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STOCK MARKET RESPONSE TO RESEARCH AND DEVELOPMENT EXPENDITURES OF THE FIRM IN THE CONTEXT OF MERGERS AND ACQUISITIONS
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Abstract

This dissertation investigates the success of technology M&As. The research question is approached through four separate empirical essays, each of which assesses a different but interrelated issue of value creation of technology M&As. The approach used throughout the dissertation is to consider the motives of improving acquirer’s R&D activity through the acquisition of a technology firm and stress the role of the interaction between acquirer’s and target’s resources. The first two essays investigate the valuation consequences of M&As, while the following two essays examine pricing implications of M&As.

The results indicate that technology M&As are successful in enhancing the acquiring firm’s R&D activities to the extent that it manifests as an increase in the stock market valuation of acquirer’s R&D spending and its higher future profitability. The results also demonstrate that investors do not fully recognize these benefits at the announcement of M&A. Therefore investors benefit from technology M&As in the long run when these benefits begin to materialize. Furthermore, the results show that even when compared to other possible motives, enhancing acquirer’s R&D activities is an important and successful motive for M&As, emphasizing the absorptive capacity of the acquiring firm in generating synergies from the combination of two firms.

Overall, the findings of the dissertation provide more evidence on the success of mergers and acquisitions motivated by technology improvement. The thesis emphasizes the interaction between acquirer’s and target’s resources in creating synergies from M&As, with a focus on technological resources. The evidence also has important implications for the literature on the stock market valuation of R&D expenditures as it indicates that technology M&As can be considered an R&D investment with significant impacts on this activity.

Keywords: cross-border mergers and acquisitions, long-run stock returns, mergers and acquisitions, profitability, R&D expenditures, stock market valuation
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Elina Pyykkö
List of original essays

The dissertation is based on the introductory chapter and the following four essays:


1 Introduction

1.1 Background

Mergers and acquisitions (hereafter M&A) are transactions in which two or more companies are combined to achieve certain strategic and business objectives. These transactions are of great significance not only to the companies themselves, workers, managers and investors, but also to competitors and the economy. For decades, firms have used M&As as part of their strategies for growth, and the size and number of these transactions have grown dramatically during the past two decades. Despite their popularity and importance among firms, many M&As fail to yield the benefits expected of them. Extensive research has shown that shareholders in target firms gain significantly, but the shareholders of acquiring firms earn, on average, zero or negative abnormal returns after the transaction.

The discrepancy between the popularity of M&As and the empirical evidence on their success has motivated researchers to identify conditions associated with the success of M&As. Andrade et al. (2001) suggest that the underlying strategic motivation for a particular transaction could elucidate how and when value is created through M&As for acquirer shareholders. By classifying M&As into appropriate categories, we could be able to determine which strategic motivation for M&As is flawed, and thereby predisposed to destroy shareholder value (Higgins and Rodriguez 2006).

The synergy theory of mergers and acquisitions argues that M&As should take place only when gains will accrue to acquirer firm shareholders. Value is created when the benefits of the synergy gained through the combination and integration of two formerly separate firms exceeds the costs incurred to create that synergy. Synergies can be generated in several ways, including improved operating efficiencies that are based on scale or scope economies, and the sharing of knowledge or skills across units (Hitt et al. 2001).

Recent evidence that M&A activity clusters not only in time but by industry seems to favour the interpretation that M&A waves are a result of industry-level shocks, namely technological shocks (Faria 2008). M&As are a way for a firm to enhance its own operations through acquiring the organization capital of another. Chesbrough (2003) puts forward the importance of firm’s need to address gaps in its technological progress in a timely manner. One of the methods he suggests to fill these gaps is through technology oriented M&As. March (1991) argues that
organizations, in order to adapt and survive in a changing competitive environment, need to allocate their limited resources so as to strike a balance between the exploration of new alternatives and exploitation of existing competencies and technologies. Therefore, M&As provide important means for technology firms to supplement their research and development (hereafter R&D) activities. In most cases, this is even more so for firms operating internationally. Geographic diversification through cross-border mergers and acquisitions permits firms to expand their boundaries, which enables the exploitation of economies of scale and scope of information-based assets (Morck and Yeung 2003) and enhances the collection of basic proprietary knowledge relevant to R&D (Bae and Noh 2001; Buckley and Casson 1976).

1.2 Purpose of the dissertation

The purpose of this dissertation is to investigate the factors that generate value for acquiring firms’ shareholders in M&As. Special emphasis is placed on the success of technology oriented M&As. The research question is approached through four separate empirical essays, each of which assesses a different but interrelated issue of value creation of technology M&As. The first two essays investigate the valuation consequences of M&As, while the following two essays examine pricing implications of M&As.

With the focus on M&As motivated by the improvement of technology activities, the first essay investigates whether technology M&As enhance the acquiring firm’s R&D activities to the extent that it manifests as an increase in the stock market valuation of acquirer’s R&D spending and its higher future profitability. The second essay follows the approach taken in the first essay but takes it to an international dimension. Specifically, the purpose of the second essay is to investigate how the technology environment in the target firm’s home country affects the extent that acquirer’s R&D activities benefit from cross-border M&As.

The third and fourth essays aim to test the pricing implications that the preceding two essays have established. In particular, the purpose of the third essay is to examine whether acquirer’s shareholders, too, can benefit from technology oriented M&As. We consider the effect of information asymmetry and uncertainty associated with R&D activities in investors’ interpretation of the benefits from technology mergers and acquisitions. Therefore, we investigate whether technology M&As generate future benefits that the market fails to
recognize at the time of the transaction, leading to positive abnormal long-term stock returns. The fourth essay continues to examine the pricing implications of M&As but from a more general perspective. In particular, the essay examines how several firm characteristics, such as R&D intensity, other resources, management and valuation of the firms involved contribute to the stock market reaction to the M&As and the extent that acquirer’s shareholders benefit from the M&As in the long run. Therefore, the fourth essay assesses how significant a driver of M&As is the enhancement of R&D activities when compared to other possible drivers of these transactions.

1.3 Contribution of the dissertation

This dissertation contributes to the literature on M&As in several ways. First, it contributes to the research exploring the success of M&As by investigating the success of specific motives driving decisions to merge or acquire. The prior literature on characteristics of successful mergers and acquisitions is extensive (e.g. Agrawal et al. 1992; Fuller et al. 2002; Moeller et al. 2004; Faccio et al. 2006), but these studies generally do not acknowledge that M&As are matching processes, where acquirers with certain characteristics acquire targets with certain characteristics.

Second, this dissertation contributes to the studies exploring the economic benefits from mergers and acquisitions by aiming to identify a consistent value driver for success in these transactions. We argue that the technology orientation of mergers and acquisitions is an important driver of the success of these transactions because of the acquiring firm’s motivation to enhance its technology operations through the acquisition of another technology firm.

Third, the dissertation contributes to the literature on international mergers and acquisitions. Specifically, we contribute to studies examining the impact of country differences on cross-border merger and acquisition success by exploring how technology internalization of the firms involved in cross-border mergers and acquisitions benefit from country-specific technology differences. The investigation of synergies through the value of an acquirer’s R&D operations also provides new insights into the internalization theory of Buckley and Casson (1976) and Caves (1971). The dissertation provides new evidence in the framework of internalization theory by showing that a step towards multinationality in the form of a cross-border M&A promotes the acquirer’s R&D operations only in the presence of the target’s R&D.
The dissertation also makes a contribution to the R&D valuation literature (Chan et al. 1990; Lev and Sougiannis 1996; Chan et al. 2001; Eberhart et al. 2004) by viewing technology mergers and acquisitions as a type of R&D investment. Specifically, we investigate whether technology M&As enhance the acquiring firm’s R&D activities to the extent that it shows as an increase in the stock market valuation of the firm’s R&D spending. Consequently, we also contribute to the R&D valuation literature by identifying M&As as another setting in which the information asymmetry and undervaluation associated with R&D activities cause investor under-reaction and market inefficiency.

Finally, the dissertation contributes to the studies exploring returns in trading strategies based on the technological edge of the firm (e.g. Chan et al. 2001; Eberhart et al. 2004) by showing that an investor can benefit from the market under-reaction associated with the future cash flows generated by technology M&As.
2 Mergers and acquisitions

2.1 Motivations for mergers and acquisitions

Firms gain benefits from an M&A when the transaction creates synergy. Typically, synergy is thought to yield gains to the acquiring firm through two sources: improved operating efficiency based on economies of scale or scope; and the sharing of one or more skills (Hitt et al. 2001). In addition to covering the costs of a merger or acquisition, such as the premium paid for the target’s shares, the value of synergy must be examined in relation to the value that could be created through other strategic options. In a synergistic takeover, wealth is created by combining the resources of acquirer and target in such a way that the value of the combined entity is greater than the sum of the separate entities values (Bradley et al. 1988).

Earlier research shows, however, that M&As generally do not create value for acquiring firms, indicating that many of these transactions do not produce the synergies expected (e.g. Agrawal et al. 1992). These findings suggest that synergy motivation may not explain all M&As. Managers of acquirer companies may overestimate their capacity to extract value from the target and end up paying too high premiums for the target firm, increasing the synergy expectations. The motive for M&As in such cases is characterized as managerial hubris (Roll 1986). The extreme version of the hubris hypothesis predicts that there are no synergistic gains from M&As and the entire premium paid to the target firm is merely a transfer of value from the acquirer to the target (Seth et al. 2002). Managers may also consciously act against their shareholders’ best interests and pursue M&As that benefit management at a cost to shareholders. Following Jensen (1986), such bids have been characterized as arising from agency conflicts.

The literature on M&As has reported evidence consistent with both the hubris hypothesis and agency conflicts. Managers of firms with high levels of free cash flow have a greater capacity to pay for a target and, according to Jensen (1986), have greater desire to acquire firms than distribute these earnings to shareholders. Consistently, Richardson (2006) finds that firms with high levels of free cash flow are more likely to over-invest. Oler (2008) finds that cash-rich acquirers underperform in the long run both in stock market performance and in accounting performance.

Moeller et al. (2004) find that managerial hubris leading to overpayment in M&As is a more common problem in large firms. They suggest that managers of
large firms might be more prone to hubris because they are more important socially, have succeeded in enlarging the firm, or simply have fewer obstacles in making M&As because their firm has more resources. Rau and Vermaelen (1998) argue that in companies with low book-to-market ratios (glamour firms), managers are more likely to overestimate their own abilities to manage an acquisition, i.e., they will be infected by hubris. They propose that glamour firms are firms with high past stock returns and high past growth in cash flow and earnings, which should, according to the performance extrapolation hypothesis, presumably strengthen management’s belief in its own actions and other stakeholders in these firms are more likely to give management the benefit of the doubt and approve its M&A plans.

Prior literature finds evidence of certain characteristics that are associated with successful M&As, such as the consideration offered for the target’s shares (Loughran and Vijk 1997; Heron and Lie 2002; Faccio et al. 2006), target’s public status (Draper and Paudyal 2006), acquirer’s market valuation (Rau and Vermaelen 1998, Bouwman et al. 2009), acquirer’s size (Moeller et al. 2004), the form of the M&A (Loderer and Martin 1992), acquirer’s cash level (Oler 2008) and target’s size relative to the acquirer (Asquith et al. 1983). However, these characteristics cannot be considered as motives underlying M&A activity, but rather as indicators of the lower risk of the M&As.

Indicators of different motives behind M&As include characteristics such as the resource relatedness of the firms involved, industrial diversification, geographic diversification, or technology orientation. The resource relatedness is observed through the closeness of the industries in which the firms involved operate. The relatedness motive of M&As is often driven by expected synergies from revenue enhancement, cost reduction, or generating new resources and capabilities (Sudarsanam 2003). Industrial diversification is generally considered to occur when a firm acquires a target that operates in a totally different industry. M&As motivated by operational diversification typically seek to increase market power or acquire a new technology (Morck and Yeung 2003). Geographic diversification occurs when the acquirer and the target are located in different countries. Cross-border M&As are motivated by the exploitation of resources in the target’s home country, which may be associated with several sources of synergies (Kiymaz and Mukherjee 2000, Rossi and Volpin 2004). M&As motivated by technology improvement usually occur in order to generate synergies from combining two technology resources. Both scientific evidence and theories suggest technology motivation as an important driver of M&A activity.
Technology improvement is also an important contributor to many M&As that are considered as motivated by relatedness, industrial diversification, or geographic diversification.

2.2 Technology mergers and acquisitions

Several studies report that obtaining technological know-how and developing technical capabilities are increasingly important motives for M&As. Empirical research has generally found that M&As have a negative impact on the post-acquisition innovation output of acquiring firms (e.g. Hitt et al. 1991). Yet, even while research efforts decrease, the productivity of those efforts may increase as the two separate teams combine their skills and knowledge (Ahuja and Katila 2001).

Ahuja and Katila (2001) show that separating non-technological acquisitions from technological acquisitions helps to predict the technology related synergies generated in the M&A. Acquisitions of non-technology targets do not contribute to the acquirer’s knowledge base and may even disrupt the established routines of the acquiring firm, thereby reducing productivity and destroying value. On the other hand, the acquirer’s own R&D base is also a critical component of a successful technology M&A. Teece (1987) and Teece et al. (1997) argue that opportunities for new learning and innovation are bound by the firm’s previous experience and existing technological base. In the absence of suitable context, a target firm’s resources may suffer from an erosion of their value, and the acquiring firm may not be able to retain the activities (Anand and Singh 1997). Similarly, Cohen and Levinthal (1990) postulate that a firm’s absorptive capacity to integrate the acquired research into their own R&D program is based on its own internal research and development efforts.

Consistent with the above arguments, Ahuja and Katila (2001) show that M&As improve the technological performance of the acquiring firm. In addition, Higgins and Rodriguez (2006) provide evidence consistent with technology motivated M&As generating value for acquiring firms’ shareholders. These findings indicate that technology orientation is a successful motivation for M&As.

2.3 Cross-border mergers and acquisitions

Product and capital markets continue to become more integrated, new markets are emerging, and globalization has become an important strategic issue for
corporations (Moeller and Schlingemann 2005). Cross-border M&As can be used to access new markets, as well as to expand the market for a firm’s current goods. Acquisitions of firms headquartered in other countries also present an especially good opportunity for the acquiring firm to acquire new knowledge new capabilities. (Shimizu et al. 2004)

The theoretical foundation for value creation from cross-border M&As is based on the assumption that firms enter foreign markets to exploit the firms’ specific resources to take advantage of imperfections in the markets (Buckley and Casson 1976, Morck and Yeung 1992). Prior research states that cross-border M&As provide integrating benefits of internalization, synergy, and risk diversification and thereby create wealth for both acquirer and target firm shareholders (Kang 1993, Markides and Ittner 1994). One important argument for expecting higher value from cross-border than domestic M&As is based on the gains from diversification when businesses seek synergies arising from intangible assets (Morck and Yeung 2003). In cross-border M&As geographic diversification permits firms to expand the boundary of the firm, enabling the internalization of synergies based on intangible information based assets that would otherwise be lost because of various market failures (Conn et al. 2005).

Consistently, several studies in international economics suggest that multinational expansion is due to the presence of intangible assets. The internalization theory posits that direct investment should occur when a firm can increase its value by internalizing markets for certain of its intangible assets (Morck and Yeung 1992). The acquirers may find specific and complementary resources more easily in foreign partners because country-specific characteristics, in terms of both natural resources and institutional environment, generate different specialization and innovation patterns (Kang and Sakai 2001). Certain countries may possess particularly valuable target firms because of the country’s extensive science base or a large pool of qualified engineers.

The scientific evidence on cross-border M&As is consistent with the above arguments. Morck and Yeung (1992) and Morck and Yeung (2003) report that cross-border M&As add shareholder value in the presence of R&D related assets, but in the absence of R&D it is valueless. In comparison between domestic and cross-border M&As, Conn et al. (2005) show that cross-border M&As result in lower announcement and long-run returns than domestic M&As, but in cross-border M&As involving technology firms both announcement and long-run returns are positive, while non-technology cross-border M&As experience zero announcement returns followed by negative long run performance.
3  R&D expenditures of a firm

3.1  Stock market valuation of R&D expenditures

Continuing innovation activity is often crucial to companies’ growth and competitiveness. The scientific evidence suggests that investors view R&D activities as investments that are expected to produce future benefits. In particular, prior research provides two types of evidence building this conclusion. The first documents significant positive association between R&D expenditures and the end-of-year market value of the firm (Ben-Zion 1978, Hirschey and Weygandt 1985, Booth et al. 2006). The second indicates that stock prices generally rise when firms announce increases in long-term investments (e.g. Chan et al. 1990, Doukas and Switzer 1992).

However, any significant corporate investment depresses current earnings and increases uncertainty about the firm’s future performance (Wooldridge and Snow 1990). R&D benefits are often far from assured and are likely to materialize much later than benefits from investments in physical assets (Al-Horani et al. 2003). Kothari et al. (2002) provide evidence that the value of R&D expenditures is more uncertain than that of capital expenditures. Therefore, the value creation from R&D is uncertain. R&D is also a source of information asymmetry for several reasons (Aboody and Lev 2000). First, many R&D projects are unique to the developing firm, enabling investors to derive little or no information about the productivity and value of a firm’s R&D from observing the all firms’ R&D performance in general. Second, there are no organized markets for R&D and hence no asset prices from which to derive information. Third, accounting measurement and reporting rules treat R&D differently from other investments. (Aboody and Lev 2000.)

3.2  Stock market pricing issues of R&D expenditures

High information complexity of intangibles may increase the difficulty of assimilating intangible information, raising the possibility that stock prices do not fully incorporate the value of R&D capital. There is a large and growing body of literature showing that the market is slow to incorporate publicly available information, in contrast to the efficient market hypothesis. Consistently, Lev and Sougiannis (1996) provide evidence of an association between R&D capital and
subsequent stock returns. Chan et al. (2001) find that for highly R&D intensive firms, R&D spending is associated with future returns. Eberhart et al. (2004) find consistent evidence that shareholders experience significantly positive long-term abnormal stock returns following significant increases in firms’ R&D spending. They interpret these results as evidence of investor under-reaction to the benefit of R&D increases. In addition, Gu and Wang (2005) report a positive association between analysts’ forecast error and the firm’s intangible intensity. Furthermore, Guo et al. (2006) show that R&D activities significantly affect both the initial under-pricing of initial public offerings and they are positively related to long-term stock performance of the issuer. Therefore, there is significant amount of evidence indicating that the stock market is misled by conservative accounting for R&D costs, which tends to understate earnings when R&D investment is increasing and to overstate earnings when R&D investment declines (Chambers et al. 2002).

Lev and Sougiannis (1996) point out that the findings of subsequent stock returns associated with R&D activity may alternatively be due to the R&D activity proxying for an extra-market risk factor. In other words, there may be an additional risk characteristic associated with R&D activities for which investors are being compensated. Chambers et al. (2002) investigate this alternative explanation. They interpret their finding of great calendar-time yearly variation in excess returns as consistent with the risk explanation. Al-Horani et al. (2003) present an extension to the Fama and French (1993) three-factor asset-pricing model in order to control the effect of R&D associated risk on subsequent stock returns. They show that this modification of the three-factor model is capable of improving the explanatory power of the model. Therefore, R&D presents an additional risk, which should be accounted for when investigating stock price performance. However, the evidence does not rule out the mispricing explanation behind the association between R&D and excess returns.
4 Summary of the articles

4.1 Structure of the dissertation

The thesis consists of four separate essays focusing on different issues in the success of mergers and acquisitions. The approach used throughout the dissertation is to consider the motives of improving acquirer’s R&D activity through the acquisition of a technology firm. All essays also stress the role of the interaction between acquirer’s and target’s resources with the first three essays focusing on the technology interaction and the fourth essay considering technology interaction among several others.

The first essay examines whether M&As involving two technology firms enhance the acquiring firm’s R&D spending to the extent that it increases its stock market valuation and future profitability. The second essay takes this investigation to an international level because the technology motivation is especially common for cross-border M&As. The third essay directly investigates whether investors benefit from technology M&As. The fourth essay follows the approach used in the third essay but from a more general perspective by comparing the importance of technology-oriented motives for M&As with the importance of other motives. Figure 1 depicts the general framework for the dissertation, which begins by investigating the valuation consequences of technology oriented M&As in general and in an international context, and continues further to investigate the pricing of different drivers of M&As.

The research questions are investigated using panel data of M&As conducted by U.S. and European acquirers. In particular, the second essay investigating cross-border M&As includes transactions conducted by acquirers located in the ten most R&D active European countries according to the R&D Scoreboard 2006. Therefore, the sample covers acquirers in those countries in which R&D activities are important for the whole economy, while target firms may be located in any country. M&As conducted by U.S. acquirers were chosen as a sample for the other essays because of the significant role that U.S. firms play both in the M&A market and in the R&D field.
4.2 Essay 1: Stock Market Valuation, Profitability and R&D Spending of the Firm: the Effect of Technology Mergers and Acquisitions

The first essay is motivated by the prior literature suggesting that M&As are often motivated by the enhancement of acquirer’s R&D activities. Therefore, this essay investigates whether technology M&As enhance the acquiring firm’s R&D activities to the extent that it increases its stock market valuation and future profitability. The analysis is grounded on the argument that expected economic benefits from a technology acquirer’s R&D activities are enhanced by acquisitions of technology firms, but those from a non-technology acquirer’s R&D activities are not.

Using a sample of 1,879 M&As with technology targets conducted by U.S. acquirers during the period 1993–2006, the results show that M&As between two technology firms significantly enhance the stock market valuation of the R&D
spending of the acquiring firm in the year of the M&A, while M&As with only a
target as a technology firm have the opposite effect. This finding corroborates the
arguments of earlier studies claiming that the value of an acquirer’s R&D
activities may even decrease if the acquirer does not have the absorptive capacity
to utilize the technology stock of the target. Non-technology acquirers of
technology targets may also be biased with managerial hubris as managers of
non-technology acquirers may have overestimated their capacity to extract value
from technology targets. The results of the study also show that M&As with
technology targets enhance the technology acquirer’s ability to convert its own
R&D into higher future profitability, while non-technology acquirers do not
benefit from the M&As in this respect.

Overall, the findings show that technology improvement is a successful
motivation for M&As. Our direct test of technology oriented synergies shows that
technology M&As are successful in enhancing the acquirer’s R&D activities,
making these activities more profitable and valuable.

4.3 Essay 2: Stock Market Valuation of R&D Spending of Firms
Acquiring Targets from Technologically Abundant Countries

The internalization theory of Buckley and Casson (1976) and Caves (1971)
argues that R&D activities are one of the key motivators and a source of value in
foreign direct investment such as cross-border M&As. While the internalization
theory suggests that the acquirer with extensive intangible assets can add value by
internalizing these assets across national boundaries, the theory does not
explicitly address the importance of the target firm’s intangible assets, particularly
in M&As. The cross-border target should moreover provide the acquirer with
some advantage which cannot be attained through domestic M&As. Acquirers
may use M&As to derive benefits by exploiting country differences resulting
from divergences on the level of technology and regulation (Kiymaz and
Mukherjee 2000).

The second essay addresses the above issues in order to examine the sources
of and preconditions for successful cross-border M&As. Emphasizing the
importance of the target firm’s intangible assets in the successful internalization
of those of the acquirer, the study hypothesizes that cross-border M&As provide
synergies if both firms involved in the M&A are technology firms. More
importantly, because synergies arising from intangible assets should be realized as
enhancements in the acquirer’s R&D operations, the study assesses the generated
synergies as changes in the value of acquirer’s R&D operations. Moreover, it is argued that the internalization adds more value to acquirer’s R&D activities if the cross-border M&A provides the acquirer with a technology target in a country with abundant R&D environment relative to that in acquirer’s home country.

The results of analyzing M&As conducted by acquirers located in the ten most R&D active countries during the period 1990–2004 are consistent with the hypotheses. Specifically, acquiring a foreign technology target enhances the stock market valuation of a technology acquirer’s R&D spending, indicating that technology related synergies are generated. The study also provides evidence that the enhanced stock market valuation of the acquirer’s R&D spending occurs only if the R&D environment in the target’s home country is abundant relative to that in the acquirer’s home country.

Overall, the results indicate that in addition to the combination of two international R&D bases, the exploitation of a more favourable R&D environment in the target firm’s home country is a prerequisite for synergies arising from intangible assets in cross-border M&As. In order to enhance its R&D activities, a firm should seek access to countries with a highly favourable R&D environment to benefit from local knowledge spillovers, but this is possible only through a technology target in this particular country.

4.4 Essay 3: Long-term Abnormal Stock Returns of Acquiring Firms Following Technology Mergers and Acquisitions

The purpose of the third essay is to investigate the success of technology M&As through the value generated for shareholders. Prior literature provides evidence that technology M&As are value creating investments for acquirers, but the difficulty of interpreting information about firms’ technology performance may hinder the stock market from fully recognizing these future benefits. The study expects the information asymmetry and undervaluation associated with R&D activities to impair the market’s ability to correctly incorporate the future benefits of a technology M&A on stock prices.

Using a sample of 2,419 M&As with technology targets conducted by U.S. acquirers during 1992–2005, the study reports significantly positive long-term abnormal stock returns for acquirers in the three years following M&As with technology acquirers and technology targets. The abnormal stock price performance holds even after the risk associated with R&D activities is controlled for. Therefore, the findings of the study are consistent with investors not fully
recognizing the implications of a combination of two technology firms on acquirer’s future cash flows, but react later when the benefits start to materialize. In addition, acquirer’s pre-M&A R&D level is found to be significantly associated with the long-run positive abnormal returns when both the acquirer and the target firm are technology firms. This finding corroborates the hypothesis that investors’ inability to recognize the effect of combining two technology firms on acquirer’s R&D activities causes investor under-reaction to technology M&As.

Overall, the results of the third essay provide additional evidence that technology mergers and acquisitions generate synergies that result in increases in acquirer’s market value. Most importantly, the study identifies special characteristics of value creation in technology M&As. In particular, the stock market fails to fully interpret the value to be generated from the M&A because of the information asymmetry and difficulty in valuation associated with the main source of synergy, namely R&D operations. The results emphasize the importance of acquirer’s absorptive capacity in generating value from technology M&As, the larger the acquirer’s R&D base, the more the M&A can generate R&D related benefits for the acquirer.

4.5 Essay 4: How Do Acquirers’ and Targets’ Characteristics Interact in the Success of Mergers and Acquisitions?

Prior studies identify some acquirer and target characteristics associated with increase in value for the combined firm after M&As (e.g. Asquith et al. 1983, Rau and Vermaelen 1998, Moeller et al. 2004). However, relatively few studies focus on the motivation behind a firm’s acquisition decision. Therefore, in the existing literature, there is a lack of evidence of how acquirers’ and targets’ characteristics interact. After all, acquirers choose their M&A targets with certain characteristics on the basis of their own characteristics. Consistent with this argument, Faria (2008) argues that M&As should be seen as an outcome of a matching process.

The purpose of the fourth essay is to fill this research gap and investigate how acquirers’ and targets’ characteristics interact in the success of M&As. In particular, this study investigates how technology (R&D) intensity, other resources, management, and valuation of both firms involved affect 1) the synergies that investors expect the M&A to generate measured as acquirer’s and target’s combined short-term return from the M&A announcement, 2) the synergies that the management expects the M&A to generate observed through
the premium paid for target firm’s shares in the M&A, and 3) synergies realized from the M&A appearing as acquirer’s long-term abnormal returns.

The main empirical findings using M&As conducted by U.S. acquirers in the period 1995–2007 can be summarized as follows. First, even though investors expect more synergies when the M&A involves smaller and lower valued firms, the only characteristic that both investors and managers expect to generate synergies is the R&D intensity of the firms involved. Second, we find that synergies are eventually generated from the M&As that involve firms with low market-to-book ratios and low level of free cash flows, indicating less managerial hubris and lower likelihood of agency conflicts. With less agency conflicts and managerial hubris, acquirer managers make better investments and targets are easier to integrate into the acquiring firm. However, the most influential source of generated synergies is acquirer’s R&D base as such. Even though the synergies eventually generated in the M&A are not dependent on the R&D intensity of the firms, the acquirer’s R&D intensity by itself leads to synergies from the M&A. Therefore, the combination of two technology resources is an important motive for M&As but, in generating the synergies, the acquirer’s own R&D activity determines the extent to which the acquirer can benefit from M&As.

Overall, even though the characteristics of the firms involved that indicate less managerial hubris and agency conflicts generate synergies, we argue that these characteristics are not indications of motives for the M&A, but rather indications of lower risk of value destruction in M&As. Instead, the results indicate the importance of the combination of two technology resources as a motive for M&As. However, in generating the synergies, the acquirer’s own R&D activity determines the extent to which the acquirer can benefit from M&As.

4.6 Concluding remarks

This dissertation investigates the success of technology M&As. Extensive scientific evidence identifies several factors associated with the success of M&As. However, these studies generally do not consider the motive behind M&A decisions. After all, M&As are transactions where an acquirer with certain characteristics acquires a target with characteristics that it considers complementary to its operations. Some studies have acknowledged the role of technology motives behind M&As. However, the generation and the sources of the synergies in these M&As still require considerable research. The purpose of this dissertation is to fill this research gap.
The first and second essays investigate the sources of synergies in technology M&As by examining whether the motive to enhance acquirer’s R&D activities is a successful one. The results of the first essay provide evidence that the combination of two technology firms increase the profitability and value of acquiring firm’s R&D spending, while the second shows that in addition to the combination of two international R&D bases, the exploitation of a more favourable R&D environment in the target firm’s home country is a prerequisite for synergies arising from intangible assets in cross-border M&As. The third essay provides evidence that investors fail to fully recognize the synergies created in technology M&As, but react with a delay when the benefits start to materialize. Furthermore, the results show that the factor significantly contributing to this delay is acquirer’s pre-M&A R&D activity. This finding indicates both that the extent to which the acquirer can benefit from a technology M&A is dependent on its existing R&D base, and that the difficulty of interpreting R&D related information is a significant cause of the delayed price response to technology M&As. Finally, the fourth essay shows that even when compared to other possible motives, enhancing acquirer’s R&D activities is an important and successful motive for M&As, emphasizing the absorptive capacity of the acquiring firm in generating synergies from the combination of two firms.

Overall, the findings of the dissertation provide more evidence on the success of mergers and acquisitions motivated by technology improvement. The thesis emphasizes the interaction between acquirer’s and target’s resources in creating synergies from M&As, with a focus on technological resources. The evidence also has important implications for the literature on the stock market valuation of R&D expenditures as it indicates that technology M&As can be considered an R&D investment with significant impacts on this activity.
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