

**DUAL DISTRIBUTION AND INTANGIBLE FIRM VALUE: FRANCHISING IN  
RESTAURANT CHAINS**

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# DUAL DISTRIBUTION AND INTANGIBLE FIRM VALUE: FRANCHISING IN RESTAURANT CHAINS

## Abstract

Dual distribution systems where firms simultaneously use vertical integration and market governance are widely used across diverse marketing contexts (e.g., restaurants, retailing, and industrial selling). A prominent example of dual distribution includes business format franchising, where firms, the franchisors, license operation of some of its units to franchisees while simultaneously owning and operating some units themselves. Despite the widespread prevalence of dual distribution, there are few insights on their performance implications. In this paper, I examine the relationship between a firm's dual distribution strategy and its intangible value. Franchising in restaurant chains serves as the empirical context for the study.

I propose that a firm's dual distribution strategy will affect its intangible value both independently and jointly with a set of firm characteristics. I consider the firm's age, the scope of its vertical integration, advertising, financial leverage, and financial liquidity as firm characteristics influencing the relationship between dual distribution strategy and intangible value. I measure the firm's dual distribution strategy by the proportion of its franchised units to its total units and intangible value by its Tobin's Q. I estimate the proposed model using panel data on 55 publicly-listed U.S. restaurant chains for the period 1992-2002. Unobserved firm heterogeneity is accommodated using latent class regression analysis. Results support a four segment model. Dual distribution increases intangible value for some firms, but decreases intangible value for others, both independently and, in conjunction with other firm characteristics.

Keywords: dual distribution, intangible value, Tobin's Q, marketing channels, market-based assets, franchising

## INTRODUCTION

Dual distribution systems where firms use vertical integration and market governance are widely used across diverse marketing contexts including retailing, restaurants and industrial selling. While the nature of dual distribution system varies by marketing context, in principle, dual distribution implies that the firm contracts with market agents to manage parts of its distribution system, while *simultaneously* owning and managing other parts of it. Given its widespread prevalence, some observers have suggested that dual distribution has become the dominant channel design with important implications for firms' marketing strategies and performance (Anderson, Day, and Rangan 1997; Stern and Weitz 1997).

In this paper, I examine the relationship between dual distribution strategy and intangible value using the context of franchising in restaurant chains. In what is known as business format franchising, the chains, i.e. the franchisors own and operate some restaurant units *and* simultaneously license operation of some restaurant units to market agents, the franchisees. Franchisors provide marketing and operations support to franchisees in return for royalty income that is a fixed percentage of franchisees' revenues. I first provide the motivation for this study.

Dual distribution has been extensively studied by marketing scholars variously as hybrid channels, multiple channels, or plural governance. However, past research has primarily focused on its various antecedents including information asymmetry (Heide 1994, 2003), transaction costs (Anderson 1988; Anderson and Schmittlein 1984; Bergen, Dutta, and Walker 1992; Dahlstrom and Nygaard 1994, 1999; Rindfleisch and Heide 1997; Weiss and Anderson 1992), and uncertainty (Dutta et al. 1995; John and Weitz 1988). There are fewer insights on the performance implications of dual distribution. As Heide (2003, p. 27) noted, "the specific

performance implications of plural systems remain unanswered...establishing a link between particular governance approaches and outcome variables seems an important research priority.”

Relating dual distribution strategy to intangible value is also valuable from a marketing metrics perspective (Bolton 2004; Rust et al. 2004). Recent developments in accounting suggest that a firm’s accounting data alone cannot adequately explain its value because they do not capture its intangible assets (Amir and Lev 1996). Accordingly, there is interest in identifying value-relevant, non-accounting measures, including business strategies that may affect shareholder value (e.g., Barth et al. 1998). Relating marketing strategies to firm value is especially pertinent, as most marketing investments create intangible market-based assets not reflected on balance sheets (Srivastava, Shervani, and Fahey 1998, 1999).<sup>i</sup>

Consistent with conceptual advances in the marketing metrics area (Srivastava, Shervani, and Fahey 1998, 1999), empirical research has identified a value-relevant role for various aspects of marketing strategy including branding (e.g., Rao, Agarwal, and Dahloff 2004; Simon and Sullivan 1993), product management (Aaker and Jacobson 2001; Pauwels et al. 2004), and customer relationship management (e.g., Anderson, Fornell, and Mazvancheryl 2004). However, there are few insights on the relationship between distribution strategy, a key aspect of a firm’s marketing strategy, and its value. In an exception, Banerji and Simon (1991) used survey data from 34 restaurants and reported a positive relationship between the proportion of firms’ franchised units to their company units and their intangible value. More recently, two studies (Geyskens, Gielens, and Dekimpe 2002; Lee and Grewal 2004) showed that a firm’s adoption of the Internet as a distribution channel positively influenced its intangible value. These developments raise questions about the value relevance of distribution strategy.

A study relating dual distribution strategy to firm value is also important for marketing practice because of the increasing scrutiny of the financial accountability of marketing investments from various stakeholders (Rust et al. 2004). Testifying to the potential managerial significance of this issue, an empirical survey of restaurant chains, the industry context for this paper, suggested an intriguing relationship between chains' dual distribution strategies and intangible values (Figure 1).

---- Insert Figure 1 ----

Interestingly, the scatter plot in Figure 1 indicates that restaurant chains, using a given dual distribution strategy, have very different intangible values. For example, in 2002, McDonald's Corporation and Panera Bread Company which had similar dual distribution strategies (0.72 of their system units were franchised) had intangible values of 1.290 and 5.300 respectively. Likewise, Benihana Inc. and California Pizza Kitchen Inc. which had similar dual distribution strategies (0.18 of their system units were franchised) had intangible values of 0.990 and 2.780 respectively. I observed similar patterns in other industries where dual distribution is prevalent (e.g., automotive repair services, hotels) suggesting a complex and perhaps contingent relationship between dual distribution strategy and intangible value. Insights clarifying this relationship will be useful to managers whose business strategies must be informed by their performance implications. In this paper, I examine two research questions: Does a firm's dual distribution strategy affect its intangible value? Do the effects of dual distribution on intangible value vary across firms?

Firms are urged to leverage synergy among elements of their marketing strategy to optimize resource allocation (Capon, Farley and Hoenig 1990, pp. 1144-1159; Gatignon and Hanssens 1987, p. 257). Surprisingly, however, past studies relating marketing to firm

performance have focused on one aspect of marketing such as new product introductions (e.g., Bayus, Erickson and Jacobson 2003) and brand management (e.g., Rao, Agarwal and Dahloff 2004) without consideration of potential synergies among them. Indeed, the considerable variability in intangible values of firms, for a given dual distribution strategy, observed in Figure 1, suggests a contingent relationship between dual distribution strategy and other firm characteristics on intangible value.

Accordingly, I apply contingency theory (Hambrick 1983; Zeithaml, Varadarajan, and Zeithaml 1988) that proposes complementarities between various aspects of firm's profile, strategy and resources on its performance to relate a firm's dual distribution strategy to its intangible value. I propose that a firm's dual distribution strategy will affect intangible value, both independently and jointly, with other firm characteristics. I consider the firm's age, the scope of its vertical integration, advertising, financial leverage, and financial liquidity as characteristics influencing the effects of its dual distribution strategy on its intangible value.

I estimate the model using panel data on 55 publicly-listed U.S. restaurant chains in the period 1992-2002, resulting in 394 firm-years. Unobserved firm heterogeneity is accommodated using latent class regression analysis that derives latent segments (for a review, see Wedel and Kamakura 2000). I use the proportion of a chain's franchised units to the total number of its units in its distribution system as the indicator of its dual distribution strategy. I measure the chain's intangible value by its Tobin's Q, a forward-looking, stock market-based measure (e.g., Bharadwaj, Bharadwaj, and Konsynski 1999).

The results support a four-segment model and indicate that a firm's dual distribution strategy influences its intangible value, both independently and jointly with other firm characteristics. The effect of dual distribution on intangible value varies across firms in the four

segments supporting firm heterogeneity. The proposed model explains a firm's intangible value significantly better than its accounting data, strongly supporting the value-relevance of its dual distribution strategy. The model also predicts a firm's intangible value well, given its characteristics.

The paper is organized as follows. In the next section, I first define dual distribution and provide an overview of it, following which, the hypotheses are developed. The subsequent sections describe the data, and the model estimation procedure followed by the results. The paper concludes with a discussion of the paper's contributions, its limitations, and opportunities for further research.

## **THEORY**

### **Definition of Dual Distribution**

I conceptualize a firm's dual distribution as a hybrid system, involving the simultaneous use of vertical integration (termed vertical integrated channels or company units in franchising) and market governance (market-based channels or franchised units).<sup>ii</sup> In the restaurant industry, most chains use dual distribution although, some (e.g., Planet Hollywood International Inc., Lonestar Steakhouse Saloon Inc.) use only vertical integrated channels and others (e.g., Noble Roman's Inc., Triarc Companies Inc.) use only market-based channels.

I define the proportion of a chain's franchised units to the total number of its system units in its distribution system as the indicator of its dual distribution strategy for three reasons. First, this definition captures the chain's emphasis on market-based channels relative to its system size reflecting the conceptualization of dual distribution as a hybrid system. Second, the definition also captures the chain's relative emphasis on the creation of intangible assets (i.e., franchised

units, franchisee relationships and knowledge) in its distribution system which is consistent with the study's focus on firm value, which is achieved through intangible market-based assets (Srivastava, Shervani, and Fahey 1998). Finally, the proportion of a chain's market-based channels to its system size is a strategic choice variable as chains first determine their overall distribution strategy (e.g., system size, location of units) and then determine which units should be franchised (Lafontaine 1992). I next provide an overview of dual distribution, and discuss its various advantages and disadvantages.

### **Overview of Dual Distribution**

Vertical integrated channels and market-based channels embody different economic, structural and managerial characteristics and serve different marketing functions (Dutta et al. 1995; Heide 1994, 2003). For example, firms own, operate and manage vertical integrated channels through hierarchical, corporate control, while market-based channels are owned and operated by market agents, and are managed primarily through provisions and incentives in a relational contract between the firm and its agents (Williamson 1975, 1985).

Marketing scholars have examined the conditions when plural governance, in general, and dual distribution, in particular, leads to greater efficiency using the theoretical lenses of agency theory (Bergen, Dutta, and Walker 1992; Dutta et. al. 1995) and transaction cost economics (Heide 1994, 2003; John and Weitz 1988; Rindfleisch and Heide 1997). The emergent consensus is that, under some conditions, dual distribution eliminates problems associated with either exclusive vertical integration or market governance. See Bergen, Dutta, and Walker (1992, pp. 13-16), Heide (1994, pp. 74-78) and Rindfleisch and Heide (1997, pp. 32-43) for discussions of agency theory and transaction cost economics as applicable to dual distribution. I next review the advantages and disadvantages of dual distribution.

## **Advantages of Dual Distribution**

As both vertical integration and market governance have distinctive economic and structural characteristics and marketing functions, the advantages and disadvantages of dual distribution arise from the aggregation of benefits and costs of each channel *and* the synergy across the dual channels.<sup>iii</sup>

*Greater control over operations in vertical integrated channels.* Vertical integration, in the presence of dual distribution, enhances the credibility of the firm's contract termination safeguard, curtails agents' opportunism, and reduces its vulnerability (Dutta et al. 1995). Vertical integration also provides a firm with greater control over its business processes, products, and profits (Heide 1994). Consistent with greater control over company units, the Chief Executive Officer (CEO) of McDonald's stated: "We maintain a global base of company-operated restaurants to generate profits, link our interest with franchisees, develop management talent, gather research, and test ideas for better restaurant execution" (McDonald's 1995 Annual Report, p. 11).

*Lower costs and higher returns in market-based channels.* Market agents are an important source of scarce financial and managerial resources bundled efficiently in the contract (Alchian and Demsetz 1972; Grossman and Hart 1986; Jensen and Meckling 1976). As Anderson and Weitz (1986; p. 13) noted: "administrative costs associated with external agents are quite low...the 'invisible hand' of the market places substantial pressures on independent agents to provide a marketing activity efficiently."

For example, in restaurant chains, owner-managers of franchised units, with rights to residual profits from their units, are more motivated and work more efficiently than salary-based employees in company units, lowering operating costs. Chains monitor franchised units

infrequently, relying instead on provisions in the contract, lowering monitoring costs as well (Lafontaine and Shaw 2005). Further, chains make no capital investment in franchised units, even as they earn income, which is set as a fixed percentage of franchisees' revenues. As the Executive Vice-president at a leading fish and chips chain noted, "...with franchise units, you receive a smaller margin but the return on investment approaches infinity because there is no investment" (Bradach 1998, p. 68).

*Market-based channels are more responsive to market needs.* Owner-managers of market-based channels follow complex strategies and are more responsive to market changes, relative to bureaucratic, vertical integrated channels (Yin and Zajac 2004). As a Pizza Hut franchisee noted (Bradach 1998, p. 127), "Franchisees have a faster reaction time. With all the layers in the company, it takes a long time to get things done." Being very responsive to market needs, franchised units are an important source of innovations (Lewin-Solomons 1998). For example, three of McDonald's most successful products—The Big Mac, Filet-O-Fish and Egg McMuffin—were originally introduced by its franchisees (Newsweek 1997).

*Market-based channels provide low cost, low risk access to new markets.* Market-based channels provide firms with low risk, low cost access to markets, not economically worthwhile for them to pursue with vertically integrated channels (Dahlstrom and Nygaard 1994). Indeed, franchised units are frequently located in remote, low potential markets that achieve lower sales per unit, on average, than company units (Brickley and Dark 1987). Further, the franchise contract is designed such that the upside benefit of increased revenues accrues to chains, while the downside risk of poor performance is borne solely by their franchisees. As CEO Robert Nugent of Jack in the Box noted "The economic advantage to franchising is that there is less risk to our income statement because we're not affected by cost pressures" (Bradach 1998, p. 68).

*Synergy between dual channels.* In addition to these distinct advantages from vertical integrated channels and market-based channels, synergy between the dual channels also provides advantages (Lafontaine and Kaufmann 1994; Martin 1988). Chains leverage their experience in company units, over which they have control, to model responses in franchised units, where they have much less control, in what Bradach (1997) called the “ratcheting process”. In addition, Bradach (1997) found evidence of two-way “mutual learning” processes between company units and franchised units. Testifying to synergy between the dual channels, the CEO of a restaurant chain noted (Bradach 1998, p. 2), “The chain [company units] gives you a system perspective, while franchisees give you a local perspective. We are constantly working to balance both perspectives. By having both company and franchised units, we are able to do that.”

### **Disadvantages of Dual Distribution**

*Moral hazard problems in market-based channels.* Because agents invest only in their business (i.e. the franchised unit), they experience higher risk relative to well-diversified investors, and may invest sub-optimally in their unit, creating moral hazard problems for the firm (Blair and Kaserman 1994; Fama and Jensen 1983). For example, franchisees may attract customers based on the franchisor’s reputation but deliver inferior products (e.g., Pizza Hut franchisees can reduce the quality and quantity of cheese in pizzas), profiting from such actions with limited negative consequences to them while hurting the firm’s reputation. Such moral hazard problems are especially common when franchised units are located in remote markets characterized by high monitoring costs (Oxenfeldt and Kelly 1969).

*Uncertainty about income from market-based channels.* Restaurant chains that use dual distribution rely on market-based channels not under their control for a portion of their income resulting in uncertainty about this income stream (Bradach 1997). Indeed, the forward looking

statements in chains' annual reports identify uncertainty in income from franchised units as an important risk factor (e.g., Papa John's Annual Report 2004 at <http://www.papajohns.com>).

However, this risk is partly mitigated by vertical integration, as discussed earlier. I next develop hypotheses relating a firm's dual distribution strategy to its intangible value.

## **Hypotheses**

The considerable variability in intangible values of chains, for a given dual distribution strategy, evident in Figure 1, suggests a contingent relationship between a dual distribution strategy and other firm characteristics and its intangible value. Accordingly, I use the contingency-based approach that argues for complementarities between a firm's resources and strategy on its performance (Hambrick 1983; Zeithaml, Varadarajan, and Zeithaml 1988).

Extending the contingency theory suggests that a firm's dual distribution strategy will affect its intangible value both independently and jointly with its other characteristics. Thus, in addition to the main effect of dual distribution strategy on intangible value, I consider its interaction effects, with the firm's age, scope of vertical integration, advertising, financial leverage, and financial liquidity, on its intangible value. Note that while age, financial leverage, financial liquidity are not marketing variables, in the traditional sense, developments in agency theory (e.g., Bergen, Dutta and Walker 1992) and transaction cost economics (e.g., Rindfleisch and Heide 1997) suggest that they may influence the relationship between governance mode (i.e., dual distribution strategy) and its performance.

Extending theoretical developments in market-based assets theory (Srivastava, Shervani and Fahey 1998), I propose that, under some conditions, defined by these interaction effects, the stock market will anticipate increasing cash flows, higher speed of cash flows, and lower risk of these cash flows, which should increase the firm's intangible value. Under other conditions, the

stock market will anticipate decreasing cash flows, lower speed of cash flows and higher risk of these cash flows, lowering intangible value. As dual distribution offers both advantages and disadvantages, I hypothesize opposing effects, where appropriate. The latent class regression approach, described subsequently, accommodates opposing effects across firms in the different segments.

### **Main Effect of Dual Distribution**

As discussed, dual distribution offers several advantages including lowering a firm's capital requirements, operating costs, monitoring costs and risk. From a shareholder value perspective, market-based channels create relational, knowledge and intellectual assets that increase future cash flows while reducing their risk (Srivastava, Shervani, and Fahey 1998, 1999). From a real options perspective (Bowman and Hurry 1993; Kulatilaka and Trigeorgis 1994), market-based channels are an 'options' investment useful for managing demand growth and uncertainty. Hence, an increasing proportion of market-based channels should increase a firm's intangible value.

However, as discussed earlier, agency theory accounts suggest some disadvantages of dual distribution including potential under-investment and free-riding by market agents (Bergen, Dutta, and Walker 1992). Hence, an increasing proportion of market-based channels in such firms may decrease their future cash flows and increase the uncertainty of these cash flows, negatively affecting their intangible values.

Given the opposing arguments, I expect a positive effect of the proportion of market-based channels on intangible value for some firms and a negative effect for others. Thus,

**H<sub>1a</sub> (H<sub>1b</sub>):** The greater the proportion of market-based channels in a firm using a dual distribution strategy, the higher (lower) its intangible value.

## **Dual Distribution and Firm Age**

Over time, most high potential markets may already be covered by a firm's existing distribution system so that its expansion may be limited to smaller, remote markets, which are more efficiently served by market-based channels (Lafontaine and Shaw 2005). In such a situation, the stock market may view an increasing proportion of market-based channels as a cost-effective way to grow, strengthening the firm's cash flows and increasing its intangible value.

However, other arguments from the strategy and franchise literatures suggest an opposite effect. The life cycles of firms influence their resource profiles and strategies (Penrose 1959). Franchising is important in the early years of a firm when its resources are scarce (Carney and Gedajlovic 1991). Over time, as resources increase, franchising may become less important resulting in the well-documented reversion to company ownership of franchised units in older firms (e.g., Lafontaine and Kaufmann 1994; Oxenfeldt and Kelly 1969). Thus, the older the firm, and the greater the proportion of its market-based channels, the lower its future cash flows, the higher the risk of these cash flows and lower its intangible value. Given, the opposing effects,

**H<sub>2a</sub> (H<sub>2b</sub>):** The interaction between the proportion of market-based channels in a firm using a dual distribution strategy and its age will increase (decrease) its intangible value.

## **Dual Distribution and Scope of Vertical Integration**

I define the scope of a firm's vertical integration as the proportion of the firm's sales from its vertical integrated channels to its total sales (John and Weitz 1988). Several factors suggest a positive interaction effect between the scope of a firm's vertical integration and dual distribution on its intangible value.

A firm more dependent on its vertical integrated channels for sales will have higher fixed investments in its integrated channels, offering a credible termination safeguard against agents' opportunism, improving both the agents' and the system's performance (Heide 1994). Further, a firm more dependent on its vertical integrated channels for sales will have higher marketing expenditures (Lafontaine 1992; Lafontaine and Shaw 2005), creating positive marketing spillovers for its market-based channels, again strengthening its performance.

In addition, when a firm has an increasing proportion of sales from its vertical integrated channels and a large proportion of market-based channels, its market-based channels have lower sales per unit than its vertical integrated channels, suggesting that they are covering smaller markets with lower potential. In such a situation, the firm's market-based channels are a cost-effective way to reach these smaller markets, without attendant capital investment and risk. Thus, the interaction between the scope of a firm's vertical integration and an increasing proportion of market-based channels may strengthen its future cash flows, reduce the risk of these cash flows, and increase its intangible value. Hence,

**H<sub>3</sub>:** The interaction between the proportion of market-based channels in a firm using a dual distribution strategy and the scope of its vertical integration will increase its intangible value.

### **Dual Distribution and Advertising**

Empirical studies indicate that the effects of advertising on performance are industry-specific, varying in magnitude, timing and persistence (Comanor and Wilson 1967; Ravenscraft and Scherer 1982). Our interest here is in the interaction effect between a firm's advertising and the proportion of its market-based channels on intangible value.

The firm's and their market agents' incentives are closely aligned when its brand equity, consistent with high advertising, is high (Arrow 1985; Mathewson and Winter 1985). For

example, when a firm has high advertising, its market agents may be motivated to perform better to extract higher rents from its higher brand reputation improving its system performance.

Further, when a firm with high advertising also has a high proportion of market-based channels, its advertising investment may be efficiently recovered over the larger market increasing its cash flows and reducing their uncertainty. Hence, the higher the firm's advertising and the higher the proportion of its market-based channels, the higher its intangible value.

However, other arguments suggest the opposite. Agency theorists (Brickley and Dark 1987) argue that market agents of firms with higher advertising may have an incentive to free-ride on the firm's reputation, especially in remote markets with high monitoring costs. For example, franchisees of well-known brands located in remote markets may reduce product quality, inferring that such actions bear no negative consequences for them or for the firm. However, such actions can negatively affect the firm's product perceptions, reputation and its performance. Thus, when a firm with high advertising also has a high proportion of market-based channels, the increased moral hazard threat may lower its future cash flows and increase the risk of these cash flows, lowering its intangible value. Given these opposing effects,

**H<sub>4a</sub> (H<sub>4b</sub>):** The interaction between the proportion of market-based channels in a firm using a dual distribution strategy and its advertising will increase (decrease) its intangible value.

### **Dual Distribution and Financial Leverage**

I define financial leverage as the extent to which a firm uses debt to finance its assets (Jensen and Meckling 1976). A firm's financial leverage affects its strategy and performance through agency problems between the firm and its bondholders, and its stockholders (Bradley, Jarrell, and Kim 1984). As discussed next, these agency problems may result in an interaction effect between a firm's financial leverage and dual distribution strategy on its intangible value.

Stock and bond markets cannot differentiate between “good quality” and “bad quality” firms. Thus, “good quality” firms with high financial leverage will signal their quality with actions too costly for “bad quality” firms (Myers and Majluf 1984). For example, “good quality” firms may invest in fixed assets, increasing the security for their bondholders, and reducing their cost of capital (Myers 1977).

By the reverse logic, when a firm with high financial leverage has a high proportion of market-based channels, an inexpensive source of financial resources (Carney and Gedajlovic 1991), the bond market may interpret this as a signal of low funds, infer the firm’s inability to service its debt, lower its debt rating, and increase its cost of capital (Lang, Ofek, and Stulz 1996). In such a situation, the stock market may expect the firm’s future cash flows to decrease, even as their risk increases, negatively affecting its intangible value. Thus,

**H<sub>5</sub>:** The interaction between the proportion of market-based channels in a firm using a dual distribution strategy and its financial leverage will decrease its intangible value.

### **Dual Distribution and Financial Liquidity**

Firms vary in their financial liquidity or acid ratio, the extent to which current assets cover current liabilities, with a higher acid ratio suggesting a larger proportion of current assets relative to current liabilities. Financial liquidity affects a firm’s strategy and performance through investment constraints (e.g., Bond and Meghir 1994), creating agency problems between the firm and its shareholders (Fazzari, Hubbard, and Petersen 1988; Hsiao and Tahmiscioglu 1997). A high acid ratio suggests cash availability to fund investments with superior earnings potential. Indeed, the stock market prefers a lower acid ratio over a higher one, because it views current assets as less productive than fixed assets (Myers and Rajan 1998).

When a firm has a high proportion of market-based channels and a high acid ratio, the stock market may infer that it is foregoing income generation opportunities by not investing in vertical integrated channels. Hence, the stock market may expect a firm's increasing liquidity and an increasing proportion of its market-based channels to lower its intangible value. Thus,

**H<sub>6</sub>:** The interaction between the proportion of market-based channels in a firm using a dual distribution strategy and its financial liquidity will decrease its intangible value.

## METHOD

### Data

I used an unbalanced panel data of publicly listed US restaurant chains for the period 1992-2002 obtained from various sources including Technomic, an industry market research firm, COMPUSTAT, and firms' annual reports. The data included 55 firms observed for 394 firm-years. Some firms entered after 1992 or exited before 2002, contributing fewer firm-years. The average number of firm-years was 7.164 (minimum = 1 year; maximum = 11 years).

The firms in the study constituted 28% of publicly listed restaurant chains. The profile of firms in the study did not differ from the population of firms in COMPUSTAT (N= 198) on profit ( $t_{[\text{profitability}]} = 1.012$ , ns), but were larger ( $t_{[\text{sales}]} = 1.912$ ,  $p < 0.10$  and  $t_{[\text{employees}]} = 1.987$   $p < 0.05$ ). The firms in the study, are representative of the population, although a little larger. This is not surprising as larger firms are favored in public data sources.

### Measures

Tobin's Q is the measure of the firm's intangible value. The Chung and Pruitt's (1994) method was used to calculate Tobin's Q:  $Q = \frac{MVE + PS + DEBT}{TA}$  where *MVE* was the closing

price of shares at the financial year-end  $\times$  number of common shares outstanding, *PS* was the

liquidation value of outstanding preferred stock, *DEBT* was the sum of book value of inventories, long term debt, and current liabilities less current assets, and *TA* was the book value of total assets.

As discussed earlier, the proportion of the restaurant chain's franchised units to the total number of its system units, a continuous measure bounded between 0 (only vertical integrated channels) to 1 (only market-based channels) was the indicator of its dual distribution strategy. The trends in dual distribution for the period 1992-2002 suggested variability in dual distribution across chains and over time.

The firm's age was measured by the number of years since its incorporation.

The scope of vertical integration was measured by the proportion of the firm's sales from its company units to its total sales. The firm's sales from its company units and its total sales were obtained from Technomic and COMPUSTAT, respectively.

The firm's advertising was measured by its advertising stock using advertising expenditure reported in COMPUSTAT.<sup>iv</sup> To account for persistence of advertising, advertising stock was measured using one, two, and three year lags with annual discount rates of 0.45 (Hirschey and Weygandt 1985). Using information criteria, the three year lag was identified as the appropriate lag.<sup>v</sup>

The firm's financial leverage was measured as the ratio of its long-term debt to its total assets (Jensen and Meckling 1976).

The firm's financial liquidity was measured as the ratio of its cash, marketable securities, notes receivable, and accounts receivables to its current liabilities (Schmidgall, Hayes, and

Ninemeier 2002). Table 1 contains the descriptive statistics and the correlation matrix of the measures.

---- Insert Table 1 here ----

The correlations were within acceptable limits (highest correlation = -0.438 between firm age and financial leverage). Following Belsley, Kuh, and Welsch (1980), I assessed potential threats from multicollinearity. The VIF (Variance Inflation Factor) and condition numbers were lower than 10 (average = 1.238; maximum = 3.456) and 15, respectively (average = 1.875; maximum = 2.893), suggesting that multicollinearity may not be a threat to the validity of the study's findings.

#### **Method: Latent Class Regression**

To account for unobserved firm heterogeneity, I used latent class regression that simultaneously classifies observations into latent segments and estimates regression models within each segment (see Wedel and Kamakura 2000). The latent class regression approach directly identifies latent segments on the basis of the inferred relationship between a response variable (i.e., Tobin's Q) and the set of explanatory variables (i.e., dual distribution and related interactions) within each homogenous group (i.e., a given latent segment). An outline of latent class regression models is provided in Appendix A.

## **RESULTS**

#### **Correction for Sample Selection Bias**

Some firms (n=20) were not observed for the entire period. If the data were not missing randomly and the model was estimated with the observed data, the parameter estimates may be biased (Heckman 1979). I corrected for potential sample selection bias by including Lee's  $\lambda$

(Inverse Mill's Ratio) obtained from a Heckman selection model in the regression model for Tobin's Q.<sup>vi</sup>

I first estimated the Probit selection model including the firm's age, sales and its return on assets as factors influencing its exit from the data set. The results supported the selection model ( $\chi^2 = 20.342$ , degrees of freedom = 1,  $p < 0.01$ ). The firm's age ( $b = -0.063$ ,  $p < 0.01$ ), size ( $b = -0.005$ ,  $p < 0.01$ ), and return on assets ( $b = -0.965$ ,  $p < 0.01$ ) had negative effects in the selection model. Consistent with the liabilities of newness arguments in organizational sociology (Brüderl and Schussler 1990), newer, smaller, and less profitable firms were more likely to exit.

### **Model Estimation and Selection**

Following the procedure outlined in Appendix A, I estimated two sets of latent class regression models: (1) with the restaurant chain's class (i.e. whether it was casual dining, quick service, and limited service) and the number of brands in its portfolio (e.g., Yum Brands! had four brands including KFC, A & W, Pizza Hut, and Taco Bell) as profiling variables and (2) with only a constant term (i.e. no restaurant characteristics) as the profiling variable. I included all main effects of explanatory variables used to create the interaction effects to ensure complete model specification. I also included the firm's return on its shareholders' equity measured as the ratio of net income to shareholders' equity and a quadratic term of the proportion of its market-based channels as control variables in the regression model.<sup>vii</sup>

I used Bayesian Information Criterion (BIC) to compare the model with  $s$  segments with a model with  $s+1$  segments  $\forall s = 1, 2, \dots$  until the model fit stopped improving to determine the number of latent segments (Schwarz 1978). The 4-segment model, without restaurant characteristics term for profiling, outperformed models with 1, 2, 3, and 5 segments, both with and without profiling variables, and the 4-segment model with profiling variables.<sup>viii</sup> The

entropy of separation for the selected 4-segment model was 0.972, comparing well with results in the literature (Wedel and Kamakura 2000).

### **Tests of Hypotheses**

Table 2 contains the results of the 4-segment model with the constant term for profiling. First, Lee's  $\lambda$  significantly affected a firm's intangible value in two segments (Segment 2:  $b = -0.379$ ,  $p < 0.01$ ; Segment 4:  $b = 1.405$ ,  $p < 0.01$ ), supporting the correction for sample selection bias. There were several un-hypothesized main effects of the explanatory variables. Specifically, the negative effect of advertising stock on intangible value was counter-intuitive (Segment 2;  $b = -0.001$ ,  $p < 0.01$ ; Segment 4 =  $-0.031$ ,  $p < 0.01$ ). I examine this result in detail subsequently.

---- Insert Table 2 here ----

I next discuss the hypothesized effects. As hypothesized in  $H_{1a}$  and  $H_{1b}$  respectively, the results supported both the positive (Segment 2:  $b = 0.694$ ,  $p < 0.01$ ) and negative (Segment 1:  $b = -0.321$ ,  $p < 0.05$ ) effects of the firm's proportion of market-based channels on its intangible value. In addition, the square of the proportion of market-based channels had an un-hypothesized positive effect on intangible value in Segment 1 ( $b = 1.190$ ,  $p < 0.01$ ). As hypothesized in  $H_{2a}$  and  $H_{2b}$  respectively, the results supported the positive (Segment 1:  $b = 0.022$ ,  $p < 0.01$ ) and negative (Segment 2:  $b = -0.034$ ,  $p < 0.01$ ; Segment 4:  $b = -0.091$ ,  $p < 0.01$ ) interaction effects of the firm's age with the proportion of its market-based channels on its intangible value. As expected in  $H_3$ , the scope of a firm's vertical integration had positive (Segment 2:  $b = 0.634$ ,  $p < 0.05$ ) interaction effects with the proportion of its market-based channels on its intangible value. Somewhat, unexpectedly, the scope of a firm's vertical integration also had a negative interaction effect with the proportion of its market-based channels

on its intangible value (Segment 1:  $b = -0.413$ ,  $p < 0.01$ ). I examine this result in detail subsequently.

The results also supported hypotheses  $H_{4a}$  and  $H_{4b}$  of the positive (Segment 1:  $b = 0.005$ ,  $p < 0.05$ ; Segment 2:  $b = 0.005$ ,  $p < 0.01$ ) and negative (Segment 4:  $b = -0.073$ ,  $p < 0.01$ ) interaction effects of a firm's advertising stock with the proportion of its market-based channels on its intangible value. As hypothesized in  $H_5$ , a firm's financial leverage had a negative interaction effect with the proportion of its market-based channels on its intangible value (Segment 2:  $b = -1.634$ ,  $p < 0.01$ ; Segment 3:  $b = -7.207$ ,  $p < 0.05$ ). Finally, as expected in  $H_6$ , financial liquidity also had a negative interaction effect with the proportion of a firm's market-based channels on its intangible value (Segment 1:  $b = -0.507$ ,  $p < 0.01$ ; Segment 4:  $b = -2.144$ ,  $p < 0.05$ ). Thus, the results strongly supported the hypotheses.

### **Latent Segment Profiles**

I next report on the post-hoc segment profiles of the four segments. Results from ANOVA (analysis of variance), reported in Table 3, suggested significant differences across firms in the four segments. I summarize, below, the Scheffé multiple comparisons of means of variables across the four segments (Pedhazur 1997):<sup>ix</sup>

1. *Intangible value*: Firms in Segment 4 had higher intangible value than other firms ( $p < 0.01$ ), firms in Segment 3 had higher intangible value than firms in Segments 1 and 2 ( $p < 0.01$ ), and firms in Segment 2 had higher intangible value than firms in Segment 1 ( $p < 0.05$ ).
2. *Return on assets*: Firms in Segment 1 had a much lower return on assets than other firms ( $p < 0.01$ ).
3. *Size*: Firms in Segment 2 were larger in terms of system size, total assets, and sales than other firms ( $p < 0.01$  respectively) while firms in Segment 4 were smaller in system size than other firms ( $p < 0.01$ ).
4. *Number of brands*: Firms in Segments 3 had more brands than other firms ( $p < 0.01$ ).
5. *Advertising stock*: Firms in Segment 2 had higher advertising stock than other firms ( $p < 0.01$ ) while firms in Segment 4 had lower advertising stock than other firms ( $p < 0.05$ ).
6. *Financial leverage*: Firms in Segment 4 had much lower financial leverage than firms in the other segments ( $p < 0.05$ ).

---- Insert Table 3 here ----

I integrate the segment profiles with the regression results to explain the findings across the segments. Firms in Segment 1 (e.g., Backyard Burgers Inc., Nathan's Famous Inc., and Carrols Corporation) performed poorly in this time period. For these firms, the proportion of market-based channels had a U-shaped relationship ( $b_{\text{linear}} = -0.321$ ,  $p < 0.05$ ;  $b_{\text{quadratic}} = 1.190$ ,  $p < 0.01$ ) on their intangible values. Perhaps the stock market infers that, given their poor overall performance, these firms have limited ability to manage market-based channels although, somewhat interestingly, this negative effect disappears at very high proportions of market-based channels. Interestingly, for firms in segment 1, the scope of vertical integration has a positive main effect on intangible values ( $b = 0.001$ ,  $p < 0.01$ ), but this effect is reversed in conjunction with the proportion of their market-based channels ( $b = -0.413$ ,  $p < 0.01$ ). The positive main effect of vertical integration suggests that for these poorly performing firms, increasing their sales from the company-based channels reassures the stock market of their future cash flows. On the other hand, the negative main effect of the proportion of market-based channels, both independently, and in conjunction, with the scope of vertical integration suggests that the stock market may view these poorly performing firms as not being well-positioned to manage market-based channels. However, as these firms grow old, the proportion of their market-based channels positively affected their intangible values ( $b = 0.022$ ,  $p < 0.01$ ), suggesting that, over time, market-based channels are an effective mechanism for these firms to achieve growth. Likewise, as their advertising stock increases, the proportion of market-based channels positively affected their intangible values ( $b = 0.005$ ,  $p < 0.05$ ), suggesting that market-based channels also enable effective leverage of their advertising stocks.

Firms in Segment 2 (e.g., IHOP Corporation, McDonald's Corporation, and Wendy's International Inc.) were large firms with large advertising stocks. For these firms, the proportion of market-based channels positively affected their intangible values ( $b = 0.694$ ,  $p < 0.01$ ) suggesting that perhaps, because of market saturation, market-based channels that tap small and low-potential markets are an efficient way to grow. The interaction effects of the proportion of market-based channels with both advertising ( $b = 0.005$ ,  $p < 0.01$ ) and scope of vertical integration ( $b = 0.634$ ,  $p < 0.05$ ) positively affected their intangible values. Interestingly, the main effects of both advertising ( $b = -0.001$ ,  $p < 0.01$ ) and scope of vertical integration ( $b = -0.001$ ,  $p < 0.10$ ) for these firms are negative. Perhaps, for these large firms with large advertising stocks, the ceiling effects of advertising results in the negative main effect. However, the stock market may view these large firms as being able to effectively leverage their large advertising stocks over a larger market using market-based channels, resulting in the observed positive interaction effect of advertising stock with the proportion of market-based channels on intangible values. The combined negative main and positive interaction effects (with the proportion of market-based channels) respectively of the scope of vertical integration suggests that the stock market may be viewing expansion through market-based channels as the most effective way for these large firms to achieve growth.

Firms in Segment 3 (e.g., Brinker International Inc., CBRL Group Inc., and AFC Enterprises Inc.) were small firms with a larger portfolio of brands than other firms. Interestingly, most hypothesized effects of dual distribution on intangible value were not supported for these firms (one exception: interaction between financial leverage and proportion of market-based channels ( $b = -7.207$ ,  $p < 0.05$ )). Overall, the intangible values of these firms

appeared to be impervious to their dual distribution strategies, perhaps because the stock market views their brand portfolio diversification as sufficient hedge against market uncertainty.

Firms in Segment 4 (e.g., California Pizza Kitchen Inc., Panera Bread Company, and Diedrich Coffee Inc.) were smaller firms with low advertising stocks and low financial leverage. For these firms, there was no main effect of the proportion of market-based channels ( $b = -1.110$ , ns) on their intangible values, while advertising had a negative main effect ( $b = -0.031$ ,  $p < .01$ ) and the scope of vertical integration had a positive main effect ( $b = 0.001$ ,  $p < 0.01$ ) on their intangible values. However, there was a negative interaction effect of the proportion of market-based channels with advertising stock ( $b = -0.073$ ,  $p < 0.01$ ), age ( $b = -0.091$ ,  $p < 0.01$ ), and financial liquidity ( $b = -2.144$ ,  $p < 0.05$ ) on their intangible values. The negative effect of advertising stock on intangible value, both independently and in conjunction with dual distribution is intriguing. Indeed, after the large firms in segment 2, the firms in segment 4 have the highest proportion of advertising stock to system size. I conjecture that the stock market may consider that these firms have adequate advertising stock and need to achieve system growth. In addition, for these firms, dual distribution has a negative effect on intangible value. Integrating this pattern of findings suggest, that, perhaps, the stock market views these firms as good custodians of intangible value, rewarding them for organic growth through company-based channels (i.e. lower emphasis on dual distribution). I next report additional analyses that examine the explanatory power and predictive validity of the proposed model.

### **Additional Analyses**

*Model comparisons.* First, I compared the proposed model to a model with *only* the accounting data of financial leverage, liquidity, and return on shareholders' equity. The hypothesized model (BIC = 778.354) outperformed this baseline model (BIC = 823.358).

Second, I compared the hypothesized model with a model that included the firm's age, scope of its vertical integration, advertising stock, and financial accounting data but *excluded* dual distribution and the related interaction effects. The hypothesized model (BIC = 778.354) again outperformed the model that excludes dual distribution (BIC = 798.567). Third, I compared the proposed model with a model that included main effects of dual distribution and other explanatory variables but *excluded* the interaction effects. The hypothesized model (BIC = 778.354) once again outperformed the model that excluded the interaction effects (BIC = 810.187). Thus, the proposed model with the inclusion of dual distribution and related interactions explained firm value better than models with only accounting data or models that excluded dual distribution, strongly supporting the value relevance of dual distribution strategy.

*Predictive validity.* I evaluated the model's predictive ability using a jackknifing technique, holding out a target firm, re-estimating the model on other firms, and then using the estimated parameters to predict the target firm's Tobin Q. I computed the mean absolute

deviation (MAD), defined as 
$$= (1/NT) \sum_{t=1}^{T_i} \sum_{i=1}^N |Tob\_Q_{oit} - Tob\_Q_{pit}|$$
 where  $Tob\_Q_{oit}$ ,  $Tob\_Q_{pit}$ ,  $N$

and  $T_i$  denote observed and predicted Tobin's Q for firm  $i$  in year  $t$ ,  $N$  the number of firms and  $T_i$  the number of years for each firm  $i$  respectively. The MAD using the proposed model was 0.473 compared to a MAD of 0.713 with the average value, representing an improvement of 34 %.

Thus, the proposed model predicts the firm's intangible value well.

## DISCUSSION

Despite the growing importance of dual distribution channels in practice, there are few insights on their performance implications. In this paper, I explore the relationship between dual

distribution strategy and intangible value. I conclude with a discussion of the paper's theoretical contributions, managerial implications, and limitations and opportunities for future research.

### **Theoretical Contributions**

This paper's findings contribute to the marketing channels and marketing metrics literatures.

*Marketing Channels.* By relating dual distribution strategy to intangible value, this paper addresses the call for research on the performance implications of plural governance, general and dual distribution, in particular (Heide 2003). The study's findings indicate that a firm's dual distribution strategy is value relevant significantly affecting its intangible value. Further, the differential main and interaction effects of dual distribution across the four latent segments suggest firm heterogeneity in the value relevance of dual distribution.

For some firms (Segments 1 and 2), an emphasis on dual distribution contributes both independently, and in conjunction, with other firm characteristics to their intangible values. For others (Segment 3), their intangible values are impervious to their dual distribution, while yet others (Segment 4) are punished by the stock market for emphasizing dual distribution, albeit in conjunction with other firm characteristics. This evidence of firm heterogeneity in the value relevance of dual distribution empirically validates past theoretical developments (e.g., Bergen, Dutta, and Walker 1992; Heide 1994) that indicate both advantages and disadvantages of dual distribution. The generalizability of the contingent nature of the performance effects of dual distribution to other performance metrics (e.g. profit, market share) emerges as an area for future research.

Importantly, from a shareholder value perspective, dual distribution does not offer unilateral benefits to *all* firms as implied by some observers (e.g., Bradach 1998; Moriarty and

Moran 1990) but is *instead* contingent on their other characteristics including marketing and financial strategies. This finding, which stresses synergies between aspects of firms' distribution and business strategies, represents a useful extension to marketing strategy research, in general and marketing channels research, in particular, which has, for the most part, not examined such synergies.

*Marketing Metrics.* This paper's findings also contribute to the marketing metrics literature in which there is a gap on the relationship between a firm's distribution strategy (dual distribution, in particular) and its performance. By providing strong evidence of the value relevance of dual distribution strategy, this study takes a first step toward addressing this gap.

In a departure from past studies in both marketing and accounting literatures, which have used a functional silo-based approach (i.e. using either marketing or accounting measures respectively) to study the value relevance of strategy, this paper's findings support interactions between aspects of marketing and finance strategies. These interactions suggest a hitherto, unexamined potential interchangeability between marketing and financial strategies in maximizing intangible value. For example, a firm with high financial liquidity (firms in Segment 1 and Segment 4) can decrease its emphasis on dual distribution to increase its shareholder value. Exploring the boundaries of such interchangeability across marketing and other aspects of business strategies (e.g. finance, accounting, human resources etc.) is an interesting area for future research, given the growing importance of the financial accountability of marketing (Rust et al. 2004).

Further, the value relevance of dual distribution suggests that intangible, market-based channels not accounted on firms' balance sheets, but on their market agents' balance sheets, significantly affect their intangible values. This finding implies the existence of boundaries

beyond firms' balance sheets critical for an accurate assessment of their intangible values. The demarcation of such extended boundaries for inventorying value-relevant, intangible market-based assets emerges as an important area for future research.

Finally, the un-hypothesized negative effect of advertising stock on intangible value (Segment 2 and Segment 4) is counter-intuitive and merits discussion. For the large firms (Segment 2), perhaps ceiling effects on their large advertising stocks produce this negative effect. On the other hand, for the small firms (Segment 4), perhaps the stock market views advertising as an exploratory, risky, value creation strategy and an emphasis on market-based channels as an exploitative, value appropriation strategy (March 1991). These findings, combined with those of Mizik and Jacobson (2003) who report a value creation role for research and development and a value appropriation role for advertising, suggest that whether the stock market views a given strategy as creating or appropriating value may be context-specific.

### **Managerial Implications**

The study's findings also generate useful implications for marketing practice. To start with, the significant and different main and interaction effects of dual distribution on firms' intangible value across the four latent segments indicate that the value relevance of dual distribution is *contingent* on other firm characteristics clarifying the puzzling relationship between chains' dual distribution strategies and their intangible values reported in Figure 1.

For example, in 2002, the differences in intangible values between McDonald's Corporation (ticker: MCD: Tobin's Q = 1.290) and Panera Bread Company (PNRA: Tobin's Q = 5.300) both with similar dual distribution strategy having 0.72 of their system units franchised may be arising, in part, because of differences in their characteristics including age (MCD = 47 years; PNRA = 15), system units (MCD = 31,108; PNRA = 478), advertising stock (\$ million)

(MCD = 1088.112; PNRA = 13.445), financial leverage (MCD = 0.400; PNRA = 0.000) and financial liquidity, (MCD = 0.489; PNRA = 1.348) which influence the relationship between their dual distribution and their intangible values.

Given the increasing pressures on marketing executives to demonstrate the financial accountability of marketing and the limited past research on the financial accountability of distribution strategy, the value relevance of dual distribution is both a novel and useful insight. Marketing managers can use the paper's findings to convince various stakeholders (e.g., top management, and finance executives some of whom may be skeptical of the financial accountability of marketing) about the value relevance of marketing, in general, and dual distribution strategy, in particular. Managers can use the study's specific findings to develop investor communications program to increase their firm's intangible value. In addition, given the model's predictive ability, investment analysts can use it to assess a chain's intangible value, given a set of characteristics.

At an operational level, the study's findings generate action points for managers of firms (in the four segments) to maximize their firms' intangible values:

- *Segment 1:* For the poorly performing, medium sized firms in Segment 1, a reduced emphasis on market-based channels, especially at moderate levels and when they have high financial liquidity and increased scope of vertical integration will reduce the negative effects of dual distribution on their intangible values. Firms in this segment, with high financial liquidity will be well-served from a shareholder value perspective, by investing their cash resources in vertically integrated channels. Alternatively, these firms can invest their cash resources in additional advertising because as their advertising stocks increases, an increased emphasis on market-based channels increases their intangible value.
- *Segment 2:* The large firms with large advertising stocks in Segment 2 can increase their intangible values by emphasizing market-based channels, as dual distribution has both positive main and interaction effects with the scope of their vertical integration and advertising stocks. The negative interaction effect of dual distribution with financial leverage suggests that these firms will be well-served from a shareholder value perspective, by reducing their financial leverage.
- *Segment 3:* The shareholder values of the smaller firms with a large portfolio of brands in Segment 3 appear, for the most part, to be generally impervious to their dual distribution strategies. One

exception is the negative interaction effect between their dual distribution and financial leverage on intangible values. These firms can increase their intangible values by decreasing their financial leverage.

- *Segment 4:* Surprisingly, for the small, well-performing firms, there are no positive effects of dual distribution, either independently or jointly with other characteristics. However, dual distribution has a negative interaction effect with age, advertising and financial liquidity suggesting that over time, and as their advertising stocks and liquidity increase, the stock market rewards them for investing in vertically integrated channels.

Finally, a study of performance in franchise firms is worthy of empirical investigation in its own right as franchising is a vital force in the U.S. economy (Dant and Kaufmann 2003). In 2003, business format franchises accounted for over 600,000 establishments, 8 million jobs, and \$460 billion of economic output (<http://www.franchise.org>). Restaurant chains dominate the industry with 15 of the 20 largest franchises being restaurants, whose sales represented 54% of revenues of all U.S. franchises. Yet there are few insights on the performance of franchise firms. As Bradach (1997; p. 301) noted, “..future work should investigate how the functioning and performance of the plural forms compares in chains with different mixes of company and franchised units.” The study’s findings on the factors affecting a chain’s performance will be useful to managers of franchise firms, in general, and restaurant chains, in particular, to increase their firm value.

### **Limitations and Opportunities for Future Research**

In this first study on the performance implications of dual distribution, I focused on franchising in general, and restaurant chains, in particular. The choice of one industry allows control for cross-industry variation enabling a clean test of hypotheses. However, as a result, I do not consider environmental characteristics (e.g., uncertainty, competitive conditions etc.) which have been shown to be pertinent to channel decisions. Also, the use of secondary data precluded consideration of organizational factors (e.g., culture, trust, organizational structure etc.) affecting channel management. Future research on the performance implications of dual distribution using

other methods (e.g., in-depth interviews, surveys) across diverse industry contexts incorporating other environmental and organizational characteristics will be useful.

This paper's focus on dual distribution raises questions about the generalizability of the study's findings to other plural governance settings. The study's sample (n=55), although representative of the population of restaurant chains is small. Future research on performance in other plural governance settings (e.g., foreign market entry, outsourcing etc.) with larger sample sizes would represent useful extensions.

The dependent variable in this study is intangible firm value measured by Tobin's Q. While, Tobin's Q is a reliable measure of firm value, it represents the stock market's evaluation of the level, speed and risk of the firm's future cash flows. Research extensions using alternative performance metrics including survival, risk and volatility in earnings would both complement and extend the study's findings.

In sum, this study represents a useful, first step in exploring the performance implications of dual distribution strategies. Hopefully, this paper will stimulate further work relating plural governance, in general, and dual distribution, in particular, to firm performance.

## APPENDIX

### Outline of Latent Class Regression Models

Let:  $f = 1 \dots F$  index the restaurant chains,  $t = 1 \dots T_f$  index the year of restaurant chain  $f$ ,  $s = 1 \dots S$  index the number of latent segments,  $Y_{ft}$  be the Tobin's Q of restaurant chain  $f$  in year  $t$ ; and  $X_{ftp}$  be the value of the  $p$ th explanatory variable for restaurant chain  $f$  in year  $t$ . Assume that the vector of observations  $Y_{ft}$  be the Tobin's Q of restaurant chain  $f$  in year  $t$  arises from a population that is a mixture of  $S$  segments in proportions  $\pi_1, \pi_2, \pi_3, \dots, \pi_s$  where a priori membership of the observations in the different segments is unknown. Then, each firm belongs to one and only one segment and that the point mass for each segment is denoted by  $\pi_s$  such that:

$$\sum_{s=1}^S \pi_s = 1 \text{ and } 0 \leq \pi_s \leq 1 \quad (\text{A1})$$

$\pi_s$  is the point probability of a firm belonging to segment  $s$ .

The objective is to predict the means of the dependent variable for each observation in each segment using a set of explanatory variables. To that end, I specify a linear predictor  $\eta_{fts}$ , which is a function of the  $P$  explanatory variables,  $X_1, X_2, \dots, X_p$  ( $X_p = X_{ftp}$ ;  $p=1 \dots P$ ) and parameter vectors  $\beta = \beta_{sp}$  to be estimated in segment  $s$ :  $\eta_{fts} = \sum_{p=1}^P X_{ftp} \beta_{sp}$  (A2)

The linear predictor is in turn related to the mean of the distribution,  $\mu_{st}$  through a link function  $g(\cdot)$  such that in segment  $s$ :  $\eta_{fst} = g(\mu_{fst})$  (A3)

In the present case, given the panel structure of the data, the  $Y_{ft}$ 's are not independent across the  $t$  time periods. The distribution of  $Y_{ft}$ , given that it comes from segment  $s$ ,  $f_s(Y_{ft} | \theta_s)$  is normal within each of the  $s$  segments, so that the identity link function is pertinent such that  $\eta_{fst} = \mu_{st}$ . Thus, by combining equations (A2) and (A3), I obtain the standard linear regression model within the segments, given the assumption that the firm can belong to only segment. I model  $\pi_s$  with a logit formulation. Specifically:

$$\pi_s = \frac{e^{\delta_s}}{\sum_{s=1}^S e^{\delta_s}} \quad (\text{A4})$$

where,  $\delta_s$  is the segment-specific vector of profiling coefficients. Then, Equation (A4)

is standardized as:  $\pi_s = \frac{e^{\delta_s}}{1 + \sum_{s=1}^{S-1} e^{\delta_s}}$  (A5)

$$\text{and } \delta_s \text{ is parameterized as: } \delta_s = \beta_{0s} + \sum_{p=1}^P z_{fp} \beta_{ps} \quad (\text{A6})$$

where,  $z_{fp}$  is the matrix of profiling variables,  $\beta_{0s}$  is segment specific constant term and  $\beta_{ps}$  is a vector of coefficients for the profiling variables  $\forall s = 1, \dots, S-1$ , and  $P$  is the number of profiling variables.

### Estimation and Model Selection

If the distributions conditional upon the segments are formulated, the unconditional distribution of  $Y_{ft}$  is obtained as:  $f(Y_{ft} | \phi) = \sum_{s=1}^S \pi_s f_s(Y_{ft} | \theta_s)$ , where  $\phi = (\pi, \theta)$  and

$\theta = (\beta_f, \lambda_s)$ . The purpose of the latent class regression estimation is to estimate the parameter vector  $\phi = (\pi, \theta)$ , using the maximum likelihood method, so that the likelihood for  $\phi$  is:

$$L(\phi; Y) = \prod_{f=1}^F \prod_{t=1}^T f(Y_{ft} | \phi) \quad (\text{A7})$$

For a pre-specified value of the number of segments  $s$ , an estimate of  $\phi$  ( $\phi_0$ ) can be obtained by maximizing the likelihood equation (A7) with respect to  $\phi$  subject to the restrictions in equation (A1) so that the parameter vector  $\phi$  could have produced the observed vector  $Y$ . To obtain the parameter estimates, I use the expectation-maximization (E-M) algorithm to maximize the natural logarithm of the likelihood function specified in Equation (A7). 50 randomly selected starting values for each of the models are used to ensure convergence (Wedel and Kamakura 2000). To obtain the standard errors for the parameters the Hessian (or the information matrix) for the final parameter estimates is inverted. Once an estimate of  $\phi$  has been obtained, estimates of the posterior probability  $p_{fs}$  a probabilistic allocation of the firm to

$$\text{the latent segments are obtained using Bayes' theorem as follows: } p_{fs} = \frac{\pi_s f_s(y_f | \theta_s)}{\sum_{s=1}^S \pi_s f_s(y_f | \theta_s)} \quad (\text{A8})$$

To determine the number of latent segments, the Bayesian Information Criterion (BIC) (Schwarz 1978) is used to compare the model with  $s$  segments with a model with  $s+1$  segments  $\forall s = 1, 2, \dots$  till the model fit stops improving. BIC is calculated as:  $BIC = -2 * LL + P * \ln(F)$  where  $LL$ ,  $P$ , and  $F$  stand for log-likelihood value, number of parameters, and sample size respectively. I also report an entropy measure of separation (ES), the extent of separation of the

segments which is calculated as  $ES = 1 - \frac{\sum_{f=1}^F \sum_{s=1}^S p_{fs} \ln(p_{fs})}{F \ln(S)}$  where  $p_{fs}$  is the probability of firm

$f$  belonging to segment  $s$ , which is calculated using the Bayes rule specified in equation (A8) above. ES is bounded in the range 0 to 1, such that a value closer to 1 indicates good separation of the latent segments.

**Table 1**  
**Descriptive Statistics and Correlations (N=394)**

Variable	Mean (Standard Deviation)	1	2	3	4	5	6	7
1. Tobin's Q	1.548 (1.046)	1.000						
2. Dual distribution (proportion of market- based channels)	0.390 (0.326)	0.025	1.000					
3. Firm age (years)	26.980 (18.000)	-0.052	0.229***	1.000				
4. Scope of vertical integration	0.654 (0.562)	-0.105**	-0.079	-0.116**	1.000			
5. Advertising stock (\$ millions)	58.132 (152.693)	0.120**	0.273***	0.347***	-0.222***	1.000		
6. Financial leverage	0.259 (0.237)	-0.185***	0.123**	-0.438***	-0.199***	0.207***	1.000	
7. Financial liquidity	0.741 (0.978)	0.185***	0.221***	-0.231***	0.013	-0.099**	-0.225***	1.000

\*\*\* denotes  $p < 0.01$ , and \*\*  $p < 0.05$

**Table 2**  
**Results for Model Relating a Firm's Dual Distribution to its Intangible Value (N=394)**

Variable	Segment 1 <sup>a</sup>	Segment 2	Segment 3	Segment 4
Intercept	0.853 (0.049)***	1.393 (0.071)***	1.891 (0.254)***	0.593 (0.592)
<b>H<sub>1a</sub>/H<sub>1b</sub></b> : Dual distribution <sup>@</sup>	-0.321 (0.135)**	0.694 (0.149)***	0.564 (0.605)	-1.110 (1.009)
<b>H<sub>2a</sub>/H<sub>2b</sub></b> : Dual distribution × firm age	0.022 (0.007)***	-0.034 (0.009)***	0.028 (0.028)	-0.091 (0.031)***
<b>H<sub>3</sub></b> : Dual distribution × scope of vertical integration	-0.413 (0.160)***	0.634 (0.253)**	0.100 (0.781)	-0.140 (0.206)
<b>H<sub>4a</sub>/H<sub>4b</sub></b> : Dual distribution × advertising stock	0.005 (0.002)**	0.005 (0.001)***	-0.003 (0.010)	-0.073 (0.025)***
<b>H<sub>5</sub></b> : Dual distribution × financial leverage	-0.275 (0.471)	-1.634 (0.449)***	-7.207 (3.215)**	7.175 (5.218)
<b>H<sub>6</sub></b> : Dual distribution × financial liquidity	-0.507 (0.072)***	-0.138 (0.153)	-0.367 (0.474)	-2.144 (1.043)**
Firm age	-0.004 (0.002)**	0.006 (0.003)**	0.009 (0.004)**	-0.038 (0.014)***
Scope of vertical integration	0.001 (0.000)***	-0.001 (0.000)*	-0.001 (0.000)***	0.001 (0.000)***
Advertising stock	0.001 (0.002)	-0.001 (0.000)***	-0.002 (0.003)	-0.031 (0.007)***
Financial leverage	0.947 (0.135)***	-0.661 (0.142)***	-3.150 (0.864)***	-3.019 (1.384)**
Financial liquidity	0.323 (0.033)***	-0.192 (0.050)***	0.199 (0.179)	0.585 (0.405)
Dual distribution <sup>2</sup>	1.190 (0.358)***	-0.695 (0.498)	-3.151 (2.657)	1.328 (1.486)
Return on shareholders' equity	0.035 (0.025)	0.013 (0.013)	0.884 (0.348)**	-0.582 (0.235)**
Lee's lambda	0.011 (0.049)	-0.379 (0.113)***	0.111 (0.111)	1.405 (0.541)***
Segment size (number of firms)	36% (20)	29% (16)	20% (11)	15 % (8)

<sup>a</sup> Parameter estimates and standard errors; \*\*\* denotes  $p < 0.01$ , \*\*  $p < 0.05$  and \*  $p < 0.10$ .

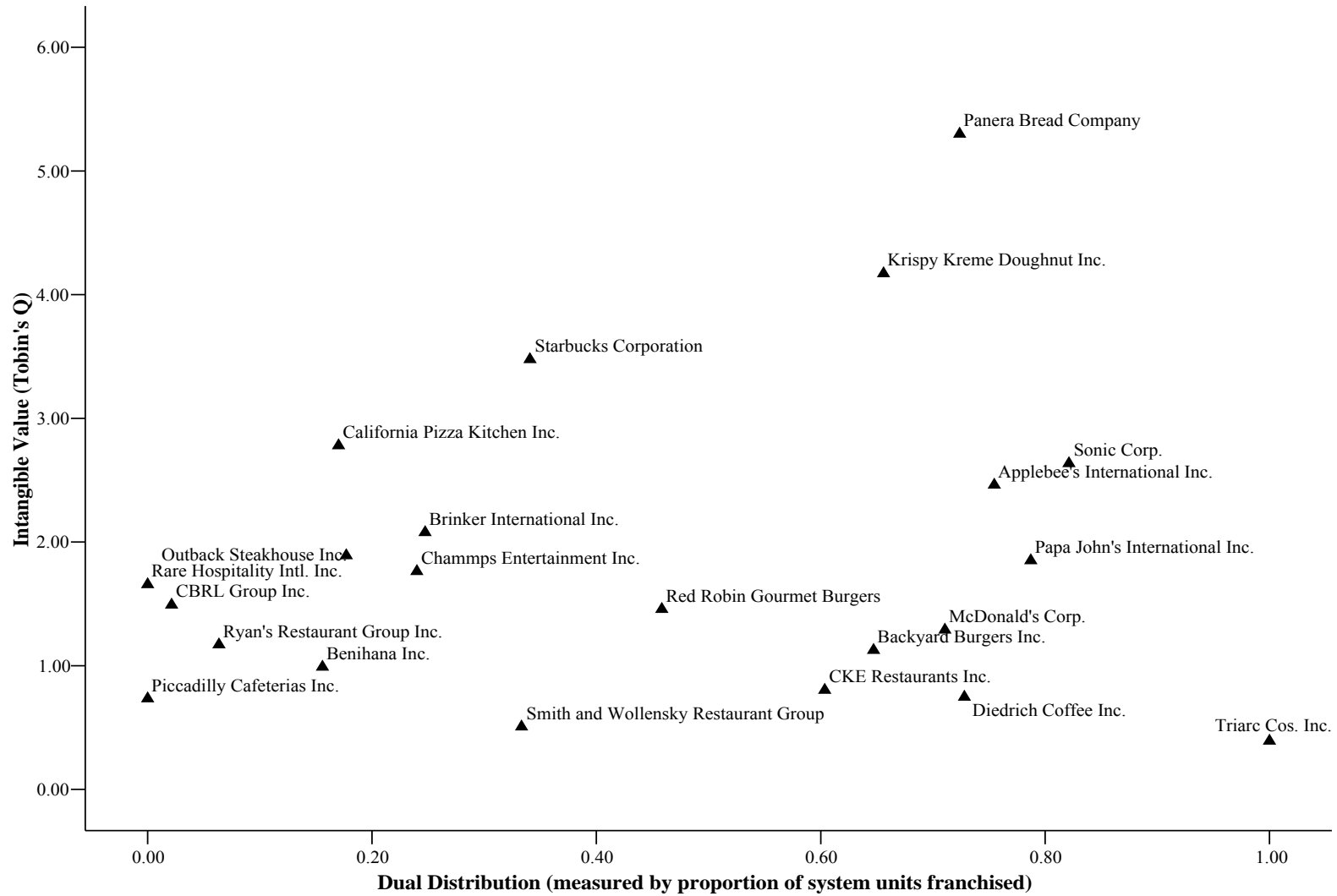
<sup>@</sup> Dual distribution is measured by the proportion of market-based channels in the firm.

**Table 3**  
**Summary of Results across the Four Latent Segments**

Variable	Segment 1	Segment 2	Segment 3	Segment 4
Intangible value (22.192***) <sup>@</sup>	1.048	1.300	1.903	2.735
Return on assets ( 8.345***)	0.006	0.018	0.016	0.028
System size (units) (5.698***)	1671	2229	1064	643
Total assets (\$ millions) (10.082***)	398.451	1450.611	443.613	343.658
Sales (\$ millions) (9.178***)	653.684	1091.030	630.852	518.781
Number of brands (3.184**)	1.400	1.375	2.545	1.375
Advertising stock (\$ mil) (9.231***)	42.363	83.832	32.557	23.388
Financial leverage (6.792***)	0.323	0.315	0.205	0.155
Exemplar members	<i>Backyard Burgers Inc., Nathan's Famous Inc., Carrols Corporation,</i>	<i>IHOP Corp., McDonald's Corp, Wendy's International Inc.</i>	<i>Brinker International Inc, CBRL Group Inc., AFC Enterprises Inc.</i>	<i>California Pizza Kitchen Inc. , Panera Bread Company, Diedrich Coffee Inc.</i>
Dual distribution (H <sub>1a</sub> /H <sub>1b</sub> )(+/-)	- /+(quadratic)	+	ns	ns
Dual distribution and firm age (H <sub>2a</sub> /H <sub>2b</sub> ) (+/-)	+	-	ns	-
Dual distribution and scope of vertical integration (H <sub>3</sub> ) (+)	-	+	ns	ns
Dual distribution and advertising (H <sub>4a</sub> /H <sub>4b</sub> ) (+/-)	+	+	ns	-
Dual distribution and financial leverage (H <sub>5</sub> ) (-)	ns	-	-	ns
Dual distribution and financial liquidity(H <sub>6</sub> ) (-)	-	ns	ns	-

<sup>@</sup>Figures in parentheses are the overall test of means across the four segments (F<sub>(3, 51)</sub>).

**Figure 1**  
**Dual Distribution and Intangible Value in Restaurant Chains (2002)**



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## Endnotes

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<sup>i</sup> I use the terms ‘firm,’ ‘restaurant chain,’ and ‘chain’ interchangeably to denote the restaurant chain and the terms ‘intangible value’ and ‘value,’ and ‘intangible firm value’ to denote the firm’s intangible value measured by its Tobin’s Q.

<sup>ii</sup> The terms ‘multiple channels and ‘dual channels’ have also been used to denote the situation when a firm owns and operates more than one channel (e.g. JC Penney with catalog operations, online store and brick-and-mortar stores). I use the term ‘dual distribution’ in this paper to denote a situation where one channel is owned and operated by the firm and the other channel is market-contracted to external agents.

In addition, the term ‘hybrid’ has been used variously in the literature. Some authors (e.g., Moriarty and Moran 1990) have used it to describe a combination of institutional forms, as in this paper, but others (e.g., Williamson 1991) have used the term ‘hybrid’ to describe a governance form that is intermediate between market governance and hierarchical governance.

<sup>iii</sup> I gratefully acknowledge the guidance of two anonymous reviewers in the development of this section.

<sup>iv</sup> None of the firms in the study reported research and development expenditure.

<sup>v</sup> I thank an anonymous reviewer for this suggestion. The BIC (Schwarz Bayesian Information Criterion) for the 4-segment model (reported subsequently) without profiling variables is 784.682 and 786.029 for models with advertising stock with a one-year and two-year lagged term for the advertising stock respectively compared to 778.354 for the model with a three-year lag for the advertising stock. Hence, the three-year lagged term for advertising stock is selected as the appropriate lag term.

Also, following the suggestions of this reviewer, I re-estimated the model with advertising stock adjusted for the firm’s sales. The results were generally consistent, but the model with the advertising adjusted for sales performed worse (BIC = 801.932) than the proposed model (BIC=778.354). I get similar results using the CAIC (Consistent Akaike’s Information Criterion).

<sup>vi</sup> See Heckman (1979) for details on the statistics of sample selection correction.

<sup>vii</sup> I included the quadratic term for dual distribution following the suggestion of an anonymous reviewer.

<sup>viii</sup> For the model formulation with restaurant class and number of brands as profiling variables, the BIC is 1131.655 for the 1-segment model, 861.773 for the 2-segment model, 846.560 for the 3-segment model, 822.564 for the 4-segment model and 808.100 for 5-segment model, respectively. Similarly, for model formulation with only the constant term as the profiling variable, the BIC is 1131.655 for the 1-segment model, 843.380 for the 2-segment model, 828.113 for the 3-segment model, 778.354 for the 4-segment model, and 786.839 for the 5-segments model, respectively. I get similar results using CAIC.

<sup>ix</sup> There are no significant differences across firms in the 4 segments on other variables.