

# SYNERGIES AND INTERNAL AGENCY CONFLICTS: THE DOUBLE-EDGED SWORD OF MERGERS

PAOLO FULGHIERI

*Kenan-Flagler Business School  
University of North Carolina  
Chapel Hill, NC 27599  
CEPR and ECGI  
paolo\_fulghieri@unc.edu*

LAURIE SIMON HODRICK

*Graduate School of Business  
Columbia University  
New York, NY 10027  
laurie.hodrick@columbia.edu*

*This paper investigates the interaction between synergies and internal agency conflicts that emerges endogenously in multi-division firms. A divisional manager's entrenchment choice depends directly on the specificity of her division's assets, because the specificity governs whether entrenchment activities reduce the likelihood of her division being divested. The presence of synergies, by modifying the difference between the value of assets in their current use and in alternative uses, may alter the divisional manager's entrenchment incentive. In "the double-edged sword of mergers," synergy and internal agency effects are of opposite sign and merger gains may not be increasing in expected synergies. We characterize when divisions should optimally stand alone and when they should be part of a merged firm. We predict an absence of diversifying mergers in industries plagued by misdeployed assets, offer a novel explanation for the cross-sectional variation in postmerger valuation, and explain why mergers may be valuable ex ante while leading to successful divestitures ex post.*

Hodrick gratefully acknowledges research support from the Lynde and Harry Bradley Foundation and the National Science Foundation through a Presidential Young Investigator Award. The comments of an anonymous referee, an associate editor, and seminar participants at Columbia, Dartmouth, CEPR symposium at Gerzensee, HEC at Jouy-en-Josas, IGIER at Bocconi, Northwestern, Ohio State, Stanford, the Universities of Amsterdam, California (Berkeley), Chicago, Florida, Michigan, Naples, North Carolina, Southern California, Turin, and Washington (Seattle), and the Meetings of the Western Finance Association, especially Eli Berkowitch, Harry DeAngelo, Bob Hodrick, Colin Mayer, Mark Mitchell, and René Stulz are gratefully acknowledged.

© 2006, The Author(s)

Journal Compilation © 2006 Blackwell Publishing

*Journal of Economics & Management Strategy*, Volume 15, Number 3, Fall 2006, 549–576

## 1. INTRODUCTION

Why do some mergers succeed more than others? Why do some industries diversify while others stay focused? This paper predicts the characteristics of firms that will merge and those that will stand alone and offers a novel explanation for the cross-sectional variation in postmerger valuation. Our model can also explain why mergers may be valuable *ex ante* while leading to successful divestitures *ex post*, as observed in the 1980s.

We develop these and other predictions by investigating the interaction between two important aspects of merging: synergies and internal agency conflicts. Synergies, which may arise from a variety of sources, denote the incremental positive (or negative) cash flow consequences of being merged. Expectations of positive synergies, arising from economies of horizontal or vertical integration, the combination of complementary resources, tax effects, or enhanced monopoly power, are exemplified by Jack Welch's repeated sentiment that "the drawing together of our thirteen different businesses . . . gives us a company that is considerably greater than the sum of its parts" (1990 General Electric Annual Report). Conversely, expectations of negative synergies, arising in the presence of diseconomies of scale or scope or other coordination costs, are exemplified by the decision to split AT&T into its various businesses, because "three mini-AT&Ts may be more nimble than one lumbering giant" (*The Economist*, 9/23/95 p. 66).

Internal agency conflicts emerge from the hierarchical structure of an organization, as lower-level managers act to protect their self-interests. As modeled in Milgrom (1988), Milgrom and Roberts (1990), and Meyer et al. (1992), these conflicts impair the smooth operation of the organization and result in inefficient behaviors, or "influence costs," including managerial entrenchment (Shleifer and Vishny, 1989; Bagwell and Zechner, 1993; and Edlin and Stiglitz, 1995), the misallocation of funds (Jensen, 1986), and rent seeking (Scharfstein and Stein, 2000). We model internal agency activities as entrenchment: to avoid personal costs, a divisional manager may be able to reduce the likelihood of her division being divested by reducing its attractiveness in an alternative use.

The net success of a merger is the trade-off between the expected synergies and the challenge of managing multiple divisions. Traditionally, these two factors have been treated as having well-understood, independent effects on firm value. Standard intuition suggested that, on the one hand, the gains from merging increase monotonically with expected synergies; on the other hand, increasing organizational complexity has been presumed to always exacerbate internal agency

conflicts and thus to increase influence costs. For example, in McAfee and McMillan (1995), the gains from merging are diminished by an additively separable agency cost. Similarly, in Meyer et al. (1992, p. 16), mergers add a new layer of hierarchy that causes "increased influence activities and costs."

A key observation of our model is that in the presence of synergies, optimal decision rules for one division of a merged firm impose externalities on other divisions, creating an interaction between synergies and internal incentives that is novel in the literature. Although it has been presumed that merging exacerbates entrenchment, we demonstrate that merging may increase, leave unchanged, or reduce the extent of entrenchment activities. Furthermore, we find that the degree of specificity of divisional assets affects both the size and the sign of the trade-off between synergies and internal agency conflicts. As in Williamson (1975, 1985), asset specificity is the difference between the value of assets in their current use and in alternative uses. The extent of entrenchment chosen by a divisional manager depends directly on the specificity of her division's assets, because the specificity governs whether entrenchment activities reduce the likelihood of her division being divested. The presence of synergies, by modifying the difference between the value of assets in their current use and in alternative uses, may alter the divisional manager's incentive to entrench herself.

The main intuition is as follows. Divestiture decisions in a stand-alone firm depend only on the comparison between the value of the assets in their current use and in an alternative use, which is precisely the extent of asset specificity. Divestiture decisions in a merged firm depend not only on asset specificity but also on the expected synergies: rather than making a divestiture decision for each division in isolation, the divestiture decision for a division in the merged firm must consider the division's total incremental contribution to the firm, including any synergies. The effect of synergies on the divestiture decision is tantamount to the effect of a change in the extent of the asset specificity by the amount of the synergy. As a consequence, for a given personal cost of entrenchment, synergies and the specificity of assets together determine the divisional manager's incentive to entrench herself in a merged firm, whereas asset specificity alone determines her entrenchment incentive in a stand-alone firm.

We find that although merging firms is always worthwhile for sufficiently positive synergies, merging firms with misdeployed assets might actually be detrimental for smaller, positive synergies due to the entrenchment incentives spawned by the merger. In firms with low asset specificity, negative synergies might motivate mergers done

to improve entrenchment incentives, with the merger serving as a commitment device for subsequent divestiture. "The double-edged sword of mergers" characterizes those circumstances in which the synergy and internal agency effects are of opposite sign. Because the gains from merging depend on both the synergy and internal agency effects, when these effects are of opposite sign, the gains from merging may not even be increasing in the expected synergies. Finally, in mergers of firms with high asset specificity, synergies alone dictate the choice of organizational form: divisions are merged if synergies are positive and are kept as stand-alone firms if they are negative.

Our model predicts an absence of diversifying mergers in industries plagued by misdeployed assets. Hence, although one might expect to observe mergers driven primarily by asset re-utilization for these divisions, we find that it may be preferable to deter these low-synergy mergers, when merging would encourage entrenchment behavior that dominates the improvement in asset utilization. Our model also offers a novel explanation for the cross-sectional variation in postmerger valuation, predicting that postmerger valuation should be increasing in the degree of asset specificity for diversifying mergers. This prediction appears consistent with the Morck and Yeung (2002) finding that diversifying mergers increase share value only in the presence of intangible assets, such as R&D expenditures, which are often highly firm-specific. Furthermore, our model can explain why mergers may be valuable *ex ante* while leading to successful divestitures *ex post*, as observed in the 1980s.

Our paper contributes to the incomplete contracts approach to the theory of the firm, as represented by the seminal contributions of Williamson (1975, 1985), Grossman and Hart (1986), Hart and Moore (1990), and, more recently, Rotemberg and Saloner (1994) and Rajan and Zingales (1998). In our model, the choice of organizational form is the instrument used by the principals (the board of directors) to control the incentives of the multiple subordinate agents (the divisional managers) who make production decisions. Our paper also relates to the literature on internal capital markets that studies the implications of a given organizational form for the efficient allocation of funds and capital budgeting decisions. Stein (1997) argues that internal capital markets reallocate scarce resources from weaker projects to stronger ones. Scharfstein and Stein (2000) show how divisional managers' rent-seeking behavior may undermine the benefits of internal capital markets. In a similar vein, Rajan et al. (2000) and Lamont and Polk (2002) show that diversity in resources and investment opportunities across divisions may lead to inefficient investment. Maksimovic and Phillips

(2002) argue that the diversification discount emerges from differences in managerial abilities. Wulf (2002) considers the optimal compensation of managers in a multi-unit firm. Unlike these other papers in the literature, we explicitly examine the interaction between synergies and internal agency conflicts to determine endogenously the number of firm segments.<sup>1</sup>

The organization of the paper is as follows. Section 2 develops the basic model. Section 3 introduces internal agency conflicts. Section 4 examines the synergy–agency interaction, providing the core results of our paper. Section 5 analyses the choice of organizational form. Empirical implications are presented in Section 6. Section 7 confirms the robustness of the results. Section 8 concludes.

## 2. THE BASIC MODEL

We examine two distinct production units, or “divisions,” which we refer to as divisions  $F$  and  $A$ . These divisions are currently stand-alone firms. Each division employs a manager, needed to oversee workers in the production process of her division, who has some discretion in making production decisions. Each firm is governed by a board of directors representing its shareholders. As a starting point, there are no conflicts of interest between a divisional manager and her board of directors; Section 3 adds this internal agency conflict. Throughout the paper, we abstract from other agency considerations: there are no conflicts of interest between a divisional manager and her employees nor between a board of directors and its shareholders.

The sequence of events is detailed in Table I. In the first period, at time 0, the boards of directors must decide whether to merge the two divisions into a single multi-division firm, or to keep them as separate, independent entities. If the two divisions are merged into a multi-division firm with one board of directors, joint production may provide synergistic gains, which have expectation  $R$ . These (positive or negative) synergies, which we take as given, measure the incremental expected joint production that a multi-division firm generates. Synergies are forgone in the event of any subsequent divestiture.<sup>2</sup> Alternatively, the divisions are kept as separate single-unit firms with

1. In subsequent work, Berkovitch et al. (in press) determine the number of segments by the trade-off between an internal agency cost and the benefits of share price informativeness. Matsusaka and Nanda (2002) determine the number of segments by the trade-off between a fixed cost of merging and the benefits of sharing internal resources in an internal capital market model. Here, the costs of merging emerge endogenously from the interaction between synergies and internal agency conflicts.

2. For simplicity, we assume that the synergies are independent of both the value of the assets in their current use and their value in alternative uses.

TABLE I.  
SEQUENCE OF EVENTS

---

Time  $t = 0$ : Choice of Organizational Form

The boards of directors chooses the organizational form, deciding whether to merge the two divisions,  $F$  and  $A$ , into a single multi-unit firm or to keep them as independent, single-division firms.

Time  $t = 1$ : Choice of Entrenchment Activities

Each division earns a nonrandom cash flow, which is normalized to zero, after which each divisional manager receives a fixed wage, which is normalized to zero. The manager of division  $A$  chooses her level of entrenchment activities  $i$ ,  $i \in \{0, 1\}$ , where the activities are undertaken at personal cost  $z$ . The manager of division  $F$  chooses not to entrench herself.

Time  $t = 2$ : Divestiture Decisions

The board of directors decides whether or not to divest division  $A$ , given its alternative "divestiture" opportunity. The outside opportunity depends on the level of entrenchment activities  $i$  chosen by the divisional manager at  $t = 1$ . It is equal to  $E$  if the manager engages in entrenchment activities and equal to  $D$  if she does not engage in entrenchment activities, where  $D > E$ . The manager of division  $A$  incurs a personal cost which is normalized to 1 if her division is divested. Division  $F$  is never divested.

Time  $t = 3$ : Cash Flow

If not divested, division  $A$  realizes a nonrandom cash flow with value  $A$ . Division  $F$  realizes a nonrandom cash flow with value  $F$ . If the two divisions belong to one multi-unit firm, synergies of value  $R$  are realized.

---

distinct boards. Because boards act in the best interest of their shareholders, no merger with strictly positive expected value is foregone.<sup>3</sup> We abstract from issues of capital structure and assume that firms are equity-financed.<sup>4</sup>

At time 1, each division earns a nonrandom cash flow, which we normalize for simplicity to zero for both divisions.<sup>5</sup> After this cash flow realization, each divisional manager receives a fixed wage, also normalized to zero.<sup>6</sup> When internal agency conflicts are introduced in Section 3, entrenchment can be chosen by the manager of division  $A$  at time 1.

At time 2, the board decides whether to keep or to sell off ("divest") each of its divisions. For division  $A$  standing alone, the divestiture decision depends exclusively on the comparison of the attractiveness

3. If indifferent, we assume that the divisions are kept as stand-alone entities.

4. In Section 7.2, we confirm that the results developed herein are robust to the inclusion of debt financing.

5. This cash flow guarantees that the continuation of each division is positive net present value at time 0.

6. In Section 7.2, we confirm that the results developed herein are robust to the inclusion of more complex incentive compensation contracts.

of the division's assets in their current use, measured by  $A$ , and in an alternative use, which we refer to as a "divestiture opportunity." We subsume in "divestiture" all changes in organizational structure or ownership that involve the disposition of the division to alternative uses. The comparison of asset values in different uses formalizes the notion of asset specificity developed in Williamson (1975, 1985): "asset specificity has reference to the degree to which an asset can be redeployed to alternative uses and by alternative users without sacrifice of productive value" (Williamson, 1989).

In this simplest form of the model, the divestiture opportunity is a nonrandom value  $D$ .<sup>7</sup> We denote the choice of whether the board of directors divests the single-division firm with  $\phi(A, D)$ , which takes the value 1 if division  $A$  is divested and zero otherwise. For a multi-division firm, the decision to divest division  $A$  depends not only on its asset specificity but also on the expected synergies: the decision compares the sum of the assets of divisions  $A$  and  $F$  in their current use, including the synergy, to their value in an alternative use. We denote the choice of whether the board of directors divests division  $A$  of a multi-division firm with  $\phi(A, D, R)$ , which again takes the value 1 if the division is divested and zero otherwise. We assume, for simplicity, that division  $F$  is optimally never divested.

Finally, for any division not divested at time 2, a cash flow is earned at time 3, at which point all investors are paid off, and the firm ceases to exist. This time 3 cash flow equals the cash flows generated by each nondivested division plus any realized synergies jointly produced if the firm has multiple divisions. Each division's name reflects its own non-random time 3 cash flow: the time 3 cash flows generated exclusively by divisions  $F$  and  $A$  are denoted  $F$  and  $A$ , respectively. We normalize the risk-free rate to zero.

We now characterize the first best outcome for division  $A$  as a stand-alone entity. The first best value,  $V$ , is given by

$$V \equiv \max\{A, D\}. \quad (1)$$

The first-best value of division  $A$  depends directly on the extent of its asset specificity. The division should be kept when its assets are more valuable in their current use, implying that the optimal divestiture choice,  $\phi^*(A, D)$ , equals 0 for  $A \geq D$ . The division should be divested

7. For simplicity, we assume that the value of the "divested" division is independent of its method of disposition. The main results are robust to the value of a division when sold to an external buyer being different from its value when the division is spun off as a stand-alone firm.

when its assets are more valuable in an alternative use, implying that  $\phi^*(A, D)$  equals 1 for  $A < D$ .<sup>8</sup>

In a firm where divisions  $F$  and  $A$  are merged, this divestiture policy for division  $A$  remains optimal in the absence of synergies, and the time 0 value of the merged firm is defined to be  $V_m \equiv F + V$ . In the presence of synergies, however, the divestiture policy for division  $A$  may differ from its stand-alone counterpart because the decision to divest division  $A$  entails a loss of the expected joint product,  $R$ . Rather than making a divestiture decision for that division in isolation, by comparing  $A$  and  $D$ , the divestiture policy for division  $A$  in the merged firm must consider the total incremental contribution to the firm, by comparing  $A + R$  to  $D$ . If division  $F$  is kept while division  $A$  is divested, then the payoff is  $F + D$ . If the divisions are merged and synergies are realized, the payoff is  $F + A + R$ . The divisions should be kept when their assets plus the synergies are more valuable in their current use, implying that the optimal divestiture decision,  $\phi^*(A, D, R)$ , equals 0 for  $A + R \geq D$ . Division  $A$  should be divested when its assets are more valuable in an alternative use, implying that  $\phi^*(A, D, R)$  equals 1 for  $A + R < D$ .<sup>9</sup>

The time 0 value of a merged firm in the presence of synergies equals the value of the two divisions as stand-alone entities plus the time 0 incremental value due to the presence of synergies, which is denoted by  $S(A, R)$ :

$$V_R \equiv F + V + S(A, R). \quad (2)$$

The synergy term,  $S(A, R)$ , quantifies the impact of those circumstances in which the optimal divestiture policy for division  $A$  is altered by the presence of synergies and is given by

$$S(A, R) \equiv \max\{A + R, D\} - \max\{A, D\}.$$

Notice that this term is an increasing function of the level of expected synergies  $R$ , with  $S(A, 0) = 0$ .

The choice of the optimal organizational form is made by the boards of directors at time 0 based on a comparison of the value of the two divisions when merged into a multi-division firm and the value if they are kept as stand-alone units. Predictably, because the synergy term  $S$  is of the same sign as  $R$ , the two divisions should be merged if synergies are positive and kept as stand-alone divisions if synergies are negative (or zero, because we assume that divisions are kept separate under indifference).

8. We assume that, if indifferent, the board of directors keeps division  $A$ .

9.  $\phi^*(A, D, R)$  is equivalent to  $\phi^*(A, D)$  when synergies are zero.



### 3. INTERNAL AGENCY CONFLICTS IN ISOLATION

This section includes an internal agency conflict between the manager of division *A* and her board of directors in the absence of synergies, and Section 4 examines the critical interaction between the expected synergies and the manager's entrenchment behavior. Throughout the analysis, we continue to abstract from conflicts of interest other than the one between this divisional manager and her board of directors. Specifically, we continue to assume that the managers and employees within a division act collectively, and that the board of directors acts in the best interest of its company's shareholders.

We introduce a disagreement between the divestiture policy preferred by the divisional manager and the one that maximizes firm value by assuming that divestitures are personally costly to her. There are several reasons why this might be so. Managers might be hurt by a change in asset utilization if they have developed asset-specific human capital, which is devalued when the division is divested and assets are put in an alternative use. Managers might be hurt by organizational change if they have developed firm-specific human capital, which is devalued when the division is divested. Furthermore, if there is a distribution of managerial skill, and if the value of a division may be correlated with its manager's skills, the divestiture of a division may negatively affect its manager's reputation and harm her external market value. Thus, our model best describes those situations where the divisional manager faces a detrimental change in asset utilization or organization, like asset sales or partial breakups. Certainly, there may also be benefits of divestiture, such as the spin-offs modeled in Aron (1991). In balance, however, we believe that the disadvantages often dominate for the manager, and we evaluate the consequences of such net costs. We model the personal loss incurred by a manager on divestiture as a non-pecuniary cost normalized to 1.<sup>10</sup>

Because the time 2 divestiture decision for division *A* depends on its divestiture opportunity, its manager may decrease the likelihood of incurring personal cost by reducing the attractiveness of divestiture. This may be achieved by engaging in costly entrenchment activities that serve to make the divisional manager "irreplaceable." As shown in Shleifer and Vishny (1989) or Edlin and Stiglitz (1995), divisional managers may invest in assets with returns dependent on their own information or attributes to entrench their position within the company.<sup>11</sup>

10. Although we recognize that these personal costs may differ depending on the specific method of disposition, for simplicity, we assume that the cost is independent of the mode of divestiture.

11. For evidence of entrenchment activities in both focused and diversified firms, see Khanna and Tice (2001).

Internal agency activities could instead serve to increase the budget of one division within an organization, as in Scharfstein and Stein (2000) and Rajan et al. (2000). Such an alternative notion of agency is a complement, rather than a substitute, to the entrenchment modeled here, because in both cases keeping the division is made relatively more attractive when the divisional manager engages in these activities at the expense of the firm.<sup>12</sup>

We modify the basic model as follows. At time 1, the manager of division  $A$  has the option to engage in activities that influence the future divestiture decisions made by her board of directors. For simplicity, we assume that the chosen level of entrenchment activities, denoted by  $i$ , can take only the discrete values 0 (no activity) or 1 (activity), that is,  $i \in \{0, 1\}$ . We assume that these entrenchment activities reduce the attractiveness of the divestiture opportunity from  $D$  to an "entrenched" nonrandom value  $E$ , where  $D > E$ . These activities are costly for the manager, and if pursued, they impose a personal cost  $z$ . This captures the insight that it takes personal effort or resources to alter the firm's divestiture opportunities, for example, by altering the composition of divisional assets. Furthermore, if a manager must acquire firm-specific skills to become irreplaceable to the firm, such specialization would require additional effort on the part of the manager. To make entrenchment possible, we assume that  $z < 1$ .

Finally, we assume again that each divisional manager receives a fixed wage, normalized to zero, and that she has no stake in the corporation.<sup>13</sup> This assumption can be justified, for example, when contracts contingent on the realization of the value of the divisional assets in alternative uses are unenforceable, such that the conflicts of interest between divisions and the board of directors cannot in general be completely resolved. In Section 5, we confirm that the results developed herein are robust to the inclusion of contracts contingent on the divested value of a division.

A manager of division  $A$  chooses at time 1 whether or not to entrench herself to maximize her utility, given by

$$U(A, i) = -\phi^*[A, iE + (1 - i)D] - zi, \quad (3)$$

where  $\phi^*[A, iE + (1 - i)D] \in \{0, 1\}$  is the optimal decision made by the board of directors of whether or not to divest the division when its manager chooses entrenchment activities of level  $i$ .

12. In our model, continuation is relatively more attractive because divestiture is less attractive. In those models, an increased budget makes continuation relatively more attractive.

13. The use of a fixed-wage payment is common in contexts such as those modeled here, for example, Stulz (1990), Meyer et al. (1992), and Bagwell and Zechner (1993).

Thus,  $\phi^*[A, iE + (1 - i)D]$  equals  $\phi^*[A, E]$  when the manager chooses to entrench, because  $i = 1$ , and equals  $\phi^*[A, D]$  when she chooses not to entrench, because  $i = 0$ . In making her entrenchment decision, the divisional manager compares the marginal benefit of making her divestiture opportunity less attractive,  $-\phi^*[A, E] + \phi^*[A, D]$ , to the marginal cost of undertaking these activities,  $z$ .

The asset specificity of division  $A$  can be fully characterized in one of three possible ways. One possibility is that its assets have strictly greater value in alternative uses than in their current use. Another possibility is that its assets are currently at their highest-valued use. Finally, its assets may be more or less valuable in their current use than in alternative uses. All three possible characterizations emerge here: assets have strictly greater value in alternative uses than in their current use for  $A < E$ , assets are currently at their highest-valued use for  $A \geq D$ , and assets may be more or less valuable in their current use than in alternative uses for  $E \leq A < D$ , depending on the chosen entrenchment behavior. This identifies three regions which depend on the extent of division  $A$ 's asset specificity:

Region 1: Misdeployed assets  $A < E$ ;

Region 2: Low asset specificity  $E \leq A < D$ ;

Region 3: High asset specificity  $A \geq D$ .

As will become apparent in subsequent analysis, this parameterization allows for the broadest set of possibilities: merging may increase, leave unchanged, or reduce the extent of entrenchment activities chosen by the division.

We now assess the optimal entrenchment level chosen by the manager of division  $A$  standing alone at time 1,  $i_s^*$ . We obtain the following proposition, which is summarized in Figure 1.

**PROPOSITION 1:** *For a manager of division  $A$  standing alone, the unique equilibrium has her engaging in entrenchment activities only when assets have low specificity,  $E \leq A < D$ . Hence,  $i_s^* = 1$  only when  $E \leq A < D$  and  $i_s^* = 0$  otherwise.*

As argued in Section 2, division  $A$  should be divested by the board of directors only if it faces a divestiture opportunity, which is strictly better than its asset value under current use. When divisional assets are misdeployed (Region 1,  $A < E$ ), the value of the assets in their current use is dominated by their value in alternative uses even if entrenchment is chosen. Because managerial entrenchment decisions do not influence the board of directors' divestiture decisions, no costly entrenchment occurs.

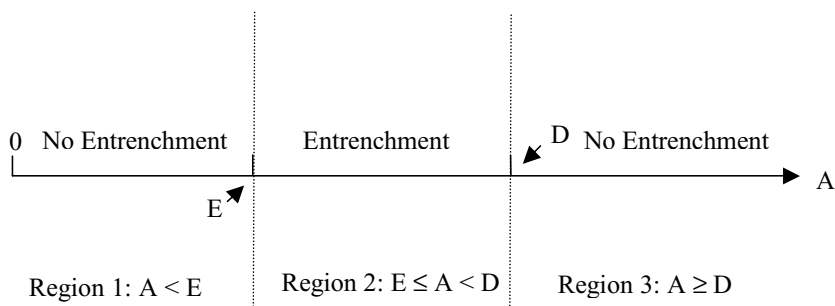


FIGURE 1. THE ENTRENCHMENT BEHAVIOR OF THE DIVISIONAL MANAGER IN THE STAND-ALONE FIRM DESCRIBED IN PROPOSITION 1

When divisional assets have low asset specificity (Region 2,  $E \leq A < D$ ), whether or not assets have higher value in their current use depends critically on the value of the alternative use. These firms are therefore vulnerable to entrenchment. Examination of equation (3) reveals that entrenchment is optimal in this case, because

$$U(A, 1) - U(A, 0) = -\phi^*[A, E] + \phi^*[A, D] - z = 1 - z > 0,$$

given that  $\phi^*[A, E] = 0$ ,  $\phi^*[A, D] = 1$  and  $z < 1$ .<sup>14</sup>

Finally, when divisional assets have high asset specificity (Region 3,  $A \geq D$ ), the value of assets in their current use dominates their value in alternative uses, making entrenchment immaterial. Hence, the unique equilibrium for a stand-alone firm of division  $A$  is characterized by the manager choosing to entrench herself only when  $E \leq A < D$ .

The time 0 value of division  $A$ , given in equation (1) absent agency conflicts, now depends additionally on the level of entrenchment chosen by its manager. Recall that the first-best value  $V$  is the value of the stand-alone division absent internal agency conflicts. This value, however, does not correspond to an equilibrium in the presence of agency conflicts when  $E \leq A < D$ . The *ex ante* value of division  $A$  standing alone,  $V_s(A, i_s^*)$ , can be written as

$$V_s(A, i_s^*) \equiv V - C(A, i_s^*), \quad (4)$$

where  $V$  as given in equation (1) equals  $V_s(A, 0)$ , and where the agency term

$$C(A, i_s^*) \equiv i_s^* \times [\max(A, D) - \max(A, E)]$$

14. Notice that, in terms of incentives, reducing the value of the divestiture opportunity by  $D - E$  is tantamount to holding the outside opportunity fixed and raising the value of the division's assets under current use by  $D - E$ .

quantifies the reduction in firm value due to the anticipated entrenchment activities,  $i_s^*$ .

#### 4. THE INTERACTION BETWEEN SYNERGIES AND INTERNAL AGENCY CONFLICTS

We now consider the interaction between synergies and internal agency conflicts and provide the core results of the paper. Define  $\phi^*(A, iE + (1 - i)D, R)$  as the optimal divestiture decision made by the board of directors when the divisional manager chooses entrenchment level  $i$ , given expected synergies  $R$ .<sup>15</sup>  $\phi^*[A, iE + (1 - i)D, R]$  equals  $\phi^*[A, E, R]$  when the manager chooses to entrench and  $\phi^*[A, D, R]$  when she chooses not to entrench. The utility of a manager of division  $A$  in a multi-division firm is given by

$$U(A, i, R) = -\phi^*[A, iE + (1 - i)D, R] - zi. \quad (5)$$

We denote  $i_R^*$  as the equilibrium level of entrenchment activities chosen by the manager of division  $A$  in the merged firm, recognizing that the expected synergy may alter the optimal divestiture policy and therefore may alter the manager's optimal entrenchment choice. We obtain the following proposition, which is summarized in Figure 2.

**PROPOSITION 2:** *For a manager of division  $A$  in a multi-division firm, the unique equilibrium has her engaging in entrenchment activities only when  $E \leq A + R < D$ . Hence,  $i_R^* = 1$  only when  $E \leq A + R < D$  and  $i_R^* = 0$  otherwise. The desirability of entrenchment depends on the level of expected synergies,  $R$ , relative to the extent of specificity of divisional assets,  $A$ , as follows:*

*Region 1: Mis-deployed assets  $A < E$ : The divisional manager engages in entrenchment activities only for moderate positive synergies,  $0 < E - A \leq R < D - A$ ;*

*Region 2: Low asset specificity  $E \leq A < D$ : The divisional manager engages in entrenchment activities only for small (positive or negative) synergies,  $E - A \leq R < D - A$ ;*

*Region 3: High asset specificity  $A \geq D$ : The divisional manager engages in entrenchment activities only for moderate negative synergies,  $E - A \leq R < D - A < 0$ .*

Proposition 2 provides one of the key insights of the paper. Once the divestiture decision for division  $A$  depends on any synergies expected to be generated in the event of merger, synergies can alter the incentive for the divisional manager to entrench herself through their effect on divestiture decisions. Notice that in the absence of synergies,

15.  $\phi^*[A, iE + (1 - i)D, R]$  is equivalent to  $\phi^*[A, iE + (1 - i)D]$  when synergies are zero.

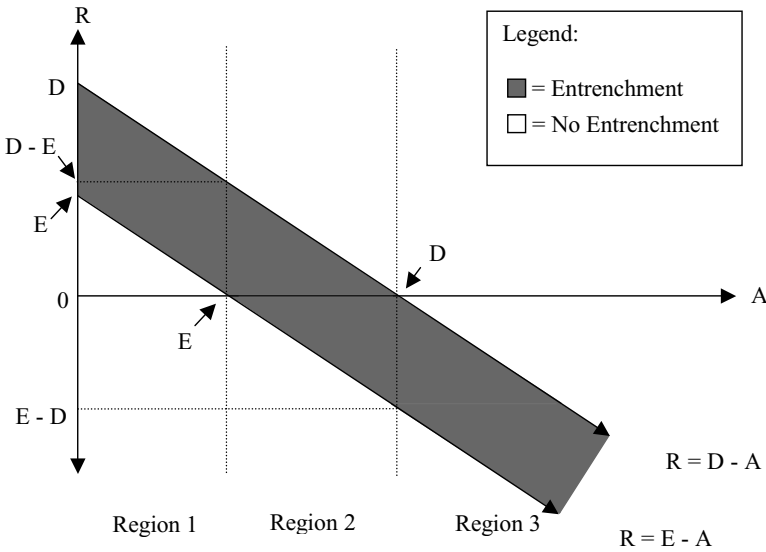


FIGURE 2. THE ENTRENCHMENT BEHAVIOR OF THE DIVISIONAL MANAGER IN THE MERGED FIRM DESCRIBED IN PROPOSITION 2

when  $R = 0$ , the critical entrenchment range  $E \leq A + R < D$  simplifies to  $E \leq A < D$ , which defined Region 2 of Proposition 1.<sup>16</sup> Because synergies systematically alter the key comparison of  $A + R$  to the value of divestiture opportunities, the effect of synergies on the divestiture decision is tantamount to the effect of a change in the extent of the asset specificity by the amount of the synergy. This is shown in Figure 2: the presence of synergies systematically shifts the critical entrenchment range in a counter-clockwise direction from the range shown in Figure 1. Thus, positive synergies may induce entrenchment within Region 1 and may deter entrenchment within Region 2; correspondingly, negative synergies may induce entrenchment within Region 3 and may deter entrenchment within Region 2.

The impact of merging and thus increasing organizational complexity is therefore no longer a foregone conclusion; rather, depending directly on the extent of asset specificity and the expected synergy, merging may increase, leave unchanged, or actually reduce the extent of the internal agency conflict. When assets are misdeployed in their current use and expected synergies are moderately positive (within Region 1),

16. Observe that in the neighborhood around zero synergy, synergies have no impact on divestiture decisions and therefore have no effect on internal agency conflicts; internal incentives for the merged firm are always the same as for stand-alone divisions.

synergies may enhance the incremental contribution enough that those assets which are misdeployed when standing alone are worth keeping in their current use facing divestiture opportunity  $E$ , because  $A + R \geq E$ , but not worth keeping when facing divestiture opportunity  $D$ , because  $A + R < D$ . In this range, incentives are compromised in a merged firm, with the divisional manager choosing to engage in entrenchment activities that she would never choose as a single-division firm. In terms of entrenchment incentives, the moderate positive synergies are tantamount to the asset specificity moving from the misdeployed region to the low specificity region. Note that in this case, the merger generates synergistic and internal agency effects of opposite sign.

When asset specificity is low and synergies are sufficiently positive or negative (within Region 2), the divestiture decision no longer depends on the value of the outside opportunity: sufficiently positive synergies,  $A + R \geq D$ , make the division always worth keeping, whereas sufficiently negative synergies,  $A + R < E$ , make the division always worth divesting. In terms of entrenchment incentives, sufficiently positive synergies are tantamount to the asset specificity moving from the low specificity region to the high specificity region, whereas sufficiently negative synergies are tantamount to the asset specificity moving from the low specificity region to the mis-deployed region. For sufficiently negative synergies, the divisional manager may therefore choose not to engage in entrenchment activities that she would choose as a single-division firm. Note that in this case, the merger generates synergistic and internal agency effects of opposite sign.

When asset specificity is high and synergies are moderately negative (within Region 3), the divisional manager may choose to engage in entrenchment activities that she would never choose as a single-division firm.

Observe further that when synergies are sufficiently positive,  $A + R \geq D$ , the division is never optimally divested irrespective of its asset specificity and no entrenchment is chosen.

## 5. THE CHOICE OF ORGANIZATIONAL FORM

We now assess the optimal organizational form that the boards of directors chooses at time 0 for the nascent firm. From Section 4 we know that in the presence of synergies, a multi-division firm may exhibit more, less, or the same level of entrenchment activities as would comparable stand-alone divisions. The *ex ante* value of the merged firm,  $V_R(A, i_R^*, R)$ , is given by

$$V_R(A, i_R^*, R) \equiv F + V - C(A, i_R^*) + S(A, i_R^*, R), \quad (6)$$

where  $i_R^*$  replaces  $i_s^*$  in the agency term  $C(A, i_s^*)$  defined in equation (4). This agency term represents the reduction in firm value due directly to the anticipated entrenchment choices detailed in Section 4. Note that if entrenchment is unaffected by merging, such that  $i_R^* = i_s^*$ , then this agency term is identical to that given in Section 3 for the stand-alone division  $A$ .

The synergy term, which quantifies those circumstances in which the optimal divestiture choice is altered by the presence of synergies given entrenchment activities, is given by

$$S(A, i_R^*, R) \equiv (1 - i_R^*) \times [\max(A + R, D) - \max(A, D)] \\ + i_R^* \times [\max(A + R, E) - \max(A, E)].$$

Note specifically that, as given in equation (2),  $V_R(A, 0, R) = F + V + S(A, R)$ , because  $S(A, 0, R) = S(A, R)$ , and that  $V_R(A, 0, 0) = F + V = V_m$ , the sum of the value of the stand-alone divisions, because  $S(A, 0) = 0$ .

The gain from merging,  $\Delta$ , is found by comparing equations (6) and (4) and is given by

$$\Delta \equiv V_R(A, i_R^*, R) - V_s(A, i_s^*) = \Delta C(A, i_R^*, i_s^*) + S(A, i_R^*, R), \quad (7)$$

where

$$\Delta C(A, i_R^*, i_s^*) \equiv -C(A, i_R^*) + C(A, i_s^*).$$

Equation (7) reveals the two factors that determine the net gain from merging and hence the optimal organizational form chosen for the nascent firm. The first determinant is the impact of merging on the internal agency conflict, as captured by the term  $\Delta C(A, i_R^*, i_s^*)$ . As shown in Proposition 2, the entrenchment effect depends both on the nature of divisional assets and on the expected synergies, and it is of ambiguous sign. The second factor affecting the gain from merging is the incremental (positive or negative) value generated by the (positive or negative) expected synergies,  $R$ , as captured by the synergy term. In a pure transaction merger with no expected synergy, such that  $R = 0$ , equation (7) provides the anticipated result that a merger fails to have any substantive impact, either on divestiture decisions, on internal agency conflicts, or on the firm's value relative to two single-division firms,  $V_m$ .

We obtain the following proposition, which is summarized in Figure 3.

**PROPOSITION 3:** *If equation (7) is positive, then in equilibrium the boards of directors chooses to merge the divisions, with the manager of division A choosing entrenchment level  $i_R^*$ . If equation (7) is negative, then in equilibrium the boards of directors chooses to maintain single-division firms, with the manager of*



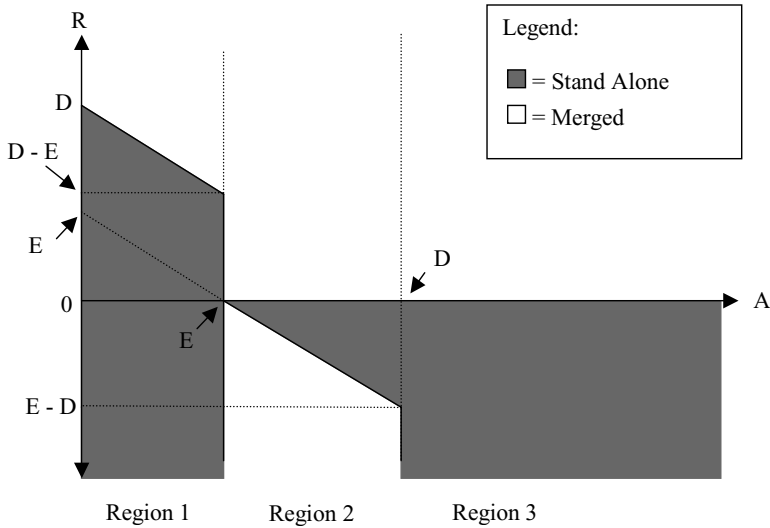


FIGURE 3. THE CHOICE OF ORGANIZATION FORM DESCRIBED IN PROPOSITION 3

division A choosing entrenchment level  $i_g^*$ . The desirability of merging depends on the level of expected synergies,  $R$ , relative to the extent of specificity of divisional assets,  $A$ , as follows:

Region 1: Misdeployed assets  $A < E$ : The divisions are optimally merged only when expected synergies are sufficiently positive,  $R \geq D - A$ .

Region 2: Low asset specificity  $E \leq A < D$ :

(a) The divisions are optimally merged for positive expected synergies,  $R > 0$ :

(b) The divisions are optimally kept as stand-alone firms for non-positive expected synergies,  $R \leq 0$ , unless expected synergies are sufficiently negative,  $R < E - A$ , in which case the divisions are optimally merged at time 0 and division A is divested at time 2.

Region 3: High asset specificity  $A \geq D$ : The divisions are optimally merged when expected synergies are positive and kept as stand-alone firms when expected synergies are nonpositive.

Proposition 3 provides the second key insight of the paper, that asset specificity affects the choice of organizational form through its effect on both the size and the sign of the trade-off between synergies and internal agency conflicts. In the neighborhood around zero synergies, the organizational form decision is straightforward because synergies

have no impact on divestiture decisions and therefore on the internal agency conflict. At other synergy levels, however, synergies interact with asset specificity to affect incentives and hence affect the optimal choice of whether or not to merge the divisions.

When divisional assets are misdeployed (Region 1), for negative synergies including the neighborhood around zero, the decision to divest division  $A$  is optimal for either merged or stand-alone divisions irrespective of the level of entrenchment activities, because  $A + R < E$ . As a consequence, no costly entrenchment would be chosen in either organizational form. Because the boards of directors is indifferent between merging these divisions and keeping them separate at time 0, we assume (in footnote 3) that the two divisions are kept as stand-alone entities. When expected synergies are sufficiently positive,  $R \geq D - A$ , the board of directors never divests division  $A$  in a merged firm, despite the fact that her assets are misdeployed in their current use, because of the incremental synergy benefit they bestow. As a consequence, no costly entrenchment would be chosen in either organizational form. In this case, the two divisions will be optimally merged to capture the positive synergy.

It is significant that for positive synergies of level  $E - A \leq R < D - A$ , the manager of division  $A$  in the merged firm would choose entrenchment activities, whereas as a stand-alone manager she would not. This implies that the stand-alone firm would divest these misdeployed assets, whereas the merged firm would not. In this region it is therefore optimal to keep the divisions separate despite forgone positive synergies to facilitate the divestiture of misdeployed assets. In the next subsection, we characterize the double-edged sword of mergers as those circumstances in which the synergy and agency effects are of opposite sign, and we identify those cases in which the agency effect actually dominates.

When assets have low asset specificity (Region 2), divisions are optimally merged when the expected synergies are positive. Notice that when synergies are in the range  $0 < R < D - A$ , the entrenchment incentives of the manager of division  $A$  are the same as in the stand-alone firm (because their divestiture decisions are the same), and merging allows the synergies to be realized. When the synergies are sufficiently positive,  $R \geq D - A$ , the board of directors will never divest division  $A$  in a merged firm, making entrenchment by division  $A$ 's manager superfluous. In this case, mergers have the dual advantage of generating positive synergies and improving internal incentives.

When assets have low asset specificity and synergies are small and negative,  $R \geq E - A$ , divisions are optimally kept as

stand-alone firms. In this case, the entrenchment incentives of the manager of division  $A$  are the same as in the stand-alone firm (because their divestiture decisions are the same), and mergers are avoided because of the negative synergies. It is significant that when the synergies are sufficiently negative,  $R < E - A$ , the board of directors will always divest division  $A$  in a merged firm, making her entrenchment superfluous. Thus, in this region, internal incentives in a merged division may be sufficiently better than for the stand-alone division that a merger is desirable despite negative synergies, another example of the double-edged sword of mergers. In such a case, the two divisions are optimally merged at time 0, followed by the divestiture of division  $A$  at time 2, with the negative synergy merger serving as a commitment device for subsequent divestiture of division  $A$ .

When divisional assets have high asset specificity (Region 3), entrenchment activities are irrelevant. The synergy effect therefore dictates the choice of organizational form: the boards of directors will pursue all value-increasing mergers and will avoid all value-destroying ones. Notice that when the negative synergies are between  $E - A$  and  $D - A$ , they motivate entrenchment behavior. In this case, mergers have the dual disadvantage of generating negative synergies and compromising internal incentives.

Finally, observe that when synergies are sufficiently positive, the decision to merge is determined solely by the magnitude of the expected synergy, irrespective of the degree of asset specificity.

### 5.1 THE DOUBLE-EDGED SWORD OF MERGERS

The relation between the gains from merging,  $\Delta$ , as defined in equation (7), and the level of the expected synergies,  $R$ , is represented in Figure 4. In the absence of either synergies or internal agency conflicts, merging is irrelevant and the gains from merging,  $\Delta$ , are zero. This is represented by the origin in Figure 4. Standard intuition and the results in Section 2 then suggest that, all else equal, the gains from merging should be monotonically increasing with the expected synergies. In the simplest case,  $\Delta$  equals the synergy level, as represented by line  $\alpha$  in Figure 4.<sup>17</sup>

Once internal agency conflicts are included, the relation between  $\Delta$  and the synergy level is less obvious. Both McAfee and McMillan (1995) and Meyer et al. (1992) assume that merging two divisions into one firm increases the internal agency costs, uniformly reducing the gains from mergers. This possibility is represented by line  $\beta$  in Figure 4,

17. In the notation of our model,  $S(A, 0, R) = R$  in the simplest case.

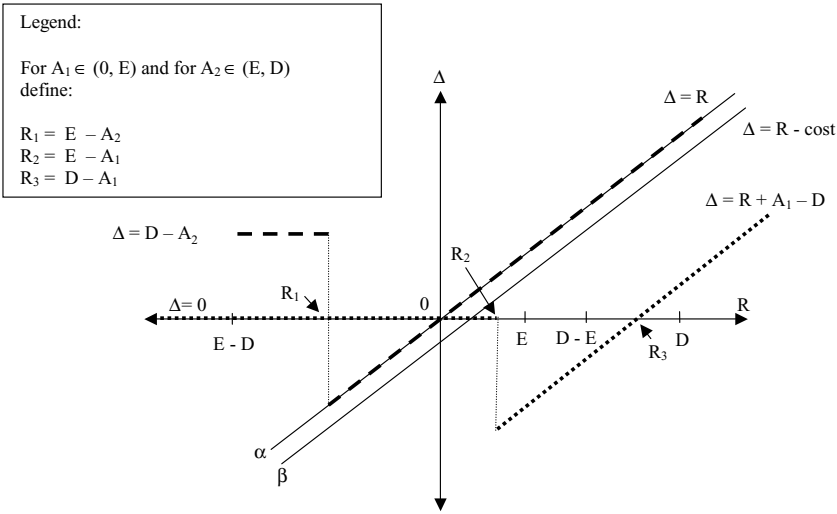


FIGURE 4. EXAMPLES OF THE DOUBLE-EDGED SWORD OF MERGERS

a downward shift of line  $\alpha$ . In contrast, Proposition 2 reveals a significant interaction between synergies and internal agency conflicts. The double-edged sword of mergers characterizes those circumstances in which the synergy and internal agency effects are of opposite sign. Because the gains from merging depend on both the synergy and internal agency effects, when these effects are of opposite sign, the gains from merging may not even be increasing in the expected synergy. Equation (7) reveals that a non-monotonicity between  $\Delta$  and the expected synergy level occurs whenever the impact of merging on the internal agency conflict, captured with the terms  $\Delta C(A, i_R^*, i_s^*)$ , is of opposite sign and dominates in size the expected synergy effect, captured with the synergy term,  $S(A, i_R^*, R)$ .

Figure 4 represents the two cases in which the double-edged sword of mergers emerges in our model. The first case occurs within Region 1 when assets are misdeployed,  $A < E$ . Merging may be dominated, despite moderate positive expected synergies, because divisional entrenchment activities are induced by the synergies. This case is represented by the dotted line in Figure 4 for synergy levels in the interval  $(R_2, R_3)$ . The second case occurs within Region 2 when asset specificity is low,  $E \leq A < D$ . Merging the divisions at time 0 with a commitment to divest division A at time 2 may be optimal, despite negative expected synergies, because entrenchment activities are deterred by the synergies.

This case is represented by the dashed line in Figure 4 for synergy levels  $R \leq R_1$ .

## 6. EMPIRICAL IMPLICATIONS

The analysis of the interaction between synergies and internal agency conflicts yields several novel empirical implications concerning observed merger and divestiture activity and the cross-sectional variation in firm valuation.

*Implication 1: For diversifying mergers, postmerger valuations are increasing in the degree of asset specificity, all else equal.* Proposition 2 implies that, for small to moderate positive synergies such as in diversifying mergers, merged firms with a higher degree of asset specificity confront less internal agency conflicts. This implies a negative relation between asset specificity and the incidence of entrenchment activities and suggests higher valuations for diversifying mergers of units with higher asset specificity, all else equal.

Recent research has documented a “diversification discount,” whereby conglomerates sell on average at a 13%–15% discount to the imputed combined value of their segments. This discount is found to have significant cross-sectional variation in both its sign and size.<sup>18</sup> Specifically, Morck and Yeung find that diversifying mergers increase share value only in the presence of intangible assets, such as R&D expenditures. Although our paper provides no insight into why mergers that generate a diversification discount would be executed, because our paper is predicated on market efficiency, it does suggest that a diversification discount would be less likely to emerge for diversifying mergers of firms with highly specific assets. Intangible assets, such as R&D expenditures, are often highly firm-specific.

*Implication 2: Diversifying mergers may be absent in industries plagued by mis-deployed assets.* One might expect mergers to facilitate the reutilization of assets in divisions where assets are currently misdeployed. In the first case of the double-edged sword, however, we find that small positive synergies are insufficient to justify the merger of these units. Meyer et al. (1992) refer to divisions with misdeployed assets as “weak

18. The conglomerate discount has been documented using various methodologies, including the “multiples valuation” approach (such as in Berger and Ofek, 1995) and the Tobin’s  $q$  approach (such as in Lang and Stulz, 1994). The discount has been shown to depend on the relatedness of segments (Berger and Ofek, 1995), differences in corporate governance systems (Lins and Servaes, 1999), and the presence of intangibles (Morck and Yeung, 2002). Others have argued that the diversification discount instead reflects pre-merger valuation (Campa and Kedia, 2002; Graham et al., 2002; and Villalonga, 2004).

divisions." Although the manager of a weak division would like to protect herself, the merger is inefficient: the synergy is insufficient to justify tolerance of the misdeployment of the assets. Deterrence of these mergers is therefore beneficial in net, serving to reduce, rather than to increase, entrenchment behavior.

*Implication 3: Mergers may be valuable ex ante while leading to successful divestitures ex post.* Shleifer and Vishny (1991) argue that the most puzzling, and troublesome, feature of the conglomerate mergers of the late 1960s is that the stock market price responses to the announcements of both mergers and their subsequent divestitures suggest an approval of the mergers *ex ante* as well as an approval of their breakup, through divestitures, *ex post*.<sup>19</sup> Similar evidence is documented in the 1980s when many of the conglomerate mergers seem to have been done expressly for the purpose of subsequent asset realignment.<sup>20</sup> This pattern, which is interpreted by Shleifer and Vishny as evidence of market inefficiency, can emerge naturally from our model of rational agents and markets. Proposition 3 suggests that mergers with negative expected synergies may correct internal agency conflicts sufficiently for the conglomerate to be *ex ante* value-enhancing, as happens in the second case of the double-edged sword of mergers for sufficiently negative synergies. When managerial entrenchment is reduced, eventual divestiture is more, not less, likely; the negative synergy serves as a form of commitment device for the subsequent asset sale. Hence, mergers driven by the benefit of reduced internal agency conflict, rather than by the large positive synergies of overlapping or related businesses, are predicted to display the pattern that they are *ex ante* value-enhancing and they result in successful divestiture *ex post*.<sup>21</sup>

*Implication 4: The decision to merge divisions is determined predominantly by the extent of the expected synergy when (i) divisions have a high degree of asset specificity, or (ii) synergies are sufficiently positive.* Although this paper highlights its novel contribution, identifying circumstances where

19. Matsusaka (1993) finds that buyers earned significantly positive announcement-period returns during this conglomerate merger wave, even though many firms joined by these mergers subsequently broke up. Ravenscraft and Scherer (1987), for example, estimate that 33% of the acquisitions in the 1960s and 1970s were later divested. Porter (1987) finds that over 50% of the unrelated acquisitions made by conglomerates were later divested. Similarly, Kaplan and Weisbach (1992) document that for a sample of large acquisitions between 1971 and 1982, almost 44% of the acquirers had divested the target company by 1989.

20. This stock market price response for the 1980s acquisitions is documented in Mitchell and Lehn (1990).

21. An alternative explanation of this pattern is offered in Fluck and Lynch (1999). This paper argues that a merger followed by divestiture creates a "financing synergy" that allows a weaker division to overcome financial distress.

the merger decision is not predicated on the level of expected synergy, it is also important to note those circumstances in which the synergy effect remains the predominant determinant of the merger decision. For divisional assets with high specificity, the expected (positive or negative) synergy dictates the consequence of merging. Similarly, for sufficiently positive synergies, the decision to merge is governed by the extent of the expected synergy irrespective of the degree of asset specificity.

## 7. EXTENSIONS

In this section, we confirm that our main results are robust to the inclusion of optimal incentive contracts and other extensions to the model.

### 7.1 OPTIMAL INCENTIVE CONTRACTS

Our model hinges on the consequences of internal agency conflicts in the absence of complete contracts. Although in our basic model managers are paid a constant (zero) wage, an incentive contract provides the board of directors with an additional instrument for controlling internal agency conflicts. In fact, it may be possible that by the careful design of incentive contracts, the board of directors may reduce or even completely eliminate enrichment activities. For example, Wulf (2002) argues that multidivisional firms use incentive contracts as tools to reduce the divisional managers' incentives to distort information. In this section, we outline a modified version of our model that suggests that the main intuitions continue to hold in this richer contractual setting.

Assume now that when the boards of directors choose the organization structure at time 0, the value of division  $A$  in its current use is not known, and it is a random variable  $\tilde{A}$ . The specific realization  $A$  of  $\tilde{A}$  is learned by the divisional manager at time 1, when she decides whether or not to entrench, and by the board of directors at time 2, when the divestiture is made. The realization of  $A$  is not contractible, and it identifies managerial "type." We assume that the divisional manager is risk averse, and that the personal cost suffered by a divisional manager on divestiture depends on divisional type,  $A$  (the cost may be interpreted as the "cash equivalent" of pecuniary and nonpecuniary costs, such as reputation losses). The board of directors of a single-division firm may attempt to control internal agency conflicts by offering a compensation schedule,  $\Omega$ , consisting of a fixed wage plus a state-dependent payment that is contingent on contractible events, such as the *ex post* divestiture

decisions and the realized value of the outside opportunity,  $O$ .<sup>22</sup> If so, total compensation  $W$  can be denoted as  $W = \Omega[O, \varphi(A, O)]$ . Specifically, in our model, the board of directors can deter divisional managers from engaging in entrenchment by paying managers a flat wage plus an appropriate payment in the case of a divestiture. These payments, which can be interpreted as severance payments, may lead firms to pay managers an expected compensation, which is higher than that paid under a fixed-wage contract (i.e., the contract we consider in main body of this paper).

At time 0, the boards of directors choose the compensation schedule  $\Omega$  that maximizes *ex ante* firm value, net of expected compensation costs, subject to appropriate incentive-compatibility and individual-rationality constraints. The optimal managerial contract, determined by the boards of directors, trades off the benefit of reducing entrenchment activities against the possible additional compensation that is necessary to eliminate such activities. These additional wages represent the cost of resolving internal agency conflicts with incentive contracts.

The main insight of our paper is that synergies interact with internal incentives in ways that may magnify or reduce these internal agency costs. Upon the merger of two divisions, synergies may change the divestiture policy of the merged firm in a way that increases the cost of reducing entrenchment activities by the use of incentive contracts. This implies that, even if internal agency conflicts could be (partially or wholly) resolved by the optimal design of incentive contracts, synergies may affect the cost of implementing such contracts. The double-edged sword of mergers may then manifest itself as a trade-off between positive (or negative) synergies and an increase (or decrease) in the cost of addressing internal agency conflicts with incentive contracts, such as golden parachutes.

## 7.2 OTHER EXTENSIONS

Our model is robust to a rich array of extensions (see Bagwell and Fulghieri (1995) for a complete discussion). These include the following:

- (1) Debt as an instrument for controlling internal agency conflicts: the boards of directors can choose at time 0 the face value of short-term debt, maturing at time 2, in addition to equity (zero debt);
- (2) Asset values in current use: the time 3 divisional cash flow may depend on the choices made at time 0;

22. Such state-dependent payments may include "golden parachutes" or similar severance payments.



- (3) Divestiture values: different methods of disposition may yield different values for the division's assets, and the divestiture values may be random variables rather than deterministic. For example, the value of the division's divestiture opportunity may depend on the method of disposition, such as piecemeal liquidation, a trade sale, an initial public offer, or some other disposition. In addition, both the likelihood and magnitude of the division's divestiture opportunities may be dependent on its value in current use;
- (4) Managerial entrenchment activities: divisional managers may face a continuum of entrenchment choice levels, with the entrenchment cost-benefit tradeoff depending on the magnitude of divisional assets (e.g., with entrenchment easier for better types). Entrenchment may affect the likelihood and not just the value of the different divestiture opportunities;
- (5) Linked managerial incentives: when both divisions have uncertain outcomes, managerial incentives may be linked across divisions. The presence of such ties between the divestiture decisions of different divisions induce a strategic link between the marginal benefits of the individual managers of engaging in entrenchment activities, leading to the possibility of multiple equilibria.

## 8. CONCLUSION

This paper investigates the interaction between synergies and internal agency conflicts that emerges endogenously in multi-division firms. It predicts the characteristics of firms that will merge and those that will stand alone and offers a novel explanation for the cross-sectional variation in postmerger valuation. Our model can explain why mergers may be valuable *ex ante* while leading to successful divestitures *ex post*, as observed in the 1980s.

The extent to which the explicit consideration of the interaction between synergies and firms' internal conflicts enhances our understanding of organizational design is ultimately an empirical question. Future research can test and extend the empirical predictions derived from the model. For example, if asset specificity is negatively correlated with market competitiveness,<sup>23</sup> then divisions that operate in competitive

23. A negative correlation between market competitiveness and asset specificity can be motivated as follows. Firms in more competitive industries typically produce more standardized products than those in less competitive industries. Hence, assets acquired from one firm in a competitive industry should be relatively easier to adapt to another firm in the industry's specific needs than would be assets acquired in a less competitive industry. Competitiveness should therefore negatively correlate with the difference between the asset value in its current use and in an alternative use.

product markets should tend to belong to single-division firms, whereas divisions operating in oligopolistic markets should tend to be part of multi-unit firms. Such empirical investigation must also recognize the importance of other factors not modeled here, such as taxes, that may help explain observed regularities. It would be interesting to isolate that portion of acquisition activity which is truly because of expected synergies, the “synergy fever,” from that portion which is motivated by internal agency issues. The 1995 divestiture of AT&T, in seeming defiance of the synergistic merger trend of its time, reminds us of the importance of the interaction between synergies and internal agency conflicts: “synergy-seeking is hard work . . . persuading business units to sacrifice their own narrow interests to the interests of the firm as a whole” (*The Economist*, 08/20/94).

### REFERENCES

- Aron, D., 1991, “Using the Capital Market as a Monitor: Corporate Spinoffs in an Agency Framework,” *Rand Journal of Economics*, 22, 505–518.
- Bagwell, L. and P. Fulghieri, 1995, “Synergies and Internal Agency Conflicts: The Double-Edged Sword of Mergers,” Unpublished working paper, Columbia University.
- , and J. Zechner, 1993, “Influence Costs and Capital Structure,” *Journal of Finance*, 48, 975–1008.
- Berkovitch, E., R. Israel, and E. Tolkowsky, in press, “The Boundaries of the Firm: The Choice Between Stand-Alone and Integrated Firms,” *Journal of Economics & Management Strategy*.
- Berger, P. and E. Ofek, 1995, “Diversification’s Effect on Firm Value,” *Journal of Financial Economics*, 37, 39–65.
- Campa, J.M. and S. Kedia, 2002, “Explaining the Diversification Discount,” *Journal of Finance*, 57, 1731–1762.
- Edlin, A. and J. Stiglitz, 1995, “Discouraging Rivals: Managerial Rent Seeking and Economic Inefficiencies,” *American Economic Review*, 85, 1301–1312.
- Fluck, S. and A. Lynch, 1999, “Why Do Firms Merger Then Divest? A Theory of Financial Synergy,” *Journal of Business*, 72, 319–346.
- Graham, J., M. Lemmon, and J. Wolf, 2002, “Does Corporate Diversification Destroy Value?” *Journal of Finance*, 57, 695–720.
- Grossman, S. and O. Hart, 1986, “The Costs and Benefits of Ownership: A Theory of Vertical and Lateral Integration,” *Journal of Political Economy*, 94, 691–719.
- Hart, O. and J. Moore, 1990, “Property Rights and the Nature of the Firm,” *Journal of Political Economy*, 98, 1119–1158.
- Jensen, M., 1986, “Agency Costs of Free Cash Flow, Corporate Finance, and Takeovers,” *American Economic Review*, 76, 323–329.
- Kaplan, S. and M. Weisbach, 1992, “The Success of Acquisitions: Evidence from Divestitures,” *Journal of Finance*, 47, 107–138.
- Khanna, N. and S. Tice, 2001, “The Bright Side of Capital Markets,” *Journal of Finance*, 56, 1489–1528.
- Kreps, D., 1990, “Corporate Culture and Economic Theory,” in J. Alt and K. Shepsle, eds., *Perspectives on Positive Political Economy*, Cambridge, UK: Cambridge University Press.

- Lamont, O. and C. Polk, 2002, "Does Diversification Destroy Value? Evidence from Industry Shocks," *Journal of Financial Economics*, 63, 51–78.
- Lang, L. and R. Stulz, 1994, "Tobin's q, Corporate Diversification and Firm Performance," *Journal of Political Economy*, 102, 1248–1280.
- Lins, K. and H. Servaes, 1999, "International Evidence on the Value of Corporate Diversification," *Journal of Finance*, 54, 2215–2240.
- Maksimovic, V. and G. Phillips, 2002, "Do Conglomerate Firms Allocate Resources Inefficiently Across Industries? Theory and Evidence," *Journal of Finance*, 57, 721–768.
- Matsusaka, J.G., 1993, "Takeover Motives during the Conglomerate Merger Wave," *RAND Journal of Economics*, 24, 357–379.
- Matsusaka, J. and V. Nanda, 2002, "Internal Capital Markets and Corporate Refocusing," *Journal of Financial Intermediation*, 11, 176–211.
- McAfee, R.P. and J. McMillan, 1995, "Organizational Diseconomies of Scale," *Journal of Economics & Management Strategy*, 4, 399–426.
- Meyer, M., P. Milgrom, and J. Roberts, 1992, "Organizational Prospects, Influence Costs, and Ownership Changes," *Journal of Economics & Management Strategy*, 1, 9–35.
- Milgrom, P., 1988, "Employment Contracts, Influence Activities, and Efficient Organization Design," *Journal of Political Economy*, 96, 42–60.
- and J. Roberts, 1990, "Bargaining Costs, Influence Costs, and the Organization of Economic Activity," in J. Alt and K. Shepsle, eds., *Perspectives on Positive Political Economy*, Cambridge, UK: Cambridge University Press, 57–89.
- Mitchell, M. and K. Lehn, 1990, "Do Bad Bidders Become Good Targets?" *Journal of Political Economy*, 98, 372–398.
- Morck, R. and B. Yeung, 2002, "Why Firms Diversify: Internalization versus Agency Problems," in J. Hand and B. Lev, eds., *Intangible Assets*, Oxford, UK: Oxford University Press, 269–302.
- Porter, M., 1987, "From Competitive Advantage to Corporate Strategy," *Harvard Business Review*, May/June, 43–59.
- Rajan, R., H. Servaes, and L. Zingales, 2000, "The Cost of Diversity: The Diversification Discount and Inefficient Investment," *Journal of Finance*, 55, 35–80.
- and L. Zingales, 1998, "Power in the Theory of the Firm," *Quarterly Journal of Economics*, 113, 387–432.
- Ravenscraft, D. and F. Scherer, 1987, *Mergers, Selloffs, and Economic Efficiency*, Washington, DC: Brookings Institution.
- Rotemberg, J. and G. Saloner, 1994, "Benefits of Narrow Business Strategies," *American Economic Review*, 84, 1330–1349.
- Scharfstein, D. and J. Stein, 2000, "The Dark Side of Internal Capital Markets: Divisional Rent-Seeking and Inefficient Investment," *Journal of Finance*, 55, 2537–2564.
- Shleifer, A. and R. Vishny, 1989, "Managerial Entrenchment: The Case of Firm-Specific Assets," *Journal of Financial Economics*, 25, 123–140.
- and —, 1991, "Takeovers in the '60s and the '80's: Evidence and Implications," *Strategic Management Journal*, 12, 51–59.
- Stein, J., 1997, "Internal Capital Markets and the Competition for Corporate Resources," *Journal of Finance*, 52, 111–133.
- Stulz, R., 1990, "Managerial Discretion and Optimal Financing Policies," *Journal of Financial Economics*, 26, 3–27.
- Williamson, O., 1975, *Markets and Hierarchies: Analysis of Antitrust Implications*, New York: Macmillan Publishers.
- , 1985, *The Economic Institutions of Capitalism: Firms, Markets, Relational Contracting*, New York: The Free Press.

- , 1989, "Transaction Cost Economics," in R. Schmalensee and R. Willig, eds., *Handbook of Industrial Organization*, 1, 136–182.
- Wulf, J., 2002, "Internal Capital Markets and Firm-Level Compensation Incentives for Division Managers," *Journal of Labor Economics*, 20, 219–262.
- Villalonga, B., 2004, "Does Diversification Cause the Diversification Discount?" *Financial Management*, 33, 5–27.