HELSINGIN KAUPPAKORKEAKOULU
HELSINKI SCHOOL OF ECONOMICS AND BUSINESS
ADMINISTRATION

**CROSS-LISTINGS AND M&A ACTIVITY:
TRANSATLANTIC EVIDENCE**

Helsingin
Kauppakorkeakoulun
Kirjasto

8371

Rahoitusteorian tutkielma

26. 7. 2001

Pasi Tolmunen

Laskentatoimen laitoksen

laitosneuvoston kokouksessa 11 / 9 2001 hyväksytty

arvosanalla erinomainen 90 pistellä

KTI Matti Keloharju KTI Sami Toivola

THE CROSS-LISTINGS AND M&A ACTIVITY: TRANSATLANTIC EVIDENCE

Objectives of the study

The aim of this study is to examine the unexplored relationship between transatlantic cross-listings and mergers and acquisitions. First objective is to examine the M&A activity of European cross-listed companies surrounding the U.S. cross-listing and to compare the activity to similar European firms. The second main objective is to similarly examine the changes in the method of payment in the acquisitions. Finally, I make a conclusion on the various results and relate them to my research problem. I also relate my findings to the main theories of M&A motives and method of payment.

Data

The data in this thesis is combined from several sources into one unique database. The data on cross-listings is received from the U.S. exchanges and from SDC databases for U.S., International and European listings, and is checked from web pages of the companies and exchanges. The cross-listed companies are included between 1.1.1980 and 31.12.2000. I employ a procedure to find size- and industry matched pair firms for each cross-listed firm. The M&A sample consists of successful takeovers announced between 1.1.1996 and 31.12.2000 and is collected from SDC's database for U.S. M&As. To control for company-specific and macroeconomic variables, I collect data on firms' financial statements, industries and countries of incorporation. I also collect data on exchange rates. My data sources are Datastream, SDC and Worldscope databases.

Methodology

I use a logit model to explain the probability of a European company to acquire a U.S. corporation from company and macroeconomic characteristics. I use logit, multinomial logit and regular t-test for the difference in means to test the change in the method of payment. The focus in this study is in variables related to the cross-listing, but I make a robust control of the results by including other key variables.

Results

European firms that are cross-listed in the U.S. are significantly more active in their U.S. acquisitions than matching pair firms. Although the cross-listed firms do not conduct more acquisitions after the cross-listing than before, their acquisitions are significantly more stock-financed after the cross-listing. The increased stock financing can be evidenced both in the likelihood and volume of stock financed takeovers. Against matching pairs, the cross-listed firms use very significantly more takeovers financed only with stock. To conclude, the evidence in this thesis supports the inference that willingness to obtain an M&A currency for transatlantic M&As is a remarkable reason to cross-list on the U.S. exchanges. There is also some evidence that the relationship may hold in reverse: M&As in the U.S. may lead to cross-listing.

Key words

Merger, acquisition, M&A, transatlantic, cross-listing, ADR, method of payment

THE CROSS-LISTINGS AND M&A ACTIVITY: TRANSATLANTIC EVIDENCE

Tutkielman tavoitteet

Tutkielman tavoitteena on tutkia Euroopan ja Yhdysvaltojen välisten tuplalistautumisten ja yrityskauppojen yhteyttä. Ensimmäisenä tavoitteenani on tutkia eurooppalaisten tuplalistautuneiden yritysten yritysostoaktiivisuutta ennen ja jälkeen tuplalistautumisen ja verrata aktiivisuutta muihin eurooppalaisiin yrityksiin. Toiseksi tutkin vastaavasti tuplalistautumisen vaikutusta maksutapaan. Lopuksi kokoan eri tulokset ja suhteutan ne tutkimusongelmaani. Lisäksi vertaan tuloksiani aikaisempiin teorioihin yrityskauppojen motiiveista ja maksutavan valinnasta.

Lähdeaineisto

Lähdeaineisto tähän tutkielmaan on kerätty useista eri lähteistä yhdeksi ainutlaatuiseksi aineistoksi. Tuplalistausaineisto on saatu USA:n pörsseistä sekä SDC:n eri tietokannoista. Lisäksi aineistoa on tarkennettu pörssien ja yritysten kotisivuilta. Perusaineiston muodostavat eurooppalaiset tuplalistautuneet yritykset ajalta 1.1.1980 – 31.12.2000. Etsin jokaiselle tuplalistautuneelle yritykselle saman suuruisen vertailuyrityksen samalta toimialalta. Yrityskauppa-aineistoni on kerätty SDC:n tietokannasta ja koostuu toteutuneista yritysostoista 1.1.1996 – 31.12.2000. Testattavien muuttujien lisäksi muodostan kontrollimuuttujia, joihin kerään aineistoa yritysten tilinpäätöisluvuista, toimialasta ja kotimaasta sekä valuuttojen välisistä vaihtokursseista. Lähteinä ovat SDC:n, Datastream:n ja Worldscope:n tietokannat.

Aineiston käsittely

Käytän tutkielmassani logit-mallia selittämään todennäköisyyttä eurooppalaisten yritysten tekemälle yritysostolle Yhdysvalloissa. Maksutavan muutoksen tutkimiseen käytän logit-mallia, monijäsenistä logit-mallia ja t-testiä keskiarvon erotukselle. Tutkielman pääpaino on muuttujissa jotka liittyvät tuplalistaukseen, mutta lisään testien tilastollista luotettavuutta lisäämällä regressiohin useita kontrollimuuttujia.

Tulokset

Eurooppalaiset tuplalistautuneet yritykset ovat huomattavasti aktiivisempia yritysostoissa Yhdysvalloissa kuin tuplalistaamattomat vertailuyritykset. Yritykset eivät tee tuplalistauksen jälkeen useammin yritysostoja kuin ennen, mutta rahoittavat merkitsevästi enemmän yritysostojaan omilla osakkeillaan. Lisääntynyt omien osakkeiden käyttö maksutapana näkyy sekä osakkeilla rahoitettujen yrityskauppojen todennäköisyydessä että niiden rahallisessa arvossa. Vertailuyrityksiin verrattuna tuplalistautuneet yritykset tekevät merkitsevästi enemmän nimenomaan täysin omilla osakkeilla maksettuja yrityskauppoja. Yhteenvetona totean tulosten tukevan teoriaa, että kiinnostus käyttää omia osakkeita maksuvälineenä on merkittävä syy eurooppalaisten yritysten tuplalistautumisille Yhdysvaltoihin. Osa tuloksista viittaa myös siihen, että kausaaliteetti voi toimia toiseen suuntaan: Yrityskaupat Yhdysvalloissa voivat johtaa tuplalistautumiseen.

Avainsanat:

Yrityskauppa, fuusio, M&A, tuplalistautuminen, ADR, maksutapa

PART I: INTRODUCTION	8
1 Background and motivation.....	8
1.1 Research problem.....	9
1.2 Objectives of the study	10
1.3 Research methodology.....	11
1.4 Definitions of the key concepts.....	11
1.5 Structure of the study	13
PART II: PREVIOUS RESEARCH.....	13
2 Cross-listing to foreign exchanges.....	13
2.1 Why companies cross-list on foreign exchanges?	14
2.1.1 Capital raising, selling securities and corporate transactions	14
2.1.2 Sources of value creation in cross-listings.....	15
2.2 Costs of cross-listing on the U.S. exchanges	18
2.3 Benefits versus costs	18
2.4 Characteristics of cross-listed companies	19
2.5 The choice of exchange to cross-list.....	20
2.6 The practice of accessing U.S. capital markets.....	21
2.6.1 Direct listing versus cross-listing on the U.S. exchanges	22
2.6.2 Primer on ADRs.....	23
3 Mergers and Acquisitions	24
3.1 Theories explaining mergers and acquisitions.....	25
3.1.1 Theories of efficiency and synergy.....	27
3.1.2 Agency problems and free cash flow hypothesis.....	27
3.1.3 Industry disturbance hypothesis.....	28
3.1.4 Merger waves.....	28
3.1.5 Size of the company.....	28
3.2 Reasons for cross-border mergers.....	29
3.2.1 Technology and internalization theory	30
3.2.2 Exchange rates and differential international stock price levels.....	31
3.2.3 Country-specific factors.....	31
3.3 Theories for the choice of method of payment	32
3.3.1 Industry disturbance, merger waves and country-specific factors.....	32
3.3.2 Financial factors.....	33
3.3.3 Risk sharing hypothesis	35

3.4	Transatlantic M&A mechanics	35
3.4.1	Legal and regulatory framework.....	36
3.4.2	Taxes in transatlantic mergers and acquisitions.....	36
3.4.3	Transatlantic M&A accounting methods	38
3.4.4	ADRs as acquisition currency in transatlantic M&As	39
PART III: EMPIRICAL STUDY		41
4	Hypotheses.....	41
5	Data and methodology	45
5.1	Data.....	45
5.2	Methodology	51
5.2.1	Overview of methodology	51
5.2.2	The analysis of the acquiring likelihood.....	52
5.2.3	The analysis of the method of payment	52
5.2.4	The matching pair firm methodology	54
5.2.5	Description of the models	56
5.3	Description of key variables	58
5.3.1	Definitions of the variables in the analysis of acquiring likelihood	59
5.3.2	Variables in the analysis of the method of payment	64
6	Descriptive statistics	67
6.1	Characteristics of cross-listed and matching pair companies	67
6.1.1	General characteristics	67
6.1.2	Financial characteristics.....	70
6.2	Descriptive statistics on mergers & acquisitions	72
7	Empirical results	76
7.1	Analysis of the acquiring likelihood.....	76
7.1.1	Analysis of the acquiring likelihood before and after cross-listing	76
7.1.2	The analysis of acquiring likelihood with matching pair firms	79
7.2	Analysis of the method of payment	85
7.2.1	Analysis of the method of payment before and after cross-listing	86
7.2.2	Analysis of the method of payment with matching pair firms.....	93
PART IV: SUMMARY		101
8	Summary and conclusions	101
9	Suggestions for further research	105
REFERENCES:		107
APPENDICES:		113

Table of figures:

Figure 1: Yearly ratio of non-IPO cross-listed companies acquiring U.S. companies, relative to cross-listing year	77
Figure 2: The yearly ratio of cross-listed and matching pair firms acquiring U.S. companies, relative to cross-listing year	80
Figure 3: Mean number of all U.S. takeovers and takeovers including stock financing by cross-listed companies, yearly means relative to the cross-listing year.....	86
Figure 4: Ratio of acquisitions including stock financing to acquisitions with payment information, relative to cross-listing year	87
Figure 5: M&A transaction volume and mean percent of transactions financed with stocks, relative to cross-listing year	92
Table 1: ADR program options – main features.....	23
Table 2: Reasons for acquisitions.....	26
Table 3: Reasons for international M&As.....	30
Table 4: Research problem and the hypotheses of the thesis.....	45
Table 5: Sample description of cross-listed companies.....	48
Table 6: The mergers & acquisitions sample	49
Table 7: Variables explaining the takeover likelihood of a U.S. company by a European company ..	63
Table 8: Independent variables affecting the use of equity as a method of payment when a European company acquires a US company.....	66
Table 9: Countries of incorporation and cross-listing year of the sample of cross-listing companies.	68
Table 10: The country and industry distribution of the sample of cross-listed companies and matching pairs	69
Table 11: Statistics for the financial performance of the sample of cross-listed companies and matching pairs	70
Table 12: Distribution of the sample market capitalization in USD millions.....	72
Table 13: Number of acquisitions in the different analyses	73
Table 14: Distribution of the sample M&As by year of announcement.....	73
Table 15: Descriptive statistics for the acquisition size variables	74
Table 16: Distribution of the M&A form of the sample takeovers.....	75
Table 17: Frequencies and percentages of stock swap and pooling of interest	75
Table 18: Explaining acquiring likelihood of cross-listed companies before and after the cross-listing	78
Table 19: Explaining acquiring likelihood using a logit model and a sample of cross-listed companies and matching pairs	82
Table 20: Explaining acquiring likelihood using a logit model with subset of companies with information on research expenses per sales.....	84
Table 21: Explaining the use of equity before and after cross-listing with logit model	89
Table 22: The timing in same-year acquisitions and cross-listings	90
Table 23: Descriptive statistics for the type of payment	94
Table 24: Explaining the use of equity as a payment method in the takeovers with logit model	95
Table 25: Frequency distribution of equity component.....	97
Table 26: Explaining the use of equity as a payment method in the takeovers with multinomial logit model.....	99
Table 27: The hypotheses and findings on the acquiring likelihood	102
Table 28: The hypotheses and findings on the method of payment.....	103

PART I: INTRODUCTION

1 BACKGROUND AND MOTIVATION

The motivations for cross-listings and cross-border M&As have been studied extensively. For instance good starting point is Pagano et al. (1999) for cross-listings and Weston et al. (1998) for international mergers and acquisitions. In this respect it is very interesting to note that there is no single research made on the relationship between these two topics. Investment bank J.P. Morgan (2000) states a common notation in the capital markets: "In fact, many foreign issuers who have reconciled their accounting to U.S. GAAP and listed their stocks on U.S. exchanges have done so with the express intent of developing viable M&A currencies." This hypothesis can be found in general form in almost any academic literature addressing the reasons for cross-listing (see e.g. Eiteman et al., 1998, p.377). Oxelheim et al. (2001) formulate the following hypothesis: "A firm is more likely to engage in foreign direct investment when it is cross-listed in a prestigious capital market". A direct test of this hypothesis is to study the M&A behavior of European companies cross-listing on the U.S. market.

This thesis contributes to the present finance literature with unique empirical evidence on the relationship between transatlantic cross-listings and M&A activity of European companies. The monetary importance of this relationship is indisputable, as my sample of 196 cross-listed European companies acquired U.S. companies in total worth of almost USD 414 Billions between 1996 and 2000. As a comparison, the total value of Western European takeovers into the U.S. was USD 547 Billions during the most active years of 1999 and 2000, which was two and half times more than the flow into the flow back from North America to Europe (KPMG, 2001). The understanding of this relationship is also important because it may have unexpected economic significance for the shareholders: The acquisitions financed with stocks are generally value destroying for long-term shareholders (Loughran and Vihj, 1997). If a cross-listing of a company leads to significant increase in large acquisitions financed with

stocks, then the cross-listing may have questionable consequences for the shareholders of the company.

I find that European firms that are cross-listed in the U.S. are significantly more active in their U.S. acquisitions than matching pair firms. The cross-listed firms do not conduct more acquisitions after the cross-listing than before, but the use of stocks as a payment increases significantly during after the cross-listing. The increased stock financing can be evidenced both in the likelihood and volume of stock financed takeovers. Against matching pairs, the cross-listed firms use significantly takeovers financed solely with stocks. If the acquisition is financed at least partly with stocks, the cross-listed firms are inclined to use more stocks than the European listed counterparts. Reasons for the increased acceptance of stock payment after cross-listing could be the improved convenience of U.S. listing for the target U.S. shareholders, reduction of home bias via visibility and the alleviation of information asymmetries between European acquirer and U.S. target.

To conclude, the evidence in this thesis conveys the view that for the willingness to obtain an M&A currency for transatlantic M&As is a remarkable reason for European companies to cross-list on the U.S. exchanges. For some firms the causality may be reversed: A strategic expansion to the U.S. markets with cash acquisitions will increase its commitment to the U.S. markets and will cause the company to cross-list.

1.1 RESEARCH PROBLEM

The purpose of this thesis is to study the relationship between the decisions of European companies to cross-list on the U.S. exchanges and to engage in the transatlantic mergers and acquisitions. I formulate the research problem as follows:

Is there a relation between the cross-listings of European companies to the U.S. and the M&A behavior in the market?

The research problem is divided into two sets of hypotheses examining the behavior of European firms in the U.S. market. The hypotheses in the first set examine the

acquiring likelihood. The first hypothesis states that the U.S. cross-listing increases the M&A activity in the U.S. market and the second that cross-listed firms are more active acquirers in the U.S. than matching pair firms.

The second set of hypotheses claim that these transactions are financed by much larger extent with stocks. First I hypothesize that cross-listed European companies use more often stock financing in takeovers after cross-listing. Secondly I advance the hypothesis that the cross-listed companies are more likely to finance the takeovers with stock than matching pair firms. Finally I hypothesize that in takeovers at least partly financed with stock, cross-listed companies use proportionally more stocks to finance the acquisition.

1.2 OBJECTIVES OF THE STUDY

The research problem produces directly three objectives. First is to describe the M&A activity of cross-listed companies surrounding the cross-listing and to relate the activity to other European firms. The second main objective is to investigate the changes in the use of stocks in the acquisitions around the cross-listing, and to make a comparison to other European firms. The third objective is to make a conclusion on the various results and to infer that is the relationship significant. I also study the causality of the relation and investigate the accuracy of the common statement that the willingness to obtain an M&A currency is a significant reason for European companies to cross-list on the U.S. exchanges.

In addition the methodology allows me to explore other less known behavioral patterns in international corporate finance. Firstly I am able to compare the characteristics of cross-listed European firms and matching pair firms. Secondly this thesis provides illustration of the characteristics increasing the likelihood of European companies to engage in transatlantic M&As, which is also scarcely covered field of study. With these results, I am also able to evaluate the efficiency, agency and internalization theories as explanations for transatlantic M&As. The third major contribution of this thesis is to explore the different factors that drive the choice of financing in transatlantic M&As. The objective is to expand the current knowledge on

the choice of acquisition financing to include the transatlantic acquisitions. This is also a subject that I have not encountered, and thus I am able to reevaluate theories in the choice of M&A financing in international context.

1.3 RESEARCH METHODOLOGY

In order to study the relationship, I have collected a unique database combining transatlantic cross-listings and takeover activity from 1996 to 2000. Most of the issues in this thesis are very scarcely studied or completely omitted. This forces me to use a synthesis of methodologies and variables from multiple disciplines.

I have two sets of hypotheses in this study. I employ logit and multinomial logit models to study the above hypotheses. To test the first two hypotheses, I use a logit model to describe the probability of a European company to acquire a US corporation from company and macroeconomic characteristics. For the latter three hypotheses I use logit, multinomial logit and regular t-test for the difference in means to test the change in the method of payment. The focus in this study is in variables related to the cross-listing, but I make a robust control of the results by including the other key variables suggested by the literature.

1.4 DEFINITIONS OF THE KEY CONCEPTS

This section defines the main terminology used in this thesis. The definitions of mergers and acquisitions are lacking a clear definition and many terms are used as substitutes for each other's. Most of the previous empirical research and theories use interchangeably terms, mergers, acquisitions and takeovers. In this thesis I use takeovers and acquisitions interchangeably to describe a situation where two business entities are combined, whether through tender offer or merger. If I explicitly refer to form of takeover, I use merger and tender offer to distinguish these two forms. I use SDC definition to determine the acquirer and target. In my empirical part, I use the terms acquirer, acquired and target to successful takeovers. In the literature review bidder and target is often used to all takeover bids, whether successful or not. Next I present short definitions of the most common terms.

Acquisition

The purchase of a controlling interest in a firm, often through tender offer for the target stocks.

Tender offer

“Tender offers usually convey that one firm or person is making an offer directly to shareholders to sell (tender) their shares at specific prices.” Weston et al. (1998, p.4). Sometimes tender offers are referred as acquisitions, but acquisitions are also used in more general term to refer to business combinations.

Merger

“In general, mergers refer to negotiated deals that meet certain technical and legal requirements” (Weston et al., 1998, p. 4).

Takeovers

Merger and tender offers are two forms of takeovers. Often used interchangeably with M&As or M&A activity.

M&As

Mergers & acquisitions, general term to describe corporate transactions, whether tender offers or mergers.

Cross-listing

“The listing of shares of common stock on two or more stock exchanges”, Eiteman et al. (1998, p. 823). Generally speaking can be conducted with different instruments, such as common stock, ADRs or other similar instruments.

ADR

American depositary receipts, ADRs, are derivative instruments to the underlying common shares. ADRs can be exchange-listed (level 2 and 3 ADRs) or OTC listed (level 1 ADR).

1.5 STRUCTURE OF THE STUDY

This thesis is organized as follows. Part II provides a review of the previous research. The reasons and practical issues on the cross-listing to the United States are discussed together with a review on the literature concerning mergers and acquisitions, with a distinct focus on transatlantic mergers and acquisitions. Part III presents my empirical study including the hypotheses, methodology and results. Finally in part IV I summarize the findings of the study and relate them to the present knowledge on cross-listings and cross-border mergers and acquisitions. I also give my suggestions for the further research on the subject.

PART II: PREVIOUS RESEARCH

Part II presents a review on multiple disciplines that are discussed in this thesis. The following chapters in this part explore literature related to theory and mechanics of cross-listings and M&As with a focus on cross-border M&As. Empirical results from the studies are presented jointly with the theoretical background.

The previous research relates to my empirical part as follows: Chapter 2 on cross-listing enables the reader to evaluate different factors why and how firms cross-list on foreign exchanges. This understanding places my hypotheses – that will cross-listing change the M&A behavior - in right context. Chapter 3 on Mergers and Acquisitions presents a synthesis on different theories affecting to acquiring likelihood and to the choice of method of payment. The main theories are controlled with empirical control variables. The chapter also presents a more descriptive section on the transatlantic M&A mechanics to increase the reader's understanding on the special issues related to transatlantic M&As.

2 CROSS-LISTING TO FOREIGN EXCHANGES

Many papers related to cross-listings have been published recently. The majority of the papers study the value creation for companies that cross-list on foreign exchanges. Also several papers have taken a closer view on the characteristics of the companies that have decided to cross-list and the development after cross-listing. This chapter

will review the literature on the matter and elaborate the picture of the multinational companies and their ways of raising equity on global capital markets. The hypothesis on the reasons for cross-listing are reviewed quite extensively, since I suggest that obtaining M&A currency is one of the main motivations. In order to better evaluate my hypothesis, it is necessarily to examine the current hypotheses for cross-listings. The focus is in the cross-listings of European companies to the U.S.

2.1 WHY COMPANIES CROSS-LIST ON FOREIGN EXCHANGES?

There are several interrelated hypotheses for the reasons for a company to cross-list on an exchange outside their country of incorporation. The reasons may be categorized into three main groups. The companies may list abroad because 1) raising capital is easier, 2) cost of capital is lower or 3) foreign corporate transactions are easier. These reasons are discussed in the next section. After that the section 2.1.2 reviews the different theories how a cross-listing may enhance the value of the company.

2.1.1 CAPITAL RAISING, SELLING SECURITIES AND CORPORATE TRANSACTIONS

The typical reason to enter into foreign exchange is the need to raise new capital for investments. For example, Baker et al. (1999) report in their study that out of 193 ADR¹ listing issues, equity were raised in 71% of the cases during the following year. Also debt-raising from U.S. investors may become easier after the provision of financial statements in U.S. GAAP. The required funding is especially large for high-growth companies.

There are several other reasons to cross-list in addition to raising capital. In all of them the possible valuation effect from cross-listing to the equity is important to the shareholders. The creation of secondary market may also help in investments in foreign corporate assets and divestitures, as in Pagano et al. (1999). The creation of secondary local markets enhances the perceived value of company's stocks used for compensation programs for foreign employees, as stated in Eiteman et al. (1998, p.

¹ For more information on ADR's, see section 2.6.2

377). The broader secondary market also helps if the existing shareholders want to sell out.

For all of these reasons the market value of corporate assets is in the interest of the shareholders. Next I will present the different hypotheses why cross-listing may raise the value of equity for a company when the assumptions of perfect capital markets are relaxed regarding the assumption of free and abundant information and no frictions for international capital flows.

2.1.2 SOURCES OF VALUE CREATION IN CROSS-LISTINGS

Reducing barriers for foreign investors

Widening the investor clientele improves risk sharing and thus reduces the cost of capital, as shown by Stulz (1999), Martin and Rey (1999) and Lombardo and Pagano (1999). Karolyi (1998) concludes that cross-listing indeed reduces the cost of capital. Also Errunza and Miller (2000) document a significant 42% reduction in the cost of capital for companies that cross-list in the United States by introducing the ADRs.

The cost of capital should edge down more when the company originally trades in a segmented and illiquid market as is noted in Pagano et al. (1999). This follows from the market segmentation hypothesis (see e.g. Foerster and Karolyi, 1999). Eiteman et al. (1998, p.335) defines the segmentation as follows: A national capital market is segmented if the required rate of return on securities on that market differs from the required rate of return on securities with comparable expected return and risk. On the other hand, if all capital markets are fully integrated, securities with comparable risk and return should have the same required rate of return in each capital markets after adjusting for foreign exchange risk and political risk. Various barriers cause the market segmentation, for example government constraints and investor perceptions. As an evidence of segmentation, the market value of Daimler-Benz appreciated 30% following the announcement to cross-list on NYSE in 5.10.93 (Eiteman, 1998, p. 346).

Eiteman (1999, p.336) lists the following barriers: Information barriers, transaction costs, foreign exchange risk, takeover defenses, small-country bias, political risk and regulatory barriers. Listing abroad can mitigate the negative effect of these barriers, such as regulatory barriers, taxes and information constraints as summarized by Foerster and Karolyi (1999). As an example for a regulatory barrier a pension funds may face a ceiling on the proportion of their assets invested in stocks not listed on their domestic markets (Pagano et al., 1999). The effect of information constraints can be modeled using Merton's (1987) investor recognition hypothesis, which states that expected returns decrease with the size of firm's investor base.

Foerster and Karolyi (1999) provide a direct evidence for the market segmentation hypothesis and Merton's investor recognition hypothesis. They show that cost of capital drops in the cross-listing to the U.S. and that the reduction is positively correlated to the expansion of shareholder base. Baker et al. (1999) find support to the investor recognition hypothesis, as they document that the cross-listing on the NYSE or the London Stock Exchange increases media attention and analyst coverage. Finally, Miller (1999) shows that the stock price reaction to a cross-listing is positively correlated both to the increase in the shareholder base and to the barriers to capital flows: abnormal returns are largest when companies cross-list on major US exchanges such as the NYSE or NASDAQ and when they originate from emerging markets.

Capitalizing on product market reputation and relying on foreign expertise

The hypothesis on capitalizing on product market reputation states that the companies which sell popular brands abroad may find it easier to sell securities in the foreign market because the local investors already are aware and trust them as customers as stated in Pagano et al. (1999). They also state that the decision to list abroad may be determined by the location of analysts with the superior knowledge of the industry. This is especially important in high-tech sectors.

Committing to disclosure and corporate governance standards

The decision to list abroad may be affected by the differences in regulatory regimes, especially concerning shareholder protection. Many firms voluntarily commit themselves to new and more exhaustive disclosure standards, when they perceive that

the costs can be covered by the benefits of broader investor clientele and reduced cost of capital. For example, Stulz (1999) argues that companies from countries with poor legal standards can secure a lower cost of capital by subjecting themselves to tighter disclosure standards and thus reducing the agency costs of external finance. This hypothesis is closely related to market segmentation hypothesis. The European companies cross-listing in the U.S. may face a significant burden when deciding to reconcile their accounts to U.S. GAAP and are confident that sophisticated investors do not penalize for accounting discontinuity. For instance, Raghavan and Sesit (1993) note in Eiteman (1998, p.330) that Daimler-Benz reported a loss of \$592 million half-year loss - first since World War II - after reconciling the accounts to U.S. GAAP and removing largely the reserves that made it possible to adjust the profit level over the past years.

Improving liquidity

One reason for companies to cross-list is the willingness to increase the liquidity of their shares and therefore provide better functioning secondary markets for the equity of the company and positive valuation effect. The evidence on liquidity effect for cross-listing companies is mixed. Beneficial effects to liquidity may be caused by e.g. better microstructure in the target exchange. The competition from the other exchange can also decrease the bid-ask spread, where applicable, and thereby raise the trading activity in domestic market, as found by Foerster and Karolyi (1996). On the other hand, the cross-listing may result in decreased liquidity due to market fragmentation, as found by Domowitz et al. (1998) for a sample of Mexican companies issuing ADRs. The liquidity improvement is also different from a company to other. Pulatkonak and Sofianos (1999) find that the variability in the share of NYSE trading of the global trading for non-US stocks is high. The authors examine that the variability in this share is from less than one percent to more than ninety percent.

There is evidence that the proximity of the foreign exchange where company cross-lists affects the share turnover ratio. Pulatkonak and Sofianos (1999) presented a "time zone" hypothesis that says that the NYSE trading of non-NYSE stocks tend to decrease as the time zone difference increases. Finland is an outlier; the level of trading is clearly higher than predicted, largely because of Nokia. Supporting this hypothesis for a broader perspective, Pagano et al. (1999) found a significant decrease

of 8 percent in domestic stock turnover ratio after European companies cross-listed to other European exchanges, but no significant change following a listing to the U.S. exchanges. Smith and Sofianos (1997) state that trading is not a zero-sum game as trading on the NYSE need not necessarily come at the expense of trading in the home market.

2.2 COSTS OF CROSS-LISTING ON THE U.S. EXCHANGES

There are both direct and non-direct costs for cross-listings. Direct costs include e.g. charges of the target exchange and the fees of the advisors, and depend on the exchange. For instance, NYSE initial fee range is from \$150,000 to \$250,000 and the annual fee ranges from \$35,000 up to \$500,000 depending on the number of ADRs issued (e.g. \$167,640 per annum for 200 million ADRs), as can be calculated from NYSE web pages (2001). The majority of the costs are however non-direct, as the survey by Fanto and Karmel (1997) suggests, since the main costs cited are the costs of complying with US GAAP and the risk of lawsuits. Saudagaran and Biddle (1992) find evidence that financial disclosure is a real burden and a major factor for the decision to cross-list. They discover with internationally traded stocks that the higher the financial disclosure required, the less likely firm is to list on that particular market.

Taken together, a first time registration with SEC could typically cost \$400,000 – \$1,000,000 in accounting, legal, printing and registration fees (Baker et al., 1998). If the cross-listing includes capital-raising in the U.S., the costs naturally increase as investment bank gross spread and other fees are charged.

2.3 BENEFITS VERSUS COSTS

The discussion on the benefits versus cost of cross-listing is continuous. It is important to remember the time frame when assessing the benefits and costs. The global equity markets becoming more integrated but are far from perfectly correlated (Eiteman, 1998, p.369). This globalization could lead to decreasing the benefits of international cross-listings. Also increased possibilities for U.S. investors to buy directly stocks from well-functioning European exchanges might cause diminishing benefits in equity valuation perspective. To support this Lins et al. (2000) find some

evidence that firms from countries with weaker shareholder protection benefit more from listing on the U.S. than firms from developed countries. Also the benefits may be greatly dependant on the country of incorporation of the European firm, which makes the decision complicated. The greatest advantages in the terms of cost of capital and valuation seems to be for companies from segmented and illiquid markets and has been achieved for European companies in the 80's and the early 90's.

Instead of cross-listing, cost of capital can be lowered and liquidity improved by issuing new shares or selling existing ones to foreign investors. Alternative ways to achieve this is the sale of directed issue targeted to investors in a single country or sale of stocks to a foreign firm as part of strategic alliance. SEC rule 144A private placement has been possible from April 1990 onwards (Eiteman et al. 1998, p.384). The private placement does not provide exchange listing, but the U.S. Qualified Institutional Buyers can trade the stocks through PORTAL trading system (J.P. Morgan, 2000)

2.4 CHARACTERISTICS OF CROSS-LISTED COMPANIES

What are then the characteristics of the companies that decide to cross-list on foreign exchange? Saudagaran (1988) found in his early study a significant relationship between the likelihood to list abroad and 1) the relative size of the firm in its domestic market and 2) the ratio of foreign sales to total sales. The relative size is measured as the ratio of firm's market value to the domestic stock exchange's market value.

In their extensive study on European cross-listing companies Pagano et al. (1999) also find that the decision to cross-list abroad is most significantly determined by the proportion of the sales abroad and the size of the assets of the company. But in addition they find that positive and significant variables at 1% level are high-tech dummy variable, the assets growth rate and the leverage ratio. The privatization dummy is also significant at 5% level. The results support the hypothesis that the firms list abroad after a rapid growth period, which is fuelled with increased leverage.

2.5 THE CHOICE OF EXCHANGE TO CROSS-LIST

The choice of Exchange where to cross-list is puzzling many companies. The exchanges differ in many aspects, and the choice of optimal exchange is difficult. Eiteman (1998, p.378) states the common market wisdom: "The decision depends on the motive for listing. If it is to support a new equity issue or establish a market for stock swaps, the target market should also be the listing market". Also good liquidity is vital, which requires a major stock market, and NYSE is by far the biggest in market capitalization. Also market-making activities, transaction costs and crisis management are vital elements when assessing exchange's quality. (Eiteman, p. 379.)

The preference of investor demand for domestic or close-to-assets is well known in the literature. For example, Grinblatt and Keloharju (2001) find that familiarity proxy variables such as distance, language, and culture have an important influence on the stockholdings in Finland. Testing proximity preference for cross-listing decision, Sarkissian and Schill (2001) find that geographic proximity and degree of familiarity play a dominant role in cross-listing decisions.

The decision where to cross-list may have strategic reasons besides familiarity. The location of the product market of the company can be one motivation for the decision. This is because the cross-listing may generate a positive feedback on the company's demand from consumers and its relationships with suppliers. The hypothesis is called product market spillovers. Stoughton, Wong and Zechner (1998) provide a model for this hypothesis. According to the hypothesis, the companies that list on a certain foreign market are able to increase their fraction of sales in that market. If this hypothesis holds, the cross-listing should lead to foreign direct investment in the target market and thus increase the number of M&As in the market.

The macroeconomic evidence on the choice of exchange is not comforting to the European exchanges, when studying the paper by Pagano et al. (1999). Although the number of the European companies in their sample that cross-listed doubled from 1986 to 1997, the number of foreign companies in the European exchanges has decreased during the same period. The reason is clear: when the number of European companies listing to the U.S. exchanges has almost quadrupled, the number of U.S

companies that listed to the European exchanges fell by over a third between 1986 and 1997. Pagano et al. (1999)

The European company characteristics also differed according to the exchange of cross-listing. The European companies that cross-list first time on the U.S. compared to companies cross-listing on other European exchanges are smaller, spend more on R&D, and have higher ROA in the long run. (Pagano et al., 1999)

2.6 THE PRACTICE OF ACCESSING U.S. CAPITAL MARKETS

There are two main ways to list on the exchanges in the United States. The first is direct listing to an exchange. Without any prior listing this is called "orphan listing". Second is cross-listing with derivative instruments for the underlying shares, in which ADRs are a majority (J.P. Morgan, 2000). There are several other instruments that are less common. A distinction has to be made between cross-listing to an exchange and other ways of accessing capital markets.

In addition to cross-listing, a non-U.S. company can access U.S. equity markets in two ways without listing on an exchange. First way is an OTC listing with level 1 ADR issue that does not require SEC registration. The level 1 ADRs are traded on non-public over-the-counter market. This market allows only twice-a-day quote updates either through the NASD's Electronic Bulletin Board service or through the "Pink Sheets" published by the national Quotations Bureau. The second way is to offer a SEC Rule 144A semi-private offering - private placement - to "qualified institutional buyers" (QIBs). Such capital-raising can be completed without registration to the SEC. The private placement does not provide exchange listing, but qualified institutional buyers can trade the stocks through PORTAL² trading system. (Pulatkouak and Sofianos, 1999).

Equity can also be raised globally with Global depositary receipts (GDRs), which are generally listed on the London or Luxembourg stock exchanges. They can also be

² PORTAL: NASD's Private Offerings, Resales and Trading through Automated Linkages

traded in the PORTAL trading system in the rule 144A private placement market (J.P. Morgan, 2000). Next I describe the two main methods of listing to the U.S. exchanges, which are direct listing and cross-listing.

2.6.1 DIRECT LISTING VERSUS CROSS-LISTING ON THE U.S. EXCHANGES

A non-U.S. company can list directly to U.S. exchanges without a prior listing. Direct listing to the United States is not common for companies outside the North America, except for tax havens, such as Cayman Islands. Pulatkonak and Sofianos (1999) used the term "Home market ordinaries", for directly listed ordinary shares, which are in NYSE mostly Canadian. These are dollar denominated ordinary shares with no listing in home market.

There are two major ways to cross-list on a U.S. exchange. First is an ordinary cross-listing and the latter includes capital-raising. Level 2 ADR listing allows exchange listing without capital-raising. The level 2 ADR requires full SEC registration including reconciling the accounts according to U.S. GAAP. (Pulatkonak and Sofianos, 1999). The listing requires fulfilling the criteria to the exchange of choice, whether NYSE, Nasdaq or AMEX. Out of these, listing on NYSE has the most demanding requirements for the size of the company (J.P. Morgan, 2000).

Finally, the most extensive way is to list with level 3 ADR offering, which is basically level 2 ADR with initial capital raising in the U.S. This requires obviously SEC registration for listing, as above, and regular IPO documents such as Form F1. (J.P. Morgan, 2000).

Besides ADRs, there are several special issues of non-U.S. companies trading in U.S. exchanges. First, New York registered shares are used mainly by Dutch companies. New York shares are dollar-dominated certificates issued by the company specifically for the U.S. market. This allows for part of the capital of the company be outstanding in the U.S. and part in the home market. Global registered shares are a single class of ordinary shares and the shares are global in their nature. There are only a few issues of Global registered shares in the market, but a notable issuer of this security is Daimler-Chrysler. (Pulatkonak and Sofianos, 1999). Global registered shares allow a

same class of shares trading on a multiple markets. However, Global registered shares are not U.S. securities, like ADRs, and as a consequence U.S. institutional shareholder may have restrictions in their ownership. As ADRs are the most common instrument, the next section gives more details on the ADR issuing and trading conventions.

2.6.2 PRIMER ON ADRS

The ADRs are clearly the most important method of cross-listing to the U.S. In the end of 1998 out of 460 foreign issues in NYSE 308 were ADRs (Pulatkonak and Sofianos, 1999). There are three levels of ADRs, as was referred in previous section. Level 1 ADR is OTC-listed, level 2 is exchange listed and level 3 ADR is exchange listed with simultaneous capital-raising in the U.S. ADRs can also privately placed and traded in PORTAL. The reconciling of accounts according to U.S. GAAP is required for level 2 and 3 ADRs, which are exchange listed. (J.P. Morgan, 2000)

Table 1: ADR program options – main features.

	Level I (Unlisted)	Level II (Listing)	Level III (U.S. listing & public offering)	Private Placement Rule 144A
Objective	Develop/broaden U.S. investor base with existing shares	Develop/broaden U.S. investor base with existing shares	Raise equity in U.S. broaden U.S. investor base	Raise equity in U.S. among QIBs
Disclosure / accounting	Home market	U.S. GAAP	U.S. GAAP	Home market (U.S. GAAP optional)
U.S. reporting requirements	Exempt under Rule 12g3-2(b)	Form 20-F	Form 20-F	None
SEC registration	Form F-6	Form F-6	Form F-1 and F-6	None
Trading	OTC	NYSE, Amex or NASDAQ	NYSE, Amex or NASDAQ	PORTAL
Estimated timing: mandate to launch	9 weeks	14 weeks	14 weeks	7 weeks

Source: J.P.Morgan (2000)

ADRs are derivative instruments. A US depositary bank (e.g. Bank of New York, Citibank or J.P. Morgan) immobilizes the home securities with a custodian in the home market and issues dollar-dominated certificates, ADRs, representing claims on the underlying home shares (Pulatkonak and Sofianos, 1999). The ratio of ADRs to underlying securities can be decided to match the regular price level in the US (Eiteman 1998, p. 375).

ADRs can be sponsored or unsponsored. Unsponsored ADRs are issued by one or more depositary banks without issuer's consent. Most of the new ADR programs are sponsored, but many unsponsored issues still exist. Sponsored ADR issues are initiated and managed by the issuing company together with a mandated depositary bank. (J.P.Morgan, 2000)

A number of ADRs is not fixed, but fluctuate according to supply and demand for ADRs and home traded common stocks. To create new ADRs, a broker can purchase underlying shares in home market and deposit them with the depositary's custodian bank in the home market. The depositary then issues ADRs representing those shares. ADRs also have voting rights, but the holders of ADRs must issue directions to the depositary for voting. (J.P. Morgan, 2000)

From now on, this thesis excludes private placements and level 1 ADRs and cross-listing refers to listing on U.S. exchanges with earlier or simultaneous European listing. Next I move to the other main subject in this thesis, to the theories on Mergers and Acquisitions.

3 MERGERS AND ACQUISITIONS

This chapter reviews the literature on mergers and acquisitions. Theories are referred only to the extent to that they support the empirical part of the thesis, and thus much of the available evidence on the value creation is omitted.

The empirical evidence is presented jointly with different reasons for Mergers & Acquisitions. Three sections examine the theories relevant to this thesis. First the section 3.1 explains general theories for M&As, and then the section 3.2 explains the

distinguishing characteristics motivating cross-border M&As. After that the theories motivating the choice of the method of payment is covered in 3.3. I select empirical control variables from each main theory, and the variables are described in section 5.3 "Description of key variables". In addition a descriptive section 3.4 is added to cover transatlantic M&A mechanics.

3.1 THEORIES EXPLAINING MERGERS AND ACQUISITIONS

The understanding of general theories of M&As is imperative in order to understand the theories relevant for transatlantic M&As. Thus the modeling of the acquiring behavior of European companies must start with the understanding of what issues make companies to engage in corporate transactions.

The motives for acquisitions in financial economics is generally divided into four categories, namely i) theories of efficiency and synergy gains, ii) hubris hypothesis, iii) agency theories and iv) redistribution theories. The classification of theories explaining mergers and acquisitions is presented by Weston et al. (1998, p.75). The efficiency and synergy theories claim that value can be created through various sources of efficiency increases and synergies such as economies of scale. Hubris hypothesis states that overconfident managers end up bidding over the true economic value of the target. Agency theories address the impact of different objectives of managers and owners. Finally, redistribution theories explain the effect of wealth transfers between different stakeholders.

Table 2: Reasons for acquisitions

REASONS FOR ACQUISITIONS	
I. Total value increased	
1. Efficiency increases	
2. Operating synergy	
3. Diversification	
4. Financial synergy	
5. Strategic realignments	
6. The q-ratio	
7. Information	
8. Signaling	
II. Hubris-acquirer overpays for target	
III. Agency-managers make value-decreasing mergers to increase size of firm	
IV. Redistribution	
1. Taxes-redistribution from the government	
2. Market power	
3. Redistribution from bondholder	
4. Labor-wage adjustments	
5. Pension reversions	

Source: Weston et al. (1998, p.75)

Before I describe the reasons for the acquisitions in detail in the next sections, I present a foreword for the value creation in mergers and acquisitions to familiarize the basic concepts and results. M&A value creation has received a wide attention from the researchers. Weston et al. (1998, p.75) has created a framework for the value creation, dividing the total gains for acquirer and target. Efficiency should bring gains to the target and the acquirer alike. Hubris does transfer the acquirer's loss to target's gain, resulting in zero total gains. For agency problems or mistakes the total gain is negative, target earning positive and acquirer negative gains.

For the purpose of classification, the value creation is often divided between short-term and long-term. The short-term refers to event studies measuring cumulative abnormal returns around the window of M&A announcement period. For short-term returns, the synthesis of various studies state that targets generally experience significant positive abnormal returns from all acquisitions, whereas acquiring shareholders earn little or no abnormal returns from tender offers but earn negative abnormal returns from mergers (Loughran and Vihj, 1997). For long-term value creation, the authors find with their U.S. sample that firms completing cash tender

offers earn 61.7 percent excess return whereas firms completing stock mergers earn negative excess return of -21.0 during a five-year period. The target shareholders did not earn significantly positive excess returns in the study. Next I examine the different theories explaining mergers and acquisitions. Each of the following sections presents main theories that are controlled with empirical variables described in section 5.3.1.

3.1.1 THEORIES OF EFFICIENCY AND SYNERGY

Efficiency improvement can result from combining firms of unequal managerial capabilities. M&As may take place when a relative efficient bidder acquires a relatively inefficient target. Also the target or the bidder may have relatively better growth opportunities. (Weston et al., 1998, p. 76). Although this theory needs to be addressed in the analysis of acquiring likelihood, the measurement of efficiency and managerial capabilities is certainly not a mundane task.

Synergies can be operational and financial. Operating synergies can be achieved for example with economics of scale or economics in specific management functions. Financial synergy can be achieved by combining firms with low internal fund generation but high growth opportunities with the opposite: firms with high internal fund generation but low growth opportunities (Weston et al., 1998, p. 76). Servaes (1991) finds that total takeover gains are higher when the bidder has high Tobin's q and the acquired has low, which supports the hypotheses that value can be created with efficiency and synergy.

3.1.2 AGENCY PROBLEMS AND FREE CASH FLOW HYPOTHESIS

Agency problems and free cash flow hypothesis are amongst the most substantiated hypothesis for the reasons to take over other companies. Roll's (1986) Hubris hypothesis states that overconfident managers pay too much for their acquisitions. Jensen (1986) applies agency theory to the conflict over the disposition of free cash flow and posits that incompletely controlled managers spend free cash flow to wasteful projects. The resulting hypothesis is named as free cash flow hypothesis. Supporting the theory in relation to acquisitions, Harford (1999) finds that cash-rich firms are more likely to make diversifying and value-destroying acquisitions. Lower

leverage can increase the agency problems and cause more acquisitions since the acquisitions can be more easily financed with debt. Harford (1999) used leverage in his study for predicting bidding probability for cash-rich firms, but the variable was not significant with the US data.

3.1.3 INDUSTRY DISTURBANCE HYPOTHESIS

In addition one theory states that M&As are a response to economic shocks like changes in technology, industry structure and regulatory environment. This hypothesis is referred as Industry disturbance hypothesis by Gort (1969). The theory states that M&As are caused by valuation differentials among market participants, which are triggered by economic shocks like changes in technology, industry structure and regulatory environment. The theory suggests that acquisitions cluster by industries, and was tested empirically in Palepu's (1988) study on predicting takeover targets. Even though the theory is rather old, one recent evidence of the theory is given by McKinsey study (2000), which states that as much as 22.6 % of the global value of M&A were internet-related in January-May 2000. Also Weston (1999) argues that M&A activity is a response to major change forces, overriding all of them are technological changes, which differs by industries.

3.1.4 MERGER WAVES

Merger waves in the US have been well documented (Weston et al., 1998, p.2). Also the trends in transatlantic merger waves have received wide attention (see e.g. Vasconcellos and Kish, 1998 or Weston et al., 1998, p.346). The evidence is clear on the fact that M&As show a strong time trend. The evidence on the different factors causing merger waves is more contested. For example, see section 3.2.2 for more discussion on the different macroeconomic factors causing variation cross-border M&A activity.

3.1.5 SIZE OF THE COMPANY

Small companies are being acquired easier (Palepu, 1986). In addition fixed costs are substantial in international M&As so it is easy to hypothesize that international

bidding companies are larger than the non-bidding European firms. Harford (1999) found that the size is significant determinant in predicting US bidders. The firm size was measured as natural logarithm of assets.

In the next section a closer look on cross-border M&As is taken. In addition the research background is presented for my empirical variables. A cross-border merger or acquisition is a one way to make a foreign direct investment (FDI). It can be a one alternative as a method of entering to a new market and thus a major strategic choice. The cross-border M&As are significantly more complicated than domestic ones.

3.2 REASONS FOR CROSS-BORDER MERGERS

This section presents the empirical background explaining the characteristics of the companies that engage in cross-border transactions. The studies referred present research from various different study subjects, for example theories on international M&A, takeover target prediction and agency costs. Each of the theories presented in the following sections are controlled with empirical variables described in the section 5.3.1.

Table 3: Reasons for international M&As

Reasons for international M&As	
1. Growth	
1.1	To achieve long run strategic goals
1.2	For growth beyond the capacity of saturated domestic market
1.3	Market extension abroad and protection of market share at home
1.4	Size and economies of scale required for effective global competition
2. Technology	
2.1	To exploit technological knowledge advantage
2.2	To acquire technology where it is lacking
3. Extend advantages in differentiated products	
3.1	Strong correlation between multinationalization and product differentiation (Caves, 1982). This may indicate an application of parent's (acquirer's) good reputation
4. Government policy	
4.1	To circumvent protective tariffs, quotas, etc.
4.2	To reduce dependence on exports
5. Exchange rates	
5.1	Impact on relative costs of foreign versus domestic acquisitions
5.2	Impact on value of repatriated profits
6. Political and economic stability	
6.1	To invest in safe predictable environment
7. Differential labor costs, productivity of labor	
8. To follow clients (especially for banks)	
9. Diversification	
9.1	By product line
9.2	Geographically
9.3	To reduce systematic risk
10. Resource-poor domestic economy	
10.1	To obtain assured sources of supply

Source: Weston et al. (1998, p.350)

3.2.1 TECHNOLOGY AND INTERNALIZATION THEORY

Growth is probably the main driver behind international M&A activity. The company's domestic markets may be saturated or too small (Weston et al. 1998, p. 350). Even if domestic markets are large enough, the acquisition that adds growth by entering to new geographical or product market can create value. Doukas and Travlos (1988) find that U.S. firms that bid for non-U.S. target earn significant positive abnormal returns only when the acquirer does not have operations in the target country. The abnormal returns are larger when the company expands into a new industry or geographic market. However, Morck and Yeung (1991) claim with their

empirical evidence that multinationality is not valuable as such, but requires the existence of intangible assets. This hypothesis is further developed in the next section.

According to the internalization hypothesis a multinational expansion does not create value if there are no intangible assets that can be internalized (e.g. Caves, 1971; Morck and Yeung, 1992). The theory suggests that an international acquisition takes place to increase the value of the intangible assets, so firms that possess high level of intangible assets are more probable to acquire companies abroad. To support this hypothesis Harris and Ravenscraft (1991) find that U.S. targets of European acquirers are more often research-intensive than when acquirers are also U.S. companies. A non-U.S. acquirers seem to realize a wealth gain when acquiring U.S. R&D-intensive firms (Eun et al., 1996). On the other hand, Cakici et al. (1996) do not find evidence on abnormal gains for non-U.S. bidder when acquiring research intensive U.S. firms.

3.2.2 EXCHANGE RATES AND DIFFERENTIAL INTERNATIONAL STOCK PRICE LEVELS

Exchange rate difference cause variation in the number of cross-border M&As as proposed by Froot and Stein (1991). When a European currency is strong against the dollar, there should be more transactions where European companies acquire US companies. Harris and Ravenscraft (1991) note that the US target shareholder gains can be partly explained by the exchange rate difference. However, Vasconcellos and Kish (1998) do not find consistent evidence supporting the hypothesis.

The stock price levels are significant reason for the number of cross-border transactions according to Vasconcellos and Kish (1998). Many other have not found them significant, and the increased correlation between the main stock indices around the world in the late 90's has weakened this argument. Actually the main emphasis in portfolio theory is transferring from geographic diversification to industry diversification. (For industry effects see e.g. Baca et al., 2000 or Cavaglia et al., 2000)

3.2.3 COUNTRY-SPECIFIC FACTORS

There are numerous country-specific factors that cause M&A activity to differ amongst countries. Accounting regulations and specifically the treatment of goodwill

varies in different countries, which is argued by to give relative benefit in international acquisitions to some countries compared to others (Lee and Choi, 1992). The different treatment of goodwill can cause different tax consequences for M&As based on the country of incorporation. Also government policy (Weston et al., 1998, p.352-353) might give relative advantage to some companies in international acquisitions. Cultural distance is hypothesized to be a major determinant to expansion decision (see e.g. summary in Buckley and Casson, 1998). Brainard (1997) finds that firms tend to invest in those foreign markets that are analogous to the home market. To control for country-specific factors, Pagano et al. (1999) grouped the countries into groups in their study of European cross-listers.

3.3 THEORIES FOR THE CHOICE OF METHOD OF PAYMENT

Martin's study (1996) and the paper by Amihud et al. (1990) for the motivations of the method of payment are the main contributions for this part. Amihud et al. (1990) hypothesize that the information asymmetries and corporate control are the main factors for the choice of financing. Martin (1996) finds support to the hypothesis that the investment opportunities of the acquiring firm is one of the main drivers for the choice of financing. According to the hypothesis, firms that have high level of investment opportunities prefer financing acquisitions with stocks. Each of the theories of the method of payment presented in the following sections is controlled with empirical variables described in the section 5.3.2.

3.3.1 INDUSTRY DISTURBANCE, MERGER WAVES AND COUNTRY-SPECIFIC FACTORS

Mergers cluster in certain industries. Industry-related consolidation boom may cause large-scale merger activity financed mostly with stocks. Across industries, high-tech acquirers use more probably equity as a method of payment. Alanen (2001) finds in his master's thesis strong support to his hypothesis that U.S. high technology acquirers use stock payment more often than the acquirers in traditional industries. Acquisitions financed with stocks are often value decreasing to the bidder. Even though, Kohers and Kohers (2000) find with U.S. data that acquisitions of U.S. high tech company has experienced significant positive abnormal returns during 1987 and

1996. If the capital markets are more favorable for high-tech acquisitions, it is justified to presume that high-tech acquirers use more stocks as the evidence suggests.

Time variation exists in the use of stocks as a payment method in takeovers. Overall economic activity has been shown to boost the likelihood of using stock financing (See Taggart, 1977 and Marsh, 1982). Material from J.P. Morgan (2000) shows that European companies have used relatively more stocks towards the end of 90's.

There are also country-specific factors that affect to the choice of financing for transatlantic takeovers. Government restrictions and corporate taxation differs by countries as well as accounting standards and investor clienteles. Also US shareholders preferences might differ based on the country of the acquirer because of information frictions caused by market segmentation. The home bias towards home or close-to-home assets is well-documented phenomenon (See e.g. Tesar and Werner, 1995). Thus it is reasonable to suggest that the country of incorporation of the acquirer may have a relationship with the preference of the target to accept stocks as a payment. U.S. acquirers use more stocks in acquisitions than European companies (Cebenoyan et al., 1992). The finding is expected, and proves that the U.S. target shareholders prefer U.S. stocks as a method of payment

3.3.2 FINANCIAL FACTORS

Many company-specific financial variables have been hypothesized to increase or decrease the likelihood of stock financing. Martin (1996) finds that firms with good investment possibilities use relatively more stocks to finance their acquisitions. The investment opportunities were measured with market-to-book and historical sales growth. Also, the likelihood of stock financing increased with higher pre-acquisition market and acquiring firm stock returns. The use of stocks in his study decreased with acquirer's higher cash-holdings, with higher institutional shareholdings and in tender offers. Amihud et al. (1990) consider corporate control a major motive for the choice of financing. Corporate insiders who value control may prefer cash or debt financing to stock financing. Their empirical study finds evidence that companies with larger managerial ownership fraction in the acquiring firm are more likely to use cash financing in acquisitions.

Harford (1999) finds that cash-rich firms are more probable to make acquisitions. For the finding to be logical, the acquisition must be financed with cash, so the cash rich firms should be using more cash acquisitions. Martin (1996) uses also a measure of leverage to control for cash availability: The degree of financial flexibility of the bidding company may add a constraint to the use of cash financing. As well as value destroying in capital market perspective, stock financed acquisitions seem to deprive the acquiring firm's post-merger cash flow significantly. On the other hand, cash acquirers are able to improve the cash flow after the merger. (Gosh, 1997).

Information asymmetries are one of key drivers in the choice of financing in acquisitions. If managers of the acquiring firm are better informed than outside investors about the value of their firm, they will prefer stock financing of an acquisition when the firm's stock is believed to be overvalued (Myers and Majluf, 1984). Indeed, Loughran and Vihj (1997) find with their U.S. sample that firms completing cash tender offers earn 61.7 percent excess return whereas firms completing stock mergers earn negative excess return of -21.0 during a five-year period. The target shareholders did not earn significantly positive excess returns for receiving stock payment.

The measuring of over- or undervaluation is obviously a controversial issue. Amihud et al. (1990) state that "Empirical tests on the choice of investment financing as a function of informational asymmetry obviously require the use of proxies for largely unobservable variables." According to finance theory, the possibilities for over- or under-valuation are higher when future earnings are unpredictable or volatile. This is true for growth firms for which the value consists of mainly of expectations of future earnings. The U.S. high technology acquirers, often fast-growing, use more often stocks to finance their acquisitions (Alanen, 2001). However, we have to keep in mind that binary high-tech dummy is often correlating with other variables that increase the probability of making stock financed acquisitions, such as sales growth rate and market-to-book ratio.

Empirical evidence on tax motives in the acquisitions does not indicate a consistent relation between the means of financing and the various tax motives in the U.S.

acquisitions. (Amihud et al., 1990). High market-to-book ratios of a target company indicate large potential tax savings due to higher depreciations. However, low market-to-book ratios increase the probability of being acquired in cash relative to being acquired in exchange of securities, which does not support the hypothesis on tax motives for the choice of financing (Carleton et al., 1983). In addition Niden (1986) did not find a relation between the tax-paying circumstances of target shareholders and the form of financing. Overall, the theoretical frameworks for the choice of acquisition financing seem to be concentrating around four theories: Investment opportunities, information asymmetries, Jensen's (1986) free cash flow hypothesis and corporate control.

3.3.3 RISK SHARING HYPOTHESIS

Hansen (1987) models the choice of payment medium under the conditions of asymmetric information between the target and the bidder. If the bidder knows its value better than does the target, the bidder would finance the acquisition with stocks thus forcing the target to share in any post-acquisition revaluation effects. Martin (1996) tests this theory with proxies, which include relative transaction size. He states that the problem with asymmetric information should be larger as the size of the target increases. Thus, if the target firm is a significant addition to the acquiring firm, the acquirer will be more likely to use stocks. However, he does not find significant support to the hypothesis.

3.4 TRANSATLANTIC M&A MECHANICS

Cross-border M&As are naturally more complicated than domestic, as there are two jurisdictions involved. For transatlantic M&As, also European Union is active in developing its regulation in addition to individual countries. In this section legal, accounting and tax issues for transatlantic M&As are discussed. Also the benefits of an ADR issue for the transactions are presented. This section does not advance any empirical variables, but it provides valuable information on the mechanics of the transatlantic mechanics and enables the reader to better evaluate my conclusions.

3.4.1 LEGAL AND REGULATORY FRAMEWORK

Legal and regulatory bodies lay restrictions on the transatlantic M&A activity. For European acquirer, the regulatory restrictions are laid on the behalf of the country of incorporation, European Union and U.S. authorities. However, if the U.S. target company lacks operations in Europe, the U.S. regulatory approvals require often more emphasis.

A US acquisition by a non-US company will encounter relatively few regulatory constraints. Regulatory approval is required generally only in acquisitions that are considered to possibly to impair the U.S. national security, which generally means acquisitions involving certain industries. These industries include defense, financing, transportation and broadcasting. Antitrust law requires disclosing pre-merger notification to U.S. authorities for acquisitions above certain size criterion. On the other hand, the purchase and sale of securities are strictly regulated by both federal and state governments and SEC. (Bendaniel and Rosenbloom, 1998, p.152-154)

3.4.2 TAXES IN TRANSATLANTIC MERGERS AND ACQUISITIONS

Contrary to accounting conventions, which should not have an effect on the value of the combined entity, the tax ruling can be of decisive importance in transatlantic M&As. First it is good to acknowledge that accounting and taxation do not have formal causality (Kramer-Pope, p. 7:11). However, normally M&As that are taxed are done with purchase accounting and tax-free acquisitions are tried to be structured so that pooling-accounting can be used.

For the acquisitions of U.S. companies, there are two main forms of transaction: Tax-free reorganization and taxable purchase. The tax-free reorganization is what we traditionally consider as a merger, where generally neither newly merged firm nor its shareholders recognize a taxable gain or loss in the transaction. The shareholders although carry over the tax basis in the merged company stocks. The majority of the consideration must be stocks, which can also be ADRs. In a taxable purchase target company stocks or assets are purchased with some consideration. The consideration is usually cash or debt obligations, but sometimes stocks or warrants. In such transaction acquiring company, its shareholders or possibly both recognize a taxable gain or loss.

The acquiring company accounts the transaction as a purchase. (Bendaniel and Rosenbloom, 1998, p.152-154)

Weston et al (1998, p. 61) start the discussion with an simplification: "Basic (U.S.) tax rule is simple: If the merger or tender offer involves the stock of one company for the stock of the other, it is a non-taxable transaction. If cash or debt is used, it is a taxable transaction". For cross-border M&A, the tax issues can be very complicated. The Internal Revenue Code distincts three types of tax-free reorganizations. Type A is a statutory merger or consolidation. In merger target firm shareholders exchange their stocks to the stocks of the acquirer. In consolidations, both target and acquirer turn in their stocks and receive stocks of the newly created business entity. Type B are similarly stock-for-stock exchanges. Type C transactions are stock-for assets with the requirement that at least 80% of the target fair market value is acquired. In general, type A and B use pooling of interest method in accounting and type C purchase accounting. (Weston et al., 1998, p.61)

U.S. acquisitions by foreign companies are more commonly conducted with a forward triangular merger. In this transaction form a U.S. target company is merged into a newly created US shell subsidiary of foreign company. This form of merger requires only that the majority of the consideration is stocks, which can be non-voting stocks and the stocks of the parent. For the extent that stocks are offered, the merger is tax-free. The target firm may remain in existence if the stock of the parent is used in the acquisition. If a transaction is "tax-free" the taxes are deferred until the sales of the stocks. (Bendaniel and Rosenbloom, 1998, p.154)

The taxation of the transatlantic M&As differs in European countries, as there is no unionized European M&A tax laws. The main question concerning taxes for a European acquirer is whether pooling or purchase method is applicable, how the goodwill is written off in purchase accounting, the resulting depreciations and the tax deductibility of the depreciations. Lee and Choi (1992) describe these differences and hypothesize that the tax treatment differentiation by countries explains the premium offered in acquisitions.

3.4.3 TRANSATLANTIC M&A ACCOUNTING METHODS

The U.S. M&A accounting methods dictate much of the accounting effects of transatlantic mergers and acquisitions. Although the accounting choice for M&As should theoretically be irrelevant in efficient capital markets, it seems that the managers considers the choice important (Berkley and Myers, 2000, p. 957). For the understanding of transatlantic M&A mechanics the basic knowledge of the accounting treatment choices is relevant.

IAS, US and UK GAAP recognize two main accounting methods, pooling of interest and purchase method. However, in practice US poolings are more common than under IAS or UK GAAP. Nevertheless, Financial Accounting Standards Board (FASB) is going to prohibit the pooling method in the US (PriceWaterhouseCoopers, 2000).

US GAAP require pooling if certain requirements are met. If they are not met, then purchase accounting is required. One important requirement for pooling is "The acquiring company must issue only common stock in exchange for substantially all the voting common stock of the other company" (Weston et al 1998, p. 45). They also note that in purchase accounting, an acquiring corporation should allocate the cost of an acquired company to the assets acquired and liabilities assumed. The goodwill account is required to be written off, for financial reporting, in less than 40 years.

Purchase method is much more common, but when analyzing the premiums it seems that firms are willing to pay to avoid using the purchase method (Davis, 1996 in Weston et al 1998, p.56). The management compensation system also has its effect on the choice. Elaborating the hypothesis, Aboody (2000) finds that in acquisitions with large step-ups to targets' net assets, CEOs with earnings-based compensation are more likely to choose pooling and avoid the earnings 'penalty' associated with purchases.

The transatlantic M&A accounting is complicated. For example, some countries, including France and Germany, do not recognize the pooling of interest method as an acceptable form. Consequently, some business combinations accounted as poolings in the U.S. may be treated as purchases in other countries, and vice versa. (Bendaniel

and Rosenbloom, 1998, p.101). As a consequence, the depreciations of the acquiring European company may change depending on the country of incorporation. As the taxes may be reduced with depreciations, the tax consequences of an acquisition differ from a country to another.

3.4.4 ADRS AS ACQUISITION CURRENCY IN TRANSATLANTIC M&AS

ADRs are often more convenient method of payment to U.S. shareholders than stocks listed only in Europe. Also, as the number of ADRs can fluctuate, the European listed common shares can be transferred as ADRs, which gives the shareholders the choice where to hold the stocks. There are many benefits for ADR issues over only European listed stocks in U.S. M&As, which are referred next.

The holding of acquirer's stocks may be inconvenient in some countries for U.S. shareholders. In certain countries there are regulations limiting foreign ownership (South Korea), risky settlement procedures (Russia, Egypt, Pakistan), restrictions on foreign currency exchange (Chile), difficulties in the reclamation of local taxes (Italy) and transfer taxes due on the purchase of local stocks (Brazil, U.K., Japan). In such markets, investors may opt to trade the ADRs in New York given the dollar-denominated executions, U.S. settlement procedures and the avoidance of transfer taxes. (J.P. Morgan, 2000)

The material from J.P. Morgan (2000) claims that the pre-acquisition ADR program has contributed to the success of many transactions. Bendaniel and Rosenbloom (1998, p.36) state that non-U.S. buyers have severe limitations to use stocks unless they have common shares or ADRs listed in the U.S. or the target is willing to accept stocks traded on a foreign exchange. The transaction may be formed as a tax-free transaction to U.S. target shareholders with ADRs (Bendaniel and Rosenbloom, 1998, p.154).

If the transaction is structured as a stock swap merger between U.S. target and European acquirer, it results in a pool of new ADR investors. This may increase the liquidity of ADR program, as the ADR free float increases. These new ADR holders have same voting rights than with common shares, but the process is not as

straightforward. The holder of ADRs can give directions to the depositary for voting. Naturally, takeover financed with ADRs avoid taking debt or paying with cash (J.P. Morgan, 2000).

PART III: EMPIRICAL STUDY

The purpose of the empirical part is to explore the relationship between cross-listing and M&A activity. Specifically, I study if the cross-listing of a European company to the U.S. is followed by increased M&A activity. To study this relationship reliably, I include many control variables to my model predicting bidder from the company characteristics. The research methodology is comparable to the one in the Harford's study (1999), in which he studies the effect of corporate cash reserves to the probability to become a bidder. The study also gives insight to the common variables for bidding companies. Also Palepu's paper (1986) on takeover likelihood modeling with logit model has given methodological guidance to this thesis. In addition I describe the method of payment in these transactions and test my hypothesis that the cross-listing increases the use of stocks as a method of payment.

4 HYPOTHESES

This chapter presents hypotheses on the relation between transatlantic cross-listings and M&A activity. The hypotheses are commonly presented in the literature in various forms, but since the relation has not been tested, the hypotheses are a result of synthesis on the existing finance literature and the view of practitioners. The literature review presents many hypotheses for the motives for cross-listings, but there are indications that the M&A activity could be one of the main reasons.

For example, the time zone hypothesis predicts that the liquidity for the stocks of the most European cross-listing companies remains low. Also the U.S. investors seem to be increasingly accessing directly the European Exchanges, which reduces the benefits on the cost of capital. This all indicates that the cross-listing decision is affected by a more strategic reason for European firms: a wish to obtain a currency for transatlantic M&As. On the other hand, the cross-listing may be resulting on the strategic expansion to the U.S. market with acquisitions, and the increased

commitment to the market cause the cross-listing. Thus I formulate my research problem around the following question:

Research problem: Is there a relation between the cross-listings of European companies to the U.S. and the M&A behavior in the market?

The change in M&A behavior is tested with five hypotheses that are studied in two main sets, the first set exploring the effect of cross-listing on M&A activity in general and the other set investigating the effect on the method of payment. If the differences are significant I can reasonably that the hypothesized relation holds. I can also investigate the causality of this relationship by examining the lead-lag relation of the U.S. cross-listings and M&As in the market.

Hypotheses on cross-listings and acquiring likelihood

The first two hypotheses relate to cross-listings and acquiring likelihood. For these hypotheses, all successful acquisitions are included, whether the payment method is known or not

The first hypothesis is explorative. The literature review conveys the view that the companies cross-list to receive a currency to participate in mergers, but the most of the US-bounded cross-border takeovers are however cash acquisition (Cebenoyan et al., 1992). Therefore it is interesting to know if the cross-listing increases the acquisitions per se, so that the increased possibilities to finance acquisitions make the companies to acquire more than before cross-listing. The internationalization of companies is proposed to happen in stages as is summarized by Buckley and Casson (1998). Therefore it can be expected that if the cross-listing is occurring during the period of international expansion, the M&A activity could be abnormally high around the cross-listing year. So my first hypothesis states that the likelihood of acquisitions in general is increased after the cross-listing:

Hypothesis A1: Cross-listing European companies are more likely to acquire U.S. companies after the cross-listing than before

The second hypothesis concerns the M&A activity of the cross-listed firms against size- and industry-matched firms. The literature suggests that cross-listed companies

have distinctive characteristics compared to other similar firms (Pagano et al., 1999). Cross-listed firms are more outward-oriented in their operations and have for example higher exports per sales than the comparable firms. If the cross-listed firms are more internationally active, I hypothesize that the cross-listed firms are more likely to enter into U.S. acquisitions than the matching pair firms. I also evaluate if the tendency to acquire has some relation to the time from cross-listing.

Hypothesis A2: Cross-listing European companies are more likely to acquire U.S. companies than the matching pair firms

Hypotheses on cross-listings and the method of payment

The U.S. target company managers and shareholders face a difficult task in the M&A negotiations. If the hypothesis is true that acquirers offer equity when they consider it overvalued (Myers and Majluf, 1984), the U.S. managers can understandably be suspicious if a foreign company offers stock payment. The information asymmetries between acquirer insiders and U.S. target shareholders over the intrinsic value of acquirer's equity can be substantially high. These information asymmetries are higher in transatlantic transactions than when both acquirer and target are U.S. firms, since the disclosure standards of IAS and European accounting systems are lower than with U.S. GAAP. In addition to information asymmetries, the holding of European-listed stocks might simply be inconvenient for the U.S. shareholders. In uncertain situations, cash payment erases problems related to the asymmetries of information.

For above reasons, I hypothesize that cross-listing allows the increased use of equity as a method of payment. The equity is a preferred method of payment in some situations, for example for companies with good investment opportunities (Martin, 1996). I hypothesize that consequently the European firms cross-list in the U.S. in order to be able to use stocks to finance acquisitions. Next I study this general hypothesis with three separate hypotheses on the method of payment.

The third hypothesis is directly suggested by the literature. If the companies actually cross-list in order to be able to receive a viable M&A currency, then the acquisitions following the cross-listing should be more likely financed with stocks. This should be seen as a peak in the ratio of acquisitions financed with stocks after the cross-listing. Thus I hypothesize the following:

Hypothesis B1: Cross-listing European companies are more likely to use stocks in the acquisitions after the cross-listing than before

If a cross-listing really enhances the possibilities to make equity-financed acquisitions, then the difference in the use of stock financing in acquisitions between cross-listed and European-listed firms should be clear. In order to cross-listing to have any logical connection with the acquisitions, the stocks of cross-listed companies should be more attractive method of payment to U.S. target shareholders than the stocks of only domestic-listed companies. Therefore I make the following hypothesis:

Hypothesis B2: Cross-listing European companies are more likely to use stocks in the acquisitions than the matching pair firms

Finally, my fifth hypothesis examines more closely the acquisitions financed with at least partly with stocks. I hypothesize that stocks of a cross-listed European company are better accepted as a payment method in acquisitions than without cross-listing. The stocks of the European company become more convenient to the U.S. shareholders and information asymmetries - of the value of the acquirer - may be decreased between to the U.S. target and the acquirer. If this holds, then the proportion of equity to cash in an acquisition payment should be higher for the cross-listed companies. In uncertain situation the target managers are likely to demand proportionally more cash from an acquirer listed only in Europe, as cash payment removes all inconvenience and information asymmetries. In short, my fifth hypothesis state that:

Hypothesis B3: In the acquisitions with equity component, cross-listed European companies use proportionally more stocks than the matching pair firms

The hypothesis formed above and the research problem is presented in the next table:

Table 4: Research problem and the hypotheses of the thesis

Research problem

Is there a relation between the cross-listings of European companies to the U.S. and the M&A behavior in the market?

Hypotheses on cross-listings and acquiring likelihood

- A1:** Cross-listing European companies are more likely to acquire U.S. companies after the cross-listing than before
- A2:** Cross-listing European companies are more likely to acquire U.S. companies than the matching pair firms

Hypotheses on cross-listings and the method of payment

- B1:** Cross-listing European companies are more likely to use stocks in the acquisitions after the cross-listing than before
- B2:** Cross-listing European companies are more likely to use stocks in the acquisitions than the matching pair firms
- B3:** In the acquisitions with equity component, cross-listed European companies use proportionally more stocks than the matching pair firms
-

5 DATA AND METHODOLOGY

5.1 DATA

Overview of the data

The data in this thesis is combined from several sources. Explicitly, the data on cross-listings is received from the U.S. exchanges and from Securities Data Corporation (SDC) databases for U.S., International and European listings. The cross-listing data is checked from company web pages and web pages of U.S. and European exchanges. The cross-listed companies are included between 1.1.1980 and 31.12.2000. The information on mergers and acquisitions is collected from SDC U.S. Mergers & Acquisitions database. The M&A data in this thesis consist of transactions that were announced between 1.1.1996 and 31.12.2000. To control for company-specific variables, information on financial statements and company SIC codes are received

from Worldscope database, May 2001 version. I gathered the information on key ratios and financial statement items from the financial statements for years between 1992 and 1999 in order to be able to average the information over longer period of time. This diverse information is then manually combined into one database, which should be unique, as there does not seem to be published study on the subject.

Sample selection procedure for cross-listed firms

Initial U.S. listings of foreign companies are received directly from Nasdaq and NYSE. In addition delisted companies are added to the sample. The lists of delisted companies are available in the exchanges, and some of the listings in SDC were later delisted. In order to add more companies and to crosscheck the data, I collected a database of listings that have an U.S. component from SDC database. I checked separately the U.S., European continental and international listings. Some of the listings found were same than the ones provided by the exchanges, but many new were added.

The main criteria consist of five points. First the company must be incorporated in one of the 17 countries in the study, namely the current European Union members and Norway and Switzerland (See Table 10 for complete list). This excludes all tax havens such as Netherland Antilles. Secondly the listing must be at least simultaneous listing, so that the company is listed or lists to some European exchange. Some companies have listed on a European exchange after a U.S. IPO and were thus excluded. Pagano et al. (1999) also used this criterion. The European exchange can be outside the country of incorporation, for example some of the non-German high-tech IPOs were listed simultaneously on Neuer Markt and Nasdaq and were approved to the sample.

Thirdly the financial institutions were also excluded, so all companies that had first digit SIC code beginning with six were rejected. I also rejected all OTC-listings, which did not later listed on the main U.S. exchanges. Some of the cross-listers listed first on OTC and later changed to the main list of NYSE or Nasdaq. These issues were included, and the original IPO date was defined to be the OTC listing date, as is identified in SDC and by the exchanges. Finally, the company must have been cross-listed during 1.1.1980 and 30.12.2000. The companies that have been cross-listed

before the 80's have been rejected, since many of these companies are global in their characteristics, and can perhaps be characterized more as multinationals than European companies. Also the effect of cross-listing to the M&A activity for these firms is vague and may distort the results.

In order to identify a cross-listing from direct listing I analyzed different sources. I used web pages of the U.S. and European exchanges, companies' web pages and information on SDC, Datastream and Worldscope databases to create manually an accurate list of cross-listing companies. The main criterion was that if there was no evidence on the listing on Europe prior the cross-listing, the company was rejected. If the company had a market price available in Worldscope or Datastream databases at the end of the year (t-1) before cross-listing, it was naturally classified as a cross-listed company. The original listings in Europe were looked after from SDC's database for European continental, international and UK issues. If the listing synopsis had a mentioning of simultaneous European offering or if the listing was an U.S. IPO but not the original IPO, then the company was classified as a cross-lister. I also checked the information on the home pages of the companies. The companies with common equity offering (Not ADR or ADS) were investigated with even further care, since most of the direct listings are common equity listings. However, common equity listings were not outright rejected if the other criteria were fulfilled. This enabled me to include the most of New York share issues.

My methodology requires that a company is either included or removed for the whole calendar year. As I have cross-listed companies and matching pairs that are changed or removed during the time frame of the study, I constructed a database of the firm years included in the study. The main criterion was that to be included for a certain year, the company must be listed in at least one European exchange at the end of the year (t-1). This excludes all simultaneous IPOs and cross-listings for the IPO year. Thus IPOs in the year 2000 were excluded. I employed two samples of cross-listed firms in this study. First includes the firm years before and after the cross-listing, resulting in 834 firm years. For the study with the matching pairs the firm years before the cross-listing were excluded. The US cross-listing date was crosschecked between SDC and the Exchanges. If there was unexplained difference between the dates, the information from the exchanges was selected.

Table 5: Sample description of cross-listed companies

The table describes the sample of cross-listed European companies that have been cross-listed during 1.1.1980 and 31.12.2000. Firms is number of companies in each step and firm years is the number of firm years included in the analysis. Companies that listed directly to the U.S. without prior European listing are excluded. Also financial institutions, OTC-listings and the companies without sufficient information were excluded. The analysis of cross-listed firms before and after cross-listing includes all firm years where the company is listed in Europe at the end of the year (t-1). In addition, the analysis with matching pair firms excludes the firm years before cross-listing.

Cross-listed companies		
	Firms	Firm years
US cross-listings identified	354	
Classified as direct listing	49	
Financial institutions	42	
Listed before the year 1980	9	
Only OTC-listed without later Exchange listing	13	
U.S. cross-listing year unknown or ambiguous	16	
In registration	1	
Initial sample	224	
IPO in 2000	18	
Information unavailable	10	
 The analysis of cross-listed firms before and after the cross-listing	 196	 834
 The analysis of cross-listed firms with matching pair firms	 196	 678

M&A sample

The empirical part of this thesis covers completed M&As of the sample companies for the period between 1.1.1996 and 31.12.2000. The rationale for the period is that information on financial statements is poorly available for European companies for the pre-1996 period in Worldscope database. The M&As were matched with the firms with multiple measures, such as name or parts of name of acquirer, acquirer immediate and ultimate parent. Also ticker symbol was used in the matching. The company CUSIP-code was not available in Worldscope database, so the code could not be used in matching. Every data point was manually checked to be accurate.

The criteria was that the company must be in the sample in the acquisition year, the acquisition must be completed and the acquirer must have acquired a majority interest of the company, owning 50 % or more after the transaction.

The next table shows the sample of M&As in my thesis. I have two separate samples in the study. From both samples I exclude all takeovers where the company was not listed in Europe at the end of the year (t-1), thus removing takeovers by private companies and IPO companies. The first sample consists of successful takeovers by cross-listed firms, which were announced between 1.1.1996 and 31.12.2000. The second sample consists analogously of successful M&As by cross-listed and matching pair firms. However, this second sample of M&As excludes all takeovers announced before the cross-listing. If the M&As of a cross-listed firm are excluded for a certain year, also the M&As by the matching pair firm are excluded for that year. This ensures that I have for each year a same number of cross-listed and matching pair firms in my data set. The matching pair firms are industry- and size-matched European firms that are included in the study for the same years than their cross-listed pairs. The matching procedure is explained in section 5.2.4. As I have two separate samples, the number of firm years and M&As in the study varies with the analysis. The following table shows the number of M&As included in the thesis.

Table 6: The mergers & acquisitions sample

The table shows the sample of successful takeovers of U.S. companies by European companies. Panel A has takeovers for cross-listed companies, B for matching pairs and C for these two together. The sample time period includes M&As that were announced between 1.1.1996 and 31.12.2000. M&A transactions are obtained from US Mergers & Acquisitions database of Securities Data Corporation (SDC). The M&A sample exclude all acquisitions that were not acquisitions of majority interest, non-successful and acquisitions announced before the company was in the sample. Thus I excluded all acquisitions where the company was not listed in Europe at the end of the year (t-1) and where the acquisition was done by matching pair before the cross-listing of the pair company. I have two main samples: First is 383 successful M&As for firms before and after cross-listing. The second is 470 successful M&As for cross-listing firms and matching pairs excluding the takeovers before cross-listing. If the cross-listed company is excluded for a certain year, also the matching pair is excluded. In the analysis of acquiring likelihood successful M&As are included. In the analysis of the method of payment all M&As with unknown method of payment are excluded.

	Panel A: Cross-listed		Panel B: Matching pairs		Panel C: Total sample	
	Frequency	Percent	Frequency	Percent	Frequency	Percent
Acquisitions between 1996 and 2000	543	64.5%	299	35.5%	842	100.0%
Acquisitions excluded	160	19.0%	153	18.2%	313	37.2%
Acquisitions included in the study	383	45.5%	146	17.3%	529	62.8%
Acquisitions in the analysis of cross-listers before and after cross-listing	383	100.0%			383	100.0%
Of which payment unknown	145	37.9%			145	37.9%
Analysis of the method of payment	238	62.1%			238	62.1%
Acquisitions in the analysis with matching pairs (after cross-listing)	324	68.9%	146	31.1%	470	100.0%
Of which payment unknown	128	27.2%	55	11.7%	183	38.9%
Analysis of the method of payment	196	41.7%	91	19.4%	287	61.1%

The choice to include only completed acquisitions seems to be justified for my thesis. Only completed acquisitions show the real commitment and actual transaction, since SDC database includes also rumored and withdrawn transactions. Also, since I do not measure abnormal returns, the ex post selection bias (see e.g. Huang and Walkling, 1997) related to announcement period stock market returns is irrelevant for this study. Following the same reasoning, I did not place limitations on the relative size of the transaction or on the public status of the target, as the both limitations are only needed in the objective measurement of cumulative abnormal returns.

For the testing of the hypotheses on the method of payment, I excluded all M&As that did not have information on the type of payment. This reduces the sample size, but I cannot presume that the missing information on the type of payment indicates cash payment.

The financial information

I use relevant financial information to control for company-specific factors in the second sample with the matching pair firms. The financial variables that I include to the empirical part require some adjustments for several reasons. First of all, price-to-earnings is discontinuous when earnings approach to zero and economically meaningless when below zero. Return on equity is also discontinuous when equity approaches to zero. Negative equity for few firm years make return on equity unavailable for some companies. Extreme care is taken to be able to include all firms, since the matching pair methodology is vulnerable to missing observations if there are as a result more observations in another group. Only minor data modification is done, as can be viewed from the next two paragraphs.

The following adjustments are done for the financial key ratios if the value of data point has questionable economic sense or was a clear outlier. Unavailable values are left untouched. Price-to-earnings is adjusted to 0.1 if negative and to 200 if over 200. Market-to-book is capped to 50, and all companies that have negative market-to-book because of negative equity are given market-to-book of 50. Return on equity is limited to a range between -300 % and +300%.

Most of the financial variables are averaged over the years (t-4) through (t-1) to remove yearly fluctuations. After averaging the values some figures were unavailable. The missing key ratios were calculated from the financial statements items, where available. If the value of ROE is required for the analysis, the yearly ROE is calculated as the earnings per share divided by book equity per share. For 29 out of 1356 (2.1%) company years the calculation of ROE was not possible because of negative equity. In such case the mean value of all available company years was used. If price-to-earnings is required for the analysis, the ratio was calculated as the year-end stock price divided by earnings per shares. For 29 out of 1356 (2.1%) company years sales growth was not available and was replaced with the mean value of all available company years. Similar procedure was used for 1 missing value of leverage. Missing values of research expenses per sales was not replaced but another test specification was used excluding all missing observations. The most important hypotheses were tested also by excluding the observations with missing variables, and the changes were insignificant.

5.2 METHODOLOGY

5.2.1 OVERVIEW OF METHODOLOGY

Five main analyses are presented in this thesis, one for each hypothesis. First a simple analysis is made on the cross-listing companies to examine the changes in M&A activity before and after cross-listing. Then a more detailed analysis is presented for cross-listed companies that have financial information available, together with matching pair firms. After that I begin to analyze the payment method in these takeovers and explore the effect of cross-listing on it, both with and without matching firms. For all analyses, the company must be listed in a European exchange at the end of year (t-1), which excludes all IPOs from the analysis. I present the methodology for each hypothesis in the following two sections, but the explanations of the models used and the independent variables are presented in own sections.

5.2.2 THE ANALYSIS OF THE ACQUIRING LIKELIHOOD

First analysis includes M&As of cross-listing companies, relative to year of cross-listing. All IPO-companies are excluded from the study for the IPO year. To be included in the analysis, the company must have market listing at the end of (t-1). No availability of financial information is required for this analysis.

Second analysis is the main analysis of the acquiring likelihood. The requirements for data availability are tighter than in first analysis. The company must have the majority of the financial information available and market capitalization at the end of the year (t-1) to be included in the sample. Unfortunately I had to exclude the transactions before cross-listing for the main analysis. The number of available matching firms before the cross-listing was poor. If the match would be missing, also the cross-listed company should have been excluded. Also the forward-looking cross-listing dummies are rare in my data. Since M&A data begins in the year 1996, the first year where forward-looking cross-listing dummy (t+1) would receive value 1 would be year 1997. This all led to very poor statistical inference for forward-looking cross-listing dummies with the matching pair firms, and thus the main analysis was conducted for M&As from cross-listing year onwards.

To test these two hypotheses I employ logit model. In the model the dependent variable is binomial. The dependent variable receives value 1 if a European company (i) has acquired a majority interest in an US company during the year (t). If no acquisition has taken place, the variable receives value 0. The independent variables consist of a set of control variables that increase or decrease the probability of an acquisition (see section 5.3.1 for the complete list of variables). The use of the logit model is referred in the section 5.2.5.

5.2.3 THE ANALYSIS OF THE METHOD OF PAYMENT

Third analysis introduces the effect of cross-listing to the method of payment to the M&As studied in the first analysis. The analysis includes M&As of cross-listing companies before and after cross-listing. As a requirement the method of payment must be known.

For the third analysis of payment method I employ logit analysis. In the logit model the dependent variable is binomial. The dependent variable receives value 1 if the European company (i) has used stocks as a method of payment in the acquisition of a majority interest in an US company during the year (t). If no stocks are used as payment method the variable receives value 0.

The fourth analysis includes the transactions studied in the second analysis of acquiring likelihood, with matching pair firms. The information on the payment method must be available at the SDC database. For the analysis of payment method I employ logit analysis. In the logit model the dependent variable is binomial. The dependent variable receives value 1 if the European company (i) has used stocks as a method of payment in the acquisition of a majority interest in an US company during the year (t). If no stocks are used as the method of payment, the variable receives value 0.

The fifth analysis analyses the method of payment of cross-listed firms and matching pairs more closely. I study the effect of cross-listing to the proportional use of stocks and cash in acquisitions with equity component. In other words, I test if more stocks are used to finance the transaction.

For the analysis of payment method I employ t-test for the differences in means and multinomial logit analysis. First I test if the mean percent of stocks used to finance the transaction is higher for cross-listers. Then I use multinomial logit regression probability model to test if the acquiring companies have used more stocks in the acquisitions than matching pairs. For the dependent variable, I employ the same definition for discrete payment type than in Martin's (1996) study. The method of payment in successful acquisition is defined as follows: Dependent variable is 0 if the acquisition has been paid in some combination of cash and "other" as defined by SDC database. Other refers often to the assumption of liabilities. Dependent variable is 1 if the payment is hybrid: some percentage of acquisition has been paid in stocks and some in the other two forms. Dependent variable is 2 if 100% of the acquisition has been paid in stocks, or pure stock swap merger has taken place.

For testing purposes, the use of multinomial dependent variable is substantiated, as the payment methods are so unevenly divided between the three groups (See Table 23 in page 94). The transforming of payment method into continuous variable would require fewer acquisitions financed with cash and stock and more hybrid acquisitions to create a more suitable distribution for statistical tests.

5.2.4 THE MATCHING PAIR FIRM METHODOLOGY

In this study I employ matching firm methodology, in which for each cross-listed firm a matching pair firm is found for each year that the company remains cross-listed. The matching firm procedure is in general found to be superior methodology to using reference portfolio such as market index in measuring abnormal stocks (Barber and Lyon, 1997). Most of the matching procedures I studied are related to performance measurement and no study with a matching procedure for modeling international bidding likelihood was found.

The matching firm procedure in this thesis is analogous to the one employed by Spiess and Affleck-Graves (1995) in their study for SEO underperformance. Their methodology produces size- and industry matched firms. Ritter (1991) used the size- and industry-matching in his study for IPO underpricing. Later Loughran and Ritter (1995) used only size as matching criterion. In all of these studies market value of equity capital is used to measure the size of a company. In many papers matching procedures focus on finding size- and market-to-book matches (See e.g. Brav et al, 2000 and Barber and Lyon, 1997). However, I believe that for predicting takeover likelihood, an industry matching is more important than market-to-book matching. For performance measurement it is essential to match for market-to-book to control for risk characteristics that are not represented in this study. Also, the M&A activity is hypothesized to be strongly industry-related.

The matching procedure is as follows. The companies incorporated in the 17 European countries are obtained from Worldscope database between 1996 and 1999. All financial institutions are excluded from the study, so all companies that have 1-digit SIC code beginning with 6 are excluded. The matching is done at year-end (t-1) from cross-listing. For example, if a company has cross-listed in 1998, then the

matching is done at the market capitalization of year-end 1997. To avoid forward-looking bias and survivorship bias the companies that will cross-list or delist during the sample period are allowed to be selected as matching pairs.

Within each three-digit SIC code the companies are sorted by market capitalization in USD millions. For each cross-listed firm the company with next higher market capitalization is selected as a matching pair. If the next largest firm is currently cross-listed or matching pair, then the next largest is selected. If no company with larger market capitalization is found, then the closest within three-digit SIC codes is selected. If the procedure does not produce a match that has at least 5 % of the market capitalization of the cross-listed company, then the same matching procedure is done within same 2-digit SIC codes and ultimately within 1-digit SIC code.

To be included in the sample, the company must have market capitalization and most of financial information available at the end of the year ($t-1$). The market values are looked from Datastream if missing from Worldscope. The requirement for market capitalization at ($t-1$) excludes all private companies and IPO years. Another restriction for a matching pair is that it cannot be a cross-listed firm that is excluded from the sample – for example Unilever that was rejected because it has been listed in the U.S. already in the 50's.

The same matching pair is kept for the entire research period, if the matching pair does not cross-list or delist. If the matching pair company cross-lists, a new matching pair is selected at the year-end ($t-1$) and new cross-listed company is transferred in the cross-listed sample for the year (t). If the matching pair delists, then a new match is selected at year-end of (t). Analogously, if the cross-listing company is delisted during year (t), it is removed from the sample at the year-end (t). The logit model that I am using in this thesis does not allow for removing or changing a firm during a calendar year, so all observations are considered as full firm-years or removed. Next I move to describe more closely the models employed to test the five hypotheses.

5.2.5 DESCRIPTION OF THE MODELS

I employ logit and multinomial logit models in my analysis. I briefly introduce the methodology in this section, and further explanations on the methodology can be found in Greene (1993, p. 635-681)

Explanation of the logit model

The logit model is used in two separate analyses, analysis for acquiring likelihood and analysis for payment method. The following paragraphs explain the logit model with an example for analysis of acquiring likelihood.

The aim is to predict P_{it} that is the probability that an announcement of successful takeover will take place during a calendar year. I write this as the probability of Y being 1, conditioned by X_{it}

$$P_{it} = E(Y = 1|X_{it}) = \frac{1}{1 + e^{-\beta X(i,t)}} = \frac{1}{1 + e^{-Z_{it}}} \quad (\text{Equation 1})$$

where

P_{it} = dependent variable, possibility that the company (i) has acquired an US firm during the year (t)

$Z_{it} = \beta X(i,t)$, a row vector of independent variables explaining the probability of a US acquisition. See 5.3.1 to the complete table of variables

If P_{it} is the probability that an acquisition will be made, then $(1-P_{it})$ is the probability that the acquisition will not take place. This can be written as

$$1 - P_{it} = \frac{1}{1 + e^{Z_{it}}} \quad (\text{Equation 2})$$

Now, the odds of announcing an acquisition, i.e. the probability that it will be announced to the probability that it will not, is thus

$$\frac{P_{it}}{1 - P_{it}} = \frac{1 + e^{Z_{it}}}{1 + e^{-Z_{it}}} = e^{Z_{it}} \quad (\text{Equation 3})$$

The natural logarithm of the odds of announcing an acquisition is

$$L_{it} = \ln\left(\frac{P_{it}}{1 - P_{it}}\right) = Z_{it} = \beta X(i, t) \quad (\text{Equation 4})$$

where L_{it} is called the logit.

Equation is estimated using iterative techniques, which generate maximum likelihood coefficients for regression coefficients. In practice the calculations are made with a computer program for econometric calculations, LIMDEP.

Explanation of the Multinomial Logit model

Multinomial logit is otherwise similar to logit model, but it is used with multiple discrete choices. The aim is to predict P_{it} that is the probability that the payment type in the acquisition will be of a certain discrete type. I write this as the probability of Y being j , conditioned by X_{it}

$$P_{it} = E(Y = j | X_{it}) = \frac{e^{-\beta_j X(i, t)}}{1 + \sum_{k=0}^J e^{-\beta_k X(i, t)}}, j = 0, 1, 2, \dots, J \quad (\text{Equation 5})$$

In this thesis I have three discrete values for dependent variable j in the analysis of the payment method. Firstly, ($j=0$) when no stocks are used to finance the acquisition. Similarly ($j=1$) when hybrid of stocks and cash is used. Finally ($j=2$) is denoted when only stocks are used to finance the acquisition.

Explanation of Pseudo- R^2

The accuracy of regular regression models is often measured with the coefficient of determination, R^2 , which shows how well the regression model predicts movements in the dependent variable. In regression models where the dependent variable is discrete

such as here, regular R^2 cannot be used, but a modified measure, pseudo- R^2 must be used. Judge et al. (1985, p.774) give the following formula for calculating pseudo- R^2 , the likelihood ratio index.

$$\rho^2 = 1 - \frac{L(\hat{\beta})}{L(\hat{\beta}^H)} \quad \text{(Equation 6)}$$

In the equation $L(\hat{\beta})$ is the log likelihood of the unconstrained model and $L(\hat{\beta}^H)$ is the log likelihood of the model defined by the null hypothesis. This measure is zero when $L(\hat{\beta}) = L(\hat{\beta}^H)$ and when the model is a perfect predictor $\rho^2 = 1$.

5.3 DESCRIPTION OF KEY VARIABLES

The list of variables is divided between general variables affecting all takeovers and variables relevant mainly to cross-border M&As. The variables are supported in the theory of Mergers & Acquisitions and international M&As. (See sections 3.1 and 3.2) Most of the variable specifications are from Harford's (1999) or Martin's (1996) studies. The names of the variables are in italic.

Referring to the literature review, I present the variables for my analyses in the following two sections. I test my hypotheses by investigating the significance of cross-listing dummies in the regressions, so the main interest is in these dummies. The cross-listing dummies are used to both in the analysis of acquiring likelihood and in the analysis of payment method. For a basic testing, a single cross-listing dummy is used, which receives value 1 if company cross-lists or is already cross-listed in year (t). The company must be listed in a European exchange at the end of the year (t-1).

For more advanced analysis, another specification is used, where cross-listing is divided into several dummies that receive value 1 during certain number of years before or after the cross-listing. I use 10 dummies for calendar years from (t-5) after the cross-listing to (t+4) before the cross-listing. For example, if a company has cross-listed in May 1995 the dummy cross-listing at (t-3) receives value 1 in year 1998 and value 0 otherwise. Dummies for cross-listings in year (t+1) to (t+4) denote for

calendar years before the cross-listing event, which I denote as forward-looking cross-listing dummies. Finally, if the company has been cross-listed more than 6 years, a separate dummy receives value 1. My M&A sample time period between 1996 and 2000 limits the forward-looking cross-listing dummy to $(t+4)$, as the earliest takeover may have occurred in the year 1996, four years before the cross-listing in year 2000.

5.3.1 DEFINITIONS OF THE VARIABLES IN THE ANALYSIS OF ACQUIRING LIKELIHOOD

Next the variables that have an effect on the likelihood of takeover of a U.S. company by a European company are described. Also the expected sign is given, positive meaning increased likelihood of acquiring. First the general variables for all M&As are introduced and then the variables specifically applicable to the international acquisitions are added. All data for the variables is from Worldscope database, May 2001 version, except for two variables. Exchange rates are from Datastream database and transaction value that is used to calculate the relative transaction size is from Securities Data Corporation (SDC) database for U.S. Mergers & Acquisitions.

Variables influencing the likelihood of all acquisitions

The next five theories introduce variables that have an influence on the likelihood of all acquisitions, both domestic and cross-border. The theories are i) industry disturbance hypothesis, ii) merger waves, iii) agency problems and free cash flow hypothesis, iv) efficiency theories and v) size of the company.

Industry disturbance hypothesis

Section 3.1.3 presented the theory that takeovers cluster in industries. To control this, *Industry dummies* are denoted as the first digit of the company SIC-code in Worldscope database. These dummies include SIC 1, SIC 3, SIC 4, SIC 5, SIC 7 and SIC 8. SIC 2 companies act as default, SIC 6 (financial institutions) are excluded and no SIC 9 companies are in the sample.

Merger waves

The merger waves cause time trend in the M&A activity, as section 3.1.4 examined. The effect of merger waves is controlled by incorporating four *yearly dummies* from

1997 to 2000. The default year is 1996. The expected sign is positive for years 1999 and 2000, as the empirical evidence shows a strong time trend (J.P. Morgan, 2000).

Agency problems and free cash flow hypothesis

The agency problems discussed in section 3.1.2 are proxied with four variables, which are defined as in Harford (1999). *Cash ratio* is the ratio of cash & equivalents to total assets at (t-1). In the study a more complex measure of cash deviation was used by incorporating an industry effect on the level of cash holdings. For a control variable, a regular cash ratio is suitable for this study. Following Harford (1999), the expected sign is positive.

Leverage is the ratio of book value of debt to book value of total assets, averaged over years (t-4) through (t-1). Lower leverage can cause more acquisitions since the acquisitions can be more easily financed with debt. Harford (1999) used the leverage but it was not significant with the US data. The expected sign is negative.

Price-to-earnings is the year-end stock price divided by earnings per share, averaged over years (t-4) through (t-1). Finally, another common variable is market-to-book. *Market-to-book* is the ratio of market value of equity to book value of equity, averaged over years (t-4) through (t-1). The expected sign is also positive. The interpretation of price-to-earnings and market-to-book is difficult, since high value can be interpreted to mean efficient management, high market valuation (and possible overvaluation) or just a presence of high level of intangible assets. However, high value is an indication of high level of information asymmetries between the management and investors and is thus a good variable to be included in the study. Following free cash flow hypothesis, the variable is expected to be positive. Harford (1999) used these variables with U.S. data, but received mixed results.

Efficiency theories

Efficient acquirers seem to acquire less efficient (see section 3.1.1). Acquirer efficiency is measured with variables that isolate the market valuations from the measurement of efficiency. In other words, accounting ratios are used. The *growth rate of the sales* is the average sales growth over years (t-4) through (t-1). Following Harford (1999), the expected sign is positive. *Return on equity* is the earnings per

share divided by book equity per share, averaged over years (t-4) through (t-1). Expected sign is positive.

Size of the company

Size is found to be significant in the earlier studies explaining acquiring likelihood, as I note in section 3.1.5. As cross-listed firms are often larger than matching pair firms, the effect of size must be controlled. *Size* is measured as natural logarithm of total assets in USD millions, measured at (t-1). Expected sign is positive. I selected the total assets instead of market capitalization to isolate the effect of size and valuation. Also Harford (1999) and Harris and Ravenscraft (1991) used logarithm of total assets in their studies.

Variables affecting the probability to become an acquirer company in international acquisitions

The next three theories introduce variables that have an influence particularly on the likelihood of cross-border transactions. The theories are i) country-specific factors, ii) technology and internalization theory and iii) exchange rates.

Country-specific factors

Country of incorporation should have strong relationship with the acquiring likelihood in cross-border M&As (See section 3.2.3). Originally 17 European countries were included in the study. Countries were grouped into four regions according to geopolitical and linguistic proximity. All countries in each regional group have related languages, except for Finland in Northern region. *Northern* includes Finland, Sweden, Norway and Denmark; *Central* includes Germany, Austria, Switzerland and the Netherlands; *Western* includes France, Belgium and Luxembourg; Dummy *Southern* includes Spain, Portugal, Italy and Greece. UK and Ireland act together as the default, and the region is expected to have higher M&A activity than other regions. The grouping was necessary for statistical tests, since some countries had too few observations. I also tested the relation between M&A activity and country of origin, and all countries within a group have high relatedness in takeover likelihood with the exemption of the Netherlands, which has higher takeover probability than the other countries in Central region. The information on the country of incorporation is from Worldscope database.

Technology and internalization theory

Section 3.2.1 presents a well-substantiated theory of international mergers & acquisition, internalization of intangible assets, which must be controlled thoroughly. Since intangible assets are hard to measure, two proxies are used to test the internalization theory: *Research expenses per sales* and *high-tech dummy*. All these measure the level of intangible assets and have positive signs.

Research expenses per sales is defined as the item in Worldscape database: Research and development expenses per net sales, and then averaged over years (t-4) through (t-1). The expected sign is positive. As information on research expenses is expected to be scarce, a separate dummy variable is used to proxy for the level of intangible assets: *High-tech dummy* includes several industries that can be considered high technology industries, defined as in Pagano et al. (1999) and described in appendix 1. The high-tech industries are defined with four-digit SIC code from the Worldscape database. The expected sign is positive.

Exchange rates

Finally, the studies referred in section 3.2.2 hypothesized that exchange rates cause variation in the M&A activity. I use the variable *exchange rates* to measure relative difference for each country against US dollar in each year, calculated as proposed by Harris and Ravenscraft (1991). Based on the home country of each company, I take the currency's average exchange rate (units of local currency per dollar) for the year-end values between 1992 and 1999. The exchange rate of currency in each year is then subtracted from the average and then divided by the average. As a result, I have a value of relative strength of each currency against U.S. dollar measured at (t-1). Positive (negative) values indicate the currency is strong (weak) relative to the U.S. dollar. The expected sign is positive.

Table 7: Variables explaining the takeover likelihood of a U.S. company by a European company

The following table presents the independent variables to explain the likelihood of a takeover where a European company acquires a U.S. corporation. Also variable definitions and expected sign are presented. Positive expected sign means increased takeover likelihood. All data for the variables is from Worldscope database, may 2001 version, except for the following variables: Exchange rates are from Datastream database and the data on cross-listing dummies is from the Exchanges and from the Securities Data Corporation (SDC) database.

Independent variables	Description	Expected sign
Financial indicators	Source: Worldscope and Datastream	
Cash ratio	%, book value of cash and short-term investments divided by total assets at the end of the year (t-1)	+
Leverage	%, book value of debt per book value of assets, averaged over years (t-4) through (t-1)	-
Price-to-earnings	year-end stock price divided by earnings per share, averaged over years (t-4) through (t-1)	+
Size	natural logarithm of total assets in USD millions, measured at the end of the year (t-1)	+
Market-to-book	the ratio of market value of equity to book value of equity, averaged over years (t-4) through (t-1).	+
Growth rate of sales	%, average sales growth over years (t-4) through (t-1)	+
Return on equity	%, the earnings per share divided by book equity per share, averaged over years (t-4) through (t-1)	+
Exchange rates	the deviation from the average exchange rate of local currency of each country against US dollar at (t-1)	+
Research expenses per sales	%, research and development expenses per net sales, averaged over years (t-4) to (t-1).	+
Cross-listing dummies	Source: Exchanges and SDC database	
Cross-listing 6 or more years ago	1 if Company has been cross-listed in the U.S. for more than 5 years	+
Cross-listing at year (t-5)	1 if Company has cross-listed in year (t-5)	+
Cross-listing at year (t-4)	1 if Company has cross-listed in year (t-4)	+
Cross-listing at year (t-3)	1 if Company has cross-listed in year (t-3)	+
Cross-listing at year (t-2)	1 if Company has cross-listed in year (t-2)	+
Cross-listing at year (t-1)	1 if Company has cross-listed in year (t-1)	+
Cross-listing at year (t)	1 if Company cross-lists in year (t)	+
Company is cross-listed at year (t)	1 if Company cross-lists or is already cross-listed in year (t)	+
Industry dummies	Source: Worldscope	
1-digit SIC code 1	1 if 1-digit SIC code is 1	
1-digit SIC code 3	1 if 1-digit SIC code is 1	
1-digit SIC code 4	1 if 1-digit SIC code is 1	
1-digit SIC code 5	1 if 1-digit SIC code is 1	
1-digit SIC code 7	1 if 1-digit SIC code is 1	
1-digit SIC code 8	1 if 1-digit SIC code is 1	
High-tech dummy	1 if 4-digit SIC code is same as defined in appendix 1	+
Regional dummies	Source: Worldscope	
Central Europe	1 for Germany, Austria, Switzerland and the Netherlands	
Northern Europe	1 for Finland, Sweden, Norway and Denmark	
Western Europe	1 for France, Belgium and Luxembourg	
Southern Europe	1 for includes Spain, Portugal, Italy and Greece	
Year dummies		
Year 1997	1 for M&As in year 1997	
Year 1998	1 for M&As in year 1998	
Year 1999	1 for M&As in year 1999	+
Year 2000	1 for M&As in year 2000	+

5.3.2 VARIABLES IN THE ANALYSIS OF THE METHOD OF PAYMENT

Next the variables that have an effect on the likelihood of using stocks as a method of payment are introduced. Also the expected sign is given. Positive expected sign means increased likelihood to use equity financing in acquisitions.

Industry disturbance, merger waves and country-specific factors

The literature reviewed in Section 3.3.1 suggested that industry disturbance, merger waves and country-specific factors cause difference in the use of stocks to finance takeovers. These effects are controlled with the following variables. *Industry dummies* are denoted as the first digit of the company SIC-code in Worldscope database. These dummies include SIC 1, SIC 3, SIC 4, SIC 5, SIC 7 and SIC 8. SIC 2 companies act as default, SIC 6 (financial institutions) are excluded and no SIC 9 companies are in the sample. *High-tech dummy* includes several industries that can be considered high technology industries, defined with 4-digit SIC code as in Pagano et al. (1999) and described in appendix 1. The high-tech companies have positive expected sign.

Four *yearly dummies* are used from 1997 to 2000. The default year is 1996. The expected sign is positive for years 1999 and 2000. The countries are grouped into regions to control for regional-specific variations in the likelihood of using equity. Regional dummies are defined as follows: *Central* includes Germany, Austria, Switzerland and the Netherlands; *Western* includes France, Belgium and Luxembourg; *Dummy Southern* includes Spain, Portugal, Italy and Greece. UK and Ireland act together as the default, and are expected to have higher proportion of stock payment than in other regions.

Risk sharing hypothesis

To test the risk sharing hypothesis introduced in section 3.3.3, Martin (1996) used the relative size of the transaction as a proxy for the significance of the transaction. In this thesis the *Relative transaction size* is defined as transaction value to acquirer's market capitalization. It could also be hypothesized that when relative size of the acquisition is higher, the financing of the cash acquisition becomes more complex and stock is more commonly used. Following Martin (1996), the expected sign is positive.

Financial factors

Referring to the section 3.3.2 in the literature review, several factors that affect the choice of takeover financing can be proxied with financial information. Acquirers with good investment opportunities use more often stocks to finance their acquisitions, as Martin (1996) proposes. Information asymmetries between target and acquirer is other hypothesis to explain the choice of financing. To remove the effect of these factors the following financial variables are used in the regression explaining the choice of method of payment. The variables are defined in the Table 8.

Firms with high level of cash and high level of profitability are hypothesized to acquire more in cash. Thus I include the variables *Cash ratio* and *return on equity*, which have negative signs. With high level of *leverage*, financing choices are more constrained and use of equity could be more common. The expected sign is thus positive. Firms with many investment opportunities and high valuations could prefer stock financing. To control for this effect, *Growth rate of sales*, *Market-to-book* and *price-to-earnings* are employed in the regression. These all have positive signs. The stocks of larger and more well-know firms may be better accepted as a method of payment than the stocks of smaller firms. I use a variable *Size* of the acquirer, measured as natural logarithm of assets in USD millions, which also has a positive sign. The complete list of all variables for the analysis of the method of payment and expected signs are listed in the next table:

Table 8: Independent variables affecting the use of equity as a method of payment when a European company acquires a US company

The following table presents the independent variables to explain the use of equity in transactions where a European company acquires a U.S. corporation. Also variable definitions and expected sign are presented, positive meaning increased use of stock financing. All data for the variables is from Worldscope database, may 2001 version, except for the following variables: Exchange rates are from Datastream database, transaction value used to calculate the relative transaction size is from Securities Data Corporation (SDC) database for U.S. Mergers & Acquisitions and the data on cross-listing dummies is from the Exchanges and SDC database.

Independent variables	Description	Expected sign
Transaction-related		
Relative transaction size	Transaction value to acquirer market capitalization	+
Financial indicators	Source: Worldscope and Datastream	
Cash ratio	%, book value of cash and short-term investments divided by total assets at the end of the year (t-1)	-
Leverage	%, book value of debt per book value of assets, averaged over years (t-4) through (t-1)	+
Price-to-earnings	year-end stock price divided by earnings per share, averaged over years (t-4) through (t-1)	+
Size	natural logarithm of total assets in USD millions, measured at the end of the year (t-1)	+
Market-to-book	the ratio of market value of equity to book value of equity, averaged over years (t-4) through (t-1).	+
Growth rate of sales	%, average sales growth over years (t-4) through (t-1)	+
Return on equity	%, the earnings per share divided by book equity per share, averaged over years (t-4) through (t-1)	-
Research expenses per sales	%, research and development expenses per net sales, averaged over years (t-4) to (t-1).	+
Cross-listing dummies	Source: Exchanges and SDC database	
Cross-listing 6 or more years ago	1 if Company has been cross-listed in the U.S. for more than 5 years	+
Cross-listing at year (t-5)	1 if company has cross-listed in year (t-5)	+
Cross-listing at year (t-4)	1 if company has cross-listed in year (t-4)	+
Cross-listing at year (t-3)	1 if company has cross-listed in year (t-3)	+
Cross-listing at year (t-2)	1 if company has cross-listed in year (t-2)	+
Cross-listing at year (t-1)	1 if company has cross-listed in year (t-1)	+
Cross-listing at year (t)	1 if company cross-lists in year (t)	+
Company is cross-listed at year (t)	1 if company cross-lists or is already cross-listed in year (t)	+
Industry dummies	Source: Worldscope	
1-digit SIC code 1	1 if 1-digit SIC code is 1	
1-digit SIC code 3	1 if 1-digit SIC code is 1	
1-digit SIC code 4	1 if 1-digit SIC code is 1	
1-digit SIC code 5	1 if 1-digit SIC code is 1	
1-digit SIC code 7	1 if 1-digit SIC code is 1	
1-digit SIC code 8	1 if 1-digit SIC code is 1	
High-tech dummy	1 if 4-digit SIC code is same as defined in appendix 1	+
Regional dummies	Source: Worldscope	
Central Europe	1 for Germany, Austria, Switzerland and the Netherlands	
Northern Europe	1 for Finland, Sweden, Norway and Denmark	
Western Europe	1 for France, Belgium and Luxembourg	
Southern Europe	1 for Spain, Portugal, Italy and Greece	
Year dummies		
Year 1997	1 for M&As in year 1997	
Year 1998	1 for M&As in year 1998	
Year 1999	1 for M&As in year 1999	+
Year 2000	1 for M&As in year 2000	+

6 DESCRIPTIVE STATISTICS

First I present the descriptive statistics for general characteristics for the sample companies. Then I move over to describe the M&A transactions of these companies in section 6.2.

6.1 CHARACTERISTICS OF CROSS-LISTED AND MATCHING PAIR COMPANIES

This section describes the characteristics of cross-listed companies and matching pairs. First geographic and industry characteristics are described and then information is provided on the financial characteristics of the sample companies. This section includes also an assessment on the successfulness of the matching procedure.

6.1.1 GENERAL CHARACTERISTICS

The next table describes the distribution of the country of incorporation and time of cross-listing for cross-listed companies in the sample

Table 9: Countries of incorporation and cross-listing year of the sample of cross-listing companies

This table shows the frequencies and percentages of the country of incorporation and year of cross-listing for the sample companies. The sample consists of 196 cross-listed companies that have been cross-listed between 1.1.1980 and 31.12.2000. Companies that listed directly to the U.S. without prior European listing are excluded. Also financial institutions, OTC-listings and the companies without sufficient information were excluded. Information on the country of origin is from Worldscope database and year of cross-listing is from the exchanges or from the SDC database.

	Country of origin			Year of cross-listing	
	Frequency	Percent		Frequency	Percent
Belgium	1	0.5%	1980	0	0.0%
Denmark	3	1.5%	1981	1	0.5%
Finland	7	3.6%	1982	0	0.0%
France	26	13.3%	1983	4	2.0%
Germany	14	7.1%	1984	5	2.6%
Greece	2	1.0%	1985	2	1.0%
Ireland	9	4.6%	1986	6	3.1%
Italy	10	5.1%	1987	9	4.6%
Luxembourg	1	0.5%	1988	5	2.6%
Netherlands	21	10.7%	1989	6	3.1%
Norway	7	3.6%	1990	4	2.0%
Portugal	2	1.0%	1991	2	1.0%
Spain	4	2.0%	1992	8	4.1%
Sweden	12	6.1%	1993	11	5.6%
Switzerland	8	4.1%	1994	10	5.1%
United Kingdom	69	35.2%	1995	16	8.2%
			1996	22	11.2%
			1997	25	12.8%
			1998	19	9.7%
			1999	21	10.7%
			2000	20	10.2%
Total	196	100.0%	Total	196	100.0%

The Netherlands is very well presented relative to the population. The dominance of UK in the cross-listings is suggested by the literature indicating the importance of cultural, linguistic and political proximity in cross-listings (see e.g. Sarkissian and Schill, 2001). The number of European cross-listing companies has been substantially higher in the latter part of the 90's. Next I describe the country and industry distribution of cross-listed companies and matching pairs by company years. This allows me to compare the distribution and evaluate the outcome of the matching procedure.

Table 10: The country and industry distribution of the sample of cross-listed companies and matching pairs

The table presents the country of incorporation and industry distribution in company years to evaluate the successfulness of the matching procedure. Panel A includes 678 firm years of cross-listed companies included in the sample between 1996 and 2000. Panel B includes 678 matching pair firm years for the same time period. The sample excludes all firm years before the cross-listing and when the company is not listed on at least one European exchange at the end of the year (t-1). I also exclude firm years for which financial statements were not available in Worldscope database at the end of the year (t-1). If the cross-listed company is excluded for a certain year, also matching pair is excluded for that year. The values of the variables are from Worldscope database.

	Panel A: Cross-listed		Panel B: Matching pairs	
	Firm years	Percent	Firm years	Percent
Country of origin				
Austria	0	0.0%	13	1.9%
Belgium	1	0.1%	12	1.8%
Denmark	15	2.2%	35	5.2%
Finland	24	3.5%	7	1.0%
France	77	11.4%	93	13.7%
Germany	31	4.6%	94	13.9%
Greece	5	0.7%	2	0.3%
Ireland	28	4.1%	4	0.6%
Italy	39	5.8%	30	4.4%
Luxembourg	3	0.4%	10	1.5%
Netherlands	77	11.4%	27	4.0%
Norway	32	4.7%	21	3.1%
Portugal	8	1.2%	3	0.4%
Spain	16	2.4%	25	3.7%
Sweden	46	6.8%	47	6.9%
Switzerland	16	2.4%	39	5.8%
United Kingdom	260	38.3%	216	31.9%
Region				
Central Europe	124	18.4%	173	25.6%
Northern Europe	117	17.2%	110	16.2%
Western Europe	81	11.9%	115	17.0%
Southern Europe	68	10.1%	60	8.8%
UK and Ireland	288	42.4%	220	32.5%
Industry				
1-digit SIC code 1	44	6.5%	39	5.8%
1-digit SIC code 2	163	24.0%	168	24.8%
1-digit SIC code 3	195	28.8%	195	28.8%
1-digit SIC code 4	128	18.9%	128	18.9%
1-digit SIC code 5	36	5.3%	36	5.3%
1-digit SIC code 7	81	11.9%	81	11.9%
1-digit SIC code 8	31	4.6%	31	4.6%
No high-tech	502	74.0%	471	69.5%
High-tech	176	26.0%	207	30.5%
Total	678	100.0%	678	100.0%

The industry composition between the cross-listed and matching pair firms is well matched. I evaluate the industry matching in three-digit SIC code level by company years. The three-digit industry matching percent is as high as 83.11 %, so I can disclaim that the industry characteristics are well matched. I calculated the matching

percent as the number of matching firm years per number of all firm years (1356). The country of origin is similarly calculated to match with 75.96 % accuracy, even if the country matching was not done explicitly. Ritter (1991) reports in his IPO study that only 36% were in the same 3-digit industry in the first matching year. The number of high-tech firms in my matching pair sample is actually higher than for cross-listed firms, thus controlling well for the effects of high-tech M&A activity.

6.1.2 FINANCIAL CHARACTERISTICS

Next I illustrate the financial characteristics of the two samples. According to previous studies on cross-listed companies, their characteristics should differ from the matching pairs. I also evaluate the successfulness of the size matching. The next table shows the statistics for financial performance of the sample companies.

Table 11: Statistics for the financial performance of the sample of cross-listed companies and matching pairs

Panel A includes 678 firm years of cross-listed companies included in the sample between 1996 and 2000. Panel B includes 678 matching pair firm years for the same time period. The sample excludes all firm years before the cross-listing and when the company is not listed on at least one European exchange at the end of the year (t-1). I also exclude firm years for which financial statements were not available in Worldscope database at the end of the year (t-1). If the cross-listed company is excluded for a certain year, also matching pair is excluded. The values of the variables are from Worldscope database, except for few observations of market capitalization received from Datastream. The market capitalization is the company equity market value at the end of the year (t-1). Cash ratio is the ratio of cash & equivalents to total assets at (t-1). Leverage is the ratio of book value of debt to book value of total assets, averaged over years (t-4) through (t-1). Total assets are in USD millions and measured at (t-1). Market-to-book is the ratio of market value of equity to book value of equity, averaged over years (t-4) through (t-1). Sales growth is the average sales growth over years (t-4) through (t-1). Return on equity is the earnings per share divided by book equity per share, averaged over years (t-4) through (t-1). Research expenses per sales is the average of the research and development expenses per net sales over years (t-4) through (t-1).

Panel A: Cross-listed companies

	Firm years	Median	Mean	Std. Deviation
Financial indicators				
Market capitalization (USD mill.)	678	3084.17	9013.83	15491.17
Cash ratio	678	26.91	33.06	24.41
Leverage	677	24.22	27.41	22.80
Total assets (USD mill.)	678	2896.74	10562.07	19146.09
Market-to-book	678	3.03	8.11	12.11
Growth rate of sales	658	11.76	26.86	45.66
Return on equity	656	15.94	16.72	55.96
Research expenses per sales	437	2.55	16.23	61.18

Panel B: Matching pairs

	Firm years	Median	Mean	Std. Deviation
Financial indicators				
Market capitalization (USD mill.)	678	1752.58	4590.43	9795.19
Cash ratio	678	23.13	27.16	20.05
Leverage	678	19.73	20.38	13.54
Total assets (USD mill.)	678	1610.89	6240.11	15173.10
Market-to-book	678	2.93	5.98	8.05
Growth rate of sales	669	10.18	21.15	37.14
Return on equity	671	15.10	19.41	35.48
Research expenses per sales	362	1.90	11.58	48.71

Some interesting differences can be noticed between the characteristics of cross-listed companies and matching pairs. Cross-listed companies hold relatively more cash and have higher leverage. They have higher valuation relative to the book value, higher sales growth rate and spend more on research. The mean of the return on equity is actually slightly less than for matching firms. Pagano et al. (1999) found also similar results and concluded that companies cross-list after a rapid growth fuelled with leverage. The cross-listed companies in my sample are faster growing companies and have higher valuation relative to assets. This higher relative valuation can be a combination of intangible assets, growth opportunities and valuation premium derived from the cross-listing, as suggested in the literature.

In the matching characteristics of the cross-listed companies and matching pairs the only arguable difference is the median size of the companies. The problem is not as serious as it may look. As long as there are about as many larger matches than smaller ones in the study, the relative difference between the sizes is not so severe, since the logit model accounts only whether an acquisition has taken place, not the size of the transaction. The differences in market capitalizations are not so large in the first years of the study, since in 1999 and 2000 the consolidation boom has increased the relative differences in market capitalizations within industries.

Table 12: Distribution of the sample market capitalization in USD millions

Panel A includes 678 firm years of cross-listed companies included in the sample between 1996-2000. Panel B includes 678 matching pair firm years for the same time period. The sample excludes all firm years before the cross-listing and when the company is not listed on at least one European exchange at the end of the year (t-1). I also exclude firm years for which financial statements accounts were not available in Worldscope database at the end of the year (t-1). If the cross-listed company is excluded for a certain year, also matching pair is excluded. The market capitalizations are from Worldscope database, except for few observations received from Datastream. The table shows the mean, standard deviation and percentiles for market values of equity capital in millions of dollars at the end of year (t-1).

	Market value of equity capital, USD Millions	
	Panel A: Cross-listed	Panel B: Matching pairs
Mean	9013.83	4590.43
Std.deviation	15491.17	9795.19
Percentile		
10	246.96	201.77
20	495.45	323.55
25	736.90	399.76
30	1054.44	529.39
40	1848.12	939.11
50 (median)	3084.17	1752.58
60	5399.87	2595.04
70	8239.62	3611.31
75	10306.15	4403.12
80	13342.69	5654.77
90	23794.30	9950.02

Actually, the relative differences in market capitalization in my study are smaller than in Ritter's (1991) study. This holds especially for upper percentiles. For example, the market values for 90th percentile in his paper are USD 130 millions for IPOs against 720 millions for matching firms. To conclude, I would claim that the matching pair firm procedure has produced a reasonably close match with the cross-listed firms for reliable statistical analysis and performs even better than the comparable matching in Ritter's (1991) study.

6.2 DESCRIPTIVE STATISTICS ON MERGERS & ACQUISITIONS

First I describe the distribution of M&A transactions for different analyses and between cross-listed companies and matching pair firms.

Table 13: Number of acquisitions in the different analyses

The table shows the sample of successful takeovers of U.S. companies by European companies, which were announced between 1.1.1996 and 31.12.2000. M&A transactions are obtained from US Mergers & Acquisitions database of Securities Data Corporation (SDC). All acquisitions where the acquiring company is not listed in Europe at the end of the year (t-1) were excluded. I have two main samples: First is 383 successful M&As for firms before and after cross-listing. The second is 470 successful M&As for cross-listing firms and matching pairs excluding the takeovers before cross-listing. If the cross-listed company is excluded, also the matching pair is excluded. In the analysis of acquiring likelihood all successful M&As are included. In the analysis of the method of payment all M&As with unknown method of payment are excluded.

	Panel A: Cross-listed		Panel B: Matching pairs		Total	
	Frequency	Percent	Frequency	Percent	Frequency	Percent
Acquisitions in the analysis of cross-listers before and after cross-listing	383	100.0%			383	100.0%
Of which payment unknown	145	37.9%			145	37.9%
Analysis of the method of payment	238	62.1%			238	62.1%
Acquisitions in the analysis with matching pairs	324	68.9%	146	31.1%	470	100.0%
Of which payment unknown	128	27.2%	55	11.7%	183	38.9%
Analysis of the method of payment	196	41.7%	91	19.4%	287	61.1%

These descriptive statistics show clearly that the cross-listed companies have done more takeovers than matching pair firms during the same number of firm years. The percent of takeovers with unavailable payment information is similar for cross-listed and matching pair companies (39.5% and 37.7%). The following tables describe the acquisitions included in the thesis

Table 14: Distribution of the sample M&As by year of announcement

Panel A includes 324 successful acquisitions by cross-listed European companies that were announced between 1.1.1996 – 31.12.2000. Panel B includes 146 successful acquisitions by matching pair firms during the same time period. The sample excludes all takeovers before the calendar year of cross-listing and takeovers when the company is not listed on at least one European exchange at the end of the year (t-1). I also exclude takeovers if financial statements of the acquiring company were not available in Worldscope database at the end of the year (t-1). If the takeovers of cross-listed company is excluded for a certain year, also the takeovers of the matching pair are excluded. All M&A transactions are obtained from US Mergers & Acquisitions database of Securities Data Corporation (SDC)

	Panel A: Cross-listed		Panel B: Matching pairs	
	Frequency	Percent	Frequency	Percent
1996	22	6.8%	18	12.3%
1997	32	9.9%	19	13.0%
1998	65	20.1%	23	15.8%
1999	87	26.9%	47	32.2%
2000	118	36.4%	39	39.0%
Total	324	100.0%	146	100.0%

The time trend in acquisitions is clearly visible from the statistics. The relative increase in the number of M&As from 1996 to 2000 is higher for cross-listed companies, indicating that cross-listed companies have become more active relative to

matching pairs towards the end of the millennium. Next the size variables of the acquisitions are examined.

Table 15: Descriptive statistics for the acquisition size variables

Panel A includes 196 successful acquisitions by cross-listed companies that were announced between 1.1.1996 – 31.12.2000 and have information on the type of payment. Panel B includes 91 successful acquisitions by matching pair firms during the same time period with information on the type of payment. The sample excludes all takeovers before the calendar year of cross-listing and takeovers when the company is not listed on at least one European exchange at the end of the year (t-1). I also exclude takeovers if financial statements information of the acquiring company were not available in Worldscope database at the end of the year (t-1). If the takeovers of cross-listed company are excluded for a certain year, also the takeovers of the matching pair are excluded. All M&A transactions are obtained from US Mergers & Acquisitions database of Securities Data Corporation (SDC). The values of market capitalization are from Worldscope database, except for few observations received from Datastream. The market capitalization is the company equity market value at the end of the year (t-1). All other variables are from SDC database.

Panel A: Cross-listed companies

	Transactions	Median	Mean	Std. Deviation
Financial indicators				
Transaction value (USD Millions)	196	126.15	1119.42	4645.41
Shares acquired %	194	100.00	94.85	17.23
Post-acquisition ownership	196	100.00	97.73	10.60
Transaction value per acquiror market capitalization	196	0.04	0.17	0.35

Panel B: Matching pairs

	Transactions	Median	Mean	Std. Deviation
Financial indicators				
Transaction value (USD Millions)	91	109.22	1354.95	6475.37
Shares acquired %	91	100.00	95.69	15.41
Post-acquisition ownership	91	100.00	98.58	7.54
Transaction value per acquiror market capitalization	91	0.05	0.18	0.42

The transaction size does not seem to be clearly larger for cross-listed companies. On the contrary, due to some large acquisitions the mean transaction value of the matching pair firms exceeds the mean value for cross-listed companies. This is somewhat unexpected, since the value of the assets and market capitalization of cross-listed companies is higher than for matching pair firms. If the size difference is taken into consideration, both mean and median relative value is higher for matching pair firms. This might indicate that because of higher fixed costs and other complications, the matching pair firms look more for larger strategic acquisitions in the U.S. than the cross-listed counterparts.

Table 16: Distribution of the M&A form of the sample takeovers

Panel A includes 324 successful acquisitions by cross-listed companies that were announced between 1.1.1996 – 31.12.2000. Panel B includes 146 successful acquisitions by matching pair firms during the same time period. The sample excludes all takeovers before the calendar year of cross-listing and takeovers when the company is not listed on at least one European exchange at the end of the year (t-1). I also exclude takeovers if financial statements of the acquiring company were not available in Worldscope database at the end of the year (t-1). If the takeovers of cross-listed company are excluded for a certain year, also the takeovers of the matching pair are excluded. All M&A transactions and values of the variables are obtained from US Mergers & Acquisitions database of Securities Data Corporation (SDC).

	Panel A: Cross-listed		Panel B: Matching pairs	
	Frequency	Percent	Frequency	Percent
Acquisition of majority interest	11	3.4%	9	6.2%
Acquisition of assets	220	67.9%	98	67.1%
Acquisition of remaining interest	13	4.0%	8	5.5%
Merger	75	23.1%	31	21.2%
Acquisition of certain assets	2	0.6%	0	0.0%
Acquisition of partial interest	3	0.9%	0	0.0%
Total	324	100.0%	146	100.0%

When the initial difference in M&A activity is controlled, the merger is as common form of transaction for matching pairs than for cross-listed companies. Yet the form of takeover does not totally dictate the method of payment. Because of this, the next table is more revealing, as it describes the frequencies of stock swaps and pooling of interests.

Table 17: Frequencies and percentages of stock swap and pooling of interest

Panel A includes 324 successful acquisitions by cross-listed companies that were announced between 1.1.1996 – 31.12.2000. Panel B includes 146 successful acquisitions by matching pair firms during the same time period. The sample excludes all takeovers before the calendar year of cross-listing and takeovers when the company is not listed on at least one European exchange at the end of the year (t-1). I also exclude takeovers if financial statements of the acquiring company were not available in Worldscope database at the end of the year (t-1). If the takeovers of cross-listed company are excluded for a certain year, also the takeovers of the matching pair are excluded. All M&A and values of the variables transactions are obtained from US Mergers & Acquisitions database of Securities Data Corporation (SDC).

	Panel A: Cross-listed		Panel B: Matching pairs	
	Frequency	Percent	Frequency	Percent
Stock Swap	33	10.2%	4	2.7%
Total	324	100.0%	146	100.0%
Pooling of interest	8	2.5%	1	0.7%
Total	324	100.0%	146	100.0%

Although the ratio of mergers is nearly the same between the two samples, the frequencies for stock swaps show first indications of the increased use of equity for cross-listed companies. Also pooling of interest, although rare, is more common among cross-listed firms. In addition to these statistics, I also investigated the

differences in target status (public / private), but the distribution was very similar. No reverse takeovers had been taken place in the sample.

7 EMPIRICAL RESULTS

This chapter presents the empirical results in two major categories, namely acquiring likelihood and method of payment. Within both categories, first the behavior of cross-listed companies is compared before and after cross-listing and then against matching pair firms. The five hypotheses are tested in the same order than in chapter 6. Finally I relate my findings to the research problem and conclude that is there a relation between the U.S. cross-listings and takeovers.

7.1 ANALYSIS OF THE ACQUIRING LIKELIHOOD

The analysis of the acquiring likelihood is two-fold. First, I analyze the cross-listing companies as a separate group. For this analysis, also firm years before cross-listing are included. Secondly, I test the main sample including cross-listed firms and matching pair firms. For this test, only years after cross-listing are included.

7.1.1 ANALYSIS OF THE ACQUIRING LIKELIHOOD BEFORE AND AFTER CROSS-LISTING

First analysis concerns the cross-listed companies before and after the cross-listing. The following figure illustrates the M&A activity of cross-listed companies around the cross-listing.

Figure 1: Yearly ratio of non-IPO cross-listed companies acquiring U.S. companies, relative to cross-listing year

The figure shows the yearly ratio of European cross-listed companies for making a successful takeover of a US company. The data is presented in calendar years relative to cross-listing. Ratio of acquiring companies is calculated by giving value 1 if a cross-listed company has announced a successful takeover during the calendar year and dividing the sum of these by the number of firms that have same number of years relative to cross-listing, i.e. same value for cross-listing dummies. (e.g. all companies that have cross-listed during the year (t-2)). The sample includes takeovers that were announced between 1.1.1996 – 31.12.2000. The sample excludes all takeovers for years when the company is not listed on at least one European exchange at the end of the year (t-1). All M&A transactions are obtained from US Mergers & Acquisitions database of Securities Data Corporation (SDC).

	Calendar years from cross-listing											Total
	-4	-3	-2	-1	0	1	2	3	4	5	over 5	
Firm years	14	22	31	46	60	102	92	84	63	47	273	834
Acquiring companies	3	5	6	12	15	20	15	17	14	16	85	208
Ratio of acquiring companies	0.21	0.23	0.19	0.26	0.25	0.20	0.16	0.20	0.22	0.34	0.31	0.25

The likelihood of acquisition does not show a clear trend around the cross-listing year. From the graph one could argue that the cross-listing does not cause companies to acquire more often, but the cross-listing period itself is the time for rapid international growth, which is characterized by increased M&A activity a year before and during the cross-listing year. The M&A activity is then declining rapidly after one year. The larger size of companies that have been cross-listing for a longer period explains partly the trend in the M&A activity after two years of cross-listing.

Next I test the first hypothesis A1 that the cross-listing European companies are more likely to acquire U.S. companies after the cross-listing than before. The acquiring likelihood described in the above figure is exposed to statistical analysis

Table 18: Explaining acquiring likelihood of cross-listed companies before and after the cross-listing

This table presents the results of a regression that explains with logit model the discrete dependent variable that receives value 1 if a sample company has made a successful acquisition in a given year (t) and 0 otherwise. The sample consists of successful acquisitions by 196 European cross-listed companies from 1.1.1996 to 31.12.2000 as in SDC database. The sample excludes all takeovers for years when the company is not listed on at least one European exchange at the end of the year (t-1). The cross-listing dummies are given value 1 if the company has cross-listed in the given time period. In the first specification all dummies before cross-listing act as a default. In the second specification the default is the (t-2), two years after cross-listing. The default year is 1996 and years 1997, 1998, 1999 and 2000 are assigned separate dummies. For regional dummies, Central includes Germany, Austria, Switzerland and the Netherlands; Northern includes Finland, Sweden, Norway and Denmark; Western includes France, Belgium and Luxembourg; Dummy Southern includes Spain, Portugal, Italy and Greece; UK and Ireland act together as the default. Industry dummies is the first digit of the company SIC-code. SIC 2 companies act as default, SIC 6 (financial institutions) are excluded and no SIC 9 companies are in the sample. High-tech dummy includes several industries that can be considered high technology industries (See appendix 1)

Dependent Variable: Acquirer dummy					
Panel A: Cross-listed firms		(1)		(2)	
Independent variables	Exp. sign	Coeff.	t-ratio	Coeff.	t-ratio
Intercept		2.264	2.34 *	1.906	1.89 *
Cross-listing dummies					
Cross-listing 6 or more years ago	+	0.447	1.53	1.008	3.03 ***
Cross-listing at year (t-5)	+	0.476	1.14	1.034	2.35 **
Cross-listing at year (t-4)	+	-0.137	-0.33	0.422	0.97
Cross-listing at year (t-3)	+	-0.291	-0.76	0.269	0.66
Cross-listing at year (t-2)		-0.557	-1.45		
Cross-listing at year (t-1)	+	-0.228	-0.63	0.330	0.84
Cross-listing at year (t)	+	-0.031	-0.08	0.531	1.22
Cross-listing at year (t+1)	-			0.651	1.40
Cross-listing at year (t+2)	-			0.227	0.40
Cross-listing at year (t+3)	-			0.593	0.94
Cross-listing at year (t+4)	-			1.000	1.27
Year dummies					
1997		0.001	1.88 *	0.001	1.94 *
1998		0.001	3.12 ***	0.001	3.18 ***
1999	+	0.001	3.48 ***	0.001	3.40 ***
2000	+	0.001	3.85 ***	0.001	3.83 ***
Regional dummies					
Central		0.330	1.37	0.325	1.35
Northern		-0.224	-0.83	-0.227	-0.84
Western		0.605	2.42 **	0.605	2.41 **
Southern		-1.798	-3.30 ***	-1.801	-3.31 ***
Industry dummies					
1-digit SIC code 1		-1.251	-2.61 ***	-1.252	-2.61 ***
1-digit SIC code 3		-0.063	-0.27	-0.059	-0.25
1-digit SIC code 4		-0.818	-2.71 ***	-0.818	-2.70 ***
1-digit SIC code 5		-0.635	-1.45	-0.634	-1.45
1-digit SIC code 7		0.118	0.45	0.116	0.44
1-digit SIC code 8		-0.633	-1.39	-0.634	-1.39
High-tech dummy	+	-0.478	-2.32 **	-0.477	-2.31 **
Number of observations		834		834	
Pseudo-R²		0.099		0.100	
Significance level		0.00000		0.00000	

***, **, * Significant at the 1, 5 and 10 percent level, respectively

The acquisition activity does not seem to pick up after the cross-listing. The companies that have been cross-listed for longer period of time are more active

acquirers, but this can be caused by the larger size and more international character of these companies relative to newly cross-listed firms.

Thus no support is found to the *hypothesis A1, The cross-listed companies seem to be as active after the cross-listing than before it.* There is some evidence that firms that have been cross-listed for longer period of time are more active acquirers than the recent cross-listers. However, this evidence alone is not sufficient to answer to my research problem, since the most of the foreign acquisitions are cash acquisitions, and the increase in the total M&A activity would require a substantial increase in equity acquisitions.

7.1.2 THE ANALYSIS OF ACQUIRING LIKELIHOOD WITH MATCHING PAIR FIRMS

Next the differences in M&A activity between cross-listing and matching pair companies are investigated. The following figure compares the ratio of companies with successful takeovers in the U.S. between these two groups

Figure 2: The yearly ratio of cross-listed and matching pair firms acquiring U.S. companies, relative to cross-listing year

The figure shows the yearly ratio of European cross-listed and matching pair companies for making a successful takeover of a US company. The data is presented in calendar years relative to cross-listing. Ratio of acquiring companies is calculated by giving value 1 if a company has announced a successful takeover during the calendar year and dividing the sum of these by the number of firms that have the same number of years relative to cross-listing. The matching pair firms are given an arbitrary cross-listing year based on the cross-listing year of the pair firm. Panel A includes 678 firm years for cross-listed companies between 1996 and 2000 and panel B includes 678 firm years by matching pair firms during the same time period. M&As that were announced between 1.1.1996 and 31.12.2000 are included. The sample excludes all takeovers before the calendar year of cross-listing and takeovers when the company is not listed on at least one European exchange at the end of the year (t-1). I also exclude takeovers if financial statements of the acquiring company were not available in Worldscope database at the end of the year (t-1). If the takeovers of cross-listed company is excluded for a certain year, also the takeovers of the matching pair are excluded. All M&A transactions are obtained from US Mergers & Acquisitions database of Securities Data Corporation (SDC).

Panel A: Cross-listed companies		Calendar years from cross-listing							Total
		0	1	2	3	4	5	over 5	
Company years		51	96	86	78	58	43	266	678
Acquiring companies		14	20	14	16	13	13	86	176
Ratio of acquiring companies		0.27	0.21	0.16	0.21	0.22	0.30	0.32	0.26

Panel B: Matching pairs		Calendar years from cross-listing							Total
		0	1	2	3	4	5	over 5	
Company years		51	96	86	78	58	43	266	678
Acquiring companies		8	11	10	10	9	7	47	102
Ratio of acquiring companies		0.16	0.11	0.12	0.13	0.16	0.16	0.18	0.15

The M&A activity of matching pair firms show a similar trend than with the cross-listing firms. The trend constitutes of the relation between cross-listings and M&A activity. The firms in the sample for year (t) include many cross-listings in years of high M&A activity in 1999 and 2000. Since the matching is done at the end of year (t-1) from the cross-listing, the year (t) includes also many matching pair firms for years with high M&A activity. The matching pairs for companies that have been cross-

listed for a longer period of time are also more established companies. This explains the trend of increasing likelihood for M&As of matching pair firms in the right side of the figure. However, the M&A activity for cross-listing companies is more volatile, peaking right after the cross-listing and after a longer period of cross-listing, which indicates that the behavior differs relative to the cross-listing year.

Although these factors cause disturbance in the descriptive statistics, the control variables in the following regressions will for the most part remove the effect from the results. Next table presents the results of the testing of the hypothesis A2.

Table 19: Explaining acquiring likelihood using a logit model and a sample of cross-listed companies and matching pairs

This table presents the results of a regression that explains with logit model the discrete dependent variable that receives value 1 if a sample company has made a successful acquisition in a given year (t) and 0 otherwise. The sample consists of successful acquisitions by 196 European cross-listed companies and matching pairs from 1.1.1996 to 31.12.2000 as in SDC database. M&As before the calendar year of cross-listing are excluded, and the company must be publicly listed on at least one European exchange and have financial statements available at the end of year (t-1). If a cross-listed company is excluded for a certain year, also the matching pair is excluded. Financial figures are from Worldscope and Datastream. Cash ratio is the ratio of cash & equivalents to total assets at (t-1). Leverage is the ratio of book value of debt to book value of total assets, averaged over years (t-4) through (t-1). Price-to-earnings is the year-end stock price divided by earnings per share, averaged over years (t-4) through (t-1). Size is measured as natural logarithm of total assets in USD millions, measured at (t-1). Market-to-book is the ratio of market value of equity to book value of equity, averaged over years (t-4) to (t-1). Sales growth is the average sales growth over years (t-4) through (t-1). Return on equity is the earnings per share divided by book equity per share, averaged over years (t-4) through (t-1). Exchange rates measure the deviation from the average exchange rate of local currency of each country for each year against US dollar at (t-1). For first specification, cross-listing dummies are given value 1 if the company has cross-listed in the given time period. For second specification the dummy "company is cross-listed at year (t)" is given value 1 if the company is cross-listed or cross-lists during the year (t). The default year is 1996 and years 1997, 1998, 1999 and 2000 are assigned separate dummies. For regional dummies, Central includes Germany, Austria, Switzerland and the Netherlands; Northern includes Finland, Sweden, Norway and Denmark; Western includes France, Belgium and Luxembourg; Dummy Southern includes Spain, Portugal, Italy and Greece; UK and Ireland act together as the default. Industry dummies is the first digit of the company SIC-code. SIC 2 companies act as default, SIC 6 (financial institutions) are excluded and no SIC 9 companies are in the sample. High-tech dummy includes several industries that can be considered high technology industries (See appendix 1)

Dependent Variable: Acquirer dummy

Panel B: Cross-listed firms and matching pairs		(1)		(2)	
Independent variables	Exp. sign	Coeff.	t-ratio	Coeff.	t-ratio
Intercept		-1.459	-1.52	0.730	0.92
Financial indicators					
Cash ratio	+	0.001	0.18		
Leverage	-	-0.008	-1.44		
Price-to-earnings	+	0.001	0.37		
Size	+	0.290	5.62 ***		
Market-to-book	+	-0.014	-1.40		
Growth rate of sales	+	0.0005	0.20		
Return on equity	+	0.004	2.02 **		
Exchange rates	+	-1.579	-1.09		
Cross-listing dummies					
Cross-listing 6 or more years ago	+	0.802	3.95 ***		
Cross-listing at year (t-5)	+	1.152	3.11 ***		
Cross-listing at year (t-4)	+	0.598	1.70 *		
Cross-listing at year (t-3)	+	0.513	1.61		
Cross-listing at year (t-2)	+	0.344	1.06		
Cross-listing at year (t-1)	+	0.644	2.08 **		
Cross-listing at year (t)	+	0.951	2.55 **		
Company is cross-listed at year (t)	+			0.752	5.19 ***
Year dummies					
1997		0.001	1.64	0.0001	1.37
1998		0.001	2.06 **	0.0001	2.24 **
1999	+	0.001	3.06 ***	0.0001	2.89 ***
2000	+	0.001	1.89 *	0.0001	2.86 ***
Regional dummies					
Central		-0.159	-0.69	0.151	0.83
Northern		-0.717	-2.80 ***	-0.515	-2.30 **
Western		-0.560	-2.16 **	-0.173	-0.80
Southern		-2.253	-4.81 ***	-1.780	-4.05 ***
Industry dummies					
1-digit SIC code 1		-1.148	-2.55 **	-0.203	-3.35 ***
1-digit SIC code 3		0.259	1.32	-0.066	-0.36
1-digit SIC code 4		-0.912	-3.42 ***	-0.907	-3.61 ***
1-digit SIC code 5		-0.270	-0.76	-0.578	-1.71
1-digit SIC code 7		0.639	2.35 **	0.061	0.27
1-digit SIC code 8		0.533	1.30	-0.416	-1.16
High-tech dummy	+	-0.031	-0.16	-0.377	-2.19 **
Number of observations		1356		1356	
Pseudo-R²		0.134		0.130	
Significance level		0.00000		0.00000	

***, **, * Significant at the 1, 5 and 10 percent level, respectively

Compared to control group, the cross-listing significantly increases the likelihood of making U.S. acquisitions. The dummy 'company is cross-listed at year (t)' is significant at 1% level. The very significant increase in the likelihood is caused mainly by the dummies for cross-listing during the year (t), (t-1) and (t-5) and after. This indicates that the M&A activity has a peak period shortly after the cross-listing and is higher for companies that have been cross-listed for long period of time.

The control variables are of expected sign, except for market-to-book, exchange rates and high-tech dummy. Exchange rates can be explained with a time trend of strengthening dollar and increasing M&A activity towards the end of the millennium. Also European currencies have become more correlated since the introduction of European Monetary Union. The negative high-tech dummy is unexpected, but loses significance after controlling for the financial characteristics of the companies. The positive return on equity shows that profitable firms have been more active in the acquisitions. I also tested the hypothesis with sub-sample of company years for which research expenses per sales were known, and the results can be examined in the next table.

Table 20: Explaining acquiring likelihood using a logit model with subset of companies with information on research expenses per sales

This table presents the results of a regression that explains with logit model the discrete dependent variable that receives value 1 if a sample company has made a successful acquisition in a given year (t) and 0 otherwise. The sample consists of successful acquisitions by 196 European cross-listed companies and matching pairs from 1.1.1996 to 31.12.2000 for which the acquirer research expenses per sales is known. M&As before the calendar year of cross-listing are excluded, and the company must be publicly listed on at least one European exchange and have financial statements available at the end of year (t-1). If a cross-listed company is excluded for a certain year, also the matching pair is excluded. Financial figures are from Worldscope and Datastream. Cash ratio is the ratio of cash & equivalents to total assets at (t-1). Leverage is the ratio of book value of debt to book value of total assets, averaged over years (t-4) through (t-1). Price-to-earnings is the year-end stock price divided by earnings per share, averaged over years (t-4) through (t-1). Size is measured as natural logarithm of total assets in USD millions, measured at (t-1). Market-to-book is the ratio of market value of equity to book value of equity, averaged over years (t-4) to (t-1). Sales growth is the average sales growth over years (t-4) through (t-1). Return on equity is the earnings per share divided by book equity per share, averaged over years (t-4) through (t-1). Exchange rates measure the deviation from the average exchange rate of local currency of each country for each year against US dollar at (t-1). Research expenses per sales is the average of the research and development expenses per net sales over years (t-4) through (t-1). The dummy "company is cross-listed at year (t)" is given value 1 if the company is cross-listed or cross-lists during the year (t). The default year is 1996 and years 1997, 1998, 1999 and 2000 are assigned separate dummies. For regional dummies, Central includes Germany, Austria, Switzerland and the Netherlands; Northern includes Finland, Sweden, Norway and Denmark; Western includes France, Belgium and Luxembourg; Dummy Southern includes Spain, Portugal, Italy and Greece; UK and Ireland act together as the default. Industry dummies is the first digit of the company SIC-code. SIC 2 companies act as default, SIC 6 (financial institutions) are excluded and no SIC 9 companies are in the sample. High-tech dummy includes several industries that can be considered high technology industries (See appendix 1)

Dependent Variable: Acquirer dummy

Panel C: Cross-listed firms and matching pairs with R&D information

Independent variables	Exp. sign	Coeff.	t-ratio
Intercept		-1.189	-1.03
Financial indicators			
Cash ratio	+	0.011	2.13 **
Leverage	-	-0.004	-0.85
Price-to-earnings	+	0.001	0.17
Size	+	0.262	4.40 ***
Market-to-book	+	-0.021	-1.44
Growth rate of sales	+	-0.003	-0.68
Return on equity	+	0.002	0.81
Exchange rates	+	-1.099	-0.62
Research expenses per sales		-0.005	-1.59
Cross-listing dummies			
Company is cross-listed at year (t)	+	0.565	2.92 ***
Year dummies			
1997		0.001	1.54
1998		0.001	2.33 **
1999	+	0.001	2.66 ***
2000	+	0.001	2.00 **
Regional dummies			
Central		0.026	0.10
Northern		-0.556	-1.92 **
Western		-0.296	-0.95 ***
Southern		-2.205	-3.35 ***
Industry dummies			
1-digit SIC code 1		-1.244	-2.14 **
1-digit SIC code 3		0.513	2.29 **
1-digit SIC code 4		-0.667	-1.96 **
1-digit SIC code 5		0.731	1.26
1-digit SIC code 7		0.648	1.63
1-digit SIC code 8		1.220	2.27 **
High-tech dummy	+	0.180	0.80
Number of observations		799	
Pseudo-R²		0.109	
Significance level		0.00000	

***, **, * Significant at the 1, 5 and 10 percent level, respectively

The cross-listing dummy remains significant in the sub-sample for firm years with available information on research expenses per sales. The research expenses is not a significant variable, but with this test specification the cash ratio becomes significant, supporting the Harford's (1999) results that cash-rich firms acquire more likely. The values of Pseudo- R^2 remain quite low in the above regressions in this section. Palepu (1986) presents a methodological critique and points out the difficulty in constructing a model for takeover target prediction. The low predictive power of my model indicates that the difficulties are also considerable when constructing a model explaining acquiring likelihood.

Statistically very significant support is found to *hypothesis A2 that the cross-listing European companies are more likely to acquire U.S. companies than the matching pair firms*. The results hold in all three separate specifications with two panels of companies. This can be caused by multiple reasons. The most attractive explanation is that cross-listed firms are larger multinational companies with higher level of international operations and therefore more active in their acquisitions. The U.S. markets may be strategically more important for companies that have decided to cross-list. Also these firms are naturally more outbound oriented and rely more on export markets (See e.g. Saudagaran, 1988 and Pagano et al., 1999). Thus it can be concluded that because of their distinctive characteristics, the European firms that have been cross-listed to U.S. exchanges are more active acquirers in the market.

7.2 ANALYSIS OF THE METHOD OF PAYMENT

In this section the hypotheses related to payment method are tested with logit and multinomial logit. The dependent variable is discrete. In the first set of tests, the dependent variable is 1 if the acquirer has used stocks and 0 if only cash and "other" has been used, as defined by SDC database. First the cross-listed firms are separately tested before and after the cross-listing and then the cross-listed firms and matching pair firms are tested after the cross-listing.

In the second set, the dependent variable is 0 if the acquiring company has not used stocks, 1 if a combination (hybrid) of stocks and cash is used and 2 if the acquisition has been financed entirely with stocks. The sample consists of successful acquisitions

by 196 European cross-listed companies and matching pairs from 1.1.1996 to 31.12.2000 with known method of payment.

7.2.1 ANALYSIS OF THE METHOD OF PAYMENT BEFORE AND AFTER CROSS-LISTING

First the payment method of cross-listed companies is compared to the time before cross-listing. The next figure shows the mean number of acquisitions and mean number of acquisitions financed at least partly with equity. The decomposition of the acquisitions based on the type of consideration shows a new pattern. The number of equity-financed acquisitions does not correlate highly with the mean number of acquisitions, but has peaks in the year of cross-listing and at the year (t+5).

Figure 3: Mean number of all U.S. takeovers and takeovers including stock financing by cross-listed companies, yearly means relative to the cross-listing year

The table illustrates the mean number of acquisitions by sample companies, relative to the calendar years from the cross-listing. The mean number of takeovers is calculated by summing all successful takeovers by the firms that have the same number of years relative to cross-listing and dividing the sum by the number of firms that have the same number of years relative to cross-listing. The mean number of takeovers including stock payment is calculated analogously. Takeovers including stock payment is denoted as acquisitions that are at least partly financed with acquirer's stock. The sample consists of successful acquisitions by 196 European cross-listed companies from 1.1.1996 to 31.12.2000 as in SDC database. The sample excludes all takeovers for years when the company is not listed on at least one European exchange at the end of the year (t-1).

	Calendar years from cross-listing											Total
	-4	-3	-2	-1	0	1	2	3	4	5	over 5	
Firm years	14	22	31	46	60	102	92	84	63	47	273	834
Takeovers	5	6	11	23	27	26	23	27	24	23	188	383
Mean number of takeovers	0.36	0.27	0.35	0.50	0.45	0.25	0.25	0.32	0.38	0.49	0.69	0.46
Takeovers financed with own shares	0	0	2	2	10	5	4	3	4	7	15	52
Mean number of takeovers financed with own shares	0.00	0.00	0.06	0.04	0.17	0.05	0.04	0.04	0.06	0.15	0.05	0.06

On average 17 % of the acquisitions by cross-listing companies during the cross-listing year are financed with stocks. Many acquisitions do not have information on the method of payment, which makes the interpretation more difficult. Thus the next figure presents the ratio of acquisitions that were financed with stock to all acquisitions with known method of payment.

Figure 4: Ratio of acquisitions including stock financing to acquisitions with payment information, relative to cross-listing year

The graph shows the ratio of acquisitions in which at least some of the acquisition was financed with stocks to all acquisitions with known method of payment for cross-listed companies. Ratio is calculated by giving value 1 if a company has during the calendar year announced a successful takeover that is at least partly financed with stock and dividing the sum of these by the number of firms that have the same number of years relative to cross-listing. The matching pair firms are given an arbitrary cross-listing year based on the cross-listing year of the pair firm. Data includes 238 successful acquisitions by cross-listed - listing that were announced between 1.1.1996 – 31.12.2000 and have information on type of payment. The sample excludes all takeovers for years when the company is not listed on at least one European exchange at the end of the year (t-1). All M&A transactions are obtained from US Mergers & Acquisitions database of Securities Data Corporation (SDC).

The increase in the use of stocks is at very peak level during the year of cross-listing. On average 56% of the acquisitions with known method of payment made on the cross-listing year were at least partly financed with stocks. This exceeds the sample mean of 21.85 % with a clear difference. Unexpectedly, the companies that have been cross-listed for over five years are not particularly active users of stocks.

For the above results to be conclusive, the above trends must be further tested. The next table presents the results to test hypothesis B1 that the cross-listing European companies are more likely to use stocks in the acquisitions after the cross-listing than before it.

Table 21: Explaining the use of equity before and after cross-listing with logit model

This table presents the results of a regression that explains with logit model the discrete dependent variable that receives value 1 if an acquisition is at least partly financed with stocks and 0 otherwise. The sample consists of 238 successful acquisitions by 196 European cross-listed companies from 1.1.1996 to 31.12.2000 with known method of payment. M&As by the cross-listed companies are included if the company is publicly listed at least in one European exchange at the end of year (t-1). The cross-listing dummies are given value 1 if the company has cross-listed in the given time period. In the first specification all dummies before cross-listing act as a default. In the second specification the default is the (t-2), two years after cross-listing. The default year is 1996 and separate dummies are assigned to years 1997, 1998, 1999 and 2000. For regional dummies, Central includes Germany, Austria, Switzerland and the Netherlands; Northern includes Finland, Sweden, Norway and Denmark; Western includes France, Belgium and Luxembourg; Dummy Southern includes Spain, Portugal, Italy and Greece; UK and Ireland act together as the default. Industry dummies is the first digit of the company SIC-code. SIC 2 companies act as default, SIC 6 (financial institutions) are excluded and no SIC 9 companies are in the sample. High-tech dummy includes several industries that can be considered high technology industries (See appendix 1)

Dependent Variable: Stocks used as a method of payment

Panel D: All transactions from cross-listed firms before and after the cross-listing with known method of payment

Independent variables	Exp. sign	(1)		(2)	
		Coeff.	t-ratio	Coeff.	t-ratio
Intercept		-3.800	-3.07 ***	-4.845	-3.39 ***
Cross-listing dummies					
Cross-listing 6 or more years ago	+	-0.441	-0.61	0.750	0.89
Cross-listing at year (t-5)	+	0.871	1.01	2.073	2.13 **
Cross-listing at year (t-4)	+	-0.006	-0.01	1.127	1.12
Cross-listing at year (t-3)	+	-1.180	-1.21	0.017	0.02
Cross-listing at year (t-2)	+	-0.972	-0.98		
Cross-listing at year (t-1)	+	-0.219	-0.24	0.888	0.95
Cross-listing at year (t)	+	1.646	1.90 *	2.867	2.79 ***
Cross-listing at year (t+1)	-			0.946	0.84
Cross-listing at year (t+2)	-			2.397	1.89 *
Year dummies					
1997		2.075	1.70 *	1.946	1.58
1998		1.867	1.60	1.542	1.31
1999	+	0.609	0.50	0.433	0.35
2000	+	1.996	1.71 *	1.771	1.52
Regional dummies					
Central		-0.718	-1.28	-0.639	-1.12
Northern		-0.634	-0.86	-0.817	-1.09
Western		-0.212	-0.41	-0.231	-0.44
Southern		-0.168	-0.12	-0.005	0.00
Industry dummies					
1-digit SIC code 1		0.909	0.65	1.135	0.81
1-digit SIC code 3		0.653	1.15	0.725	1.26
1-digit SIC code 4		0.565	0.69	0.524	0.63
1-digit SIC code 5		1.929	2.26 **	2.000	2.33
1-digit SIC code 7		1.450	2.39 **	1.534	2.47 **
1-digit SIC code 8		3.245	2.94 ***	3.433	3.12 ***
High-tech dummy	+	1.310	3.05 ***	1.396	3.17 ***
Number of observations		238		238	
Pseudo-R²		0.211		0.221	
Significance level		0.00025		0.00018	

***, **, * Significant at the 1, 5 and 10 percent level, respectively

The results indicate that when comparing the use of stocks before and after cross-

listing, the increase in the use of stocks is significant mainly during the year of cross-listing. The small sample size interferes the interpretation, but the results can be considered significant. As could be seen from the above figures, the firms that have been long cross-listed do not seem to be particularly active users of their stocks in acquisitions when comparing to the other cross-listed companies.

The increased M&A activity during the first year of cross-listing requires more analysis. Especially the causality in cross-listing and merger or acquisition should be clarified. The next table shows the relation between M&A announcement date, date when the acquisition became effective and cross-listing date.

Table 22: The timing in same-year acquisitions and cross-listings

The table shows the frequencies and percentages between acquisition announcement and effective dates and cross-listing dates. Panel A includes 27 acquisitions that were announced in the same calendar year that the cross-listing took place and which have information on the type of payment. Panel B includes 11 acquisitions that were announced in the same calendar year that the cross-listing took place and which are at least partly financed with stocks. Effective within a month means that an acquisition has become effective during 30 days before or after the announcement of acquisition. Effective at least a month after cross-listing means that an acquisition has become effective before or at least during the next 30 days following the cross-listing.

	Panel A: All acquisitions during cross-listing year		Panel B: Acquisitions including share financing	
	Frequency	Percent	Frequency	Percent
Acquisitions	27	100.0%	11	100.0%
Acquisitions announced before cross-listing	18	66.7%	8	72.7%
Effective within a month	13	48.1%	7	63.6%
Effective at least a month after cross-listing	18	66.7%	8	72.7%

During the year of cross-listing, majority of the same-year acquisitions are announced before cross-listing. Nevertheless, out of these, two thirds are effective at least month after the cross-listing. For acquisitions that include stock financing, 72.7 % are effective within a month of cross-listing. This indicates that the acquisition and cross-listing decisions are linked, even though the number of observations remains undersized for strong conclusions.

Even though the majority of acquisitions are announced before cross-listing, the acquisitions with stock component do not become effective until the cross-listing. For equity transactions, almost 64 % of the transactions become effective within a month around the cross-listing. This indicates that cross-listing is strongly serving an acquisition financed with stocks, i.e. creating a U.S. secondary markets for the new

U.S. shareholders. The use of stocks in acquisitions seems to be driving cross-listing decisions in the same-year cross-listings and acquisitions.

This is probably not a coincidence, but with this information the causality remains largely unexplained for the same-year acquisitions: Is the cross-listing required by the target shareholders during the negotiations, or is the acquisition decided after the cross-listing, which enables the acquisition financing with stocks? The cross-listing with level 2 ADR listing requires at least 14 weeks of preparations (J.P. Morgan, 2000), and the decision is probably carefully considered because of its strategic importance. This suggests that in almost all transactions, the cross-listing is decided during or before the M&A negotiations, not after the M&A announcement.

Next I include a short analysis of the development of M&A volume and the proportions of cash and equity financing, relative to cross-listing. All companies that have information on the type of payment have also the transaction value, so the sample takeovers are the same than in the other tests in this section.

Figure 5: M&A transaction volume and mean percent of transactions financed with stocks, relative to cross-listing year

The figure shows the relationship between M&A volume and the percentage of stock financing relative to cross-listing year. The sample consists of 238 successful acquisitions by 196 European cross-listed companies from 1.1.1996 to 31.12.2000 with known method of payment. M&As by the cross-listed companies are included if the company is publicly listed at least in one European exchange at the end of year (t-1). The bar shows the mean M&A volume for four groups. The M&As are divided into four groups by announcement year relative for the calendar year of cross-listing. The line shows the percent of the total transaction volume of the group financed with equity. Mean transaction volume is calculated by summing the M&A volume within the four groups and then dividing by the number of transactions in the group. Takeovers with share payment is the number of takeovers that have been at least partly financed with own shares. Volume financed with own shares is the percentage of equity used in transaction multiplied with the transaction value. Percent of transaction volume is the volume financed with own shares per the M&A volume. All M&A transactions and values are obtained from US Mergers & Acquisitions database of Securities Data Corporation (SDC).

	Before cross-listing	Cross-listing year	1 - 5 years after crosslisting	6 or more years after cross-listing	Total sample
Takeovers	30	18	87	103	238
M&A volume (USD mill.)	38095	13516	115713	246649	413973
Mean transaction volume (USD mill.)	1270	751	1330	2395	1739
Takeovers with share payment	4	10	23	15	52
Volume financed with own shares (USD mill.)	7975	3539	76467	167846	255827
Percent of transaction volume financed with shares	20.9%	26.2%	66.1%	68.1%	61.8%

The mean transaction volume peaks after 6 years of cross-listing, but a more interesting behavioral pattern is the use of stocks after the cross-listing. The increase

is minor in the year of cross-listing, but after that over 66% of the total M&A volume is financed with stocks. The increase is substantial compared to the extent of acquisitions financed with stocks before cross-listing, which is 21% of the total transaction volume.

In conclusion it seems that companies that have been cross-listed for long period are very active cash acquirers of small targets but have lower likelihood of financing the takeovers with stock than the cross-listers on average. But these companies use equity financing in the largest transactions, which increases the equity portion on the total M&A volume. Thus the equity part in 15 acquisitions financed with stocks make up 68.1% of the transaction volume for 103 takeovers of companies that have been cross-listed for longer than 6 years. On the contrary, newly cross-listed firms do not make particularly much more nor larger acquisitions than before cross-listing, but use clearly more stocks as a method of payment than before. The genuine difference is in the percentage of the transaction volume that is financed with stocks. Companies that have been cross-listed between one to five years finance the 66 % of the transaction volume with equity, compared to the mediocre 21 % of equity used before cross-listing.

Thus there is significant support to the *hypothesis B1 that the cross-listing European companies are more likely to use stocks in the acquisitions after the cross-listing than before*. This holds whether the use of stocks is measured as a probability or as a percentage of M&A volume.

7.2.2 ANALYSIS OF THE METHOD OF PAYMENT WITH MATCHING PAIR FIRMS

The likelihood to finance an acquisition with stocks: difference between cross-listed companies and matching pairs

First I test hypothesis B2 that the cross-listed European companies are more likely to use stocks in the acquisitions than the matching pair firms. The following table for the type of payment shows the distribution of the dependent variable, the type of payment.

Table 23: Descriptive statistics for the type of payment

Panel A includes 196 successful acquisitions by cross-listed companies that were announced between 1.1.1996 – 31.12.2000 and have information on type of payment. Panel B includes 91 successful acquisitions by matching pair firms during the same time period. All M&A transactions are obtained from US Mergers & Acquisitions database of Securities Data Corporation (SDC). M&As before the calendar year of cross-listing are excluded, and the company must be publicly listed on at least one European exchange and have financial statements available at the end of year (t-1). If a cross-listed company is excluded for a certain year, also the matching pair is excluded.

	Panel A: Cross-listed		Panel B: Matching pairs	
	Frequency	Percent	Frequency	Percent
Cash payment	155	79.1%	81	89.0%
Hybrid payment	13	6.6%	9	9.9%
Share payment	28	14.3%	1	1.1%
Total	196	100.0%	91	100.0%

Clear difference exists between the two panels of companies. Cross-listed companies have generally used more often stocks (including hybrid and stock payment). When the use of stocks is decomposed into hybrid and stock payment, the difference in frequencies for hybrid payment is not as clear as for stock payment. With the next table I present the results of the test for fourth hypothesis that cross-listing increases the use of stock payment against matching pair firms. The dependent variable is 1 if the acquisition has been at least partly financed with stocks.

Table 24: Explaining the use of equity as a payment method in the takeovers with logit model

This table presents the results of a regression that explains with logit model the discrete dependent variable that receives value 1 if a sample company has used stocks as a payment method and 0 otherwise. The sample consists of successful acquisitions by 196 European cross-listed companies and matching pairs from 1.1.1996 to 31.12.2000 with known method of payment. M&As before the calendar year of cross-listing are excluded, and the company must be publicly listed on at least one European exchange and have financial statements available at the end of year (t-1). If a cross-listed company is excluded for a certain year, also the matching pair is excluded. Financial figures are from Worldscope and Datastream. Cash ratio is the ratio of cash & equivalents to total assets at (t-1). Leverage is the ratio of book value of debt to book value of total assets, averaged over years (t-4) through (t-1). Price-to-earnings is the year-end stock price divided by earnings per share, averaged over years (t-4) through (t-1). Size is measured as natural logarithm of total assets in USD millions, measured at (t-1). Market-to-book is the ratio of market value of equity to book value of equity, averaged over years (t-4) to (t-1). Sales growth is the average sales growth over years (t-4) through (t-1). Return on equity is the earnings per share divided by book equity per share, averaged over years (t-4) through (t-1). Exchange rates measure the deviation from the average exchange rate of local currency of each country for each year against US dollar at (t-1). For first specification, cross-listing dummies are given value 1 if the company has cross-listed in the given time period and is publicly listed at least in one European exchange at (t-1). For second specification the dummy "company is cross-listed at year (t)" is given value 1 if the company is cross-listed or cross-lists during the year (t). The default year is 1996 and years 1997, 1998, 1999 and 2000 are assigned separate dummies. For regional dummies, Central includes Germany, Austria, Switzerland and the Netherlands; Northern includes Finland, Sweden, Norway and Denmark; Western includes France, Belgium and Luxembourg; Dummy Southern includes Spain, Portugal, Italy and Greece; UK and Ireland act together as the default. Industry dummies is the first digit of the company SIC-code. SIC 2 companies act as default, SIC 6 (financial institutions) are excluded and no SIC 9 companies are in the sample. High-tech dummy includes several industries that can be considered high technology industries (See appendix 1)

Dependent Variable: Stocks used as a method of payment

Panel E: Takeovers by cross-listing and matching pair firms with payment information

Independent variables	Exp. sign	(1)		(2)	
		Coeff.	t-ratio	Coeff.	t-ratio
Intercept		-6.237	-2.99 ***	-3.576	-3.34 ***
Financial indicators					
Cash ratio	-	-0.014	-1.15		
Leverage	+	0.002	0.70		
Price-to-earnings	+	0.015	1.59		
Size	+	-0.063	-0.37		
Market-to-book	+	0.024	1.02		
Growth rate of sales	+	0.020	2.79 ***		
Return on equity	-	-0.001	-0.18		
Cross-listing dummies					
Cross-listing 6 or more years ago	+	1.497	2.07 **		
Cross-listing at year (t-5)	+	1.634	1.71 *		
Cross-listing at year (t-4)	+	1.300	1.44		
Cross-listing at year (t-3)	+	-1.202	-0.85		
Cross-listing at year (t-2)	+	0.109	0.10		
Cross-listing at year (t-1)	+	1.699	1.74 *		
Cross-listing at year (t)	+	3.624	3.37 ***		
Company is cross-listed at year (t)	+			0.767	1.87 *
Year dummies					
1997		0.975	1.43	0.418	0.35
1998		1.488	1.29	0.886	0.78
1999	+	1.436	1.29	0.849	0.77
2000	+	2.080	1.24 *	2.189	2.06 **
Regional dummies					
Central		-1.180	0.73	-0.945	-2.00 **
Northern		-0.690	0.87	-0.633	-0.98
Western		-0.310	0.69	-0.440	-0.89
Southern		-2.313	2.60	-0.885	-0.74
Industry dummies					
1-digit SIC code 1		1.639	1.52		
1-digit SIC code 3		1.658	0.75 **		
1-digit SIC code 4		1.515	1.10		
1-digit SIC code 5		2.207	1.02 **		
1-digit SIC code 7		1.995	0.92 **		
1-digit SIC code 8		3.387	1.30 ***		
High-tech dummy	+	1.164	0.61 *	1.222	3.40 ***
Number of observations		287		287	
Pseudo-R²		0.331		0.143	
Significance level		0.00000		0.00003	

***, **, * Significant at the 1, 5 and 10 percent level, respectively

Cross-listing increases the use of equity significantly. The increased use of equity is concentrated immediately after the cross-listing and after a long period of cross-listing. In the second specification the dummy 'company is cross-listed at year (t)' is significant at only at 10% level of significance, but the decomposing of the stock payment into pure stock payment and hybrid payment increases the level of significance for the dummy substantially (See Table 26 below)

Most control variables have expected sign, but significant are only growth rate of sales, year 2000, industry dummies including high-tech and Central Europe for the second specification. Growth rate of sales and market-to-book were also significant in Martin's (1996) study, indicating that companies with high investment opportunities are more active users of equity. Fast-growing companies, high-tech companies, companies from the British Isles and cross-listed companies have more likely used equity to finance acquisitions than other European firms. It is interesting to note that the high-tech effect is not as clear as suggested by the literature, as the dummy loses much of its significance after controlling for financial variables and cross-listing. It seems that high-tech is acting only as a proxy for more fundamental variables, such as growth potential.

Another specification was tried for the dependent variable. The percent of stock used as a payment method was transformed into continuous variable with logit transformation and regressed with OLS regression. The significance for cross-listing dummy remained at same significance level. The multinomial logit model is better able to explain the phenomenon, since the greatest difference between the cross-listed firms and matching pairs is the propensity to make acquisitions financed solely on stock.

Thus I find significant support to the *hypothesis B2 that the cross-listing European companies are more likely to use stocks in the acquisitions than the matching pair firms.*

The test for increased equity financing in acquisitions: The proportion of stocks used to finance acquisitions.

Finally, fifth hypothesis B3 is tested. The hypothesis states that in the acquisitions with equity component, cross-listed European companies use proportionally more stocks than the matching pair firms. The testing is two-fold. First the use of equity is tested as a t-test for the mean percentage of equity used to finance acquisitions. The test reveals if proportionally more equity is used to finance the transaction. Then the use of equity is tested with a more sophisticated multinomial logit model that incorporates control variables into the test.

Table 25: Frequency distribution of equity component

Panel A includes 41 successful acquisitions by cross-listed companies that were announced between 1.1.1996 – 31.12.2000 and were at least partly financed with acquirer's equity. Panel B includes 10 successful acquisitions by matching pair firms during the same time period, which were at least partly financed with acquirer's equity. All M&A transactions are obtained from US Mergers & Acquisitions database of Securities Data Corporation (SDC). M&As before the calendar year of cross-listing are excluded, and the company must be publicly listed on at least one European exchange and have financial statements available at the end of year (t-1). If a cross-listed company is excluded for a certain year, also the matching pair is excluded. The results of the test for equality of variances and means are presented below. The tests are 2-sided and mean tests assume unequal variances because differences in the variances is found.

Percent of shares used to finance the transaction in acquisitions with equity component

	Panel A: Cross-listed		Panel B: Matching pairs	
	Frequency	Percent	Frequency	Percent
Mean		86.3%		43.5%
Median		100.0%		30.7%
Std. Deviation		23.7%		37.8%
Frequencies				
0-10 %	0	0.0%	1	10.0%
10-20 %	0	0.0%	2	20.0%
20-30%	1	2.4%	2	20.0%
30-40%	2	4.9%	2	20.0%
40-50%	3	7.3%	0	0.0%
50-60%	2	4.9%	0	0.0%
60-70%	1	2.4%	0	0.0%
70-80%	1	2.4%	0	0.0%
80-90%	2	4.9%	0	0.0%
90-100%	29	70.7%	3	30.0%
Total	41	100.0%	10	100.0%

Equality tests for variances and means

	Test for equality of variances		t-test for equality of means	
	F	Significance	t-value	Significance
Percent shares used	5.85	0.019	3.42	0.006

The differences in method of payment between the two groups are clear and significant. The control variables must be included to further test the hypothesis. As the main difference seems to be between the choice of 100% stock payment and hybrid payment, my final test explains the use of stocks with multinomial logit, where dependent variable is discrete: 0 means cash payment, 1 hybrid payment and 2 is 100 % stock payment.

Table 26: Explaining the use of equity as a payment method in the takeovers with multinomial logit model

This table presents the results of a multinomial logit model explaining the use of stocks in acquisitions. The dependent variable is discrete. The dependent variable is 0 if the acquiring company has not used stocks, 1 if a combination (hybrid) of stocks and cash(debt) is used and 2 if the acquisition has been financed entirely with stocks. The sample consists of successful acquisitions by 196 European cross-listed companies and matching pairs from 1.1.1996 to 31.12.2000 with known method of payment. M&As before the calendar year of cross-listing are excluded, and the company must be publicly listed on at least one European exchange and have financial statements available at the end of year (t-1). If a cross-listed company is excluded for a certain year, also the matching pair is excluded. Financial figures are from Worldscope and Datastream. Cash ratio is the ratio of cash & equivalents to total assets at (t-1). Leverage is the ratio of book value of debt to book value of total assets, averaged over years (t-4) through (t-1). Price-to-earnings is the year-end stock price divided by earnings per share, averaged over years (t-4) through (t-1). Size is measured as natural logarithm of total assets in USD millions, measured at (t-1). Market-to-book is the ratio of market value of equity to book value of equity, averaged over years (t-4) to (t-1). Sales growth is the average sales growth over years (t-4) through (t-1). Return on equity is the earnings per share divided by book equity per share, averaged over years (t-4) through (t-1). The dummy "company is cross-listed at year (t)" is given value 1 if the company is cross-listed or cross-lists during the year (t). The default year is 1996 and years 1997, 1998, 1999 and 2000 are assigned separate dummies. For regional dummies, Central includes Germany, Austria, Switzerland and the Netherlands; Northern includes Finland, Sweden, Norway and Denmark; Western includes France, Belgium and Luxembourg; Dummy Southern includes Spain, Portugal, Italy and Greece; UK and Ireland act together as the default. Industry dummies are denoted as the first digit of the company SIC-code. SIC 2 companies act as default, SIC 6 (financial institutions) are excluded and no SIC 9 companies are in the sample. High-tech dummy includes several industries that can be considered high technology industries (See appendix 1). A variable for transaction value per acquirer market capitalization is added.

Dependent Variable: Payment form

Panel E: Takeovers by cross-listing and matching pair firms with payment information

Independent variables	Exp. sign	Payment form			
		Hybrid payment		100 % stock payment	
		Coeff.	t-ratio	Coeff.	t-ratio
Intercept		-34.905	0.00	-15.714	-4.00 ***
Transaction value to acquiror market capitalization	+	2.307	3.44 ***	2.456	3.75 ***
Financial indicators					
Cash ratio	+	0.007	0.44	-0.007	-0.41
Leverage	-	0.005	0.42	-0.001	-0.32
Price-to-earnings	+	-0.010	-0.63	0.028	2.22 **
Size	+	-0.019	-0.08	0.532	1.99 **
Market-to-book	+	0.055	1.88	0.082	2.28 **
Growth rate of sales	+	0.020	2.27 **	0.034	3.60 ***
Return on equity	+	-0.003	-0.47	-0.002	-0.21
Cross-listing dummies					
Company is cross-listed at year (t)	+	-0.023	-0.03	4.437	3.00 ***
Year dummies					
1997		-0.224	0.00	1.122	0.65
1998		29.800	0.00	1.406	0.88
1999	+	30.301	0.00	0.888	0.53
2000	+	31.490	0.00	1.408	0.89
Regional dummies					
Central Europe		-2.076	-1.49	-1.509	-1.58
Northern Europe		0.204	0.21	-3.279	-2.16 **
Western Europe		-1.219	-1.13	-0.847	-0.95
Southern Europe		-33.542	0.00	-2.119	-0.80
Industry dummies					
1-digit SIC code 1		1.868	1.29	-26.388	0.00
1-digit SIC code 3		0.914	0.97	2.433	2.48 **
1-digit SIC code 4		0.632	0.46	-2.233	-0.83
1-digit SIC code 5		1.104	0.78	1.863	1.47
1-digit SIC code 7		0.339	0.32	0.762	0.70
1-digit SIC code 8		0.587	0.37	4.746	2.75 ***
High-tech dummy	+	0.478	0.59	1.664	2.12 **
Number of observations		287			
Pseudo-R²		0.401			
Significance level		0.00000			

***, **, * Significant at the 1, 5 and 10 percent level, respectively

Very interesting phenomenon can be seen from the results. Hybrid payment is as common among cross-listed than matching pairs. But for 100 % stock payment, the cross-listing dummy is very significant after a robust control for different variables. The cross-listed companies are very active in making acquisitions that are financed entirely with stocks, even after controlling for various variables. The pseudo- R^2 of the model receives value 0.40, which evidences reasonably good predictive power.

Both the t-test for equality of means and multinomial logit test above support significantly the hypothesis that the cross-listing companies use more equity to finance the takeovers than the matching pairs. Thus there is significant support to the *hypothesis B3 that in the acquisitions with equity component, cross-listed European companies use proportionally more stocks than the matching pair firms.*

The results from the control variables provide new information on the theories motivating the use of stocks in acquisitions. In addition to fast-growing companies, firms with high market-to-book and price-to-earnings and high-tech companies are likely to make pure stock swaps. This supports Martin's (1996) theory that firms with high level of investment opportunities prefer stock financing. To further test the investment opportunities hypothesis, I also tried another specification with research expenses. For 100 % stock payment, the research expenses per sales was positive and significant at 5 % level, and for cross-listing dummy the t-value was also significant at 5 % level.

The significance of market-to-book and price-to-earnings in explaining stock financing could also be interpreted with another line of literature in financial economics: information asymmetries. If the acquirers are inclined to pay with stocks when their stocks are overvalued (Myers and Majluf, 1984), stock payment should occur more often when there are high level of information asymmetries and higher potential for valuation errors. High market-to-book and price-to-earnings indicate this possibility. Also some evidence is available to risk sharing hypothesis: As the relative size of transaction becomes higher, the acquirer is more likely to finance the transaction with stock and thus forcing the target to share the potential post-acquisition revaluation effects.

The reasons for the increased use of equity in acquisitions after cross-listing would require more analysis. One reason is obviously the convenience of U.S. listing for the new U.S. shareholders. Another reason might be related to home bias and visibility. Kang and Stulz (1997) observe that overseas investor portfolio holdings are biased towards larger, more well-known manufacturing firms. This may suggest that cross-listing reduces home bias by making the foreign firm more visible and more similar to U.S. firms. I also hypothesize that one reason is the reduced information asymmetries between U.S. target and European acquirer on the intrinsic value of acquirer's equity. The U.S. target shareholders seem to be more favorable to stock payment after cross-listing. This may indicate that the shareholder protection and more extensive disclosure standards of the U.S. financial market reduce the private information of the acquiring insiders relative to the U.S. target.

PART IV: SUMMARY

8 SUMMARY AND CONCLUSIONS

This study investigates the unexplored relationship between transatlantic cross-listings and M&As by European companies. The impact of cross-listing is divided into two categories: The effect on the acquiring likelihood and the effect on the method of payment. From the two categories, five hypotheses are formed. I test the cross-listed firms separately before and after the cross-listing and together with matching pair firms for the period after the cross-listing.

I form a unique database to study the relationship combining data on cross-listings, M&A activity and financial statements. My final sample includes 196 European cross-listed firms and as many matching pairs. The M&As of these companies are gathered from SDC database for the period from 1.1.1996 to 31.12.2000. To control for various macro-and microeconomic variables influencing the M&A activity, I collect financial information from Worldscope and Datastream databases for the period from 1992 to 1999.

This thesis has multiple contributions to the existing knowledge of cross-border Mergers & Acquisitions and cross-listings. For transatlantic M&A activity I find that European firms that are cross-listed in the U.S. are significantly more active in their U.S. acquisitions than matching pair firms, especially shortly after the cross-listing. However, when compared to the period before cross-listing, the likelihood of acquisitions for cross-listed companies does not increase nor does the M&A volume. The findings on the acquiring likelihood are summarized in the next table:

Table 27: The hypotheses and findings on the acquiring likelihood

Hypotheses on cross-listings and acquiring likelihood	Findings
A1: Cross-listing European companies are more likely to acquire U.S. companies after the cross-listing than before.	No consistent support is found. For the other specification firms that have been cross-listed for over 5 years are significantly more likely to acquire.
A2: Cross-listing European companies are more likely to acquire U.S. companies than the matching pair firms.	Strong support is found. Both with and without companies that have R&D information cross-listing dummy is significant at 1% level of significance.

The evidence on the acquiring likelihood provides some support for the main theories of mergers and acquisitions. The free cash flow hypothesis and efficiency hypothesis receive some support, but the variables are not consistently significant. Surprisingly, my results do not provide any evidence for the internalization hypothesis. On the contrary, high-tech dummy has negative sign for the analysis of acquiring likelihood. When I include variable research expenses per sales to the acquiring likelihood regression, R&D expenses has negative sign but high-tech dummy has insignificant positive sign. This indicates that the internalization of intangible assets is not a major reason for European companies to conduct U.S. takeovers. However, my sample does not consist of unbiased sample of European companies but relatively high-tech oriented cross-listers and industry-matched firms, which makes the evaluation of the internalization theory quite awkward.

The analysis of the payment method contributes the main results of this thesis. As European companies cross-list, the use of stocks as a payment method increases during the cross-listing year. The genuine difference is in the percentage of the transaction volume that is financed with stocks. Companies that have been cross-listed for between one to five years finance 66 % of the value of the transactions with

equity, compared to the mediocre 21 % of equity used before cross-listing. Against matching pairs, the cross-listed firms use very significantly more takeovers financed solely with stocks. If the acquisition is financed at least partly with stocks, the cross-listed firms are inclined to use more stocks in the transaction than the counterparts listed only in Europe. The next table summarized the findings on the method of payment.

Table 28: The hypotheses and findings on the method of payment

Hypotheses on cross-listings and the method of payment	Findings
B1: Cross-listing European companies are more likely to use stocks in the acquisitions after the cross-listing than before.	Support is found for the increased stock payment during the cross-listing year. Also transaction volume financed with equity increases.
B2: Cross-listing European companies are more likely to use stocks in the acquisitions than the matching pair firms.	Strong support is found. The cross-listing dummy is significant at 10% level, and for the cross-listing year at 1% level.
B3: In the acquisitions with equity component, cross-listed European companies use proportionally more stocks than the matching pair firms.	Strong support is found. Mean of the transaction value financed with stock is higher for cross-listed firms. Takeovers solely financed with stock are more likely. Both are significant at 1% level.

The results on the method of payment support the main theories of choice of financing in acquisitions. With this evidence the theories can also be evaluated in international context, which is an unexamined field of study. Following Martin (1996) I find that the investment opportunities are a major driver for choices of financing. Most of the variables that proxy for high investment opportunities denote significant positive relation to the likelihood of using stock financing, especially growth rate of sales and high-tech dummy. When the likelihood of a takeover with 100% stock financing is explained, also price-to-earnings and research expenses per sales are significant at 5% level. Also Hansen's (1987) theory for risk sharing receives support, significant transactions are more often financed with stock. This may indicate that the acquiring managers want to force the target to share any post-acquisition revaluation effects in significant transactions.

Additionally, the choice of financing may have some more dubious elements (Myers and Majluf, 1984). Information asymmetries for the intrinsic value of acquirer's stock are relatively higher when the above-mentioned characteristics of high investment opportunities are realized. The acquiring firm may derive advantage from the

opportunity and use stock financing when they believe the stock to be overvalued. Thus it would be interesting to know more on the economic consequences of the transactions by cross-listed companies. To conclude, these three theories of the choice of payment method in transatlantic M&As should be examined more closely to obtain more reliable conclusions, since my inference is derived from control variables.

Finally, I can conclude that the evidence of this thesis is able to shed light on the research problem. The U.S. cross-listings and M&A behavior of European companies are strongly linked. The significant increase in the use of stocks indicates that the willingness to obtain an M&A currency for transatlantic M&As is a major reason for European companies to cross-list on the U.S. exchanges.

The reasoning behind this conclusion is following: As the literature review showed, the stock financing is preferable in some takeovers for various reasons. The European firms seem to change their takeover behavior in the U.S. after the cross-listing event. Since the takeover behavior changes, it suggests that the managers considered the takeover financing as suboptimal before the cross-listing. This suggests that one motive for the cross-listing is that it enables stock financed acquisitions. If there would not be such a motive - i.e. no value for the increased possibilities to finance with stocks - the transactions should be financed equally irrelevant of the cross-listing status.

- However, the causality between cross-listing and acquisition decision is not completely clear. The common hypothesis is that firms cross-list in order to obtain an M&A currency for transatlantic M&As. But actually the cross-listing may be also a result from major commitments to the U.S. market. The indication of this is the evidence that the cross-listed firms have been active cash acquirers before cross-listing. The cross-listing may be decided after the increased strategic importance of the U.S. market will cause the company to cross-list. After cross-listing the companies are able to finance the acquisitions with stocks, take benefit on the possibility and become more active in the use of stock financing. This thesis evidences a relation between U.S. cross-listing and M&As, but the strong conclusions on the causality cannot be made based on this evidence.

The stock financing of acquisitions is certainly preferable in some situations, but the reasons enabling the increased stock financing after cross-listing would deserve more analysis. Reasons could be the increased convenience of U.S. listing for the target U.S. shareholders and the reduction of home bias via visibility. The difference in pure stock swaps in acquisitions is an indicative of potential tax motives, as the transaction form is often tax-free. I also hypothesize that one reason is the alleviated information asymmetries between U.S. target and European acquirer on the intrinsic value of acquirer's equity following the cross-listing. The reconciling of accounts according to U.S. GAAP and registration with SEC seem to make the target managers more trustful towards the stocks of European companies.

9 SUGGESTIONS FOR FURTHER RESEARCH

The possibilities for further research on the field are numerous, as this thesis is the first to investigate the relationship. The first possibility could be to expand the geographic coverage of the sample data. For example, does this phenomenon differ for companies outside Europe? Even more global view could be taken, investigating the cross-listing and M&A activity between different countries. For example, the U.S. companies cross-listing to Europe may show a different trend in the M&A activity. Secondly the results from this thesis could be further detailed. A longer time period could be taken into use with the sacrifice of availability of financial information.

Also the choice of payment method in cross-border acquisitions is a field that could be covered with a focused research on the subject. The previous studies with U.S. data employ sophisticated methodologies, which could be used to test the different hypothesis for the underlying reasons influencing the choice of acquisition financing. In particular, investment opportunities hypothesis could be contrasted with the theories on information asymmetries as a motivation to choose stock financing for a takeover. Additionally the theories on home bias could be employed to elaborate the above-mentioned study – cultural and geographic proximity factors could be of decisive importance when making a choice between foreign stock and cash payment.

The combination of the data in this thesis and extensive literature on the shareholder abnormal returns could be used to clarify the above questions. The short- and long-

term abnormal returns for target and acquiring shareholders could be studied to see if there are differences in the abnormal returns between the cross-listed and otherwise similar firms. If the target short- and long-term abnormal returns are higher for acquisitions financed with stocks by domestic-listed than cross-listed companies, then non-US listed stocks are charged a premium. This premium could be charged because higher information asymmetries cause non-U.S. stocks to be accepted below their intrinsic value. However, this premium may be decreased with cross-listing. This test setting could be used to study if cross-listing alleviates the information asymmetries between U.S. target and European acquirer.

The understanding of the relation between cross-listing and transatlantic mergers and acquisitions is a relevant but scarcely covered subject. As I referred in the introduction, the understanding of this relationship may have unexpected economic significance for the shareholders: The acquisitions financed with stocks are generally value-destroying for long-term shareholders. If cross-listing leads to significant increase in large acquisitions financed with stocks, then the cross-listing may have questionable consequences for the shareholders. A study exploring the long-term value creation in M&As for cross-listed companies and matching pairs would reveal the economic effects of the relationship that I found in this thesis.

REFERENCES:

- Aboody, D., 2000, Purchase versus pooling in stock-for-stock acquisitions: Why do firms care?, Working paper (University of California).
- Alanen, J., 2001, Is high-technology M&A different? An empirical study of shareholder gains and acquisition behaviour in US technology M&A transactions, Master's thesis, Helsinki School of Economics and Business Administration.
- Amihud, Y., B. Lev, and N. Travlos, 1990, Corporate control and the choice of investment financing: The case of corporate acquisitions, *Journal of Finance* 45, 603-616
- Baca S., B. Garpeand R. Weiss, 2000, The rise of sector effects in major equity markets, *Financial Analysts Journal*, September-October, 35-40.
- Baker, H., J. Nofsinger and D. Weaver, 1998, International cross-listing and visibility, Working Paper (ssrn.com).
- Barber B. and J. Lyon, 1997, Detecting long-run abnormal stock return: The empirical power and specification of test statistics, *Journal of Financial Economics* 43, 341-372.
- Bendaniel D. and A. Rosenbloom, 1998, *International M&A, Joint Ventures, and Beyond* (John Wiley & Sons, Inc.).
- Brav, A., C. Ceczy and P. Gompers, 2000, Is the abnormal return following equity issuances anomalous, *Journal of Financial Economics* 56, 209-249.
- Buckley, P. and M. Casson, 1998, Analyzing foreign market entry strategies: Extending the internalization approach, *Journal of International Business Studies* 29, 539-562.
- Brainard, S., 1997, An empirical assessment of the proximity-concentration trade-off between multinational sales and trade, *American Economic Review* 87, 520-544
- Brealey, R. and S. Myers, 2000, *Principles of Corporate Finance*, (McGraw-Hill, sixth edition).
- Cakici, N., C. Hessel and K. Tandon, 1996, Foreign acquisitions in the United States: Effect on shareholder wealth of foreign acquiring firms, *Journal of Banking & Finance* 20, 307-329.
- Carleton, W., D. Guilkey, R., Harris and J. Stewart, 1983, An empirical analysis of the role of the medium of exchange in mergers, *Journal of Finance* 38, 813-826.
- Cavaglia, S., C., Brightman and M. Aked, 2000, The increasing importance of industry factors, *Financial Analysts Journal*, September-October, 41-54.

Caves, R., 1971, International corporations: the industrial economics of foreign investment, *Economica* 38, 1-28.

Caves, R., 1982, *Multinational Enterprise and Economic Analysis* (Cambridge University Press).

Cebenoyan A., G. Papaioannou and N. Travlos, 1992, Foreign takeover activity in the U.S. and wealth effects for target firm shareholders, *Financial Management*, Autumn, 59-68.

Davis, M., 1996, the purchase vs. pooling controversy: How the stock market responds to goodwill", *Journal of Applied Corporate Finance* 9, 50-59

Domowitz, I., J. Glen and A. Madhavan, 1998, International cross-listing and order flow migration: Evidence from an emerging market, *Journal of Finance* 53, 2001-2027.

Doukas, J. and N. Travlos, 1988, The effect of corporate multinationalism on shareholders' wealth: evidence from international acquisitions, *Journal of Finance* 5, 1161-1175.

Eiteman, D., A. Stonehill and M. Moffett, 1998, *Multinational Business Finance* (Addison-Wesley Publishing Company, Eight Edition).

Errunza V. and D. Miller, 2000, Market segmentation and the cost of capital in international equity markets, working paper (ssrn.com).

Eun, C., R. Kolodny and C. Scheraga, 1996, Cross-border acquisitions and shareholder wealth: Tests of the synergy and internalization hypothesis, *Journal of Banking & Finance* 20, 1559-1582.

Foerster, S. and G. Karolyi, 1996, Multimarket trading and liquidity, working paper (Ivey Business School).

Fanto, J. and R. Karmel, 1997, A report on the attitudes of foreign companies regarding a U.S. listing, working paper (NYSE, 97-01).

Foerster, S. and G. Karolyi, 1999, The effects of market segmentation and investor recognition on asset prices: Evidence from foreign stock listings in the United States, *Journal of Finance* 54, 981-1013.

Froot K. and J. Stein, 1991, Exchange rates and foreign direct investment: an imperfect capital markets approach, *The Quarterly Journal of Economics*, November, 1191-1217.

Gosh A., 1997, Accounting based performance of acquiring firms and method of payment used in acquisitions, working paper (ssrn.com).

Gort, M., 1969, An economic disturbance theory of mergers, *Quarterly Journal of Economics* 83, 624-642.

- Greene, W., 1993, *Econometric Analysis*, (Prentice Hall, Second edition).
- Grinblatt, M. and M. Keloharju, 2001, How distance, language and culture influence stockholdings and trades, *Journal of Finance*, forthcoming.
- Hansen, R., 1987, A theory for the choice of exchange medium in mergers and acquisitions, *Journal of Business* 60, 75-95.
- Harris, S. and D. Ravenscraft., 1991, The role of acquisitions in foreign direct investment: Evidence from the U.S. stock market, *Journal of Finance* 3, 825-844.
- Harford, J., 1999, Corporate cash reserves and acquisitions, *Journal of Finance* 6, 1969-1997.
- Huang, Y. and R. Walkling, 1987, Target abnormal returns associated with acquisition announcements: payment, acquisition form and managerial resistance, *Journal of Financial Economics* 19, 329-349.
- Jensen, M., 1986, Agency costs of free cash flow, corporate finance, and takeovers, *American Economic Review* 76, 323-239.
- J.P. Morgan, 2000, The ADR reference guide (www.adr.com).
- Judge, G., W. Griffiths, R. Carter Hill, H. Lütkepohl and T. Lee, 1985, *The Theory and the Practise of Econometrics* (John Wiley and Sons, Singapore).
- Kang, J. and R. Stulz, 1997, Why is there a home bias? An analysis of foreign portfolio equity ownership in Japan, *Journal of Financial Economics* 46, 3-28.
- Kohers, N. and T. Kohers, 2000, The value creation potential of high-tech mergers, *Financial Analysts Journal*, May/June, 40-49.
- KPMG, 2001, Europe's corporate invasion of North America at all time high, KPMG Virtual library (<http://www.kpmg.co.za/library/2001/jan2001/dealwatch.htm>).
- Kramer, J. and T. Pope, 1998, *Prentice Hall's federal taxation 1999. Corporations, trusts and partnerships.* (Prentice Hall).
- Lee, C. and F. Choi, 1992, Effects of alternative goodwill treatments on merger premia: Further empirical evidence, *Journal of International Financial Management and Accounting* 4, 220-236.
- Lins, K., D. Strickland and M. Zenner, 2000, Do non-U.S. firms issue stock on U.S. equity markets to relax capital constraints?, working paper (University of South Carolina).
- Lombardo, D. and M. Pagano, 1999, Law and equity markets: a simple model, working paper (no. 25, CSEF).

- Loughran T. and J. Ritter, 1995, The new issues puzzle, *Journal of Finance* 50, 23-51.
- Loughran, T., and Vihj, A., 1997, Do long-term shareholders benefit from corporate acquisitions?, *Journal of Finance* 52, 131-145
- Marsh, P. 1982, The choice between equity and debt: An empirical study, *Journal of Finance* 37, 121-144.
- Martin, K., 1996, The method of payment in corporate acquisitions, investment opportunities, and management ownership, *Journal of Finance* 51, 1227-1246.
- Martin, P. and H. Rey, 1999, Financial integration and asset returns, CEPR Discussion Paper no. 2282, November.
- Mckinsey, 2000, Internet M&A booms, *Mckinsey quarterly* 4, 18-21.
- Merton, R., 1987, A simple model of capital market equilibrium with incomplete information, *Journal of Finance* 42, 483-510.
- Miller, D, 1999, The market reaction to international cross-listings: Evidence from depository receipts, *Journal of Financial Economics* 51, 103-123.
- Morck, R. and B. Yeung, 1991, Why investors value multinationality, *Journal of Business* 64, 165-187.
- Morck, R. and B. Yeung, 1992, Internalization. An event study test, *Journal of International Economics* 33, 41-56.
- Myers, S. and N. Majluf, 1984, Corporate financing and investment decisions when firms have information that investors do not have, *Journal of Financial Economics* 13, 187-221.
- Nasdaq web pages, 2001, (www.nasdaq.com).
- Niden, C., 1986, The role of taxes in corporate acquisitions: Effects on premium and type of consideration, Working paper (University of Chicago).
- NYSE web pages, 2001, (www.nyse.com).
- Oxelheim, L., T. Randøy and A. Stonehill, 2001, On the treatment of finance-specific factors within the OLI paradigm, Working paper (No. 554, The Research Institute of Industrial Economics, IUI).
- Pagano, M., A. Röell and J. Zechner, 1999, The geography of equity listing: Why do European companies list abroad?, working paper (No.28, CSEF).
- Palepu, K., 1986, Predicting takeover targets. A methodological and empirical analysis, *Journal of Accounting and Economics* 8, 3-35.

PriceWaterhouseCoopers, 2000, International accounting standards, similarities and differences. IAS, US GAAP and UK GAAP. (www.pwcglobal.com).

Pulatkouak, M. and Sofianos, G., The distribution of global trading in NYSE-listed non-U.S. stocks, working paper (NYSE, 99-03).

Raghavan, A. and M. Sesit, 1993, Financing boom: Foreign firms raise more and more money in the U.S. markets, Wall Street Journal, 5/10/1993. (In Eiteman, 1998, p.330).

Ritter, J., 1991, The long-run performance of initial public offerings, Journal of Finance 46, 3-27.

Roll, R., 1986, The Hubris hypothesis of corporate takeovers, Journal of Business 59, 197-216.

Sarkissian, S. and M. Schill, 2001, The overseas listing decision: New evidence of proximity preference, working paper (ssrn.com).

Saudagaran S., 1988, An empirical study of selected factors influencing the decision to list on foreign stock exchanges, Journal of International Business Studies 19, 101-127.

Saudagaran, S. and G. Biddle, 1992, Financial disclosure levels and foreign stock exchange listing decisions, Journal of International Financial Management and Accounting 4, 106-148.

Servaes, H., 1991, Tobin's Q and the gains from takeovers, Journal of Finance 66, 409-419.

Smith K. and G. Sofianos, 1997, The impact of an NYSE listing on the global trading of non-U.S. stocks, Working paper (NYSE, 97-02).

Spiess, K. and J. Affleck-Graves, 1995, Underperformance in long-run stock returns following seasoned equity offerings, Journal of Financial Economics 38, 243-267.

Stoughton, N., K. Wong and J. Zechner, 1998, IPO's and product quality, working paper (University of Vienna).

Stulz, R., 1999, Globalization of equity markets and the cost of capital, working paper (NBER, no. 7021).

Taggart, R., 1977, a model of financing decision, Journal of Finance 32, 1467-1484.

Tesar, L. and I. Warner, 1995, Home bias and high turnover, Journal of International Money and Finance 14, 467-492.

Vasconcellos, G. and R. Kish, 1998, Cross-border mergers and acquisitions: the European-US experience, Journal of Multinational Financial Management 8, 431-450.

Weston, F., K. Chung and S. Hoagm, 1990, Mergers, Restructuring and Corporate Control (Prentice Hall)

Weston, F., K. Chung, and J. Siu, 1998, Takeovers, restructuring and corporate Governance (Prentice Hall)

Weston F., 1999, Mergers and performance, working paper (UCLA)

APPENDICES:

I have three appendices in this thesis, which are described below.

APPENDIX 1: High tech codes used in the thesis to denote high-tech dummy

The appendix shows the 4-digit high-tech codes that denote for high-tech dummy in my thesis. The source is Pagano et al.(1999)

APPENDIX 2: Correlation table for the acquiring likelihood with matching pairs.

The data source is takeovers in the same than in section 7.1.2 The analysis of acquiring likelihood with matching pair firms. The sample includes 678 firm years for cross-listed companies between 1996 and 2000 and 678 firm years by matching pair firms during the same time period. M&As that were announced between 1.1.1996 and 31.12.2000 are included. All M&A transactions are obtained from US Mergers & Acquisitions database of Securities Data Corporation (SDC).

APPENDIX 3: Correlation table for the variables in the analysis of the payment method with matching pairs

The data source is takeovers in the same than in section 7.2.2 Analysis of the method of payment with matching pair firms. The sample includes 196 successful acquisitions by cross-listed companies that were announced between 1.1.1996 – 31.12.2000 and have information on type of payment and 91 successful acquisitions by matching pair firms during the same time period. All M&A transactions are obtained from US Mergers & Acquisitions database of Securities Data Corporation (SDC).

APPENDIX 1: High tech codes used in the thesis to denote high-tech dummy

SIC-code	Description
2830	drugs
2833	medicinal chemicals, botanical products
2834	pharmaceutical preparations
2835	in vitro, in vivo diagnostics
2836	biological products, ex diagnostics
3570	computer and office equipment
3571	electronic computers
3572	computer storage devices
3575	computer terminals
3576	computer communication equipment
3577	computer peripheral equipment
3651	household audio and video equipment
3660	communication equipment
3661	telephone and telegraph apparatus
3663	radio, tv broadcast, communication equipment
3669	communications equipment
3670	electronic components and accessories
3671	electron tubes
3672	printed circuit boards
3674	semiconductor and related device
3760	guided missiles, space vehicles
3761	guided missiles, space vehicles
3764	guided missiles, space vehicles propulsion
3769	guided missiles, space vehicles parts
3810	search, detection, naval, guided, aero systems
3812	search, detection, naval, guided, aero systems
3820	laboratory apparatus, optical, measure, control instruments
3821	laboratory apparatus and furniture
3822	automatic regulating controls
3823	industrial measurement instruments
3826	laboratory analytical instruments
3840	surgical, medical, dental instruments
3841	surgical, medical instruments, apparatus
4800	communications
4810	telephone communications
4812	radiotelephone communications
4813	phone comm ex radiotelephone
4820	telegraph and other mess. communication
4822	telegraph and other mess. communication
4830	radio, tv broadcasting stations
4832	radio broadcasting stations
4833	television broadcasting stations
4840	cable and other pay tv services
4841	cable and other pay tv services
4890	communication services
4899	communication services
7370	cmp programming, data processing
7371	computer programming service
7372	prepackaged software
7373	component integrated system design

Source: Pagano et al. (1999)

APPENDIX 2: Correlation table for the acquiring likelihood with matching pairs

Correlation Table		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
Variable																												
1 Acquirer dummy		1.000	-0.022	-0.035	-0.003	.162**	-0.002	-.054**	.071**	-0.037	-0.051	.162**	.136**	.142**	.055*	.011	.001	-0.022	-0.004	.035	.013	-0.053	.073**	-.060*	.001	-.126**	.058**	.080**
2 Cash ratio		-0.022	1.000	-0.122**	-0.014	-.263**	-0.023	.211**	-.285**	.044	.521**	-.061**	.131**	.003	.044	.056*	.027	.048	.079**	.044	.088**	.137**	.148**	-0.006	-0.033	-.080**	.210**	.026
3 Leverage		-0.035	-0.122**	1.000	-0.079**	.168**	.348**	.003	.042	.055*	-.247**	.048	.184**	.076**	.049	.028	.038	.048	.053	.068**	-.088**	-0.029	-0.049	.041	-.071**	-0.008	.067**	-0.007
4 Price-to-earnings		-0.003	-0.014	-0.079**	1.000	-.093**	.121**	.023	.153**	-.128**	-.122**	.047	-.064**	-.102**	-0.013	-0.022	.008	.033	.033	.033	.016	.190**	.092**	-0.007	-0.007	-0.010	-.062**	.113**
5 Size (Assets)		.162**	-.263**	.168**	-.093**	1.000	-.233**	.348**	.112**	.010	-.320**	.588**	.125**	.307**	.018	-0.030	-0.051	-.070**	-.076**	-.059**	-.210**	-.219**	.092**	-.093**	.053	.137**	-.129**	-.065**
6 Market-to-book		-0.002	-0.023	.348**	.121**	-.233**	1.000	.164**	.238**	.044	.007	-0.008	.103**	.009	.005	-0.007	-0.002	.051	.077**	.087**	.253**	.173**	-0.048	-0.132**	-.107**	-.087**	.278**	.129**
7 Growth rate of sales		-.054**	.211**	.003	.023	-.348**	.164**	1.000	-.120**	-0.038	.438**	-.119**	.068**	-.127**	.006	-0.007	.031	.127**	.152**	.040	.202**	.198**	-0.006	.021	-.062**	-0.041	.059**	.097**
8 Return on equity		.071**	-.265**	.042	.153**	.112**	.238**	-.120**	1.000	.022	-.264**	.071**	-0.029	.048	-0.037	.011	.001	-0.004	-0.053	-.088**	-0.006	-.062**	.057**	-0.011	-.108**	-0.010	.045	.004
9 Exchange rates		-0.037	.044	.055**	-.128**	.010	.044	-0.038	.022	1.000	.047	-.071**	.019	.060**	-0.034	-0.035	-0.044	-0.001	.028	-0.002	-0.049	-.069**	-.167**	-.057**	-.097**	-.161**	.355**	-.648**
10 Research expenses per sales		-0.051	.521**	.247**	-.122**	.320**	.007	.438**	-.264**	.047	1.000	-.087**	.041	.041	.068	.031	-0.032	-0.022	-0.020	.015	.297**	.047	-.074**	-0.054	-0.024	-0.055	.148**	.058
11 Market capitalization		.162**	-.061**	.048	.047	.568**	-0.008	-.119**	.071**	-.071**	.071**	1.000	.168**	.223**	.002	-0.008	.001	-0.011	-0.008	.005	-.126**	.098**	.086**	-.118**	-0.015	.053**	-0.015	.094**
12 Company is cross-listed at year (t)		.136**	.131**	.184**	-.064**	.125**	.103**	.068**	-0.029	.019	.041	.168**	1.000	.494**	.181**	.211**	.247**	.251**	.278**	.198**	-0.002	-0.051	-.087**	.014	-.071**	.020	.104**	.000
13 Cross-listing 5 or more years ago		.142**	.003	.076**	-.102**	.307**	.009	-.127**	.048	.060**	.041	.223**	.494**	1.000	-.088**	-.104**	-.122**	-.130**	-.136**	-.098**	-.085**	-.161**	-.167**	.022	-.062**	.044	.168**	-.028
14 Cross-listing at year (t-5)		.055**	.044	.049	-0.013	.016	.005	.006	-0.037	-0.034	.066	.002	.181**	-.088**	1.000	-0.038	-0.045	-0.048	-0.050	-0.036	.013	-0.011	-0.014	.009	.021	-0.015	-0.001	.041
15 Cross-listing at year (t-4)		.011	.058**	.028	-0.022	-0.030	-0.007	-0.007	.011	-0.035	.031	-0.009	.211**	-.104**	-0.038	1.000	-0.052	-.056**	-.058**	-0.042	.020	.013	.020	.013	-0.014	-0.018	-0.005	.030
16 Cross-listing at year (t-3)		.001	.027	.038	.008	-0.051	-0.002	.031	.001	-0.044	-0.032	.001	.247**	-.122**	-0.045	-0.052	1.000	-.065**	-.066**	-0.049	.023	.035	.022	.008	.007	-0.004	-0.028	.043
17 Cross-listing at year (t-2)		-0.022	.048	.048	.033	-.070**	.051	.127**	-0.004	-0.001	-0.022	-0.011	.251**	-.130**	-0.048	-.056**	-.065**	1.000	-.073**	-0.052	.050	.034	.027	.002	.002	-0.003	-0.025	.002
18 Cross-listing at year (t-1)		-0.004	.079**	.053	.033	-.076**	.077**	.152**	-0.053	.028	-0.020	-0.008	.278**	-.136**	-0.050	-.058**	-.068**	-.068**	1.000	-.055**	.044	.050	.042	-0.024	.001	.019	-0.029	-.057**
19 Cross-listing at year (t)		.035	.044	.068**	-0.023	-.059**	.067**	.040	-.080**	-0.002	.015	.005	.198**	-.088**	-0.036	-0.042	-0.048	-0.052	-.055**	1.000	.003	.040	-0.002	-0.006	-0.015	-0.024	.031	.020
20 1-Digit SIC code		.013	.088**	-.088**	.016	-.270**	.253**	.202**	-0.049	.297**	-.126**	-0.002	-.085**	.013	.020	.023	.050	.050	.044	.003	1.000	.088**	-0.022	-.055**	.060**	.016	.008	.052
21 High-tech dummy		-0.053	.137**	-0.029	.190**	-.218**	.173**	.198**	-.062**	.068**	-.074**	.096**	-.087**	-.167**	-0.014	.020	.022	.027	.042	-0.002	.040	.088**	-.022	-.055**	.060**	.016	.008	.052
22 Central		.073**	-.148**	-0.048	.052**	.082**	-0.048	-0.006	.057**	.167**	-.074**	.096**	-.087**	-.167**	-0.014	.020	.022	.027	.042	-0.002	.040	.088**	-.022	-.055**	.060**	.016	.008	.052
23 Northern		-.060**	-0.006	.041	-0.007	-.093**	.132**	.021	-0.011	-.057**	-0.054	-.119**	.014	.022	.009	.013	.008	.002	.001	-0.015	.060**	.036	-.218**	1.000	-.184**	-.145**	-.347**	-0.006
24 Western		.001	-0.033	-.071**	-0.007	.053	-.107**	-.062**	-.108**	-.097**	-.024	-0.015	-.071**	-.082**	.021	-0.014	.007	.002	.001	-0.015	.060**	.036	-.218**	1.000	-.184**	-.145**	-.347**	-0.006
25 Southern		-.128**	-.090**	-0.008	-0.010	.137**	-.097**	-0.041	-0.010	-.161**	-.055	.058**	.020	.044	-0.015	-0.018	-0.004	-0.003	.019	-0.024	.031	.008	-0.022	-.410**	-.347**	1.000	-0.043	.008
26 UK and Ireland		.053**	.210**	.067**	-.062**	-.128**	.279**	.059**	.045	.355**	.148**	-0.015	.104**	.168**	-0.001	-0.005	-0.028	-0.025	-0.029	.031	.008	-0.022	-.410**	-.347**	1.000	-.250**	1.000	-0.043
27 Year of takeover (announcement)		.080**	.026	-0.007	.113**	-.065**	.128**	.097**	.004	-.048**	.058	.094**	.000	-0.028	.041	.030	.043	.002	-.057**	.020	.052	.097**	.036	-0.006	.018	.008	-0.043	1.000

* Correlation is significant at the 0.05 level (2-tailed).

** Correlation is significant at the 0.01 level (2-tailed).

APPENDIX 3: Correlation table for the variables in the analysis of the payment method with matching pairs

Correlation Table																																	
Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30			
1 Cash payment	1.000	-620 ^(*)	-721 ^(*)	-316 ^(*)	-278 ^(*)	-102	137 ^(*)	-163 ^(*)	242 ^(*)	-255 ^(*)	-420 ^(*)	0.010	-288 ^(*)	0.011	-121 ^(*)	0.063	-0.096	-0.030	0.068	0.006	-0.086	-231 ^(*)	-219 ^(*)	-198 ^(*)	0.063	0.009	-0.028	0.014	-0.042	-0.061			
2 Hybrid payment	-620 ^(*)	1.000	-0.097	238 ^(*)	223 ^(*)	0.019	0.030	0.028	-162 ^(*)	223 ^(*)	197 ^(*)	0.089	214 ^(*)	-0.039	-0.057	-0.079	0.050	-0.021	-0.068	-0.060	0.044	0.094	147 ^(*)	0.094	-118 ^(*)	0.055	0.000	-0.046	0.080	0.132			
3 Pure stock payment	-721 ^(*)	-0.097	1.000	190 ^(*)	156 ^(*)	0.113	-200 ^(*)	181 ^(*)	-164 ^(*)	128 ^(*)	359 ^(*)	-0.091	181 ^(*)	0.020	204 ^(*)	-0.010	0.077	0.056	-0.027	0.045	0.070	210 ^(*)	148 ^(*)	166 ^(*)	0.024	-0.050	0.036	0.022	-0.018	-0.027			
4 Relative transaction size	-316 ^(*)	238 ^(*)	190 ^(*)	1.000	427 ^(*)	-0.024	-0.048	0.073	-0.109	0.033	0.116	-0.025	0.018	-0.087	-0.017	-0.078	0.011	-0.054	-0.041	0.063	191 ^(*)	-0.031	116 ^(*)	0.082	-0.036	0.028	0.095	-0.025	-0.044	0.045			
5 Value of the transaction	-278 ^(*)	223 ^(*)	156 ^(*)	427 ^(*)	1.000	-130 ^(*)	0.036	0.076	198 ^(*)	0.028	-0.016	0.029	-0.040	328 ^(*)	-0.021	0.011	-0.018	0.042	-0.025	-0.041	-0.013	-0.019	-0.035	0.091	0.006	-0.029	0.004	-0.003	0.010	0.088			
6 Cash ratio	-102	0.019	0.113	-0.024	-130 ^(*)	1.000	-0.018	0.049	-285 ^(*)	-0.029	148 ^(*)	-120 ^(*)	381 ^(*)	-150 ^(*)	224 ^(*)	147 ^(*)	0.056	-0.088	-0.028	133 ^(*)	127 ^(*)	-0.019	215 ^(*)	147 ^(*)	-190 ^(*)	0.013	0.028	0.028	-0.039	-0.033	-0.054		
7 Leverage	137 ^(*)	0.030	0.200 ^(*)	-0.048	0.036	-0.018	1.000	-166 ^(*)	0.113	120 ^(*)	0.010	0.019	-246 ^(*)	-0.115	-0.001	143 ^(*)	-0.008	-0.070	-0.032	-178 ^(*)	-0.099	0.061	-158 ^(*)	-242 ^(*)	0.013	0.028	0.028	-0.039	-0.033	-0.054			
8 Price-to-earnings	-163 ^(*)	0.028	181 ^(*)	0.073	0.076	0.049	-166 ^(*)	1.000	-0.093	0.055	0.068	0.074	0.009	0.040	-0.110	-180 ^(*)	0.036	165 ^(*)	0.060	0.014	-0.085	-0.042	0.080	312 ^(*)	0.026	-0.033	-0.005	-0.012	0.004	-0.037			
9 Size (Assets)	242 ^(*)	-162 ^(*)	-164 ^(*)	-0.109	198 ^(*)	-285 ^(*)	0.113	-0.093	1.000	-319 ^(*)	-430 ^(*)	-0.089	-236 ^(*)	620 ^(*)	0.047	274 ^(*)	-0.044	-0.025	-0.032	-257 ^(*)	-122 ^(*)	-0.030	-345 ^(*)	-180 ^(*)	208 ^(*)	0.028	190 ^(*)	-0.027	-309 ^(*)	177 ^(*)			
10 Market-to-book	-255 ^(*)	223 ^(*)	126 ^(*)	0.033	0.028	-0.029	120 ^(*)	0.055	-319 ^(*)	1.000	223 ^(*)	459 ^(*)	0.066	-0.110	0.011	0.052	-0.078	0.024	-0.089	-0.034	0.008	0.081	362 ^(*)	0.111	-124 ^(*)	0.110	-128 ^(*)	-0.044	265 ^(*)	0.136			
11 Growth rate of sales	-420 ^(*)	197 ^(*)	359 ^(*)	0.116	-0.016	146 ^(*)	0.010	0.068	-430 ^(*)	223 ^(*)	1.000	-0.079	470 ^(*)	-150 ^(*)	0.091	-168 ^(*)	147 ^(*)	0.004	-0.044	0.100	147 ^(*)	194 ^(*)	349 ^(*)	216 ^(*)	0.040	-0.013	-0.011	117 ^(*)	-0.054	-0.114			
12 Return on equity	0.010	0.089	-0.091	-0.075	0.029	-120 ^(*)	0.019	0.074	-0.089	459 ^(*)	-0.079	1.000	-152 ^(*)	-0.048	-0.074	1.000	-0.074	0.101	0.006	-0.017	-0.063	0.057	217 ^(*)	159 ^(*)	0.135	-0.037	-0.047	0.007	-0.023	0.080	0.101		
13 Research expenses per sales	-288 ^(*)	214 ^(*)	181 ^(*)	0.018	-0.040	381 ^(*)	-246 ^(*)	0.009	-236 ^(*)	0.066	470 ^(*)	-152 ^(*)	1.000	-0.074	0.101	0.006	-0.017	-0.063	0.057	217 ^(*)	159 ^(*)	0.135	-0.037	-0.047	0.007	-0.023	-0.047	0.007	-0.023	0.080	0.101		
14 Market capitalization	0.011	-0.039	0.020	-0.087	328 ^(*)	-150 ^(*)	-0.115	0.040	620 ^(*)	-0.110	-150 ^(*)	-0.048	-0.074	1.000	0.115	223 ^(*)	-0.032	0.002	0.003	-0.110	-0.086	-0.024	-192 ^(*)	145 ^(*)	0.117	0.088	0.024	-0.027	-153 ^(*)	219 ^(*)	0.058		
15 Company is cross-listed at year (t)	-121 ^(*)	-0.057	204 ^(*)	-0.017	-0.021	224 ^(*)	-0.001	-0.110	0.047	0.011	0.091	-213 ^(*)	-0.023	0.006	223 ^(*)	510 ^(*)	1.000	-176 ^(*)	-194 ^(*)	-176 ^(*)	-156 ^(*)	-182 ^(*)	-188 ^(*)	-147 ^(*)	-219 ^(*)	-247 ^(*)	0.036	-0.007	212 ^(*)	135 ^(*)	-0.037	-193 ^(*)	0.072
16 Cross-listing 6 or more years ago	0.063	-0.079	-0.010	-0.078	0.011	147 ^(*)	143 ^(*)	-180 ^(*)	274 ^(*)	0.052	-169 ^(*)	-0.023	0.006	223 ^(*)	510 ^(*)	1.000	-176 ^(*)	-194 ^(*)	-176 ^(*)	-156 ^(*)	-182 ^(*)	-188 ^(*)	-147 ^(*)	-219 ^(*)	-247 ^(*)	0.036	-0.007	212 ^(*)	135 ^(*)	-0.037	-193 ^(*)	0.072	
17 Cross-listing at year (t-5)	-0.096	0.050	0.077	0.011	-0.018	0.056	-0.008	0.036	-0.044	-0.078	147 ^(*)	-145 ^(*)	-0.017	-0.032	160 ^(*)	-176 ^(*)	1.000	-0.061	-0.055	-0.049	-0.057	-0.059	-0.013	0.036	-0.007	212 ^(*)	135 ^(*)	-0.037	-193 ^(*)	0.072			
18 Cross-listing at year (t-4)	-0.030	-0.021	0.056	-0.054	0.042	-0.088	-0.070	165 ^(*)	-0.025	0.024	0.004	0.101	-0.016	0.002	176 ^(*)	-194 ^(*)	-0.061	1.000	-0.061	-0.054	-0.063	-0.065	-0.067	0.073	0.076	-0.026	0.023	-0.041	-0.051	0.016			
19 Cross-listing at year (t-3)	0.068	-0.068	-0.027	-0.041	-0.025	-0.078	-0.032	0.060	-0.032	-0.099	-0.044	-0.063	-0.038	0.003	160 ^(*)	-176 ^(*)	-0.055	-0.061	1.000	-0.049	-0.057	-0.059	0.052	0.001	0.069	0.042	0.044	-0.037	-0.089	-0.031			
20 Cross-listing at year (t-2)	0.006	-0.060	0.045	0.063	-0.041	133 ^(*)	-178 ^(*)	0.014	-257 ^(*)	-0.034	0.100	-0.088	0.003	-0.110	142 ^(*)	-156 ^(*)	-0.049	-0.054	-0.049	1.000	-0.051	-0.052	180 ^(*)	0.072	-0.023	-0.063	0.070	193 ^(*)	-0.053	-0.053			
21 Cross-listing at year (t-1)	-0.086	0.044	0.070	191 ^(*)	-0.013	127 ^(*)	-0.099	-0.085	-122 ^(*)	0.008	147 ^(*)	-173 ^(*)	0.057	-0.086	166 ^(*)	-182 ^(*)	-0.057	-0.063	-0.057	-0.051	1.000	-0.061	0.068	164 ^(*)	0.022	-0.073	125 ^(*)	0.060	-0.082	-0.087			
22 Cross-listing at year (t)	-231 ^(*)	0.094	210 ^(*)	-0.031	-0.019	-0.029	0.061	-0.042	-0.030	0.081	194 ^(*)	-0.038	217 ^(*)	-0.024	171 ^(*)	-188 ^(*)	-0.059	-0.065	-0.059	-0.052	-0.061	1.000	-0.094	0.017	0.050	0.031	-0.100	-0.040	0.023	-0.039			
23 1-Digit SIC code	-219 ^(*)	147 ^(*)	148 ^(*)	116 ^(*)	-0.035	215 ^(*)	-158 ^(*)	0.090	-345 ^(*)	362 ^(*)	349 ^(*)	138 ^(*)	159 ^(*)	192 ^(*)	-0.104	-147 ^(*)	-0.013	-0.067	0.052	180 ^(*)	0.068	-0.094	1.000	0.006	-0.088	-183 ^(*)	171 ^(*)	0.002	0.056	-0.005			
24 High-tech dummy	-196 ^(*)	0.094	166 ^(*)	0.082	0.091	147 ^(*)	-242 ^(*)	312 ^(*)	180 ^(*)	0.111	216 ^(*)	-176 ^(*)	0.135	145 ^(*)	-0.049	-219 ^(*)	0.036	0.073	0.001	0.072	164 ^(*)	0.017	0.006	1.000	0.055	0.075	0.085	0.059	-163 ^(*)	0.095			
25 Central	0.063	-118 ^(*)	0.024	-0.036	0.006	-190 ^(*)	0.013	0.026	208 ^(*)	-124 ^(*)	0.040	-0.112	-0.037	117 ^(*)	-158 ^(*)	-247 ^(*)	-0.007	0.076	0.069	-0.023	0.022	0.050	-0.088	0.055	1.000	-157 ^(*)	-206 ^(*)	-0.082	-567 ^(*)	0.061			
26 Northern	0.009	0.055	-0.060	0.028	-0.029	0.002	0.028	-0.033	0.028	-0.110	-0.013	0.008	-0.047	0.088	0.098	0.036	212 ^(*)	-0.026	0.042	-0.063	-0.073	0.031	-183 ^(*)	0.075	-157 ^(*)	1.000	-120 ^(*)	-0.048	-330 ^(*)	0.083			
27 Western	-0.028	0.000	0.036	0.095	0.004	0.008	0.028	-0.005	190 ^(*)	-128 ^(*)	-0.011	-270 ^(*)	0.007	0.024	117 ^(*)	-0.021	135 ^(*)	0.023	0.044	0.070	125 ^(*)	-0.100	171 ^(*)	0.085	-206 ^(*)	-120 ^(*)	1.000	-0.063	-433 ^(*)	147 ^(*)			
28 Southern	0.014	-0.046	0.022	-0.025	-0.003	0.043	-0.039	-0.012	-0.027	-0.044	117 ^(*)	-0.069	-0.023	-0.027	0.011	-0.024	-0.037	-0.041	-0.037	193 ^(*)	0.060	-0.040	0.002	0.059	-0.082	-0.048	-0.063	1.000	-173 ^(*)	0.093			
29 UK and Ireland	-0.042	0.080	-0.018	-0.044	0.010	137 ^(*)	-0.033	0.004	-309 ^(*)	265 ^(*)	-0.054	295 ^(*)	0.060	-153 ^(*)	-0.008	204 ^(*)	-193 ^(*)	-0.051	-0.099	-0.053	-0.082	0.023	0.056	-163 ^(*)	-567 ^(*)	-330 ^(*)	-433 ^(*)	1.000	-226 ^(*)	0.093			
30 Year of takeover (announcement)	-0.061	0.132	-0.027	0.045	0.088	-0.071	-0.054	-0.037	177 ^(*)	0.136	-0.114	-0.074	0.101	219 ^(*)	0.004	0.058	0.072	0.016	-0.031	-0.053	-0.097	-0.039	-0.005	0.095	0.061	0.083	147 ^(*)	0.093	-226 ^(*)	1.000			
** Correlation is significant at the 0.01 level (2-tailed).																																	
* Correlation is significant at the 0.05 level (2-tailed).																																	

^(*) Correlation is significant at the 0.01 level (2-tailed).

* Correlation is significant at the 0.05 level (2-tailed).