

Value Creation in International Telecom Acquisitions

Olaf Rieck*

August 8, 2002

Abstract

Throughout the past decade, the telecommunications industry has started to evolve from an essentially multi-domestic into a global industry. The relaxation of foreign ownership restrictions, deregulation, privatization, and technological change have triggered a wave of international acquisitions involving telecommunications service providers. The underlying motives for these acquisitions are diverse, including improving network efficiency, increasing the customer base, acquiring technology and know-how, establishing footholds in emerging markets, and enabling carriers to better serve their multinational corporate customers. International telecom acquisitions have involved the purchase of minority or majority stakes and they have occurred between service providers from neighboring countries, as well as from geographically remote countries. Moreover, they have involved providers of a similar range of services, as well as those operating in different and vertically related service segments.

This study examines the conditions under which international telecom acquisitions create value to shareholders of the acquirer and the target company. It classifies 72 international acquisitions in the telecommunications industry according to their characteristics, and examines their underlying motives. The study then uses an adopted M&A value creation framework and the Cumulative Abnormal Returns (CAR) method to empirically analyze the impact of different acquisition motives on the valuation effect.

The CAR method employs stock market price data around the announcement date of each acquisition to compute the abnormal stock market returns. These abnormal returns are then regressed on acquisition motives and characteristics to obtain an empirical relationship between the motives and characteristics of international telecom acquisitions, and their value creation.

*Assistant Professor, Nanyang Business School, Nanyang Technological University, Singapore. Address correspondence to Olaf Rieck, S3-B1b-55, Nanyang Avenue, Singapore 639798 (e-mail: AORieck@ntu.edu.sg, telephone: +65 6790-5929, fax: +65 6792-4217).

1 Introduction

During the last two decades, the telecommunications services industry has experienced unprecedented changes with respect to technology, regulation, industry structure, and growth. One of the most conspicuous recent trends in the telecom industry has been the globalization of telecom services and service providers.

The trend to telecom globalization can be attributed mainly to two factors. First, a rapid expansion of global trade has driven up international traffic volumes and increased the demand for communications solutions requiring global presence. Second, throughout the past decade governments all over the world have liberalized their telecom markets and privatized their national carriers. The newly arising business opportunities triggered a series of international mergers and acquisitions. Thompson (2001) aptly discusses the phenomenon of such cross-border M&As. Through mergers and acquisitions, firms can "...better serve the global customers, enhance profits, expand market share and increase corporate competitiveness by employing international production networks more efficiently". As a result, the telecom industry has converted from a multi-domestic industry to an industry dominated by carriers with international and global reach.

Recent developments however indicate that mounting debt is forcing large international players to rethink, if not reverse, previously pursued internationalization strategies. Prominent examples are Telecom Italy's sale of its stake in Telecom Austria, BT's sale of its stakes in Japan Telecom, and the termination of Concert, at the time the last remaining large telecom alliance. The question arising is, therefore, whether or not, and under what conditions international telecom M&As have been beneficial to the participating carriers.

The business strategy research has developed a large body of literature on strategic fit of companies that engage in mergers and acquisitions. Most of these studies were conducted in the context of manufacturing industries, or in non-industry specific contexts. Few studies have examined the issue of strategic fit in the context of telecommunication industry. Since the international telecommunication industry exhibits a number of unique features including network economics and the necessity of carriers having to

provide complex and costly services on location in at least two different countries, this research attempts to generate some new and industry specific insights into the empirical relationship between the value created by M&As, and their specific underlying characteristics. The remainder of this paper is organized as follows. Section 2 will provide the theoretical background for this research and derive the hypotheses. Section 3 will introduce the method and data. The results are presented in section 4, followed by a discussion and conclusions in section 5.

2 Determinants of Value Creation

Lubatkin (1983) suggests in his merger contingency theory framework that the better the strategic fit between the acquiring and the target company, the greater the potential value is created. In other words, the better the match between the acquirer and the target, the greater the observable change in the value of the acquiring firm. The strategic fit between two firms depends on a variety of factors, including the firms' synergies in their operations, their market position, and their long-term strategies. As the degree of strategic fit varies across different combinations of potential acquirers and targets, so does the amount of value that can be generated from an acquisition.

Another key determinant of the acquiring firm's change in value is the acquisition price. In an efficient corporate takeover market, the maximum price any potential acquirer is willing to pay for a given target is the stand alone value of the target plus the discounted future gains from synergies. The bidder with the highest potential synergies from the M&A will have the highest willingness to pay, place the highest bid, and eventually win the competitive bidding process and acquire the target firm. Therefore, under the efficient market hypothesis, the acquirer will be the firm that can achieve *unique* synergies through the M&A, that is, synergies that are brought about by the unique combined capabilities of acquirer and target, and that are not obtainable by any other acquirer (Goldberg and Godwin 2001).

Economic theory suggests the acquirer will purchase the target at a price that is

equal to the second highest bidders' willingness to pay¹. The acquirer's gain from the deal will then be precisely the difference between its own willingness to pay, and the second highest bidders' willingness to pay, in other words, the acquirer's gain will be equal to the *unique* synergies it can obtain from the M&A. These unique synergies are perceived by an efficient stock market as an increase of the value of the acquiring firm. Hence, when investors perceive positive synergistic gains resultant from the unique match in an acquisition, a positive return would be observable in the acquiring firm's share price after the announcement. Positive returns to a firm are created through consensual estimates of the large numbers of investors in the capital markets and reflect all the expected future benefits streams associated with firm M&As (Subramani and Walden 2001).

The objective of this study is to examine what factors determine the uniqueness of cross-border M&As in the telecom industry, and how they impact carriers' stock returns. Adapted from Shusterman et. al (2000), this research will focus on factors that are specifically relevant to this industry, such as service diversification, geographical proximity, firm size, and trade levels between the countries concerned, and on the extent to which they affect the buyer's share price. After all, an increased share price is one objective (in the midst of many others) associated with "successful" M&As.

2.1 Service Diversification

There has been much debate in the literature about the risks and implications of diversifying into different products or services. Theoretical arguments suggesting that diversification increases firm value fall into three broad categories. First, the internal capital markets of diversified firms enjoy a higher degree of independence from specific industry segments. They may therefore be able to allocate resources more efficiently (Matsusaka & Nanda 1996; Stein 1997). Second, diversified firms benefit from a coin-

¹To illustrate this, consider two bidders in an auction. The auction terminates at the point in time, when the second highest bidder does not match the current bid. Hence, the final price is equal to the second highest bidder's willingness to pay, plus the auction increment. Assuming the increment to be infinitely small, the final acquisition price then equals the second highest bidder's willingness to pay.

insurance effect, whereby their combined cash flow will be less volatile than that of a non-diversified firm of similar size, and their ability to balance off gains and losses from different segments may help them to reduce tax payments (Stulz 1990). Third, diversified firms have a higher degree of conglomerate power by engaging in cross-subsidization, predatory pricing, reciprocal buying, or mutual forbearance.

On the other hand, diversification can decrease firm value as it can give rise to cross subsidization of failing business segments (Stulz 1990; Stein 1997), increase firms' agency costs (Jensen 1986), or create a misalignment of incentives between central and divisional managers.

In contrast to traditional manufacturing firms, which often serve very disparate product markets, telecom service providers rarely diversify into entirely unrelated service markets. Rather, a large number of telecom service providers have pursued both vertical and horizontal diversification strategies *within* the domain of the telecom industry. Vertical diversification, the entry of service providers into vertically related service markets, occurred for example, when traditional carriers engaged in e-commerce activities or started to offer information and content. Engaging in such vertically related market segments gives carriers the ability to differentiate their services from those of their competitors. Without such differentiation, carriers are not able to obtain market power and can in the long run not survive in telecom markets that are characterized by a high degree of competition, high fixed cost, and close to zero marginal cost.

Horizontal diversification of service providers includes the entry of carriers into markets that constitute close substitutes, or that may in future turn into close substitutes. Traditional carrier may, for example, buy CATV networks that can also be used for broadband access, or move into the market for wireless broadband access. Again, the long term benefit of this strategy is that the carrier can enhance market power, or at least to prevent an erosion of its market power.

In the context of telecom carrier's international service diversification, the market power argument is naturally not as pervasive as in the domestic context. Nevertheless, international vertical and horizontal service diversification will improve the acquirer's

strategic position with respect the access to technology, know how and management experience regarding diversified telecommunications conglomerates, and thereby increase its value. Therefore, the first hypothesis is:

H1: As telecom carriers increase services diversification through overseas acquisitions, there will be a significant positive impact on their abnormal stock return.

2.2 Geographical Proximity

When selecting their takeover targets, telecom carriers have not limited their choice to carriers in close geographically proximity to their home country. BT, for example, acquired and later sold a stake in a Malaysian mobile carrier. Singapore Telecom owns stakes in Belgacom. The problem of managing geographically dispersed M&As has been discussed in a variety of papers.

Penrose (1959) and Shrivastava (1986) point out that as the distance of the merging entities increases, understanding the challenges of post-acquisition integration becomes more complex. This complexity might hamper a firm's effort to rationalize operations and reduce duplication. Failure to integrate the two firms could result in escalating cost commitments from their overseas acquisitions.

In addition, cultural diversity complicates the management of a firm. Managers now have to deal with transnational aspects of the business. Regulations differ accross countries and the differences become more pronounced as the acquisition gets further away from the firm's home country. Local conditions vary and the complexity of regulations in different countries would take time away from management in dealing with more important issues such as strategic planning for the long-term (Daniel & Radebaugh 2001). The integration of the newly acquired firm in a distant country becomes an issue as the management's time is more thinly spread to manage specific and time-consuming problems.

Other problems of managing culturally diverse companies include language differences (Buckley & Casson 1976), expatriates management team (Daniel & Radebaugh 2001), local biases, prejudice, and the management of political relations.

Geographical distance and the associated problems make it more difficult for acquirers to successfully create unique synergies and value, as envisioned in the acquisitions. A unique match between firms of diverse cultural background becomes more difficult as acquisition gets further away from the acquirer's home.

Therefore, the second hypothesis is:

H2: An acquisition further away from the acquirers' home countries will result in a lower abnormal return.

2.3 Firm Size

Lamacchia (1997) observed a general movement toward M&A - both domestically and internationally, and explained this trend with the competitive benefits of consolidation by taking advantage of the operating efficiencies, economies of scale and increased market presence that may be achieved through successful consolidation. Thus, telecom companies are expanding not just domestically, but also internationally in a bid to increase scale and capture market share in the global arena.

When companies grow, gradually or through acquisitions, they can achieve operating economies, which result from economies of scale in management, marketing, production or distribution. In the case of telecom carriers, significant benefits may accrue from more efficient utilization of fixed capital, better global market presence, and thus, ultimately, higher profitability (Ernest & Young 1994).

Furthermore, when firms expand their operations to foreign markets, they develop multiple national market bases from which they can retaliate against competitors (Hamel & Prahalad 1985; Kim & Mauborgne 1988). Kim and Mauborgne argued that when threatened, a MNC can counterattack directly in the market under siege or indirectly in any number of other markets in which both parties are involved. When a firm faces the threat of an overseas competitor entering its home market, it may retaliate by advancing into the foreign competitor's domestic market. This could be observed when Singapore's incumbent carrier SingTel acquired Australia's second largest mobile carrier Optus. In the following month, Australia's incumbent Telstra made a bid for

Singapore's second largest mobile carrier M1. Although having a wide base with multiple launching platforms to counter competitors move is not a primary objective in overseas acquisitions, it forms an increasingly important secondary benefit to the competitive telecom industry as telecom companies vie for profitability. The implication of such an observation underscores the importance of multi-domestic or even global market share to a telecommunication company. The benefits of scale economies and the need to capitalize on its capital-intensive investment all points to the importance of having as large a global market share as possible.

Thus, the scale benefits of M&As will lead to a higher combined value of both companies than their stand-alone value. The increase in value of the combined company will have a positive impact on the stock price of the companies.

Therefore, third hypothesis is:

H3: Larger telecom service providers enjoy greater abnormal stock returns from acquisitions.

2.4 Trade Levels

Telecommunications services are a crucial component of the support infrastructure of global trade. Business telecommunications, which constitutes the bulk part of international telecommunication traffic, is to a large extent a secondary product, dependent on and driven by international trade. Its demand is derived from the demand for products to be imported or exported.

Countries with high trade volumes communicate more than countries with low trade levels, for example, by IDD calls and electronic mail. For the telecom carriers, high trade levels between two countries will translate into high traffic volumes between them and their counterpart on the respective inter-country route.

As long as carriers on the opposite ends of an inter-country route are independent, they will not coordinate their pricing schemes. Rather, they are in a curious way competitors and partners at the same time. On one hand the carriers interconnect; they hand over outbound traffic to and receive inbound traffic from the other carrier. On

the other hand, the inbound traffic is to some degree also a substitute for the outbound traffic, because the customers adjust their calling patterns to the *relative* prices. Demand on both side of the inter-country route is interdependent, and both carriers will therefore compete to have *their* cosumers generate outbound calls, rather than receive inbound calls.

An M&A between carriers of two different countries will enable these carriers to coordinate output and pricing schedules on the inter-country route, and thereby increase the joint profits on the route. The higher the traffic volume, the higher will be the gains from coordination and thus the potential value created by the M&A.

Another major benefit international telecom M&As is that the resulting close coordination facilitates service innovation and quality improvement of the telecom service between the carriers involved. These innovations and improvement will reduce the cost of conducting trade. To the extent that carriers can extract higher profits from higher value services, the integration of carriers can increase their value. In countries with high trade levels, such improvements of international telecom service will be absolutely more valuable, and hence result in higher valuations attached.

Therefore, the final hypothesis is:

H4: The abnormal stock return due an acquisition is higher between two countries with a higher trade level.

3 Methodology and Data

3.1 Event Study Methodology

This research uses the event study methodology to study the impact of merger characteristics on value creation. The event study method is based on the efficient market hypothesis and thus assumes that a firm's stock market value perfectly reflects its value and future profit stream. On the days around the announcement day of an M&A, the stock market "learns" new information and adjusts to a new level, incorporating this new information. The stock returns on the days around the announcement that are

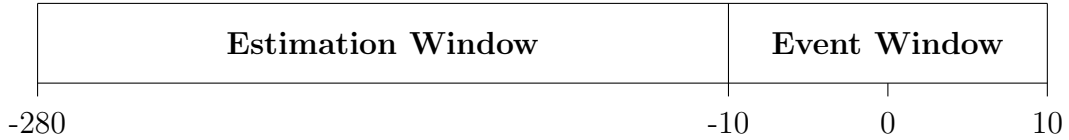


Figure 1. Time Line

solely due to the occurrence of the M&A announcement are called Cumulative Abnormal Returns (CAR). In order to measure the CAR, the event study method divides the period before and around the announcement into two windows, the *estimation window* (280 days before the announcement until 11 days before the announcement) and the *event window* (10 days before until 10 days after it, for a total of 21 days), as depicted in figure 1.

Equation 1 is then used to estimate a linear relationship between an acquirer’s stock returns and the average industry returns during the estimation window.

$$R_{s,t} = \alpha_s + \beta_s R_{m,t} + \varepsilon_{s,t} \quad (1)$$

$R_{s,t}$ denotes the return of the acquirer’s stock in an M&A event s for date t of the estimation window, $R_{m,t}$ is the average industry return (e.g., the return of an industry specific index), α_s and β_s are firm specific coefficients, and $\varepsilon_{s,t}$ is the error term.

The estimated regression parameters, α_s and β_s , and the average industry returns during the event window can be used to “predict” the acquirer’s stock returns during the event window.

$$R_{s,\tau} = \alpha_s + \beta_s R_{m,\tau} \quad (\tau = -10..10) \quad (2)$$

$R_{s,\tau}$ can be interpreted as the *normal* stock returns during the event window, that is, the returns that one would have expected to observe, given the stock performance during the estimation window, and had the M&A announcement not occurred. The event study method attributes any deviation from these normal stock returns during the event window to the M&A announcement. The *abnormal* returns due to the announcement

on any given day of the event window are therefore equal to the actual return minus the predicted returns.

$$AR_{s,\tau} = R_{s,\tau} - R_{m,\tau} \quad (\tau = -10..10) \quad (3)$$

Summing up the abnormal returns over the entire 21-day-event window yields the Cumulated Abnormal Returns (CARs).

$$CAR_s = \sum_{\tau=-10}^{10} AR_{s,\tau} \quad (4)$$

Since the Abnormal Returns are just the prediction errors of the regression model 1 during the event window, and have a known distribution, it is possible to draw statistical inferences with regard to the Abnormal Returns. Following Subrami and Walden (2001) and Judge et al. (1988), the variance of the abnormal returns can be calculated as

$$VAR(AR_{s,\tau}) = (s_s^2 [1 + \frac{1}{T} + \frac{(R_{m,\tau} - R_m)^2}{\sum_{t=1}^T (R_{m,t} - R_m)^2}]) \quad (5)$$

where s_s^2 is the variance of the errors from the estimation model

$$s_s^2 = \frac{\sum_{t=1}^T (\varepsilon_t - \bar{\varepsilon})^2}{T - 1} \quad (6)$$

R_m is the mean index return in the estimation window, T is the number of days in the estimation window, while t again indicates the day in the estimation window and τ is a time index for the event window. Assuming serial independence of the abnormal returns over the event window, and independence of abnormal returns across M&A events, the variance of the CARs is given by

$$VAR(CAR_s) = \sum_{\tau=-10}^{10} VAR(AR_{s,\tau}) \quad (7)$$

and

$$VAR(\overline{CAR}) = \frac{1}{N^2} \sum_{s=1}^N VAR(CAR_s) \quad (8)$$

where \overline{CAR} is the average CAR, averaged across the N M&A events.

$$\overline{CAR} = \frac{1}{N} \sum_{s=1}^N VAR(CAR_s) \quad (9)$$

Finally, the formula of student's t-test can be computed and used to test the hypothesis that the mean CAR of all M&A events is different from zero.

$$t = \frac{\overline{CAR}}{\sqrt{VAR(\overline{CAR})}} \sim t_{a,N-1} \quad (10)$$

3.2 Regression Analysis of Cumulative Abnormal Returns

The second step of the analysis employs the following regression equation to analyze the impact of the acquiring carriers characteristics on the value effect of the M&A event.

$$\overline{CAR} = \alpha + \beta_1 DIV + \beta_2 DIST + \beta_3 SIZE + \beta_4 TRADE \quad (11)$$

where DIV is a dummy variable indicating whether or not the M&A constitutes a diversification, $DIST$ is a measure of geographical distance, $SIZE$ is a proxy for the acquirer's company size, and $TRADE$ captures the trade levels between the countries of the acquirer and the target. The following section elaborates on the data collection procedure and the measurement of the dependent and independent variables of regression equation 11.

3.3 Data

One of the most critical steps of the event study method is to define what exactly constitutes an M&A event, that is, to determine the specific point in time, at which the markets learn about an M&A and adjust their valuation of the acquiring companies. Quite obviously, at the time of the formal transfer of ownership, all the news regarding the M&A are typically already publicly known and incorporated into the share price. This study therefore defines an M&A event as the earliest public announcement of a telecommunication company's intention to merge with another company, or to acquire

another company, partially or as a whole. The criteria for selecting M&A announcements were that the acquirer had to be NYSE or NASDAQ listed and that it had to be classified as a telecom service provider. As this research focuses on *international* M&As, the target company had to reside in a different country than the acquirer. Moreover, only acquisitions that were eventually completed were considered. The M&A announcements were located and dated by searching the telecom carriers' websites, as well as performing structured searches on the LEXIS/NEXIS database of business and finance news articles.

The initial sample contained 124 events. Some cases were dropped because they did not have a trading history of 280 days prior to the event date. Events where the acquiring companies did more than one acquisition on the same day were also dropped because it is impossible to determine the abnormal returns associated with any specific M&A announcement. The remaining number of M&A announcements was 72.

The company stock prices were obtained from the Center of Research on Security Prices (CRSP) and from Yahoo.com. For each event, the adjusted stock price of the acquiring company 280 days before the event date and 10 days after the event date were downloaded.

The Dow Jones Sector Titan Telecommunication (DJTTEL) index was downloaded from the Bloomberg database and used to represent the average industry share price. The stock returns and average industry returns at time t , as used in the regression model 1, are then given by $R_{k,t} = \frac{P_{k,t} - P_{k,t-1}}{P_{k,t-1}}$ and $R_{m,t} = \frac{P_{m,t} - P_{m,t-1}}{P_{m,t-1}}$, respectively, where $P_{k,t}$ is the price of stock k and $P_{m,t}$ is the level of index m at time t . Average industry returns, rather than stock prices, are used in order to correct for first order autocorrelation effects.

To test the extent to which each of the variables affects the abnormal returns in the stock price of the acquiring companies, data concerning the various variables were collected.

To capture vertical service diversification, acquiring and acquired companies were classified according to their main line of business into the following five categories, "owns and operates network infrastructure", "offers value added services", "e-commerce service

provider”, “content provider”, and “others”.

For horizontal service diversification, acquiring and acquired companies were classified according to their main line of business into the following four categories, “fixed line”, “wireless”, “CATV”, and “others”. A dummy variable *DIV* was then created, which takes the value 0 if both acquirer and target operate in the same vertical and horizontal lines of business, and 1, otherwise. This dummy variable then served as a measurement to how the acquiring companies are diversifying their business.

To measure the effect of the acquiring company’s size on the abnormal returns, the revenue of the acquiring companies are used as a proxy. The revenues of the acquiring companies in the year of each event were collected. As the revenue of each company is reported in different currencies, for comparison purpose, all the revenues were converted into US dollars using the average exchange rate for the event year. The exchange rate of the currencies were downloaded from the Universal Currency Converter at www.xe.com.

To measure the effect of trade on the abnormal stock returns, trade data between the two countries were collected. As the trade data are available on a quarterly basis, the trade levels between the countries in an event were collected according to the exact quarter into which the event date falls. For example, if the acquisition event occurred in 10 July 2000, the trade data between the two countries in the 3rd quarter of 2000 was used.

Finally, the distance between the acquiring carriers and the target carrier’s home country was calculated as the distance between the capital cities or commercial centers of the respective countries. The formulae used are shown in Appendix A.

4 Results

4.1 Average Cumulative Abnormal Returns

The average of the CARs over all 72 completed acquisitions announcements, \overline{CAR} , was statistically not different from zero. The computed value of \overline{CAR} was 0.17; the t-value was 1.594. Given the diversity of M&A events that were captured in the data sample

used for this study, this result comes as no surprise. After all, a zero overall \overline{CAR} does not indicate that M&As have no impact at all. Rather, it indicates in this case that the positive and negative valuation of M&A events in the sample may have canceled each other out, such that the overall result turns out to be insignificant.

4.2 Regression Analysis

Table 1 shows the results of regressing the company specific CARs on the four M&A characteristics: diversification, distance, the acquirer’s size, and the trade volume.

Table 1. Regression Results

<i>variable</i>	<i>coefficient</i>	<i>t-value</i>
Const	0.045	(2.43)
DIV	0.066	(1.63)
DIST	-0.76 E-06	(-2.21)
SIZE	-1.8 E-12	(-2.89)
TRADE	3.2 E-07	(1.97)
$R^2 = 0.5937$		

The R^2 of the regression is approximately 59%, which is within reasonable expectation for an empirical study involving highly aggregated data. The diversification dummy variable, DIV, is insignificant. In the sample of telecom M&As employed in this study, service diversification had no significant impact on firm value. This may be due to the fact that the prospects of gaining market power through *international* M&As are indeed limited, and that the shortcomings of diversification outweigh their benefits. The coefficient on the DIST variable is negative and significant. Hypothesis 2, which states that M&As add less value to the acquirer with increasing geographical distance from its target, is therefore supported. Similarly, the impact of trade volumes between the acquirer’s and the target’s home country is positive and significant as expected. Finally, an unexpected finding is that the coefficient on the SIZE variable is negative and significant. This result indicates that large carriers have been in fact less successful than smaller carriers in increasing shareholder value through M&As. The effects of managerial inefficiency and difficulties of large companies to succeed in highly dynamic

telecom service markets appear to outweigh the advantages from scale economies and multi-domestic market bases.

5 Discussion and Conclusions

International M&As have been an important phenomenon in the telecom industry ever since countries started to deregulate their telecom markets in the late 1990s. Yet, facing financial pressures and low returns, many carriers have started to demerge, and sell off their foreign assets. This study attempts an evaluation of international telecom M&As by assessing their impact on the stock market value of the acquirers, and by analyzing the factors that may contribute to the success of such M&As.

The findings are that the overall impact of international telecom M&A on the acquiring carriers' value has been insignificant. Surely, worldwide telecom deregulation has not marked the beginning of a gold rush, as many telecom managers have believed. However, this study also shows that M&As are more likely to be successful when the acquiring carrier is small, when the target is in close geographical distance, or when the home countries of the acquirer and target have close economic ties.

This study is nevertheless subject to a number of limitations. Some of these limitations are inherent to the event study method, but aggravated by the telecom context. For example, the existence of efficient stock market reactions is certainly a strong assumption in the context of telecom markets prior to the bursting of the dot.com bubble, and thereafter. Also, international telecom acquisitions are often subject to regulatory approval, which may prevent the observation of a precise M&A announcement date.

Another set of limitations is due to the *international* context. For example, the acquirer and target are typically not traded on the same stock market, making it practically impossible to study their combined stock market reaction. Moreover, in order to maintain the comparability of events, only U.S. listed acquirers were chosen. This restriction reduced the sample size substantially and precluded the use of a more refined set of explanatory variables. Future extensions of this research will therefore use a larger

data set, include stock market trading volumes and a larger set of explanatory variables, and refine the empirical treatment of horizontal and vertical differentiation.

A Formulae for Measuring Geographical Distance

Given the locations of the cities in longitudes ($LONG$) and latitudes (LAT), the geographical distance between the two countries can be computed from in each event:

$$DIST = 69.18 \cdot \frac{180}{\pi} \cdot \arccos(\sin(VA) \cdot \sin(VT) + \cos(VA) \cdot \cos(VT) \cdot \cos(DLO)) \quad (12)$$

where

$$VA = LAT(A) \cdot \frac{\pi}{180} \cos(DLO) \quad (13)$$

$$VT = LAT(T) \cdot \frac{\pi}{180} \quad (14)$$

and

$$DLO = \det LONG(A) - LONG(T) \cdot \frac{\pi}{180} \quad (15)$$

References

- [1] Buckley, P. J. and M. C. Casson (1976), *The Future of the Multinational Enterprise*, London: Macmillan
- [2] Buzzell, R. D., B. T. Gale, and R. G. M. Sultan (1975), "Market Share - A Key to Profitability," *Harvard Business Review*, Jan - Feb, pp. 97.
- [3] Buzzell, R. D. and B. T. Gale (1987), *The PIMS Principle: Linking Strategy to Performance*, Macmillan, New York.
- [4] Copeland, T, T. Koller, and J. Morrin (2000), *Valuation, Measuring and Managing the Value of Companies*, 3rd Edition, New York, John Wiley & Sons. Inc.
- [5] Daniel J. D and L. H. Radebaugh (2001), *International Business: Environments and Operations*, 9th edition, Prentice Hall, New Jersey.
- [6] Ernst & Young (1994), *Mergers and Acquisitions*, 2nd edition, John Wiley & Sons, Inc.
- [7] Hamel G. and C. K. Prahalad (1983), "Do You Really have a Global Strategy?" *Harvard Business Review*, pp.138-148.
- [8] Jensen, M. (1986), "Agency Cost of Free Cash Flow, Corporate Finance, Takeovers," *American Economic Review*, May.
- [9] Judge, G. G., R. C. Hill, W. E. Griffiths, H. Lutkepohl, and T. C. Lee (1988), *Introduction to the Theory and Practice of Econometrics*, John Wiley and Sons, New York.
- [10] Kim W. C. and R. A. Mauborgne (1988), "Becoming an Effective Global Competitor," *Journal of Business Strategy*, pp.33-37.
- [11] Lamacchia, T. F. (1997), *Cross-Border M&A: A Guide to Global Strategic Direct Investment For Asian Companies*, Asia Law & Practice Publishing Ltd.
- [12] Lubatkin, M. (1987), "Merger Strategies and Stockholder Value," *Strategic Management Journal*, 8, pp. 39-53.
- [13] Matsusaka, J. G. and V. Nanda (1996), "Internal Capital Markets and Corporate Refocusing," Working Paper, University of Southern California.
- [14] Penrose E.T. (1959), *Theory of the Growth of the Firm*, Basil Blackwell, London.
- [15] Shrivastava P. (1986), "Postmerger Integration," *Journal of Business Strategy*, 7(1), pp. 65-76.
- [16] Shusterman, T. G., J. R. Norsworthy and W. Bessler (2000), "Stock Market Reaction to the Announcement of Mergers and Acquisitions in the U.S. Telecommunications Industry", *Institute of Electrical and Electronics Engineering (IEEE)*, pp. 446-452.
- [17] Stein, J. C. (1997), "Internal Capital Markets and the Competition for Corporate Resources," *The Journal of Finance*, 52, Issue 1, 111-133.

- [18] Stulz, R. M. (1990), "Managerial Discretion and Optimal Financing Policies," *Journal of Financial Economics* 26, 3-27.
- [19] Subramani, M. and E. Walden (2001), "The Impact of E-Commerce Announcements on the Market Value of Firms," *Information System Research*, 12(2), pp.135-154.
- [20] Thompson Jr. A. A. and A. J. Strickland III (2001), *Strategic Management: Concepts and Cases*, 12th edition, McGraw-Hill.