

**Abnormal Returns To Rivals of Acquisition Targets:  
A Test of the "Acquisition Probability Hypothesis"**

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# **Abnormal Returns to Rivals of Acquisition Targets:**

## **A Test of the "Acquisition Probability Hypothesis"**

### Abstract

We develop and test the "*Acquisition Probability Hypothesis*" which asserts that rivals of initial acquisition targets earn abnormal returns because of the increased probability that they will be targets themselves. On average, rival firms earn positive abnormal returns regardless of the form and outcome of acquisition. These returns increase significantly with the magnitude of surprise about the initial acquisition. Moreover, the cross-sectional variation of rival abnormal returns in the announcement period is systematically related to variables associated with the probability of acquisition. In addition, rivals that subsequently become targets earn significantly higher abnormal returns in the announcement period.

# **Abnormal Returns to Rivals of Acquisition Targets:**

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### **1. Introduction**

An extensive literature, beginning with Eckbo (1983,1985) and extending through Mitchell and Mulherin (1996), finds that rivals of acquisition targets earn significant, positive abnormal returns. The most widely cited explanation is that horizontal mergers eliminate competitors and facilitate collusion among the remaining firms. However, Eckbo (1983, 1985, and 1992), Stillman (1983), and Eckbo and Wier (1985) all reject the collusion hypothesis, leaving the explanation for positive rival returns unclear. Moreover, we have little explanation for the wide cross-sectional variation in abnormal returns to rivals or the finding that only fifty to sixty percent of rival firms earn positive abnormal returns.

In this paper, we develop and test an alternate explanation for positive rival returns. Our explanation, termed the "acquisition probability hypothesis", asserts that rivals earn abnormal returns because of the increased probability that they will be targets themselves. In our model, the appearance of a bidder willing to pay a premium over the market price for a firm is *prima facie* evidence of a valuation differential for at least one firm in the industry. This differential may result from expected synergies, or target management's failure to anticipate and incorporate needed changes. In any case, the appearance of an unexpected acquisition attempt within an industry generates shock waves that cause firm specific reassessment of the probability of an acquisition attempt for rivals.

The implications of the "acquisition probability hypothesis" are quite different from those of the collusion hypothesis. For example, acquisitions need not be horizontal to generate abnormal returns to rivals, nor must they be successful. The "acquisition probability hypothesis" also helps explain the cross-sectional differences in abnormal returns to rivals. Under our hypothesis,

revisions in a rival's stock price occur because of *changes* in the perceived probability of acquisition attempts and these changes vary systematically with individual firm characteristics.

Section 2 reveals the intuition behind the acquisition probability hypothesis and develops testable implications. Section 3 describes the data and methodology of the research. In particular, we develop a procedure to identify unexpected acquisitions within an industry. The implications of the acquisition probability hypothesis are then tested on a sample of 141 unexpected acquisitions and 2459 rival firms over the 1982-1991 period. The following results, all consistent with the acquisition probability hypothesis, are documented in sections 4 and 5: (1) rival firms earn positive abnormal returns regardless of the form (horizontal or non-horizontal) and outcome (successful or unsuccessful) of the initial industry acquisition. Abnormal returns to rival firms are significantly positive in all categories except horizontal acquisitions. (2) The abnormal return to rival firms tends to increase with the magnitude of surprise about an acquisition. (3) The characteristics of target firms are distinct from those of non-targets, but similar to those of rivals that subsequently become targets. (4) Furthermore, the cross-sectional variation in the abnormal returns to rival firms is systematically related to variables associated with the probability of acquisition, and (5) the magnitude of rival returns is significantly, positively related to the probability of being a target. In addition, the abnormal return for rivals that subsequently become targets is significantly higher than for non-targeted rivals. In separate multivariate tests, we also document that the magnitude of rival returns is significantly greater in unregulated firms.

## **2. Background and hypotheses**

### ***2.1 Previous literature***

Gort (1969) argues that mergers are caused by valuation differentials among market participants, triggered by economic shocks such as changes in technology, industry structure, and in the regulatory environment. Since these shocks tend to be industry specific, acquisitions cluster by industry. Jensen (1988) cites examples that illustrate this point. The sharp rise in interest rates,

coupled with the sharp drop in oil prices, were the catalysts of massive restructuring in the oil industry during the early 1980's. Also, the advent of radial tires tripled tire life and (since demand for tires was constant) tripled capacity in the industry. Excess capacity within the industry forced restructuring. In each case, an external catalyst (interest rates, oil prices, or technology) led to industry-wide restructuring. Mitchell and Mulherin (1996) detail the clustering of acquisitions within industries and the relation of acquisition waves to external shocks. Acquisition activity is distributed fairly evenly over the eight year period of their sample; the percentage of acquisition activity occurring in any given year ranges from approximately ten to eighteen percent. However, within specific industries there is noticeable clustering: fifty percent of the acquisition activity within industries occurs within just twenty-five percent of the sample period.

Acquisition activity within an industry is associated with positive abnormal returns to rivals of the targeted firm. Eckbo (1983, 1985) finds that horizontal competitors of target firms earn significantly positive abnormal returns of 0.76%, ( $Z=2.59$ ), over the seven day period surrounding the merger proposal date. Eckbo and Wier (1985) report similar announcement period abnormal returns. Stillman (1983) does not aggregate rival firms into a single portfolio but instead reports separate results for the rivals of 11 different mergers. The abnormal return to rivals is positive in 9 of the 11 cases analyzed. Mitchell and Mulherin (1996) report abnormal returns of 0.5% to rivals during the month of announcement.

The source of these positive rival returns is unresolved. Increased ease of collusion could explain the positive returns, but Eckbo (1983, 1985, 1992), Eckbo and Wier (1985), and Stillman (1983) reject this hypothesis. Alternative explanations include the signal of positive information about the value of an industry or increased synergies between rivals and subsequent bidders. To date, these explanations for positive rival returns and the substantial cross-sectional dispersion of these returns have been unexplored. In the paragraphs that follow, we develop a simple model to explain the level and existence of positive abnormal rival returns.

## 2.2 The acquisition probability model

At any point in time, a firm's market value is a weighted average of the values of the firm under current and alternative management(s) where the weights are the probability of the firm being controlled by the various managerial teams. Acquisition attempts will occur when the expected gain from an acquisition attempt exceeds the cost.

External catalysts, such as regulatory changes, technological innovation, changes in consumer tastes, and changes in an industry's cost structures, impact the probability of an acquisition attempt by changing the potential gains to competing managerial teams. An unexpected acquisition within an industry signals that the expected gain from bidding exceeds the cost for at least one firm in the industry. This leads to a revision in the value of rival firms based on their observed characteristics.

Let  $p_r(x_1)$  and  $E[v_r(x_2)]$  denote, respectively, the probability of rival  $r$  becoming a target and the expected return to rival firm shareholders, conditional on an acquisition attempt for their firm.  $x_1$  and  $x_2$  represent vectors of characteristics related to the probability of acquisition and firm value. According to the acquisition probability hypothesis, the abnormal return to rival  $r$ , is:

$$AR_r = \Delta p_r(x_1) E[v_r(x_2)] \quad (1)$$

where  $\Delta p_r$  is the change in the probability of an acquisition attempt for rival  $r$  associated with the initial acquisition announcement in its industry.<sup>1</sup>

There are many reasons why rival firms are affected differently by external shocks. In the case of changing technology, for example, firms face different costs of adoption, have varying degrees of information about the new process, or have different attitudes towards the risk of new processes. For these reasons and others, the shift in the mean and/or variance of the distribution of

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<sup>1</sup> Analogous to the 'information versus synergy' discussion of Bradley, Desai and Kim (1983), we note that the initial industry acquisition announcement could also signal the existence or increased value of unique industry specific resources. Under this alternative, the rival's probability of being a target need not change for its value to be affected. Here,

$$AR_r = E[v_r(x_2)]$$

Of course, to the extent that the vectors of characteristics  $x_1$  and  $x_2$  overlap, empirical distinction of this alternative and the 'acquisition probability hypothesis' is difficult. We note, however, that synergistic

potential or actual gains will vary across rival firms, causing cross-sectional variation in their abnormal returns.

External catalysts (which materialize in acquisition activity) cause revisions in the actual or perceived importance of certain firm specific variables. For example, it is known that managerial ownership is inversely related to probability of an acquisition attempt (Mikkelsen and Partch (1989), Song and Walkling (1993)). However, low managerial ownership by itself is not a reason for acquisition. The impact of managerial ownership on the probability of acquisition is irrelevant to a firm's value unless some economic catalyst suggests acquisition is profitable. If this catalyst occurs, the importance of managerial ownership is magnified and prices adjust accordingly. Those *attractive* firms that are more easily acquired (i.e., low managerial ownership) receive greater revisions in their market value.

### ***2.3 Implications of the acquisition probability hypothesis***

This acquisition probability hypothesis suggests the following testable implications. First, rival firms earn (on average) significantly positive abnormal returns. However, unlike the collusion hypothesis, positive abnormal returns for rivals need not be restricted to cases where the initial acquisition attempt is horizontal or even successful. If an initial acquisition attempt within an industry signals increased likelihood of a beneficial restructuring for that industry, its rivals will (on average) experience positive abnormal returns regardless of the form of the restructuring (i.e. horizontal or non-horizontal). Moreover, the acquisition need not be successful to cause revisions in the returns to rivals. The appearance of a bid allows shareholders to experience gains, regardless of outcome, by selling on the open market at a revised (presumably higher) price. Second, average abnormal returns to rival firms will be positively related to the degree of surprise associated with the initial acquisition announcement for a particular industry. Third, the cross-sectional variation in the abnormal returns to rivals firms will be systematically related to variables associated with the probability of acquisition. The literature suggests that smaller firms, with low managerial

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gains to rivals need not be realized for announcement period abnormal returns to be affected.

ownership, greater debt capacity, and lower growth have an increased probability of acquisition. Fourth, to the extent that the market correctly anticipates acquisition attempts, announcement returns will be higher for those rivals that subsequently become targets.<sup>2</sup>

### **3. Data and methodology**

#### ***3.1 Target firms and industry classification***

Testing the acquisition probability hypothesis requires a list of acquisitions sorted chronologically within each industry, a list of rival firms, and proxy variables to test each of the implications. We begin with a list of acquisition bids compiled from W. T. Grimm's Mergerstat Review for the period January 1, 1982 through December 31, 1991.<sup>3</sup> This database records formal, publicly announced transfers of ownership of at least 10% of a company's assets or equity where the purchase price is at least \$500,000 and where one of the parties is a US company. Over the 1982-1991 period, Grimm reports 1353 acquisition bids. We confirm and in some cases revise the first announcement dates through the Wall Street Journal, defining the initial announcement date for a firm as the first indication of control related discussions following a minimum three month absence of such announcements.

We classify each target firm according to its Value Line industry during the quarter preceding the acquisition announcement. Using Value Line industries enables us to avoid some of the problems associated with SIC codes: Value Line classifies firms into approximately 90 different industries, updating classifications as appropriate. Moreover, historical classifications are available.<sup>4</sup> In a subsequent section, rivals will be defined using Value Line industries. Our

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<sup>2</sup> We also test, but do not feature, another implication: abnormal returns will be lower for regulated firms since government intervention reduces the probability of their being acquired.

<sup>3</sup> Until 1987, W.T. Grimm and Co. managed this database. After 1987, Merrill Lynch Business Brokerage and Valuation Services has managed Mergerstat.

<sup>4</sup> Kahle and Walkling (1996) report that nearly 40% (80%) of the two- (four-) digit SIC codes of firms classified by CRSP would be classified differently by Compustat. Moreover, although SIC codes change over time, Compustat only reports the latest code. Consequently, researchers using historical Compustat data do not have access to the SIC that existed at the time of interest. We use the classifications reported by Value Line at the time of the acquisition announcement. We note that geographical location may preclude two firms in the same industry from actually being rivals. Nevertheless, an acquisition in one

purpose here is to identify target firms that could affect inferences about the acquisition probability of these rivals. Four hundred and seventy of the 1353 target firms noted by W.T. Grimm are listed in Value Line and comprise our sample for examining industry targets. We later discuss sensitivity tests using the remaining Grimm targets not covered by Value Line.

### ***3.2 Dormant periods and initial industry targets***

Our primary proxy for the degree of surprise about industry acquisition activity is termed the *dormant period*, the length of time (in months) since a previous acquisition announcement in the same industry. To determine the dormant period, target firms are sorted chronologically within their Value Line industries.<sup>5</sup> *Initial industry targets* are defined as the first firm in an industry to experience acquisition activity following a (minimum) 12-month dormant period. *Rivals* are defined as firms in the same Value Line industry at the time of the initial industry target.

Value Line recognizes changing business environments, creating new or deleting old industries as appropriate. While Value Line's timeliness is a definite advantage, changes in industry names must be recognized in our methodology. Where Value Line combines industry classifications, we use the historical classifications of all firms as appropriate to calculate the dormant period. For example, the brewing industry and soft drink industries were combined in 1987 to form the beverage industry. If an acquisition announcement occurs in the beverage industry after 1987, we trace the history of all firms in the beverage industry to determine if this is the initial industry announcement. For the initial appearance of an industry, we determine the dormant period by tracing the classification history of the individual firms using the prior industrial classification of these firms.

In order to calculate dormant periods beginning prior to 1982, we examine the Wall Street Journal Index back to the beginning of 1977 for each firm in a target's Value Line Industry to ascertain if it was a target. Of course, acquisition activity for smaller firms not covered by our

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part of the country could still have information content for a distant firm in the same industry.

<sup>5</sup> Initially we eliminate regulated industries. These include Air Transportation, Electric Utility, Finance and Investment Companies, Insurance Firms, Savings and Loans and Natural Gas. In an extension

databases could also signal industry activity. To the extent that we misclassify industries or missed initial industry targets, we have biased against finding support for our hypotheses.

Panel A of Table 1 reveals details of the distribution of initial targets for our sample. One hundred and forty-one unregulated "initial industry targets" are identified. The distribution of initial industry targets over the sample period is fairly uniform with a slight decline in the 1989-91 period.

This is consistent with the literature. Comment and Schwert (1994), for example, find that 1.5% of their firms receive initial takeover bids each month during 1987-88 but by 1990 this declines to 0.5% per month. Mitchell and Mulherin (1996) find the lowest level of acquisition activity for their sample in 1989.

Panel B reveals the distribution of industry characteristics for initial industry targets. By design, the minimum dormant period is 13 months; the mean, median, and maximum dormant periods are 38, 31, and 122 months, respectively. To the extent that the dormant period extends beyond the beginning of our data (1977) we understate its length.<sup>6</sup> Consequently, the mean dormant period is understated. Consistent with the literature, we use a sales based Herfindahl index to measure the degree of concentration within an industry. According to the collusion hypothesis, horizontal mergers within more concentrated industries facilitate collusion. By design, the Herfindahl index is constrained between zero and one. The mean and median Herfindahl index for our sample is 0.14 and 0.16, respectively, indicating relatively low levels of concentration. An alternate measure of concentration is the number of rivals within an industry. A total of 2459 Value Line rivals are associated with the 141 initial industry targets. The number of rivals ranges from 3 to 50 per target firm with the mean and median being 17 and 15 rivals, respectively.<sup>7</sup>

The health of an industry is indicative of opportunities for restructuring. Relatively unhealthy industries suggest turnaround opportunities; an initial industry target within an unhealthy

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discussed at the end of the paper, we repeat our methodology and analysis for firms in these industries.

<sup>6</sup> For example, suppose an initial acquisition occurs in January of 1983 and there is no prior acquisition activity for this industry since 1977 (the beginning of our search). We set the dormant period to 72 months, although the actual length is longer.

<sup>7</sup> Eight of the 2459 rivals were bidders for firms outside their industry at the same time as an initial

industry could have a greater impact on rival firms than initial acquisitions in profitable industries.

To test this, we include a measure of industry health in our analysis. Value Line ranks each industry it covers from best (rank = 1) to worst (rank = L) where L is the number of industries covered in a particular quarter. Since the number of industries varies slightly from quarter to quarter, we normalize industry rank by dividing by L. Thus, by construction the distribution of relative rank ranges from close to zero to one with mean and median around 0.5.

### ***3.3 Calculating abnormal returns***

We calculate abnormal returns using the market model and standard cumulative abnormal return methodology. Since our objective is to explain the cross-sectional variation in rival returns, most of our analysis focuses on individual abnormal returns for each rival firm. However, rival firm returns are not independent since they are measured within the same industry over the same time period. Consequently, in discussing the significance of abnormal returns, we also report results after grouping the rivals of each target firm into an equal-weighted portfolio and treating the portfolio as a single observation.

Daily returns for 240 days (covering the period  $t-300$  through  $t-61$ ) are used to estimate market model parameters for each rival firm and portfolio; day  $t$  represents the announcement date for the initial industry target. We require a minimum of 100 daily returns or the case is deleted. The average abnormal return on day  $t$  is computed as the average difference between actual observations and estimated returns for the rival firms analyzed. Cumulative abnormal returns (CAR) summarize the price impact over the two-day period  $(-1,0)$  surrounding the announcement of the "initial industry target." Average standardized abnormal returns and average standardized cumulative abnormal returns are utilized to create test statistics.

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industry target is announced. Deleting these observations does not affect our results.

## **4. Abnormal returns to portfolios of rivals and the probability of acquisition**

### ***4.1 Abnormal returns to target and rival firms***

Panel A of Table 2 presents abnormal returns for the entire sample of initial industry targets and their associated rival firms over an 11 day window surrounding the initial acquisition announcement. Target abnormal returns average a significant 16.7% for the announcement period (-1,0). They are also significantly positive beginning with day -4 of the pre-announcement period. Abnormal returns to a portfolio of rivals average a significant 0.35% for the announcement period (-1,0) and a significant 0.56% during the longer period (-5, +5). The percentage of rival portfolios earning positive abnormal returns is 58.2% in the (-1,0) period and 63.1% in the (-5, +5) period.

Panel B Table 2 reveals the distribution of abnormal returns for targets and individual rival firms over the period (-1,0). The average abnormal return to target firms is 16.7%; 87% of all target firms experience positive abnormal returns. The mean abnormal return for rival firms is significant beyond the 1% level ( $z = 4.86$ ), averaging 0.36% for the two day period. The range of abnormal returns, however, is quite large; the minimum and maximum two-day abnormal returns to rivals are -16.0% and 23.4%, respectively. About 52% of rival firms experience positive abnormal returns. Thus, while the mean abnormal return to rival firms is positive and significant, the distribution of returns is dispersed and symmetric around zero.<sup>8</sup>

### ***4.2 Motives for initial acquisitions***

To shed additional light on the relation between the abnormal return to rivals and the motives behind the initial industry acquisition, we examine the Wall Street Journal for the initial news stories describing the bid for the initial industry target. We identify over 22 phrases repeated frequently in the news articles and reduce these phrases to seven categories of motives. Caution

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<sup>8</sup> We also test hypotheses that the proportion of rivals with positive abnormal returns is a) equal across all 141 observations and b) equal to 50% in all observations. Chi-square tests, with approximated z-statistics of 9.82 and 9.99, respectively, reject both hypotheses. Thus, there does appear to be a concentration of reaction in some industries. Multivariate tests, reported in later sections, include controls for industry

must be applied in interpreting these classifications since the sample sizes of some categories are small. For example, we find only 4 targets and 62 associated rivals where the financial press explicitly mentions an “industry trend” . Nevertheless, our results (available upon request for the sake of brevity) indicate that the highest mean and median abnormal returns to rivals are earned by this category of firms. With one exception, the mean and median returns to rivals (both 1.2%) in the “industry trend” category are more than double the values for the remaining categories. This is true regardless of whether portfolios of rivals or individual rival returns are used.

### ***4.3 Abnormal returns across portfolios of rival firms***

In Table 3 we begin the analysis of rival abnormal returns conditional on target and bid characteristics. Specifically, we condition the sample on the outcome of the offer, the nature of the bid (horizontal or non-horizontal), degree of industry concentration, and length of the dormant period. We also categorize acquisitions by initial target market value, the level of industry acquisition activity, industry health, the bid premia for the initial industry target, and whether this bid is the first, second or subsequent “initial” bid within the industry. Each of these categorizations is linked to the likelihood and potential gain from subsequent acquisition attempts on a rival, the degree of surprise surrounding the initial attempt or the ease of subsequent collusion within the industry. Since our focus here is on univariate statistical significance across categories rather than explaining the cross-sectional dispersion of individual returns, we report results on (equal-weighted) portfolios of rivals. For each categorization, we report the mean target and mean and median rival portfolio returns. We also report tests of significance for each sub-category. Except for the difference between the last two dormant period classifications, tests for differences in abnormal rival returns across the sub-categories of Table 3 are all insignificant. This includes both t-tests between the various sub-categories and a Kruskal-Wallis non-parametric test.

### ***4.4 The outcome and nature of the initial bid***

The collusion hypothesis rests on the assumption that merger reduces the number of firms

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effects.

in an industry. This requires a successful, horizontal, acquisition. In contrast, the “acquisition probability hypothesis” is agnostic with regard to both the completion of the initial acquisition and its form (horizontal or non-horizontal).

Abnormal announcement period returns experienced by targets of successful and unsuccessful acquisition bids are 21% and 15%, respectively. However, mean abnormal returns are insignificantly higher for portfolios of rivals when the initial bid is successful (t-statistic = 0.16) and median rival returns are actually negative for successful offers. Mean and median returns to portfolios of rivals associated with unsuccessful initial targets are significantly positive.

We define horizontal acquisitions as cases where the initial industry target and its initial bidder share the same 3-digit SIC code, as defined by CRSP. We obtain SIC codes for both target and bidder for 70 of the unregulated initial industry targets. Eleven of the initial industry targets are classified as horizontal; 59 are classified as non-horizontal. The remaining 71 cases, often involving a bid by individuals, are listed as not classified. The mean abnormal return to rivals of horizontal targets (0.32%) is insignificantly smaller than the corresponding figure for non-horizontal rivals (0.51%). Median abnormal returns present a more dramatic difference. Median abnormal returns to rivals are actually negative in horizontal acquisitions. Related to this, a smaller percentage (36.4%) of horizontal portfolios exhibit positive abnormal returns as compared to 62.7% for non-horizontal firms. Replications of this analysis using the more homogeneous 4-digit SIC codes resulted in only 6 horizontal acquisitions but produced similar conclusions. Thus, the existence of positive abnormal returns is not restricted to horizontal acquisitions. Moreover, rival returns are actually lower in the sample of horizontal acquisitions.<sup>9</sup>

#### ***4.5 Industry concentration***

The collusion hypothesis suggests that higher abnormal returns are earned in more concentrated industries. To examine how the degree of industry concentration affects rival returns,

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<sup>9</sup> Betton and Eckbo (1997) find that rivals competing for the same target earn significantly positive abnormal returns around the bid. Analysis of the Grimm Database does not reveal the existence of rival bidders for the same target.

we construct a sales-based Herfindahl index for each industry at the time of the initial acquisition announcement. Rivals are then sorted into quintiles based on the Herfindahl index of their industry. Analysis of mean and median returns across quintiles does not reveal a monotonic increase or decrease. However, median abnormal returns to rivals are markedly lower and negative for the most concentrated industries (the fifth quintile). Again this result is contrary to that expected by the collusion hypothesis. It is consistent, however, with the acquisition probability hypothesis which predicts lower probabilities of subsequent acquisition due to anti-trust concerns.

Another measure of concentration is the number of rivals per industry. While mean returns are higher for the more concentrated industries (those with the smaller number of firms), the result is affected by extreme values; an opposite ordering is noted for median values.

#### ***4.6 Degree of surprise***

We have conjectured that the abnormal return to rivals is a positive function of the degree of surprise associated with an initial industry target and that the degree of surprise is related to the length of an industry's dormant period. By construction, the minimum dormant period is 13 months; the maximum dormant period is constrained only by the time period of the sample. We find that mean and median abnormal returns to rivals follow a U-shaped pattern with regard to the length of their industry dormant period. Mean and median abnormal portfolio returns are largest for cases where the dormant period exceeds four years; these returns are significantly higher than cases with dormant periods between 37 and 48 months which have the smallest abnormal returns. However, we cannot reject the hypothesis that mean rival abnormal returns are equal across all categories of dormant period.

In spite of the requirement of a minimum dormant period, some industries experience two or more initial industry targets over our sample period. The Air Transportation industry, for example, experienced three separate initial industry targets following dormant periods of 14, 36, and 21 months. It is possible that second and subsequent initial industry targets throughout our sample period are at least partially anticipated. Therefore, we also examine results categorized by

the order of initial industry targets in an industry.<sup>10</sup> Seventy and forty-three of our observations are the first and second initial industry targets, respectively. Twenty-eight of our observations are the third or higher initial targets. The average abnormal return to portfolios of rival firms associated with the first and second initial industry targets is 0.48% and 0.29%, respectively. The mean abnormal return to third and subsequent initial industry targets declines to 0.12%. Median abnormal returns are 0.28%, 0.12%, and 0.14% for rivals of the first, second, and third or higher initial industry targets respectively. Also, the percentage of rival portfolios experiencing positive abnormal returns is 64% for the first initial industry targets, 51% for the second initial industry target and 54% for the third or higher initial targets.

The higher mean and median abnormal rival returns associated with the first initial industry target and the higher percentage of positive portfolios are consistent with increased probabilities of subsequent acquisition activity being built into the price of rivals following the initial industry target. Thus, a rival's change in the probability of acquisition,  $\Delta p_r(x_1)$  from equation 1, is smaller following second and subsequent initial targets. An alternative explanation is that targets acquired first in an industry are the firms with the greatest potential for gain, implying that subsequent acquisition activity in our sample is associated with reduced potential for gain. However, the abnormal return earned by targets is not declining across this classification. In fact, the abnormal return to initial targets increases slightly across the first, second, and third initial targets.

Alternate measures of surprise, in addition to the length of the dormant period, include the level of acquisition activity in an industry between initial acquisition targets and the size of the initial target firm. Stock prices of rivals in industries with frequent acquisition activity will already

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<sup>10</sup> By definition, our data source focuses on large acquisitions involving at least 10% of a firm's shares. We are also able to obtain the percentage of shares sought from Securities Data Corporation for 86 of our 141 initial industry targets. The mean percentages of shares sought in the first, second, and third initial industry targets within an industry are 77.7%, 90%, and 96.5%, respectively. The median percentage of shares sought is 100% for all three categories. Thus, the majority of our sample involves offers for control. Moreover, the inclusion of any small clean-up offers biases against our finding a significant impact to industry rivals.

incorporate a higher probability of being a target. In 51 of our 141 observations there are one or more acquisitions in the industry between initial industry targets. The mean and median abnormal returns to rivals for these cases are 0.17% and 0.07%, which is significantly smaller than the comparable values of 0.45% and 0.32% for cases without an acquisition attempt between initial industry targets. The size of the initial industry target is also indicative of the magnitude of industry disturbance. Acquisition of a larger target is likely to be more of a surprise than acquisition of a smaller target. Table 3 reveals the abnormal returns to rivals grouped into five quintiles according to initial industry target size. Mean rival returns increase monotonically with the size of the target firm. Median rival returns increase with target firm size in four of five categories.

#### ***4.7 Industry health and potential for gain***

The potential for gain through acquisition is likely to be related to both industry health and the size of the premium paid for the initial target. Rivals in declining industries present turnaround and restructuring opportunities. Higher premia paid to the initial industry target could indicate greater potential gains from acquiring firms in the industry.

To examine the impact of industry health on rival returns we use the Value Line industry rank. The lowest rank (1) indicates the most attractive industry whereas the highest ranks (around 90) indicate relatively unattractive industries. However, an acquiring firm, unlike most individual investors, can alter a firm's strategies or redeploy its assets. "Unattractive industries" can represent ideal takeover targets. Arguably, the poorest performing (i.e., highest ranked) industries are most attractive for turnaround given opportunities for restructuring in the industry. The appearance of an external catalyst (initial acquisition) in these industries could indicate a higher level of subsequent acquisition activity and higher rival returns. Although mean and median returns are higher for rivals in poorly performing industries, the differences are insignificant in univariate tests.

Abnormal returns to the initial target can proxy for the potential gain from the acquisition of rivals. To examine the relation between target and rival abnormal returns, we group initial

industry targets by quintile according to the target two-day CAR. The results, shown in Table 3, do not reveal a systematic relation between mean target CARs and their corresponding rival portfolio abnormal returns. Contrary to expectations, median rival abnormal returns tend to decline monotonically across quintiles of target abnormal returns. The means from these quintiles are insignificantly different from each other. In a related test, the regression of rival portfolio CARs on target CARs produces an insignificant coefficient. We do not find evidence of a link between the size of the bid premium and rival abnormal returns.

#### ***4.8 Are announcement period returns related to the actual acquisition experience of rivals?***

In this section we examine the market's ability, at the time of the initial industry target, to correctly assess which rivals will subsequently become targets. We examine W. T. Grimm for each of the 2459 rival firms to determine if they became targets of acquisition after the initial acquisition target for their industry. Results are shown in Table 4.

Sixty-six of the 2459 unregulated rivals, or about 2.6%, are targets of acquisition attempts in the subsequent twelve months. The abnormal return of these rivals (at the initial industry announcement) is 1.36%, which is significantly higher than the 0.32% for the rivals that are non-targets within the subsequent 3 years.<sup>11</sup> The t-statistic for this difference is 2.35. Differences in median returns suggest a similar conclusion: 0.81% for rivals targeted within one year and 0.06% for non-targets.<sup>12</sup> Rivals that are targeted between one and three years after the initial industry target earn insignificantly higher mean and median returns than non-targets.

Ex post we know that the probability of acquisition,  $[p_r(x_1)]$ , changed most dramatically for the rivals that were targets within one year. The abnormal returns for these firms are 3 to 4 times higher than those of non-targets. However, the abnormal returns for non-targets are still

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<sup>11</sup> Throughout the paper, our definition of non-targets refers to rivals that do not experience acquisition attempts within three years after their initial industry target.

<sup>12</sup> Rivals that are successfully acquired earn a two-day announcement return of 1.34%, which is insignificantly smaller than the 1.37% earned by rivals subsequently involved in unsuccessful acquisitions. Median results show a similar pattern.

positive and significantly different from zero. While this abnormal return to non-targets could reflect the uncertainty about their subsequent acquisition status, it is also consistent with an increase in industry-specific quasi-rents. The initial industry acquisition announcement could signal the existence or increased value of unique industry specific resources. Our evidence indicates significantly positive abnormal returns to non-targeted rivals and significantly and substantially higher returns to subsequently targeted rivals.

## **5. Explaining the cross-section of individual rival returns**

In this section we begin by comparing the characteristics of rivals that subsequently become targets to those that do not using both a univariate and logistic analysis. We also relate the abnormal return of rivals to firm characteristics associated in the literature with the probability of acquisition. Finally, we examine the relation between abnormal returns to rivals and the probability of acquisition predicted by a logistic regression. Examining individual firms, as opposed to portfolios, allows us to test the importance of firm specific variables in explaining cross-sectional variation in rival abnormal returns.

### ***5.1 Comparing target to rival firms***

In the previous section we find that the market correctly anticipates subsequent acquisition attempts on rival firms. We ask whether these subsequently targeted rivals have a distinct financial profile. A finding that initial and subsequent targets have a distinct financial profile as compared to all rivals would strengthen our understanding of a differential announcement return to rivals based on the probability of acquisition.

Table 5 reveals descriptive statistics on initial industry targets and their corresponding rivals. All financial data are obtained from Compustat using fiscal year ends preceding the acquisition attempt on the initial industry target. Ownership data are obtained from the latest Value Line issue covering the rival firm but preceding the acquisition attempt on the initial industry target. We are able to obtain complete financial and ownership data on 106 initial industry targets

and 2084 rival firms.

Columns A, B, and C report financial and ownership characteristics for initial industry target firms, all rival firms, and rivals that become targets within one year after the initial industry acquisition announcement, respectively. Columns D and E contain t-tests for differences between these categories. T-tests for differences between targets and all rivals (column D) reveal that on average, targets have higher leverage, are significantly smaller both in terms of market value of equity and sales and have significantly lower levels of managerial ownership. The latter result occurs despite the known inverse relation between firm size and managerial ownership. Tobin's Q is significantly lower for target firms.<sup>13</sup> In addition, target firms have insignificantly higher levels of outside block ownership. Growth rates for target firms are insignificantly smaller than for rival firms. These results are generally consistent with previous empirical tests of differences between target and non-target firms, [Hasbrouck (1985), Palepu (1986), Mikkelsen and Partch (1989), Song and Walkling (1993)].

### ***5.2 Rivals that subsequently become targets***

At the time of the initial industry target, none of the rival firms had experienced acquisition activities in at least the preceding 12 months. After the initial industry target, some rivals become targets themselves. Column E presents t-statistics for differences between initial industry targets and rival firms that are subsequently targets. Interesting results emerge. When we compare initial industry targets to rivals that are themselves targets in the next 12 months, all of the significant differences in firm characteristics disappear. Leverage, size, managerial ownership, and Tobin's Q are significantly different in the comparison of all rival firms to their initial industry targets. None of these variables is significantly different in comparisons of initial industry targets to rivals that subsequently become targets. Indeed, all variables but growth (which was insignificant anyway) have mean values for subsequent targets that are closer to the means of initial targets.

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<sup>13</sup> We calculate Tobin's Q using the following equation:  $Q = (S + P + D - NWC) / (TA)$ , where S = market value of equity, P= liquidating value of preferred stock, D= book value of long-term debt, NWC= net working capital, and TA= book value of total asset.

Table 6 tests these relations in a multivariate context using logistic regression. In the first regression we compare initial industry targets to all rivals, setting the dependent variable equal to one for the target firms. Target firms are significantly smaller, have significantly lower levels of managerial ownership and significantly lower levels of Tobin's Q. Growth, block ownership and leverage are insignificant. These results complement our previous univariate results (Table 5). In the second regression we compare target firms (dependent variable equals one) to rivals that become targets themselves within one year. None of the differences remain significant. Thus, initial industry targets have a distinct financial profile as compared to all rivals, but rival firms that subsequently become targets are indistinguishable from the initial targets. The existence of measurable differences in subsequently targeted rivals is consistent with the differential pricing of these firms at the time of the initial acquisition announcement. The next section addresses the extent to which these target-specific characteristics are priced in the initial announcement returns of rival firms.

### ***5.3 Cross-sectional analysis of rival returns***

In Table 7 we regress announcement period abnormal returns on firm and industry characteristics associated with the probability of acquisition. The spirit of this regression is similar to that of Eckbo (1992). Remember that, at the time of the initial industry announcement, the actual identity of subsequent industry targets is unknown. Regression 1 reveals that abnormal returns to individual rival firms decrease with the growth rate of a rival firm's sales. This is consistent with the acquisition probability hypothesis. Palepu (1986) finds that firms with lower growth rates are more likely to be acquired. Rival returns significantly decrease with managerial ownership. This is also consistent with the literature [Song and Walkling (1993), and Mikkelsen and Partch (1989)]. In spite of its statistical significance throughout the analysis, the size of the coefficient on managerial ownership suggests that it has a relatively minor economic impact.<sup>14</sup>

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<sup>14</sup>Following Morck, Shleifer, and Vishny (1988), and McConnell and Servaes (1990), we allow for a non-linear impact of managerial ownership using three variables for managerial ownership: the first represents

Abnormal returns are insignificantly related to firm size, Tobin's Q, and the existence of a blockholder. Firms with increased leverage earn significantly higher abnormal returns. The latter result is inconsistent with the literature, but consistent with our previous univariate results. However, results for this variable are mixed throughout the subsequent regressions.

In regressions 2 and 3, we add industry characteristics. In this case, returns are significantly positively related to the dormant period. Returns increase with industry timeliness (less attractive industries earn higher returns) and are significantly negatively related to the Herfindahl index; the latter result is inconsistent with collusion.

However, the collusion hypothesis relates to the horizontal consolidation of firms within an industry. In order to determine if an initial acquisition is horizontal or non-horizontal, we need data on industrial classification of both target and bidder firms.<sup>15</sup> Complete data are obtained on 1062 unregulated rivals. The results, displayed in regression four, are similar to the other rows except that size is now significantly negatively related to rival returns. The dormant period and the dummy variable for horizontal initial acquisitions are insignificant.

The results are consistent with the determinants of acquisition probability being priced at the time of an initial industry target. That is, abnormal returns to rival firms are significantly related to variables associated with the probability of acquisition attempt. The lack of significant differences in returns across horizontal and non-horizontal acquisitions is consistent with the acquisition probability hypothesis, but is unexplained by the collusion hypothesis.

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the impact of managerial ownership at levels less than 5%. The second recognizes levels larger than or equal to 5% and less than 25%. The third recognizes levels greater than or equal to 25%. Our results, not shown for brevity, indicate that abnormal returns are insignificantly related to managerial ownership below 5%, significantly negatively related to it between the 5% and 25% levels and insignificantly related to it at higher levels.

<sup>15</sup> We obtain our SIC codes for target and bidder from CRSP. Too few cases for both target and bidder are available using Compustat data to check the sensitivity of our results to the source of SIC codes.

#### ***5.4 Predicted probabilities and abnormal returns***

We also perform a direct comparison of the relation between the abnormal returns to rivals and the predicted probability that these firms will become targets. To accomplish this, we calculate probabilities from the logistic regression comparing targeted to non-targeted rivals and then regress abnormal returns to rivals against these predicted probabilities. The results are shown in regressions five and six of Table 7.

Using a two-tailed test, the predicted probability of being a target is significantly related to abnormal returns at the 2 % level.<sup>16</sup> Abnormal rival returns are significantly positively related to this predicted probability in both regressions.<sup>17</sup> Returns also continue to be significantly positively related to both the industry rank and the length of the dormant period and significantly negatively related to the Herfindahl index.

#### ***5.5 Sensitivity tests and extensions***

In our univariate analysis, we also noted that acquisition activity within an industry and initial target size are alternate measures of surprise about the initial acquisition announcement. To test the importance of these variables, we replace the dormant period with a dummy variable set equal to one if there has been any acquisition activity in the industry since the previous initial target. The variable enters with a significant negative coefficient; abnormal returns to rivals are significantly smaller in cases where acquisition activity within an industry has been higher. The results, omitted for brevity, are consistent with market anticipation of higher probabilities of acquisition and hence lower changes in these probabilities,  $[\Delta p(x_1)]$ , surrounding an initial industry acquisition announcement. When the dummy variable for acquisition activity and dormant period are included simultaneously, their coefficients are insignificant. Of course, industries with higher levels of acquisition activity are likely to have smaller dormant periods; both are measures of

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<sup>16</sup> Note that this interpretation is conservative. The appropriate test for a specific hypothesis (i.e., abnormal returns increase with the predicted probability of being a target) is a one tailed test.

<sup>17</sup> According to the acquisition probability hypothesis, abnormal returns should be related to the change in acquisition probability. The logit regression measures the level of acquisition probability. Our results are

surprise about an initial industry acquisition announcement. Similarly, adding the initial target's market value to regression 3 results in an insignificant positive coefficient (p-value = .18).

Our definition of dormant periods is based on target firms covered by Value Line. Of course, shock waves can be transmitted by acquisition activity for related firms not covered by Value Line. Consequently, we identify 883 additional target firms listed by W.T. Grimm but not covered by Value Line. For each of these firms we search the preceding year's Predicast F&S Index to find the primary 7-digit SIC code and industry name and then subjectively assign these firms to the appropriate Value Line industry. In general, our assignment is based on industry name and correspondence of the firm's SIC code with the SIC codes (and industry names) of the Value Line firms. We are able to classify 760 of the 883 firms. These additional targets, while undoubtedly smaller and less newsworthy than our Value Line events, could still produce confounding effects if their acquisition announcements were just prior to those of our Value Line initial industry targets. Firms not covered by Value Line, but ostensibly related to Value Line industries, became targets in the 12 months preceding 54 of our 141 initial industry targets. Nevertheless, sensitivity tests reveal that these cases have very little impact on our results. Mean and median target and rival CARs are insignificantly different between these and the remaining cases. Also, a dummy variable set equal to one for the rival firms associated with these 54 cases is insignificant in each of the regressions of Table 7. The significance and magnitude of the remaining coefficients is practically unaltered by the inclusion of this dummy variable.

Under the acquisition probability hypothesis, we would also expect abnormal rival returns to be smaller for regulated industries since regulatory approval reduces their probability of acquisition. To test this, we replicate our methodology using regulated firms. We identify 238 rivals associated with 23 additional initial targets in regulated industries as defined by Value Line. These include Air Transportation, Electric Utility, Finance and Investment Companies, Insurance Firms, Savings and Loans, and Natural Gas. Similar results are obtained using Compustat SICs to

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consistent with the change in probability being correlated with the level of probability.

identify regulated firms, i.e., between 4,000 and 5,000 and between 6,000 and 7,000.

In multivariate sensitivity tests on a combined sample of regulated and unregulated rivals, a dummy variable set equal to one for regulated industries enters with a negative sign significant beyond the 1% level. (Results are available upon request.) Conclusions regarding the other independent variables are unaltered. The result is consistent with the acquisition probability hypothesis.

## **6. Summary and Conclusions**

Previous research documents positive abnormal returns to rivals of acquisition attempts but does not explain their existence. Our explanation, the "acquisition probability hypothesis" asserts that rivals earn abnormal returns to the extent that the probability of their becoming a target is revised. The acquisition probability hypothesis has implications for explaining the cross-sectional variation in abnormal returns to rivals and, unlike the collusion hypothesis, does not require horizontal or even successful acquisition of target firms for rivals to experience changes in value.

We identify 141 unregulated initial industry acquisition targets and 2459 associated rival firms over the period 1982 through 1991. Our results, based on both individual rival firms and portfolios of rival firms, indicate that rivals earn significantly positive abnormal returns and that the distribution of these returns exhibits considerable cross-sectional variation. Rivals of initial industry targets involved in non-horizontal, successful and unsuccessful acquisitions also earn significantly positive abnormal returns.

Comparison of individual firm characteristics reveals significant differences between the set of initial industry targets and all rival firms, but insignificant differences between initial targets and rivals that become targets within one year. Rivals that become targets in the year subsequent to the initial industry acquisition announcement have a financial profile similar to initial industry targets.

Rivals that become targets in the subsequent year earn significantly larger abnormal

returns at the initial industry acquisition announcement than untargeted rivals. Multivariate tests reveal that the magnitude of abnormal returns for rival firms changes with variables related to the probability of acquisition attempts. Finally, abnormal returns for rivals are significantly positively related to the predicted probability of acquisition attempts. All of these results are consistent with the "acquisition probability hypothesis."

**Table 1: Target firms, rival firms, and dormant periods between initial industry targets over the sample.** 1353 target firms are identified from W.T. Grimm for the period 1982 through 1991. Target firms are then sorted chronologically within their industries as defined by Value Line. The length of time since a previous acquisition announcement in the same Value Line industry is defined as the dormant period.<sup>+</sup> "Initial industry targets" are defined as the first firm in an industry to have acquisition activity after a minimum 12 month dormant period without acquisition activity in the industry; 141 unregulated firms meet this criteria. The Herfindahl index is calculated based on sales for each firm in the industry at the time of the initial acquisition announcement. Value Line ranks each of the approximately 90 industries it covers each quarter according to attractiveness to investors. The lowest rank (1) indicates the most attractive industry whereas the highest rank (around 90) indicates a relatively unattractive industry. We measure this Value Line rank in the quarter before the initial acquisition announcement.

*Panel A: Number of initial industry target firms per year*

Year	
1982	15
1983	14
1984	14
1985	16
1986	15
1987	15
1988	19
1989	11
1990	8
1991	14
<b>Total</b>	<b>141</b>

*Panel B: Distribution of industry characteristics for initial industry targets*

	Mean	Minimum	Quartile 1	Median	Quartile 3	Maximum
Dormant periods (months)	38	13	19	31	48	122
Herfindahl index of the industry	0.14	0.04	0.11	0.16	0.25	0.70
# rivals per target firm (total number of rivals is 2459)	17.4	3	9	15	23	50
Normalized Value Line industry rank	.52	.01	.31	.51	.77	1.00

<sup>+</sup> Before 1982, we check 5 years of reports on each rival firm in the Wall Street Journal Index to ascertain if it was a target.

**Table 2: Abnormal returns to target and rival firms.** Results are shown for individual target firms and portfolios of rivals. Abnormal returns to rivals are calculated in two ways: the portfolio approach of Panel A aggregates all rivals at the time of a particular initial industry target into one portfolio and treats the returns to this portfolio as a single observation. The individual approach of Panel B treats each rival as a separate observation;

*Panel A. Abnormal returns to initial industry targets and portfolios of rival firms.*

Day	Initial Target				Rival Portfolios N=141		
	N	AR (%)	z-stat	% Pos.	AR (%)	z-stat	% Pos.
-5	141	0.20	0.78	48.2%	0.02	0.75	48.9%
-4	141	1.09	5.83***	54.6	0.12	2.15	58.9
-3	140	1.17	5.37***	60.0	0.09	1.15	50.4
-2	138	2.80	15.26***	70.3	0.16	2.49	56.7
<b>-1</b>	132	<b>10.32</b>	<b>58.89***</b>	<b>81.8</b>	<b>0.17</b>	<b>3.11***</b>	<b>53.9</b>
<b>0</b>	141	<b>7.29</b>	<b>29.96***</b>	<b>64.5</b>	<b>0.18</b>	<b>3.12***</b>	<b>56.9</b>
1	141	0.16	1.15	41.8	0.05	0.62	51.1
2	141	-0.16	0.26	42.6	-0.10	-1.46	44.0
3	140	0.02	-0.72	45.7	-0.00	-0.09	53.9
4	140	-0.49	-2.41**	45.0	-0.05	-0.72	45.4
5	141	0.43	1.95*	48.9	-0.06	-0.66	46.8
<b>-1, 0</b>	141	<b>16.74</b>	<b>69.20</b>	<b>87.2</b>	<b>0.35</b>	<b>4.41***</b>	<b>58.2</b>
<b>-5, +5</b>	141	<b>21.89</b>	<b>37.19</b>	<b>91.5</b>	<b>0.56</b>	<b>3.21***</b>	<b>63.1</b>

\*, \*\*, and \*\*\* denote significance at 10%, 5%, and 1%, respectively.

**Table 2, continued,**

*Panel B. Distribution of abnormal announcement period (-1,0) returns to target and individual rival firms.*

Category	N	Mean	Min.	Q1	Median	Q3	Max.	% pos.
All initial industry target firms	141	16.74	-15.43	2.73	12.76	24.97	97.29	87.2%
Individual rival firms	2459	0.36	-16.00	-1.45	0.10	1.95	23.38	52.3%

**Table 3. Distribution of abnormal announcement period (-1,0) returns to targets and equal-weighted portfolios of rival firms.** 1353 target firms are identified from W.T. Grimm for the period 1982 through 1991. Target firms are then sorted chronologically within their industries as defined by Value Line. The length of time since a previous acquisition announcement in the same Value Line industry is defined as the dormant period. Before 1982, we check 5 years of reports on each rival firm in the Wall Street Journal Index to determine if it was a target. "Initial industry targets" are defined as the first firm in an industry to have acquisition activity after a minimum 12 month dormant period; 141 firms meet this criteria. Results are shown for individual rival firms and portfolios of rivals classified by various criteria. Abnormal returns to rivals are calculated by aggregating all rivals at the time of a particular initial industry target into one portfolio and treating the returns to this portfolio as a single observation.

<b>Table 3 (continued)</b>							
Category <sup>+</sup>	Target firm returns	Number of portfolios	Average Number of firms per portfolio	Mean portfolio return	Z-Statistic	Median portfolio return	% positive portfolios
<b>All Firms</b>	16.7	141	17.4	0.35	4.41	0.21	58.2
<b>Successful vs. Unsuccessful initial targets</b>							
Successful	21.0	44	17.0	0.38	2.67	-0.19	47.7
Unsuccessful	14.8	97	17.6	0.33	3.52	0.29	62.9
<b>Horizontal vs. Non-horizontal</b>							
Horizontal	19.4	11	13.0	0.32	1.28	-0.41	36.4
Non-horizontal	20.3	59	18.9	0.51	3.63	0.45	62.7
Not classified	13.4	71	16.9	0.21	2.41	0.27	57.7
<b>Ranked by Herfindahl index of industry</b>							
H $\leq$ 0.09	14.4	24	31.5	0.65	3.88	0.71	79.2
0.09<H $\leq$ 0.13	21.2	27	22.4	0.17	1.18	0.32	59.3
0.13<H $\leq$ 0.18	15.7	30	15.0	0.64	2.65	0.40	63.3
0.18<H $\leq$ 0.25	14.3	30	9.8	0.09	1.29	0.08	53.3
H>0.25	18.0	30	11.8	0.22	1.03	-0.32	40.0
<b>Number of firms in the industry</b>							
Less than or equal to 16	14.3	71	9.2	0.38	3.22	0.17	59.2
Greater than 16	19.2	70	25.8	0.31	3.01	0.27	57.1

+ Except for the difference between the last two dormant period classifications, tests for differences in abnormal rival returns across the sub-categories of Table 3 are all insignificant. This includes both t-tests and a Kruskal-Wallis non-parametric test.

<b>Table 3 (continued)</b>							
Category	Target firm returns	Number of portfolios	Average Number of firms per portfolio	Mean portfolio return	Z-Statistic	Median portfolio return	% positive portfolios
<b>Results for various dormant periods</b>							
13-24 months	16.9	58	21.0	0.39	2.97	0.45	62.0
25-36 months	17.8	25	15.6	0.21	1.11	-0.17	48.0
37-48 months	18.3	23	15.8	-0.05	0.18	-0.37	47.8
Above 48	14.6	35	13.9	0.63	3.96	0.67	65.7
<b>Abnormal returns to various initial industry targets for an industry</b>							
1st initial industry target	15.5	70	16.3	0.48	4.05	0.28	64.3
2nd initial industry target	17.2	43	17.8	0.29	2.24	0.12	51.2
3rd or higher initial industry targets	19.2	28	19.6	0.12	0.71	0.14	53.6
<b>Level of industry acquisition activity between initial targets</b>							
None	15.7	90	15.9	0.448	4.5	0.32	61.1%
One or more targets	18.6	51	20.2	0.166	1.36	0.07	52.9
<b>Target Market Value (Tmval)</b>							
Tmval < 74.56 mil	19.6	27	19.5	-0.03	-0.03	-0.32	48.1%
74.56 ≤ tmval < 139.55	22.8	29	14.5	0.1	0.66	-0.12	48.3%
139.55 ≤ tmval and < 275.70	10.6	28	16.8	0.34	1.65	0.63	64.3%
275.70 ≤ tmval and < 774.44	14.5	29	18.3	0.47	2.63	0.29	65.5%
777.44 mil ≤ tmval	16.3	28	18.3	0.85	4.93	0.80	64.3%

<b>Table 3 (continued)</b>							
Category	Target firm returns	Number of portfolios	Average Number of firms per portfolio	Mean portfolio return	Z- Statistic	Median portfolio return	% positive portfolios
<b>Value Line industry rank</b>							
Less than or equal to .51	16.7	70	16.5	0.27	2.34	0.18	55.7
Greater than .51	16.8	71	18.4	0.42	3.89	0.34	60.1
<b>Target CAR (TCAR)</b>							
TCAR < 1.0%	-3.19	28	19.1	0.60	3.70	0.42	75.0
1.0% ≤ TCAR < 9.0%	4.37	28	16.0	0.01	0.46	0.30	57.1
9.0% ≤ TCAR < 17.3%	13.2	28	15.7	0.38	2.23	0.15	57.1
17.3% ≤ TCAR < 29.7%	22.1	28	18.6	0.42	1.84	0.19	53.6
29.7% ≤ TCAR	46.2	29	17.8	0.33	1.65	-0.27	48.3

**Table 4. Announcement period abnormal returns to rivals categorized by acquisition activity in the 3 years following the "initial industry announcement".** Rivals are defined as firms in the same Value Line classification as an "initial industry target". Initial industry targets are the first firm in a Value Line industry to be the target of an acquisition attempt following a minimum 12-month dormant period of acquisition activity within the industry. The abnormal return for each firm is defined as the residual from a market model. Abnormal returns are cumulated over the two-day announcement period (-1,0) where 0 is the Wall Street Journal announcement date of the initial industry target. T-statistics for differences from zero are shown in parentheses. Statistics for differences between means and medians across categories are shown in the lower part of the table.

<b>Abnormal announcement periods returns (-1,0)</b>			
<b>Rivals that were subsequently:</b>	<b>Mean</b>	<b>n</b>	<b>Median</b>
<b>Non-targets within 3 years</b>	0.32*** (4.26)	2144	0.06
<b>Targets within 1 yr.</b>	1.36*** (4.26)	66	0.81
<b>Targets within 2 to 3 years</b>	0.42** (2.03)	249	0.30
		2459	
<b>Tests for difference between means and medians</b>			
	<u>t-statistics</u>		<u>p-value</u>
			<u>Kruskal-Wallis</u>
<b>Targets within one year and non-targets</b>	2.35**		0.04**
<b>Targets within 2 to 3 years and non-targets</b>	0.44		0.25

\* , \*\* , and \*\*\* denote significance at 10% , 5% , and 1% , respectively.

**Table 5: Univariate analysis comparing initial industry target firms, all rivals, and rivals that are subsequently targets.** Rivals are defined as firms in the same Value Line classification as an initial industry target. Initial industry targets are the first firm in a Value Line industry to be the target of an acquisition attempt following a minimum 12-month dormant period of acquisition activity within the industry. We obtain financial and ownership data on 106 initial industry targets; 2084 rival firms are associated with these initial targets. Fifty-one of these rivals become targets themselves within the subsequent year.

	A	B	C	D	E
	Initial industry Target firms	All rival firms	Rival firms that are subsequent targets+	Rivals and initial industry targets	Rival firms that are subsequently targets and initial industry targets
	t-statistic for differences between:				
<b>Sales (millions)</b>	1094.0	2418.4	1779.5	4.90***	1.07
<b>Market value of firm (millions)</b>	621.0	1529.0	656.2	6.12***	0.18
<b>Growth (3yr)</b>	11.3%	12.3%	17.1%	0.57	0.97
<b>Leverage</b>	27.0%	22.2%	26.0%	-2.47**	-0.29
<b>Tobin's q</b>	0.68	0.89	0.72	4.89***	0.57
<b>Managerial ownership</b>	14.2	17.5	16.4	2.11**	-0.44
<b>Outside block ownership</b>	7.7	5.5	6.6	-1.54	0.82
<b>N</b>	106	2084	51		

+ Subsequent targets are those firms that become targets within one year after the initial industry target  
 \*, \*\*, and \*\*\* denote significance at 10%, 5%, and 1%, respectively.

**Table 6. Logistic regressions comparing initial industry target firms, all rivals, and rivals that are subsequently targets.** Rivals are defined as firms in the same Value Line classification as an initial industry target. Initial industry targets are the first firm in a Value Line industry to be the target of an acquisition attempt following a minimum 12-month dormant period of acquisition activity within the industry. We obtain financial and ownership data on 106 initial industry targets; 2084 rival firms are associated with these initial targets. Fifty-one of these rivals become targets themselves within the subsequent year. The dependent variable equals one if the firm is a target.

	Constant	Growth	Log (market value of equity)	Block- holder ownership (dummy)	Tobin's q	Managerial ownership ( $\alpha$ ):	Leverage	Likeli- hood ratio index	Chi- square df=6 (p-value)	N
1 Initial industry targets firms vs. rivals	-1.29** (-2.29)	0.27 (0.51)	-0.21*** (-2.71)	-0.02 (-0.09)	-0.46** (-2.22)	-0.01** (-2.14)	0.65 (1.25)	0.03	22.4 (0.00)	2190
2 Initial industry targets firms vs. rivals that are targets within one year	2.19* (1.95)	-0.52 (-0.86)	-0.17 (-1.17)	-0.25 (-0.63)	-0.24 (-0.55)	-0.01 (-0.89)	0.31 (0.32)	0.02	3.5 (0.85)	157

\*, \*\*, and \*\*\* denote significance at 10%, 5%, and 1%, respectively.

**Table 7: OLS regressions relating abnormal returns of individual rival firms to their financial and ownership characteristics and to the predicted probability of being a target.** Rivals are defined as firms in the same Value Line classification as an initial industry target. Initial industry targets are the first firm in a Value Line industry to be the target of an acquisition attempt following a minimum 12-month dormant period of acquisition activity within the industry. We obtain financial and ownership data on 2084 rival firms associated with these initial targets. We obtain data on the type of proposed acquisition (horizontal or non-horizontal) for initial acquisition attempts associated with 1062 rival firms. The dependent variable is the abnormal return for each individual rival over the two day announcement period (-1,0) for the initial industry target.

#	Firm Characteristics							Industry Characteristics						Adj R <sup>2</sup>	F-stat (p-value)	N
	Constant	Predicted Probability	Growth	Log size	Block-holder ownership dummy	Tobin's q	Mgt. ownership (α)	Leverage	Dormant period	Industry Rank according to Value Line	Herfindahl Index	Dummy for horizontal initial industry target				
1	0.67 (1.59)		-1.00** (-2.25)	-0.06 (-1.09)	0.06 (0.34)	0.14 (1.32)	-0.01** (-1.96)	0.81* (1.86)					.00	2.36 (.03)	2084	
2	0.69 (1.56)		-0.90** (-2.02)	-0.05 (-0.96)	0.04 (0.21)	0.18* (1.68)	-0.01** (-2.09)	0.68 (1.55)	0.01* (1.75)	0.38*** (2.90)			.01	3.15 (.00)	2084	
3	0.92** (2.02)		-0.84* (-1.89)	-0.06 (-1.06)	0.03 (0.15)	0.18* (1.64)	-0.01** (-2.14)	0.62 (1.41)	0.01** (2.04)	0.28*** (2.59)	-1.60** (-1.96)		.01	3.23 (.00)	2084	
4	1.91*** (2.89)		-1.42** (-2.31)	-0.14* (-1.88)	-0.15 (-0.59)	0.15 (1.03)	-0.01** (-2.15)	1.15* (1.77)	0.01 (1.22)	0.31** (2.15)	-2.26** (-1.98)	0.37 (0.97)	.02	3.05 (.00)	1062	
5	-0.036 (-0.195)	8.05** (2.32)											.00	5.38 (.00)	2084	
6	0.23 (0.86)	6.54* (1.85)							0.01*** (2.41)	0.24*** (2.25)	-1.70** (-2.09)		.01	5.14 (.00)	2084	

\*, \*\*, and \*\*\* denote significance at 10%, 5%, and 1%, respectively.

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