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THE CHOICE AMONG ACQUISITIONS, ALLIANCES, AND DIVESTITURES

BELÉN VILLALONGA[1]* and ANITA M. MCGAHAN[2]
[1] *Harvard Business School, Boston, Massachusetts, U.S.A.*
[2] *School of Management, Boston University, Boston, Massachusetts, U.S.A.*

This paper investigates how firms choose among acquisitions, alliances, and divestitures when they decide to expand or contract their boundaries. The dataset covers 9276 deals announced and completed by 86 members of the Fortune *100 between 1990 and 2000. Our findings support explanations based on resources, transaction costs, internalization, organizational learning, social embeddedness, asymmetric information, and real options, and suggest that these theories are highly related and complementary. We find less consistent support for theories based on agency costs and asset indivisibilities. The strong role of firm attributes explains in part why firms may pre-specify whether they will pursue acquisitions, alliances, or divestitures as part of their corporate strategies.* Copyright © 2005 John Wiley & Sons, Ltd.

INTRODUCTION

This paper examines the acquisitions, alliances, and divestitures of a group of large firms during the 1990s to evaluate how these firms chose to conduct transactions that expanded and contracted their boundaries. Acquisitions, alliances, and divestitures are strategic alternatives along a continuum of governance modes (Williamson, 1975, 1991; Hennart, 1993):[1] Acquisitions represent greater integration at one end of the continuum, while divestitures represent less integration at the other end (Klein, Crawford, and Alchian, 1978; Devlin and Bleackley, 1988; Mulherin and Boone, 2000; Sanders, 2001). In the middle of the spectrum are alliances and joint ventures, which typically confer upon firms the option for a subsequent acquisition or divestiture (Kogut, 1991; Chi, 2000; Folta and Miller, 2002). The choice to organize a particular transaction as an alliance instead of as a divestiture is analogous to the choice between an alliance and an acquisition; for example, when two firms negotiate to transfer rights for operating a business, the choice between an acquisition and an alliance for one of the firms amounts to a choice between a divestiture and an alliance for the firm on the other side of the transaction.

Earlier empirical studies of boundary choice largely fall into three groups. A first group of studies looks at the alternative governance structures that are found in a specific industry: making

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* Correspondence to: Belén Villalonga, Harvard Business School, Soldiers Field, Boston, MA 02163, U.S.A.
E-mail: bvillalonga@hbs.edu

[1] For instance, Child (1987) mentions the following legal forms of organization along such a continuum: firms, mutual organizations (consortia) and joint ventures, subcontracting, licensing and franchising, and market transacting between independent traders. Contractor and Lorange (1988) provide a similar ranking of various types of alliances in order of increasing interorganizational dependence: equity joint ventures, non-equity alliances in exploration, research and/or development, marketing alliances, know-how licensing, franchising, patent licensing, production/assembly/buyback agreements, and technical training/start-up assistance agreements.

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vs. buying auto parts in the automobile industry (Monteverde and Teece, 1982), equity alliances vs. non-equity alliances in biotechnology (Pisano, 1989), in-house vs. external R&D procurement in pharmaceutical firms (Pisano, 1990), company-owned gasoline stations vs. lessee-dealer and open-dealer stations (Shepard, 1993), equity alliances vs. bilateral and unilateral non-equity alliances in technology transfers (Oxley, 1997), etc. Shelanski and Klein (1995) provide a comprehensive review of the studies in this first group. A second group looks at the choices that firms make between acquisitions and alliances. These choices have long been studied in the context of foreign market entry (e.g., Anderson and Gatignon, 1986; Kogut and Singh, 1988; Hennart and Reddy, 1997; Shaver, 1998), but recent studies have begun to investigate them in more general terms (Dyer, Kale, and Singh, 2004). A third group of studies examines joint decisions by two or more firms to ally (see Gulati, 1998, for a review) and/or to merge (Vanhaverbeke, Duysters, and Noorderhaven, 2002). The studies in each of these three groups use different units of analysis: the transaction, the firm, and the dyad, respectively. As a result, each confers a somewhat different perspective on issues that are related to the choice of acquisitions, alliances, and divestitures.

While there has been extensive study of the choice to make vs. buy, there has been little study of the choice between selling vs. buying or making. Yet there is no clear reason for this omission. As Klein *et al*. (1978) argue, from a transactional perspective, both divestitures and acquisitions represent reactions to changes in the transaction costs created by specialized assets. From the perspective of the firm, divestitures and alliances are alternative ways to contract boundaries, just as acquisition and alliances are alternative ways to expand them. For dyads, divestitures are a way of allocating control of resources between the parties. For example, suppose that a large firm controls activities or owns assets that would be more valuable in combination with those of a smaller firm. The two firms have three choices: the large firm can acquire the activities and assets of the small firm; the two firms can ally; or the large firm can sell its own activities and assets through a divestiture to the small firm. What constitutes a divestiture for one firm in the dyad is an acquisition for the other. Volkswagen AutoEuropa provides a good case in point. In 1991, Ford and Volkswagen formed a joint venture in Portugal named AutoEuropa to enter the minivan segment of the European market. Ford was in charge of building the plant, while Volkswagen took responsibility for designing the product. In 1999, the two partners agreed to have Volkswagen buy out Ford's stake in the venture, thus creating an acquisition from Volkswagen's perspective and a divestiture from Ford's perspective.

There are other important antecedents to this study. An extensive literature in strategy, economics, and finance investigates the motives for contracting firm boundaries, a practice sometimes referred to as downsizing, downscoping, or refocusing (Harrigan, 1982; Duhaime and Grant, 1984; Montgomery, Thomas, and Kamath, 1984; Montgomery, 1988; Bethel and Liebeskind, 1993; Hoskisson and Hitt, 1994; Hoskisson, Johnson, and Moesel, 1994; Mitchell, 1994; John and Ofek, 1995; Daley, Mehrotra, and Sivakumar, 1997; Berger and Ofek, 1999; etc.). Part of this literature focuses on divestitures of prior acquisitions (Porter, 1987; Ravenscraft and Scherer, 1987; Kaplan and Weisbach, 1992; Berger and Ofek, 1996). In addition, two studies have compared divestitures to acquisitions. Mulherin and Boone (2000) compare the industry patterns and wealth effects of acquisitions and divestitures. Their results support synergistic over agency theoretic explanations for acquisitions and divestitures, although they do not test directly for the determinants of the choice. Sanders (2001) views acquisitions and divestitures as alternative ways to increase the value of stock options, and finds evidence that executives make decisions to influence the value of their personal holdings. Only a few studies examine boundary-contracting modes. Slovin, Sushka, and Ferraro (1995), Khan and Mehta (1996), Nixon, Roenfeldt, and Sicherman (2000), and Powers (2004) analyze the financial determinants of the choice to spin-off vs. sell-off activities, but none of these studies compares divestitures to alternative boundary-contracting modes.

In this paper, we study a broad range of strategic options available to firms along the full integration continuum: acquisitions (including mergers, full or majority acquisitions, and minority acquisitions), alliances (including joint ventures and other equity alliances as well as non-equity alliances in technology, R&D, manufacturing, or marketing, and licensing), and divestitures (including spin-offs and sell-offs). Our sample includes all of the

9276 acquisitions, alliances, and divestitures by 86 members of the *Fortune* 100 during the 1990s. By including deals of all three types for this group of firms, the analysis allows us to make inferences about choices to change firm boundaries, that is, about the dynamics of boundary decisions.

Our primary analyses consider the full continuum of available choices from acquisitions to divestitures, which we divide into either three or seven discrete alternatives. The results of these analyses should be interpreted as conditional on the firm having already decided to undertake a boundary-changing transaction. Because the motives underlying such decisions may differ between boundary-expanding and boundary-contracting decisions, we also analyze separately the choice between two types of decisions: the choice between acquisition and alliances (i.e., boundary expansion) and the choice between alliances and divestitures (i.e., boundary contraction). We take the firm as our unit of analysis and draw on the transactional and dyadic perspectives by considering how firm choice is influenced by the attributes of the focal firm, the target or partner firm, the transaction, the dyad, and the relationship between the focal firm and the transaction.

We base our hypotheses on a variety of theories: the resource-based view, transaction cost economics, internalization theory, agency theory, asymmetric information, asset indivisibilities, organizational learning, and social embeddedness. All of these theories have been validated empirically as relevant to boundary-spanning transactions (Zajac and Olsen, 1993; Gulati, 1995; Hennart and Reddy, 1997; Capron and Mitchell, 1998; Poppo and Zenger, 1998). Because these theories offer complementary and even coinciding predictions, we do not treat them as competing. Our approach is to test for candidate explanations while controlling simultaneously for alternative theoretical mechanisms.

THEORY AND HYPOTHESES

The analysis draws on different theoretical perspectives to identify potential determinants of the choice of governance mode. Because the unit of analysis is the firm, our emphasis is on the attributes of the focal firm and its interaction with both the target/partner firm and the transaction. We also control for certain attributes of the transaction and of the target/partner firm in our tests of theory. Figure 1 summarizes our assessment of relevant attributes.

Focal firm attributes

Intangible resources

The dominant theoretical paradigms in the study of market entry modes are the resource-based view and transaction cost economics. The Penrose–Teece view of diversification posits that a firm's entry into new product markets results from excess capacity in valuable resources that may be transferable across firms but subject to market imperfections (Penrose 1959; Teece, 1980, 1982). The internalization theory of multinational firms, while developed independently (Hymer, 1976; Caves, 1971; Dunning, 1973), makes a similar argument about the mechanism of entry into new geographic markets, and has been applied extensively in studies of foreign market entry and performance (e.g., Anderson and Gatignon, 1986; Kogut and Singh, 1988; Morck and Yeung, 1992; Hennart and Reddy, 1997; Shaver, 1998).

This theory highlights the role of intangible capital such as a firm's technological and marketing resources, which are particularly vulnerable to appropriation by partnering firms in alliances or in market exchanges. As a result, firms may choose more integrative forms of governance such as acquisitions when their technological knowledge capital is highly valuable. Likewise, because brand capital cannot be easily shared across partners except through extensive internal coordination of activities, advertising-intensive firms may opt for greater integration for their transactions. Because appropriability hazards are higher among direct competitors, these arguments are at least as likely to apply to horizontal expansion and contraction of firm boundaries as they are to diversification and internationalization. Thus:

Hypothesis 1a: The firm's technological resources are associated with the choice of acquisitions over alliances, and alliances over divestitures.

Hypothesis 1b: The firm's marketing resources are associated with the choice of acquisitions over alliances, and alliances over divestitures.

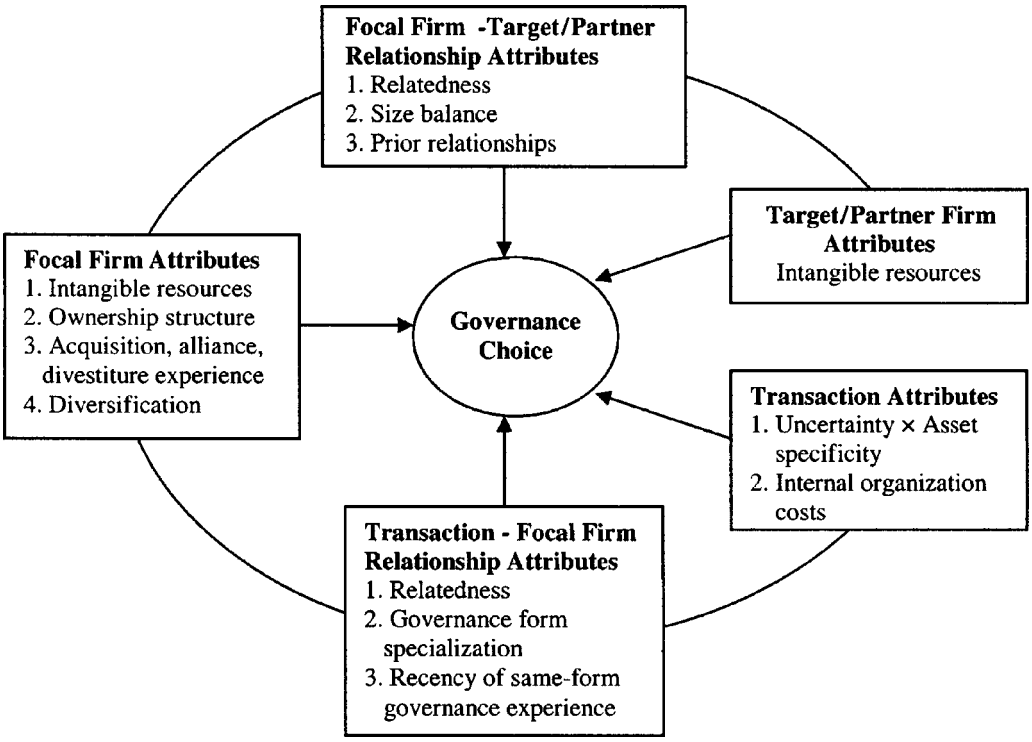

Figure 1. Determinants of the choice among alliances, acquisitions, and divestitures

Ownership structure

Agency-theoretic arguments explain why managers may engage in boundary-spanning transactions such as acquisitions even when the transactions may be detrimental to shareholder value (Jensen and Meckling, 1976; Jensen, 1986). To maximize the assets under the firm's control, the executive has an incentive to pursue acquisitions over alliances and alliances over divestitures. In large public corporations, two features of their ownership structure can be used to mitigate agency problems: large insider ownership, which aligns managerial incentives with those of other shareholders, and monitoring by large blockholders such as institutions (Bethel and Liebeskind, 1993; Denis, Denis, and Sarin, 1997; Sanders, 2001).

Hypothesis 2a: The level of insider ownership of the firm is associated with the choice of divestitures over alliances, and alliances over acquisitions.

Hypothesis 2b: The level of blockholder ownership of the firm is associated with the choice of divestitures over alliances, and alliances over acquisitions.

Hypothesis 2c: The level of institutional ownership of the firm is associated with the choice of divestitures over alliances, and alliances over acquisitions.

Acquisition, alliance, and divestiture experience

From an organizational learning perspective, the value generated by an acquisition or an alliance depends on a firm's acquisition or alliance capabilities, which firms develop through repeated experience with these governance forms (Dyer and Singh, 1998; Haleblian and Finkelstein, 1999; Anand and Khanna, 2000; Hayward, 2002; Kale, Dyer, and Singh, 2002). The theoretical logic extends naturally to cover divestitures: firms with experience in divestitures may be more effective at managing disintegration than firms without prior experience. Allen (1998) suggests this explanation for Thermoelectron's repeated success at spinning off and carving out equity in its activities. Under this view, a firm's experience at managing a particular governance form makes the firm

more inclined to choose the same form for future transactions.

Hypothesis 3a: The firm's acquisition experience is associated with the choice of acquisitions over both alliances and divestitures.

Hypothesis 3b: The firm's divestiture experience is associated with the choice of divestitures over both alliances and acquisitions.

Hypothesis 3c: The firm's alliance experience is associated with the choice of alliances over both acquisitions and divestitures.

Prior diversification

The three theories discussed above also offer predictions about the effect of a firm's prior level of diversification on its governance choices. First, resources and transaction costs views suggest that corporate growth depends not only on firm resources but also on the applicability of resources across industries and on the potential for economies of scope offered by different resource combinations. Coase (1972) argues that internal organization costs are likely to be higher when there is dissimilarity between the activities of the transaction and of the firm because the lack of a precedent within the firm creates greater demands on the organization's structure. On the other hand, the greater the level of prior diversification, the greater the likelihood of commonalities with the activities of the transaction, and thus the greater the likelihood of integrating the activities *ex post*.

Second, agency theory suggests diversification as a self-serving action that managers take to increase their compensation, power, or prestige (Jensen, 1986; Jensen and Murphy, 1990), to become entrenched (Shleifer and Vishny, 1989), or to reduce their personal risk by reducing total firm risk (Amihud and Lev, 1981). Thus, one would expect a firm's level of diversification to be negatively related to the equity ownership of both managers and outside blockholders (Denis *et al*., 1997). Support for Hypotheses 2a–c implies that prior diversification is also positively associated with the choice of an integrative governance form.

Third, because diversification almost always results from prior acquisitions, firms that are highly diversified are also likely to have prior acquisition experience. Hypothesis 3a also reflects this regularity.

The implication of all three theories with respect to diversification is therefore the following:

Hypothesis 4a: The firm's diversification level is associated with the choice of acquisitions over alliances, and alliances over divestitures.

On the other hand, some researchers have expressed the view that much of the corporate restructuring activity that took place during the 1980s and 1990s was aimed at reversing the diversification undertaken in earlier decades (Bhide, 1990; Shleifer and Vishny, 1991; Berger and Ofek, 1996). If this effect predominated during the 1990s, then diversified firms would be more likely to engage in divestitures or other forms of disintegration than they would be to engage in further acquisitions.

Hypothesis 4b: The firm's diversification level is associated with the choice of divestitures over alliances, and alliances over acquisitions.

Attributes of the relationship between the focal firm and the target or partner firm

Industry activity of the focal firm and partner/target firm

Two theories yield a coinciding prediction about the effect on governance choice of relatedness between the focal firm and the target or partner firm. A combination of resource-based and transaction-cost arguments suggests that greater relatedness implies a lower cost of integration (Coase, 1937) because of economies of scale within the organization. A related version of the argument is that direct competition between the focal and target/partner firm enhances the need for protective (i.e., integrative) governance structures that will induce knowledge sharing among the partners (Oxley and Sampson, 2004).

Balakrishnan and Koza (1993) propose an asymmetric information theory of joint ventures that has similar implications. In their theory, joint ventures are superior to acquisitions when the costs to the acquirer of valuing the target's assets are high due to information asymmetries between the parties. This can occur when one party has the power to appropriate rents if the other reveals private information. A joint venture can mitigate the risks

and costs of transacting by aligning the incentives of the two parties.

A related view has been articulated with respect to divestitures: spin-offs and other forms of divestiture create value because they reduce information asymmetries between the firm and the market. If specialized firms are better able to convey information about their operating efficiency and future prospects when they are stand-alone entities than when they are divisions of a larger firm, conglomerates and vertically integrated firms may be able to create value through spin-offs and divestitures. In support of this view, Krishnaswami and Subramaniam (1999) find that firms that engage in spin-offs have higher levels of information asymmetry than a matched sample of firms, and that the asymmetry decreases significantly after the spin-off. Gilson *et al*. (2001) show that conglomerate stock break-ups through spin-offs, equity carve-outs, and tracking stock offerings generate a significant increase in coverage by specialized analysts and a 30–50 percent improvement in analyst forecast accuracy for parent and subsidiary firms.

Research in both streams suggests proxying the level of information asymmetry by assessing dissimilarities in the parties' SIC codes. Their predictions yield a general asymmetric information-based hypothesis of governance choice that is consistent with the hypothesis of the resource-based and transaction-costs arguments:

> *Hypothesis 5: The relatedness between the focal firm and the target (or partner) firm is associated with the choice of acquisitions over alliances, and alliances over divestitures.*

Size balance

Hennart's (1988) 'digestibility' theory argues that joint ventures may create value when neither of the partnering firms can 'digest' the other due to the diseconomies of scale or scope that would arise if an acquisition were to occur. Hennart and Reddy (1997) find that, in their sample, joint ventures are relatively more likely than acquisitions when the partners are in the same industry. They interpret this result as consistent with Hennart's (1988) digestibility hypothesis but inconsistent with Balakrishnan and Koza's (1993) information asymmetries hypothesis (reformulated in this paper as Hypothesis 5). Their interpretation has been challenged by Reuer and Koza (2000a), who argue that the two theories are complementary rather than competing (see also Hennart and Reddy, 2000; Reuer and Koza, 2000b). Hennart and Reddy (2000) offer one possible reconciliation of this debate by acknowledging that proximity in SIC codes is a better proxy for information asymmetries than it is for the digestibility of the target's assets to the acquirer. As an alternative measure of digestibility, we propose the size balance between the two firms, which we define as the ratio of the sales of the smaller firm to the sales of the larger firm. This measure also addresses the concern that one solution to digestibility problems is to have the indigestible partner fully acquire the digestible one (Hennart and Reddy, 2000; Reuer and Koza, 2000a): The more balanced in size partners are, the more difficult it becomes for any of them to be digested by the other. Using this proxy, we reformulate Hennart's digestibility hypothesis as follows:

> *Hypothesis 6: The size balance between the focal firm and the target (or partner) firm is associated with the choice of divestitures over alliances, and alliances over acquisitions.*

Prior alliances

Several theories suggest that prior relationships between the focal firm and the target or partner are important to governance choices. Social embeddedness theory suggests, and empirical evidence has confirmed, that two firms are more likely to engage in an alliance when they have a history of prior alliances between them (Powell, 1990; Gulati, 1998; Podolny and Page, 1998). The embeddedness of firms in social networks enhances trust, which can be promoted by prior ties. Real options theory suggests that firms with a history of prior alliances or minority acquisitions are more likely to engage subsequently in alliances because prior alliances create valuable options (Kogut, 1991; Folta and Miller, 2002). Chi (2000) further argues that alliances also confer upon firms a valuable option to engage in a subsequent divestiture. In addition, the literature on corporate refocusing shows that firms often divest or spin off formerly acquired divisions, which suggests that dyadic ties of an acquisitive nature may also affect future governance choices (Porter, 1987; Ravenscraft and Scherer, 1987; Bhide, 1990;

Kaplan and Weisbach, 1992; Berger and Ofek, 1996, 1999).

All of these theories predict that firms are more likely to engage in deals of any type (acquisitions, alliances, and divestitures) when they have a history of dyadic ties between them. Social embeddedness theory yields an even more specific prediction: prior alliances are more likely to result in subsequent alliances than they are to result in either acquisitions or divestitures because the trust created by prior alliances enables firms to reduce appropriability hazards (Gulati, 1995):

Hypothesis 7: The number of prior alliances between the firm and the target (or partner) firm is positively associated with the choice of alliances over both acquisitions and divestitures.

Real options theory predicts that prior alliances will give rise to acquisitions or divestitures only when the value of the option makes it worthwhile to exercise it. Hence, if Hypothesis 7 is supported, the evidence will be consistent with both theories. If it is not, the evidence will still be consistent with real options theory but not with social embeddedness theory.

Attributes of the transaction and of the firm

Relatedness in SIC codes between the firm and the transaction

Resource-based and transaction-cost arguments suggest that firms are more likely to choose integrative governance forms when the activities that are subject to the transaction are similar to the firm's established activities (Coase, 1937; Penrose, 1959). The asymmetric information theory of firm boundaries contraction extends the prediction to divestitures:[2]

Hypothesis 8: The relatedness between the firm and the activity that is subject to the transaction is associated with the choice of acquisitions over alliances, and alliances over divestitures.

[2] As stated in Hypothesis 5, the asymmetric information theory of joint ventures makes the same prediction about the similarity in activities between the partner firms. Unlike other governance forms, the activities of the joint venture need not be the same as those of the partner firm. Therefore, we use the asymmetric information theory of boundary expansion to justify Hypothesis 5 but not Hypothesis 8.

Governance specialization

Implicit in Hypotheses 3a–c is the assumption that there are negative or no experience spillovers across governance forms. For instance, Hypothesis 3c predicts that a firm with a long history of alliances will be more likely to choose an alliance over other governance forms than a firm that has no alliance experience but is otherwise identical to the former. It also predicts that a firm will be more likely to choose an alliance the more alliances it has engaged in before. But if the lessons learned by the firm at managing alliances can also be applied to acquisitions, the firm may be equally likely to engage in acquisitions based on its experience. Zollo and Reuer (2001) provide evidence of spillovers from alliances to acquisitions. One question that remains open is whether these spillovers are symmetric across governance forms. For instance, it may be that acquisitions provide firms with valuable learning that can inform the evaluation and implementation of future alliances, but not vice versa.

To address this question we introduce the concept of *governance specialization*, which measures the degree to which a firm has repeatedly engaged in deals of the current type. As a result, governance specialization captures whether a firm shows evidence of pursuing a program of acquisitions, alliances, or divestitures.

If experience spillovers are symmetric across governance forms, the following will hold:

Hypothesis 9a: The firm's governance specialization is insignificantly associated with the choice of governance form.

If, on the other hand, governance form experience spillovers are asymmetric, one of the following hypotheses will be supported:

Hypothesis 9b: The firm's governance specialization is associated with the choice of acquisitions over alliances, and alliances over divestitures.

Hypothesis 9c: The firm's governance specialization is associated with the choice of divestitures over alliances, and alliances over acquisitions.

Hypothesis 9b will be supported if specialization is more important for boundary-expanding transactions such as acquisitions than for boundary-contracting transactions such as divestitures. Conversely, Hypothesis 9c will be supported if specialization is more important for boundary-contracting transactions. Hypothesis 9a will be supported if governance specialization is not more important to deals of any particular type, or if specialization is more important to alliances.

Recency of experience

A related question to the symmetry and sign of experience spillovers is the relative importance of the experience effects hypothesized in 3a–c. Regardless of a firm's experience with a governance form, the recency of a firm's experience with deals of the current type may reflect relevant learning. For instance, it may be that a firm contemplating a transaction may lean toward an alliance because of learning from a recent alliance, regardless of whether it is pursing a program of alliances. To address this question we develop the notion of *recency of same-form governance experience*—the proximity in time between the deal that is the subject of the governance choice and the last deal of the same form undertaken by the firm. This measure differs from governance specialization in that it captures only the amount of time since the last deal of the same type. For example, for two firms, each with the same high degree of specialization in divestitures, the 'deal recency' variable simply captures the elapsed time since the most recent divestiture.

The following hypotheses test for these possibilities. Hypotheses 10a and 10b will be supported if learning effects are more important in acquisitions and alliances, respectively.

Hypothesis 10a: The recency of the firm's same-form governance experience is associated with the choice of acquisitions over alliances, and alliances over divestitures.

Hypothesis 10b: The recency of the firm's same-form governance experience is associated with the choice of divestitures over alliances, and alliances over acquisitions.

Target/partner attributes

Target/partner firm's intangible resources

The resource-based view offers boundary choice predictions based not only on the focal firm's resources but also on those of the target. The focal firm diversifies and expands not only in search of opportunities to exploit its existing resources and capabilities (Penrose, 1959), but also in search of new resources that may complement its existing base (Chatterjee, 1990). Hence:

Hypothesis 11a: The target (or partner) firm's technological resources are associated with the choice of acquisitions over alliances, and alliances over divestitures.

Hypothesis 11b: The target (or partner) firm's marketing resources are associated with the choice of acquisitions over alliances, and alliances over divestitures.

Transaction attributes

Market transaction costs and internal organization costs

Transaction cost theory stipulates that a firm chooses to acquire assets when the ongoing costs of conducting business in the market are higher than the costs of organizing activities within the firm (Coase, 1937; Williamson, 1975, 1985). Empirical tests typically use one of two proxies for high market costs: uncertainty in the relevant market, or the degree of specificity of the asset or activity being exchanged. As Shelanski and Klein (1995) argue, uncertainty leads to hierarchical governance only in the presence of asset specificity. Therefore the interaction between uncertainty and asset specificity may be a better proxy for the costs of transacting through the market. One possible measure of uncertainty that is generic across industries is the variability in profits of the target or partner/firm. Measuring asset specificity in a multi-industry setting is difficult, however, because what makes assets specific to a given activity typically differs across activities. We propose the use of the percentage of employees in the focal firm's industry that are engineers as a measure of human asset specificity. Nevertheless, we caution that this variable may also be indicative of the firm's knowledge

capital and hence be a proxy for combined resource-based/transaction-costs arguments rather than for transaction cost theory alone.

Hypothesis 12a: The interaction between uncertainty and asset specificity is associated with the choice of acquisitions over alliances, and alliances over divestitures.

Likewise, we use the number of managers as a percentage of employees in the target/partner firm's industry as a proxy for the internal organization costs associated to integrating the target into the focal firm. Transaction cost economics recognizes that the costs of market exchange are only relevant determinants of the optimal governance choice after netting out the costs of internal organization. Thus, even if transaction costs are high, a firm may choose to conduct an alliance over an acquisition if the cost of integrating the target firm's activities is even higher than the cost of market exchange (Kogut and Singh, 1988; Masten, Meehan, and Snyder, 1991; Hennart and Reddy, 1997).

Hypothesis 12b: The internal organization costs of integrating the target firm into the focal firm are associated with the choice of divestitures over alliances, and alliances over acquisitions.

DATA AND SAMPLE

The sample represents 9276 acquisitions, alliances, and divestitures announced and completed by 86 members of the *Fortune* 100 between 1990 and 2000.[3] Each of the 86 firms engaged in a variety of deals over the period, which allows us to evaluate the importance of transaction and target/partner attributes while controlling for firm attributes. We construct the dataset through the process described below.

First, we select the 86 firms in the 1990 *Fortune* 100 that: (a) were publicly traded on one or more U.S. stock exchanges; (b) engaged in at least one alliance during the period; and (c) engaged in at least one acquisition or divestiture.

Second, we draw information from the SDC *Joint Ventures and Alliances* database on alliances announced and completed between January 1, 1990, and December 31, 1999 by the 86 firms in our database, including alliances that involved any of their subsidiaries.

Third, we draw information from the SDC's *Mergers and Acquisitions* database on acquisitions announced and completed between January 1, 1990, and December 31, 1999, by the 86 firms and by any of their subsidiaries. This category, 'acquisitions,' includes deals classified by SDC as mergers, acquisitions, acquisitions of majority interest, acquisitions of partial interest, acquisitions of remaining interest, acquisitions of assets, or acquisitions of certain assets.

Fourth, we draw information from the SDC's *Mergers and Acquisitions* database on the divestitures announced and completed during the period by the 86 firms and by any of their subsidiaries. The 'divestitures' category includes deals classified by SDC as divestitures, spin-offs and carve-outs.[4] It also includes seven 'mega-divestitures' in which the entire sample firm was sold: Daimler–Chrysler, Compaq–Digital Equipment, Exxon–Mobil, Boeing–McDonnell Douglas, Kimberly Clark–Scott Paper, Jefferson Smurfit–Stone Container, Kohlberg Kravis Roberts–Borden.

Fifth, we eliminate duplicate observations on the same deal arising from repeated announcements of a single deal, from deals that are associated with more than one governance form (alliance, acquisition and/or divestiture), and from simple reporting errors in SDC. Thus, any given deal will appear only once in our dataset unless the partner/target firm is also one of our sample firms, in which case the deal will appear twice and the focal and target

[3] The dataset was drawn from the same sources as in McGahan and Villalonga (2003). The main difference is that the dataset in the prior paper contained 7714 deals, whereas this paper reports on 9276 deals. The reason is that the prior dataset excluded deals for which the stock market reaction could not be assessed.

[4] A divestiture is tracked in SDC when there is a loss of majority control, the parent company is losing a majority interest in the target, or the target company is disposing of assets. A spin-off is the tax-free distribution of shares by a company of a unit, subsidiary, division, or another company's stock, or any portion thereof, to its shareholders. SDC tracks spin-offs of any percentage. In contrast, in a carve-out, the new company's shares are distributed or sold to the public via an IPO. Carve-outs are tracked in SDC only if they represent 100 percent of the unit, subsidiary division or other company. Note that we exclude any observation that was not a divestiture, spin-off, or carve-out. In particular, we do not include changes in a firm's ownership structure created by a firm's Employee Stock Ownership Plan, or more generally by the acquisition of partial or remaining interest in one of the sample firms (or in a subsidiary) that does not represent a divestiture.

firm will switch roles. For instance, three of the 'mega-divestitures' mentioned above also appear in our sample as acquisitions: Exxon–Mobil (a mega-divestiture for Mobil but an acquisition for Exxon), Boeing–McDonnell Douglas, and Kimberly Clark–Scott Paper.

Sixth, because SDC alliance dates are unreliable (Anand and Khanna, 2000; McGahan and Villalonga, 2003), we verify the alliance dates reported by SDC using the Lexis–Nexis and the Dow Jones News Retrieval Service (DJNRS). We could not find news information on 8 percent of the alliances and relied on the SDC data for these observations. For 62 percent of all alliances, the SDC dates were the same as those reported by the news services. When discrepancies arose, we used the date reported by the news service rather than by SDC. In 21 percent of cases, the news date was earlier than the date reported by SDC. In 10 percent of cases, the news date was later than the date reported by SDC.

Seventh, we group the 14 original deal types identifiable through SDC into three, seven, or nine categories for further analysis. The three major categories are alliances, acquisitions, and divestitures. The seven categories are: (1) mergers and full or majority acquisitions (which includes mergers, acquisitions, acquisition of majority interest, acquisition of assets, and acquisition of remaining interest when the acquirer holds over 50% of the target and seeks to acquire 100%); (2) minority acquisitions; (3) joint ventures; (4) non-equity alliances in technology, R&D or manufacturing; (5) non-equity alliances in marketing; (6) licensing arrangements; and (7) divestitures. The nine categories include acquisitions of remaining interest as a category in themselves, less integrative than full or majority acquisitions but more integrative than minority acquisitions, and splits the divestiture category into two: spin-offs and carve-outs (relatively more integrative) and asset sales (less integrative). In our main analyses, we classify equity alliances other than joint ventures as minority acquisitions. Later we examine the sensitivity of our results to the alternative classification

Table 1. Alliances, acquisitions, and divestitures undertaken by 86 *Fortune* 100 firms over the 1990s

Panel A. Mean, median, minimum, maximum and total number of deals undertaken by sample firms

	Acquisitions	Alliances	Divestitures	All deals
Average	27	62	19	108
Median	19	37.5	17	80.5
Min.	1	3	2	17
Max.	247	566	51	662
Total no. of deals	2307	5358	1611	9276

Panel B. Frequency of deals per firm

No. of deals per firm	Acquisitions	Alliances	Divestitures	All deals
1–10	21	17	27	0
11–20	23	15	27	3
21–30	15	7	17	8
31–40	11	6	8	9
41–60	11	10	7	12
61–80	2	11	0	11
81–100	1	7	0	12
101–150	1	5	0	17
151–200	0	3	0	6
201+	1	5	0	8
Total no. firms	86	86	86	86

$N = 9276$ firm–deal observations resulting from the alliances, acquisitions, and divestitures announced and completed by 86 of the 1990 *Fortune* 100 firms between January 1, 1990 and December 31, 1999. The firms are listed in Table 2. All deals are identified using the Securities Data Corporation (SDC) *Mergers and Acquisitions* and *Joint Venture and Alliances* databases.

Table 2. Total number of deals for each firm in the sample

Firm name	Acquisitions	Alliances	Divestitures	All deals
Abbott Laboratories	13	64	4	81
Alcoa	23	24	6	53
Allied-Signal	47	63	27	137
Amerada Hess	9	11	12	32
American Home Products	24	84	16	124
Amoco	3	15	10	28
Anheuser-Busch	7	25	8	40
Apple Computer	4	152	2	158
Archer Daniels Midland	39	9	3	51
Ashland Oil	38	16	20	74
Atlantic Richfield	21	35	41	97
Baxter International	26	62	13	101
Boeing	8	54	7	69
Borden	9	3	23	35
Bristol-Myers-Squibb	19	82	20	121
Campbell Soup	16	9	24	49
Caterpillar	13	24	3	40
Chevron	12	61	51	124
Chrysler	10	48	22	80
Coastal	27	30	5	62
Coca-Cola	34	50	8	92
Colgate-Palmolive	18	9	7	34
Conagra	36	18	19	73
Cooper Industries	46	3	11	60
Deere	14	9	5	28
Digital Equipment	9	193	18	220
Dow Chemical	42	104	37	183
Du Pont de Nemours	52	181	49	282
Eastman Kodak	31	126	41	198
Emerson Electric	37	10	10	57
Exxon	2	72	10	84
Ford Motor	88	126	29	243
General Dynamics	6	17	10	33
General Electric	247	259	50	556
General Mills	8	9	6	23
General Motors	106	268	45	419
Georgia-Pacific	13	6	12	31
Goodyear Tire & Rubber	12	12	10	34
H.J. Heinz	44	14	15	73
Hewlett-Packard	30	343	18	391
Honeywell	3	40	7	50
IBM	65	566	31	662
International Paper	42	9	22	73
Johnson & Johnson	37	85	21	143
Kimberly-Clark	19	11	14	44
Litton Industries	25	14	19	58
Lockheed	23	106	14	143
LTV	3	10	4	17
McDonnell Douglas	1	38	10	49
Merck	7	67	7	81
3M	19	49	19	87
Mobil	22	85	48	155
Monsanto	27	64	27	118
Motorola	44	271	24	339
NCR	4	11	3	18
Northrop	11	14	4	29

(*continued overleaf*)

Table 2. (*Continued*)

Firm name	Acquisitions	Alliances	Divestitures	All deals
Occidental Petroleum	17	27	32	76
Pepsico	44	66	22	132
Pfizer	21	64	16	101
Philip Morris	48	37	35	120
Phillips Petroleum	12	48	18	78
PPG Industries	31	21	13	65
Procter & Gamble	37	52	40	129
Quaker Oats	7	4	17	28
Ralston Purina	12	10	5	27
Raytheon	27	44	25	96
Reynolds Metals	17	12	20	49
RJR Nabisco	21	5	14	40
Rockwell International	21	71	16	108
Sara Lee	63	12	23	98
Scott Paper	3	5	13	21
Stone Container	8	3	7	18
Tenneco	37	41	21	99
Texaco	22	88	31	141
Texas Instruments	17	141	20	178
Textron	49	17	17	83
TRW	16	50	24	90
Union Carbide	14	49	22	85
Unisys	14	88	6	108
United Technologies	48	95	15	158
Unocal	8	25	24	57
USX–Marathon	14	32	25	71
W.R. Grace	40	31	36	107
Weyerhaeuser	19	6	16	41
Whirlpool	6	13	4	23

of equity alliances as (or together with) joint ventures.

Finally, we extract information on firm attributes and on target/partner firm attributes from the Compustat Research and Active files, the Compustat Business-Segment Reports, CRSP, the Occupational Employment Survey of the Bureau of Labor Statistics, and Compact Disclosure. The sample we use for our probit analyses encompasses the 4058 deals for which we have information on partners and targets.

Tables 1–3 describe the screened data set. Panel A of Table 1 indicates that 5358 of the deals in the sample (or 56%) are alliances, 2307 (26%) are acquisitions, and 1611 (18%) are divestitures. The sample firms engaged in an average of 108 deals, of which 27 were acquisitions, 62 were alliances, and 19 were divestitures. Panel B shows that the distribution of the number of firms doing deals of each type is skewed.

Table 2 lists the number of alliances, acquisitions, and divestitures for each firm over the sample period. As the table shows, some firms used mixed governance strategies, while others specialized in one particular governance form. IBM pursued more deals of all types than any other firm (662). LTV Steel pursued fewer deals than any other firm (17). General Electric did the most acquisitions (247). IBM did the most alliances (566). Chevron did the most divestitures (51), followed closely by General Electric (50).

Table 3 shows deals by year and economic sector. Panel A shows that the number of acquisitions grew over the sample period, while the number of alliances and divestitures peaked in 1994. Panel B shows the distribution of deals by industry (where the industry is that of the deal, i.e., the primary SIC code of the alliance for alliances, and the primary SIC code of the target for acquisitions and divestitures). The most deals of all types were in manufacturing. The fewest deals occurred in the agriculture, forestry and fishing sector.

Table 3. Alliances, acquisitions, and divestitures undertaken by sample firms by year and by deal sector[a]

Panel A. Number of alliances, acquisitions, divestitures, and total number of deals by year

Year	Acquisitions		Alliances		Divestitures		All deals	
	Number	% of all deals	Number	% of all deals	Number	% of all deals	Number	% of all deals
1990	180	24%	445	59%	135	18%	760	100%
1991	174	19%	574	64%	147	16%	895	100%
1992	157	16%	628	66%	169	18%	954	100%
1993	178	18%	654	67%	151	15%	983	100%
1994	235	19%	805	66%	188	15%	1,228	100%
1995	268	23%	725	63%	165	14%	1,158	100%
1996	276	33%	400	47%	171	20%	847	100%
1997	265	28%	518	54%	170	18%	953	100%
1998	270	35%	324	42%	174	23%	768	100%
1999	304	42%	285	39%	141	19%	730	100%
Total 1990s	2307	25%	5358	58%	1611	17%	9276	100%

Panel B. Number of alliances, acquisitions, divestitures, and total number of deals by deal sector[b]

SIC	Sector	Acquisitions		Alliances		Divestitures		All deals	
		Number	% of all deals	Number	% of all deals	Number	% of all deals	Number	% of all deals
0	Agriculture, Forestry, and Fishing	0	0%	2	100%	0	0%	2	100%
1	Mining and Construction	174	25%	305	44%	216	31%	695	100%
2	Manufacturing	664	32%	935	45%	485	23%	2084	100%
3	Manufacturing	579	21%	1673	62%	442	16%	2694	100%
4	Transportation and Communication	89	20%	284	63%	80	18%	453	100%
5	Wholesale and Retail Trade	209	20%	723	68%	129	12%	1061	100%
6	Finance, Insurance, and Real Estate	183	47%	114	29%	94	24%	391	100%
7	Lodging and Entertainment	293	20%	1061	72%	111	8%	1465	100%
8	Services	85	25%	220	65%	36	11%	341	100%
9	Public Administration	1	4%	21	91%	1	4%	23	100%
	Unclassified	30	45%	20	30%	17	25%	67	100%
	All sectors	2307	25%	5358	58%	1611	17%	9276	100%

[a] $N = 9276$ firm–deal observations from 8938 deals (alliances, acquisitions, or divestitures).
[b] The industry refers to that of the deal, i.e., the primary SIC code of the alliance for alliances, and the target primary SIC code for acquisitions and divestitures.

METHODS

Most of our hypotheses predict a linear relationship between the independent variable and the integrativeness of governance form; that is, most suggest that higher (or lower) values of the independent variable will lead firms to choose acquisitions over alliances and alliances over divestitures. Hypotheses 3c and 7 are non-linear, however: they suggest that higher values of the independent variable will lead firms to choose alliances over both acquisitions and divestitures. To address these non-linearities, we use two different econometric models to test our hypotheses. We use ordered probit models of the choice among acquisitions, alliances, and divestitures, and binary probit models of the choice between acquisitions and alliances and the choice between alliances and divestitures. The two sets of models also facilitate the interpretation of results

as conditional on different decisions by a firm: to change boundaries, to expand boundaries, or to contract boundaries, respectively. The purpose is to evaluate candidate explanations for the choice among acquisitions, alliances, and divestitures.

The dependent variable in the ordered probit models is an indicator variable called 'governance form' that takes on a series of ordinal values (see McKelvey and Zavoina, 1975, and Oxley, 1997, for statistical details on the estimation technique). Higher values indicate higher degrees of integration along the market–hierarchies continuum. We use alternative measures of this variable to test formally for the appropriate level of aggregation or disaggregation of the governance continuum into discrete structural alternatives. In the three-category ordered probit model, the governance form variables is set to two if the transaction involves a merger or acquisition (majority or minority), one if the transaction involves any kind of non-equity alliance or joint venture, and zero if the transaction involves a divestiture of any type. In the remaining ordered probit models, the governance form variable takes one of seven values for each of the categories listed earlier, ranging from six for mergers and full or majority acquisitions, to zero for divestitures.

The ordering is similar in the binary probit models: in the model of boundary expansion, the governance form variable equals one for acquisition and zero for alliances. In the probit model of boundary contraction, the dependent variable equals one for alliances and zero for divestitures. Thus, in all models, a positive coefficient on any of the independent variables can be interpreted as a higher probability that the firm will choose to organize the transaction through a more integrative governance form.

Table 4 contains a description of each independent variable together with the hypothesis it serves to test, its predicted sign, and the data source. The correlation matrix is reported in Table 5.

RESULTS AND DISCUSSION

Choices among the full continuum of boundary-changing governance forms

Table 6 presents the results of our ordered probit analyses linking attributes to governance choices. These results should be interpreted as conditional on a firm's decision to change its boundaries through expansion or contraction. The first column shows the results when the dependent variable (which represents governance form) takes three possible values (for acquisitions, alliances, and divestitures). The second column shows results for the seven-value construction of the dependent variable.

In both models, the focal firm's technological resources are significantly associated with the choice of acquisitions over alliances and alliances over divestitures, as predicted by Hypothesis 1a. This result provides support for the resource-based, transaction-cost, and internalization arguments, and is consistent with prior evidence from studies of foreign market entry mode (e.g., Kogut and Singh, 1988; Morck and Yeung, 1992). Like Morck and Yeung (1992), however, we find support for these arguments in the R&D intensity (or technological resources) variable, but not in the advertising intensity (or marketing resources) variable, which is statistically non-significant in both of our probit models. Hence, Hypothesis 1b is not supported in our analysis. The effects of the target firm's technological and marketing resources (Hypotheses 11a and 11b) are not statistically significant.

The ownership structure variables show only mixed support for agency theory. On the one hand, institutional ownership is significantly associated with the choice of divestitures over alliances and alliances over acquisitions in both probit regressions, as predicted by Hypothesis 2c. Blockholder ownership has a negative sign, as predicted by Hypothesis 2b, but is not statistically significant. On the other hand, insider ownership has a positive sign, and is statistically significant in the three-governance-form model, which runs contrary to the prediction of Hypothesis 2a. Our results about the effect of ownership structure on governance choice suggest that blockholders, particularly institutional blockholders, do exercise a monitoring role in preventing executives from empire building through excessive acquisitions. Yet the concentration of stock in the hands of executives has the opposite effect of leading to further expansion of the firm's boundaries through acquisitions, and/or less boundary contraction through divestitures. One possible explanation for this finding is that equity ownership by insiders beyond certain levels may have an entrenchment effect rather than an incentive-alignment effect (Morck, Shleifer, and Vishny, 1988).

Table 4. Determinants of governance form choice

Variable	Measure	Hyp.	Sign	Source
1. Focal firm's technological resources	Focal firm's R&D to sales ratio	1a	+	Compustat
2. Focal firm's marketing resources	Focal firm's advertising to sales ratio	1b	+	Compustat
3. Insider ownership	End-of-year % of common stock owned by insiders in the focal firm	2a	−	Compact D
4. Blockholder ownership	End-of-year % of common stock owned by blockholders in the focal firm	2b	−	Compact D
5. Institutional ownership	End-of-year % of common stock owned by institutions in the focal firm	2c	−	Compustat
6. Acquisition experience	Average number of acquisitions per year undertaken by the focal firm since 1990	3a	+	SDC
7. Divestiture experience	Average number of divestitures per year undertaken by the focal firm since 1990	3b	−	SDC
8. Alliance experience	Average number of alliances per year undertaken by the focal firm since 1990	3c	+, −	SDC
9. Diversification	Number of segments in different SIC codes reported by the focal firm	4a, 4b	+, −	Compustat
10. Focal–target firm relatedness	Proximity in the SIC codes of the focal and target (or partner) firm. = 1 when the primary SIC codes of the firms are the same, = 0.5 if the secondary SIC codes (or the primary and secondary SIC codes) are the same, = 0.33 if the tertiary SIC codes (or the primary, secondary, and tertiary SIC codes) are the same, etc.	5	+	Compustat
11. Size balance	Ratio of the sales of the smaller firm to the sales of the larger firm	6	−	Compustat
12. Prior alliances	Average no. of alliances per year between the focal and target (or partner) firm between 1990 and the deal	7	+, −	SDC
13. Focal firm–transaction relatedness	Proximity in the SIC codes of the focal firm and the deal. The measure is constructed in the same way as the firm relatedness variable. The deal SIC code is the primary SIC code of the target firm in acquisitions and divestitures, and of the joint enterprise in alliances	8	+	Compustat
14. Governance specialization	% of the focal firm's deals in year with the same governance form used in the deal	9a, 9b, 9c	+, −	SDC
15. Recency of same-form experience	Inverse of the number of years since the focal firm last engaged in a deal of the same type	10a, 10b	+, −	SDC
16. Target's technological resources	Target (or partner) firm's R&D to sales ratio	11a	+	Compustat
17. Target's marketing resources	Target (or partner) firm's advertising to sales ratio	11b	+	Compustat
18. Uncertainty[a]	Variance of the target (or partner) firm's return on assets (ROA) over the 3 previous years. ROA is defined as operating income after depreciation over total assets	12a	+	Compustat
19. Asset specificity[a]	(Human) Number of engineers as % of employees in the focal firm's industry	12a	+	Compustat
20. Internal organization costs	Number of managers as % of employees in the target (or partner) firm's industry	12b	−	Compustat

[a] Interaction uncertainty × Asset specificity

Table 5. Correlation matrix

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
1. Focal firm's technological resources	1.00																		
2. Focal firm's marketing resources	0.34	1.00																	
3. Insider ownership	−0.06	−0.08	1.00																
4. Blockholder ownership	−0.17	−0.13	0.53	1.00															
5. Institutional ownership	−0.23	−0.17	−0.08	0.03	1.00														
6. Acquisition experience	0.29	−0.01	−0.15	−0.26	−0.17	1.00													
7. Divestiture experience	0.01	0.07	−0.03	0.11	−0.15	−0.15	1.00												
8. Alliance experience	0.67	0.04	0.01	−0.17	−0.26	0.48	−0.15	1.00											
9. Diversification	0.03	−0.01	−0.03	−0.02	0.02	0.04	0.24	−0.07	1.00										
10. Focal–target firm relatedness	0.06	0.04	−0.04	−0.01	−0.04	0.05	−0.02	0.02	−0.12	1.00									
11. Size balance	−0.04	−0.04	0.03	0.01	0.01	−0.01	−0.04	−0.01	0.09	0.13	1.00								
12. Prior alliances	0.26	0.04	0.09	0.00	−0.07	0.27	0.00	0.01	0.07	0.13	0.20	1.00							
13. Focal firm–transaction relatedness	−0.04	−0.04	−0.04	0.02	0.07	−0.13	−0.13	−0.01	−0.04	0.11	0.02	0.04	1.00						
14. Governance specialization	−0.18	−0.11	0.10	0.09	0.06	−0.13	−0.15	−0.02	−0.05	0.06	0.03	0.06	0.02	1.00					
15. Recency of same-form gov. experience	0.16	0.05	0.00	−0.04	−0.09	0.18	0.13	0.03	−0.01	0.02	0.00	0.09	−0.04	0.14	1.00				
16. Target's technological resources	0.05	0.00	0.05	0.03	0.00	0.09	0.00	0.01	0.09	0.12	0.48	0.38	0.00	0.02	0.03	1.00			
17. Target's marketing resources	0.01	0.02	−0.01	0.00	0.00	0.02	0.01	−0.02	0.07	0.09	0.40	0.16	0.01	0.01	0.00	0.57	1.00		
18. Uncertainty × Asset specificity	0.05	−0.03	0.01	0.00	0.02	0.04	−0.05	−0.02	0.01	−0.02	−0.04	0.06	−0.02	0.02	0.03	0.01	−0.02	1.00	
19. Internal organization costs	0.08	−0.02	0.02	0.02	0.02	0.07	0.05	−0.01	0.03	0.04	−0.03	0.02	−0.01	0.00	0.02	0.06	−0.02	0.07	1.00

Table 6. Ordered probit analysis of governance form choice[a]

Variable	Hyp.	3 governance form values[b]		7 governance form values[c]	
		Coeff.	*t*-statistic	Coeff.	*t*-statistic
Focal firm's technological resources	1a	5.E-05	2.67***	4.E-05	2.34**
Focal firm's marketing resources	1b	6.E-07	0.02	1.E-05	0.40
Insider ownership	2a	0.006	2.37**	0.001	0.28
Blockholder ownership	2b	−0.003	−1.47	−0.001	−0.74
Institutional ownership	2c	−0.004	−2.34**	−0.003	−1.97**
Acquisition experience	3a	0.022	7.37***	0.027	9.91***
Divestiture experience	3b	−0.028	−4.20***	−0.029	−4.77***
Alliance experience	3c	−0.005	−3.29***	−0.007	−5.77***
Diversification	4	0.093	24.31***	0.081	23.76***
Focal firm-target firm relatedness	5	0.334	6.52***	0.230	5.01***
Size balance	6	0.458	4.19***	0.276	2.85***
Prior alliances	7	−0.161	−8.20***	−0.105	−5.94***
Focal firm–transaction relatedness	8	0.147	1.99**	0.198	2.94***
Governance specialization	9a,b	0.293	3.30***	0.606	7.43***
Recency of same-form experience	10a,b	−0.272	−3.37***	0.088	1.21
Target's technological resources	11a	2.E-05	0.48	−1.E-06	−0.03
Target's marketing resources	11b	1.E-04	1.39	1.E-04	1.50
Uncertainty × Asset specificity	12a	0.251	2.60***	−0.019	−0.22
Internal organization costs	12b	−0.028	−2.92***	−0.021	−2.46**
Cutpoint no. 1		−0.807	−4.83***	−0.431	−2.86***
Cutpoint no. 2		1.200	7.16***	−0.343	−2.28**
Cutpoint no. 3				−0.045	−0.30
Cutpoint no. 4				0.808	5.32***
Cutpoint no. 5				1.513	9.96***
Cutpoint no. 6				1.666	10.96***
Log likelihood		−3343		−6435	
No. of observations		4058		4058	
Prob. $>\chi^2$		0.000		0.000	
Pseudo R^2		0.127		0.071	

[a] The dependent variable is an ordinal variable called 'governance form', where higher values indicate higher degrees of integration. Huber/White/Sandwich robust standard errors are in parentheses. *** $p < 0.01$; ** $p < 0.05$; * $p < 0.10$

[b] Governance form takes one of three values: 2 for mergers and acquisitions, 1 for alliances and joint ventures, 0 for divestitures.

[c] Governance form takes one of seven values: 6 for mergers and full or majority acquisitions; 5 for minority acquisitions; 4 for joint ventures; 3 for non-equity alliances in technology, R&D or manufacturing; 2 for non-equity alliances in marketing; 1 for licensing arrangements; and 0 for spin-offs and divestitures.

The focal firm's acquisition and divestiture experience are significantly associated with the choice of deals of the same type. These findings provide support for Hypotheses 3a and 3b about the significance of experience effects, and are consistent with organizational learning theory and with prior evidence about acquisition and divestiture capabilities (Allen, 1998; Haleblian and Finkelstein, 1999; Hayward, 2002). The focal firm's alliance experience is negatively and significantly associated with more integrative governance choices. Because Hypothesis 3c posits that alliance experience favors the choice of alliances over both acquisitions and divestitures, it can only be tested using our binary probit models; thus we defer until later the discussion of the alliance experience results.

The firm's diversification level has a positive sign and is highly significant in both regressions. As explained in the development of Hypothesis 4a, this result can be explained by the combined resources–transaction costs view as well as by agency theory and by organizational learning arguments about acquisition capabilities. However, the result is inconsistent with the view that diversified firms are more likely than focused firms to engage in divestitures (and not in any further acquisitions) to reverse their earlier diversification strategy.

All the attributes of the focal firm–partner/target firm dyad are statistically significant, as are those

of the relationship between the focal firm and the transaction itself. As predicted by Hypothesis 5, the effect of relatedness (measured by proximity in SIC codes) between the two firms is positive. Hypothesis 8, about the relatedness between the activities of the focal firm and the transaction, is also supported. These results are consistent with the combined resources–transaction costs view that the cost of integration is lower the greater the similarity in activities between the partnering firms or between the focal firm and the goods or services being exchanged (Coase, 1972). It is also consistent with the theory and findings in Balakrishnan and Koza (1993), Krishnaswami and Subramaniam (1999), and Gilson *et al*. (2001) about information asymmetries leading to boundary-contracting choices. If, as Hennart and Reddy (1997, 2000) argue, the proximity in SIC codes between the partners is a proxy for digestibility and a way to test Hennart's (1988) indivisibilities theory against the asymmetric information view, our results can be seen as supportive of the latter and not of the former. To the extent that the size balance between the partnering firms is an alternative proxy for digestibility, our finding that size balance has a positive effect on the choice of integrative governance is also difficult to reconcile with Hennart's views.

The focal firm's governance specialization is associated with the choice of acquisitions over alliances, and alliances over divestitures, which supports Hypothesis 9b but not Hypotheses 9a or 9c. This finding indicates that experience spillovers are asymmetric across governance forms. In particular, governance specialization is important for moves toward greater integration, but not vice versa. This means that the knowledge acquired by conducting acquisitions tends to be specialized to future acquisitions, but that the knowledge acquired on alliances and divestitures is fungible and applies across both deal types. In other words, the lessons learned by firms in prior alliances may be applicable to divestitures but not to acquisitions, which is consistent with Zollo and Reuer's (2001) finding of a negative spillover effect of alliance experience on acquisition performance for low experience levels. Zollo and Reuer also find that the spillover effect is a function of the decisions made in the post-acquisition phase regarding the level of integration and the replacement of top management. The importance of post-acquisition integration to the overall success of acquisitions—i.e., the strategy implementation phase—may thus be the reason why governance specialization is critical for acquisitions but not so much for other governance forms.

Our findings also suggest that firms can learn valuable lessons from acquisitions that can be applied to subsequent alliances and divestitures—perhaps of the same units that were acquired earlier. The latter is consistent with the evidence in Porter (1987), Ravenscraft and Scherer (1987), and Kaplan and Weisbach (1992) indicating that between one third and one half of acquisitions are later divested. As Kaplan and Weisbach (1992) show, divested acquisitions are not in themselves evidence of failures.

We find that the recency of the focal firm's experience is less influential for acquisitions than it is for alliances or divestitures. This means that learning between deals is more potent at the non-integrative end of the spectrum. Firms are more likely to choose a divestiture if they have recently divested or an alliance if they have recently allied. Yet they are no more likely to choose an acquisition if they have recently acquired. In the hypothetical case in which a firm had engaged in deals of all three types with equal recency, the findings imply a greater likelihood that a less integrative governance form would be chosen. The learning effects underlying alliance capabilities are more persistent than those that underlie acquisition capabilities, and the learning effects underlying divestiture capabilities last longer than those that underlie alliance capabilities.

The interaction between uncertainty and asset specificity is positive and significant. This is supportive of Hypothesis 12a and is consistent with prior empirical evidence on transaction cost theory as reviewed in Shelanski and Klein (1995). The results also indicate that internal organizational costs—as measured by the percentage of the target/partner's industry employment as managers—are associated with less integrative choices, which is also consistent with a transaction–cost hypothesis (Hypothesis 12b) and with the evidence in Masten *et al*. (1991). Despite this, our measures are coarse proxies for the variables that they represent, and therefore lend themselves to alternative interpretations such as the resources–transaction costs view that underlies our Hypotheses 1a and 1b.

Choices between boundary-expanding governance forms and between boundary-contracting forms

Table 7 shows the results of our binary probit models of the choice between acquisitions and alliances and the choice between alliances and divestitures. The former choice is conditional on the focal firm having decided to expand its boundaries, while the latter is conditional on the firm having decided to contract its boundaries. These results are critical to test our non-linear Hypotheses, 3c and 7, which suggest that higher values of the independent variable will lead firms to choose alliances over both acquisitions and divestitures. They also help us understand which part of the continuum is really driving the ordered probit results of Table 6: the choice between acquisitions and alliances, or the choice between alliances and divestitures.

For instance, Table 7 shows that the results in Table 6 about the focal firm's technological resources being associated with more integrative governance choices (Hypothesis 1a) are entirely driven by choices between boundary-contracting modes (alliances vs. divestitures). The coefficient of the same variable in the probit model of acquisitions vs. alliances is in fact negative, although it is statistically insignificant. Furthermore, the coefficient of the marketing resources variable is also negative in both regressions, and is significant in the probit model of alliances vs. divestitures. This runs contrary to the prediction of Hypothesis 1b. On the other hand, Hypothesis 11a about the effect on governance choice of the target firm's technological resources, which was insignificant in the ordered probit models, becomes significant in the probit model of boundary expansion.[5] Thus, support for the combined resources–transaction costs view is more mixed in the probit models than it is in the ordered probits.

Ownership structure also plays a different role in boundary-expanding and boundary-contracting

[5] The boundary-contracting model (alliances vs. divestitures) cannot be identified if we include these two variables; therefore we estimate it without them.

Table 7. Probit analysis of governance form choice[a]

	Hyp.	Acquisitions/alliances[b]		Alliances/divestitures[c]	
		Coeff.	*t*-statistic	Coeff.	*t*-statistic
Focal firm's technological resources	1a	−1.E-05	−0.18	6.E-05	1.78*
Focal firm's marketing resources	1b	−9.E-06	−0.08	−7.E-05	−1.78*
Insider ownership	2a	−0.009	−0.77	0.007	1.65*
Blockholder ownership	2b	0.003	0.36	−0.006	−2.38**
Institutional ownership	2c	−0.012	−1.97**	−0.005	−2.05**
Acquisition experience	3a	0.034	3.82***		
Divestiture experience	3b			−0.035	−3.62***
Alliance experience	3c	−0.006	−1.24	0.028	9.72***
Diversification	4	0.030	2.01**	0.155	21.10***
Focal firm–target firm relatedness	5	0.633	3.37***	0.434	5.24***
Size balance	6	0.628	2.04**		
Prior alliances	7	−4.677	−27.14***		
Focal firm–transaction relatedness	8	0.437	1.72*	0.182	1.48
Governance specialization	9a,b	−0.399	−1.11	0.974	6.58***
Recency of same-form experience	10a,b	−0.672	−2.69***	−0.158	−1.32
Target's technological resources	11a	4.E-04	3.29***		
Target's marketing resources	11b	−4.E-04	−1.51		
Uncertainty × Asset specificity	12a	−0.125	−0.35	1.516	6.05***
Internal organization costs	12b	−0.012	−0.37	−0.063	−3.76***
Intercept		3.245	5.37***	−0.356	−1.37
Log-likelihood		−157		−1127	
No. observations		3379		3328	
Prob. $>\chi^2$		0		0	
Pseudo R^2		0.921		0.330	

[a] Robust standard errors are in parentheses. *** $p < 0.01$; ** $p < 0.05$; * $p < 0.10$
[b] The dependent variable equals one for acquisitions and zero for alliances.
[c] The dependent variable equals one for alliances and zero for divestitures.

decisions. In the former, only institutional ownership is significant and has the negative sign predicted by agency theory (Hypothesis 2c). In the latter, all three variables are significant, including blockholder ownership, which was insignificant in the ordered probit models, but is now negative and significant in support of Hypothesis 2b. The positive sign of insider ownership shows that the results that were contrary to agency theory in Table 6 are entirely attributable to the choice between alliances and divestitures. Consistent with agency theory and with earlier evidence of the incentive alignment role played by insider equity ownership, firms are less likely to engage in acquisitions the higher is the ownership stake of those insiders, although the coefficient is not statistically significant. While event study evidence shows that spin-offs and divestitures tend to create value for shareholders (Rosenfeld, 1984; Jain, 1985; Daley *et al*., 1997; Krishnaswami and Subramaniam, 1999), there is similar evidence of positive abnormal returns to joint ventures and alliances (McConnell and Nantell, 1985; Koh and Venkatraman, 1991; Chan *et al*., 1997; Das, Sen, and Sengupta, 1998). The case for an agency explanation to managers' preference for alliances over divestitures is therefore weaker than it is for managers' preference for acquisitions,

Table 8. Ordered probit analysis of governance form choice on alternative categories[a]

Variable	Hyp.	3 governance form values[b]		9 governance form values[c]	
		Coeff.	*t*-statistic	Coeff.	*t*-statistic
Focal firm's technological resources	1a	5.E-05	2.65***	4.E-05	2.39**
Focal firm's marketing resources	1b	2.E-05	0.59	8.E-06	0.32
Insider ownership	2a	0.007	2.53**	0.001	0.24
Blockholder ownership	2b	−0.003	−1.61	−0.001	−0.79
Institutional ownership	2c	−0.003	−1.82*	−0.003	−2.00**
Acquisition experience	3a	0.020	6.60***	0.027	9.99***
Divestiture experience	3b	−0.031	−4.58***	−0.029	−4.81***
Alliance experience	3c	−0.004	−2.89***	−0.007	−5.87***
Diversification	4	0.093	23.99***	0.080	23.74***
Focal firm–target firm relatedness	5	0.304	5.87***	0.231	5.05***
Size balance	6	0.452	4.07***	0.282	2.92***
Prior alliances	7	−0.117	−5.85***	−0.105	−5.92***
Focal firm–transaction relatedness	8	0.108	1.43	0.191	2.85***
Governance specialization	9a,b	0.574	6.38***	0.602	7.40***
Recency of same-form experience	10a,b	0.060	0.73	0.085	1.17
Target's technological resources	11a	−1.E-05	−0.29	−1.E-06	−0.03
Target's marketing resources	11b	2.E-04	2.31**	1.E-04	1.55
Uncertainty * Asset specificity	12a	0.241	2.46**	−0.016	−0.19
Internal organization costs	12b	−0.026	−2.68***	−0.021	−2.44**
Cutpoint no. 1		−0.311	−1.85*	−0.456	−3.03***
Cutpoint no. 2		1.840	10.78***	−0.439	−2.91***
Cutpoint no. 3				−0.351	−2.33**
Cutpoint no. 4				−0.053	−0.35
Cutpoint no. 5				0.800	5.28***
Cutpoint no. 6				1.505	9.93***
Cutpoint no. 7				1.658	10.93***
Cutpoint no. 8				1.689	11.13***
Log likelihood		−3200		−6630	
No. of observations		4058		4058	
Prob. $>\chi^2$		0.000		0.000	
Pseudo R^2		0.127		0.070	

[a] The dependent variable is an ordinal variable called 'governance form', where higher values indicate higher degrees of integration. Huber/White/Sandwich robust standard errors are in parentheses. *** $p < 0.01$; ** $p < 0.05$; * $p < 0.10$

[b] Governance form takes one of three values: 2 for mergers and acquisitions, 1 for alliances and joint ventures, 0 for divestitures. Minority acquisitions are included in the joint venture category.

[c] Governance form takes one of nine values: 8 for mergers and full or majority acquisitions; 7 for acquisitions of remaining interest; 6 for minority acquisitions; 5 for joint ventures; 4 for non-equity alliances in technology, R&D or manufacturing; 3 for non-equity alliances in marketing; 2 for licensing arrangements; 1 for spin-offs and equity carve-outs; and 0 for asset sales.

where abnormal returns to the bidding firm's shareholders are typically zero or negative (Jensen and Ruback, 1983). Hence, our finding that insider ownership is associated with the choice of alliances over divestitures is not so much at odds with the predictions of agency theory.

The results about acquisition and divestiture experience in boundary-expanding and boundary-contracting decisions, respectively, confirm the findings of Table 6 in support of Hypotheses 3a and 3b. Hypothesis 3c predicts a negative coefficient for alliance experience in boundary-expanding decisions and a positive coefficient in boundary-contracting decisions. We find that this is only true for the latter set of decisions, however: firms with greater alliance experience are more likely to choose alliances over divestitures, yet they are not significantly more likely to choose alliances over acquisitions. This result is consistent with the evidence about the asymmetry of governance form experience spillovers that we find in our ordered probit models.

The focal firm's level of diversification, the relatedness of both the target and the transaction with the focal firm's activities, size balance, prior alliances, the recency of same-form governance experience, and internal organization costs, all have the same sign as in the ordered probit models. All except the first two, however, are only significant in one of the decisions: the focal firm–transaction relatedness and the recency of same-form governance experience are only significant for the choice between alliances and acquisitions. Internal organization costs are only significant for the choice between alliances and divestitures. Size balance and prior alliances can only be included in the model of the choice between alliances and acquisitions due to identification constraints, but both are significant in that model. The negative sign of prior alliances provides support for Hypothesis 7, which is consistent with social embeddedness arguments and prior evidence about the importance of trust and prior ties (e.g., Gulati, 1998). As explained in the theory section, this result is also consistent with a real options view of governance choice. From that perspective, our result suggests that, while alliances confer upon firms an option to engage in subsequent acquisitions, firms rarely choose to exercise that option.

The results in Table 7 also show that the finding of a positive sign on the focal firm's governance specialization shown in Table 6 is entirely driven by the choice between alliances and divestitures. There are positive knowledge spillovers from alliances to divestitures, but not from acquisitions to alliances. The positive significance of the interaction between uncertainty and asset specificity reported in Table 6 is also driven by the alliance vs. divestiture choice.

Sensitivity analyses

Table 8 reports the results of two different sensitivity analyses. Column 1 shows the results of an ordered probit model with three governance choices: acquisitions, alliances, and divestitures. The difference between this model and the one previously reported (in column 1 of Table 6) is that we now reclassify minority acquisitions as alliances (equity alliances), instead of classifying them as acquisitions. The results are very similar to those in Table 6, with one exception: the recency of same-form governance experience, which was significantly negative in Table 6, now becomes positive and non-significant. The focal firm–transaction relatedness also loses statistical significance but maintains its positive sign relative to the regression in Table 6. On the other hand, the target firm's marketing resources now become significant (although they also maintain their positive sign), which is supportive of Hypothesis 11b.

Column 2 of Table 8 shows the results of another ordered probit model, this one with nine categories instead of the previous three or seven. The nine categories are the same as the earlier seven categories with two further subdivisions: one, acquisitions of remaining interest are separated from full or majority acquisitions as a category in themselves, less integrative than full or majority acquisitions but more integrative than minority acquisitions; two, spin-offs and carve-outs are separated from divestitures as a category in themselves, more integrative than divestitures proper, which are limited in this classification to asset sales. All variables have the same sign and significance level as in the seven-category model. This finding therefore confirms the robustness of our results to alternative classification schemes.

The analysis of the cutpoints estimated as a by-product of the ordered probit analysis provides a formal test of the adequacy of

our classification and of the appropriate level of aggregation or disaggregation of alternative governance structures. In the three-governance form models, the two cutpoints, which mark the boundary between acquisitions and alliances and the boundary between alliances and divestitures, are significant. Yet the first cutpoint is only significant at the 10 percent level in Table 8, while it is significant at the 1 percent level in Table 6. This result suggests that minority acquisitions are more appropriately classified as part of the acquisition category (as we do in Table 6) than as part of the alliance category (as we do in Table 8). In the seven- and nine-category models, all cutpoints are statistically significant at the 5 percent or 1 percent levels, with the exception of cutpoint number 3 in the seven-category model and cutpoint number 4 in the nine-category model. This cutpoint marks the boundary between joint ventures and non-equity alliances in technology, R&D, and manufacturing, in both models. Because most prior studies of boundary choice between alliances have focused on the choice between equity and non-equity alliances (e.g., Pisano, 1989; Oxley, 1997) our finding that these are the least distinct pair of alternatives suggests that the results in those studies are all the more powerful. Our analysis of the cutpoints also confirms the appropriateness of separating acquisitions of remaining interest from other acquisition categories, and spin-offs and carve-outs from other divestitures.

CONCLUSION

In this paper, we examine 9276 deal announcements to study the choices among acquisitions, alliances, and divestitures made by 86 firms in the *Fortune* 100 between 1990 and 2000. The deals in the sample include mergers and full or majority acquisitions; minority acquisitions; joint ventures; non-equity alliances in technology, R&D and manufacturing; non-equity alliances in marketing; licensing; and divestitures. The purpose is to evaluate the impact of firm attributes, target/partner attributes, transaction attributes, and the interactions among them, on the choice of governance form for boundary-spanning transactions.

Our findings provide varying levels of support for different theories. The combined resources, transaction costs, and internalization view is supported by the findings that a firm's technological resources are associated with its choice of alliances over divestitures, and that the target or partner's resources are associated with the focal firm's choice of acquisitions over alliances. Yet a firm with rich technological resources is not more inclined to pursue acquisitions over alliances. The marketing resources of both the focal and target firms are either irrelevant for boundary choices or favor the choice of divestitures over alliances, which runs contrary to this set of theories. Our findings about the effect of SIC relatedness and prior diversification levels on boundary choices are also consistent with this view but, as we note in the results section, they can also be explained by other theories.

Agency theory also finds mixed support in our results. A higher fractional ownership by institutions is associated with less acquisitive choices, as predicted by this theory. Yet, the theory's predictions for insider ownership are not supported. We find no support for Hennart's digestibility theory of joint ventures, regardless of the measure we use to test it.

The remaining theories that motivate our hypotheses are supported by our findings. As we have cautioned earlier in the paper, however, our measures are sometimes coarse proxies for theoretical constructs. Hence, our results yield more compelling support for some theories than for others. In particular, our study provides strong support for organizational learning explanations of governance specialization in acquisitions. The results yield weak support for variables associated with transaction cost economics, especially compared to the cumulative evidence from single-industry studies, where the measures used are sometimes more precise than those in this paper but are specialized to the industry of the study.

The main results, which yield support for each of many theories while controlling simultaneously for others, renders prior evidence in their favor all the more powerful, and implies that a multi-theoretical approach is needed to study firms' boundary choices. The implication for further research in this area is twofold. First, studies on the choice between acquisitions, alliances, and divestitures may lead to spurious results if the analysis omits alternative explanations. Second, the interaction between different explanations may be critical to the choice of governance form for a particular transaction. For example, firms may be

exposed to transactional hazards only when they possess certain kinds of resources. Certain kinds of resources may be valuable only when the firm is protected because transactional hazards make imitation difficult. Alliance or acquisition capabilities may be valuable only when the firm controls certain kinds of resources. Further study is necessary to investigate these possibilities.

The results of our binary probit models of boundary choice show that our main (ordered probit) results arise because of differences between both acquisitions and alliances and between alliances and divestitures. Yet, some variables are more significant determinants for one of the choices than they are for the other. The implication is that future research on boundary choice should consider divestitures as an additional alternative to alliances and acquisitions, and future research on divestitures should consider alliances as an alternative boundary-contracting mode to spin-offs, carve-outs, and asset sales.

Our findings point to several areas where additional research may be particularly fruitful. First, there may be much to learn about governance choice by studying the choice between alliances and divestitures. The boundary-contracting choice results on agency explanations suggest that the mechanisms in place to curb empire building by executives may in fact compel empire destruction. The analyses on transaction cost explanations indicate that market hazards may prevent firms from ceding control of activities through divestitures. Firms develop divestiture capabilities that are as potent an influence on deal choice as acquisition capabilities.

Second, organizational learning explanations are particularly important for all governance choices. The firms in the dataset—which are the largest in the economy—are more likely to do deals of the same type they did historically. Indeed, these effects are so strong that a question arises about why some firms do not pursue programs of acquisitions, alliances, or divestitures in which they may develop specialized capabilities.

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