

DYNAMIC TRANSACTION COSTS AND FIRM BOUNDARIES IN THE SOFT DRINK INDUSTRY

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ABSTRACT

Recent articles in the business press have drawn attention to firms integrating different stages of their supply chain. This purported increase in vertical mergers and the awarding of a Nobel Prize to Oliver Williamson in 2009 provide an excellent opportunity to reflect on the efficacy of economic theory in explaining shifts in the vertical boundaries of the firm. The dominant approaches emphasize the role of transaction costs and agency costs in determining the optimal level of vertical integration. This paper argues that the narrow focus on incentives by these approaches has ignored the role of organization in coordinating complementary activities that require very different types of know-how. Capabilities theory which stresses the knowledge, skills, and experience of firms contends that it is the transaction costs that emerge from trying to coordinate these types of activities that best explain the vertical boundaries of the firm. This paper argues that the capabilities story best describes the economic rationale for vertical integration (or disintegration). A case study analyzing vertical integration in the carbonated soft drink industry is presented.

INTRODUCTION

There have been numerous articles in the business press identifying an increase in the number of vertical mergers. This increase in activity has sparked a debate over whether these mergers represent a general movement towards vertical integration, reversing several decades of outsourcing and vertical disintegration (Gross, 2006; Denning, 2009). Despite differences in opinion over trends, observers agree that, unlike the large corporations of a hundred years ago, current efforts are not leading to full-blown vertical integration. “Today’s approach is more nuanced. Companies are buying key parts of their supply chains but most don’t want end-to-end control” (Worthen, et. al., 2009).

These articles have put forth a variety of explanations for this increase in “selective vertical integration” (Gross, 2006). One is that rising commodity prices (and price volatility) have spurred manufacturers to purchase suppliers of commodities. “Having bulked up acquiring rivals, manufacturers are turning their deal making prowess to raw materials providers in hopes of ensuring adequate supplies and controlling costs” (Aepfel, 2006, A1). The current economic

downturn has also been cited as an important rationale for backward integration. By threatening the economic viability of suppliers, the recession has created a high degree of uncertainty for downstream firms who rely on upstream producers for inputs and raw materials (The Economist, 2009). For both these situations, backward integration represents a defensive strategy to prevent costly interruptions in the supply chain. Such efforts resemble one of the major rationales for the emergence of large, vertically integrated corporations during the late 19th and early 20th centuries (Chandler, 1977).

In addition to ensuring supplies, a recent Wall Street Journal article identifies “control” as an important motive for vertical acquisitions for firms in diverse industries. Live Nation seeks to buy Ticketmaster to have greater control over event promotion and ticketing; PepsiCo purchases Pepsi Bottling Group to capture greater control over beverage distribution; and Boeing merges with Vought Aircraft to gain greater control over manufacturing (Worthen, et.al., 2009). Such claims beg the question why contractual measures failed to provide the requisite “control” for buyers.

The recent flurry of vertical mergers and the awarding of a Nobel Prize in economics to Oliver Williamson in 2009 present a propitious opportunity to assess the explanatory power of economic theory in depicting the vertical boundaries of firms. In looking at these recent mergers, a cogent theory would be able to explain why above firms found pre-merger contractual relationships unsatisfactory while being able to describe how integration addressed those shortcomings. In other words, economic theory needs to conceive firms and contracts as alternative governance structures and discuss the conditions under which each structure would be optimal from an efficiency perspective. Organizational economics generally portrays decisions to integrate (or to outsource) as contingent ones, depending upon the characteristics of the firm (and industry), specific attributes of a transaction and the circumstances of the time. This paper examines alternative approaches within organizational economics in the light of recent empirical experience to see which theories best stand up to scrutiny.

The dominant approaches emphasize transactions costs and agency costs in determining the vertical boundaries of the firm. Both of these approaches see firms as organizational structures that address incentive problems that often plague market-based (or contractual) relationships. This paper argues that the narrow focus on incentives has ignored the role of firms in addressing coordination problems associated with arm’s length exchange. Firms often facilitate the coordination of complementary activities along the supply chain that require very different types of know-how. Capabilities theory which stresses the knowledge, skills, and experience embodied within firms contends that it is the transaction costs associated with coordinating these types of activities that best explains the vertical boundaries of firms. In particular, product and process innovations that require simultaneous changes across multiple stages of production often create “dynamic transaction costs” (Langlois, 1992). In these circumstances, firms may find it necessary to integrate these stages of production to reduce these transaction costs in order to implement these innovations successfully.

This paper contends that the capabilities approach best explains the rationale for vertical integration. In doing so, the paper begins by reviewing the transaction cost and agency cost approaches that have dominated organizational economics for the last forty years. It then provides an overview of capabilities theory and its implications for analyzing vertical boundaries of the firm. In supporting the capabilities approach, the paper, lastly, offers a case study looking at vertical integration in the carbonated soft drink industry by analyzing the experiences of Coca-Cola and PepsiCo.

TRANSACTION COSTS, AGENCY COSTS, AND VERTICAL INTEGRATION

The basic insight from the economics of organization literature is that in addition to production costs, one must also consider transaction costs in explaining the economic nature of the firm. The central idea behind the bulk of this literature is that virtually all issues in the economics of organization can be reduced to problems of misaligned incentives attendant on imperfect information or less than perfect human beings. In analyzing these problems, the nature of the production process and all of the costs associated with it *are held constant* in order to focus primarily on *transaction cost* considerations. The methodology of transaction cost economics (TCE) is no more evident than in Oliver Williamson's approach to the specific problem of vertical integration. Williamson contends that: "A useful strategy for explicating the decision to integrate, ... is to hold technology constant across alternative modes of organization and to neutralize obvious sources of differential economic benefit" (Williamson 1985, p.88). By adopting this postulate, Klein, Crawford and Alchian (1978) and Williamson (1985) focus on what has become perhaps the central concept in the modern economics of organization: asset specificity.

The logic of asset specificity is simple and is related to the notion of sunk costs. Assets are highly specific when they have value within the context of a particular transaction but have relatively little value outside the transaction. This opens the door to opportunism. Once the contract is signed and the assets deployed, one of the parties to the transaction may threaten to walk away from the agreement unless the threat-maker appropriates a greater share of the quasi rents of joint production. The classic example of opportunism from Klein et al. (1978), which is described in Holmstrom and Roberts (1998):

involves the dies used to shape steel into the specific forms needed for sections of the body of a particular car model (say, the hood or a quarter panel). These dies are expensive – they can cost tens of millions of dollars. Further, they are next-to-worthless if not used to make the part in question. Suppose the dies are paid for and owned by an outside part supplier. Then the supplier will be vulnerable to hold-up. Because any original contract is incomplete, situations are very likely to arise after the investment has been made that require the two parties to negotiate over the nature and terms of their future interactions. Such *ex post* bargaining

may allow the automobile manufacturer to take advantage of the fact that the dies cannot be used elsewhere to force a price reduction that grabs some of the returns to the investment that the supplier had hoped to enjoy (Holmstrom and Roberts 1998, p. 74).

Fear of such “holdup” *ex post* will affect investment choices *ex ante*. If the parties integrate their resources into a single firm where profits are jointly shared, the incentives for unproductive rent-seeking are eliminated. Unified organization would thus-forth select a more productive specialized technology and gain a competitive advantage against the contractual alternative. The difficulties associated with completing arms-length transactions in an environment where specific assets are present results in one explanation for vertical integration. Of course, more detailed contracts are an alternative to vertical integration. Such detailed contracts are in some cases very costly to negotiate because of the inability to plan for every contingency known and unknown *ex ante*.

Once organizations integrate, there is a fundamental transformation of incentives (Williamson 1985). Inside integrated organizations, governance costs of a different sort can generate inefficiencies. Agency problems result from conflicts of interests between agents who are under contract with one or more persons, called the principal(s), who delegate some duty of the organization to the agent (Jensen and Meckling 1992). Because not all actions of the agent are observable, agents may be able to pursue utility maximizing activities that do not serve the interests of the principal(s). For example, a manager might shirk, consume perquisites, and choose investment and operating policies that reduce profits of owners but increase the manager’s expected well-being (Brickley et al. 2002).

It is possible to realign the incentives of the agents more closely to those of the principal. The two broad strategies that the principal may pursue would be to offer their agents performance pay or monitor the agents more closely. Consider the following example (Lazear, 2000; Harford, 2008,). Safelite Glass Corporation’s new bosses were not happy with the speed at which employees fitted replacement windshields. So, rather than paying employees an hourly wage, they decided to pay them per windshield fitted. And rather than depending on peer pressure to insure quality workmanship, the bosses made the employees fix shoddy workmanship without pay. Productivity soared at Safelite by nearly 50 percent per worker. Half of this effect was because workers tried harder. The other half was because the fastest most skilled workers made much more money and stayed with the firm, while slow, clumsy workers tended to drift away. In the end, the quality of work increased and the number of botched jobs fell.

Each type of agency problem does have a potential solution, but solutions always come at a cost. Agency costs are the sum of the costs of designing, implementing, and maintaining appropriate incentive and control systems and the residual loss resulting from the difficulty of solving these problems completely (Jensen and Meckling 1976). In some instances, the agency cost of realigning the incentives of the principal and the agent become prohibitive. In such a

case, it is Pareto optimal to take the agent's task and relocate it outside the boundaries of the business – that is, outsource the activity. In these instances, contracting at arm's length is the structural setting needed for optimal behavior. For example, outsourcing janitorial services in many organizations lowers agency costs and increases the quality of the service provided.

Both the asset specificity and agency cost explanations of organizational boundaries and optimal contractual design assume production costs of are *held constant*. This *comparative institutional approach* is indeed appropriate in highlighting specific organizational characteristics at a particular moment in time. This simplifying assumption, however, has been over-extended, at least implicitly, in ways that critically obscure the actual mechanisms by which productive knowledge is generated and transmitted in the economy (Langlois 1998).

The emphasis in the economics of organization literature on misaligned incentives obscures the fundamental role that *organizations* play in helping cooperating parties to align not only *incentives* but their *knowledge and expectations* (Langlois and Foss 1999). All recognize that knowledge is imperfect and that most economically interesting contracts are incomplete. But most of the literature only considers the incentive effects of alternative contractual mechanisms, neglecting the role organization plays in coordinating diverse activities (Langlois and Foss 1999).

CAPABILITIES, DYNAMIC TRANSACTION COSTS AND VERTICAL INTEGRATION

In his seminal contribution, G. B. Richardson (1972) defined capabilities as the “knowledge, experience and skills” appropriate to the performance of productive “activities” that need to be completed and coordinated. Furthermore, he categorized activities according to the types of capabilities they require. Two or more activities are *similar* if they require the same productive capabilities. The resource-based view of the firm beginning, perhaps, with Penrose (1959) has illustrated how excess capacity with respect to a given capability provides incentives to expand production in new—but similar—directions. Such a view provides a productive efficiency rationale for firm diversification by engaging in activities subject to *economies of scope*. Although Richardson defines similarity of activities based on the capabilities they require, activities are *complementary* if they contribute to different stages of a coordinated production process.

Richardson points out that the coordination of productive activities may be provided by intra-firm direction, inter-firm cooperation or through market transactions. Complementary activities may reflect standardized production such that arm's length, spot market transacting efficiently coordinates the plans of independent producers in different phases of production. Alternatively, the relatively specialized nature of some complementary activities may require close cooperation between firms. Richardson refers to such activities as *closely complementary*. Richardson concludes that complex networks of cooperation exist “because of the need to

coordinate closely complementary but dissimilar activities” (Richardson, 1972). Richardson argues that the number of complementary activities undertaken by firms usually is limited because they often are dissimilar.

Richardson’s analysis implies that the nature of productive capabilities, rather than the transaction costs of markets or the governance costs of integration, determines organizational structure. The process of production itself is fraught with uncertainty, not over agency problems, but about how productive knowledge and routines needs to be coordinated (Langlois and Foss, 1999). The coordinating role of capabilities is embedded in the knowledge and routines that constitute production, and may not be analytically separable from the productive activity itself. Such an orientation opens the door to economic models that take firm heterogeneity seriously. Firm heterogeneity derives from the differences in capabilities among firms.

This does not suggest that transaction cost economics (TCE) lacks explanatory power. Rather, as David Teece has noted, “[i]n order to fully develop its capabilities, transaction cost economics must be joined with a theory of knowledge and production (Teece, 1990). TCE’s explanatory power is not independent of the productive capabilities at work within the firm. That is, productive capabilities, to some degree, determine the costs of transacting. By turning the TCE methodology on its head, i.e., by holding transaction costs constant and varying the capabilities required in the production process, one sees that the changing nature of capabilities alone provides a rationale for alternative organizational forms.

Given the limits of firms’ productive knowledge, skill, and experience, economic change often poses challenges for the existing array of complementary capabilities. In particular, product and process innovations can create “dynamic transaction costs” that require changes in organization for their implementation. Dynamic transaction costs consist of the “costs of persuading, negotiating, coordinating and teaching outside suppliers.... [or] the costs of not having the capabilities you need when you need them” (Langlois, 1992, 113). It is these dynamic transaction costs associated with economic change that may call for changes in vertical relationships within the supply chain. “When the market cannot provide the right capabilities at the right time, vertical integration may result; and when the firm lacks the right capabilities at the right time, vertical disintegration may occur” (Langlois, 1992, 113). Systemic innovations which require simultaneous changes in multiple stages of the supply chain may require vertical integration to carry them out. On the other hand, if firms do not possess the requisite capabilities, innovation may lead to vertical disintegration as firms rely on the market to complete the necessary activities. Learning by firms and markets over time creates incentives for altering vertical boundaries as relative capabilities change (Langlois, 1992).

Though TCE and the capabilities view can be construed as complementary, the relationship between the two approaches is an uneasy one, owing to the different ways the two theories have been operationalized. TCE has been exploited as a tool of static optimization. As such, the methodologies it employs reflect the power—and limitations—of neoclassical theory. Economic capabilities, by contrast, derive their explanatory power from plausibility rather than

tractability. Empirical support for the economics of capabilities is most often case-study based, and therefore derives from a context of changing markets. Capabilities reflect production as an innovative process not wholly compatible with static optimization.

CASE STUDY: THE U.S. CARBONATED SOFT DRINK INDUSTRY - COCA-COLA AND PEPSICO

With regard to analyzing decisions to integrate (or disintegrate), history matters. As stated previously, these decisions are path dependent in nature, contingent on circumstances of time and place. The best way to analyze these decisions, we contend, is to examine the particular contexts in which they occurred. This case study looks at the historical experience of Coca-Cola and PepsiCo in the soft drink industry as they implement new product and process strategies. Its focus is on the changing relationship between the two major concentrate manufacturers (Coca-Cola and PepsiCo) and the bottling operations they rely on to manufacture and distribute their products to retailers. The recent decisions by Coca-Cola and Pepsi to vertically integrate with independent bottlers reflect strategies to pursue niche markets through the introduction of new product line extensions. Over the history of Coca-Cola and Pepsi, there have been shifts in the level of integration between these two stages of the supply chain. Much of this history is described in the 1992 article “Strategy and Transaction Costs: The Organization of Distribution in the Carbonated Soft Drink Industry” by Timothy Muris, David Scheffman, and Pablo Spiller. In their analysis, Muris, et. al. (1992) describe the increase in transaction costs between concentrate manufacturers (CMs) and their bottlers that arise from a changing economic landscape. Though these authors do not apply the concept of “dynamic transaction costs” in describing the motivations for vertical integration, their narrative largely supports that interpretation.

The Emergence of a Franchise System

For the first half of the last century, a large number of geographically dispersed, independent franchisees handled the bottling, marketing and distribution of carbonated soft drinks (CSDs). Muris, et al. (1992) argued that market coordination through many independent franchised bottlers was an efficient organizational response to the economic environment of the time. The “value of CSDs relative to shipping costs and the use of returnable (and breakable) containers, soft drink bottling, like dairies, required local manufacturing and a substantial local delivery system.... Given the state of national communications and transportation systems of the time, the management of such a large system of local manufacturing and delivery operations could only be accomplished with an extremely decentralized management structure” (Muris, et al., 1992, 265). The costs of a vertically integrated governance structure were prohibitive,

making the emergence of independent distribution an efficient organizational response to the environment of the time.

Under this arrangement, Coca-Cola and Pepsi-Cola focused on manufacturing concentrate, monitoring bottling operations, and orchestrating national promotional campaigns. They shipped concentrate to bottlers that were widely dispersed around the country. The bottlers invested in and maintained plant and equipment, converted concentrate into carbonated soft drinks in glass containers, and marketed and distributed product to local retailers and soda machines. Coca-Cola and Pepsi sold concentrate to bottlers at a contractually specified price. The bottlers had discretion over the prices they charged their customers. Each bottler served a relatively small geographic area (Muris, et al., 1992).

The relative simplicity of the business fostered the development of a rapidly expanding franchising system between concentrate manufacturers (CMs) and local bottlers. The bottlers as independent franchisees only produced and marketed a few, unchanging beverages in a few, unchanging packages. The terms of the contract between CMs and bottlers successfully addressed the significant sunk investment costs in highly specific capital incurred by bottlers. In the franchising arrangement, bottlers received “exclusive and perpetual territorial rights” to produce and distribute soft drinks. Such rights provided bottlers strong incentives for market development and protection against opportunistic behavior by CMs (Muris, et. al., 1992). The exclusive and territorial nature of the contract prohibited the CM from granting franchises to new bottlers that encroached on the territories of existing bottlers. The perpetual stipulation greatly expanded time horizons for bottlers, giving them greater assurance of recouping their specialized investments in plant and equipment. By providing these safeguards, CMs were able to take advantage of the local knowledge these franchisees possessed. The success of this strategy led to a proliferation of small bottlers throughout the country; by 1950, there were over 6500 bottling plants within the United States alone producing carbonated soft drinks (Saltzman, et al., 1999).

Increasing Scale and Scope

Changes in the economic environment during the second half of the twentieth century created opportunities (and competitive pressures) for both product and process innovations in the industry. Improvements in transportation, the introduction of nonreturnable containers, and advances in technology dramatically increased the minimum efficient scale in bottling operations. The introduction of new products and new packaging by CMs in the 1970s required that bottling operations exploit “economies of scope” in production (Muris, et. al., 1992, 260). The result was a proliferation of new brands and variations on existing brands.

By 1985, the consumer could purchase Coca-Cola, Caffeine-Free Coke, Coca-Cola Classic, Diet Coke, Caffeine-Free Diet Coke, Cherry Coke, Sprite, Diet Sprite, Tab, Caffeine-Free Tab, Mello Yello, Fanta, Fresca, Mr. Pibb, and others

in a great range of sizes, in cans or bottles, and in different kinds of vending machines as well as through the restaurant and fast-food trade. The distinction between fruit juice and soft drinks was broken down with the introduction of such products as Minute Maid Orange Soda, in response to Pepsi-Cola's Slice.... [PepsiCo] too had a wide variety of soft drinks: Pepsi-Cola, Diet Pepsi, Mountain Dew, Slice, and others in a truly bewildering variety of packages and with or without various ingredients such as caffeine (Tedlow, 1990, 69).

Coca-Cola and PepsiCo bottlers also added the production of independent brands like Dr. Pepper and 7-UP to their operations in the 1980s (Saltzman, et. al., 1999). Along with changes in production processes, the increase in the number of offerings required "ever more sophisticated use of advertising, particularly television, with a greatly increased pace of change of promotions" (Muris, et. al., 1992, 259). In addition, the rise of retail chains like Walmart and other large accounts called for increasing standardization of terms with respect to price, promotion, and delivery at a national level which challenged the independent marketing decisions of bottlers within their exclusive territories.

The execution of these new product and process strategies as well as adapting to the realities of a new retail environment posed serious problems for the existing franchising system. "In essence, Coca-Cola and Pepsi-Cola needed to change their distribution systems in order to implement effectively, the strategies that were stimulated by the new environment because the relative transaction costs of the independent bottling systems in the environment were too high" (Muris, et. al., 1992, 256). To accommodate increases in minimum efficient scale required bottlers to cooperate and consolidate their operations across existing territories. In response, a number of independent bottlers combined their efforts by creating large, multi-franchise operations (MFOs). The CMs largely found the formation of MFOs to be scattered, slow and inadequate in responding to the new environment. In addition, CMs found that the transaction costs of persuading many independent bottlers to adopt new products and packaging to be prohibitive. "The success of product introductions hinges, first, on the ability of the manufacturer to convince retailers to take on the product and market it effectively and, ultimately, on consumer acceptance. Concentrate manufacturers (CMs) face an additional hurdle in introducing a new product or package – they must convince their independent bottlers to handle the item" (Muris, et al., 1992, 272). These product introductions also required increased local promotional and advertising efforts which bottlers often resisted.

These "dynamic transaction costs" of adaptation prompted Coke and Pepsi to make significant changes to the decentralized distribution system. Both Coke and Pepsi moved to more vertically integrated distribution systems that allowed them greater control in the implementation of these product and process innovations. The excerpt below summarizes these changes.

Beginning in the late 1970s, Coke and Pepsi started creating captive distribution organizations by acquiring some of their larger independent bottlers. Coca-Cola formed Coca-Cola Enterprises (CCE) as a publicly owned bottling operation with the parent holding a 49 percent interest. Rather than forming a separate publicly traded corporation for its captive bottling, PepsiCo enlarged and revamped its 'bottler of last resort,' Pepsi-Cola Bottling Group (PBG) to manage its captive distribution operations. Coca-Cola (through CCE) and PepsiCo now each bottle about 50 percent of their total bottled sales and have a minority equity interest of about 15 – 20 percent in independent bottlers that accounts for about another 20 percent of sales. Thus, Pepsi-Cola and Coca-Cola each own or have an equity interest in bottlers selling about two-thirds of their volume (Muris, et. al., 1992, 261).

In creating Coca-Cola Enterprises, Coke purchased its two largest independent bottlers and immediately sold 51% interest to the public. The consolidation and integration of bottling operations continued into the 1990s as CCE acquired numerous bottlers including Johnston Coca-Cola Bottling Company in 1991, the second largest independent bottler at the time as well as many bottlers in overseas markets. In the 1990s, CCE reorganized its operations by creating "four operating groups defined by market and along geographic lines" (Coca-Cola Enterprises, Hoovers.com, 2010). In addition to domestic efforts through CCE, Coca-Cola "acquired more than 30 bottlers worldwide from 1983 to 1993" in aggressively expanding into international markets (Coca-Cola Company, 2005). Coca-Cola traditionally has had a much stronger presence in international markets relative to Pepsi, with two-thirds of its sales coming outside of the United States. For Pepsi, foreign markets account for only one-third of its sales.

For Pepsi, the path towards integration and consolidation began with their own company-owned bottling network. In the 1950s, Pepsi purchased several of their own franchisees because of poor performance. "By 1959 Pepsi-Cola was its own bottler in 22 major U.S. markets, including metropolitan New York City, Houston, Philadelphia, Pittsburgh, and St. Louis" (PepsiCo, 2001). Pepsi Bottling Group (PBG), a subsidiary of PepsiCo, administered a growing network of bottlers as the purchases of independent bottlers accelerated in the 1980s. "Acquisitions in the late 1980s totaled more than 80 franchises, including the bottling operations of General Cinema and Grand Metropolitan (then the #3 independent US Pepsi bottler)" (Pepsi, Bottling Group, Hoover.com, 2010). PBG mergers continued into the next decade so that by 1997, "the top 10 US Pepsi bottling operations (including #1 company-owned Pepsi-Cola Bottling) distributed more than 80% of Pepsi's total volume" (Hoover.com). The reorganization of operations along regional lines quickly followed these purchases.

These efforts continued so that by 1998, PepsiCo and Coca-Cola had ownership or equity interests that accounted "for approximately 73% and 77%, respectively, of their U.S. sales" (Saltzman, et. al., 12, 1999). The rationalization of bottling operations quickly followed these organizational changes as the number of bottling plants fell while production volume per plant

increased. Table I below shows changes in the number of bottling operations and the scale of production over time for all U.S. plants.

Table I: Number and Average Production of U.S. CSD Bottling Plants			
Year	Number Of Plants	Total Cases	Average Cases Per Plant
1970	3054	2,971,000,000	972,823
1980	1859	4,930,000,000	2,651,963
1990	807	7,780,000,000	9,640,644
1998	498	9,880,000,000	19,839,357
From Saltzman, Levy, & Hilke, 1999.			

From 1970 to 1998, the U.S. Carbonated Soft Drink Industry experienced an 83.7% decrease in the number of bottling plants. During the same time, productivity per plant as measured in average cases per year increased nearly twenty fold. Table II below shows the changes in number of plants for Coca-Cola and PepsiCo for the years 1983, 1987, and 1998.

Table II: Number of Coca-Cola and PepsiCo Bottlers		
Year	Coca-Cola Bottlers	PepsiCo Bottlers
1983	319	256
1987	192	180
1998	94	119
From Saltzman, Levy, & Hilke, 1999.		

These operations also experienced a dramatic increase in the scope of their operations with the introduction of new brands and new types of packaging. “From 1985 to 1993, PepsiCo introduced, acquired, or formed joint ventures to distribute nine beverages, including Lipton Iced Teas, Ocean Spray Juices, All Sports Drink, H2O! Sparkling water, Avalon bottled water, and Mug root beer” (PepsiCo, 2001). Similarly Coca-Cola by the mid-1990s had added the sports drink POWERade, the Fruitopia line, Nestea and Nescafe brands of tea and coffee drinks, and Barq’s root beer to their line-up (Coca-Cola Company, 2005). The same time period witnessed changes in the composition of packaging of beverages. Table III below shows the types of containers employed by all CSDs for the years 1970, 1982, 1990, and 1998. In 1970, sixty percent of all containers were returnable glass while plastic containers had not been introduced. By 1998, a majority of containers were plastic and glass containers had virtually disappeared from the marketplace. This shift away from glass containers towards plastic and metal cans required significant changes to bottling equipment and operations.

Table III: Container Type (Percentage of Total Volume)

Year	Metal Cans	Plastic All Types	Plastic 20 oz.	Plastic 2 Liter	Plastic 3 Liter	Glass Non-Ret.	Glass Return.
1970	20%	n.a.	n.a.	n.a.	n.a.	20%	60%
1982	36.5%	21.4%	n.a.	19.9%	n.a.	15.7%	26.4%
1990	54.4%	33.6%	0.2%	26.0%	2.8%	11.4%	0.6%
1998	48.3%	50.9%	15.3%	23.2%	4.2%	0.3%	0.4%

From Saltzman, Levy, and Hilke, 1999.

In addition to explaining the rationale for vertical integration, capabilities theory provides a basis for understanding other organizational changes that PepsiCo initiated at the time. In the late 1990s, PepsiCo set off an extensive, corporate-wide restructuring effort with the intent of having the company focus narrowly on its core capabilities. Over the years, PepsiCo had become a highly diversified firm. In addition to beverages, PepsiCo through its acquisition of Frito Lay in 1965 had become a major player in the snack food sector with popular brands like Fritos, Cheetos, Ruffles, Lay's potato chips, Rold Gold pretzels, Doritos, and Tostitos tortilla chips. PepsiCo had also aggressively moved into the fast-food business with purchases of Pizza Hut, Taco Bell, and Kentucky Fried Chicken in the 1970s and 1980s (PepsiCo, 2001).

With arrival of CEO Roger Enrico in 1996, Pepsi narrowed its focus on activities it considered core competences, while spinning off dissimilar, non-core businesses. In communicating his business philosophy, Enrico explained that "I started out here [as CEO] with a sense of limitations, not just opportunities" (Gibney, 1999, 1). He argued that PepsiCo needed to "stick to the things we do well and do them better. Stop doing things we don't do well-no matter how alluring they might seem. And put the power of the entire corporation behind a few big initiatives – ones that really count.... [W]e need to do throughout the corporation exactly what we've been doing for years at our strongest businesses, Pepsi-Cola in the U.S. and Frito Lay" (Venkataraman, 2002, 2).

In 1997, PepsiCo spun off its fast-food division with the sale of Tricon Global Restaurants (PepsiCo, Hoovers.com, 2010). "Success in the restaurant business, it seemed, required a set of skills completely different from those required in the snack and beverage businesses. The restaurant business was far more localized and customer-centric. It was not simply about the prompt delivery of tasty, convenient food" (Venkataraman, 2002, 4). With the restructuring and consolidation of bottling operations largely completed, PepsiCo spun off the Pepsi Bottling Group (PBG) as an IPO for \$2.3 billion while retaining a 35% ownership stake. In the deal, PBG retained two PepsiCo officials on its board of directors while also giving PepsiCo the right of approval over its annual operating plans (Pepsi Bottling Group, 2001). PepsiCo's relationship with their bottlers now closely mirrored Coca-Cola's.

These spin offs allowed PepsiCo to focus its efforts in promoting its core beverage and snack-food businesses. The similarity of these two businesses with respect to activities like

advertising, marketing, and promotion within the same retail channels greatly facilitated this change in focus. CEO Enrico “launched an initiative called ‘Power of One’ aimed to take advantage of the synergies between Frito-Lay’s salty snacks and the beverages of Pepsi-Cola. This strategy involved persuading grocery retailers to move soft drinks next to snacks, the pitch being that such a placement would increase supermarket sales. In the process, PepsiCo would gain sales of both snacks and beverages while Coca-Cola could benefit in the latter area” (International Directory of Company Histories, p. 6).

Era of Market Fragmentation

With a strong foundation in place, PepsiCo expanded its product lines in both beverages and snacks outside of their traditional offerings. While soda sales in the 1990s were robust, growth began to slow later in the decade as consumers began to move away from carbonated soft drinks towards other, often more healthy alternatives (Beverage Digest, 2010). In response to this shift in consumer preferences, PepsiCo acquired Tropicana in 1998 with the intent of selling healthier products and tapping into the “morning daypart” category (Venkataraman, 2002, 6). In 2001, it purchased the Quaker Oats Company, bringing in brands like Gatorade which controlled over 80% of the sports drink market and healthier snacks like granola bars, rice cakes, and oatmeal bars. Additionally, PepsiCo bought the South Beach Beverage Company which produced the SoBe brand of non-carbonated soft drinks that featured organic ingredients (PepsiCo, 2001).

By the late 1990s, Coca-Cola similarly looked again to aggressively expand its product line. “Having restructured its worldwide bottling operations ..., the firm moved into a new phase of growth based on the acquisition of other companies’ brands” (Coca-Cola Company, 2005). Unfortunately, governmental authorities in numerous countries frustrated many of their attempts. “An agreement to buy about 30 Cadbury Schweppes beverage brands – including Canada Dry, Dr. Pepper, and Schweppes – outside the US and France was scaled down because of antitrust concerns. Completed in 1999, the deal also excluded Canada, much of continental Europe, and Mexico” (Coca-Cola Company, Hoovers.com, 2010). Despite these and other setbacks, Coca-Cola dramatically increased its offerings in the first decade of the new century. Coke added new cola-based products with lemon, lime, vanilla and black cherry flavored versions. It also introduced the Dasani brand of bottled water and purchased Mad River Traders and Odwalla which produce teas, sodas and juices. Many of its attempts to expand its product line occurred in foreign markets where Coca-Cola enjoys the bulk of its sales. In 2007, Coca-Cola acquired Glaceau, producer of vitamin water and Fuze Beverages, another producer of teas and juices (Coca-Cola, Hoovers.com, 2010).

The shift in consumers’ preferences away from traditional carbonated soft drinks towards these new alternatives accelerated in the 2000s. Not only had sales growth in carbonated soft drinks slowed, U.S. sales volume actually has declined each year since 2004. In 2009 alone,

Coca-Cola and PepsiCo suffered 3.9% and 5.0% declines in CSD volume, respectively (Beverage-Digest, 2010, 1). Per-capita U.S. consumption of carbonated soft drinks in 2009 had fallen 14.8% since their peak in 1998 (Beverage-Digest, 2010, 2). “[N]oncarbonated drinks now make up approximately two-thirds of the beverage market in North America. That figure was about 40 percent a decade ago” (Mitchell, 2009). These changes in consumer tastes forced PepsiCo and Coca-Cola to adapt, yet again, to a rapidly changing economic environment. Both companies responded by introducing a wide array of diverse, non-carbonated drinks. A new set of dynamic transaction costs, however, threatened the ability of Coke and Pepsi in adjusting to new market realities.

Success in the new environment required Coca-Cola and PepsiCo to dramatically increase the number and variety of offerings outside of the traditional CSD category. Profitability depended upon their ability to efficiently supply many, low volume niche brands to meet the demands of an increasingly fragmented market. These new market imperatives created significant challenges for the bottling system. The editor of Beverage Digest, John Sicher sums up these challenges. “The old bottling system was based on a world where there were a relatively small number of carbonated soft drink products that grew every year.... That’s what the bottlers know. Everything is changing now” (Warner, 2009, 2). The manufacturing capabilities of bottlers often faced difficulties in producing these new products. “As the industry moves from a heavy reliance on carbonated soft drinks, some soft drink bottlers don’t have the equipment to manufacture the non-carbonated drinks and many are sold in small volume” (Cimulluca, et. al, 2010).

The proliferation of new, low volume products challenged “direct store delivery” (DSD), the traditional method of distribution employed by bottlers. In DSD, bottlers deliver beverages directly to the retailer, put them on the shelves, and handle all aspects of merchandising. Bottlers will make frequent deliveries to make sure that shelves are fully stocked and that merchandise is fresh and properly displayed. They often made multiple deliveries each day to large retailers like Wal-Mart. This method has been extremely successful in distributing high volume products like Coke and Pepsi’s traditional CSD beverages. The frequent deliveries, restocking, and merchandising efforts associated with DSD, however, are not cost effective for the distribution of many, low volume beverages (Venkatarman, 2002).

Under warehouse distribution systems, product is shipped directly to retailers’ warehouses who handle all storage, stocking, and merchandising functions. The warehouse system “is cheaper and more efficient for smaller volume products like teas and water that are growing in popularity” (Cimulluca, et. al., 2010, A1). In addition to the popularity of its offerings, the cost advantage of warehouse distribution for newer products partially motivated PepsiCo’s acquisition of Quaker in 2001. “PepsiCo’s merger with Quaker [Oats] dramatically expanded the company’s broker-warehouse distribution capabilities, adding the large and efficient warehouse system used for Quaker and Gatorade products” (Venkatarman, 2002, 12). Additionally, large retailers like Walmart often prefer the warehouse method of distribution to

DSD for lower volume items because it allows Wal-Mart to use its highly efficient inventory management system (Terhune, 2006).

The negative response of small, independent bottlers to attempts by Coca-Cola to introduce warehouse delivery illustrates the “dynamic transaction costs” associated with convincing these bottlers to follow suit. In 2006, Coca-Cola and Coca-Cola Enterprises (which accounted for 77% of Coke’s US sales) agreed to ship Powerade, Coke’s sports drink, directly to Wal-Mart’s warehouses. In return, Wal-Mart agreed to provide additional space for Powerade on its stores’ shelves. Wal-Mart already had agreements in place with PepsiCo to ship Gatorade directly to Wal-Mart’s warehouses. In February, fifty five small, independent bottlers (responsible for 10% of sales) sued Coca-Cola and CCE for violation of contract with the bottlers (Terhune, 2006). “The standard contract with bottlers said that, except for food service accounts such as restaurants or airlines, the sports drink ‘shall not be warehoused delivered by’ Coke” though it didn’t address delivery by bottlers (Terhune, 2006). According to Chad Terhune, the bottlers’ motivation for the suit lay in the precedent this action set for future business dealings. “Their concern is that straight-to-warehouse delivery will prove pleasing to Wal-Mart, that other chains will demand it, and that it would inexorably spread to other drinks and bottlers. The small bottlers then would see their close relationships with grocers diminished, and local marketing would suffer. Those relationships are the main way the bottlers feel they can drive sales in their territories – and thus their own business success” (Terhune, 2006, A1). Donald Knauss, then the head of Coke’s business in North America, expressed his frustrations with the bottling system as it existed at the time: “It’s about having one system that operates in concert.... We can’t keep having internal debates where 20 bottlers want to do it this way and another 35 bottlers want to do it that way. I don’t think we can grow unless we adapt to how the customer landscape has changed” (Terhune, 2006, 2).

In August of 2009, PepsiCo announced an agreement to acquire all of the outstanding shares of its two largest bottlers, Pepsi Bottling Group and PepsiAmericas. In describing the impetus for the merger, CEO Indra Nooyi explained that “[t]he fully integrated beverage business will enable us to bring innovative products and packages to market faster, streamline our manufacturing and distribution systems and react more quickly to changes in the marketplace, much like we do with our food business” (de la Merced, 2009). The acquisition of its two largest bottlers “will give Pepsi control over 80% of its beverage volume and is likely to boost the outlook for non-soda brands like Gatorade and Aquafina, which bottlers often overlook” (Warner, 2009). Coca-Cola announced in February 2010 its decision to buy the balance of Coca-Cola Enterprises. Coca-Cola CEO Muhtar Kent explained that “[f]undamental industry forces have altered the consumer, customer and competitive landscape. Our franchise system cannot remain static. We have to create the next generation of high-return opportunities” (McKay, 2010).

Only time will tell if Coca-Cola's and PepsiCo's integration strategies are successful. What is apparent is that the "dynamic transaction costs" that emerged between CMs and their bottlers were major obstacles that impeded the ability of the industry to adapt to a more diverse and fragmented marketplace. The removal of those obstacles was the primary motivation for Coca-Cola and Pepsi to vertically integrate with their bottling operations. While vertical integration in this case may not be a sufficient condition for success, it certainly seems to be a necessary one.

CONCLUSION

Several mainstream economists have become increasingly critical of the traditional transaction cost explanations for vertical integration. Bengt Holmstrom and John Roberts (1998) contend that too much emphasis has been placed on the provision of incentives in explaining the boundaries of the firm. "In negotiating joint venture agreements, venture capital contracts, or any of a number of other business deals, much time is spent on building in protections against hold-ups. At the same time, such contracts are prima facie evidence that hold-up problems do not get resolved solely by integration of buyer and seller into a single party hold-up problems" (Holmstrom and Roberts, 1999, 74). While investments are often specialized and contracts are incomplete, firms have developed many explicit and implicit mechanisms to align incentives in supporting arms-length relationships. In those cases where vertical integration may be the best response to hold-up problems, often it is investments in specialized capabilities that represent the ultimate source of appropriable quasi-rents because of the difficulty in transferring these capabilities in the market (Monteverde and Teece, 1982). Even if hold-up was not a concern in these circumstances, vertical integration may be necessary, arising from the tacit nature of knowledge embedded in these capabilities. It is the problem of qualitative coordination of tasks in a world of heterogeneous capabilities that ultimately determine the boundaries of the firm.

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