

09-007

The Internalization of Advertising Services: An Inter-Industry Analysis*

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* Earlier versions of this paper were presented at the INFORMS Marketing Science Conferences held at Emory University, June, 2005 and at Singapore Management University, June, 2007. We thank Marko Madunic, Guzel Tulegenova, Katie Hazen, and Len Alper for research assistance; Ernst Berndt for valuable discussions; and Dan Horsky, George John, Kip King, and Peter Klein for helpful comments on earlier drafts. The support of the Division of Research, Harvard Business School, is gratefully acknowledged. The authors are listed in alphabetical order.

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Abstract

The common perception appears to be that vertical integration of advertising services is more the exception than the rule in the U.S. advertising industry. This study investigates the extent of such outsourcing and examines inter-industry variation in the use of in-house rather than independent advertising agencies by U.S. advertisers. While the vast majority of large advertisers employ outside agencies, it comes as a surprise to find that when advertisers of all sizes are considered, about half operate some form of in-house agency. Internalization of advertising services is much more widespread than has hitherto been appreciated and varies widely across industries. To explain this variation, we draw on concepts from research on scale economies and transaction costs to develop a set of hypotheses which we test in cross sectional analyses of data covering 69 two digit SIC industries at two points in time, 1991 and 1999. Across industries, we find that the likelihood of internalization of advertising services decreases as the size of advertising outlays increase but increases as advertising intensity and technological intensity increase and is greater for “creative” industries.

Key words: Advertising Agencies, In-House, Vertical Integration, Make or Buy

1.0 INTRODUCTION

“The man who acts as his own advertising agent sometimes has a fool for a client.”

Nathaniel C. Fowler, (*Fowler's Publicity*, 1904, p.192).

How widespread is the vertical integration of advertising services? And how can variation in the internalization of advertising services be explained? Most large U.S. advertisers rely on independent agencies for advertising services but many other advertisers operate in-house advertising agencies. While no extended time series relating to the use of in-house agencies are available, historical evidence suggests that reliance by major national advertisers on external rather than internal agencies emerged as the dominant industry policy early in the evolution of modern advertising (Pope 1983). Over the years, advertisers' interest in establishing in-house agencies has waxed and waned (Loomis 1972). Despite occasional indications to the contrary, “self-sufficiency” has long been treated as more the exception rather than the rule in the U.S. advertising business (e.g., Gardner 1976, 1988). But industry observers have often noted that utilization of in-house agencies is more prevalent in certain sectors or industries than others (Anderson and Weitz 1986; Clark 2003) and scattered evidence corroborates this view (e.g., Ripley 1991). Whereas inter-industry differences with respect to the purposes and intensity of advertising have been extensively investigated (e.g., Comanor and Wilson 1974; Nelson 1974), inter-industry variation in the integration of advertising services has been neglected. We address this void by investigating the pattern and persistence of industry differences in the integration of advertising services in the U.S.

Research on the economics of the supply of advertising services is scarce (Bagwell 2007). The only study that has addressed governance issues theoretically and empirically is Horsky (2006). Her focus was on the decisions made by large advertisers with respect to the choice between bundled or unbundled advertisers' services (whether purchased externally or organized internally), as observed at the firm level and a single point in time. The present study takes a different approach: (1) we

analyze the effects of industry-specific sources of both production and transaction costs on inter-industry differences in the internalization of advertising services; and (2) we consider vertical integration by advertisers of all sizes at two points in time that bracket a major business cycle in the U.S. economy. This design enables us to develop a comprehensive picture of the extent of vertical integration across the economy during the decade of the 1990's.

We account for inter-industry variation in the relative incidence of advertisers' use of in-house rather than independent advertising agencies by drawing on theories of vertical integration that suggest the scope of a firm is determined by both production and transaction costs. With respect to production costs, advertisers confront a critical tradeoff. If a firm "buys," the compensation paid to the outside agency includes markups on its creative, production, and media costs. The costs the outside agency incurs when purchasing media time and space includes the media suppliers' markup, resulting in inefficiency associated with double marginalization (Spengler 1950). If a firm "makes," it avoids payment of the agency's markups (Bursk and Sethi 1976). But the internalized unit may fail to achieve minimum efficient scale, thereby suffering a cost penalty. That is, an in-house agency, operating on a smaller scale, may sacrifice size-related economies realized by an independent agency serving numerous clients (Silk and Berndt 1993).

The focus on margins, double marginalization, and scale economies is incomplete; transaction costs must also be considered (Lafontaine and Slade 2007). Vertical integration of advertising services may entail investments in transaction-specific assets (Williamson 1975, 1985) such that the cost of organizing them internally is less than that associated with employing an outside agency, as has been suggested by several authors (Anderson and Weitz 1986; Ruekert, Walker, and Roering 1985; Taplin 1963). The leading historian of advertising considers but rejects transaction cost analysis as a possible explanation for the governance structure that developed in the agency business and suggests that advertising services may be an industry where Williamson's (1975) theory "may not hold" (Pope

1983, p. 152), thus lending both institutional and theoretical interest to our research question.

This study advances understanding of vertical integration of advertising services at two levels. First, we find it to be much more widespread than has hitherto been appreciated. Almost half of all U.S. advertisers (large and small) operated some form of in-house advertising unit in the decade of the 1990's.¹ The share of all advertisers with in-house advertising services was 43% in 1991 and increased to 53% in 1999, where the two points in time mark a full business cycle.

Second, we show that across industries, the incidence of such vertical integration varies widely, with the fraction of advertisers within different industries having in-house advertising services varying from one-sixth to three-quarters. Our analysis indicates that this internalization varies systematically across industries in ways consistent with theories of vertical integration. Unlike much "make or buy" research in marketing and elsewhere, we explicitly consider both production and transaction costs in our theoretical and empirical analysis. Industry differences with respect to both production and transaction costs play significant roles in explaining this cross industry variation in vertical integration.

The plan of the paper is as follows. Section 2 develops our hypotheses and reviews pertinent theory and research. Section 3 describes two cross-sectional databases and sets forth the econometric model and method used to test the hypotheses. Section 4 presents our results. Section 5 discusses our findings, limitations of the study, and directions for further research. Section 6 considers the managerial implications of our findings, relating them to current issues and developments surrounding the organization of marketing services. Section 7 summarizes our results and conclusions.

¹ To the best of our knowledge, the only comparable estimates available in the literature are those due to Hasse, Lockely, and Digges (1934) who found that share of advertisers who placed advertising directly with media rather than through agencies was stable at around 24 percent from 1924-27; it then dropped to 19 percent in 1928 just prior to the onslaught of the depression. However, that share rebounded in 1929 to 20 percent and continued rising, reaching approximately 28 percent in 1933, the last year in the series reported.

2.0 THEORETICAL FRAMEWORK AND HYPOTHESIS DEVELOPMENT

The institutional structure that emerged in the U.S. advertising industry's formative years has had a lasting effect on the industry's organization and practices (Pope 1983). Taking account of those institutional arrangements along with contemporary developments pertaining to advertising agency economics and client relations, we develop five hypotheses about inter-industry variation in the internalization of advertising services.

2.1 Scale-Related Economies and Double Marginalization

Costs figure prominently in discussions of the "make or buy" decision found in the trade literature on advertising services (Britt, Donahue, and Foley 1975; Holtze 1981; Newton 1965; Pulver 1979). Can advertisers operate an in-house agency at a lower cost than the compensation required to retain an outside agency? Horsky (2006) has recently noted that this issue may be approached from the viewpoint of the effects of double marginalization (Lafontaine and Slade 2007) and scale economies on the choice between vertical separation and integration.

First, consider the total cost of an advertising campaign for an advertiser who employs a full-service advertising agency.

$$C_a = K_a + \Delta K_a + P_a + \Delta P_a + B_a + \Delta B_a + M_s + \Delta M_s, \quad (1)$$

where:

C_a = Total cost of a campaign for an advertiser employing an outside advertising agency;

K_a = Cost to agency of creative services;

ΔK_a = Margin agency charges advertiser for creative services;

P_a = Cost to agency of production services;

ΔP_a = Margin agency charges for production services;

B_a = Agency's cost of media planning and buying services supplied for advertiser's

campaign;

ΔB_a = Margin agency charges for media planning and buying services;

M_s = Cost to media supplier of time and space for advertiser's campaign;

ΔM_s = Margin media supplier charges on media purchased by agency for advertiser's campaign.

Thus an advertiser employing an independent agency encounters four margins: ΔK_a , ΔP_a , ΔB_a , and ΔM_s . The first three margins relate to the set of services provided by the agency while the fourth margin is that of the media supplier and included in the price of time and space purchased by the agency on behalf of the advertiser.

Next, consider the total cost of a campaign for an advertiser that vertically integrates the services needed to plan, produce, and implement an advertising campaign.

$$C_v = K_v + P_v + B_v + M_v + \Delta M_v \quad (2)$$

where C_v is the total cost of the campaign to the advertiser with vertically integrated services and is equal to the sum of the costs of operating internal creative (K_v), production (P_v) and media (B_v) services plus the cost of the media time and space ($M_v + \Delta M_v$) purchased directly from media suppliers. An advertiser has an incentive to internalize advertising services when there is a cost advantage to doing so, i.e.

$$C_v < C_a \quad (3)$$

or when:

$$(K_v + P_v + B_v + M_v + \Delta M_v) < (K_a + \Delta K_a + P_a + \Delta P_a + B_a + \Delta B_a + M_s + \Delta M_s) \quad (4)$$

One argument often made in favor of establishing an in-house agency stresses the potential cost savings realized by avoiding the margins an agency charges over and above the costs incurred in supplying the services (i.e., the terms ΔK_a , ΔP_a , and ΔB_a on the right-hand side of (4)).

Integration further eliminates the informational equivalent of "double marginalization" which involves the three agency margins referred to above plus the margin demanded by the media

supplier (ΔM_s). In the vertical relationship where an advertiser employs an agency and the agency buys time and space from a media supplier, both the agency and the media supplier demand margins over and above their costs. In setting their margins, both the agency and media supplier ignore the negative consequences of their actions on the other's profits in that an increase in either margin reduces the overall demand for advertising services. Thus, each "inflates" their respective margin. Hence, the advertiser has an incentive to promote efficiency by internalizing the agency's functions and thereby avoid paying the agency's margins.²

But this line of argument which concentrates on the margins (and the fact that they are smaller on the left hand side than on the right hand side of inequality (4)) ignores the magnitude of the cost terms in inequality (4); that is: $(K_v + P_v + B_v + M_v) \leq (K_a + P_a + B_a + M_s)$. It tends to underestimate the scale-related economies available to an external agency through pooling the demands from many different clients. Prior research has shown that advertising agency operations are indeed subject to significant scale and scope economies. Silk and Berndt (1993) estimate that the minimum efficient size of a full-service agency required a gross income of \$3-4 million in 1987 dollars or equivalently, expenditures in the range of \$25-33 million; assuming agency gross income represented 12% of client billings. Clearly, an expenditure of that magnitude exceeds the advertising budgets of numerous firms. Since an in-house agency usually serves a single client (Pulver 1979), it may sacrifice scale-related economies. Then, the reverse of (3) and (4) holds, such that $C_v > C_a$, and use of an outside agency is less costly than operating an in-house agency.

Silk and Berndt (1993) observed that in 1987, each of the 100 largest national advertisers had expenditures that exceeded the estimated minimum efficient agency size but less than 5% of them operated an in-house agency. Moreover, Schmalensee, Silk, and Bojanek (1983) had earlier shown that

² Spengler (1950) has shown that for a vertical market structure with successive stages of monopoly, the integrated industry realizes more profits than the nonintegrated industry and the final price is lower under integration.

larger agencies tended to have not only more accounts, but also larger accounts, than smaller agencies. When negotiating compensation agreements, large advertisers are in a stronger bargaining position than smaller advertisers to capture size-related economies available to agencies. Pursuit of this advantage has been facilitated by the changes in compensation methods wherein billings-based commissions have been replaced by labor fee-based arrangements. As part of this shift in compensation practices, it has become commonplace for clients to review their accounts' profitability and to audit agency costs (Beals 2007).

Furthermore, agencies with larger accounts are in a stronger bargaining position with media suppliers enabling them to capture size-related economies associated with larger purchases of media space and time. This effect could lead to $(M_s + \Delta M_s) < (M_v + \Delta M_v)$. In addition, agencies having more accounts realize size-related economies with respect to other services that may result in $(K_a + P_a + B_a) < (K_v + P_v + B_v)$.

Overall, vertical integration is expected to be more likely among small advertisers seeking to avoid double-marginalization than among large advertisers seeking to take advantage of size-related economies available to independent agencies. Thus, we hypothesize:

H1: *The greater the volume of advertising services demanded by a client, the greater the scale-related cost advantage of an external advertising agency serving multiple clients, and the less the likelihood of vertical integration.*

2.2 Transaction Cost Analysis

2.2.1 *Theoretical Framework.* Following Rindfleisch and Heide (1997), Williamson's (1975, 1985) framework may be summarized as consisting of two basic assumptions about human behavior (bounded rationality and opportunism) and two fundamental dimensions of transactions (asset specificity and uncertainty). The interaction of these behavioral and transaction factors gives rise to a set of governance problems: (a) safeguarding specific assets in the face of opportunism; (b) adapting contractual arrangements under conditions of bounded rationality and uncertainty; and (c)

evaluating contractual performance given asset specificity and opportunism. The presence (or absence) of these governance problems affects the magnitude of transactions costs a firm will face when it chooses to rely on market exchange. When the costs of addressing these governance problems are sufficiently high to offset any advantage with respect to production costs available to an external supplier, a firm will opt for vertical integration.³ We now apply these concepts to advertising services.

2.2.2 Transaction Costs and Agency-Client Relations. Williamson (1985) maintains “the most critical dimension for describing transactions is asset specificity” (p. 30) which he defines as “durable investments that are undertaken in support of particular transactions, the opportunity cost of which investments is much lower in best alternative uses or by alternative users should the original transaction be prematurely terminated” (p. 55). Of the various types of asset specificity recognized in transaction cost analysis, human asset specificity is the most relevant here inasmuch as two-thirds to three-quarters of an advertising agency’s total costs are for labor-related expenses (Comanor, Kover, and Smiley 1981; Silk and Berndt 1993.)

A specific human asset exists in the account team formed within an agency to serve a client. Such teams consist of personnel from various areas of expertise (e.g., planners, creative, media, and research) who frequently interact with client representatives in planning, developing, and producing campaigns. Thus, an advertising campaign is the outcome of the coordinated efforts of the client and agency and may be described as co-produced (Broschak 2004). In carrying out their tasks, agency personnel acquire specialized knowledge about the client’s products, markets, strategy and organization. As Anderson and Weitz (1986) point out: “Such knowledge is a valuable company-

³ See David and Han (2004) and Macher and Richman (2008) for reviews of empirical research of transaction cost economics.

specific capability” (p. 16). Part of the specialized knowledge acquired by agency personnel in the course of working with a particular client relates to conditions that prevail in the particular industry where the client operates. Hence, the value of the specialized human assets that resides with an account team consists of both client-specific and industry-specific components.⁴ The magnitude of the industry-specific component affects the value of account personnel if they are redeployed to another client in the same industry and that value is likely to vary across industries, given industry differences in the nature and use of advertising (Comanor and Wilson 1974).

That the value of specialized human capital contains industry-specific as well as client-specific elements is suggested by several agency practices. Agency personnel typically serve on the accounts of more than one client (American Association of Advertising Agencies 1987) and are highly mobile over the course of their careers, moving not only between agencies but also from agency to client organizations (Broschak 2004). Recognition that human assets have a high value when redeployed to another account in the same industry is reflected in the longstanding norm that prohibits an agency from serving the account of a competitor of a current client (American Association of Advertising Agencies 1979; Stone 1989). The exclusivity agencies grant clients is customarily limited to a single product category or industry and agency-client contracts generally include a clause that defines conflict explicitly by delineating the bounds of competition (Stone 1989).

Long-term agency-client contracts are rare (Comanor, Kover, and Smiley 1981; Stone 1989) and the duration of agency-client relationships is highly variable, from months to decades (Broschak 2004). In the absence of long-term contractual safeguards or the freedom to employ industry or product-specific knowledge concurrently on accounts of competing clients, agencies may underinvest in specialized knowledge. By providing relatively greater security of employment, integration can induce higher investments in specialized knowledge by agency personnel. It also bears noting

⁴ The multidimensionality of asset specificity has been recognized in other TCE research. For example, Anderson (1988, pp.

that agency-client contracts specify that the property rights to the content of the advertising messages created by an agency (such as slogans and symbols) are vested in the client (Stone 1989). Hence, a client has no incentive to integrate in order to acquire property rights to advertising content.

2.2.3 Advertising Intensity and Human Asset Specificity. It has long been observed that differentiated products tend to be more heavily advertised than relatively undifferentiated ones and thus advertising intensity (ratio of advertising expenditures to sales revenue) is often used as a proxy for the importance of product differentiation in industry competition (Comanor and Wilson 1974). As discussed above, the development and production of advertising campaigns involves outlays for nonstandard, campaign-specific inputs generated by account teams. Campaign costs are sunk in the sense of being irrecoverable and last period's campaign affects this period's environment (Sutton 1991). More differentiation is likely to require more transaction specific investment (Dyer 1996; Lajili, Madunic, and Mahoney 2007). Thus, following Levy (1985) and Gatignon and Anderson (1988), advertising intensity can be taken as a proxy for transaction-specific investments undertaken in connection with product differentiation and therefore, vertical integration of advertising services and advertising intensity are expected to be positively related. Therefore, we hypothesize:

H2: *The greater the intensity of advertising, the greater the investment in client specific human assets required to develop and produce advertising campaigns, and the greater the likelihood of vertical integration of advertising services.*

2.2.4 Technological Intensity and Human Asset Specificity. Most business transactions involve some specialized knowledge but the potential gains from specialized knowledge are likely to be largest in technological industries. Williamson (1985) summarizes: "A more harmonious and efficient exchange relation - better disclosure, easier reconciliation of differences, more complete cross cultural adaptation, more effective team organization and reconfiguration - predictably results from the substitution of an internal governance relation [integration] for bilateral trading under those

256-7) identified seven dimensions of asset specificity and grouped them into company and customer categories.

recurrent trading circumstances where assets, of which complex technology transfer is an example, have a highly specific character" (p. 294). Lodish (1983) makes a similar point in the advertising context: "[I]f your product or service is very technical and very specialized, so that an outside creative person would have to spend months learning about the business in order to be able to write copy, it might be appropriate to have an in-house creative team" (p. 106). He argues that media buying may also be subject to the same logic, since highly technical products may require specialized media that are better known to the advertiser than to any outside agency.

Kahn (1986) has argued that advertising professionals typically have experience in consumer marketing and the knowledge and skills acquired there tend not to be transferable to the development and execution of advertising programs for complex, technology-based industrial products. Probably the best-known in-house agency was one operated by General Electric for more than half a century, offering a wide variety of communications and promotion services to the firm's diverse businesses (Burnside 1991). One motive for General Electric's in-house agency was the technological sophistication of its products (Burnside 1991). Thus in the case of technologically intensive industries, vertical integration into advertising services serves to protect human asset specific investments; hence:

H3: *Vertical integration into advertising services is more likely in technologically intensive industries in order to protect human asset specific investments.*

2.2.5 *Retailing and Temporal Asset Specificity.* Another type of asset specificity, first proposed by Masten, Meehan, and Snyder (1991), is "temporal specificity" that arises "when timely responsiveness by on-site human assets is vital" (Williamson 1996, p. 106). Some assets require timely but sequential performance by both transacting parties, thus creating a window for opportunism by delaying one stage of the process. The transaction between advertiser and provider of advertising services may be subject to high temporal asset specificity.

Temporal asset specificity is especially important in retailing. Some advertising programs are undertaken for the purpose of reputation/image-building while others are intended to attract consumer traffic to store locations. The latter type of advertising emphasizes price and availability of store merchandise and requires knowledge of local market conditions (Lal and Matutes 1994). Coordination both internally (among departments within a retailing organization) and externally (with merchandise vendors and advertising service providers, including local media) is crucial to the effectiveness of such programs. Failure to execute advertising to attract consumers promptly can undermine its competitive impact. Disclosure of such information to competitors may also be damaging. By removing boundaries separating retailer and agency, integration can improve coordination and communication of sensitive information, and thereby reduce transactions costs. Therefore, we hypothesize:

H4: *Vertical integration into advertising services is more likely in retailing to protect temporal specificity and thereby facilitate the timely use of local market information and internal coordination in developing and producing advertising campaigns.*

2.2.6 *Creative Industries and Transaction Similarity.* Another dimension of transactions is “transaction similarity,” first proposed by Coase (1937) in his classic paper where he argued that the cost of internal organization would increase with the “dissimilarity” of transactions. Masten, Meehan, and Snyder (1991) further developed the comparative transaction cost rationale underlying Coase’s suggestion and advanced the hypothesis that “transactions that are similar to ones in which the firm is already engaged are more likely to be integrated” (p. 8). Advertising services fit Caves’ (2000) concept of a “creative industry” possessing “bedrock” properties that differentiate them from other economic sectors⁵. Advertising agencies are commonly described as “idea” businesses (Backer 1993) and creativity in advertising is the elusive quality prized by agencies and sought by clients in their

⁵Caves emphasizes: “...creative goods and services, the processes of their production, and the preferences or tastes of creative artists differ in substantial and systematic (if not universal) ways from their counterparts in the rest of the economy where creativity plays a lesser (if seldom negligible) role” (2000, p.2).

ongoing search for “breakthrough” advertising. Disagreements about creative processes and products are a notoriously commonplace source of disharmony in agency-client relations (Michell 1988). Organization theory has long emphasized that the type of organization structure that enhances creativity and innovation differs from that designed to facilitate efficiency (Daft 1986, Chapt. 7; Tushman and O’Reilly 1997). Similarly, the fostering of creativity calls for different control and reward systems from those typically relied upon in business organizations (Amabile 1996, 1998). Concern about an in-house agency’s ability to attract and retain creative personnel is often expressed in discussions about the viability of such operations found in the trade press (e.g., Pulver 1979). To illustrate, the chairman of Procter & Gamble informed shareholders during the wave of agency mergers in the mid-1980’s that the firm had considered acquiring a full-service advertising agency. The idea was ultimately rejected on the grounds that it was unlikely that an in-house operation could match the creativity of external agencies (Alter 1986).

Thus in industries where creativity is critical to their core businesses, firms may be expected to engage routinely in transactions similar to those associated with advertising services. By internalizing advertising services, such firms may exploit economies of scope as a result of past investments made in human assets and management systems, and thereby reduce transaction costs below the level that would prevail were they to employ outside agencies.

H5: *Vertical integration into advertising services is more likely in creative industries where transactions relating to advertising services are similar to those already undertaken in connection with core business activities and scope economies are available.*

3.0 DATABASE AND ECONOMETRIC METHODOLOGY

This section describes the database employed along with definitions of variables. The econometric model and estimation method used for hypotheses testing are then presented.

3.1 Industry Cross Sections

As Caves and Bradburd (1988) observe: “Testing hypotheses about vertical integration on cross sections of industries is attractive for the variance it supplies in the structural determinants and for the chance to observe entities in presumed long-run equilibrium” (p. 265).⁶ Our hypotheses are formulated at the industry level and the data analyzed here consists of two years of annual observation (1991 and 1999) for a cross section consisting of the same set of 69 manufacturing and service industries, as defined by two-digit SIC categories.⁷

Demand for advertising is cyclical (Blank 1962) and shifts in interest in the use of in-house agencies have sometimes been attributed to the business cycle (Haase, Lockley, and Digges 1934; Loomis 1972). The years 1991 and 1999 bracket a business cycle in the U.S. economy as a whole, as dated by the National Bureau of Economic Research (2005). The downturn occurred in the advertising industry in 1991, when for the first time in four decades, total U.S. advertising expenditures declined by 1.6% from the previous year (measured in current \$). Throughout the remainder of the decade, expenditures grew steadily until 2000, when another decline occurred. 1991-99 was also a period when agency compensation was steadily shifting away from billings-based commissions to labor rate-based fees (Arzaghi et al. 2008, Beals 2007).

Schmalensee (1989) draws attention to the bias that may arise from cross sectional studies when departures from long-run equilibrium are correlated with the independent variables. He emphasizes the desirability of replicating cross sectional studies over time and using panel designs to check the robustness of results. The 1991 and 1999 cross sections employed here constitute a balanced panel and permit assessment of the stability of results over time while controlling for unobserved industry factors that remained fixed over this time interval.

⁶ Other studies of vertical integration using inter-industry analysis include Balakrishnan and Wernerfeldt (1986) and Levy (1985). Also see Hubbard (2008) on the contribution of cross-industry studies in providing stylized facts on firm boundaries.

3.2 Variable Definitions

The key variables were operationally defined as follows⁸:

SVI_{it} = Share of the total number of advertisers in industry i reporting use of an in-house agency in year t , $0 < SVI_{it} < 1$. $i = 1, 2, \dots, 69$. $t = 1991$ or 1999 .

NUN_{it} = The number of advertisers in industry i in year t .

ADX_{it} = Mean advertising expenditure per advertiser in industry i during year t , 000's constant \$1991.

ASR_{it} = Mean advertising intensity per advertiser in industry i during year t , ratio of advertising expenditures to sales revenue, expressed as a percentage where both series were deflated separately to constant \$1991.

TECH = Dummy variable to denote a technological industry, as defined in Table 2.

RETL = Dummy variable to denote a retailing industry, as defined in Table 2.

CRET = Dummy variable to denote a creative industry, as defined in Table 2.

As defined above, ADX and ASR are taken as measures of advertising spending and intensity, respectively, for a representative advertiser in an industry. The source of information on advertisers and agencies is the Standard Directory of Advertisers (1992, 2000) that reports the names of agencies employed by advertisers, and distinguishes between use of in-house and independent agencies. The Standard Directory also includes other information about advertisers, including SIC industry code, advertising expenditure, and sales revenue.

Consistent with previous research on firm boundaries and governance, we examine the outcomes of decisions made by "advertisers," the relevant competitive unit in an industry that included divisions or business units of multidivisional firms as well as firms operating in a single industry. Accordingly, using data in the Standard Directory of Advertisers, we classified each advertiser as having either an in-house or an outside agency and calculated the share (SVI_{it}) of all advertisers

⁷ The only two-digit SIC categories excluded were government (#43 and #91-96), wholesale trade (#50-51), legal (#81) and miscellaneous services (#88-89). A listing of the VI shares by SIC category is available upon request.

⁸ In our analysis, monetary variables are expressed in constant \$1991. Advertising series were deflated using the McCann-Erickson cost per thousand exposures (CPM) indices for national and local budgets available from Robert Coen, Universal

(NUN_{it}) in a given SIC industry and year operating an in-house agency. As is evident from the summary statistics presented in Table 1, both cross sections exhibit considerable variability across SIC categories with respect to vertical integration share (SVI) as well as the two advertising variables (ADX and ASR).

INSERT TABLE 1 HERE

The Standard Directory claimed coverage of U.S. advertisers with annual advertising expenditures of \$75,000 or more in 1991 and \$200,000 or more in 1999 (\$142, 000 in constant 1991 dollars). The number of advertisers listed for which agency, advertising expenditure, sales revenue, and SIC information was available was 9,527 in 1991 and 15,548 in 1999. Collectively, the advertising expenditures (\$ current) reported by the firms included in the cross sections amounted to \$65.45 billion for the 1991 sample and \$100.98 billion for the 1999 sample (or \$71.82 billion in constant 1991 dollars).⁹ Those amounts represent 50.66% and 46.74% of total advertising expenditures reported by all U.S. corporations in 1991 and 1999, respectively, as measured by the Internal Revenue Service (Statistics of Income, 1991, 1999) from corporate tax returns.

Across all SIC industries, the weighted (by the number of units within each industry) share of all units classified as having vertical integrated advertising services was 43.26% in 1991 and 53.38% in 1999. Surprisingly, about half of all advertisers had internalized at least some of their advertising services. The vertical integration shares for the common SIC categories co vary moderately across the two years ($r = .541$) with the shares for 57 of the 69 SIC categories being larger in 1999 than in 1991. As shown in Table 1, for both years, the magnitude of SVI varies widely across industries (from one-

McCann, New York. All other series were converted to \$1991 using the GDP implicit price deflator reported by the U.S. Bureau of Economic Analysis (Economic Report of the President (2002), Table B-3).

⁹ The information reported in the Standard Directory of Advertisers tends to be more complete for large advertisers as compared to smaller ones and this tendency appears more pronounced in 1991 than in 1999. While the number of advertisers included in the 1999 Standard Directory was more than 60 percent greater than in the 1991 version, this expanded coverage apparently captured comparatively more smaller advertisers than was the case for the 1991 sample. Although the two cross

sixth to three-quarters or more) but the standard deviations of the two distributions are very similar (.116 and .127). Turning to the two advertising variables, we see from Table 1 that the medians and standard deviations for both ADX and ASR (constant \$1991) are greater for the 1991 cross section than for 1999. The relative dispersion (as indicated by the values of the coefficients of the variation) of ADX is virtually identical for the two years but for ASR, the coefficient of variation is greater in 1999 than 1991. Across the 69 industries, the correlation between the 1991 and 1999 values of both ADX and ASR is high ($r = .725$ for ADX and $r = .779$ for ASR).

Three hypotheses relate to particular types of industries: technological, retailing, and creative. For each, we set criteria for inclusion and then identified the two-digit SIC's that satisfied the criteria, using a separate dummy variable for each industry. The composition of each of the three industry groups is shown below in Table 2.

As discussed in Section 2.2.4, technological industries are associated with human asset specificity. Guided by information on R&D intensity (National Science Foundation (NSF) 1991), we assigned six SIC categories (Chemical Products, Industrial Machinery, Electronic Equipment, Transportation Equipment, Instruments, and Business Services) to the technology group shown in Table 2. The first five industries spent above average amounts on research and development, measured as a percentage of sales. Since the NSF data covers only manufacturing industries, we added a sixth, "Business Services," a category that includes software development as a major component. The retailing sector is readily identified in the SIC classification and contains the 8 SIC categories listed in Table 2.

Throsby (2001) defines "cultural goods and services" as those that "involve creativity in their production, embody some degree of intellectual property and convey symbolic meaning" (p. 112). Caves (2000) refers to "creative" industries as those "supplying goods and services that we broadly

sections of advertisers accounted for approximately half of total U.S. advertising expenditures in each of 1991 and 1999, their

associate with cultural, artistic, or simply entertainment value” (p. 1). Howkins (2001) lists a set of “core creative industries” that produce intellectual property in the form of patents, copyrights, trademarks, and proprietary designs. Relating these conceptions of creative industries to SIC categories, we identified four industries that involve the creation of intellectual property (Apparel, Furniture, Printing, and Engineering Services) plus another pair that are communications media (Communications and Motion Pictures). The activities of this second set of industries relate to two major advertising services, message creation and media placement.

INSERT TABLE 2 HERE

3.3 Model Specification and Estimation

We use a logistic regression model to test our hypotheses. The dependent variable of interest, SVI_{it} , is the share of the NUN_i advertisers in an industry who use vertically integrated advertising services rather than outside agencies. Since the observed SVI_{it} represent grouped data, the values of which fall within the interval 0 and 1, we apply the logit transformation to the SVI_{it} proportions (Ashton 1972). The full model used to test jointly the five hypotheses presented earlier is specified as:

$$\text{Log}\{SVI_{it}/1-SVI_{it}\} = \alpha_t + \beta_t \text{LADX}_{it} + \gamma_t \text{LASR}_{it} + \theta_{1it} \text{TECH} + \theta_{2it} \text{RETL} + \theta_{3it} \text{CRET} + \varepsilon_{it},$$

(5)

where LADX and LASR are the natural logarithms of the advertising expenditure and advertising intensity variables, respectively. The logarithmic transformation allows for possible non-linear effects; TECH, RETL, and CRET are dummy variables representing the sectors defined in Table 2; ε_{it} is a random disturbance term; and α , β , γ , and the θ 's are parameters to be estimated. Summary statistics for the variables in (5) are presented in the Appendix (Tables A1-A3).

To investigate the possibility that the two advertising variables in model (5) may be jointly determined along with the share of vertically integrated advertisers, we developed a set of

representativeness of all U.S. advertisers in those years is open to question.

instrumental variables and then conducted tests for endogeneity (Hausman 1978) of the two advertising variables for each cross section.

Instrumental variables (IV's) were defined using information compiled annually by the IRS from individual corporate tax returns and reported as aggregate amounts across firms for two-digit SIC categories. The IRS data used for instruments essentially represent corporate population totals for the various SIC categories and thus can be distinguished from the measures of ADX and ASR that were obtained from the Standard Directory of Advertisers.

Studies of advertising budgeting practices indicate that it is commonplace for advertisers to begin with last year's budget and then adjust that level upward or downward according to expectations about developments in the coming year (Farris and West 2007). In order to reduce any correlation between instruments and the disturbance term in (5), values of all IV's were lagged two years. In addition to two year lagged values of ADX and ASR as measured by the IRS data, three additional IV's were obtained from this source: percentage gross margin (GMR or business receipts minus costs of sales and operations divided by business receipts); percentage net income (NIR or net income as a percentage of business receipts); and mean income tax (MTX). GMR approximates the Learner price-cost margin that is often used as an indicator of product differentiation. If advertising increases product differentiation, then GMR should be positively related to advertising spending (cf., Boulding, Lee, and Staelin 1994). NIR is a measure of profitability; theory predicts and empirical studies confirm that advertising intensity is positively related to average industry profits (see Schmalensee 1989 for a review). Finally, the income tax (MTX) a firm pays is related to its profitability but the rate at which corporate income is taxed is determined exogenously.

For each cross section, the results from the Hausman (1978) test indicated that the null hypothesis of exogeneity for ADX and ASR could not be rejected (1991: $\chi^2 = 2.123$, $df = 2$, $p = .346$; 1999: $\chi^2 = 3.985$, $df = 2$, $p = .136$). Assuming the test is asymptotically valid, we conclude that the advertising

variables and vertical integration share are not jointly determined¹⁰.

Hence, we estimated model (5) by pooling the observations for the two cross sections, treating the two advertising variables as exogenous. The estimation was carried out via generalized least squares (GLS) using EViews5 (2004). Pooling permits estimation of fixed effects and allows for cross section-specific heteroskedasticity.¹¹ Summary statistics and correlation matrices are presented in the Appendix (Tables A2, A3, and A4).

4.0 RESULTS

Cross section-specific parameter estimates for the five regressors in (5) that relate to our hypotheses are presented in columns (1) and (2) of Table 3. Also shown there are robust (heteroskedasticity-consistent) estimates of the standard errors of the parameters (White 1980). Wald tests were then conducted to test the null hypothesis that the coefficient estimates for each regressor were equal for both cross sections. Based on the outcomes of those tests, we then estimated a mixed model, where the coefficients are either cross section-specific (unequal parameters for 1991 and 1999) or common (1991 and 1999 parameters constrained to be equal). The mixed model estimates are shown in columns (3), (4), and (5) of Table 3.

INSERT TABLE 3 HERE

The adjusted R² statistics shown in Table 3 indicate that model (5) accounts for about 30% of the

¹⁰ When the number of IV's exceeds the number of possibly endogenous explanatory variables, a test for over-identifying restrictions due to Sargan (1958) may be used to test whether the candidate instruments are valid in the sense of being uncorrelated with the error term in the structural equation. In particular, the null hypothesis tested is that all IV's are uncorrelated with the structural error term, assuming that at least one of the IV's is exogenous. In the present context, as defined above, we have five IV's and two possibly endogenous variables (ADX_{it} and ASR_{it}) for each of the two cross sections. The results indicated that the null hypothesis could not be rejected for either the 1991 or 1999 cross section; the χ^2 statistics were well below the critical values of that statistic at even the .20 level. Thus, the tests for over-identifying restrictions are consistent with the assumption that the five IV's are exogenous.

¹¹ Eq. (5) was also estimated as a system of two seemingly unrelated regressions (SUR). SUR estimates led to conclusions similar to those discussed below for the pooled estimates with respect to the tests of the five hypotheses.

total variance in the logit dependent variable (LSVI). The standard deviations of LSVI are of similar magnitudes for both cross sections (.520 and .540, for 1991 and 1999, respectively). The estimated fixed effects are significant for the mixed-model specification. The Ramsey (1969) RESET tests gave no indication of model functional form misspecification.

4.1 Advertising Expenditure and Intensity

As may be seen from Table 3, the estimated coefficients for log mean advertising expenditures/firm (LADX) have the expected negative sign and remain relatively stable (within one standard error) in both the cross section-specific and mixed specifications. Using one-tail tests, two of the estimated coefficients are significant at the .001 level and the third is almost significant at the .01 level. Consistent with H1 then, we find that vertical integration share decreases monotonically across industries as log mean advertising expenditure/firm increases.

Turning to advertising intensity (LASR), we again find that the estimated coefficients all have the expected positive sign but differ in magnitude; the 1991 estimate is considerably larger than that for 1999. For the mixed model, the estimated coefficient for 1991 is significant at the .001 level while that for 1999 is almost significant at the .10 level. Thus, these results generally support H2; vertical integration increases monotonically as advertising intensity, our proxy for human asset specificity, increases.

4.2 Industry Sector Dummy Variables

Hypotheses H3-H5 relate to the technological, retailing, and creative sectors, each sector represented by a dummy variable. Across specifications, the estimated coefficients for the three dummy variables all have the expected positive sign but differ in statistical significance. Results for the dummy variable, TECH, indicate consistent support for H3; vertical integration of advertising services is more likely in technologically intensive industries. The estimated coefficient for TECH is

larger for 1999 than for 1991, the former being significant at the .01 level while the latter is significant at the .10 level ($p = .079$).

The results provide only mixed support for H5, that vertical integration of advertising service is more likely for creative than other industries. The estimated coefficient for CRET in 1999 is highly significant ($p < .001$) while that for 1991 is of much smaller magnitude and not significantly different from zero.

We obtain no support for H4, that vertical integration of advertising services is more likely in retailing industries. Although the coefficient estimates for RETL have the predicted positive signs, the ratios of the estimated coefficients to their standard error are all less than unity. Overall, the evidence points to rejection of H4.

5.0 DISCUSSION

5.1 Double Marginalization (H1) and Advertising Intensity (H2) Hypotheses

The results provided consistent support for our first pair of hypotheses relating advertising expenditures and intensity to vertical integration. Across all specifications and for both years, the share of firms in an industry integrating advertising services decreased as the mean advertising expenditure per firm increased. In line with H1, the tradeoff between the potential gains from avoiding double marginalization but sacrificing scale-related economies tends to operate so as to decrease the likelihood of vertical integration as the size of advertising outlays increases.

To gauge the sensitivity of vertical integration to changes in advertising expenditures, we estimated the elasticity of the share of advertisers in an industry who had internalized advertising services (SVI) with respect to ADX. The elasticities were evaluated at three values of ADX, representing the median (Q2), lower (Q1) and upper (Q3) quartiles, respectively, of the ADX

distributions for 1991 and 1999. In calculating these elasticities, the values of the three industry group dummy variables (TECH, RETL, and CRET) were all set equal to zero (Appendix, Table A4).¹² The elasticities with respect to changes in ADX are quite small (in absolute magnitude) and essentially flat over the interquartile range of the 1991 and 1999 ADX distributions. A 10% increase in ADX is associated with reductions in SVI of approximately 1.0% for both years.¹³

Taking advertising intensity as a proxy for human asset specificity, our results are consistent with H2 that the greater the investment in client-specific human assets required to develop and to produce advertising campaigns, the greater the likelihood that advertising services will be vertically integrated. To measure the magnitude of this effect, elasticities of SVI with respect to advertising intensity (ASR) were estimated in a similar manner to that discussed for advertising expenditures and are presented in the Appendix (Table A4).¹⁴ The ASR elasticities are of similar magnitude to those obtained for ADX and also relatively invariant over the interquartile range. A 10% increase in ASR is associated with about a 1.6% increase in SVI in 1991 and a 0.4% increase in 1999.¹⁵

5.2. Industry Sector Hypotheses (H3-H5)

H3 predicted that internalization of advertising services would be more likely in technologically intensive industries where human asset specificity for advertising services was particularly high. The estimated coefficients for the dummy variable, TECH, were found to be uniformly positive across

¹² The elasticity of vertical integration share, SVI, with respect to ADX for eq. (5) is: $E_{svi,adx} = \partial SVI / \partial ADX (ADX/SVI) = \beta (1 - SVI)$; where: $SVI = \exp(\mathbf{g}) / (1 + \exp(\mathbf{g}))$, given that: $\ln (SVI / (1 - SVI)) = \mathbf{g}$, where \mathbf{g} is specified as shown on the right hand side of (5) above.

¹³ Wald tests indicated that the null hypothesis that $E_{svi,adx} = 0$ could be rejected at the .01 level for all three elasticities in both 1991 and 1999.

¹⁴ $E_{svi,asr} = \partial SVI / \partial ASR (ASR/SVI) = \gamma (1 - SVI)$.

¹⁵ Based on Wald tests, the null hypothesis that $E_{svi,asr} = 0$ was rejected at the .01 level for the three 1991 elasticities but at only the .10 level for the 1999 elasticities.

specifications and the estimated common coefficient for the mixed model was statistically significant at the .01 level. To assess the magnitude of this effect, with ADX and ASR at their medians, we compared the expected values of SVI when TECH was set equal to one and zero, respectively, using the parameter estimates for the mixed model. The predicted values of SVI were evaluated at the median values of the ADX and ASR variables. These estimates indicated that the expected share of advertisers in technologically intensive industries exceeded the level expected for non-technologically intensive industries by approximately 6% in 1991 and 13% in 1999. The latter estimate was significantly different from zero at the .05 level but the former was not significant ($p > .10$).

H5 predicted that internalization of advertising services would be greater in creative than in other industries on grounds of transaction similarity; this prediction received strong support for the 1999 cross section but not for 1991. With a similar calculation to the above, the increase in SVI for creative industries was approximately 28% in 1999, significantly different from zero at the .001 level.

H4 predicted that the likelihood of vertical integration would be greater for retailing industries but the evidence from both the 1991 and 1999 cross sections failed to support this prediction. The rationale underlying this hypothesis emphasized the distinction between two varieties of retail advertising: building image/reputation versus store traffic. It was argued that the latter gives rise to temporal human asset specificity and accordingly, favors vertical integration. However, our simple dichotomous classification of industries (retail versus all other) clearly fails to capture any inter-industry (or intra-industry) variation in the mix of image and traffic-oriented advertising. Interacting the retailing sector dummy variable with a measure of local (versus regional or national) advertising would provide a more discriminating way to test H4. For similar reasons, it also seems likely that the retailing sector is one where hybrid governance structures can be expected, e.g., local, traffic-building advertising performed in-house with image-oriented national campaigns assigned to external agencies. Pryor (2001, 2002) has shown that concentration levels in retailing rose over the period 1971-1997 and suggests that this trend reflects mergers and acquisitions and growth of national

chains. These developments may have been accompanied by changes in the mix of national and local advertising employed by retailers that, in turn, have diminished the importance of temporal asset specificity.

5.3 Directions for Future Research

The panel design employed in this study wherein observation obtained at two points in time for the same cross-section of industries has the advantage of providing comprehensive coverage of the U.S. advertising industry and permitting important econometric issues to be addressed, including tests for detecting endogeneity and differences between period in hypothesized relationships arising from exogenous factors such as changes relating to the business cycle and institutional arrangements. At the same time, the limitations of the methods employed in this study deserve mention and future research should seek to address them.

First, our measure of vertical integration does not distinguish between full and partial or “tapered” integration (Michael 2000; Perry 1989). With the shift away from billings-based compensation and the growth of holding companies (Silk and Berndt 2004), the unbundling of agency creative and media services has become more common, increasing the likelihood of partial integration (Horsky 2006). Second, sector dummy variables afford only a crude means of inferring inter-industry differences in transaction costs. Here, as in other areas of transaction cost research, more refined measures of transaction costs and asset specificity would be desirable (Klein 2005). Finally, how integration or separation of advertising services affects client and brand performance is beyond the scope of this study and is left for future research. Case studies and cross-sectional surveys of firms would offer a valuable complement to this investigation by extending our micro-analytic understanding of decisions affecting contemporary governance structures relating to advertising and marketing services.

6.0 MANAGERIAL IMPLICATIONS

Client interest in the vertical integration of advertising services has varied over time (Loomis 1972) and Douglas (2004) has recently raised the prospect that clients may once again give serious consideration to vertical integration of advertising services. While such a development might appear unlikely to some in this era of widespread outsourcing of marketing services (McGovern and Quelch 2005), major changes that have occurred in advertising agency-client relations suggest otherwise.

First of all, it is informative to view the preeminent place independent suppliers have long occupied within the historical context of how the governance structure of the advertising and marketing services industry evolved in the U.S. since the mid-19th century. Pope (1983) traces the dominance of independent full-service agencies to the institutional arrangements that evolved early in the industry's history. Foremost among those arrangements was the practice of compensating agencies through a commission on client expenditures for media space and time and the production of advertising messages. The commission system, supported by a broader set of trade practices known as the "recognition system," effectively prohibited advertisers from purchasing media directly at the same price as agencies, thereby removing an incentive for integration. Pope argued that: "If (the commission system) had been eradicated, the industry might well have witnessed a partial internalization of agency activities by large advertisers" (p. 152). In the wake of a 1956 consent decree that is credited with dismantling the recognition system (Holland 1981), the media commission-based system of advertising agency compensation has gradually been replaced with labor fee-based compensation (Beals 2007, Arzaghi et al. 2008). This latter development has been accompanied by a number of related changes in agency-client relations, including the "unbundling" of services by traditional "full-service" agencies (Horsky 2006, Arzaghi et al. 2008). Thus, the increase in internalization of advertising services between 1991 and 1999 found here is consistent with the removal of institutional barriers that had earlier stood in the way of the internalization of advertising services; namely the unbundling of advertising agency services, and diminished reliance on media commissions in compensating advertising agencies.

Second, in recent years "accountability" and in particular, the measurement of returns to communication spending, have become prominent issues in agency-client relations (Duboff 2007). The adoption of agency compensation methods related to labor charges and/or performance criteria (Beals 2007) and the involvement of professional procurement personnel in the management of

agency relations (Escobar 2006) has heightened the cost consciousness of clients with respect to advertising and marketing services. More than three decades ago, Gross (1972) questioned the optimality of the allocation of an advertising budget between the costs of creating and developing advertising messages versus outlays for media space and time to reach the target audience that arose under the prevailing policies of reliance on full-service agencies and commission-based agency compensation. He reached the provocative conclusion that advertisers were typically under-spending on creative development relative to media by a wide margin. This led Gross to advocate the unbundling of creative and media services and the abandonment of media commission as the basis of agency compensation in the interests of advertisers' exerting greater control over the strategic allocation of their advertising outlays and thereby improve the return on advertising spending. In this study, we have identified industry conditions under which the internalization of advertising and marketing services might also be a policy that enhances control and returns to advertising.

Advertisers are faced with the challenge of coordinating a vast array of independent communication services and suppliers (Draft 2003, Liodice 2008). The advertising industry is currently undergoing a major transformation as it absorbs new information and communication technologies that offer not only new media for reaching customers but also new tools for managing campaigns, such as in the case of online advertising, sophisticated economic and statistical methods (cf. Evans 2008). There is talk of disintermediation of agencies and other communication service providers in the face of the expanding activities of internet firms such as Google and Microsoft (Battelle 2005), spurring further acquisitions by holding companies to develop their capabilities in digital marketing. The diversified communication and marketing services available globally through holding companies afford advertisers an additional set of options affecting both production and transaction costs (Silk and Berndt 2004). These technological and structural changes are likely to result in shifts in production and transaction costs and thus existing patterns of vertical relations

between advertisers and suppliers of marketing services are also likely to continue to evolve.

Changes in corporate policies and organization often follow changes in economic and technological conditions. Procter and Gamble's director of corporate marketing has been quoted as saying: "There's so much inefficiency in the process we create and the agencies create" (Johnson 2003, p. 16). The firm has re-structured its internal brand organization and initiated tests of a new approach to managing relations with its outside suppliers of marketing services (Neff 2007). Whereas in 1986, Procter and Gamble considered but ultimately rejected a proposal to acquire an advertising agency on grounds that the creativity of an in-house operation was unlikely to match that of an independent agency (Alter 1986). More recently in 2000, the firm established an in-house division that develops and implements word-of-mouth campaigns and serves both internal and external clients (McCarthy 2007). Interestingly, the latter development occurred at the time Procter and Gamble had made important changes in its policies relating to innovation (Deutsch 2008; Laffley and Charon 2008).

Given that the present governance structure appears to be in a state of flux, it is an opportune time for industry-specific knowledge to be incorporated into guidelines intended to support practitioners' decisions relating to the vertical integration of advertising and marketing services (e.g., Anderson and Weitz 1986), adding to the current focus on issues of incentives, monitoring, and scale. In particular the following considerations deserve attention.

First, internalization should be included in the set of policy options considered in the course of conducting agency search and selection processes. Our findings indicate that in-house operation is most likely to be a viable option for firms competing in technology-oriented and creative industries. The introduction of in-house advertising services at Google (Klaassen 2007) and Conde Nash Media Group (Story 2007) are recent cases that reflect this pattern. Study of the practices and experiences of industry competitors may be a source of useful learning as to the scope and sustainability of

alternative governance structures and the risks of short-lived “mistaken” integration decisions (Williamson 1985, p.107)...

Second, a detailed cost comparison is required to assess the tradeoff between employing an independent service provider versus supporting an in-house operation. Client understanding of agency cost behavior has grown through the conduct of audits in connection with reviews of agency compensation programs (Beals 2007). Consulting firms specializing in agency selection and compensation (Beard 2002) have developed databases that might be tapped for information about cost levels and size-related economies.

7.0 SUMMARY AND CONCLUSIONS

Examining a broad range of industries, we observed that forty to fifty percent of all U.S. advertisers in 1991 and 1999 used at least some in-house agencies, with the level of penetration varying markedly across two-digit SIC categories. Both production costs and transaction costs exerted influence consistent with our theoretical hypotheses relating to inter-industry differences; in particular, larger advertisers, advertisers of technical products, advertisers of creative products, and advertisers of differentiated products were more likely to integrate. The evidence was generally robust across two different time periods and establishes that industry differences are important in accounting for the incidence of integration of advertising services. These results represent an initial step in developing a body of stylized facts that can encourage and support further analysis of vertical relations in advertising and marketing services industry, a neglected domain of research and one that is likely to undergo considerable change, creating challenges and opportunities for both managers and researchers..

Table 1
 SUMMARY STATISTICS
 (n = 69 SIC Categories)

Statistic	Share Vertically Integrated (%)		Number of Advertisers		Advertising Expenditures (\$'000)		Adv. /Sales Ratio (%)	
	SVI91	SVI99	NUN91	NUN99	ADX91	ADX99	ASR91	ASR99
Mean	42.3	50.7	138.07	225.33	16,112.17	8,227.64	2.494	1.708
Median	43.5	53.5	67	114	12,414.05	6,612.20	2.107	1.296
Max	83.3	75.0	1,008	1,582	87,278.13	49,149.95	8.267	9.147
Min	16.7	16.7	5	4	373.33	213.36	.071	.059
Std. Dev.	11.6	12.6	184.71	292.60	15,139.14	7,706.55	1.867	1.541
Coef. of Variation	.274	.249	1.338	1.299	.940	.937	.749	.902

Table 2

ASSIGNMENT OF SIC INDUSTRIES TO SECTORS AND DUMMY VARIABLES

Industry Sector	SIC Number	Name
Technology (6)	TECH = 1, 0 otherwise	
	28	Chemical & Allied Products
	35	Industrial Machinery & Equipment
	36	Electronic & Other Electric Equipment
	37	Transportation Equipment
	38	Instruments & Related Products
	73	Business Services
Retail (8)	RETL = 1, 0 otherwise	
	52	Building Materials & Garden Supplies
	53	General Merchandise Stores
	54	Food Stores
	55	Automotive Dealers & Service Stations
	56	Apparel & Accessory Stores
	57	Furniture & Home Furnishings Stores
	58	Eating & Drinking Places
	59	Misc.
Creative (6)	CRET = 1, 0 otherwise	
	23	Apparel & Other Textile Products
	25	Furniture & Fixtures
	27	Printing & Publishing
	48	Communications
	78	Motion Picture Services
	87	Engineering & Management Services

Table 3

POOLED GLS ESTIMATES OF LOGISTIC REGRESSION MODEL
OF SHARE OF UNITS WITH IN-HOUSE ADVERTISING SERVICES

Estimated Regression coefficients (Standard Error/Ratio of Coefficient to Standard Error) N = 138					
Full Model: All Cross-Section Specific Coef.			Mixed Model: Common & Cross-Section Specific Coef.		
Variable	(1) 1991	(2) 1999	(3) 1991	(4) 1999	(5) Common (‘91=’99)
Advertising Variables					
ln(ADX) H1	-.183 ^c (.073) (2.502)	-.196 ^b (.087) (2.244)	---	---	-.188 ^c (.060) (3.147)
ln(ASR) H2	.278 ^c (.065) (4.281)	.066 (.059) (1.287)	.277 ^c (.067) (4.152)	.069 (.054) (1.265)	---
Ind. Dummy Variables					
Technology H3	.105 ^a (.079) (1.334)	.268 ^c (.109) (2.458)	.109 ^a (.076) (1.432)	.261 ^c (.105) (2.498)	---
Retail H4	.062 (.191) (.326)	.127 (.179) (.713)	---	---	.090 (.165) (.543)
Creative H5	.057 (.122) (.469)	.559 ^c (.143) (3.893)	.062 (.118) (.522)	.549 ^c (.138) (3.982)	---
Fixed Effect	+/- .217 (.486) (.447)		+/- .161 ^c (.050) (3.253)		
Intercept	1.406 ^c (.557) (2.526)		1.395 ^c (.551) (2.532)		
Unweighted Statistics					
R ² (adj.)	.304		.315		
Std. Err. Est.	.473		.470		
Residual Corr.	.411		.411		

*Heteroskedastic-consistent covariances and standard errors

^a p < .10 ^b p < .05 ^c p < .01 (one-tail tests)

APPENDIX

Table A1

SUMMARY STATISTICS FOR VARIABLES IN LOGIT REGRESSIONS
(n = 69 SIC Categories)

Statistic	1991			1999		
	Logit SVI	LADX	LASR	Logit SVI	LADX	LASR
Mean	-.330	9.306	.571	.022	8.640	.101
Median	-.262	9.427	.745	.140	8.800	.259
Max	1.609	12.129	2.112	1.099	10.803	2.113
Min	-1.609	5.922	-2.648	-1.609	5.363	-2.839
Std. Dev.	.524	1.084	.977	.542	.973	1.061

Table A2

CORRELATION MATRIX FOR 1991 VARIABLES
(n = 69 SIC Categories)

	Logit SVI	LADX	LASR	TECH	RETL	CRET
Logit SVI	1.000					
LADX	-.267	1.000				
LASR	.461	.194	1.000			
TECH	.077	.010	.045	1.000		
RETL	.054	.259	.237	-.112	1.000	
CRET	.080	.011	.121	-.095	-.112	1.000

Table A3

CORRELATION MATRIX FOR 1999 VARIABLES

(n = 69 SIC Categories)

	Logit SVI	LADX	LASR	TECH	RETL	CRET
Logit SVI	1.000					
LADX	-.263	1.000				
LASR	.126	.233	1.000			
TECH	.106	.035	.107	1.000		
RETL	-.026	.250	.264	-.112	1.000	
CRET	.248	.117	.142	-.095	-.112	1.000

Table A4

ELASTICITIES OF VERTICAL INTEGRATION SHARE WITH RESPECT TO
ADVERTISING EXPENDITURES ($E_{VI,ADX}$) AND ADVERTISING INTENSITY ($E_{VI,ASR}$)

Distribution Quartile	$E_{VI,ADX}$		$E_{VI,ASR}$	
	(Standard errors in parentheses)			
	1991	1999	1991	1999
Q1	-.105 ^c (.032)	-.092 ^c (.028)	.170 ^c (.043)	.037 ^a (.029)
Median	-.109 ^c (.034)	-.097 ^c (.031)	.161 ^c (.038)	.036 ^a (.028)
Q3	-.114 ^c (.037)	-.102 ^c (.034)	.153 ^c (.034)	.035 ^a (.027)

^a p < .20 ^b p < .05 ^c p < .01

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