A more general distinction between owned and franchised outlets is offered by Gallini and Lutz (1992). They focus on the assets owned by managers and franchisees. Their purpose is to explain dual distribution by showing how franchisors with private information can employ company-ownership as one means of signaling their type to prospective franchisees.

<sup>3</sup> The franchisor can also require the franchisee to make specific investments (e.g., unique building fixtures and equipment), investments the franchisee will lose if he behaves opportunistically and is caught (see Klein (1980)). These types of contractual provisions are costly, however, because they encourage *franchisor* opportunism. In such situations it may be profitable for the franchisor to misdeclare a cheat and then foreclose on the franchisees investment. Presumably, franchisees recognize this hazard and include it in the price they are willing to pay to operate an outlet (i.e., reduce the franchise fee and royalties paid).

<sup>4</sup> Strictly speaking, the hypotheses are not mutually exclusive: an increased value of the trademark could reduce franchisee incentives to cheat while simultaneously increasing the cost of any given cheat. The trade-off lends itself to empirical investigation of the type offered here. Other ways of reducing franchisee cheating include direct monitoring by the franchisor, performance bonds and franchise fees, and requiring franchisees to invest in firm specific assets forfeitable if the franchise relationship is terminated. These strategies do not run the risk of increasing the cost of a given cheat, that is, the additional cost associated with increasing the degree of asset specificity.

<sup>5</sup> Although Bowman's (1980) study confirmed that the book value of debt closely approximates the market value of debt for risk based studies, by using the book value for physical assets rather than the replacement value, our measure of the intangible asset may be biased upward (overvalued). Since data

are pooled, this could be a problem for across firm comparisons. Dividing by firm revenue corrects for this problem. In general, firms with high capital expenditures will have higher revenues.

<sup>6</sup> Our specification also includes interest rate and growth variables. These variables may pick up some relationships between credit market conditions and equity market valuations on growth strategies that otherwise might be encompassed in a measure of the intangible asset.

## References

- Amemiya, T. (1981) 'Qualitative Response Models: A Survey', *Journal of Economic Literature*, **19**, 1483–1536.
- Banerji, S. and C. Simon (1993) 'Franchising Versus Ownership: The Role of Trademark Value in Externality Control', Working Paper, Graduate School of Business, University of Chicago.
- Bartik, T. (1989) 'Small Business Start-Ups in the United States: Estimates of the Effects of Characteristics of States', *Southern Economic Journal*, **55**, 1004–1018.
- Bowman, R. (1980) 'The Importance of a Market-Value Measurement of Debt in Assessing Leverage', *Journal of Accounting Research*, **18**, 242–254.
- Brickley, J. and F. Dark (1987) 'The Choice of Organizational Form: The Case of Franchising', *Journal of Financial Economics*, **18**, 401–420.
- Caves, R. and W. Murphy (1976) 'Franchising: Firms, Markets, and Intangible Assets', *Southern Economic Journal*, **42**, 572–576.
- Copeland, T. and J. Weston (1983) *Financial Theory and Corporate Policy*. Reading, Massachusetts: Addison Wesley.
- Franchise Opportunities Handbook* (1988) United States Department of Commerce. U.S. Government Printing Office: Washington, D.C.
- Gallini, N. and N. Lutz (1992) 'Dual Distribution and Royalty Fees in Franchising', *Journal of Law, Economics, and Organization*, **8**, 471–501.
- Green, W.H. (1990) *Econometric Analysis*. New York: Macmillan.
- Green, W.H. (1992) *LIMDEP User's Manual and Reference Guide, Version 6.0*. Econometric Software, Inc., Bellport, NY
- Griliches, Z. and J. Hausman (1989) 'Errors in Variables in Panel Data', *Journal of Econometrics*, **13**, 93–118.
- John, G. and B. Weitz (1988) 'Forward Integration Into Distribution: An Empirical Test of Transaction Cost Analysis', *Journal of Law, Economics, and Organization*, **4**, 337–355.
- Joskow, P. (1988) 'Asset Specificity and the Structure of Vertical Relationships: Empirical Evidence', *Journal of Law, Economics, and Organization*, **4**, 95–117.
- Klein, B. (1980) 'Transaction Cost Determinants of "Unfair" Contractual Arrangements', *American Economic Review*, **70**, 356–362.
- Klein, B., and L. Saft (1985) 'The Law and Economics of Franchise Tying Contracts', *The Journal of Law and Economics*, **28**, 345–362.
- Lafontaine, F. (1992) 'Agency Theory and Franchising: Some Empirical Results', *Rand Journal of Economics*, **23**, 263–283.
- Levy, D. (1985) 'The Transactions Cost Approach to Vertical Integration: An Empirical Examination', *Review of Economics and Statistics*, **67**, 438–445.
- Martin, R. (1988) 'Franchising and Risk Management', *American Economic Review*, **78**, 954–968.
- Masten, S. (1984) 'The Organization of Production: Evidence from the Aerospace Industry', *Journal of Law and Economics*, **27**, 403–418.
- Masten, S., J. Meehan, and E. Snyder (1989) 'Vertical Integration in the U.S. Auto Industry', *Journal of Economic Behavior and Organization*, **12**, 265–273.
- Mathewson, F. and R. Winter (1985) 'The Economics of Franchise Contracts', *Journal of Law and Economics*, **28**, 503–526.
- Minkler, A. (1990) 'An Empirical Analysis of a Firm's Decision to Franchise', *Economics Letters*, **34**, 77–82.
- Minkler, A. (1992) 'Why Firms Franchise: A Search Cost Theory', *Journal of Institutional and Theoretical Economics*, **148**, 240–259.

- Monteverde, K. and D. Teece (1982) 'Supplier Switching Costs and Vertical Integration in the Automobile Industry', *Bell Journal of Economics*, **13**, 206–213.
- Perry, M. (1989) 'Vertical Integration: Determinants and Effects', in R. Schmalensee and R. Willig (eds.) *Handbook of Industrial Organization*. Amsterdam: North-Holland.
- Rosenberg, J. (1983) *The Dictionary of Business and Management*. New York: Wiley-Interscience.
- Rubin, P. (1978) 'The Theory of the firm and the Structure of the Franchise Contract', *Journal of Law and Economics*, **21**, 223–233.
- Williamson, O. (1985) *The Economic Institutions of Capitalism*. New York: Free Press.