Corporate Equity Ownership, Strategic Alliances and Product Market Relationships

Jeffrey W. Allen and Gordon M. Phillips[*]

This paper examines long-term block ownership by corporations and performance changes in firms with corporate block owners. We also examine potential reasons for corporate ownership including benefits in product market relationships, alleviation of financing constraints, and board monitoring by corporate owners. We find the largest significant increases in targets' stock prices, investment, and operating profitability when ownership is combined with product market relationships between purchasing and target firms, especially in industries with high research and development. Our findings are consistent with the conclusion that block ownership by corporations has significant benefits in product market relationships.

Non-financial corporations in recent years have been active purchasers of long-term block equity positions in U.S. firms. Block ownership by corporations is unique relative to block ownership by institutions or individuals because of the possibility that business agreements, alliances, or joint ventures might be reached between target firms and corporate owners.[1] Despite the fact that corporate block ownership is potentially quite different from block ownership by institutional owners, we know very little about equity holdings by non-financial corporations. The academic literature on block ownership has not specifically examined the role of long-term corporate owners, but rather has focused on the role of institutional and other block owners in corporate control contests and improving firm performance.[2]

In this paper, we study the changes in investment and operating performance of firms after non-financial corporations purchase large equity positions. We also examine why corporations might establish these equity positions and propose some alternative explanations. Our sample consists of 402 ownership stakes established during the 1980 to 1991 period where corporations hold a minimum of five percent of outstanding shares. Thirty-seven percent, or 150, of the target firms in the sample have explicit business relationships with their corporate blockholder.

There are several possible reasons why target and purchasing firms might benefit from establishing long-term partial ownership positions. First, block ownership might be useful in aligning the incentives of the firms involved in alliances or joint ventures. Contracting or monitoring costs between firms may be reduced if a significant ownership stake increases the incentives of firms to invest in product market relationships or other relationship-specific assets. Klein, Crawford, and Alchian (1978) argue that relationship-specific assets create the potential for "holdup" costs between firms. Williamson (1979, 1985) argues that equity can lead to lower contracting costs in product market relationships or can lower the costs of monitoring agreements. Aghion and Tirole (1994) model several cases in which the optimal solution, given relationship specific investments by both parties, may be partial ownership by a downstream firm of an upstream firm.

Second, block equity purchases by corporations could mitigate information problems regarding the investment opportunities of target firms. For example, if asymmetric information has an adverse impact on the cost and availability of external capital, it may be less costly to sell equity to an informed party such as

an outside corporation. Under this argument, block equity placements with outside firms provide capital directly to issuing firms (private equity placements) or validate the target's investment opportunities to the capital markets or other capital providers.

Third, as with other large blockholders, purchasing corporations may also be able to effectively monitor or influence management. Corporate block owners may possess industry knowledge or operating expertise that is superior to institutional block owners or other shareholders. Burkart, Gromb, and Panunzi (1997) model the tradeoffs involved with monitoring and eliciting effort. Bethel, Liebeskind, and Opler (1998) find that activist block ownership is effective in restructuring operations of target firms and in improving operating performance. Wruck (1989) discusses how private equity placements can result in more optimally concentrated ownership. Her finding of positive abnormal stock returns around announcements of private equity placements to both institutional and corporate purchasers suggests that investors view such placements favorably – perhaps due to one or more of the arguments noted above. These possibilities are discussed further in the next section of the paper.

Our approach to this study is as follows. We first document the extent of corporate ownership in U.S. firms, provide descriptive statistics on our sample, report the frequency of product market relationships between firms, and document characteristics of target firms and block purchases by corporations. Next, we examine the abnormal stock returns to target firms, purchasing firms, and combined target plus purchaser returns around purchase announcements. We then examine changes in investment expenditures and operating performance of target firms following corporate block purchases. We examine whether these changes in performance differ for firms based on the existence of product market relationships and whether a firm is likely to be constrained in its ability to finance investments.

We find that the stock prices of target firms, on average, increase significantly at announcements of corporate block purchases. The block purchases in our sample accompanied by agreements, alliances, or joint ventures between firms result in significantly larger excess stock returns to target shareholders when compared to block purchases by corporations that are not associated with alliances or joint ventures. We also find that target firms significantly increase investment expenditures and exhibit substantive gains in operating cash flows following block equity purchases by corporations relative to industry peers and the

2

period prior to purchase announcements, especially for target firms that form alliances or joint ventures with corporate blockholders.

Since the possible reasons for block ownership by corporations are not mutually exclusive, we examine whether information asymmetry, underinvestment problems, board monitoring, or the formation of alliances or joint ventures between firms impact the results. We find that target firms operating in industries with high R&D and advertising expenses – those most likely to create relationship-specific assets or to be subject to information asymmetries – show significant improvements in industry-adjusted operating cash flows and increases in investment expenditures following corporate equity purchases. The increase in operating cash flows, however, is concentrated in firms that operate in R&D-intensive industries and most notably in R&D-intensive firms that form alliances or joint ventures with corporate block owners. We do not find evidence that board representation by corporate owners, independent of product market relationships with target firms, has a positive impact on announcement-period stock returns or on subsequent changes in the investment or operating performance of target firms.

Additional tests show that the increases in operating cash flows and investment expenditures do not result from the easing of liquidity constraints. We do not find significant differences in stock returns at purchase announcements, increases in investment spending, or improvements in operating cash flows for targets that underinvest relative to their industry median prior to corporate block purchases. We also check for robustness by classifying the sample by a proxy for ex ante liquidity. We again fail to find significant differences in the results for high or low liquidity firms. Regression results also show that the largest increases in investment and operating performance are for firms with joint ventures and alliances when the target firm has sufficient ex ante liquidity to undertake subsequent investment.

Although information problems may be severe in R&D-intensive industries, we conclude that financing or liquidity constraints do not explain the significant increases in performance for target firms that have business relationships with their corporate blockholders. The evidence supports the view that block equity purchases by partnering firms in a business alliance or venture can reduce contracting or monitoring costs in the relationship – costs that may be substantial when specialized assets are involved (Klein, Crawford, and Alchian (1978)). Overall, our work has implications for ownership between firms

and thus adds to Demsetz and Lehn (1985), who examine large ownership positions independent of product market relationships.

The paper is organized as follows. Section I discusses possible causes and consequences of corporate block ownership. Section II describes the sample used in this study and presents several descriptive statistics. Section III contains our empirical analysis, and Section IV concludes.

I. Potential Benefits of Corporate Blockholders

In this section, we discuss possible reasons for equity ownership between firms and briefly review related research in both industrial organization and finance. We also discuss the empirical implications of prior research and how we differentiate among the possible reasons for corporate block ownership. Because there is no existing theory that explains the range of interaction of partial equity ownership positions and product market relationships we observe, we do not provide any explicit tests of one specific theory.[3] Thus, this study is intended to guide future theoretical work.

A potential reason for corporate block ownership is the difficulty of contractually specifying all the terms of a business relationship. Without an ownership stake or other type of credible commitment, firms may hold incentives to break off or change the terms of an agreement or relationship. It is important to note that these potential ex post problems can cause *ex ante* investment to be affected. For example, firms under separate ownership may reduce investment in a joint business venture if the assets involved are specific to, or have lower value outside of, the venture. Prior authors have emphasized how different organizational forms can help internalize these problems. Williamson (1979, 1985) highlights the importance of contracting costs in different organizational forms and types of contract choice. Klein, Crawford, and Alchian (1978) attribute the extent of vertical integration to the existence of rents from assets and the potential for ex-post contractual holdup.[4]

Ownership may increase the incentives to invest in joint business relationships by aligning the interests of the firms involved. Grossman and Hart (1986) model how the costs and benefits of vertical integration depend on which firm makes relationship-specific investments. In many of our cases in this paper, both parties may be making relationship specific investments (e.g. a supplier making a product for

the owner who also invests in design and production processes that use that product). Partial ownership can also affect incentives to develop new products that cannot be identified ex ante. Aghion and Tirole (1994) model ownership of a research unit by the research unit and its customer (downstream firm).[5] In the case where a potential innovation may be of several possible types and it makes use of both parties' investment, ownership of the research unit by both the downstream firm and research unit may be optimal. They also consider how partial ownership by a customer (downstream firm) of a "research unit" may be optimal when the customer has ex ante bargaining power. They note how full ownership by the customer discourages the research unit's initiative in situations where the research unit's current effort affects not only the occurrence of the current innovation or investment but also the occurrence or value of future innovations. Rajan and Zingales (1998) emphasize another potential cost of ownership. In their model, ownership can reduce the incentives to invest in specialized assets, when specialization reduces the value of the asset in an outside alternative use. They do not explore partial firm ownership. Partial ownership may thus be an intermediate solution to full integration, given joint investment and also potential costs of ownership.

Tapon (1989), Choi (1993) and Kamien, Muller, and Zang (1992) model the incentives to undertake research and development joint ventures. Optimal research and development may not take place because part of the gains to innovation could accrue to another party in the industry. These studies show how cooperative research joint ventures can increase R&D by firms and also increase consumer surplus. McConnell and Nantell (1985) and Chan, Kensinger, Keown, and Martin (1997) document positive announcement-period excess stock returns to participants in joint ventures and other alliances. Moon and Khanna (1996) also examine announcement returns and investment for firms with private equity placements, a subset of the corporate block equity stakes examined in this paper.

An alternative reason for block equity purchases by corporations is that target firms sell equity to raise investment capital because the outside firm is more fully informed about the seller's investment opportunities. If asymmetric information adversely impacts the cost and availability of external capital, it is less costly to sell to the informed party. Examining block sales of equity to both institutions and other corporations, Hertzel and Smith (1993) conclude that block private equity placements with outside

investors can resolve a Myers and Majluf (1984) underinvestment problem. However, in Hertzel and Smith's sample of private equity placements, other corporations are purchasers in only seven of 106 block equity sales.

Finally, as with other large blockholders, purchasing corporations may also be able to more effectively monitor or influence management than other shareholders. However full ownership may not be optimal. Burkart, Gromb, and Panunzi (1997) show how excessive monitoring may decrease the incentives of the target (research unit) firms' managers to develop new investments, thus limiting the size of the stake purchased. They also demonstrate that concentrated ownership may conflict with performance-based incentive schemes. Empirically, Bethel, Liebeskind, and Opler (1998) find that activist block ownership is effective in restructuring operations of target firms and in improving operating performance. Wruck (1989) discusses how private equity placements can result in more optimally concentrated ownership. She examines the stock returns around announcements of private equity placements.

We differentiate among these possible reasons by examining whether ex post investment and operating performance differs for firms based on ex ante firm characteristics. We first ask whether there are significant improvements in performance for firms with business relationships with corporate block owners, especially in industries with potential contracting difficulties (proxied by R&D intensity). Second, we examine the importance of potential liquidity constraints and whether the ownership stake alleviates underinvestment prior to the ownership stake. We examine the importance of liquidity constraints by examining whether simple measures of the amount of ex ante liquidity and access to capital impact ex post performance. In addition, we investigate the importance of monitoring by examining whether firms' performance is higher when corporate owners gain board representation and whether the firm is taken over after an initial ownership period.

II. The Sample

To construct a sample of firms with large corporate owners, we review annual issues of *Spectrum 5* over the 1982 to 1991 period for blockholdings of at least five percent of voting shares. We also use Security Data Corporation's (SDC) Mergers and Corporate Transactions database to collect reports of

partial equity interests acquired by corporate acquirers in publicly traded firms during the 1985 to 1991 period (ownership data are not available in the SDC database prior to 1985).

As with all empirical research, we are concerned with the integrity of our data, especially since Anderson and Lee (1997) report that *Spectrum* ownership data may not be wholly accurate or updated in a timely manner. Therefore, we use proxy data reported by Disclosure Inc. or on the proxy statements of target firms themselves to confirm the ownership stakes reported in *Spectrum 5* and the SDC database. We find that in nearly 30 percent of the observations, ownership reported in *Spectrum 5* do not match data found in the proxy statements. We also found three instances of relatively small inconsistencies in the SDC data. It is possible, however, that some of these discrepancies we discovered can be explained by timing differences between dates of 13-D filings with the SEC and the dates of proxy statements. However, where there are discrepancies, we use ownership data obtained from proxy sources. We eliminate the observations that could not be verified with proxy data.

To be included in the final sample, we require that each candidate observation meet several criteria. Since our interest is equity holdings between corporations, we exclude all equity positions held by financial institutions or trusts, insurance companies, institutional investors, and venture capital firms. We also require that: (1) Neither the firm nor the corporate owner are regulated or financial companies; (2) the firm is not merged with the blockholder during a two year period following the equity purchase; (3) the ownership position continues for a minimum of two years;[6] (4) stock data for the target firm is available on the CRSP database; and (5) a public report of the transaction is located in the *Wall Street Journal* or the *Dow Jones Newswire*. The final sample extends from 1980 to 1991 and contains 150 block purchases by corporations that accompany explicit product market relationships and 252 equity stakes that do not appear to be associated with business relationships.[7]

Insert Table I here

Panel A of Table I reports the annual frequency of corporate block purchases and the methods corporations use to acquire equity stakes. Corporations obtain over half (56.5 percent) of the equity blocks in direct purchases from target firms in private transactions. Open market purchases account for 18.4 percent of the sample; shares issued in a purchase of assets 11.9 percent; direct purchases from other

shareholders 10.4 percent; and the remaining 2.7 percent from miscellaneous sources including spin-offs (5), mergers (5), and a legal judgment (1). The average size of equity stakes obtained by corporate purchasers is not trivial; the mean fraction acquired is 20 percent of voting shares (median = 14 percent). Thirty-seven percent (150) of target firms report the formation of alliances or joint ventures with corporate owners either prior to or subsequent to the purchase, a trend that appears to increase in the latter portion of the sample period. Nearly half (46 percent) of target firms are in the upper quartile of R&D + advertising expenditures among all non-financial four-digit SIC industries on COMPUSTAT. Fifty-three percent of corporate block ownership involves firms in related industries (three-digit SIC level) while corporate acquirers obtain board representation in 59 percent of target firms within two years following the purchase date.

Panel B of Table I reports statistics on alliances and joint ventures, high R&D industries, industry relatedness of targets and corporate block owners, and board representation. We find that in 60 percent of cases where firms form alliances or joint ventures, equity blocks are obtained in private transactions with target firms. Somewhat surprisingly, only 2 of 74 open market purchases lead to an explicit alliance or joint venture between the firms involved. Although not shown in the table, the proportion of alliances between industry-related firms is similar to the proportion of alliances where both firms operate in unrelated industries. This suggests to us that corporate equity stakes and subsequent alliances or ventures between firms may be used to expand business opportunities across industries.[8] Finally, we report that acquirers gain board seats much less often if shares are purchased in the open market. This could be due in part to the smaller median fraction of equity acquired in open market purchases.

Insert Table II here

Table II shows the types and frequency of product market alliances, agreements, and joint ventures between corporate block owners and target firms in our sample. Research and product-development agreements are the most common form of alliance, followed by marketing and distribution agreements, and product or services supply agreements. Given the frequency of alliances and joint ventures in our sample and the potential of these agreements to expand the investment opportunities of target firms, we examine

the impact of product market relationships and corporate block ownership on the investment and operating performance of target firms in subsequent sections of the paper.

Table III reports additional information on the characteristics of target firms prior to corporate block purchases including statistics on the asset size of target firms, target assets divided by purchaser assets, stock returns in the year prior to corporate block purchases less the return on a portfolio of firms of similar size and market-to-book ratios, the median number of months since IPO, the fraction of equity acquired, and the average premium paid by purchasing firms. These statistics are categorized by alliances and joint ventures, high R&D + advertising industries, and the four main purchase methods.

Insert Table III here

We find that firms completing private equity placements with corporate purchasers are substantially smaller when measured by total assets and target assets divided by purchaser assets relative to firms whose equity is purchased by other means. For example, firms that place equity directly with other corporations average less than two percent of the size of acquiring firms. Targets of open market purchases, however, are nearly one-fifth the size of acquiring firms. Targets involved in joint ventures or that operate in R&D-intensive industries are also much smaller and newer in the market (months since IPO) relative to target firms that do not meet these criteria. Firms that sell equity directly to corporate bidders have been public an average of 38 months, compared to 56 months for the sample as a whole and 172 months for targets of open market purchases. These differences suggest that firms that place equity directly with corporations or form alliances or joint ventures with corporate block owners are strong performers but are small and relatively new in the market in comparison to other target firms in our sample. We also note that alliance / joint venture or R&D-intensive target firms are also strong performers as measured by excess stock returns in the year prior to block purchases by corporations. The prior year excess return ending on day –11 relative to purchase announcements averages 5.9 percent across the full sample and is only negative when equity stakes are purchased in open market transactions.

Table III also reports the fraction of equity acquired and premiums paid by corporate block owners in direct equity placements and in transactions with other shareholders. The median premium paid to corporate issuers or other block owners of shares is 8.0 percent which is smaller than the 15.7 percent

median premium reported by Barclay and Holderness (1989) in a sample of large block trades. In 40 percent of the cases, however, stakes are sold at a discount to current market value. Hertzel and Smith (1993) argue that private equity placements should be sold at a discount due to illiquidity of large blocks and search costs incurred by block purchasers. In our sample, equity blocks acquired at a discount are primarily small firms with stock prices under five dollars per share, which is consistent with the Hertzel and Smith argument. Interestingly, purchase prices are not disclosed in any of the cases where parent or target firms form alliances or joint ventures.[9]

III. Empirical Results: Stock Returns and Operating Performance

A. Announcement Stock Returns

We next examine the excess returns for both the target and purchasing firms at announcements of block equity purchases. Our objective is to document the market's assessment of equity purchases by outside corporations and to determine whether characteristics representing the possible motives of corporate ownership affect the market's reaction. In Table IV, we report the mean cumulative excess stock returns at announcements of corporate equity purchases over a 21-day (-10 to +10) interval relative to the initial press date. We use a -10 to +10 day window because of the possibility that stock market participants know about the pending stake before it was announced, and because an announcement of this type may not be reported until several days after the actual purchase.[10] Table IV presents the announcement-period excess stock returns to target firms, purchasing firms, and the combined excess returns of both target firms and corporate block owners.

Insert Table IV here

We find that all significant wealth gains in these transactions accrue to the shareholders of target firms. Excess returns to block purchasers are not significant – perhaps because these firms are generally much larger than the firms in which they purchase equity. Since purchasing firms are, on average, much larger than target firms, when we combine the excess returns by weighting each firm by its market capitalization, we find that the combined excess return averages a mere 0.02 percent. Thus, as in other areas of this paper, we focus on the impact of block equity purchases by corporations on target firms in subsequent discussions of stock performance. We note, however, that the combined returns and the excess

returns to target firms are of the same sign in virtually all classifications of the sample reported in Table IV.

In the full sample, we find that target firms experience a 6.9 percent average abnormal stock return to purchase announcements. Positive and significant returns are observed in all purchase methods except equity issued to acquire assets where the average CER is an insignificant 0.8 percent.

The difference in announcement excess stock returns between the sample of firms where joint ventures or alliances are formed (mean CER = 9.1 percent) versus purchases of shares without such agreements (mean CER = 5.5 percent) is significant at the 0.05 level. These results are considerably greater than the excess returns to alliances or joint ventures reported in prior studies. Chan, Kensinger, Keown, and Martin (1997) report excess returns of 0.6 percent in their full sample of alliance and joint venture announcements with a maximum excess return of 3.5 percent for a subsample of firms involved in technological transfer agreements. Our announcement period excess returns are also somewhat larger than the findings of Moon and Khanna (1996) who examine only private equity placements.

We also calculate cumulative excess stock returns for corporate block purchases by whether target firms operate in the upper quartile of R&D + advertising expenditures as a percentage of total assets among all non-financial four-digit SIC industries, whether target firms invest as a percentage of total assets above or below industry medians, and whether purchasing firms obtain board seats in target firms. The differences in excess stock returns by these classifications of the sample, however, are not significant at conventional levels. We examine the excess returns for firms with alliances and joint ventures in which the purchasing firm also obtains a board seat in target firms. This excess return is slightly lower, but not significantly lower than the excess return to purchasers with alliances and without the board seat. Thus the purchase of the stock is not likely to represent an opportunity for the owner to divert value from the target firm when it also has board ownership.

Table IV also shows that there are significant differences (p-value <0.01) in the stock market reaction to announcements of private equity placements. These differences in our sample, however, depend on whether alliances are formed between targets and corporate block owners (mean CER = 10.1 percent) or not (mean CER = 5.3 percent).

Our finding of positive average excess returns to corporate block purchases that are not accompanied by alliances or joint ventures warrants some discussion. One could argue that market participants might view the block purchase as a potential toehold position in a subsequent merger bid or takeover attempt of the target firm. Evidence of this possibility is the 5.9 percent average abnormal return to open market purchases that are associated with product market agreements in only three percent of our sample. Second, it is also clearly possible that the market expects an alliance or joint venture will be formed with the corporate block owner, or at least that the probability of such an agreement will increase with the purchase of a large equity stake. Finally, the market may view such purchases favorably if the corporate bidder holds industry expertise that may benefit the target or has a strong performance reputation. This type of monitoring would likely occur, however, in cases where the corporate block owner obtains one or more board seats in the target firm. The first two possibilities, of course, do not occur ex post in our sample.

B. Operating Performance and Investment

In this section, we document the change in operating cash flows and investment expenditures of target firms. We first examine these changes by whether or not targets and corporate block owners form alliances or joint ventures. We also examine targets that operate in high R&D and advertising industries. We expect bigger increases in operating performance and investment in these industries if the equity stake mitigates financing constraints or facilitates the development of assets that are unique or highly specific to the relationship with the corporate block owner. We thus test whether alliances or joint ventures have a greater impact on the performance of target firms in high R&D and advertising industries versus targets that are less R&D-intensive. These classifications of the data are chosen to gain insight on the question of whether alliances and joint ventures in industries that are likely to have the potential for specialized assets impact the investment and operating performance of target firms. Finally, to assess the importance of liquidity constraints in explaining our results, we examine the performance of firms with ex ante low liquidity that are also underinvesting relative to their industries prior to corporate block purchases.

Panels A and B of Table V report industry-adjusted percentage changes in operating profitability divided by average book value of assets, changes in investment expenditures, and changes in interest

coverage during a four-year period (-1,+3) around the purchase year. Panel A examines the importance of product market relationships and high R&D industries. Panel B addresses the importance of liquidity constraints by examining firms investing below their industry medians and the ex ante liquidity of target firms prior to block purchases.

The statistics are group medians less the median of a sample of matching firms in related industries matched by asset size. Industry portfolios for each target firm are constructed using five firms matched by industry (four-digit SIC) and nearest asset size from COMPUSTAT. If five firms are not available with matching four-digit SIC codes, three-digit or two-digit levels are used to obtain at least five firms before applying the size criterion.

<div align="center">**Insert Table V here**</div>

In Panel A of Table V, we report positive but insignificant increases in industry-adjusted operating cash flows divided by average total net assets for the full sample through the third year following block purchases by corporations. There are large and significant differences in operating cash flows, however, when the sample is divided by alliances/joint ventures and high R&D and advertising industries. Targets that form business agreements with corporate block owners or those that operate in high R&D and advertising industries show large, positive industry-adjusted gains in operating cash flows relative to non-alliance targets or those target firms not in the R&D-intensive group. The *p*-values for these differences are 0.06 or below.

When we jointly examine firms that form alliances or joint ventures with corporate block owners in R&D-intensive industries and otherwise, we find significant cross-sectional differences in operating performance improvements. Target firms forming product market alliances or joint ventures with corporate block owners in high R&D industries exhibit significantly larger performance gains relative to alliance or joint venture firms in less R&D-intensive industries. For example, alliance or joint venture firms in high R&D industries achieve a 36.4 percent median (industry-adjusted) gain in operating cash flow versus a three percent gain for alliance/JV firms in non-high R&D industries during the (-1,+3) period (*p*-value for difference is 0.02). These initial results suggest that the benefits of product market agreements in

conjunction with block ownership between firms occurs principally in target firms that create unique assets, or perhaps, are liquidity constrained because of high information asymmetry regarding future opportunities.

Panel A of Table V also reports large increases in industry-adjusted investment (capital expenditures + R&D) expenditures following corporate block acquisitions. Significant increases in investment spending are evident in nearly all classifications of the sample with the exception of non-alliance or joint venture firms and firms not in the upper quartile of R&D and advertising expenditures among all non-financial industries. These differences are significant at the 0.01 level. This result is consistent with the view that business alliances between firms expand the investment opportunities of target firms leading to increases in investment spending.

Table V also reveals that interest coverage increases substantially following corporate equity purchases. A portion of the decline in this measure of financial leverage could be attributed to improved cash flow in target firms following the stake purchase. The increase in the post-purchase coverage ratio is again largest in those cases where target firms form joint ventures or other alliances with corporate block owners.

As with operating performance improvements, large increases in investment by high R&D firms might also be the result of information asymmetries or potentially high levels of asset specificity. To address this question, we divide the sample by whether or not target firms were investing below or above their industry medians in the year prior to corporate block purchases. These statistics are reported in Panel B of Table V. Both the below and above-industry investment groups show significant industry-adjusted gains in investment expenditures during the (-1,+3) period, but the difference between the groups is not significant. As an additional test, we split the below-industry investment firms into two groups based on whether year -1 cash flows and cash balances are sufficient to fund years 0 and +1 investment (high liquidity) and otherwise (low liquidity). This classification allows us to determine whether financing constraints lead to below-industry investment and whether the ex post gains in investment can be attributed to these firms. The evidence, also reported in Panel B, does not indicate that low liquidity firms significantly increase investment expenditures relative to higher liquidity targets. We also investigate whether external capital received in the transaction or thereafter is important in explaining our results. We

do not find any significant improvements in operating profitability or differences in investment expenditures by target firms based on receiving capital. (We do not report these results).

We conclude that ex ante underinvestment in general, and underinvestment because of potential liquidity constraints, does not explain why target firms substantially increase capital expenditures and R&D following corporate block purchases. The findings are consistent with the argument that block ownership is beneficial in certain product market relationships with unique assets or the potential to create unique assets in R&D-intensive industries. We also note that the observed increases in target firm's investment and operating profitability following corporate equity purchases is considerably greater than the results reported by Chan, Kensinger, Keown, and Martin (1997) for alliances and joint ventures. These authors report insignificant changes in operating performance for firms involved in strategic alliances, presumably without block equity ownership.

To investigate the importance of board monitoring and the market for corporate control, we also examine changes in operating performance and investment based on include whether or not corporate block owners obtain board seats or whether target firms are subsequently taken over by corporate block owners or other firms. We find no significant differences in investment or operating performance changes based on whether or not these criteria are met. Based on this evidence, we conclude that board monitoring and subsequent takeovers of target firms do not significantly impact post-purchase investment or operating performance.

Due to significant differences in operating profitability and investment for alliance or joint venture targets in high R&D and advertising industries, we are left with the question of why corporations purchase equity in firms where alliances are not formed. There are several possible answers to this question including (1) there are benefits of corporate ownership that we do not capture, if, ex ante, target firms are expected to under perform their industry in the future, (2) ex post, the alliance or joint venture is not established despite it being an ex ante possibility, (3) the probability that the corporate block owner will bid for the entire firm (presumably at a premium) increases, although a takeover does not occur ex post, or (4) some long-term holdings are made simply for investment purposes and not for strategic or product market reasons and this is not known to the market ex ante.

We do find some limited evidence that is consistent with the first explanation. For firms without sufficient liquidity to invest, we find ex ante Tobin's q to be negatively related to the size of the stake sold, suggesting that these firms were expected to under perform their industry by the external market and thus choose to sell equity privately. For firms not classified as liquidity constrained, we find the size of the stake sold is positively related to ex ante Tobin's q. We do not report these results.

Overall, it is clear, however, that equity purchases by corporations that do not involve joint business relationships are not associated with significant increases in ex post operating profitability or investment of target firms. Increases in investment and operating performance are significantly positive for firms that have joint business relationships with their corporate owners – especially when these targets operate in high R&D industries. Other potential explanations including the alleviation of liquidity constraints and board monitoring by corporate owners do not explain these results.

C. Multivariate Cross-Sectional Evidence

To gain additional insight into the changes in investment and operating performance following corporate block equity purchases, we estimate regressions using the industry-adjusted change in operating cash flow (earnings before interest, taxes, depreciation, and amortization) and the industry-adjusted change in investment as dependent variables.[11] Independent variables in the regressions include dummy variables representing joint ventures and alliances, high R&D and advertising industries, investment levels below industry medians prior to corporate block purchases, board representation by corporate block owners in the two-year period following the purchase year, and interaction terms including whether or not firms have sufficient liquidity (cash flow and cash balances) in the year prior to corporate equity purchases to fund year 0 and year +1 investment. Our liquidity variable is a (1,0) indicator variable for high liquidity identifying those firms that are unlikely to be subject to financing constraints. It equals one for firms with sufficient liquidity to fund subsequent investment expenditures. We include this variable to test whether or not the equity stake merely relaxes credit constraints independent of product market agreements. If firms are able to use internal capital for future investment, we can be more confident that any results we observe are less likely because the firm sells an equity stake to alleviate credit constraints.

Insert Table VI here

Table VI reports regression specifications for the industry-adjusted change in operating cash flow and the change in investment over years (-1,+3) relative to the purchase year.[12] In the first two regressions in Table VI using operating cash flow as the dependent variable, the alliance / joint venture variable and the R&D-intensive industry variable are positive and significant at the 0.10 level or better. An interaction term between alliances/joint ventures and R&D-intensive industries are also positive and significant at conventional levels. The coefficients on these variables indicate that both alliances and industry characteristics of target firms are significant determinants of the performance improvements in target firms following corporate block purchases.

These results are actually stronger for firms classified as having sufficient ex ante liquidity for subsequent investment. In the second column of Table VI, the coefficient on the high liquidity variable interacted with alliances or joint ventures and R&D-intensity is positive and significant at the 0.01 level. We interpret this result as evidence that financing constraints do not appear to have any significant impact on ex post improvements in the operating performance of target firms. Therefore, we cannot conclude that alleviating such constraints is an important motive for corporate block equity ownership.

We also use coefficients from Table VI and the underlying data to compute the predicted changes in target firms' operating cash flow for specific sub-groups in the data. The underlying data used is the simple binary variables for the sub-group in question (e.g. alliance or joint venture and high R&D industry) and the mean (for the respective sub-group) of the indicator variables: investment below the industry median and corporate owner on the board of directors. Using the coefficients and the underlying data from the regression in column 1 (2) the average predicted change in operating cash flow for the non-alliance, non-high R&D is −6.0 percent (-6.3 percent) over the (-1,+3) period. Adding the effect of high R&D industry, we find that the average predicted effect for firms in high R&D industries, still without product market alliances, increases to -0.3 percent (0.3 percent) in regression one (two). Thus, we find that there is a positive effect of ownership on operating cash flow for firms in high R&D industries that do not form alliances with corporate block owners. However, the largest predicted increase is for firms with product-

market alliances that are also in high R&D industries. The predicted effect in these cases rises to 17.6 percent using the coefficients from regression two.

Columns 3 and 4 of Table VI examine the changes in capital and R&D expenditures from the year prior to block equity purchases by corporations to three years thereafter. We find similar results to those presented for operating cash flow. Alliances or joint ventures and R&D-intensive industries are significantly related to increases in investment spending by target firms following corporate block purchases. The variables capturing the joint interdependence between alliances or joint ventures, R&D-intensity, and high liquidity firms are also positive and significant as reported in column 4 of Table VI. Surprisingly, the coefficient on board representation by corporate block owners is negative and significant at the 0.10 level in both regressions. We do not have a detailed explanation for this result other than the implication that board monitoring by corporate block owners does not positively impact investment or operating performance independent of product market relationships and industry characteristics. It may be that board ownership may give rise to too much monitoring, decreasing the incentives of target firms' managers to show initiative in developing new investments as is modeled by Burkart, Gromb, and Panunzi (1997).

Similar to the predicted effects for operating cash flow, we use the coefficients from the regressions in Table VI, columns 3 and 4, and the underlying data to compute predicted changes in investment. As before, the underlying data used is the simple binary variable for the sub-group in question (e.g. alliance or joint venture and high R&D industry) and the mean (for the respective sub-group) of the indicator variables: investment below the industry median and corporate owner on the board of directors. Using the underlying data and the coefficients from the regression in column 3 (4), the average predicted change in investment for the non-alliance, non-high R&D is 4.3 percent (3.5 percent) over the (-1,+3) period. Adding the effect of high R&D industry, we find that the average predicted effect for firms in high R&D industries, still without product market alliances, increases to 10.0 percent (9.1 percent) using the coefficients from regression three (four). Thus we find that there is a positive effect of ownership on investment for firms in high R&D industries that do not form alliances with corporate block owners. However, again we find that the largest predicted increase is for firms with product-market alliances that are also in high R&D

industries. The predicted effect in these cases rises to 34.2 percent using the coefficients from the regression in column 4.

The evidence presented in these cross-sectional tests is useful in two ways. First, the results confirm the univariate evidence presented in Table V regarding the positive impact on operating performance when target and purchasing firms have explicit product market relationships or operate in R&D-intensive industries. Second, partitioning the data on a single variable makes it difficult to identify whether the variable used in the classification matters or whether it is simply correlated with other significant variables. In Table V, both the alliance/joint venture and R&D-intensive industry partitions of the data produce significant results. In the cross-sectional analysis, both variables are jointly significant in explaining the changes in investment and operating performance following corporate block purchases.

To conclude our analysis, we report the simple correlation statistics between operating performance changes, changes in investment plus R&D spending, and the stock market reaction to corporate block purchases in target firms. All of the correlations between these measures are positive. The correlation between operating performance and investment changes over the (-1,+3) interval is 0.32, the correlation between operating performance changes and announcement returns is 0.29, and the correlation between investment changes and announcement returns is 0.20. Thus, there appears to be a positive joint relationship between our measures of stock, investment, and operating performance.

The results we have presented regarding operating performance and investment expenditures by target firms support the view proposed in the business press that there are benefits of ownership in business relationships with corporate block owners.[13] Assuming that some other contractual mechanism outside of block ownership could have been used, our tests provide evidence that corporate block ownership results in substantial positive performance improvements in target firms involved in alliances or joint ventures with corporate owners.

IV. Conclusions

This paper investigates block equity ownership positions held by corporations in U.S. firms. We argue that corporate block ownership is unique relative to institutional or individual block ownership because of possible benefits in business relationships between target firms and corporate owners.

Alternative explanations for corporate block ownership include alleviating financing constraints in target firms, or that purchasers possess information advantages, or are better able to monitor the operations of target firms. For these reasons, we ask whether product market relationships, financing constraints, or board monitoring by corporate block owners have a differential significant impact on target firms' stock prices, investment policies, and operating performance. We find that ownership stakes provide benefits in high R&D industries, especially when product market relationships are accompanied by ownership stakes. We do not find evidence that liquidity constraints in target firms are an important motive for corporate block ownership or that target firms improve operating profitability as a direct consequence of board monitoring by corporate block owners independent of product market relationships.

Our findings strongly indicate that corporate equity ownership stakes combined with product market relationships in R&D-intensive industries lead to improvements in operating performance and substantial increases in investment expenditures by target firms. We also find that the stock market reacts favorably to the announcements of corporate equity purchases in target firms, especially in cases where product market relationships are formed between target firms and corporate block owners.

Our results support the argument that corporate equity ownership provides significant benefits to the firms involved in certain business agreements, thereby reducing the costs of creating, expanding, or monitoring the alliances or ventures between firms and their corporate block owners. The evidence that increases in operating performance and investment are strongest in the cases when product market alliances and joint ventures are combined with ownership in high R&D industries is consistent with ownership stakes helping firms reduce the contracting and ex post holdup costs involved in creating specialized assets.

REFERENCES

Aghion, Philippe, and Jean Tirole, 1994, The Management of Innovation, *Quarterly Journal of Economics* 109, 1185-1209.

Anderson, Ronald C., and D. Scott Lee, 1997, Ownership studies: The data source does matter, *Journal of Financial and Quantitative Analysis* 32, 311-329.

Barclay, Michael J. and Clifford G. Holderness, 1989, Private benefits from control of public corporations, *Journal of Financial Economics* 25, 371-395.

Bethel, Jennifer E., Julia Porter Liebeskind, and Tim Opler, 1998, Block share purchases and corporate performance, *Journal of Finance* 53, 605-634.

Brickley, James A., Frederick H. Dark, and Michael S. Weisbach, 1991, The economic effects of franchise termination laws, *Journal of Law and Economics* 34, 101-132.

Bolton, Patrick, and Ernst-Ludwig von Thadden, 1998, Blocks, liquidity, and corporate control, *Journal of Finance* 53, 1-26.

Burkart, Mike, Denis Gromb, and Fausto Panunzi, 1997, Large shareholders, monitoring, and the value of the firm, *The Quarterly Journal of Economics* 112, 693-728

Chan, Su Han, John W. Kensinger, Arthur J. Keown, and John D. Martin, 1997, Do strategic alliances create value?, *Journal of Financial Economics* 46, 199-221.

Choi, Dosoung, 1991, Toehold acquisitions, shareholder wealth, and the market for corporate control, *Journal of Financial and Quantitative Analysis* 26, 391-407.

Choi, Jay P., 1993, Cooperative R&D with product market competition, *International Journal of Industrial Organization* 11, 553-571.

Crocker, Keith, J., and Scott C. Masten, 1991, Pretia ex machina? Prices and process in long-term contracts, *Journal of Law and Economics 34,* 69-99.

Demsetz, Harold, and Kenneth Lehn, 1985, The structure of corporate ownership: Causes and consequences, *Journal of Political Economy* 93, 1155-1177.

Farrell, Joseph, and Carl Shapiro, 1990, Asset ownership and market structure in oligopoly, *Rand Journal of Economics* 21, 275-292.

Ferguson, Michael F., 1994, Ownership structure, potential competition, and the free-rider problem in tender offers, *Journal of Law Economics and Organization* 10, 35-62.

Grossman, Sanford, and Oliver Hart, 1986, The costs and benefits of ownership: A theory of vertical and horizontal integration, *Journal of Political Economy* 94, 691-719.

Hertzel, Michael, and Richard L. Smith, 1993, Market discounts and shareholder gains for placing equity privately, *Journal of Finance* 48, 459-485.

Joskow, Paul, 1985, Vertical integration and long-term contracts: The case of coal burning electric generating plants, *Journal of Law Economics and Organization* 1, 33-80.

Kahn, Charles, and Andrew Winton, 1998, Ownership structure, speculation, and shareholder intervention, *Journal of Finance* 53, 99-130.

Kamien, Morton, Eitan Muller, and Israel Zang, 1992, Research joint ventures and R&D cartels, *American Economic Review* 82, 1293-1306.

Klein, Benjamin, Robert G. Crawford, and Armen A. Alchian, 1978, Vertical integration, appropriable rents, and the competitive contracting process, *Journal of Law and Economics* 21, 297-326.

Maksimovic, Vojislav, and Sheridan Titman, 1991, Financial policy and reputation for product quality, *Review of Financial Studies* 4, 175-200.

Malueg, David A., 1992, Collusive behavior and partial ownership of rivals, *International Journal of Industrial Organization* 10, 27-34.

Maug, Ernst, 1998, Large Shareholders as monitors: Is there a trade-off between liquidity and control?, *Journal of Finance* 53, 65-98.

McConnell, John J., and Timothy J. Nantell, 1985, Corporate combinations and common stock returns: The case of joint ventures, *Journal of Finance* 40, 519-536.

Mikkelson, Wayne, and Richard Ruback, 1985, An empirical analysis of the interfirm equity investment process, *Journal of Financial Economics* 14, 523-53.

Monteverde, Kirk, and David J. Teece, 1982, Supplier switching costs and vertical integration in the automobile industry, *Bell Journal of Economics* 13, 206-213.

Moon, John J., and Tarun Khanna, 1996, The importance of acquirer type in private equity sales, Working paper, Harvard Business School.

Myers, Stewart C., and Nicholas S. Majluf, 1984, Corporate financing and investment decisions when the firm has information that investors do not have, *Journal of Financial Economics* 13, 187-221.

Rajan, Raghuram, G., and Luigi Zingales, 1998, Power in a theory of the firm, *Quarterly Journal of Economics* 113, 387-432.

Tapon, Francis, 1989, A transaction costs analysis of innovations in the organization of pharmaceutical R and D, *Journal of Economic Behavior and Organization* 12, 197-213.

White, Halbert, 1980, A heteroskedasticity-consistent covariance matrix estimator and a direct test for heteroskedasticity, *Econometrica* 48, 817-838.

Williamson, Oliver, 1979, Transaction-cost economics: The governance of contractual relations, *Journal of Law and Economics* 22, 233-261.

Williamson, Oliver, 1985, *The Economic Institutions of Capitalism: Firms, Markets, Relational Contracting* (The Free Press: New York).

Wruck, Karen H., 1989, Equity ownership concentration and firm value: Evidence from private equity financings, *Journal of Financial Economics* 23, 3-28.

Table I
Descriptive Statistics

Block equity transactions with outside corporations by year and method of acquisition, 1980-1991. Acquisition dates are the first report of a purchase agreement published in the *Wall Street Journal* or press release reported by *Dow Jones Newswire*. Private equity placements are block equity purchases by outside corporations. Open market purchases occur in block or cumulative transactions in the secondary market. Stock purchases associated with asset sales occur in equity-for-asset transactions between firms. Acquisitions from other shareholders are block purchases from institutions or individuals. Miscellaneous transactions include spin-offs of the target (5), shares received in mergers (5), and legal judgments (1). Alliances and joint ventures are explicit agreements announced between the target and corporate block owners during the two-year period centered on the purchase announcement dates. High R&D industries are in the upper quartile of R&D + advertising expenditures divided by total net assets among all four-digit SIC industries on COMPUSTAT. Firms are considered to operate in related industries if the primary SIC codes of the target and acquirer overlap at the three-digit level. Board representation is documented for the two-year period following corporate block purchases. Board and ownership data are obtained from the proxy statements of target firms.

Panel A. Acquisition Statistics by Year

Year	Total	Private Placements	Open Market Purchases	Received in Sale of Assets	From Other Shareholders	Misc.	Alliance / J. Venture	Target in High R&D Industry	Acquirer / Target in High R&D Industry	Industry Related	Acquirer on Board of Directors	Mean [Median] Fraction of Equity Acquired
1980	13	6	2	3	1	1	1 (8%)	7 (54%)	5 (38%)	5 (38%)	6 (46%)	0.29 [0.24]
1981	12	7	3	1	1	–	1 (8%)	6 (50%)	6 (50%)	6 (50%)	9 (75%)	0.25 [0.23]
1982	13	5	3	2	3	–	2 (15%)	4 (31%)	5 (38%)	5 (38%)	5 (38%)	0.25 [0.21]
1983	18	8	3	5	2	–	3 (17%)	11 (61%)	11 (61%)	11 (61%)	12 (67%)	0.22 [0.17]
1984	33	17	9	5	2	–	12 (36%)	17 (52%)	13 (39%)	22 (67%)	22 (67%)	0.15 [0.12]
1985	48	21	9	7	10	1	15 (31%)	26 (54%)	20 (42%)	34 (71%)	34 (71%)	0.22 [0.17]
1986	45	27	6	4	8	–	18 (40%)	21 (47%)	23 (51%)	23 (51%)	22 (49%)	0.23 [0.13]
1987	42	20	12	5	4	1	12 (29%)	19 (45%)	19 (45%)	23 (55%)	23 (55%)	0.18 [0.14]
1988	60	36	9	6	5	4	25 (42%)	16 (27%)	35 (58%)	35 (58%)	39 (65%)	0.19 [0.15]
1989	45	30	8	6	0	1	24 (53%)	23 (51%)	34 (76%)	34 (76%)	30 (67%)	0.17 [0.10]
1990	48	30	8	3	4	3	20 (42%)	20 (42%)	29 (60%)	29 (60%)	27 (56%)	0.18 [0.12]
1991	25	20	2	1	2	–	17 (68%)	15 (60%)	12 (48%)	12 (48%)	8 (32%)	0.15 [0.10]
Total	402	227	74	48	42	11	150 (37%)	185 (46%)	212 (53%)	237 (59%)	147 (65%)	0.20 [0.14]

Panel B. Alliances, R&D Classification, Industry Relatedness, and Board Representation by Method of Acquisition

	Alliances or Joint Ventures	Target in High R&D Industry	Acquirer / Target in Related Industries	Acquirer on Board of Directors
Private placements	136 (60%)	124 (55%)	122 (54%)	147 (65%)
Open market purchases	2 (3%)	28 (38%)	35 (47%)	20 (27%)
Asset sales to target	6 (12%)	20 (42%)	27 (56%)	30 (62%)
Other shareholders & misc. sources	6 (11%)	13 (25%)	28 (53%)	40 (75%)

Table II
Alliances, Agreements, and Joint Ventures between Targets and Corporate Shareholders

Reports of alliances, agreements, and joint ventures are obtained from Security Data Corporations' Joint Venture / Strategic Alliance database and from press reports published by *Dow Jones Newswire* during two-year intervals centered on purchase announcement dates. Joint ventures create a separate legal entity where the firms involved invest assets or hold equity interests in the venture. Agreements and alliances are explicit contracts to supply products or services, manufacture products, market or distribute products, license the rights to produce or distribute a product, conduct research and development activities, and share existing technologies or methods. Cooperative agreements in our sample are reached between a domestic airline and three commuter and two international airlines in conjunction with block equity purchases. Column totals exceed the statistics reported in Table I due to two alliances or joint ventures between firms in 33 cases and three alliances or ventures between firms in three cases.

	Total	Agreements or Alliances	Joint Ventures	Related Industries	Unrelated Industries	Board Seats
Research / product development	52	43	9	30	22	32
Marketing or distribution	46	43	3	26	20	25
Supply – product or service	30	29	1	15	15	16
Manufacturing / other production	26	12	14	14	12	18
Licensing rights	18	18	0	11	7	11
Technology sharing	12	12	0	10	2	7
Cooperative	5	5	0	5	0	2
Totals	189	162	27	111	78	111

Table III
Characteristics of Target Firms Prior to Corporate Equity Purchases

Financial and operating data for target firms in the fiscal year prior to block equity purchases by outside corporations. Data is classified by whether target and acquiring firms form alliances or joint ventures, whether target industries are in the upper quartile of R&D + advertising expenditures divided by total net assets among all four-digit SIC industries on COMPUSTAT, and by the method of purchase. Prior year excess stock returns are the average one-year holding period return ending 11 days prior to the acquisition announcement dates less the return on a portfolio of five firms in the same book-to-market quartile matched by size. Acquisition premiums are calculated as the percentage difference between the per share price paid by acquirers and the closing price of the target on the day prior to purchase announcements. Premiums are calculated for 63 cases where the purchase amounts are disclosed in the *Wall Street Journal* article or press release reported by *Dow Jones Newswire*. With the exception of prior year excess stock returns, all statistics are group medians.

	All Targets	Alliance or Joint Venture	No Alliance or Joint Venture	High R&D Industry	Low R&D Industry	Private Placements	Open Market Purchases	Asset Sales	Other SH & Misc.
Book value of assets ($m)	49.8	32.1	52.9	27.1	70.9	36.8	105.1	70.1	63.0
Target assets ÷ Acquirer assets	0.039	0.013	0.105	0.017	0.104	0.017	0.199	0.043	0.310
Excess stock return in prior year	5.9%	8.8%	1.9%	7.9%	3.7%	10.1%	(3.4%)	6.0%	2.6%
# months since IPO	56	35	81	45	72	38	172	79	87
Fraction of equity acquired	0.14	0.11	0.15	0.13	0.15	0.15	0.11	0.23	0.35
Premium (discount) paid at acquisition [fraction positive]	8.0% [0.60]	n.a.	8.0% [0.60]	6.0% [0.67]	8.1% [0.56]	5.8% [0.59]	n.a.	n.a.	8.2% [0.62]

<div align="center">

Table IV

Excess Stock Returns to Block Equity Purchases by Corporations

</div>

Cumulative average excess stock returns to targets, purchasers and combined purchasers + targets calculated over a 21-day (–10,+10) interval centered on purchase announcement dates. Excess stock returns are calculated using a single-factor market model with parameters estimated over the (–200,–25) day interval. Combined purchaser + target returns are weighted using the market capitalization of each firm on day –11 relative to the announcement dates. High R&D industries are in the upper quartile of R&D + advertising expenditures divided by total net assets among all four-digit SIC industries on COMPUSTAT. Investment by target firms is capital expenditures + R&D divided by average total net assets. Classifications based on industry R&D + advertising and investment relative to industry medians are in the fiscal year prior to block purchases. Board representation by corporate block owners is documented in year +1 and +2. Board data are obtained from the proxy statements of target firms. *p*-values are in parentheses.

	Targets	Purchasers	Purchasers + Targets
Full sample	6.9%	-0.7%	0.0%
(N = 402)	(<0.01)	(0.13)	(0.99)
Alliance or joint venture	9.1%[a]	-0.1%	0.5%
(N = 150)	(<0.01)	(0.88)	(0.36)
No alliance or joint venture	5.5%[a]	-1.1%	-0.3%
(N = 252)	(<0.01)	(0.10)	(0.31)
Target in high R&D industry	7.9%	-0.2%	0.3%
(N = 185)	(<0.01)	(0.61)	(0.39)
Target in low R&D industry	5.6%	-0.9%	-0.0%
(N = 217)	(<0.01)	(0.15)	(0.96)
Investment by target firm above industry median (N = 214)	6.6%	-0.7%	0.1%
	(<0.01)	(0.23)	(0.77)
Investment by target firm below industry median (N = 188)	7.4%	-0.6%	-0.1%
	(<0.01)	(0.28)	(0.75)
Purchaser representative on target's board of directors (N = 237)	5.9%	-1.4%	-0.9%
	(<0.01)	(0.01)	(0.06)
No board representation	7.8%	0.6%	1.2%
(N = 165)	(<0.01)	(0.21)	(0.01)
Board representation + alliance or joint venture (N = 92)	8.3%	-0.4%	0.2%
	(<0.01)	(0.62)	(0.74)
Private placements	8.3%	0.2%	0.5%
(N = 227)	(<0.01)	(0.59)	(0.22)
Private placement + alliance or joint venture (N = 136)	10.1%[b]	0.6%	0.9%
	(<0.01)	(0.24)	(0.14)
Private placement + no alliance or joint venture (N = 91)	5.3%[b]	-0.3%	-0.1%
	(<0.01)	(0.74)	(0.96)
Open market purchases	5.9%	-1.0%	0.7%
(N = 74)	(<0.01)	(0.09)	(0.32)
Asset sales	0.8%	-1.1%	-0.8%
(N = 48)	(0.38)	(0.15)	(0.41)
Purchases from other shareholders	8.9%	-3.6%	-2.1%
(N = 42)	(<0.01)	(0.01)	(0.12)

[a]The average excess return between alliance/JV and no alliance/JV is significantly different at the 0.05 level.
[b]The average excess return in private placements with an alliance/JV relative to no alliance/JV is significantly different at the 0.01 level

Table V
Operating Performance of Target Firms Surrounding Corporate Equity Purchases

Comparison portfolios for each target firm are constructed using five firms matched by industry (four-digit SIC) and nearest asset size from COMPUSTAT. If five matching firms are not available at the four-digit SIC level, three-digit or two-digit levels are used to obtain a minimum of five firms prior to applying the size criterion. Median statistics for the comparison groups are subtracted from the target measure before changes are calculated. High R&D industries are in the upper quartile of R&D + advertising expenditures divided by total net assets among all non-financial four-digit SIC industries on COMPUSTAT. High liquidity firms are able to fund investment expenditures in the year of and following (0,+1) corporate block equity purchases with after-tax operating cash flow and cash balances in year −1. ΔOCF is the industry-adjusted change in earnings before interest, taxes, depreciation, amortization, and extraordinary items (EBITDA) divided by average total net assets. ΔINV is the industry-adjusted change in capital + R&D expenditures divided by average net assets. ΔICOV is the industry-adjusted change in EBITDA divided by interest expense. To avoid survivorship bias, we require targets to have COMPUSTAT data available in each comparison year over the interval (−2,+3). The median test and the Wilcoxon signed rank test are used to determine between and within sample significance.

Panel A. Alliances or Joint Ventures and High R&D Industries

Year relative to purchase year	All targets	Alliance or Joint Venture	No Alliance or Alliance or JV	Between Group Significance	High R&D Industry	Low R&D Industry	Between Group Significance	Alliance or JV + High R&D	Alliance or JV + Low R&D	Between Group Significance
ΔOCF (−2,−1)	-4.2%	14.4%	-15.8%[c]	<0.01	-14.8%	-1.2%	<0.01	6.2%	17.9%	
(−1,+3)	9.4%	21.7%[b]	2.1%	0.06	37.5%[a]	-16.1%[c]	<0.01	36.4%[b]	3.0%	0.02
ΔINV (−2,−1)	-6.7%	2.6%	-10.3%	<0.01	-11.5%	-4.8%	<0.01	-1.7%	6.8%	
(−1,+3)	25.6%[a]	58.4%[a]	13.3%	<0.01	41.1%[a]	10.2%	<0.01	68.0%[a]	42.7%[a]	0.07
ΔICOV (−2,−1)	-16.2%[c]	2.2%	-24.7%[b]	0.04	14.2%	-22.4%[b]		8.3%	-6.1%	
(−1,+3)	25.3%[a]	39.0%[a]	-5.4%	<0.01	24.4%[b]	11.8%	<0.01	44.3%[a]	30.5%[b]	

Panel B. Pre-Stake Investment and Liquidity

year relative to purchase year	Investment Below Industry Median	Investment Above Industry Median	Between Group Significance	Low Investment + High Liquidity	Low Investment + Low Liquidity	Between Group Significance
ΔOCF (−2,−1)	-8.5%	-1.4%		-7.9%	-8.8%	
(−1,+3)	7.6%	10.1%		5.2%	10.5%	
ΔINV (−2,−1)	-17.0%[c]	2.2%	0.05	-13.3%	-23.3%	
(−1,+3)	28.9%[b]	24.3%[b]		25.7%	31.4%[c]	
ΔICOV (−2,−1)	-18.6%	-9.9%		-10.1%	-26.9%	
(−1,+3)	16.8%	29.5%[b]		13.6%	18.0%	

a,b,c represent two-tailed significance levels of 1 percent, 5 percent, and 10 percent respectively.

Table VI
Determinants of Investment and Operating Performance Changes

Ordinary least squares regressions of industry-adjusted changes in operating cash flow (EBITDA) divided by average total net assets and changes in capital + R&D expenditures during the (-1,+3) year interval relative to corporate block equity purchases. Regressors include a dummy variable if the target and corporate block owner form an alliance or joint venture during the two-year period centered on the purchase announcement dates, a dummy variable if the R&D + advertising expenditures of the target's industry is in the upper quartile of all non-financial four-digit SIC industries in the year prior to purchase announcements, a dummy variable indicating whether R&D + capital expenditures divided by average net assets is below the industry median in the year prior to corporate equity purchases, a dummy variable indicating whether the corporate owner obtains board seats in the target firm in year +1 or year +2, and interaction terms including a high liquidity variable that equals one if the target is able to fund investment expenditures in the year of and following (0,+1) corporate block equity purchases with after-tax operating cash flow and cash balances in year -1. White (1980) standard errors are in parentheses.

dependent variable	Δ operating cash flow (-1,+3)	Δ operating cash flow (-1,+3)	Δ capital + R&D expenditures (-1,+3)	Δ capital + R&D expenditures (-1,+3)
Alliance or joint venture	5.650[c] (2.986)	5.377[c] (3.006)	8.532[b] (3.988)	7.841[c] (4.187)
R&D-intensive industry	6.292[b] (2.778)	6.115[b] (2.912)	7.115[c] (3.937)	7.046[c] (4.081)
Investment below industry median	-1.418 (3.166)	-1.742 (2.728)	3.024 (4.173)	3.240 (4.032)
Corporate owner on board of directors	-3.455 (2.831)	-3.279 (2.862)	-7.631[b] (3.760)	-7.523[c] (3.968)
Alliance or joint venture x R&D-intensive industry		6.831[b] (3.111)		9.416[b] (4.195)
High liquidity x R&D-intensive x alliance or joint venture		7.592[a] (3.210)		11.502[b] (4.644)
intercept	-2.883 (3.966)	-2.947 (3.734)	5.701[c] (3.439)	4.687 (3.792)
adjusted R^2	0.06	0.09	0.07	0.10

a,b,c represent two-tailed significance levels of 1 percent, 5 percent, and 10 percent respectively.

Endnotes

[1] See *Business Week*, "American Keiretsu: Learning from Japan," January 27, 1992, pp. 52-60. The most common types of alliances between firms in our sample include marketing and supply agreements (Compaq / Conner Peripherals and General Motors / Robotic Vision Systems), single-source contracts (Ford Motor Co. / Excel Industries), and technological development with startups and key suppliers (Intel / Alliant Techsystems and Digital /MIPS Computer Systems). Note that unlike the case of Japan, most of the examples cited in the *Business Week* article and all but one of the firms in our sample involve one firm owning equity in another with no reciprocal shareholding.

[2] Recent theoretical work on institutional blockholders includes Bolton and von Thadden (1998), Maug (1998), and Kahn and Winton (1998). Empirical articles include Wruck (1989), Hertzel and Smith (1993), and Bethel, Liebeskind and Opler (1998). Wruck (1989) and Hertzel and Smith (1993) have documented positive excess returns to the announcement of private sales of large blocks of equity. Most of the equity sales in these studies, however, are to institutions and not to corporations. There have also been analyses of toehold positions, or block positions established in anticipation of a takeover, including Mikkelson and Ruback (1985), Choi (1991), and Ferguson (1994). To focus on the potential effect on product market relationships, we eliminate equity investments that are explicitly related to takeovers, or when the firm is taken over within two years.

[3] Farrell and Shapiro (1990) and Malueg (1991) theoretically model partial-firm ownership of rival firms in an oligopoly. However, nearly all of the equity ownership stakes in our sample are not between rival firms in the same four-digit SIC code.

[4] Contracting costs and the potential for ex post holdup problems are used to explain the extent of vertical relationships in specific industries. Empirical studies for specific industries include Joskow (1985), which explains electric utility ownership of, and long-term contracts, with coal mines; Monteverde and Treece (1982), and Crocker and Masten (1991) on automobile manufacturing contracting and product sourcing; and Brickley, Dark, and Weisbach (1991) on franchising choice. Maksimovic and Titman (1991) also use contracting costs between firms and their customers in the product market to explain the choice of financial structure.

[5] They also discuss separating ownership into control or property rights and income rights.

[6] The acquisition of shares prior to successful takeovers and other short-lived, transitory ownership positions (e.g. toeholds in failed takeover attempts) are not within the scope of this study and are eliminated from the sample.

However, we retain target firms that delist for other reasons during the two-year period. We also examine the extent of future takeovers or mergers subsequent to the two-year window. Of the 402 firms in the sample, 84 are acquired by outside firms through the period ending December, 1996. However, of these 84, the corporation that owns the partial equity stake made only 11 acquisitions.

[7] Our sample goes back to 1980 because we found several ownership positions established during this time in our review of the 1982 issue of *Spectrum 5*.

[8] For example, in 1988, Eastman Kodak invested $20 million in Immunex Corp. to expand drug research. In 1984, Du Pont purchased a stake in Biotech Research Laboratories, followed by marketing and manufacturing agreements.

[9] We have price data for 63 of the equity purchases. It is possible that part of the difference in excess returns could be due to systematic differences in the amount paid relative to the current stock price. The subsequent analysis of operating profitability and investment, however, is not affected by this possibility.

[10] We also examine excess returns over longer announcement intervals and find similar results to those reported in table IV.

[11] Both operating cash flows and investment are divided by average net assets during the prior year. Industry median statistics are then subtracted prior to calculating the year-to-year change in these variables.

[12] We also estimate these regressions for shorter windows (-1,+1, and –1,+2) and find similar results.

[13] See Business Week, January 27, 1992, pp. 52-60.