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ABSTRACT

This study examines the relationship between corporate entrepreneurship and returns to stockholders by investigating whether abnormal stock returns occur for firms who are recognized in the financial press for being innovative. We apply event study methodology to the stock prices of firms identified as the “World’s Most Innovative Companies” on lists published annually by Business Week. We find no evidence of abnormal returns for firms identified in the lists. We also find no difference in returns between those firms listed for product and service innovations and those firms listed for process and business model innovations.

INTRODUCTION

Corporate entrepreneurship (CE) has been conceptualized as a strategy or strategic posture for established firms (Hitt, Ireland, Camp & Sexton, 2001; Ireland, Covin & Kuratko, 2009). A firm’s strategy is formulated and implemented with the goal of creating value for stakeholders. While research has examined the effects of CE on firm performance (Rauch, Wiklund, Lumpkin & Frese, 2009), little attention has been paid to addressing how that performance satisfies different groups of stakeholders. The present study focuses on the firm’s stockholders in an effort to address the gap in our understanding of CE’s effects on value creation for the unique perspectives of specific stakeholder groups. We have limited knowledge of if, when, and how CE creates value for the firm’s stockholders other than to assume that it will result in a given performance measure which will be translated into the stock price.

Returns to stockholders are driven by earnings per share. CE activity or innovation efforts can have conflicting effects on a firm’s earnings. On one hand, the new products and services that result from innovation initiatives can generate growth in revenues and net income. On the other hand, in any given year, a firm could experience lower net income as a result of its CE activity if it has incurred R&D expenditures but has not yet developed a marketable product that generates large sales revenue or a process improvement that generates large cost savings. It can take several years before new products and services generate revenues sufficient to be recognized as growth over the existing revenue base of a large, established firm. By its very nature, CE activity involves risk and offers an uncertain payoff that can affect earnings. The risk is even greater for shareholders as it is difficult to evaluate the quality of this activity in order to determine whether they believe it will result in an increase in future cash flows. The general research question that drives this study asks whether positive news of a firm’s CE activity is associated with value creation for stockholders. Specifically, we ask whether recognition of a firm’s success with innovation is associated with abnormal stock returns. We employ an event study methodology with the announcements being the lists published under the heading of “World’s Most Innovative Firms” each year by Business Week magazine.
Announcements of Innovativeness

The efficient markets hypothesis states that stock prices fully reflect all available information (Fama, 1970; McWilliams & Siegel, 1997). This perspective suggests that there would be no abnormal stock price returns associated with the publication of information in the business press regarding firms’ successes with innovation unless this constituted previously unknown information. One might argue that analysts and investors would have experience assessing the activities of firms engaged in CE, and consequently, recognition of a firm’s innovativeness in the mainstream financial press would not offer new information to the market. However, much of the innovative activity of firms may not be readily visible to the market, or the likelihood of success with that innovative activity may not be easily predicted by the market. While a firm’s R&D expense is a measure frequently used in CE research as an indicator of the firm’s level or intensity of CE activity, many companies engaged in CE do not incur expenditures classified as R&D expense on the firms’ financial statements. For example, process and business model innovations may be generated without expenditures that would qualify as R&D expense. For these firms, then, R&D expense is not available as a visible signal for investors.

In theory, news favorable to the firm would be associated with positive stock price reaction when the market becomes aware of it, while news unfavorable to the firm would be associated with a negative reaction. Research demonstrates that announcements that might on their face seem to have an unfavorable connotation may actually be received as favorable to the firm’s future earnings stream. For example, Johnson, Ellstrand, Dalton and Dalton (2005) found that the firms included in Business Week’s list of best boards of directors experienced positive abnormal returns but so did the firms on the list of worst boards of directors. One explanation for the positive returns for firms identified as having the worst boards is that the publicity would lead to positive changes in the boards and improve the future outlook for the firm. Jacobs, Singhal and Subramanian (2010) found that announcements of major philanthropic gifts to benefit environmental causes tended to improve stock price but announcements of voluntary emissions reductions tended to reduce stock prices. There may also be mitigating factors that reduce the effect of an event, such as a firm’s reputation acting to reduce the effect of announcements of deceptive advertising practices (Wiles, Jain, Mishra & Lindsey, 2010). The market’s interpretation of the magnitude and direction of the effect drives the stock price reaction.

The event that is the focus of the present study is the publication by Business Week of its annual list of “World’s Most Innovative Firms.” Application of the event study methodology requires not only the identification of a relevant event but also a theoretical rationale for expecting that the event will trigger a stock price reaction (McWilliams & Siegel, 1997). Both the amount of expenditures to develop an innovation and the payoff for investments in innovation are uncertain. Therefore, investors factor the uncertain cash flows into their expectations about a firm’s earnings. We propose that public recognition of a firm’s innovativeness will be a signal that investors can use to improve the accuracy of their evaluations about the risk associated with the firm’s efforts at innovation, thus affecting stock prices through investors’ risk perceptions. Being included on the list of most innovative firms is a public acknowledgement of the firm’s success with its innovation efforts. The list offers investors an indication that a firm’s innovative activity will produce the intended revenues or cost savings as opposed to producing little to no return.

A commonly used measure of CE activity is the entrepreneurial orientation (EO) scale. This scale includes innovativeness and risk-taking as two separate dimensions of EO. While the list
we use for this event study claims to rank firms based on their innovativeness, we propose that the list is giving insight into both the innovative behavior of the firms and the extent of the risk inherent in that behavior. In discussing the components of EO, Lumpkin & Dess (1996: 142) defined innovativeness as a strong organizational commitment to “engage in and support new ideas, novelty, experimentation, and creative processes that may result in new products, services or technological processes”. That support may be costly and the fact that the process “may” result in something new suggests that resources are at risk. (EO) has demanding resource requirements and is associated with risk (Rauch et al., 2009). Announcements about innovative activity tend to report the successful outcomes of that activity rather than merely identifying firms that are undertaking innovation. Arguments in previous CE research typically contend that firms benefit from highlighting newness, responsiveness, and a degree of boldness (Lumpkin & Dess, 1996; Rauch et al., 2009). Inclusion in a published list of “innovative” firms highlights both the boldness and the success. The label “innovative” may also be interpreted by the market as identifying firms that are continually seeking opportunities (Rauch et al., 2009) since they are operating with innovation as a noticeable component of their strategies. To the extent that innovativeness is associated with generating something new to the world or market, we can also look to first-mover research which indicates that pioneering firms earn higher economic profits (Kreiser & Davis, 2010). Based on these arguments, we hypothesize that public acknowledgement of a firm’s innovativeness will be associated with a positive stock price reaction:

\[ H1: \text{The publication of the list of “World’s Most Innovative Companies” will result in positive abnormal returns to stockholders for the listed companies.} \]

Because the event we are focusing on is a list of companies published annually, we find that some companies appear repeatedly year after year. For these companies, perhaps the list does not present new and unexpected information to the market. It is for the companies newly added to the list that the investors are getting new information to factor into their risk assessment. Research has found evidence of legitimacy effects of being mentioned in the financial press (Pollock & Rindova, 2003; Zuckerman, 1999). The firms newly appearing on the list may benefit from a legitimacy effect of their association with firms that have been notably successful with innovation. The firms previously listed offer a direct point of comparison for investors evaluating what the news about being “most innovative” means for the future cash flows of the newly added firms. Thus, we would expect a positive stock price reaction for firms newly added to the list:

\[ H2: \text{The publication of the list of “World’s Most Innovative Companies” will result in positive abnormal returns to stockholders for the companies that are new to the list (i.e., not included in previous year’s list).} \]

**Announcements of Process and Business Model Innovativeness**

CE can be directed at developing innovations in a variety of areas of a firm’s operations. Some categories of innovation occur frequently, such as new product development, while others tend to occur infrequently, such as business model changes (Covin & Miles, 1999). These different frequency levels may create information asymmetry between managers and investors. Outside analysts and investors may have more experience in evaluating frequently occurring innovation activities. However, the market may have less experience in evaluating the likelihood of success and the associated risks of innovations that occur less frequently. Different types of innovation may also be subject to different sources of risk. New products involve questions about whether customers will see the value and make purchases. Concerns such as the level of innovativeness
of the product drive commercial success (Calantone, Chan & Cui, 2006). By comparison, the implementation of new processes or the adoption of new business models involve acceptance by employees or groups such as suppliers in order for the firm to achieve the desired outcomes.

Innovations may differ not only in their frequency but in their visibility to the market. Many of the outward indicators of innovativeness that have been used in CE research are associated with new products or services. For instance, researchers have relied on outward indicators such as new product introductions, R&D expenditures reported in financial statements, and patent applications. Other innovations may have lower visibility to outsiders. This difference in visibility could make it difficult for the market to have included an accurate assessment of this activity in their valuations of the firm. Investors may also assess the risks of product and service innovations differently than the risks of process and business model innovations. This line of reasoning is consistent with an event study of outsourcing announcements indicating that investors have different reactions for news about the outsourcing of primary activities compared with support activities (Duan, Grover & Balakrishnan, 2009). Based on these arguments, we offer the following hypothesis regarding the returns expected from process and business model announcements compared with product and service announcements:

H3: The publication of the list of “World’s Most Innovative Companies” will result in positive abnormal returns to stockholders for the companies that are included primarily for process or business model innovations rather than for product or service innovations.

Methods

Data and Sample

Each year since 2005 Business Week magazine publishes a list of the most innovative companies. The rankings are based on three factors – a survey of senior executives around the world, the firm’s stock returns, and the firm’s three-year financial performance as measured by revenue and margin growth. The survey sent out to over 1,500 respondents worldwide by Boston Consulting Group (BCG) and represents 80% of the final weighting for the rankings. Stock returns represent 10%, while financial performance represents the remaining 10% (Business Week). The number of firms on this list range from a low of 20 in 2005 to a high of 100 in 2006 and 2007. For this study we chose firms appearing on the list in the years 2007-2010, for an initial sample size of 250.

Because this study examines the effect of being named as one of the most innovative companies on a firm’s stock price, only publicly traded firms were included in our analysis. Furthermore, in an effort to control for factors in foreign markets that may affect returns and use a common index in the market model, only those firms trading on the US stock exchange were included in the analysis, leaving us with 169 firms. Daily stock returns for individual firms and for the Standard & Poor’s 500 Index were collected from the Center for Research in Security Prices (CRSP) available through Wharton Research Data Services.

Analysis

In conducting our analysis we utilized the event study methodology outlined by McWilliams and Siegel (1997). This methodology has been used in similar studies which have examined the effect on stock returns for firms appearing on Business Week’s ratings of best and worst boards of directors (Johnson, Ellstrand, Dalton, and Dalton, 2005), appearance and deletion from the FTSE4Good Index (Curran and Moran, 2005), the impact of horizontal mergers on rival firm
performance (Clougherty and Duso, 2009), and the value of product placement in successful films (Wiles and Danielova, 2009), for example.

The event study methodology is based on the efficient market theory (e.g. Fama, 1970) which suggests that all public information regarding future cash flows of a firm are known to the market and are represented in the price of the stock. If new information is provided and that information is deemed relevant to investors, the firm’s stock would be expected to have abnormal returns in relation to its expected value. In this particular study, it should be noted that *Business Week* published both an online version as well as a feature article in their magazine. In each case the online version was published approximately 10 days before the magazine publication. Due to the fact that the efficient market theory suggests that previously known information is already priced into the stock, we used the earlier date of the online publication as the triggering event. Due to the fact that the lists were published after the market closed, the first trading day following the event is the day after online publication of the list. The expected rate of return for a stock is determined by the following equation:

\[ R_{it} = \alpha_i + \beta_i R_{mt} + \varepsilon_{it} \]

Where

- \( R_{it} \) = the rate of return on the share price of firm \( i \) on day \( t \),
- \( R_{mt} \) = the rate of return on a market portfolio of stocks (the Standard & Poor’s 500 in this study) on day \( t \),
- \( \alpha_i \) = the intercept term,
- \( \beta_i \) = the systematic risk of stock \( i \), and
- \( \varepsilon_{it} \) = the error term, with \( E(\varepsilon_{it}) = 0 \).

Using ordinary least squares (OLS) regression, we estimated the parameters for each of the firms in the study over a period (\( T \)) ranging from 250 trading days to 50 trading days prior to the event. These estimates were then used to determine the abnormal returns for a stock on any given day using the equation:

\[ AR_{it} = R_{it} - (\alpha_i - \beta_i R_{mt}) \]

Where \( AR_{it} \) represents the abnormal returns for the \( i \)th firm on day \( t \) and \( a \) and \( b \) are the OLS parameter estimates obtained by regressing \( R_{it} \) on \( R_{mt} \) over the period \( T \). We then standardized the abnormal return (SAR) of each firm by dividing it by its standard deviation over the estimation period \( T \) (Dodd and Warner, 1983). These were then added over the event window (\( k \)) to arrive at a cumulative abnormal return (CAR) for each firm where:

\[ CAR_i = \left( \frac{1}{k^{0.5}} \right) \sum_{t=1}^{k} SAR_{it} \]

As noted by Ryngaert and Netter (1990), a short event window will generally capture any significant effects of an event. In fact, some studies have shown that stock prices will adjust within 15 to 90 minutes of the release of company specific information (e.g. Dann, Mayers, and Raab, 1977; Mitchell and Netter, 1989). Also, longer event windows make it more difficult to control for confounding events (McWilliams and Siegel, 1997). However, it is important to account for the fact that information about firms appearing on the list may be leaked early, so we examine our hypotheses using a 2-day event window which includes the trading day on which the list was released after the market closed and the subsequent day, which represented the first trading day...
following publication of the list online.

Following the recommendations of McWilliams and Siegel (1997), we then convert these to identically distributed variables by dividing the CAR for each firm by its standard deviation which is equal to \[ \left( \frac{T-2}{T-4} \right)^{0.5} \]. This is then used to calculate the average cumulative abnormal return for \( n \) firms over time \( t \) as follows:

\[
ACAR_t = \frac{1}{n} \sum_{t=1}^{n} \left( \frac{1}{\left( \frac{T-2}{T-4} \right)^{0.5}} \right) \times CAR_{it}
\]

Finally, we calculate the test statistic, \( Z \), to determine if the average cumulative abnormal returns for the firms across the event window are significant using:

\[
Z = ACAR_t \times n^{0.5}
\]

The event study methodology utilized in this study assumes that the event in question, appearance in Business Week’s most innovative company list, is isolated from other events that could affect the firm’s stock price. Due to the fact that a firm’s stock price can be affected by other events, we controlled for this by examining the financial press for confounding events such as a change in key senior management, announcement of unexpected earnings, filing of a damaging legal suit, product recalls, announcement of a new product, signing of a major new contract, announcements of impending mergers or acquisitions, or other events that might impact stock price positively or negatively. The authors examined all articles published in the Wall Street Journal two days prior to the publication of the list to two days after for each of the firms in the study and eliminated those that had potentially confounding events. This resulted in a final sample of 137 firms that were included in the study for testing hypothesis one.

The second hypothesis suggests that the firms appearing on the list for the first time will see a more significant increase in abnormal returns. In order to test this hypothesis we first examined the abnormal returns for those firms appearing on the list for the first time in the years 2007-2010. This reduced our sample size to 20 firms for testing hypothesis two. We then followed the same procedures indicated above.

In the 2008 and 2009 surveys, respondents indicated whether the firms were best known for innovation in products and services, business models, customer experience, or processes. In order to test hypothesis three, we limited the sample to those firms that were recognized for innovation in processes. Due to the fact that this data was only available for the two years indicated, this reduced our sample size to 22 firms.

In order to determine whether or not outliers were a factor in each of the analyses we conducted a nonparametric test of the abnormal returns using a binomial Z test. If there are systematic abnormal returns, we would expect a higher proportion of firms to have abnormal returns in that direction. If the event does not have a significant, systematic effect, we would expect the abnormal returns to be normally distributed with half of the firms exhibiting positive abnormal returns and half showing negative abnormal returns (McWilliams and Siegel, 1997).
Results

The individual abnormal returns for the 274 observations (137 firms, two days each) ranged from -0.03116 to 0.18677. However, the standardized average cumulative abnormal returns (ACAR) across the 2-day event window was -0.0235 which corresponds to a Z-value of -0.27, indicating that there is no statistically significant evidence suggesting a relationship between the appearance of a firm on Business Week’s Most Innovative Companies list and the firm’s stock price. These results were also supported by the binomial Z-test which indicated that the proportion of firms with negative abnormal returns did not vary significantly from what would be expected for a normal distribution of the firms, further suggesting that the event did not have a systematic effect on the stock price. Therefore, hypothesis one is not supported.

Our second hypothesis suggested the firms appearing on the list for the first time would experience positive abnormal returns. More recently new entrants to the list have come from firms that do not trade on US exchanges and, thus, they are not included in this study. As a result, as mentioned earlier, the sample size for this hypothesis was reduced to 20 firms and 40 observations. The ACAR for the 2-day event window for these firms was 0.128 with a corresponding Z-value of 0.572. As with our first hypothesis, the binomial Z-test also indicated that there was not a significant difference in the distribution of firms with positive and negative abnormal returns. Taken together, we find no support for hypothesis two.

Our third hypothesis proposed that firms known for process or business model innovation would see positive abnormal returns that were greater than those of firms known for product or customer experience innovation. The first step in testing this hypothesis was to determine if there were statistically significant abnormal returns for this set of firms. Our analysis indicated that the ACAR for the 2-day event window was 0.1419 with a corresponding Z-value of 0.6658. Given that there was no statistical evidence for a positive relationship between abnormal returns and firms recognized for innovation in business models and processes, hypothesis three could not be confirmed.

Discussion and Conclusion

This paper contributes to the stream of research that investigates the tie between CE and firm performance. Existing CE research has often measured firm performance as sales growth because innovative activity is frequently directed toward generating new products or services. This line of reasoning is consistent with, for instance, a firm’s goals that a specified percentage of revenues each year will come from new products. However, entrepreneurial efforts also affect expenses. Research and innovation are expensive undertakings. Many innovative initiatives are directed at internal processes with an outcome of reducing expenses. Researchers do suggest that CE activity can affect both growth and profitability measures of performance (Rauch et al., 2009), however this can be difficult to determine a priori. The present study incorporates both growth and profitability outcomes since stock price is driven by expectations of growth in earnings and attempts to determine whether or not outside confirmation of a firm’s success in innovation changes investor’s perception of the risk involved in the firm’s innovative activities.

The results of this study provide no evidence that announcements of the “most innovative” firms are associated with abnormal stock returns for investors. One explanation for these results is that the innovativeness list speaks a great deal to past success with innovation rather than future.
The financial markets typically operate with the perspective that past performance is no predictor of future performance. Investors may simply be acting on the belief that the benefits from the innovativeness captured in the Business Week lists have already been obtained for the listed firms. It is past earnings performance that was built on the revenues or the cost savings from innovation, and there is still uncertainty about future earnings.

Another explanation for the finding of no significant abnormal returns can be found in the method with which the lists are compiled. Respondents were asked to name the most innovative firms outside of their industry. As such, it is possible that the survey results reflect general perceptions of innovativeness in the population as opposed to firm-specific knowledge of innovative activities. If this is the case, it can be argued that these perceptions of innovativeness are already well known and priced into the stock. If the survey had asked respondents to name the most innovative firms within their industry (excluding their own), this may have represented more specific knowledge that might not have been known to investors in general. Thus, it may be the case that if these executives know the information, then the market knows the information. However, what is not known by the market are the results of the survey, meaning that the compiled survey responses are the new information. A similar Business Week methodology of compiling a list of firms based on expert evaluations yielded the lists of Best and Worst Boards of Directors that formed the basis of the Johnson et al. (2005) study that did find significant abnormal returns.

A further difficulty in using this data is that the list remains largely unchanged from year-to-year. As we noted in the analysis, when we examined only new entrants the sample size decreased from 137 firms to 20 firms. Since we used four years worth of data, this means that on average over five new firms which are publicly traded in the US are added each year. The result of this may be that the list provides little new information to the market. Those firms that have a reputation for innovation are already known. While our test of firms new to the list also was not significant, this may be a function of the sample size being too small to detect any systematic effect.

An implication of this study for management practice is that generic announcements identifying the firm as innovative do not appear to have significant effects on stockholder returns. Announcements tend to have a stock price effect when they differ from the expectations that investors had built into their stock price valuation. Therefore, managers could benefit from an understanding of what level of innovativeness investors are expecting and what performance results they expect as a consequence of that innovativeness. Such an understanding could help managers know what information to announce regarding their innovative activities.

The results of this analysis should be interpreted in light of some limitations of the study. First, while we have controlled for other announcements that could contribute to abnormal returns, there are explanations that cannot necessarily be ruled out by this methodology. For example, simply being mentioned in the financial press brings publicity that could be as influential as the specific context of that publicity (Pollock & Rindova, 2003; Zuckerman, 1999). Similarly, being included in a list of notable firms can attract attention regardless of whether those firms are successful due to innovativeness or to some other reason. Additionally, while the hypotheses in this study have been developed using expectations about investors’ assessment of risk, the methodology does not actually reveal how investors evaluate information about either a firm’s investment in innovation or news about that firm’s success with innovation.
There are several questions for future research suggested by this study. First, the lists that were the focus of this study speak generally about the level of innovativeness of many of the listed firms. Future research could compare the general information content of these lists with more specific measures of innovativeness such as patents or innovation announcements made by the firms themselves. The basic premise of this study is that investors will find information value in the lists of innovative firms. A question that remains unanswered is what level of innovativeness investors are expecting from firms. Future research could also investigate how those expectations differ across firms and what those differences mean for stock prices.

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