MARKET PERCEPTION OF SYNERGIES
IN RELATED ACQUISITIONS

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ABSTRACT

This research examines whether market participants are able to identify post-acquisition operating synergies at the time of the acquisition announcement. We examine the abnormal returns of the bidding firm and its major rival and relate equity gains or losses during acquisition announcements to subsequent post-acquisition operating performance. Empirical results suggest that the abnormal stock returns of the acquiring firm surrounding the announcement is positively associated with post-acquisition operating performance, and the abnormal stock returns of the major rival firm is negatively associated with post-acquisition operating performance of the combined firm. These results indicate that abnormal stock returns, that is, the variations in the stock price movements of the acquiring and rival firms in a given window following an acquisition announcement, reflect the potential synergies at the time of acquisition announcements.

INTRODUCTION

Unlike the mergers and acquisitions (M&A) era of the 1970s and 1980s where the predominant motives for acquisitions were hubris, empire building, market power, and agency (Jensen, 1991; Roll, 1986; Trautwein, 1990), an increasing number of acquisitions in the 1990s, and in this decade, have been purportedly undertaken for synergistic reasons (Hitt, Harrison, & Ireland, 2001). Synergy has been defined in various ways such as, utilization of the resources that creates value for the combined entity (Chatterjee, 1986), as “valuation of a combination of business units which exceeds the sum of valuations for stand alone units” (Davis & Thomas, 1993: 1334), and as “increases in competitiveness and resulting cash flows beyond what the two companies are expected to accomplish independently” (Sirower, 1997). The synergy motive for acquisitions states that by combining the resources of the two firms, economies of scale and scope are created, which in turn, creates value for the combined entity (Slusky & Caves, 1991).

Both market and accounting measures have been used to measure the performance of firms engaged in synergistic acquisitions. Researchers using market measures have focused on the wealth gains to shareholders. The basic findings of these studies can be summarized as follows: (1) shareholders of target firms earn significant positive abnormal common stock returns immediately
following the acquisition (Jensen, 1986; Jensen & Ruback, 1983), (2) irrespective of the extent of
relatedness between the two firms, acquiring firms earn negative abnormal common stock returns
in approximately 65% of the acquisitions (Berkovitch & Narayana, 1993; Datta, Pinches &
Narayanan, 1992; Loughran & Vlij, 1997; Lubatkin, 1987), and (3) bidding firms often overestimate
the value of the target firms by underestimating the cost of exploiting relatedness with targets (Salter

Accounting measures to study the operating performance of the combined entity following
the acquisition have also been extensively used. The basic findings of these studies can be
summarized as follows: (1) acquisitions, on average, do not create value (Ravenscraft & Scherer,
1987), (2) the presence of synergies is not sufficient: effective integration of the two firms is
essential to realize the synergies (Haseslag & Jemison, 1991; St. John & Harrison, 1999), and (3)
synergy is an elusive concept, difficult to define and measure and therefore firms often overestimate
the perceived synergies between the two partners (Collis & Montgomery, 1995; Markides &

In this paper, we propose a novel method to identify and measure synergy using the efficient
capital market theory. Past researchers of corporate strategy have attempted to measure synergy
using several proxies such as relatedness in product/markets (Rumelt, 1974), relatedness in the
underlying process and assets of the business units (Markides & Williamson, 1994), presence of
similarities (or differences) in the resource base of the two partners (Capron, 1999; Harrison, Hitt,
Hoskisson & Ireland, 1991; Salter & Weinhold, 1979), opportunity to share or combine resources
among businesses (Brush, 1996; Farjoun, 1998; Hayeslagh & Jemison, 1991), or, as an outcome
(abnormal returns) associated with acquisitions (Seth, 1990). Our method to measure synergy is
novel because we examine whether market participants are able to identify post-acquisition
operating synergies arising out of unique combinations at the time of the acquisition announcement.
For this, we examine the abnormal returns of the bidding firm and its major rival and relate equity
 gains or losses during acquisition announcements to subsequent post-acquisition operating
 performance. For example, when the merger between Chemical Banking and Chase Manhattan was
 announced, the market reaction was a 11% increase in the share price of Chase and a 9.6% increase
 in the share price of Chemical (Puliam, 1995). The increase in price was attributable to merger-
 related synergies perceived by investors (Hitt, Harrison & Ireland 2001). There has been very little
 research in the area of synergy measures despite three decades of inquiry into the M&A
 phenomenon. Healy, Palepu, and Ruback (1992) used the abnormal returns of the combined firm
 and related them to post-acquisition operating performance, and Chatterjee (1986, 1992) studied the
 abnormal stock returns of the merging firms, and the firm that is the major rival to the target firm.

Our study makes a contribution to the literature by examining the abnormal returns of the
bidding firm and its major rival firm, and relating them to post-acquisition operating performance.
Because Healy et al. (1992) examine the abnormal returns of the combined firm, their results do not
allow us to disentangle the individual contributions of the bidding and target firms. Chatterjee’s

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studies (1986, 1992) do not examine the relationship between abnormal returns and post-acquisition operating performance and thus do not provide a test of operating synergy. Our research design allows us to isolate any synergy valuation effects associated with the market perception of post-acquisition operating performance to the valuation of the bidder and its major rival.

We examine 50 large U.S. acquisitions that occurred during 1992 and 1996 between firms where the businesses of the combining firms were related. Our results indicate that the abnormal returns of the bidding firm are positively associated with post-acquisition operating performance as measured by return on sales (ROS). Second, and more critically, our results show that the abnormal returns of the major rival firm are negatively associated with post-acquisition operating performance of the combined bidder and target firm. Taken together, the results suggest that the market is able to identify acquisition-related synergies at the time of the acquisition announcement.

THEORETICAL DEVELOPMENT

Motives for Mergers and Acquisitions

While an extensive body of literature in finance, economics and strategy has examined the motives and consequences of mergers and acquisitions, some of the basic questions still remain unanswered (Agarwal, Jaffe & Mandelkar, 1992). For example, there is no consensus on whether the stock market fully comprehends the consequences of an acquisition immediately on announcement (Jensen & Ruback, 1983). Second, there has been limited success in relating equity gains during acquisition announcement to subsequent operating performance.

However, in recent times, it may be easier to predict the subsequent performance of acquisitions by studying their equity gains or losses during the acquisition announcement. This is because many institutional investors have taken on a greater role as a watch-dog of firms’ value destroying activities and firms are less likely to pursue deals for size alone (Investors Business Daily, 1995; Useem, 1993; Zuckerman, 2000). In deals completed in the 1970s and 1980s, the target usually received all the abnormal returns and the bidding firms witnessed negative returns even when the capital market perceived synergistic gains from the acquisition. However, in the deals completed in the 1990s, the acquiring firm was not penalized if the acquisition was perceived to be synergistic (Sirower, 1997). Hence, if we assume that the capital markets are semi-strong efficient, then security prices will reflect all publicly available information (Chatterjee, 1992; Fama, 1976).

Measurement of synergies using stock prices

The efficient capital market theory offers a useful theoretical lens to understand synergies because if indeed, security prices reflect all publicly available information, there are advantages to measuring performance by studying stock price movements around the time of an acquisition
announcement. The efficient capital market theory assumes that stock prices are fully specified and not limited to a specific aspect of performance such as sales growth or profits, is readily available for all publicly traded firms and cannot be manipulated by managers (Fama, 1976). Woolridge and Snow (1990) make a strong case for the efficacy of semi-strong version of an efficient capital market and their position is strongly supported by finance (Chang, Chen, Hsing & Huang, 2007; Dow & Gorton, 1997) and strategy researchers (Seth, 1990; Sirower, 1997). They argue that the capital market is capable of judging the existence of positive potential synergy in any major long-term investments such as joint ventures, research and development, or acquisitions that firms may announce to the public. Thus, initial reactions of the stock market to an acquisition announcement are representative of the market’s perceptions of long-term performance (Sirower, 1997).

In this context, we argue that valuable information may well be obtained from the market’s perception of the acquisition. Within the backdrop of efficient markets, the resource-based view offers a useful approach to understand synergistic acquisitions. According to the resource-based view, resources contribute to the advantage of one firm over another in a particular industry. In the context of acquisitions, the following types of synergies have been defined: operational synergies arising out of similarities and complementarities in the value chain that result in economics of scale and scope (Chatterjee, 1986), collusive synergies arising out of increased market power (Caves & Porter, 1977), financial synergies arising from diversification (Lubatkin, 1987) and managerial synergies that arise from applying complementary competencies and by creating a more efficient transacting environment (Coase, 1937; Martin & Eisenhardt, 2001). However, in the context of related acquisitions, particularly those relationships that are complementary, operational and managerial synergies play a critical role in creating value for the organization (Brush, 1996; Hitt, Harrison & Ireland, 2001; St. John & Harrison, 1999).

Operational and managerial synergies are derived from the resources of the combined entity. Combining the operating assets or resources of the two firms such as marketing, manufacturing, logistics, or procurement may result in economies of scale and scope (Brush, 1996; Rumelt, 1974). In an efficient capital market, the market may perceive that the combined firm possesses a unique combination of resources not easily replicable by its major competitors (Barney, 1988; Chatterjee, 1986). If this is indeed true, buyers may be willing to purchase the combined firms’ outputs at prices significantly above their costs and are not likely to switch to competitors who offer similar or substitute products (Coombs & Ketchen, 1999).

Barney (1988) argues that not all potential bidders have complete information about their targets. Thus, a bidder with private synergy based on perceived uniqueness is likely to have an advantage over other potential bidders (Chatterjee, 1992). Private synergy refers to synergy between the acquiring and target firm that is due to unique resource complementarity not found among other potential bidders for a specific target. Barney (1988) argues that complementary acquisitions have the potential to create greater value because the synergistic relationship between the two firms is unique, difficult to imitate, and durable. An imperfectly competitive market can exist when a target
is worth more to one bidder than it is to others. Once acquired, the performance of the combined firm will be greater than expected and generate abnormal returns for its shareholders. If other bidders cannot duplicate the uniqueness of the newly combined firm then the shareholders of the combined firm will earn abnormal returns and that firm can gain a competitive advantage (Barney, 1991). Hitt, Harrison, and Ireland’s (2001) case studies reveal that successful acquisitions are ones in which complementary resources exist between the acquiring and target firms.

A complementary relationship between the partners offers opportunities for asset improvement and asset creation (Hespelagh & Jemison, 1991; Markides & Williamson, 1994). Over a period of time, the changing knowledge of the organization’s workforce enables the consolidated organization to combine the resources so that new capabilities are developed. These capabilities may then be applied to help improve the strategic value of the existing assets which may eventually result in new product offerings for existing and new markets (Teece, 1980). Markides & Williamson (1994) argue that value is created when the organization is able to utilize its competencies (pools of knowledge, experience, and systems that exist elsewhere in the corporation) in existing businesses to create new assets in a new business faster, or at a lower cost. The stock market is indeed capable of sensing such uniqueness as revealed in empirical and anecdotal studies. Woolridge and Snow (1990) found that the stock market reacts positively to announcements concerning new product offerings in old and new product markets. As mentioned earlier, the announcement of a merger between Chemical Banking and Chase Manhattan was followed by a 11% increase in the share price of Chase and a 9.6% increase in the share price of Chemical (Pulliam, 1995). Hitt, Harrison, and Ireland (2001) argue that Wall Street perceived a complementary, synergy yielding relationship, between the two partners.

Seth (1990) argues that any abnormal returns that accrues to the combined firm after the acquisition announcement is due to synergies that the market is able to perceive. She measured synergy by comparing the value of the combined firm after all gains were incorporated into the stock price with the combined value of the bidder and target had there been no acquisition. Healy, Palepu, and Ruback (1992) found that combined firms have increases in post-merger operating performance compared to the industry and that there is a positive association between combined abnormal returns for the target and the bidder at the time of the merger announcement and the post-merger operating performance. Sirower (1997) found that stock market losses or gains on announcement of acquisitions are indicative of long term stock performance. Extending this argument, if the market assigns a greater value to mergers that exhibit the potential for operating synergies, then it will bid up the price of both the acquiring firm and the target. That is, the shareholders of bidding firms would gain from the acquisition. If these "perceived" synergies are indeed materialized in the form of better operating performance after the acquisition, then there should be an association between the stock price of the acquiring firm at the time of the acquisition announcement and the post-acquisition operating performance of the combined firm. Hence we predict that greater perceived
synergies between the acquirer and acquired firm would be associated with higher post-acquisition performance.

_Hypothesis 1:_ There is a positive association between the abnormal returns of the bidding firm and the post-acquisition operating performance of the combined firm.

**Impact of acquisition on rival firm**

If the market perceives a synergy from the acquisition then it should also affect the market's valuation of rival firms. It is generally believed that rival firms benefit from an acquisition in at least two major ways. First, an acquisition increases collusion or concentration, which in turn increases the market power of the entire industry including that of the rival firms. Indeed, Kim and Singal (1993) examined 14 large airline mergers and found that rival firms also benefited from market power after the merger and therefore, increased prices of their services. Second, if a merger signals a need for restructuring for the entire industry then rivals would also benefit from the merger (Chatterjee, 1992). For the rivals to benefit from the acquisition, the predominant process for creating value should be restructuring because it is likely to be industry-wide instead of being limited to the combined entity (Chatterjee, 1992). Hence, if upon an announcement, the stock prices of the major rivals to the bidding firm decrease, it suggests that synergy rather than restructuring may be the motive behind the proposed acquisition.

Chatterjee (1986) argues that the wealth gain attributable to a merger should be related, assuming that the impact of collusion has been controlled for, to either an operational or a financial synergy. If the acquisition is perceived to create cost efficiencies for the combined organization, the rivals of the acquiring firm may face a lower final price of the product and also a higher cost of raw materials (due to monopsony power) and therefore, are likely to experience a reduction in their market value. This is based on the assumption that the rivals are not in position to adopt the same cost-efficient production process (Chatterjee, 1986; Eckbo, 1983). Further, synergistic acquisitions are likely to provide the combined entity with increased bargaining power over customers and suppliers. They may be in a position to sell complementary products to a common buyer, bundle products, use common logistics or distribution and thus reduce the search costs for buyers (Nelson, 1970). Additionally, increased scale of purchasing may improve their negotiating position with suppliers (Adelman, 1949). The combined firm’s improved bargaining power may come at the expense of its rival firms in the competitive cost and price environments of the 1990s.

Finally, assuming an efficient capital market, the market may perceive that the combined entity may limit the competitors’ ability to contest their input markets, processes, or output markets, and may encroach into markets where the competitors may not be able to quickly respond (Sirower, 1997). Drawing on the above arguments we predict that a synergistic acquisition will hurt a rival
firm because the uniqueness perceived in the combination is likely to translate into improved long-term operating performance which is not replicable by the rivals of the bidder (Barney, 1991). Additionally, in the absence of collusion, the improvement in performance is likely to come at the expense of their rivals.

To our knowledge, there is no study that has examined whether the stock performance of the bidding firm’s rival firm is affected by the potential for post-acquisition synergies. However, to the extent that the bidding firm obtains these synergies, it strengthens the post-acquisition position of the combined firm. Hence, if synergies indeed exist, the abnormal stock performance of the rival firm surrounding the acquisition announcement should be negatively associated with post-acquisition operating performance of the combined firm. Hence we predict that greater perceived synergies between the acquirer and acquired firms would be associated with lower stock price performance of rival firms during the time of the acquisition announcement.

**Hypothesis 2:** There is a negative association between the abnormal returns of the major rival firm and the post-acquisition operating performance of the combined firm.

**METHODOLOGY**

**Sample and Data**

A list of all the U.S. mergers and acquisitions completed during the years 1992-1996 was obtained from the Almanac editions of *Mergers and Acquisitions*. We selected this time period for two reasons. First, the U.S. economy was facing robust growth during this period after emerging from the recession during the late 80s and early 90s. Second, after 1996, internet based firms became a significant economic force, and the market was perceived to be overvalued.

To be included in the final sample, both the bidder and the target firm had to be sufficiently large, and have generated revenues of at least $200 million at the time of the acquisition. We restricted our sample to large related acquisitions because such acquisitions entail a higher degree of operational integration compared to unrelated acquisitions and therefore, have greater potential to create synergies not easily duplicated by competitors (Chatterjee, 1992; Oliver, 1997; Seth, 1990). From the same we excluded the following: all acquirers who were acquired within two years after the acquisition, acquisitions by privately held groups, firms which made other major acquisitions during the two years following the acquisition, acquisitions which did not result in single ownership, and foreign acquirers. This was to ensure that the stock price change was not influenced by other confounding events. Also, firms that witnessed significant events (such as top-management changes, or changes to the product mix) in the 240 day window prior to the announcement were deleted. The above criteria were adopted to (a) reduce the noise in the data pertaining to the acquiring company.
and obtain a “clean” sample (Seth, 1990) and, (b) ensure that the acquisition has a considerable impact on the operations of the combined entity (Kroll, Wright, Toombs & Leavell, 1997).

Related acquisitions were identified in two ways. First, the two-digit SIC code of the bidder and the target for the major lines of business had to be the same. Second, the acquisition had to be undertaken for reasons of “synergies” as stated by the firm in any of the leading newspapers featuring the announcement. We chose a broad measure for relatedness because managers seek to increase the likelihood for operational synergies by acquiring firms that may have multiple businesses (Brush, 1996). These criteria resulted in a sample of 50 related acquisitions and included both horizontal and non-horizontal acquisitions. Including non-horizontal acquisitions, as long as they were broadly related at the 2-digit SIC level, was important because first, the product/factor price effect is assumed to have an impact on the rival if it had a stake in that industry and second, complementary relationships are usually witnessed when firms operate within the same 2-digit SIC level, and are likely to generate unique synergies (Chatterjee, 1986; Haspeslagh & Jemison, 1991; St. John & Harrison, 1999).

Rival firms were identified using the Hoovers Database, which identifies the biggest rival firms for each bidding firm. We also examined the COMPSTAT database for firms that operated in the same major 4-digit SIC levels as the bidding firms during the year of the acquisition. This procedure yielded at least two domestic publicly–traded rivals for every bidding firm which were then scrutinized to ensure that the major lines of business were common for each bidding firm, target firm, and rival firm.

**Independent Variables**

**Perceived Synergies**

*CAR of acquiring firm surrounding the announcement.*

Recall that perceived synergy is measured by analyzing the stock market’s response to the acquisition announcement. Following an announcement, the target’s price usually increases whereas the bidder’s stock declines slightly or stays relatively flat (Hayward & Hambrick, 1997). If the bidder’s price drops very sharply it reflects investor uncertainty associated with acquisition costs and concerns regarding the viability of the combined entity. Additionally, it may also indicate that the market doubts whether the relationship between the bidder and target is indeed synergistic. If the bidder’s price does not decrease significantly, or increases marginally, investors may perceive synergies from the combination (Chatterjee, 1992).
CAR of the rival firm surrounding the announcement.

The stock price of the bidder firm’s rival may also be influenced as a result of the announcement. If the stock price of the rival decreases, then it implies that investors perceive synergies in the original combination and believe that the acquisition could have an adverse impact on the subsequent performance of the rival firms. If there is little change in the stock prices of the rival firms, investors may not perceive major synergies from the combination.

Consistent with prior research, we measured perceived synergies as the cumulative abnormal returns (CAR) for the bidding firm surrounding the acquisition announcement. Security returns were obtained from the CRSP database. The following event windows were used in our main analysis: (1) -1 to 1 days with 0 denoting the date of the acquisition announcement (3-day window), and (2) -2 to 2 days with 0 denoting the date of the acquisition announcement (5-day window). We also used an 11-day window (-5 to 5 days) in supplemental analysis and found no significant results, corroborating the findings in previous research that increasing the event window creates greater noise in the data (Brown & Warner, 1985; McWilliams & Siegel, 1997). For the rival firms, the CAR for the 3-day window around the announcement was used.

We calculate abnormal common stock returns for each firm using standard event study methodology with a market model based upon a value-weighted market index estimated over a 240-day estimation period with the estimation period ending 45 days preceding the acquisition announcement.

Using the market model, we defined abnormal returns (AR) of a firm $i$ on any given day $d$ as follows:

$$\text{AR}_{id} = R_{id} - a_i - b_i R_{md}$$

Where $a$ is the risk-free rate of return and $b$ is the sensitivity of the return to the market portfolio. $a$ and $b$ are estimated from the following OLS regression:

$$R_{id} = a_i + b_i R_{md} + e_{id}$$

In equation (2), $R_{id}$ is the daily return of the individual firm and $R_{md}$ is the daily return of the market portfolio. The CAR for a 3-day window is computed as:

$$\text{CAR} = \sum_{i=1}^{n} \text{AR}_{id}$$

Where day 0 is the date of the acquisition announcement and $n$ equals the 3 days surrounding the announcement.
In sensitivity tests, we also calculated abnormal common stock returns for each firm using a net-of-market methodology as

\[ MAR_{id} = R_{id} - R_{md} \]  \hspace{1cm} (4)

Where \( R_{id} \) is the return of firm \( i \) on day \( d \) and \( R_{md} \) is the return of the market portfolio on day \( d \).

The simple excess returns over the market is essentially the same as the market model in equation (1) where \( a=0 \) and \( b=1 \) for all securities. This measure is free from the parameter biases from the estimation period in the market model (Sirower, 1997). The results (not reported) using this alternative methodology were not qualitatively different from the results presented in Table 3 in terms of the direction and significance of the coefficient estimates.

**Dependent Variable (Post acquisition performance of combined entity)**

**Accounting measures**

We used the combined firm’s return on sales (ROS) in the year following the acquisition as our measure of post-acquisition operating performance. ROS, obtained from the COMPUSTAT database, is measured as operating income (before acquisition adjustments) divided by net sales. We used ROS rather than an equity based performance measure such as firm value or Return on Equity (ROE), or an asset based performance measure such as Return on Assets (ROA) for several reasons. First, ROS is less sensitive to unexpected economy and industry factors compared to firm value. Second, a performance measure using assets as a base will be affected by the alternative accounting methods allowed under generally accepted accounting principles as well as the two acquisition accounting methods available during our sample period, purchase and pooling of interests (Ayers, Lefanowicz, & Robinson, 2000). Third, ROS reflects the operational performance of a firm and is therefore, a better indicator of any synergies that may arise from the acquisition (St. John & Harrison, 1999). Finally, our sample is comprised of U.S. firms that operate in a business environment that is short term in orientation, and hence a one-year ROS appears to be an appropriate measure that is likely to capture the synergies.

**Control Variables**

**Post-acquisition year ROS of the industry**

This variable was included as a control for the post-acquisition year performance of the industry. This allows us to control for unmeasurable factors that may affect all the firms in the industry.
Prior performance of the acquiring firm

Prior performance can influence the strategic actions of top managers. Firms may undertake acquisitions as a means to improve their performance or to reduce slack (Porter, 1987; Hambrick & Cannella, 1993). Prior performance was measured as the return on sales (ROS) of the acquiring firm in the year prior to the acquisition.

Pre-acquisition year ROS of the industry

This was used to control for the pre-acquisition performance of the industry, thereby providing industry adjusted pre-acquisition bidder performance.

Competing bid

This variable controls for acquisitions where there was a competing bid from another firm. This measure was included because the presence of a competing bid may push up the price of the target and affect the post-acquisition behavior of the merging firm.

Payment type

Prior research indicates that payment type is an important determinant of post-acquisition operating performance (Morck, Schleifer, & Vishny, 1990; Sirower, 1997). To control for the type of payment, we divided our sample into three categories; stock acquisitions, cash acquisitions, and cash-stock combination acquisitions. We use the variable *Equity-Based Payment*, which is a dummy variable that takes the value of 1 if the acquisition was financed using stock, or else it has a value of zero. Similarly, *Cash-Based Payment* is a dummy variable that takes the value of 1 if the acquisition was financed with cash, else it is zero. The combination-financed acquisition was the omitted dummy.

Nature of Acquisition

Friendly acquisitions are more likely to result in superior post-acquisition performance compared to hostile acquisitions because in the former, integration problems are easier to overcome. Following the method suggested by Jensen and Ruback (1983) and subsequently employed by Loughran and Vijk (1997), an acquisition was classified as friendly if the target managers were favorable, the board of directors and shareholders voted to approve the acquisition, and the general tone of the acquisition was friendly. An acquisition was coded as hostile if the tone was unfriendly and there was no shareholder approval. Acquisition climate was assessed from statements made in
the Wall Street Journal and other business journals (Hambrick & Cannella, 1993). This variable was coded as 1 for hostile acquisitions and 0 otherwise.

**Empirical Model**

The following empirical model was used to test our hypotheses.

\[
\text{Post acquisition ROS of combined firm in the year following the acquisition} = a + b_1 \times (\text{CAR of acquiring firm surrounding the announcement}) + b_2 \times (\text{CAR of the rival firm surrounding the announcement}) + b_3 \times (\text{Post-acquisition year ROS of the industry}) + b_4 \times (\text{Prior performance of the acquiring firm}) + b_5 \times (\text{Pre-acquisition year ROS of the industry}) + b_6 \times (\text{Competing bid}) + b_7 \times (\text{Equity-Based Payment Dummy}) + b_8 \times (\text{Cash-Based Payment Dummy}) + b_9 \times (\text{Nature of acquisition - friendly or hostile})
\]

(5)

**RESULTS**

Table 1 provides the mean values for the variables used in the study. It can be observed that the ROS of the combined entity is lower in the post-acquisition year compared to the pre-acquisition year. The average CAR for the acquiring firm is approximately -2% around the time of the announcement, consistent with previous studies (Sirower, 1997). However, there is considerable cross sectional variation in the returns as evidenced by the large standard deviation. Similarly, the CAR for the rival firms is also negative. In approximately 26% of the acquisitions, a competing bid was present and 20% of the acquisitions were hostile. Regarding method of payment, 46% of the acquisitions were financed using only equity, 28% were financed using cash, and 26% were financed using a combination of cash and stock.

<table>
<thead>
<tr>
<th>Table 1: Means for Variables used in the Analyses*</th>
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<tbody>
<tr>
<td>Variable</td>
</tr>
<tr>
<td>(Net Operating margin (before acquisition adjustments) divided by net sales.)</td>
</tr>
<tr>
<td>Post-Acquisition Return on sales (ROS) of the combined entity</td>
</tr>
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### Table 1: Means for Variables used in the Analyses*

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
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<tr>
<td></td>
<td>(Standard Deviation in Parenthesis)</td>
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<td></td>
<td>N=50</td>
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<tr>
<td>Cumulative Abnormal Return of the Acquiring Firm</td>
<td>-0.0205 (0.0571)</td>
</tr>
<tr>
<td>3 day period surrounding the announcement</td>
<td>-0.0207 (0.0607)</td>
</tr>
<tr>
<td>5 day period surrounding the announcement</td>
<td>-0.0234 (0.0686)</td>
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<tr>
<td>11 day period surrounding the announcement</td>
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<tr>
<td>Cumulative Abnormal Return of the Rival Firm</td>
<td>-0.0032 (0.0302)</td>
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<tr>
<td>3 day period surrounding the announcement</td>
<td>6.26 (3.90)</td>
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<tr>
<td>Post-Acquisition Year ROS of the Industry</td>
<td>6.59 (5.93)</td>
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<tr>
<td>Prior performance of the acquiring firm</td>
<td>6.28 (3.95)</td>
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<tr>
<td>Pre-Acquisition ROS of the Industry</td>
<td>0.26 (0.44)</td>
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<td>Competing bid present (1=yes)</td>
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<td>Payment Type</td>
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<td>All Equity (number of acquisitions)</td>
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<tr>
<td>All Cash</td>
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<tr>
<td>Mixed</td>
<td>0.20 (0.40)</td>
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<tr>
<td>Nature of Acquisition (1=hostile)</td>
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<tr>
<td>* Means for the 50 related acquisitions</td>
<td></td>
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</table>

Table 2 provides the Pearson correlation coefficients for the variables used in the analysis. The pre-acquisition ROS performance of the industry is highly correlated with the pre-acquisition performance of the firm (r=0.60, p<0.001), and the post-acquisition performance of the industry (r=0.85, p<0.001). Hence, separate regressions were run including and excluding one of the correlated variables. Competing bids and hostility are also related and therefore, we perform similar analysis using only one of them.
Table 2: Pearson Correlation Coefficients

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* p < .05,  ** p < .01,  *** p < .001

Table 3 contains the results of the regression analysis. Column 1 provides the results for the 3-day window and column 2 provides the results for the 5-day window. For both windows, the CAR of the acquiring firm has a large positive and significant coefficient. These results are consistent with Hypothesis 1 and suggest that higher perceived synergy (CAR) values are associated with greater post-acquisition ROS. Thus, the market is able to perceive synergistic acquisitions at the time of the acquisition announcement, and acquisitions that are more likely to result in operating synergies are assigned a greater value by the market. Similarly, for both windows, the CAR for the rival firm has a significantly negative coefficient. Thus, higher post-acquisition ROS is associated with lower CAR for the rival firms, suggesting that the market assigns a lower value to rival firms which are most
likely to be affected by the synergistic acquisition. These results are consistent with hypothesis 2. We also substituted industry-adjusted pre-acquisition year ROS instead of including the pre-acquisition ROS of the acquiring firm and the industry separately. The results are substantively the same. The industry-adjusted ROS of the pre-acquisition firm had a positive and significant coefficient.

Table 3: Results from the Regression Analysis - Predictors of Post-Acquisition Return on Sales
(Standard Errors in Parentheses)

Predictor | Dependent Variable = ROS of the Combined Firm in the Year Following the Acquisition
---|---
Cumulative Abnormal Return (CAR) of the Acquiring Firm Surrounding the Announcement | 20.04** (7.56)
| t=2.65
Cumulative Abnormal Return (CAR) of the Rival Firm Surrounding the Announcement | -25.06** (13.92)
| t=-1.80
Post-acquisition Year Return-On-Sales of the Industry | 0.98*** (0.11)
| t=9.24
Prior performance of the acquiring firm | 0.43*** (0.09)
| t=4.72
Pre-acquisition Year Return-On-Sales of the Industry | 0.05 (0.04)
| t=1.29
Competing Bid (1=yes) | -0.49 (1.18)
| t=-0.41
Equity-Based Payment (1=yes, 0=no) | 0.59 (0.97)
| t=0.61
Cash-Based Payment (1=yes, 0=no) | -0.28 (1.12)
| t=-0.25

(1) 3-day Window | (2) 5-day Window
---|---
16.29** (7.41) | -23.65* (13.24)
1.00*** (0.11) | 0.50 (1.00)
0.06 (0.04) | -0.28 (1.12)
0.59 (0.97) | -0.41 (1.15)
0.43*** (0.09) | -0.28 (1.12)
0.50 (1.00) | -0.41 (1.15)

Table 3: Results from the Regression Analysis - Predictors of Post-Acquisition Return on Sales
(Standard Errors in Parentheses)

Post acquisition ROS of combined firm in the year following the acquisition = \( a + b_1 \times (\text{CAR of acquiring firm surrounding the announcement}) + b_2 \times (\text{CAR of the rival firm surrounding the announcement}) + b_3 \times (\text{Pre-acquisition year ROS of the industry}) + b_4 \times (\text{Nature of acquisition}) + Y \)

<table>
<thead>
<tr>
<th>Predictor</th>
<th>Dependent Variable = ROS of the Combined Firm in the Year Following the Acquisition</th>
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<tr>
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<td>(1)</td>
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<td>Nature of Acquisition</td>
<td>2.05 (1.38)</td>
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<td></td>
<td>t=1.49</td>
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<tr>
<td>Intercept</td>
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<td>Adjusted R²</td>
<td>0.74***</td>
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<td>N</td>
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</table>

\( p < .05, \quad ** p < .01, \quad *** p < .001 \)

For the control variables, higher post-acquisition return on sales for the industry is associated with higher ROS for the merging firms. Pre-acquisition ROS for the acquiring firms is positively associated with post-acquisition ROS suggesting that prior performance has a significant influence on post-acquisition performance.

The adjusted R\(^2\) of the model using the 3-day window is 0.74. This is relatively high compared to previous studies. To examine this further, we partitioned the adjusted R\(^2\) by first entering only the control variables and then entering the rival CAR and compared the incremental explanatory power of the synergy measures. The adjusted R\(^2\) for the model containing only the control variables was 0.69 for the 3-day window. The incremental adjusted R\(^2\) of the rival CAR was 0.02 and the incremental adjusted R\(^2\) of the bidder CAR was 0.03. These are comparable to previous studies which examine the association between CAR and other outcome variables. Similar incremental adjusted R\(^2\)s were observed for the 5-day window model. Finally, we applied Cook’s test to examine the role of outliers. Our analysis revealed outliers to present no problem.

Our study is restricted to examining post acquisition operating performance (ROS) for one year because of the inherent limitations associated with longer time periods. Over longer time periods, there could be significant changes in the external environment, related or unrelated to the acquisition, which may violate the clean data criterion (Ramaswamy, 1997). Further, the U.S. business environment had been very active in acquisitions and acquisitions during the period of our study with many of the firms in our sample engaging in further acquisitions. Thus, adding further years is likely to add noise to the data.
DISCUSSION

This study examines whether the market expectations of synergies following an acquisition are associated with post-acquisition financial performance. Using a sample of 50 related acquisitions, results indicate that there is a strong positive association between abnormal security returns for the bidding firm surrounding an acquisition announcement and the post-acquisition operating performance as measured for by return on sales for the combined firm. Results also show a strong negative association between post-acquisition ROS and abnormal returns for the firm that is a major rival to the acquiring firm. Taken together, these results indicate that the market is able to accurately perceive synergies from an acquisition.

There are several reasons as to why the market reacts negatively to most announcements of acquisitions. First, managers perceive synergies because they may find it difficult to separate the real opportunities from the illusions (Goold & Campbell, 1998). The market, assuming it is efficient, may not perceive any synergies in the combination. Second, even if there are potential synergies in the combination, the stock market may not have confidence in the firm’s ability to successfully integrate the acquisition and to implement operational strategies to extract these synergies after the acquisition. This lack of confidence may have its roots in the previous experience of the bidding firm in integrating acquisitions, composition of the current top management team, high premium for the target, size of the acquisition and possible cultural incompatibility between the two firms (Hitt, Harrison, & Ireland, 2001). When the market reacts positively to an acquisition announcement, that is, there are abnormal gains to the acquiring firms relative to the market, the market may believe that the combined entity is capable of integrating the value chains of the two firms (Lee & Lim, 2006), and effectively meshing the cultures of the merging partners, or, as Hitt, Harrison, and Ireland (2001) argue, it may sense a resource complementarity between the two partners.

Synergy is not an easy concept to define or operationalize and it has been argued that synergy cannot be seen and that only its effects can be studied in organizations. Our major contribution to this area of research is to revisit the notion of synergy by examining the reactions of the stock market to the announcement of major acquisitions and relating the abnormal gains (or losses) of the bidding firms to subsequent post-acquisition operating performance. Acquisitions represent strategic decisions that have major long-term performance implications and therefore, their effects have to be examined on the wealth of the acquiring firm’s shareholders (Sirower, 1997). Additionally, by examining the impact of an announcement on the abnormal returns of the major rival to the bidding firm and linking it to post-acquisition operating performance of the combined organization, a more complete test of synergy is provided.

REFERENCES


Most buyers routinely overvalue the synergies to be had from acquisitions. They should learn from experience. Many acquirers rely too heavily on assumptions about pricing and market share that are not consistent with overall market growth and competitive realities. One global financial concern estimated that a recent acquisition would net €1 billion ($1.18 billion) in mostly top-line synergies within five years and 13 percent profit growth in the first year. But limited overall market growth meant that these goals could be achieved only if the company took significant share from competitors through cross-selling, and then only if the competitors didn’t respond successfully. Actual profit growth was a ... Related Articles. Article - McKinsey Quarterly. Managing your integration manager.