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The Market Response to American Depositary Receipts

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Abstract

This dissertation has investigated how different factors are affected by cross-listings on the American stock exchanges through the issuance of *American Depositary Receipts*. The research has been conducted by using an event study methodology. The variables that are examined are domestic stock returns, company earnings, and sales revenues. A sample of 504 ADR program initiated by companies from 43 countries between January 1989 and May 2003 has been analyzed. The results obtained give evidence of significantly negative stock return reactions following the event. Whereas, the test for company earnings- and sales provide evidence of highly significant increases in the variables, implying that analyzes of only stock market reactions following international cross-listings could lead to ineffective decision makings by managers regarding whether to list their stocks on the American markets via ADRs.

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1. Introduction

The purpose of this chapter is to introduce the reader to the research topic of this dissertation. The background provides a general discussion about the subject and leads to the problem discussion, which in turn constitutes the foundation of the study's purpose. Thereafter the limitations are communicated. Finally, the outline is presented in order to provide an overview of the dissertation's structure.

1.1 Background

In today's global environment it is difficult for countries to isolate themselves from the rest of the world. This is especially true regarding economic aspects since companies are increasingly exposed to global competition and hence strive to enhance the markets in which they operate. Furthermore, the de facto de-regulative characteristics of today's financial markets have made it a necessity and a possibility for companies to raise capital and expand their investor base internationally.

The great importance for companies to be able to access foreign markets have made the issue of *International Finance* extensively debated in the research world. In particular, much focus has been concentrated to investigate the degree of market integration and the affect on stock prices following international cross-listings. Several studies have examined this by analyzing changes in market value following companies' internationalization (see for example Alexander, Eun and Janakiramanan, 1988; Foerster and Karolyi, 1999; Miller, 1999).

In the time period that followed the Second World War, governments in general believed that the best way of healing the economic wounds was to impose a variety of restrictions on international capital flows. In addition to high taxation and transaction costs, there existed explicit restrictions on foreign ownership, capital mobility, and foreign exchange transactions. Besides this, equity markets were often small and characterized by low liquidity. As a result of these barriers, many companies became dependent on their domestic capital markets and therefore faced high cost of capital. (Oxelheim, 1996)

Capital markets throughout the world did not become increasingly deregulated until the last few decades. The underlying force that has driven the enhancing liberalization of capital markets is the boost in international activities of multinational corporations. As a natural consequence to the fact that pressure from the business environment has lessened the mentality regarding conservative government restrictions and high transaction costs there now exists a global market that to a greater extent services the needs of companies. Even though capital markets today are considered to be less regulated than they were during the past century, there is a consensus in the academic world that barriers of financial integration and liberalization still exist, why it has become essential for both investors and companies to find ways of overcoming these obstacles in order to achieve their goals most efficiently.

1.2 Problem discussion

Capital market segmentation creates incentives for companies to adopt operating and financial policies that reduce the negative effects of this type of financial market regulations. According to Stapleton and Subrahmanyam (1977), a company can choose between the following financial policies in order to circumvent the barriers that investors face: (1) portfolio investment or direct investment; (2) mergers with foreign companies; (3) cross-listing of the company's stock on foreign equity markets.

This study focuses on the third policy since cross-listings represents an interesting feature in *International Finance* which has gained importance as a strategic management tool. Since no single capital market attracts as many foreign listings as the US stock markets these are of particular interest to study. Moreover, the most common method for non-US companies to cross-list their shares in the US are to establish so-called *American Depositary Receipts* (ADRs)¹ (Miller, 1999).

By studying the reaction on domestic stock prices following cross-listings important conclusions can be made regarding the market response of internationalization or company stocks. Theory suggests that if markets are completely deregulated there should not exist any unusual effects on domestic stock prices following a cross-list from one market to another since investors are presumed to have access to both markets in the first place (Sundaram and Logue, 1996).

Since several studies have shown that there are substantial effects on domestic stock prices when companies cross-lists their stocks, it is suggested that there must be a form of market segmentation between countries which gives rise for these pricing inefficiencies (see for example Alexander, Eun and Janakiramanan, 1988; Foerster and Karolyi, 1999; Howe and Kelm, 1987; Miller, 1999; Sundaram and Logue, 1996). However, these stock price effects could also be due to other factors besides just market segmentation. Other factors that could affect the conclusions made in above mentioned studies are issues regarding company visibility as a marketing factor or costs for the companies due to increased disclosure- and transparency requirements. These factors should affect fundamentals such as company earnings and sales revenues, which are neglected in previous research. The lack of consensus and understanding regarding the effect of cross-listings further motivates this study, which leads to the purpose of the dissertation.

1.3 Purpose

The purpose of this study is twofold; (i) to investigate the reaction of domestic stock returns following cross-listings and (ii) to analyze the cross-listing effects on Earnings Before Interest and Taxes (EBIT) and Sales Revenues.

¹An American Depositary Receipt can be described as a certificate that represents a foreign company's domestically traded equity. By initiating an ADR program a company can circumvent certain barriers and have its stocks traded on US stock exchanges (Foerster and Karolyi, 1999). There also exists GDRs (Global Depositary Receipts) which can be initiated on markets other than the American. However, GDRs are not treated in this study.

1.4 Limitations

To be able to conduct this empirical research some limitations and criteria needs to be outlined. Companies of which the stocks do not fulfill the requirements below are excluded from the study. The limitations that are applied are as follows:

- The cross listings must have occurred between January 1989 and May 2003.
- To be included the cross-listing dates must be represented on the Bank of New York's database regarding ADR programs.
- Only ADRs, where the underlying stocks' domestic prices and relevant index data were obtainable from the Bloomberg database for at least 241 consecutive trading days before and 240 days after the listing dates are considered.
- Only sponsored programs are part of the data sample².
- Only so-called Level 1 and 2 ADR programs are included³.

1.5 Outline

After this introductory chapter, which has focused on providing the reader with insight regarding the research topic, the remainder of the dissertation proceeds as follows:

Chapter 2. This chapter describes the working procedure used in the study. First the choice of research method is argued for and thereafter the data collection issues are presented. Next, a discussion is held concerning the studies' reliability and validity. Finally, the empirical research methodology employed is briefly presented.

Chapter 3. The purpose of this chapter is to introduce the relevant theories regarding the research topic. Theories that are covered are for example the *Investor Recognition-*, *Liquidity-*, and *Efficient Markets Hypothesis*. The third chapter ends by reviewing previous research of interest.

Chapter 4. Here the empirical event study methodology is presented in a more detailed manner compared to in chapter 2. The chapter describes how the data has been handled in order to establish the results that constitute the foundation of the analysis and all the steps undertaken in order to calculate the numerical data are presented.

Chapter 5. In this chapter the results obtained regarding the research topics are presented and analyzed. It is here that the signs regarding cross-listings' impact on domestic stock returns, company earnings, and sales can be stated. It is this chapter that is of greatest importance for companies' decision makers.

Chapter 6. In the final chapter of the dissertation, concluding remarks regarding international cross-listings impact on the studied variables are presented. This chapter and thus the entire dissertation end with suggestions for further research.

² These are ADR programs which the companies themselves have participated in. This opposed to unsponsored programs, which are undertaken without the companies' permission and cooperation.

³ Since these are not capital raising programs the 'well-known' negative stock price effect of new equity issues are avoided, which helps isolate the effect of the cross-listing.

2. Methodology

In this chapter the working procedure of this study is presented. First a description of the method is outlined, which is followed by a presentation of the data collection, method of selection, and the reliability and validity of the study. In the last section an overall presentation of the event study technique is outlined.

2.1 Choice of Method

This study investigates effects on non-US companies' domestic stock prices, company earnings, and sales figures following the cross-listing of their securities on the American stock market. The analyses are conducted by measuring the reactions on domestic stock returns, EBIT, and Sales Revenues subsequent to the issuance of the ADR programs. In order to undertake these analyses a quantitative approach is used. This choice is made partly because the study investigates variables that are measurable and partly because a great number of research units are included in the data sample.

Quantitative approaches presuppose that the researcher can quantify the information needed and is characterized by a focus on the collection of numerical data and the use of statistical tools to analyze the data. The method is much more formalized and structured compared to the qualitative method, which is the other main research approach. The qualitative methods are more suitable for in-depth studies where fewer units are investigated. (Holme and Solvang, 1996)

A positive feature when using quantitative research methods is that statistical generalizations can be made from the data sample. Furthermore there is a distance between the researcher and the object being studied which removes possible biases such as misinterpretations and subjectivity that can arise from for example interviews, which are of a qualitative nature. However, a weakness in using a quantitative method is that the results may not be applicable to all units in the sample even though it is valid for the units in general. Another important factor when conducting quantitative research is to revise the sources where the data has been collected. If the data is not reliable the results obtained from the analysis will not have any scientific value and generalizations made will not be trustworthy. (Holme and Solvang, 1996)

In addition, the method applied in this study is of a deductive character as a theoretical framework is employed in order to formulate hypotheses used to answer the research question (Bryman, 1989).

2.2 Data Collection

An extensive data collection has been undertaken in order to obtain relevant literature and reliable numerical data needed to conduct the study. The published articles and literature have been collected via economic libraries, electronic databases and authors' homepages. The databases that have primarily been used are J-Stor, Nber and Ingentia. Whenever references are made to research papers the original articles have been acquired. This has been done in order to minimize the risk for subjectivity biases and misinterpretations by authors other than the original ones.

Regarding the collection of numerical data a careful choice has been made in order to find the most reliable source that is accessible. Hence, all numerical data have been collected from the Bloomberg database, which is an independent and professional organization that provides all-embracing information and news to its customers worldwide. Thus, the numerical data employed is of a secondary nature, in other words, the information has been gathered by other researchers or institutions.

Finally, listing dates for the ADR programs are obtained from the Bank of New York's ADR database. The bank is the leading actor on the ADR market and provides extensive information regarding foreign companies that have cross-listed their stocks on the US stock exchanges. They also provide a lot of information concerning the ADR market in general.

2.3 Sample selection

The initial data sample included all sponsored level I and II ADR programs that were registered in the Bloomberg database for the period of January 1989 to March 2003. This sample amounted to 829 programs from 52 countries.

The first prerequisite to be included in the final sample was that the listing dates for the ADR programs during the test period were obtainable from the Bank of New York. Furthermore, to be included in the study price data had to be available from the Bloomberg database for at least 241 consecutive trading days prior to the actual listing date and 240 trading days afterwards. The next prerequisite was that a relevant country specific index for each company was obtainable from the Bloomberg database for the same time period as the relevant stock prices. The final sample consisted of 504 companies from 42 countries.

In order to investigate the research topics, yearly data regarding EBIT and company sales were also gathered for 1 year prior to the actual listing date and 2 years afterwards⁴. This was done for all the companies in the data sample. (See appendix A and B for an overview of the companies and indexes included in the study).

⁴ For the Scandinavian data sample data regarding earnings and sales were collected for 1 year before and 3 years after actual listing.

2.4 Reliability and Validity

Reliability refers to the consistency of a measure and is determined by how the tests have been conducted and how careful the researcher has been when processing the information. A high degree of reliability is achieved when several independent measurements regarding the same phenomenon give similar results. (Holme and Solvang, 1996)

In this study the reliability is determined by the method used to collect the numerical data and how accurate the data processing has been. Regarding the data collection of asset prices, company earnings, sales figures, and listing dates, the only sources used are major organizations why the reliability of the data is considered to be sufficiently high. Although the data is of a secondary nature there is no reason to suspect that the price data is incorrect or has been manipulated by Bloomberg. Nor is it likely that the Bank of New York has supplied inaccurate listing dates.

When processing such a large amount of numerical data as this study has, the possibility of random mistakes cannot be totally eliminated. However, by carefully processing the data and conducting a double check of the prices for 50 randomly chosen stocks and 20 country-indexes, the probability of errors in the data sample has been minimized.

In order to estimate the expected returns needed to calculate the abnormal returns appropriate market portfolios are needed. The most optimal market portfolio would be one that accounts for country-, industry-, size- and other company-specific variables. However, considering the large sample of ADR programs from 42 countries, this selection method of market portfolios is not a realistic nor practical option. Instead, the market portfolios in the study constitutes of primarily *all-share* indexes for each companies' home market.

Nonetheless, the reliability in the study can be affected by choice of clustering the stocks and not separating them according to industry, company size, geographic location etc. If all companies that constitute the data sample were identical, then generalizations made would of course be more credible and reliable. Therefore a solution would be to narrow down the number of countries or industries that were included in the analysis. However, since this study initially covered ADR programs initiated from 52 countries and 50 different industries, this approach would be impracticable to conduct.

Next, the validity of a measure takes into account whether it really relates to the concept that it is claimed to measure. In other words, validity is dependent on if the method applied in the study really measures the phenomenon that it intends to measure. (Holme and Solvang, 1996)

The obvious question that is entitled to be discussed regarding the validity of the research conducted in this dissertation is the connection between ADR programs and stock prices, companies' EBIT, and Sales Revenues. One might question if the impact of an ADR initiation can be 'isolated' and analyzed by observing above mentioned variables since these are affected by so many other factors, such as general changes in the world

environment. This form of validity is often mentioned as *construct validity* and refers to if there are any theoretical connections between the methodology and the research area of interest (Bryman, 1989). Since a deductive approach is employed in the study, hypotheses are established on a theoretical base implying that there exists construct validity in the research.

2.5 Event study

By using financial market data, an event study is used to measure the effects of an economic event on the value of a company. This method has a long history and was pioneered by Dolley (1933) through the publication of a research paper that examined the price effects of stock splits. However, since then the methodology has been developed and modified successively. The event study methodology that is mainly employed today was developed by Fama, Fisher, Jensen and Roll (1969).

Events can be defined as for example mergers, earnings announcements, equity issues etc. In this dissertation the events that are studied are ADR programs carried out by non-US companies between January 1989 and March 2003. To investigate how these events affect domestic stock returns, the returns are analyzed during different event windows. It is through these analyses that conclusions can be drawn regarding the market view on ADR issuances.

To be able to appraise the events' impact on domestic stock returns a measure of abnormal returns needs to be outlined. Abnormal returns are defined as the actual ex post stock returns subtracted by the expected returns during the event window. The expected returns are defined as the returns that would be expected if no events were to take place.

According to MacKinlay (1997) there are two common choices for modeling and estimating expected returns for stocks; (i) *the constant mean return model*⁵ and (ii) *the market model*. The latter is the one that is implemented in this research. The market model is more sophisticated and represents a potential improvement compared to the constant mean return model. By using the market model, the variance of abnormal returns is reduced as the fraction of the return related to variation in the market's return is removed (MacKinlay, 1997). The market model assumes a stable linear relationship between a stock's return and the return on a relevant market portfolio. Historical data, previous to the event window, are therefore used with the purpose of estimating expected returns for stocks during the event windows that are studied.

⁵The constant mean return model assumes that a certain stock's mean return is constant through time. That is, the expected return is equivalent to the mean return for a particular time period.

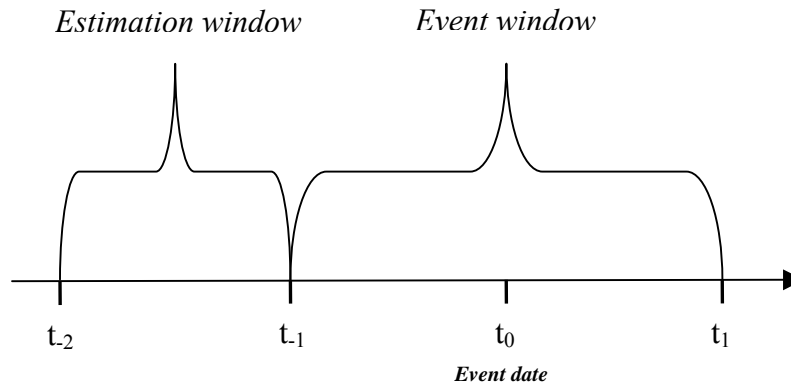


Figure 2. 1 Intuitive event study methodology.

In the above figure, the estimation window is used to estimate each stock's α - and β -coefficients⁶. Next, these parameters are used in combination with relevant country-specific index data in order to calculate expected returns, which in turn are used to calculate the abnormal returns.

Thereafter the abnormal returns are accumulated for each stock during the event windows. Afterwards all the cumulative abnormal returns (CARs) are averaged across stocks and last event days. Finally, these average values (CAARs) are statistically tested for significance so that an analysis can be performed and conclusions made regarding the research question. (See chapter 4. *Empirical methodology* for a more detailed illustration of these calculations).

2.5.1 Arguments for choosing listing dates

In previous research it has been widely discussed which event date, announcement- or actual listing date, that is most appropriate to choose in order to measure the effect of international cross-listings. There are advantages and disadvantages regardless of which type of dates that are used. The purpose of this part is, therefore, to consider arguments both for- and against each one and then present this study's choice of event date.

There exists a consensus in financial research that announcement dates are more appropriate to use as event dates if it is assumed that markets are efficient (see for example Miller, 1999). If markets are efficient in the sense that stock prices reflect all publicly available information, then the price reactions of the cross-listings will be incorporated immediately at the announcement dates. However, Foerster and Karolyi (1999) mention three important disadvantages when using announcement dates:

⁶This is done by an Ordinary Least Squared (OLS) regression, which estimates its parameters by minimizing the deviation from a "best-fit" line.

- i) Markets might have expected a company to cross-list its stocks for some time, implying that the information have already been incorporated into the price at the announcement date.
- ii) A company's spokesperson might indicate that the company intends to cross-list its stocks, but has not received necessary approval from the company's board of directors, the relevant stock exchange or the necessary Security and Exchange Commission (SEC) approval.
- iii) There is also the possibility that companies announce their intent to cross-list without actually fulfilling it.

Consequently, as the information might have reached the market through speculations or different press releases on different dates, it is difficult to obtain reliable announcement dates. Furthermore, when studying a great extent of cross-listings, as is done in this study, the possibility to obtain correct announcement dates for all ADR programs is not a realistic task.

By using listing dates it is possible to incorporate effects such as increased company visibility, investor recognition and liquidity aspects, which are hard to evaluate at the announcement dates. Furthermore, if markets are not efficient, then the price reaction to the event in question might not affect the stock price completely at the time of announcement. Instead, by using actual listing dates and examining a longer time horizon the reactions might, on the other hand, more appropriately capture the effects of international cross-listings. Therefore, the chosen event dates for this dissertation are actual listing dates.

3. Theoretical framework

This chapter accounts for relevant theories regarding the subject in question. The chapter starts with a presentation of the Efficient Market Hypothesis. Thereafter, the structure of the ADR market is presented and is followed by an exposition of the International Capital Asset Pricing Model, the investor recognition- and the liquidity hypotheses. Subsequently, stock market regulations and motives for cross-listing are outlined. Finally, a chronological review of previous research regarding the impact of cross-listings on domestic stock prices is provided.

3.1 The Efficient Markets Hypothesis

“The Efficient Markets Hypothesis is the proposition that an asset’s current price fully reflects all publicly available information about future economic fundamentals affecting the asset’s value” (Bodie and Merton 2000, p. 206).

The above quote, more or less, concludes the general view that all public information about a certain stock is incorporated in the stock’s market price. Consider a case when some good news is released implying that the stock price should rise in the near future. These expectations will motivate investors to acquire the stock the day of the news release. As long as potential investors expect the stock price to increase they will purchase the stock and this will consequently force the price to rise. Finally the price has increased so much that it has reached the equilibrium level and the market does not expect the price to rise any more. The assumption of stock prices reflecting new information immediately is of main focus in the theory of efficient markets.

The foundation to the theory behind the *Efficient Markets Hypothesis* was laid by Roberts (1959) who first made the distinction between weak and strong form of market efficiency. However, according to Fama, the term ‘Efficient Market Hypothesis’ was developed by Fama, Fisher, Jensen and Roll (1969) and considers three different degrees of efficiencies depending on how much of the existing information that is incorporated in the stock prices⁷.

3.1.1 Weak form of efficiency

The weak degree of efficiency is fulfilled if all historical information regarding a stock is reflected in its price. When this criterion is met it is implied that past stock prices cannot be used in order to predict future stock returns. Spokesmen of technical analysis are, however, convinced of the possibility of finding patterns in historical stock prices that can help them in the task of forecasting future stock returns. Therefore, they do not even believe in the weak form of efficiency, which implies that stock prices follow a so-called

⁷ Mail correspondence with Eugene F. Fama, 14th May 2003.

random walk. This means that price changes do not follow any systematical patterns. That is, today's stock price is uncorrelated with historical prices (Fama, 1970).

In the world of finance there exists a consensus that stock prices follow a random walk and that financial markets are at least efficient according to the weak form. This is quite intuitive due to the fact that historical stock price data are very easily obtained and if there were profit opportunities to be extracted from these everyone would seek to identify these price patterns and thereby exhausting the profits. This implies that the stock price would increase instantaneously until a new equilibrium price was reached. (Fama, 1970)

3.1.2 Semi-strong form of efficiency

The semi-strong level of efficiency exists when all historical information and all publicly available information is incorporated in the stock prices. As a result, investors are incapable of predicting stock price movements through studying newspapers, press releases, company specific information such as financial statements etc. If this is the case, neither technical- nor fundamental analysis will generate any abnormal returns. (Fama, 1970)

Keown and Pinkerton (1981) carried out a study where they investigated how stock prices changed when companies were targeted for takeovers. Usually the company that intends to take over another one is willing to pay high premiums to acquire the shares of the targeted company. Considering basic economic theory concerning demand and supply, one would easily expect the stock price of the target company to rise. Assuming that capital markets are semi-strong efficient the price increase would take place immediately. The results which Keown and Pinkerton arrived at supported the view of the markets being semi-strong efficient. The study showed that the targeted companies' stock prices increased at the announcement day of the takeovers, and that these increases were not temporary fluctuations. This implies that the new stock price levels reflected the acquisition premiums that would be expected to be paid for the target companies' stocks. The analysis also provided evidence that insider trading profits existed. This was concluded by the fact that the stock prices increased a few days before the takeover announcement occurred. (Keown and Pinkerton, 1981)

Several other studies have been undertaken with the purpose of investigating how stock prices react to other news releases besides those concerning takeovers. These studies imply that most of the information gets incorporated into the prices relatively quickly. This means that a potential investor cannot obtain abnormal returns when the announcement has occurred by trading on the news in question. These findings support the propositions stating that markets are at least semi-strong efficient.

3.1.3 Strong form of efficiency

If stock prices reflect all relevant information that exists markets are assumed to be efficient according to the strong form criteria. In this market condition people with inside information will not be able to generate abnormal profits based on the special knowledge

they possess. This degree of efficiency assumes that stock prices react instantaneously when somebody receives new information concerning a certain stock. (Fama, 1970)

However, the study of Keown and Pinkerton (1981) implies that markets do not fulfill the criteria of being strongly efficient as they found that insider trading actually generated abnormal returns. The strong degree of efficient markets implies that an investor might as well throw darts on a list with stocks when deciding which securities to include in the portfolio. This is because one cannot use the knowledge of a stock to achieve abnormal returns⁸. This, however, seems to be unrealistic for the vast majority of the academic world of economics (Fama, 1970).

3.2 The structure of the American Depositary Receipt market

The most common method for foreign companies to cross-list their securities on US stock exchanges are by creating ADRs (Foerster and Karolyi, 1999). In order to give the reader a basic understanding of this financial strategy, a description of the structure of the ADR market is presented below.

In 1927 JP Morgan developed the ADR market as an alternative method for US investors to purchase and earn dividends on foreign listed stocks without actually having direct access to the foreign market itself. It was a way for investors to circumvent foreign countries' capital controls and restrictions.

ADRs can be described as certificates representing a certain number of underlying foreign stocks, and are issued by US depository banks. ADRs can be divided into two broad categories; unsponsored and sponsored programs. In the early days, the most common ADRs were unsponsored programs. The initiative to introduce an unsponsored ADR program was undertaken by a US bank and did not require an authorization from the foreign company. However, since 1983 the SEC requires all new ADRs to be authorized by the company before the program can be established. (Sundaram and Logue, 1996)

Sponsored ADRs are, on the other hand initiated by the foreign companies. Companies choosing to sponsor ADR programs permit a depository bank to act as transfer agent while no other banks are allowed to duplicate the program. When issuing an ADR program the company must finance all initial costs and following expenses that are associated with ADR management. (Sundaram and Logue, 1996)

There are no rules regarding the number of underlying stocks an ADR must represent, which therefore can be either a fraction or a multiple of each stock. Depending on the foreign stock price, the number of stocks included in an ADR is made to fit the appropriate trading range for US stocks. Like other securities traded on the US stock exchanges, the certificates must be registered with the SEC. All dividends and other

⁸A potential investor can however use knowledge about the stock market to diversify the portfolio in order to spread the risks, which throwing darts not necessarily would do.

payments to US investors are converted into USD, which means that the foreign company does not bear any exchange rate risk. (Foerster and Karolyi, 1999)

There exist several advantages by initiating ADR programs for both issuers and investors. According to Foerster and Karolyi (1999) the main advantages for issuers include: (i) the access to a liquid secondary market in the US; (ii) an improved opportunity to raise capital due to the enlarged investor base associated with ADRs and (iii) increases of the domestic market for the issuers stocks.

In addition, Miller (1999) points out a number of potential advantages for investors that want to diversify their portfolios. These are as follows: (i) ADR programs give investors the opportunity to invest in foreign restricted equity markets; (ii) ADRs are denominated- and dividends are paid in USD; (iii) the depositary bank is responsible for distributing financial information to investors; (iv) trading costs are lower and (v) as settlement occurs in the US the transaction can be completed faster compared to a direct purchase on the foreign company's home market. An additional advantage with ADRs is the increased company disclosure requirements due to the US accounting standards, which makes it harder for companies to conceal information from investors.

Moreover, there are four different levels of ADR programs that companies can choose between to balance the benefits with the costs of increased information requirements. Table 3.1 describes the different characteristics of each level regarding exchange, accounting standards, SEC registration, share issuance and costs. (Miller, 1999)

Table 3.1
Different types of American Depositary Receipt Programs

	Level I	Level II	Level III	144a
Primary Exchange	OTC market	NYSE, AMEX or NASDAQ	NYSE, AMEX or NASDAQ	PORTAL
Accounting standards	Domestic standards	U.S GAAP	U.S GAAP	Domestic standards
SEC registration	Exempt	Full registration	Full registration	Exempt
Share issuance	Existing shares only (Public offering)	Existing shares only (Public offering)	Equity capital raised (Public offering)	Equity capital raised (Private offering)
Costs	< \$25,000	\$200,000-700,000	\$500,000-2,000,000	\$250,000-500,000

Source Miller (1999) p. 107

For a company wanting to cross-list its stocks on the US market, the cheapest strategy is to establish a so-called Level I ADR program. These ADRs, which are traded on the OTC market, require a minimal SEC disclosure and the company does not have to reconcile to the General Accepted Accounting Principles (GAAP) rules, thus the company is allowed to use its domestic accounting standards with adequate translation. (Miller, 1999)

Level II ADR programs are initiated by companies that desire more liquidity in their stocks and greater visibility. These ADRs are traded on the NYSE, AMEX and NASDAQ and therefore requires the company to comply with US accounting standards in accordance to GAAP. The costs associated with Level II ADRs can be substantial and according to Miller (1999) the initial cost alone can in some cases exceed 1 Million USD. Moreover, both Level I and Level II ADRs are made without any capital raising elements and hence created only by the company's existing shares.

Level III ADRs are the most prestigious and expensive cross-listings that companies can carry out. This type of listings involves raising of capital by new equity issues and requires full SEC disclosure, reconciliation with the exchange's existing listing rules and compliance with GAAP reporting standards. Similar to Level II programs these ADRs are traded on NYSE, AMEX and NASDAQ.

Finally companies can choose to cross-list on the US markets by raising equity capital via private placements towards so-called qualified institutional buyers. By using this form of programs companies do not have to comply with GAAP or SEC disclosure rules, but these programs are traded on PORTAL, which has limited liquidity⁹. (Miller, 1999)

3.3 The International Capital Asset Pricing Model (ICAPM)

The traditional form of the Sharpe-Lintner *Capital Asset Pricing Model* (CAPM) has important limitations since it only considers national investments. An investor that has not diversified the portfolio internationally will according to theory be bearing more risk than if the investor was able to diversify the portfolio with stocks from other countries. This is true since an international diversification facilitates a reduction of the portfolio variance for any given expected return. The outcome is that the risk-premium is significantly lower in an internationally diversified portfolio compared to a purely domestic portfolio. This implies that a stock's domestic β cannot be taken as the true measure of its risk. The "true" systematic risk of a stock is much smaller than the domestic – non-diversifiable – risk. (Solnik, 1974a)

In a global integrated capital market, which ADRs help achieve, investors with internationally diversified portfolios will measure the risk of an individual stock in terms of a world market portfolio and a global β . Therefore, the cost of capital for an individual company will be in terms of a global CAPM as shown below. (Solnik, 1974a)

$$E[R_i] = r_f + \beta_G [E[R_G] - r_f]$$

Where $E[R_i]$ is the required return (cost of capital) on a stock when markets are global, r_f is the risk free interest rate, β_G is the global beta, and R_G is the return on the world

⁹PORTAL stands for Private Offering, Resales and Trading through Automated Linkages. PORTAL was developed to support the distribution of private placements and to facilitate liquidity in these securities.

market portfolio. A company that has internationally diversified shareholders will have a cost of capital with a lower market risk premium as compared to companies with shareholders that are not internationally diversified, because the latter investors demand higher expected returns (Solnik, 1974b). The lower cost of capital will in turn help generate profits for the company and therefore help boost their operational earnings.

3.4 Investor Recognition Hypothesis

Merton's (1987) *Investor Recognition Hypothesis* is a capital equilibrium model and an extension of the standard Sharpe-Lintner CAPM, relaxes the assumption that investors have equal information. By assuming that investors only trade stocks that they are aware of when constructing their optimal portfolios, the model takes the issue of incomplete information into account. The model illustrates that expected returns not only depend on market risk, but also on investor recognition.

According to the author the motivation behind the assumption is the fact that any investor's portfolio only contains a small fraction of all securities available in the market place and these are securities for which the investor possesses certain awareness about. Therefore well-informed investors can create more optimal portfolios where they demand less expected returns as their demanded risk premium diminishes. This motivates companies to take measures with aim at spreading awareness of their stocks, which then would lower their cost of capital. This could easily be done by the use of ADRs.

Nevertheless, the information gatherings for the investors are not free and this is taken into account in Merton's *Investor Recognition Hypothesis*. The information cost structure underlying the model is partly based on analyses of information costs and partly on models of differential information flows made by Klein and Bawa (1977). The information cost structure is divided into two parts; one refers to the cost of gathering the relevant information and processing the data (*the investor perspective*) and the other of transmitting the information from one party to another (*the company perspective*).

However, the model by does not consider different quality of information. Instead it is assumed that information on all securities are of the same characteristics, but that the price is affected by the different distribution of information to investors. Thus, the emphasis lies on the differences in the breath of investor cognizance.

Merton argues that the most important cost structure for the model is the cost involved in making investors aware of the company. In a theoretical example, Merton shows that an increase in the size of a company's investor base will lead to a reduction of the cost of capital since expected returns decrease in relation to the size of the company's investor base. By doing this he shows that expected returns depend on other factors than market risk as in the traditional CAPM. Merton also shows that the impact will be more evident for companies that are relatively unknown. This statement should inspire small companies to cross-list their stocks on foreign markets.

Even though regulation constraints are not an incomplete information issue specifically, Merton argues that these constraints are accounted for in the model since investors act as if they do not know anything about the company and would therefore not include the security in their portfolio. Merton suggests that by spending resources, for example to have the company listed on another stock exchange, the company can expand its investor base by making its stocks an eligible investment for these overseas investors and thereby lowering its cost of capital and increasing its earnings.

3.5 Liquidity Hypothesis

In an equilibrium asset pricing model developed by Amihud and Mendelson (1986), the returns are shown to be an increasing and concave function of liquidity. Since the illiquidity can be measured by the cost of immediate execution, the proxy for liquidity in the model is the bid-ask spread. The ask price includes a premium for an instant purchase and the bid price reflects a concession for an instant selling. Thus a natural measure of liquidity is the bid-ask spread since it reflects the difference of the buying premium and the selling concession.

According to the model, the return required by an investor on an asset is described as the required spread-adjusted return plus the expected liquidation cost, which consists of the investor's liquidation probability multiplied by the asset's relative spread. The hypothesis states that if a listing results in smaller spreads, the investors should require lower expected returns, equivalent with a rise in stock prices, and thus lowering the companies cost of capital.

3.6 Stock market regulations

This part of the chapter focuses on barriers to stock market integration, which ADRs to certain extent can circumvent. The literature in International Finance has for a long time identified a number of market imperfections, which hinder capital market integration. However, the relative importance of these obstacles has changed over time and across markets (Oxelheim, Randøy and Stonehill, 2001). The barriers described below are considered to be of most importance.

3.6.1 Stock market regulations

There are different types of regulations that a government can impose on cross-border equity activities, which constitute important sources for market segmentation. Regulations that impose a direct barrier to integration are for example restrictions on foreign ownership of stocks. During the past century governments also employed restrictions on acquisitions of foreign stocks by domestic investors. Moreover, legislators have also restricted the ability for domestic companies to cross-list abroad and for foreign companies to list on the domestic equity market. (Oxelheim, 2001)

In countries where stock market restrictions exist, companies have to find ways to 'escape' their home market regulations in order to entice foreign investors (Oxelheim, Randøy and Stonehill, 2001). Especially, above mentioned regulations regarding ownership- and acquisitions of foreign equity can both be avoided by the use of the ADR market.

3.6.2 Asymmetric information

This concept takes into account that there exists information asymmetry depending on in which countries investors are resident. The basic assumption is that domestic investors are assumed to be better informed regarding the domestic market than foreign investors (Kang and Stulz, 1994). This implies that investors in different countries do not have access to the same information. For example, language difficulties could impose a barrier for potential investors' information gathering concerning foreign stocks. This could be due to information distortion arising from obscurities in interpreting foreign financial data, news, laws etc.

Asymmetric information also concerns differences in analytical methods used to evaluate the properties of a stock. The severeness of information asymmetry was supported by Coval and Moskowitz's (1999) findings, which stated that portfolios of US mutual funds were geographically biased toward the home of the fund. The information problems are explained by language and communication difficulties. Information concerning the domestic economy can be acquired easily, whereas information regarding foreign economies requires considerably more time and efforts.

3.6.3 Different tax regulations

Differences in governments' tax regulations could also impose barriers to stock market integration. This is true especially regarding taxes on capital gains and double taxation of dividends. Differences in tax systems have been acknowledged to be an imperfection affecting the relative value of stocks sold in different markets and hence affect international stock market trades (Kim and Stulz, 1988).

Personal and corporate taxation highly influence the shape of national financial markets. The tax system can for example lower the propensity for investing in production facilities and instead create incentives for other investments. However, the most acknowledged problem with different tax systems is that in some countries it is more favorable to raise funds by debt instead of equity. (Oxelheim, 1996)

Stonehill and Dullum (1982) discuss the problem of different taxes on similar kinds of investments in Denmark. Until a tax law change in July 1981, capital gains on stocks held for over two years were taxed at a 50 percent rate. However, stocks held for less than two years were taxed at personal income tax rates, which varied up to a rate of 75 percent. In contrast, capital gains on bonds were tax free. This tax policy resulted in the fact that most individual investors held bonds rather than stocks, which reduced the liquidity of the stock market and increased the required return on stocks.

3.6.4 Political risk

Another barrier imposing capital market segmentation is political risk. This kind of risk can be defined as “risk attaching to changes in the market rules” (Oxelheim, 1996, p.225). This kind of risk takes into account the government’s propensity to intervene in the capital markets as well as the country’s relative indebtedness. The latter measure is mentioned since the need for interventions is signaled by the country’s financial situation. A high net foreign debt makes it more likely that a government will intervene in the market by launching new taxes or legislations affecting corporate returns on investments. (Oxelheim, 1996)

When managers or investors undertake investments exposed to political risks, they demand higher risk premiums, implying higher expected returns. Every government is associated with a certain level of political risk and uncertainty, which affects the pricing of stocks in the country. (Oxelheim, 1996)

3.6.5 Agency costs

Agency costs arise from the principal-agent problem, meaning that ‘inside actors’ and ‘outside actors’ have interests that are in conflict with one another (Jensen and Meckling, 1976).

Jensen and Meckling (1976) recognize two types of interest conflicts. The first is between stockholders and managers and the second is between stockholders and debt holders. The first type arises since management’s portfolios are generally less diversified and consequently they will try to reduce the operational risk more than is desired by the shareholders who have limited shares in the company. The second type of conflict arises since certain levels of debt gives shareholders the incentive to persuade the company to invest sub-optimally and increase the company risk and also the expected return of the company. If bankruptcy should occur then the debt holders would suffer the most.

There are differences in agency costs between countries. The most obvious difference in agency costs can be found between firms located in bank-dominated markets such as Japan and Germany, where banks to a great extent influence the domestic companies, compared to firms situated in Anglo-American markets (Oxelheim, Randøy and Stonehill, 2001).

3.6.6 Foreign exchange rate risk

When deviations in the *Purchasing Power Parity* (PPP) exist, investors in different countries will appraise their real returns differently. Consequently, investors will prefer to hold different portfolios (Adler and Dumas, 1983). Exchange rate risk is a product of a floating exchange rate system and imperfect foresight ability (Choi and Rajan, 1997). When it comes to the valuation of an individual company or the demand for an asset, there are both theoretical (Choi, 1986) and empirical evidence (Karolyi and Stulz, 1996) that stock returns are sensitive to exchange rate changes.

The existence of this risk factor depends on the nature of exchange rate uncertainty. If exchange rate risks are purely nominal, they can be fully diversified away. If, on the other hand, they contain real components such as relative price uncertainty, consumption differences, or government controls, the exchange rate risk may be partially non-diversifiable (Adler and Dumas, 1983). Thus, investors facing non-diversifiable exchange rate risks might demand higher expected return.

3.6.5 Risk tolerance

Investors from different countries can have different levels of financial risk tolerance, implying that companies have to overview their debt ratios. Investors in some countries may accept financial risks whereas investors in other countries would neglect a company if it was considered as being too risky.

Moreover, the degree of financial leverage usually differs depending on which country the company is incorporated in. Scandinavian, German and Japanese companies tend to have relatively high debt/equity ratios compared to US and UK standards (Stonehill and Dullum, 1982). As a result, investors in the UK and the US might perceive these kinds of stocks as more risky and demand higher expected returns from them.

3.6.8 Transaction costs

Transaction costs, such as bid-ask spreads, brokerage commissions, and transaction taxes are important features in financial markets (Vayanos, 1998). Since the level of transaction costs involved in trading stocks differs across markets, stocks are also valued differently. Consequently, the level of differences in transaction costs has an impact on the attractiveness of markets as well.

The existence of transaction costs have an impact on investors' portfolios, since these costs have the implication that investors do not trade in all assets (Mayshar, 1981). This implies that transaction costs have a limiting effect on the number of assets investors chooses to hold in their portfolios. To relate the statement to this research one can imagine an US investor who wants to purchase stocks in a Swedish company listed on the Stockholm Stock Exchange. Imagine that the transaction costs are larger when purchasing directly on the Swedish market, then the US investor would value the opportunity to purchase the stock at lower transaction costs as an ADR on an US stock exchange instead.

3.7 Why do companies want to cross-list?

Since this dissertation investigates the impact of cross-listings on the domestic companies it is appropriate to discuss why companies reach abroad and cross-list their securities on foreign markets. In this part, the most important reasons why companies list their stocks on foreign stock exchanges are outlined.

A foreign cross-listing has generally its roots in two main reasons. Firstly, financial motives such as cheaper funding and a larger supply of capital could motivate a company to list itself on a foreign stock exchange. Secondly, a listing abroad may be done for marketing reasons since a cross-listing enhances a company's visibility on the foreign market. (Pagano, Röell and Zechner, 2002)

3.7.1 Raising capital for investments

One important reason why companies may need equity funding is to be able to finance new investment opportunities. Equity funding is most important for companies that are large and fast growing and for those that have limited their debt capacity. Thus, it can be concluded that companies with high investments, growth rate, and leverage are more likely to cross-list than companies that have the opposite characteristics. (Pagano, Röell and Zechner, 2002)

Another reason for cross-listing stocks on foreign stock exchanges is when companies are considering mergers or acquisitions involving foreign companies. It is common that acquisitions are financed with the bidder's stocks. However, this is only acceptable if the stocks are listed on the same stock exchange. (Pagano, Röell and Zechner, 2002)

3.7.2 Broadening shareholder base

Numerous researches have shown that an expansion of the marketplace for a company's stocks lowers the cost of capital due to improvements in risk sharing (see for example: Martin and Rey, 2000; Stulz, 1999). Nevertheless, as described in table 3.2 there exists mixed results regarding the effects on stock prices following cross-listings. However, there is evidence pointing at a reduction of the home market β for companies that cross-lists its stocks, which therefore results in a lower cost of capital (Karolyi, 1998).

Cross-listings make it possible for companies to evade market regulations by reducing the barriers faced by foreign investors as discussed in chapter 3.6. Lack of information can range from total unawareness of foreign investment opportunities to an informational disadvantage of trading foreign stocks as described in Kang and Stulz (1994). It is clear that companies initiating ADR programs might reduce this kind of barriers and attract foreign investments by supplying investors with as much information as necessary (Pagano, Röell and Zechner, 2002).

Previous research has shown that the larger the expansion of the shareholder base, the greater is the positive reaction on the domestic stock prices (Forester and Karolyi, 1999, Miller, 1999). A research presenting related evidence showed that stocks moving from the OTC to the more prestigious and traded NYSE experienced abnormal returns of five percent (Kadlec and McConnell, 1994). Another interesting finding is that cross-listing companies experienced an increase in analyst coverage resulting in an increased visibility, which was followed by a boost in investors' awareness of the company (Bancel and Mittoo, 2001).

3.7.3 Liquidity

Enhancing trading liquidity of the stocks is a common motive why companies cross-list their stocks. When listing on a foreign stock exchange, the increase in turnover associated with a wider shareholder base abroad, can also have positive effects on domestic bid-ask spreads and trading volumes. (Foerster and Karolyi, 1999)

According to the *Liquidity Hypothesis* the asset pricing is positively related to liquidity, implying that correct pricing with small spreads is a consequence of high liquidity in those securities. Moreover, since the bid-ask spreads is a measure of risk, the required rate of return from investors decrease as liquidity increases, thereby resulting in lower cost of capital for the companies.

3.7.4 Capitalizing on Product Market Reputation

Companies that already have penetrated a product market should be more motivated to cross-list their stocks on that particular capital market compared to similar companies whose operational activities are not established on the same market (Pagano, Röell and Zechner, 2002).

The argument is evolved from the fact that investors are already familiar with the company and a large marketing effort to attract potential investors would not be as necessary as if the foreign market was completely unaware of the company in question. In a study conducted by Saudagaran (1988) it was concluded that companies which cross-listed on foreign stock exchanges had a larger portion of foreign sales than companies only listed on the home market.

3.7.5 Strengthening the company's output market

As explained in the previous section, the presence on a foreign product market can improve a company's ability to reach and profit from that specific foreign capital market. However, the relationship could also be the other way around. A cross-listing can be used as a very strong marketing tool for the company's products, thereby increasing the company's foreign sales (Pagano, Röell and Zechner, 2002).

According to Stoughton, Wong and Zechner (2001) a company can list itself on an equity market in order to signal its high product quality to consumers, and consequently, try to capture a larger market share and increase its sales and thereby also its earnings. This motive has also been proved by Bancel and Mittoo (2001), concluding that 16 percent of European cross-listed companies consider this motive as important.

3.7.6 Other motives for cross-listing

There are at least five further reasons for companies to cross-list their stocks on foreign markets. One increasingly important motive is regarding management compensation. This motive arises if a multinational company wishes to use stock options and stock purchase compensation plans for the management and also the employees in a subsidiary

located in a foreign country. In this case a listing on the local stock market would increase the perceived value of such plans for the beneficiary. In addition, a cross-listing would reduce the transaction- and foreign exchange costs for the local recipients. (Eiteman, Stonehill and Moffet, 2001)

According to Eiteman, Stonehill and Moffet (2001), gaining political acceptance is the most important motive for Japanese companies when cross-listing. This conclusion is based upon the argument that the Japanese market has both low cost of capital and high availability of capital. Therefore, Japanese companies are not driven by trying to increase stock prices, liquidity or the availability of capital by cross-listings. Instead Japanese companies that cross-list on foreign stock markets seek local ownership in the host country in order to increase the political acceptance of the company, as a part of their product marketing strategy.

Another reason to cross-list is to take advantage of a temporarily high valuation of the company's stocks abroad. This situation can arise either by an overvaluation in the foreign market or by an undervaluation in the domestic market. (Pagano, Röell and Zechner, 2002)

A cross-listing could also have its roots in analyst coverage. For example, a company is likely to cross-list on a stock exchange where analysts with superior knowledge of a specific industry are situated. In some industries, the access to such knowledge may have an impact on the availability of capital. Since analysts reduce the informational asymmetry in the market, investors are more willing to invest in companies covered by well reputed investment banks compared to 'uncovered' companies. (Pagano, Röell and Zechner, 2002)

Another motive for companies to cross-list is the existence of differences in regulations between countries. By listing the stocks on a highly regulated stock exchange, companies signal that they will use high standards of corporate governance and disclosure practices. Consequently, companies signal quality and transparency by listing on highly regulated stock exchanges (Pagano, Röell and Zechner, 2002). However, evidence in this area is also indecisive. For example, Biddle and Saudagaran (1989) state that rigorous disclosure requirements have a negative impact on foreign companies listing decisions and stock returns.

3.8 Previous Research

The objective of this part of the dissertation is to provide the reader with a comprehensive framework concerning the research made on the subject of financial market integration and cross-listings. By reviewing the most important literature focusing on foreign cross-listings and stock market integration, the empirical findings are here presented in chronological order.

3.8.1 Stonehill and Dullum (1982)

In 1982 Stonehill and Dullum conducted an in-depth study of the Danish pharmaceutical company Novo. This is one of the first empirical studies directed to this area of finance. The authors aim was to investigate the impact market segmentation had on cost of capital. Furthermore, they wanted to outline how companies could overcome the limitations of being listed on a segmented market.

One basic argument concerning market segmentation is that investors can benefit from internationally diversifying their portfolios if stock markets are uncorrelated with each other. Thus, the authors suggested that stocks traded on foreign markets should be priced to reflect their attractiveness for inclusion in internationally diversified portfolios. Another argument regarding the effect of illiquidity and market segmentation is that companies located on markets characterized by these impediments are likely to be undervalued. The authors suggested that when and if, these companies cross-list on foreign exchanges it is possible to analyze the reaction on stock prices to evaluate whether the country is segmented or not. If it is possible to observe significant changes in stock prices uncorrelated with movements on both underlying stock market indexes during the transition, one could infer that the domestic market was segmented.

At the time of the study, the Danish financial market was highly regulated and illiquid, which had the implication that Novo was heavily undervalued in the home market compared to its US competitors. However, when Novo cross-listed its stocks on the US capital market the company experienced a strong increase in the US stock price, resulting in an increase in the domestic stock price as well. A consequence of going international financially was that the company could enjoy a significant decrease in their cost of capital. This conclusion implied that other companies on segmented markets could also benefit by internationalizing their cost of capital.

3.8.2 Howe and Kelm (1987)

Howe and Kelm (1987) examined the impact on domestic stock returns of US companies that listed their stocks on European and Japanese stock markets during the time period 1962 to 1985. Their study was the first to use an event study methodology to investigate the market response following foreign cross-listings. The purpose of the research was not to outline whether the included markets were more or less integrated with the US, instead the authors focused on what consequences a foreign cross-listing had on shareholders' wealth.

The research examined the issue of overseas listings from two perspectives. First, they measured the impact of companies' first-, second-, and third overseas listings. Second, they sorted the sample by listing location in order to analyze whether listings on different stock exchanges had different price effects.

The stock markets that were included in the second sample were the Basel-, Frankfurt-, and Paris stock exchanges. The method used to examine these issues was the standard event study methodology, using the *market model* to estimate the abnormal returns and

using actual listing dates as the events of interest. The event window that was exercised in this study was [-90 days, +40 days] relative to the actual listing dates. The authors stated that by looking at 90 days prior to the event they were able to incorporate the effects of the application and the approval dates for the cross-listings.

To estimate the expected returns, the parameters of the market model were estimated from a 100-day period ending just prior to the event period. The data sample consisted of 112 US companies.

The results of the first, second and third listings indicated that foreign cross-listings were harmful to shareholders' wealth since the CARs were negative prior to the actual listing date and remained negative even after the event. The next area of the study concentrated on the listing locations. The Basel- and Frankfurt Stock Exchange listings proved to be associated with negative CARs of about -5% over the event window. The Paris listings, however, concluded no significant CARs.

3.8.3 Alexander, Eun and Janakiramanan (1988)

This was the first research to empirically test the behavior of a larger number of stocks' returns following international dual listings on major US stock exchanges. The authors found it most interesting to conduct the analysis due to (i) the lack of previous empirical evidence regarding cross-listings on US stock exchanges, (ii) the increased frequency of cross-listings at the time, and (iii) the fact that conclusions could be drawn regarding the integration of capital markets.

The purpose of the study was threefold: the first objective was to investigate the effects that cross-listings had on domestic stock returns; the second was to study whether the effects varied between issuers from different countries and; the third was to draw conclusions regarding capital market regulation on the basis of these results.

Alexander, Eun and Janakiramanan's hypothesis was that an international cross-listing should lead to a decrease in the expected return if capital markets were completely or mildly segmented before the listing.

Based on a sample of 34 companies from 6 countries that cross-listed their securities on the NYSE, AMEX or NASDAQ between 1969 and 1982, the research topics were analyzed. Due to the difficulty of determining reliable announcement dates, the authors found it more accurate and appropriate to investigate the changes in expected returns around the listing dates. The calculations were undertaken using monthly data starting 36 months before the first month of trading and ending 36 months after the listing dates.

Their empirical results indicated that non-Canadian companies experienced a significant decline in expected returns after cross-listing. Although the Canadian companies also experienced a decline of expected returns in the post-listing period, the decline was less compared to the non-Canadian stocks and not significant. The authors conclude that these results can be interpreted as non-Canadian stock markets being more segmented from the

US stock markets than the Canadian stock markets. However, they also imply that the results could be interpreted as the Canadian markets being just as segmented as the other markets, but have a relatively higher covariance with US stock markets, resulting in a lower risk and thus also lower expected returns.

3.8.4 Jayaraman, Shastri and Tandon (1993)

Another often cited research within the field of international listings is the study conducted by Jayaraman, Shastri and Tandon (1993). The study focuses on the impact on risk and return when companies cross-list through the use of ADRs. The international financial integration and hence financial deregulation in the 1980's had given rise to an increased interest of the impact of international cross-listings. This was mentioned as a motive for carrying out this research. The purpose was to investigate the effect on domestic stock prices- and volatilities following the cross-listings.

The data sample consisted of 95 companies from 7 countries that cross-listed its stocks via the ADR markets during the period between 1983 and 1988¹⁰. The first actual days of trading for the ADRs were used as event dates. Furthermore, daily domestic stock prices were observed 150 days prior and 150 days after the listing date in order to analyze the research question.

The authors found empirical evidence of significant positive abnormal returns on the underlying stocks associated with the cross-listings. However, the authors suggested that this positive effect was primarily driven by the Japanese sub-sample as neither the British nor the other samples showed any significantly abnormal returns. The non-Japanese data sample however, also indicated positive abnormal returns, but not significant. The authors interpret these findings as a result of a greater liquidity in the stocks associated with cross-listings. They also suggest that there is a value incorporated in the cross-listing itself since it provides companies with an additional capital market where the possibility of raising funds at a lower cost exists.

3.8.5 Sundaram and Logue (1996)

An alternative method of studying the impact of international cross-listings on stock prices was made by Sundaram and Logue (1996). Previous research had mainly investigated changes in returns, and the motive behind this study was to adopt an alternative method of examining the price impact. Instead of using a traditional event study methodology, they focused on three valuation measures; price-to-book; price-to-cash-earnings; and price-to-earnings, in order to investigate the research topic.

These price ratios were then evaluated on a country-benchmarked-, world industry-benchmarked- as well as on a non-benchmarked basis. The purpose of the study was to re-examine the previous mixed empirical evidence regarding international cross-listings, when using their alternative research method.

¹⁰ 78 percent of the sample consists of Japanese and British companies.

The data sample consisted of 57 companies that listed its equity on the NYSE and AMEX during the period 1982 to 1992. By using monthly stock prices, they analyzed the post-listing price performance for each company, with three sets of pre- and post-listing periods. These periods were evaluated in relation to the benchmarks described above. Their hypothesis was that if the benchmarked ratios were less than 1, the cross-listings destroyed value. Benchmark ratios greater than 1 indicated value creation associated with the listings.

The non-benchmarked results did not indicate any significant change in value for the domestic shareholders. However, when the tests were conducted in relation to country- and world industry specific ratios, the listing companies experienced an increase in stock prices by 4- and 10 percent, respectively, for at least 6 months after the listing.

The authors interpreted these results as cross-listings being associated with a value creating effect and thereby reducing the expected returns. Furthermore, the results showed no differences in valuation effects between companies from underdeveloped financial markets, compared to those from well-developed markets. The overall conclusion was that a cross-listing in the US increases the valuation of a company by reducing the effects of segmentation between financial markets regardless of the origin of the company.

3.8.6 Miller (1999)

Miller (1999) conducted one of the most thorough researches on stock price reaction to international cross-listings on US stock exchanges. The author found the research of interest for two main reasons. First of all, Miller found an interest in the dramatic increase of ADR programs during the past decade. Secondly, the author's attention was captured by the previous ambiguous empirical evidences of foreign cross-listings, which in many cases had contradicted the theoretical models of asset pricing under restrictions of free international capital flows. The purpose of the study was to investigate cross-listings' impact on company value, and also to measure the effect created by indirect- and direct barriers.

In the study an extensive analysis was made on the stock price reaction to different types of ADR programs. The analysis intended to investigate the indirect barriers in regulated markets and was made by linking the different levels of disclosure requirements of the ADR programs to the *Investor Recognition-* and *Liquidity Hypotheses*. In order to investigate the direct legal barriers, Miller used the economic development in different countries as proxies and clustered the companies into groups according to three classifications of economic development¹¹.

¹¹The three classifications are based on the Investment Regulation Summary developed by the International Finance Corporation and are labeled as developed markets, free emerging markets and restricted emerging markets.

The data sample consisted of 181 companies that announced ADR program on US stock exchanges over the period 1985 through 1995. An event study methodology was used to measure stock reactions around the announcement dates. To be included in the data sample, daily domestic stock returns were required for 150 days prior to the announcement dates and 125 days after the listing dates. Moreover, Miller found that the mean time between listing date and announcement date was 77 days.

The results showed positive abnormal returns around the announcement dates and also that companies earned normal rates of return following the cross-listings on the US market. Altogether these findings are consistent with the equilibrium models of asset pricing under barriers to capital flows.

Regarding the test for indirect barriers the findings are consistent with the liquidity- and investor recognition hypothesizes. The study concludes that companies that list their stocks on the major US stock exchanges experience the largest positive returns, while the listings that occur on PORTAL have much less price responses. Miller argued that PORTAL had low liquidity- and investor awareness which could explain the differences.

The study does not support the international market segmentation hypothesis which states that companies in underdeveloped markets should have larger abnormal returns than companies from developed markets. The findings implied the opposite. Further, the author argues that this could be explained by the fact that a majority in the sample of companies that were classified as restricted emerging markets had listed their stocks on PORTAL. Therefore the indirect barriers such as liquidity and investor recognition could have outweighed the legal barriers for these stocks in the study. Furthermore, he explained that the positive pre-listing returns could be caused by insider trading, which Miller suggests could be most critical in emerging markets. Finally, he argues that difficulties in finding the accurate announcement dates could further explain the positive pre-listing returns.

3.8.7 Foerster and Karolyi (1999)

Another important study concerning cross-listings on US stock exchanges was conducted by Foerster and Karolyi (1999). The purpose of this research was to study stock price performance and how companies' risk exposure changes following a cross-listing. The authors state that their motivation to conduct this study arose from the fact that important conclusion pertaining to the issue of capital market integration- and segmentation could be drawn from analyzing the reaction of stock prices to international cross-listings.

To investigate the stock price reaction due to cross-listings, Foerster and Karolyi uses a data sample consisting of US cross-listings by 153 companies from 11 countries in four regions of the world, including Europe, Canada, Asia and Australia. The study was limited to include companies that issued ADR programs during the time period 1976 to 1992. Both announcement- and listing dates were used as event dates.

In order to analyze the impact on domestic stock prices following cross-listings, the study used the market model to obtain the parameters needed to calculate the expected returns for the different stocks. Thereafter the actual returns for the event window were compared to the expected returns in order to calculate the abnormal returns. The abnormal returns were sorted according to if they occurred before, during or after the US listing.

The authors motivate their choice of examining a longer event window around the event to obtain an overall perception of what happens to domestic stock prices following cross-listings. Their findings imply that stocks earned significant CARs of 19 percent during the pre-listing year, an additional 1.20 percent during the listing week, but experienced a significant decline of 14 percent during the year following the cross-listing. They conclude that these results are generally consistent with the market segmentation hypothesis, but can also stem from larger shareholder bases and greater liquidity that companies achieve when listing in the US.

The authors point out that their results do not capture time variation effects, because their study was only based on one event time. For example, they did not test if different markets had become more integrated over the test period since they did not divide their data into sub-samples.

Table 3.2
A Chronology of studies concerning cross-listings

Study	Methodology	Sample	Findings
Stonehill and Dullum, 1982	In depth case study on a single Danish company, Novo	The Danish firm, Novo internationalizing its cost of capital	<ul style="list-style-type: none"> • A firm can achieve a lower cost of capital when circumventing barriers
Howe and Kelm, (1987)	Event study – announcement date. daily data, 1962-85	165 U.S. listings in Canada and Europe.	<ul style="list-style-type: none"> • Negative abnormal returns in the period surrounding the announcement of the listing.
Alexander, Eun and Janakiramanan (1988)	Event study – listing date, monthly data, 1969-82	34 ADR listing on NYSE, AMEX and NASDAQ by companies from 6 countries	<ul style="list-style-type: none"> • CARs peak three months before listing and then decline, indicating segmentation. • Declines significant only for non-Canadian stocks.
Jayaraman, Shastri and Tandon (1993)	Event study – listing date, daily data, 1983-88	95 ADRs by companies from 7 countries.	<ul style="list-style-type: none"> • Positive cumulative returns during listing months
Sundaram and Logue (1996)	Examining valuation metrics (price-to-book, price-to-cash-earnings, price-to-earnings) – listing date, quarterly data, 1982-92	76 US ADR listings on NYSE and AMEX by firms from 14 countries	<ul style="list-style-type: none"> • Using country benchmarked ratios – the value of cross-listed stocks had a positive rise of 4-10% compared to the stock prices in the home markets.
Miller (1999)	Event study – announcement date, daily data, 1985-95	181 ADR listings by companies from 35 countries	<ul style="list-style-type: none"> • Positive effect at announcement • Small listing effect • Results sensitive to geographical location and disclosure choices
Foerster and Karolyi (1999)	Event study – listing date, weekly data, 1976-92	153 US ADRs listings by firms from 11 countries in Europe, Asia, Canada and Australia	<ul style="list-style-type: none"> • Positive CARs before and during listing • Negative CARs after listing • Results differed by region, and returns also vary by industry.

3.9 Summary

This chapter has provided the reader with a description of the theories related to this dissertation's research topic. Since this research analyses stock market reactions the *Efficient Markets Hypothesis* was first discussed in this chapter.

Afterwards, this chapter provided a description of ADRs and the markets they are traded on. It was outlined that there are four different levels of ADR programs whereas the first two levels are issued with existing stocks and the two others incur an element of raising new capital. The levels that are taken into account in this study are the first two levels.

The *International Capital Asset Pricing Model* was thereafter discussed in order to exhibit why cross-listings in theory should decrease the expected return and lower companies' cost of capital. Furthermore, the *Investor Recognition-* and *Liquidity Hypotheses* were presented in order to explain why companies could benefit from cross-listings accompanied with an enlargement of the shareholder base and more liquidity in the trade of the stocks.

A very essential argument in this research is that if markets were perfectly deregulated there should be no impact on the domestic stock price when cross-listing on a foreign stock exchange and the advantages of the ADR market would somewhat disappear. Therefore, a part in this chapter was devoted to describe regulations that create segmentation of capital markets.

Furthermore, a presentation of the motives for cross-listing was provided. The most common motive for a company to list on a foreign stock exchange is to lower its cost of capital. However, there are other motives as well, such as marketing reasons and management compensation plans, which are important to stress when scrutinizing this field of research.

The presentation of previous research demonstrated that most research made on this topic shows that financial markets are at least partially regulated and could therefore, to a certain extent, benefit from the use of the ADR market. Moreover, the results regarding the impact that foreign cross-listings have on domestic stock prices are very ambiguous and it is therefore of interest to strive to find other features that are affected by the issuance of ADR programs.

4. Empirical methodology

In this chapter the empirical methodology used to perform the analysis is outlined. The purpose of the chapter is to thoroughly illustrate how the data has been handled in order to establish the results that constitute the foundation for the analysis. This will make it easier for the reader to understand the procedure used to answer the research topics.

4.1 Computations

In order to investigate the impact of cross-listings on the US stock markets via ADRs, abnormal returns for each stock have to be calculated. Therefore the first step, after gathering all relevant stock price- and index data, is to calculate the stock- and index returns. This is done by the following procedure:

$$r_t = \frac{P_t}{P_{t-1}} - 1 \quad [t = \text{day } -240, +240]$$

where r_t is the asset's return at day t along with P_t and P_{t-1} which are the market prices at day t respectively $t-1$.

The second step is to estimate the 'normal' returns of the different stocks'; that is the returns that would have been expected if no event were to take place. This study uses *the market model* in order to estimate these returns. An essential part of the market model is to evaluate how a security's return varies relative to the return of a relevant market portfolio. This is done by running an OLS-regression on each stock's return data for the estimation window, which in this study is -240 to -121 days relative to the actual cross-listing date. In the regression model the explanatory variable is the return on the market portfolio, that is the percentage change in value of a relevant country-specific market index. This is demonstrated below:

$$R_{i,t} = \alpha_i + \beta_i R_{m,t} + \varepsilon_{i,t} \quad [t = -240, -121]$$

where $R_{i,t}$ and $R_{m,t}$ are the day- t returns on stock i and the market portfolio, respectively, and $\varepsilon_{i,t}$ is the zero mean disturbance term. Furthermore, the α - and β -coefficients are the parameters used to estimate the expected returns for the stocks in the event windows. Thereafter, these returns are subtracted from the actual stock returns in order to obtain the abnormal returns. Algebraically this process can be illustrated as below

$$AR_{i,t} = R_{i,t} - (\alpha_i + \beta_i R_{m,t}) \quad [t = -120, +240]$$

where $AR_{i,t}$ is the abnormal return for company i at day- t , and $R_{i,t}$ is the actual ex post stock returns for the event windows and $(\alpha_i + \beta_i R_{m,t})$ are the expected returns. Afterwards, as discussed in chapter 2.5, the abnormal returns for each stock are accumulated in order

to be able to observe total stock return movements during the specified event windows. The calculation of the cumulative abnormal returns (CARs) for any given stock and event window is undertaken in the following way:

$$CAR_{i,(t_1,t_2)} = \sum_{t_1}^{t_2} AR_{i,t} \quad [t = \text{day in event window}]$$

Finally, all CARs are averaged across stocks for each last day in the different event windows. It is these cumulative average abnormal returns (CAARs) that are statistically tested in order to analyze the impact on domestic stock returns from the initiation of ADR programs.

4.2 Determination of event windows

The analysis conducted regarding the impact of cross-listings on domestic stock returns is based upon three event windows: (I) [-120, -2], (II) [-10, +10], and (III) [0, +240], where the numbers reflect the days relative to the actual listing dates. The reason to separate the analysis into several event windows is to capture different aspects associated with the cross-listings, thus providing a more thorough and meaningful analysis.

The first event window focuses on the pre-listing effects on domestic stock returns. The purpose of choosing a relatively long pre-listing event window is the attempt to capture the effects of the cross-listing announcements. Miller (1999) and Foerster and Karolyi (1999) has shown that, on average, announcement dates occur between 77 and 70 days before the actual listing dates, why the pre-listing window should be able to capture the announcement effects.

The second event window attempts to, exclusively, capture the effects from the actual cross-listings. The overall thought concerning this event window, is to isolate the effects from the de facto listings and observe the market reactions during a relatively short time period. Hence, certain conclusions can be drawn regarding the markets immediate 'opinion' of the cross-listings.

The third and final event window is employed in the study to capture the post-listing effects on domestic stock returns. The relatively long post-listing window is used in order to analyze whether the effects of cross-listings are sustainable or if they only are temporary. The purpose is to provide a comprehensive understanding regarding the long term changes in stock returns.

4.3 Test for stock market responses

In order to determine the impact on domestic stock returns, in connection with cross-listings via the ADR market, certain statistical tests have to be performed. If the test statistics indicate that the values of the CAARs are significantly different from zero, then this implies that the issuance of ADR programs truly affects domestic stock returns on average. Whether the domestic returns are influenced positively or negatively depend on the sign of the test statistics.

In order to test the domestic stock return reactions to the cross-listings, t-values have to be calculated and compared to critical t-values in order to establish the statistical significance of the observations. The calculations of the t-values are undertaken by using the following formula for the studied variables, which are the last observations of the company-specific CARs in each event window:

$$t = \frac{\bar{X} - \mu}{s / \sqrt{n}}$$

t: observed t-value

\bar{X} : the average value of the studied variable, i.e. the CAARs

μ : the value for which the studied variable is tested to be different from, which in this study is zero.

s: the studied variable's standard deviation

n: number of observations

The hypothesis testing concerns examining whether the CAARs created in connection with the ADR issuance, are significantly different from zero. This implies the following hypotheses for the domestic stocks returns:

H_0 : CAARs = 0

H_1 : CAARs \neq 0

If the null hypothesis is rejected it implies that the CAARs are significantly different from zero. This means that the cross-listings of companies' stocks on the American equity markets via ADRs, significantly affects the returns generated from the domestic stocks. However, if the null hypothesis cannot be rejected, it indicates that the undertaking of ADR programs does not affect domestic stock returns in a significant matter.

4.4 Cause analysis

In order to examine potential sources to the results obtained from the above tests regarding the impact of cross-listings on domestic stock returns, further testing is performed on data regarding the companies' earnings- and sales. These tests might help explain the stock return reactions.

According to theories, such as the *Efficient Markets Hypothesis*, expectations regarding the future should be incorporated in today's market prices, therefore implying that actual stock price changes might be due to future changes in EBIT and sales. Moreover, if the changes in the above mentioned variables are not correlated with stock prices, then these variables might be of more interest for companies since stock price fluctuations are

harder to control. Positive changes in these variables due to the initiation of ADR programs would give rise to a more concrete long-term operational reason to cross-list.

The tests regarding the values of EBIT and Sales Revenues are undertaken by performing t-tests on the percentage changes in the variables for the year at which the ADR programs are issued and for the following year as well. Here the hypotheses, for both year 0 and 1, are as follows¹²:

$$\begin{array}{ll} \text{i) } H_0: \Delta EBIT = 0 & \text{ii) } H_0: \Delta \text{Sales Revenues} = 0 \\ H_1: \Delta EBIT \neq 0 & H_1: \Delta \text{Sales Revenues} \neq 0 \end{array}$$

If the null hypotheses are rejected it implies that the cross-listings via ADRs, significantly affects company earnings and sales. This could be due to the notions behind the *Investor Recognition Hypothesis* and the *Liquidity Hypothesis*.

4.5 Test for use of ADR market as direct marketing tool

Another very interesting and important feature of international cross-listings is its capability to exploit product- and service marketing. Since companies' potential markets have expanded dramatically during the last centuries due to various deregulations, it is essential for companies to try to reach customers on markets other than their home market.

If it is proven that the initiation of an ADR program improves the companies' sales on the American product- and service market, then it is highly recommended to consider that benefit as well, when deciding on whether to cross-list or not. This could be a motive to cross-list its stocks which most likely would be very appealing for the majority of companies worldwide.

The notion is based on an extension of the *Investor Recognition Hypothesis*, which implies that since company visibility increases through cross-listings, so should their sales on that particular market. Following the fact that a company receives more analyst- and media attention, the public obtains more awareness regarding the company's operational activity and hence should increase the company's sales on that market.

In order to test this, North American sales figures for 1 year before- and 3 years after the actual cross-listings are gathered for all Scandinavian companies in the data sample¹³. Thereafter percentage changes in the variable are calculated and statistically tested for $t=0, 1, \text{ and } 2$, in the same way as the tests in the previous section. The hypotheses are:

$$\begin{array}{l} H_0: \Delta \text{North American Sales} = 0 \\ H_1: \Delta \text{North American Sales} \neq 0 \end{array}$$

¹² If the ADR program was undertaken during the second half of the calendar year, then the year after the actual cross-listing date was used as $t=0$.

¹³ The figures regarding North American sales were gathered from Annual reports and from mail correspondence with respective companies' investor relations department..

If the null hypotheses is rejected it can be concluded that international cross-listings, through the ADR market, significantly affects companies' North American sales. If the test statistics are significantly positive it implies that company sales on the North American market have increased significantly after cross-listing. This might be natural consequences of increased company visibility, which might very well have product-marketing affects which favors company revenues. However, if the values are negative it implies the opposite.

5. Results and analysis

In this chapter the results obtained from the data sample is presented and analyzed. The study consists of four main tests. The first part, considers the stock market response to the issuance of ADR programs. The second part, studies the affect of cross-listing on earnings and thereafter on changes in Sales Revenue. The last test, investigates the potential benefits of using the ADR market as means for marketing purposes.

5.1 Stock market response

When studying the stock market's response to cross-listings many important conclusions can be made regarding for example financial market integration, changes in shareholder value, investor recognition- and liquidity aspects. In order to perform the relevant statistical tests, the numerical data has to be organized.

The initial data sample consisted of 829 ADR programs from 52 countries, whereas 504 companies from 42 countries fulfilled the criterions to be included in the 'final' sample. However, from this sample, 15 additional stocks were excluded as they consisted of extreme values which could bias the test statistics. These outliers were defined by a graphic approach, where the abnormal returns were plotted in diagrams in order to find and remove the extreme values.

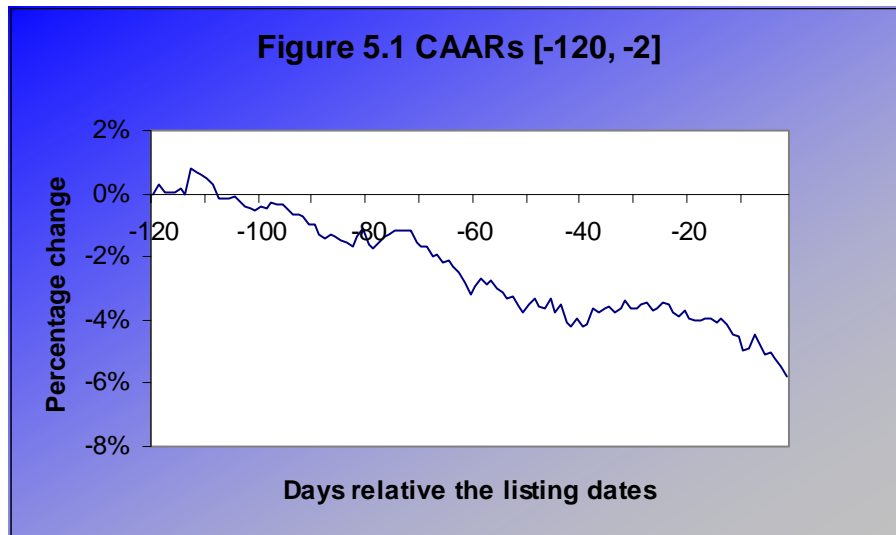
As described in chapter 4.2 the analysis for the stock market response is based upon several different event windows, with aim at capturing different effects of the ADR issuances. The different event windows examined are: (I) [-120, -2], (II) [-10, +10], and (III) [0, +240], reflecting the number of days relative to the actual listing dates. Each event window is analyzed in separate sections.

5.1.1 Pre-listing window [-120, -2]

When analyzing this event window it might be possible to draw certain conclusions regarding market speculation, information leakage or whether or not the *Efficient Market Hypothesis* holds. The latter is analyzed by trying to observe abnormal stock return behavior at the time of the supposed announcement dates. According to Miller (1999) and Foerster and Karolyi (1999), the announcement dates usually occur between 77 and 70 days prior the actual listing day. Moreover, the statistical properties regarding the pre-listing event window is presented in table 5.1.

Average (%)	-5.80
Standard deviation (%)	51.93
Calculated t-value	-2.47
Number of positive	226
Number of negative	263
Total	489

As shown in table 5.1, the pre-listing period is associated with a decline in CARs of approximately 6 percent for companies that issued their ADR programs between January 1989 and May 2003. The calculated t-value is significantly negative despite the adverse affect of relatively high standard deviation. The highest- respectively lowest values obtained are 247.16 percent and -289.74 percent. Additionally, it should be mentioned that 46 percent of the observations generated positive CARs for the event window, implying that the negative values were much more substantial than those that were positive. The developments of the CAARs in the pre-listing window are illustrated in figure 5.1.



The stock returns drop rather legible during approximately 75 to 60 days relative actual listing, which could reflect the announcement dates. Moreover, the declines in CAARs follow through the whole event window, which therefore naturally results in the significantly negative CAAR for the pre-listing period. However, these findings contradict the traditional theories regarding international finance.

The most logical explanation to the negative stock market development may very well be those of which advocates of *Behavioral Finance* present. They stress the importance of acknowledging the fact that people are not always rational as is often assumed in

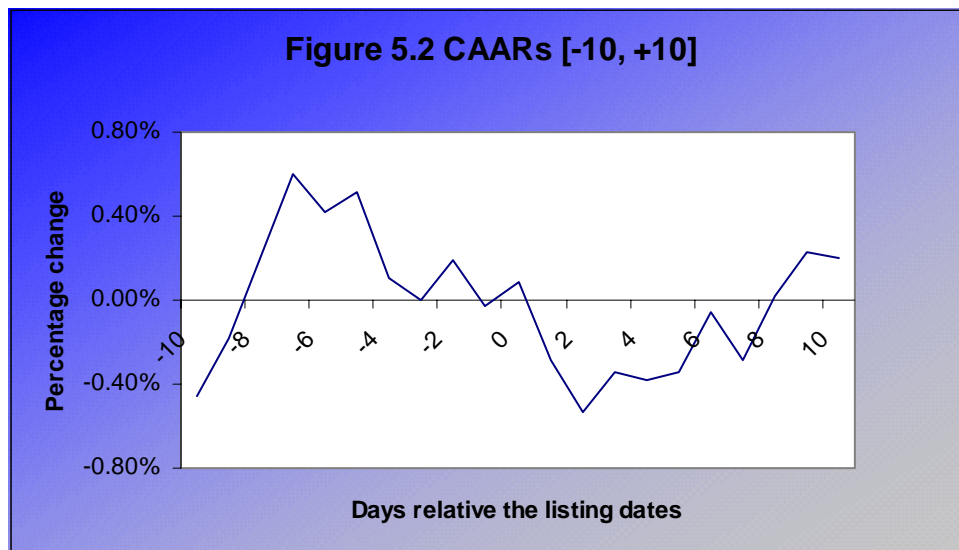
traditional economic theory and therefore it is very hard to apply these theories to stock market behavior (see for example Kahneman, Knetsch and Thaler, 1986; Rabin, 1998). Stock market performance is most likely driven by other factors such as subjective expectations and speculations, rather than by rational thinking.

5.1.2 Actual listing window [-10, +10]

By analyzing such a short event window which captures the actual international cross-listing dates, it is possible to observe the direct market behavior surrounding the days when actual trade is initiated. This is especially appealing since markets seemingly did not react according to traditional theories when studying the pre-listing window. Table 5.2 summarizes the results obtained.

<i>Table 5.2 CARs [-10, +10]</i>	
Average (%)	0.20
Standard deviation (%)	14.89
Calculated t-value	0.29
Number of positive	240
Number of negative	249
Total	489

The table indicates that the data sample experienced a minor increase in CARs of 0.20 percent. But, since this value is insignificant, no generalizations can be made regarding actual cross-listing behavior. However, certain intuitive conclusions can be made by observing figure 5.2.



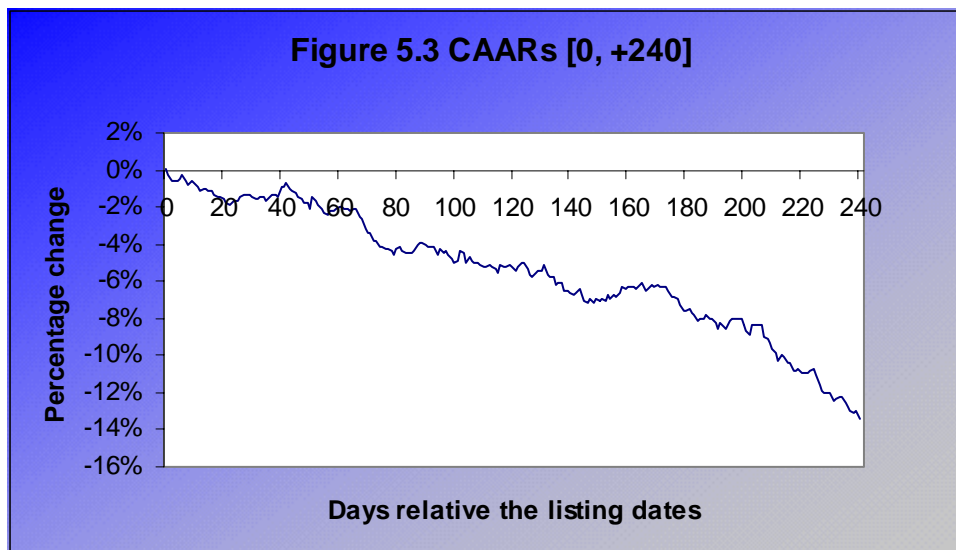
The positive changes the days before actual listing could be due to investors' beliefs that market price will rise following the cross-listing. However, the immediate drop in stock returns could be a result of investors' overreaction to the event. Moreover, even though there are clear movements in the CAARs, the small intervals within which the fluctuations occur should be considered.

5.1.3 Post-listing window [0, +240]

This event window is probably most important, especially from a shareholder wealth perspective. Stock market responses after the actual cross-listings are important for decision makers when considering whether or not to list their securities on foreign stock exchanges. The results obtained when performing the statistical test for the post-listing window are presented in the table below.

Average (%)	-13.37
Standard deviation (%)	93.84
Calculated t-value	-3.15
Number of positive	203
Number of negative	286
Total	489

As table 5.3 illustrates, the CARs have decreased by 13.37 percent on average. Despite the high standard deviation, the calculate t-statistic is significantly negative. This implies that generalizations regarding the post-listing effect of cross-listing via the ADR market can be made. The cross-listings' post-affect on domestic stock returns are generally harmful for shareholder wealth. This conclusion is also obvious by viewing figure 5.3.



As the figure demonstrates, the post-listing effects are clearly negative and therefore create incentives for decision makers not to cross-list their stocks. According to economic theory regarding financial market integration international listings should not be followed by negative stock market responses. A possible explanation to the negative results is the fear of internationalization by the home market investors. However, since the negative returns are quite persistent, it is more likely that the reasons for the results achieved, are that stock market behavior does not always follow rational ‘textbook theories’, but more likely are affected by other less predictable factors.

Previous research by for example 2002’s Nobel price winner Daniel Kahneman, Knetsch and Thaler (1986) has stated that stock price movements are not mainly driven by rational factors, but by expectations, speculations, and other psychological factors as is stressed by *Behavioral Finance* in general. Considering this, it might be much more essential to analyze other factors rather than just stock price fluctuations.

5.1.3 Summary

This part of the study examined how international cross-listings affect domestic stock returns. According to traditional economic theory, cross-listings should be perceived as positive events, which according to the *Investor Recognition*, -the *Liquidity*, -and the *Efficient Markets Hypothesis* should result in stock price increases. However, as the results in this study conclude, the impact on domestic stock prices following cross-listings via the ADR market is significantly negative. Since this study only examines Level I and II ADR programs, which are not capital raising instruments, the findings cannot be addressed to the well-known negative stock market reactions to new equity issues. Therefore, the sources of the results must arise from elsewhere. Possible reasons for these negative results could be that the domestic market fears the costs of the increased disclosure requirements and also perhaps the fears of increasing influence by foreign owners, thereby causing the stock price to decrease in value.

The negative market reactions could also be explained by the relatively substantial costs that are associated with international cross-listings or by the fact that some domestic markets are too optimistic regarding the effects of cross-listings and therefore, expect that US market participants will accept their stocks in an embellished manner. However, if this is not the case, then the domestic stock price will fall as a consequence of the overvaluation made by domestic investors regarding the foreign listing.

The alternative explanation, which seems more probable, is that the findings are evidence of the statements made by advocates of *Behavioral Finance*. This implies that investors are irrational and act upon subjective issues, such as psychological factors causing the stock prices not to fluctuate accordingly to traditional economic theories.

Moreover, the results obtained when purely analyzing domestic stock returns provide strong motives for companies to disregard cross-listings on the American stock market even though it, according to international finance theories, should be perceived as positive events by the stock market. However, depending on the results from the remaining tests incentives for companies to issue ADR programs might arise from studying the impact of cross-listings on company earnings and sales.

5.2 EBIT and Sales Revenue

By testing variables such as changes in earnings and sales, the negative results in the above tests regarding stock price response to the ADR issuances, might be explained or outweighed by positive changes in these operational variables. Intuitive, international cross-listings should affect variables other than stock prices and from a company perspective these factors might even be of more importance than purely stock price development.

The following two sections present the results achieved by testing for changes in EBIT and Sales Revenue during the years that the cross-listings occurred and the following year¹⁴. Each section is divided into three parts, where the first part concerns the results and analysis of the changes in respective variable during the first year of listing. The second part treats the results obtained by analyzing the changes during the year after actual listings. Finally, concluding remarks are presented.

5.2.1 Changes in year-end EBIT

I). The results for this test, which examines EBIT-changes at the end of the year defined as $t=0$, are based on a sample consisting of 239 companies for which sufficient data was obtainable from the Bloomberg database. From these, 9 companies were excluded since their values were obvious outliers and therefore would have skewed the results achieved. Table 5.4 summarizes the results obtained for changes in year-end EBIT at $t=0$.

Table 5.4 Changes in Earnings Before Interest and Taxes (EBIT) when $t=0$

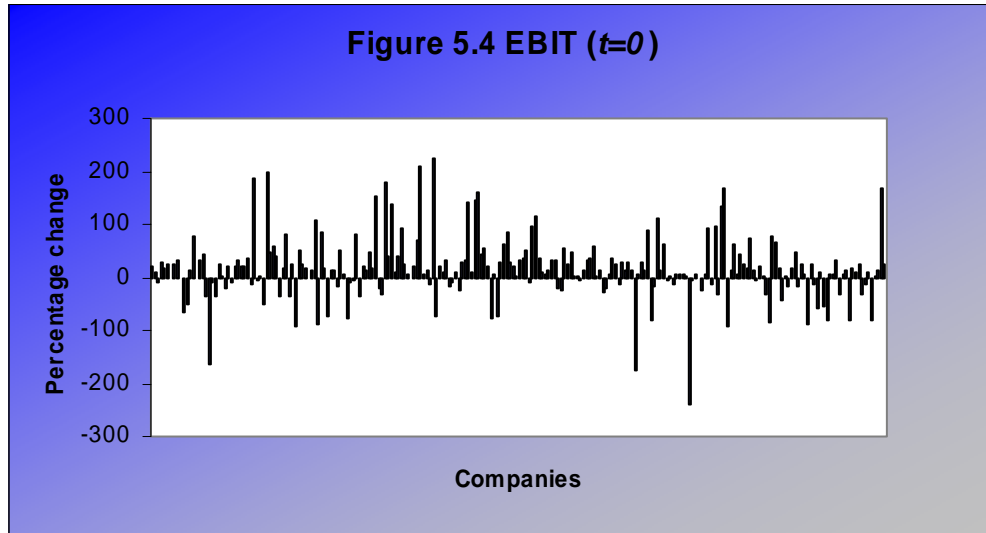
Average (%)	16.03
Standard deviation (%)	59.17
Calculated t-value	4.11
<hr/>	
Number of positive	159
Number of negative	71
Total	230

The above table presents properties of the changes in EBIT experienced by companies that cross-listed their stocks via the ADR market between January 1989 and May 2003. Potential benefits from cross-listing are apparent when considering the calculated t-value, which in spite of the relatively high standard deviation is highly significant.

High standard deviations imply high risk as the intervals in which the variable will fall into becomes large. However, since the test statistics are significant despite the high standard deviations, it is recommended to cross-list from an earnings perspective. On average the change in EBIT for the data sample was 16 percent.

¹⁴ If the actual listings occurred during the second half of the calendar year, then the next year is used as $t=0$. Moreover, the figures used are year-end values.

Additionally, further support for cross-listings are provided by the table, which also shows that almost 70 percent of the ADR programs were followed by positive changes in EBIT the year of which the actual listings occurred. This is also illustrated in figure 5.4 where every company's EBIT-change is plotted. As can be clearly seen the majority of changes in company earnings are positive with only a few large EBIT decreases.

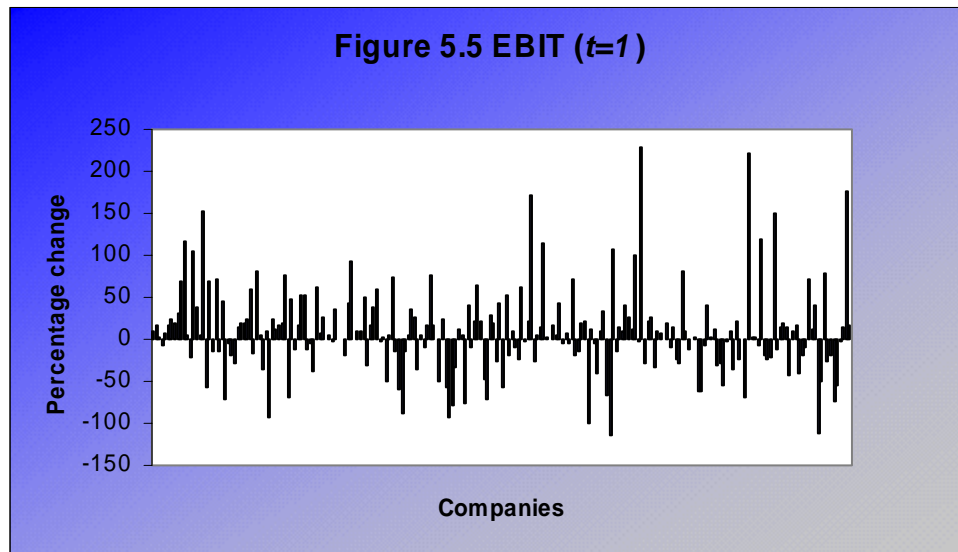


II). The results obtained when testing the changes in EBIT the year after the actual cross-listing, that is $t=1$, are based on a sample based on 222 companies for which sufficient data was obtainable. Moreover, 11 companies were removed from the test due to their extreme values, which would have caused misleading results.

Table 5.5 presents the values obtained when analyzing the changes in year-end EBIT experienced by companies the year after they initiated their ADR programs. Once again the calculated t-values are significant, despite the adverse effect of high standard deviations.

<i>Table 5.5 Changes in Earnings Before Interest and Taxes (EBIT) when $t=1$</i>	
Average (%)	8.48
Standard deviation (%)	50.95
Calculated t-value	2.48
Number of positive	130
Number of negative	92
Total	222

Moreover, nearly 60 percent of the EBIT-changes in this sample were positive, which figure 5.5 illustrates. This is a slight drop compared to the number of positive EBIT-changes at $t=0$. However, despite the lower average change in EBIT and the lower calculated t-value, the impact of cross-listings on earnings are still significantly positive. This implies that the operational incomes might be somewhat diminishing, but still keeps on increasing even the year after the international listings occurred.



Since earnings are fundamental issues for companies and the fact that the positive changes in EBIT seems to be somewhat persistent, this should be incentives for companies to cross-list their stocks via the ADR market despite the ‘irrational’ negative fluctuations in stock prices, which were obtained in the tests that were presented in section 5.1.

III). The results obtained are very interesting not just because the fact that they prove positive impacts on companies’ operational incomes, but because they contradict the negative stock return movements, which were discussed in section 5.1. This also implies that as the majority of studies merely examine cross-listings’ impact on domestic stock prices, important aspects concerning international cross-listings are neglected.

Findings such as those regarding the significantly positive changes in EBIT, both during the actual year of listing and the following year as well, are features which most likely would motivate companies to be keener on choosing to cross-list their stocks on foreign stock markets.

Reasons for the positive response in earnings following cross-listings are most likely to be multiple, but the most apparent reason is probably the lower cost of capital obtained by being listed on a foreign stock market. The decrease in the cost of capital could be due to diversification benefits, which lowers the stock price variance, and hence the returns demanded by investors should also decrease. Other variables such as taxes, interest rates,

and inflation also affect companies' capital costs. Furthermore, lower cost of capital gives rise to the possibility of undertaking increasing amounts of positive investment opportunities, which in turn should result in higher operational earnings for the companies. The positive changes in EBIT proved in these tests might very well also depend on actual sales changes, which will be analyzed in the next section.

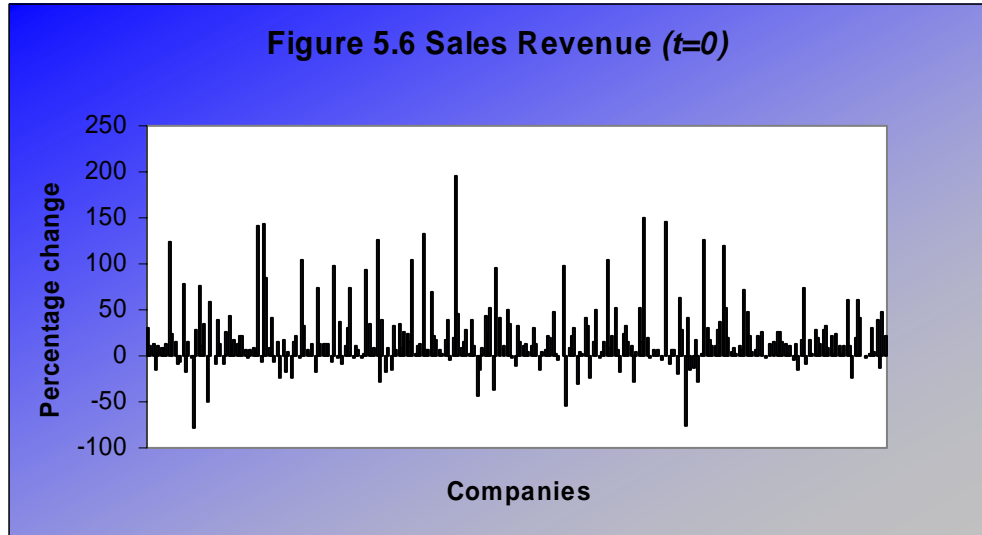
5.2.2 Changes in Sales Revenues

I). The test undertaken in order to analyze the changes in sales during the year defined as $t=0$, is based on 283 underlying companies for which adequate sales data were accessible from the Bloomberg database. From these 283 companies, 6 were excluded for being apparent outliers observable when plotting the companies' percentage changes in Sales Revenues. After eliminating these extreme values, the statistical test of the changes in the variable at $t=0$ are performed. The results achieved are summarized in table 5.6.

Average (%)	19.90
Standard deviation (%)	35,79
Calculated t-value	9.20
Number of positive	219
Number of negative	55
Total	274

When viewing the above table, it is clear that the results obtained are very interesting from a company perspective. The extremely high calculated t-value along with the high average increase in Sales Revenues and relatively low standard deviation, are findings that should and most probably would motivate companies to leave their segregated business environment and strive to internationalize themselves.

Furthermore, as table- and figure 5.6 illustrates, the vast majority of the 274 companies (almost 80 percent) that are included in this sample experienced increases in their sales. The large number of positive observations, in addition with the extremely positive t-value, are signs of the clear benefits by cross-listing on the US capital market. Decision makers should therefore take these issues into consideration when deciding on whether to cross-list and not just focusing on stock price effects.

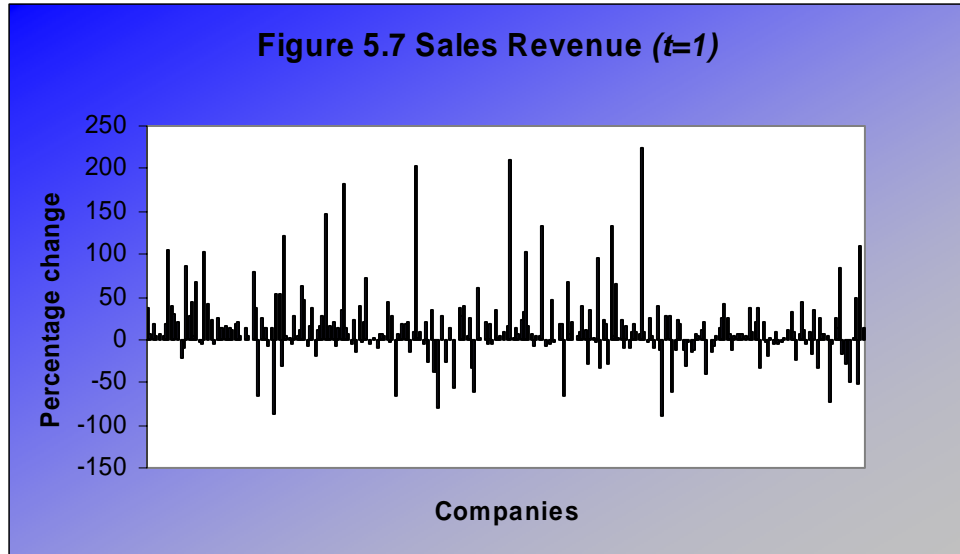


II). The results achieved when testing for changes in Sales Revenues for the year after actual cross-listing ($t=1$) is based on 279 companies after 4 companies were excluded since their sales changes were obvious outliers. The statistical properties of the test variable are summarized in table 5.4.

Table 5.7 Changes in Sales Revenues when $t=1$

Average (%)	13.24
Standard deviation (%)	40.12
Calculated t-value	5.51
Number of positive	195
Number of negative	84
Total	279

Nearly 70 percent of the changes in the test variable accounted for during the year after the international listing were positive (see figure 5.7). This is a slight decrease compared to the results for the sales changes at $t=0$. However, the number of increases still clearly outnumbers the number of decreases.



Moreover the average change in Sales Revenue has also decreased, but the test statistics are still significantly positive. The results show that the increases in sales figures keeps on increasing even the year after the cross-listings occurred. These findings are of great importance since they give evidence for positive consequences for the companies' operational activities which are long lasting, maybe even permanent.

III). The significantly positive results might be due to increased sales purely in the US. However, they may perhaps also be due to increased sales on other geographical markets as well. This could be a consequence of increased analyst- and media coverage regarding the company following its cross-listing.

This proposition might very well be true, especially since the cross-listings via the ADR market occur in the US, which is know to be the worlds leading financial market. Hence, many countries report financial news concerning companies and securities that are listed on the American stock market. This creates an awareness regarding the companies and their operational activities, which might result in an increase in the sales of their products and services and consequently also enlarge their market share and customer base.

The above stated concept has also been tested by directly analyzing how the North American Sales Revenues have changed for Scandinavian companies that cross-listed their securities via ADRs during the test period. This test is of interest because ADRs could be used as a direct marketing tool in order to establish- or expand a customer base in the US. The results are presented and analyzed in the following section.

5.3 Changes in North American Sales

The results in section 5.2.1 proved that changes in overall Sales Revenues were significantly positive, which implied certain operational benefits from initiating ADR programs. The test, for which the results are presented in this section, was undertaken in order to further investigate ADR issuances as marketing tools for companies' products and services.

Since data regarding companies' North America sales are rather difficult to acquire, the data sample has been limited to only include companies domiciled in Scandinavia. Furthermore, relevant data should be attainable so that the tests can be performed for North American sales changes during the year of actual cross-listing as well as for the following two years. That is, actual sales figures should be gathered for the year before- and three years after the listing years.

The initial data sample consisted of 18 Scandinavian companies, which cross-listed their stocks via ADRs during the test period. However, 8 of these listings occurred during 2002 or 2003, which made it impossible to gather sales figures for the three following years. These were therefore excluded, leaving a sample of 10 companies. Furthermore, two of the Swedish companies were excluded from the test due to absence of North American sales sometime during the required time period. From these 8 companies, relevant data were obtainable from 5 of them: *Atlas Copco*, *Svenska Cellulosa Aktibolaget* (SCA), and *Swedish Match* from Sweden; *Tomra Systems A/S* from Norway; and the *Amer Group* from Finland. The North American sales changes for these companies during the test period are presented in table 5.8.

Table 5.8. American sales changes (%)

t	<i>Atlas Copco</i>	<i>SCA</i>	<i>Swedish Match</i>	<i>Tomra A/S</i>	<i>Amer Group</i>
0	7.04	351.93	45.21	44.02	23.85
1	-7.75	-23.98	72.37	22.53	-13.90
2	-6.66	7.92	28.62	50.29	-25.20

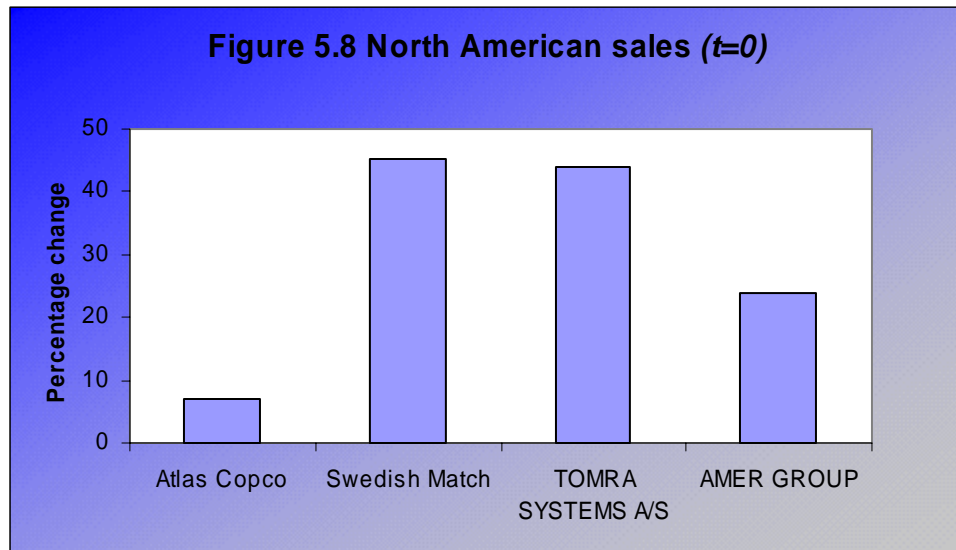
The analysis in this section is divided into four parts, where the first three parts regard the examination of the changes in the North American Sales Revenues during the observed years. Whereas the last part presents concluding comments of the results obtained. Moreover, it is important to stress the fact that generalizations should be made with caution when statistical tests are performed based on a limited number of observations.

I). This part presents the results for the test which examines changes in North American Sales Revenues for Scandinavian companies during the actual year of cross-listing. Moreover, SCA is removed from this test due to its value biases the results. Table 5.9 summarizes the statistical properties of the test sample.

Table 5.9 Changes in North American Sales Revenues when $t=0$

Average (%)	30.03
Standard deviation (%)	18.19
Number of companies	4
Calculated t-value	3.30

Potential advantages regarding sales increases on the North American market following the issuance of an ADR program by a Scandinavian company are supported by the results presented in the table above. The high average change along with the relatively low standard deviation gives rise for the comparatively high t-statistics despite the low number of observations¹⁵. This finding implies that there are clear benefits by cross-listing regarding the marketing of a company's products and services the same year as the initiation of the ADR program occurred as all companies experience increases in their North American sales (see figure 5.8). This result could be due to the fact that the event announcements have occurred some time before actual cross-listings and therefore has initiated company awareness processes resulting in increased sales during $t=0$.



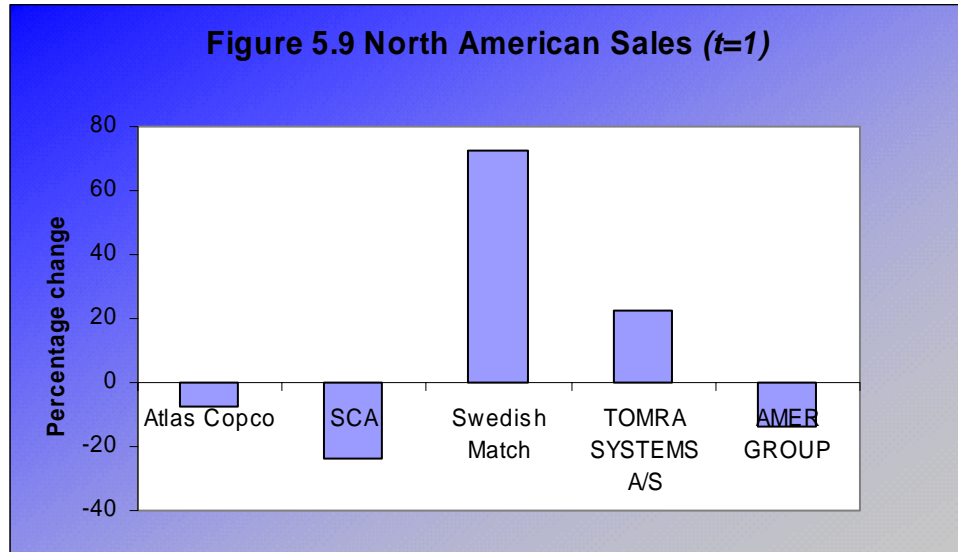
II). The results arrived at when undertaking the test concerning the year after actual listing dates are presented below in table 5.10. There are no extreme values for the sales changes at $t=1$ and hence no companies are excluded from the test.

Table 5.10 Changes in North American Sales Revenues when $t=1$

Average (%)	9.85
Standard deviation (%)	39.01
Number of companies	5
Calculated t-value	0.56

¹⁵ The number of observations is positively related to the calculated t-value as can be seen in chapter 4.3.

As the table indicates, the average change in the studied variable is still positive, even though it is not as large as the value for $t=0$. Additionally, the standard deviation is larger for this test than for the test concerning the actual listing years. The latter factor along with the low number of test units causes the t -statistic to be low. The high variation in the sample values can be observed by glancing at figure 5.9.

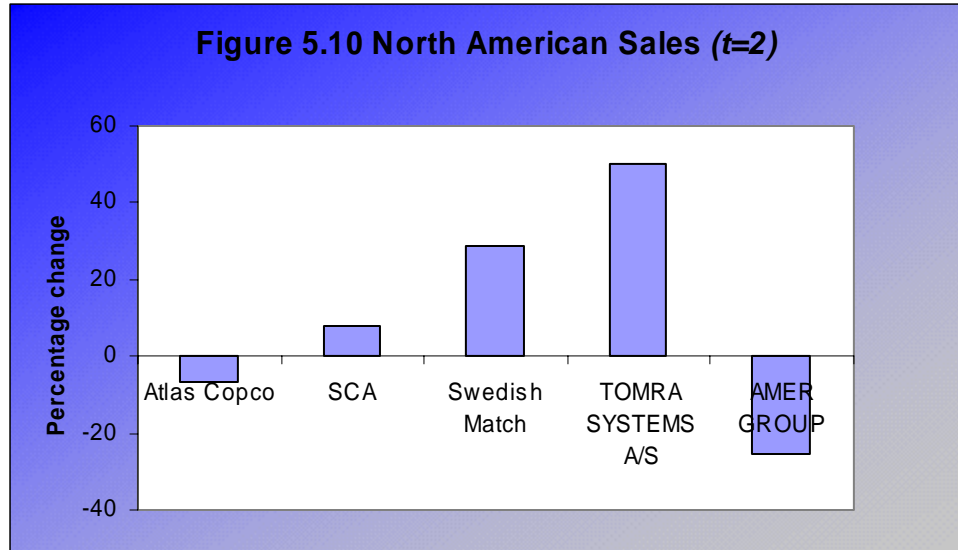


As the figure illustrates, the three companies with declining Sales Revenues only experienced comparatively small decreases. Whereas, Swedish Match demonstrates remarkably large sales increases, which gives rise to the high standard deviation.

III). This test, which analyses the more long-term change in North American Sales Revenues, is carried out for the second years after the cross-listings occurred. The results achieved are presented in table 5.11.

<i>Table 5.11 Changes in North American Sales Revenues when $t=2$</i>	
Average (%)	10.99
Standard deviation (%)	29.52
Number of companies	5
Calculated t -value	0.83

Once again the results prove positive average changes in the examined variable, implying certain sales benefits by international cross-listings. However, yet again, the high standard deviation causes the calculated t -value to be insignificant. The large spread regarding the sales changes can clearly be observed by viewing figure 5.10.

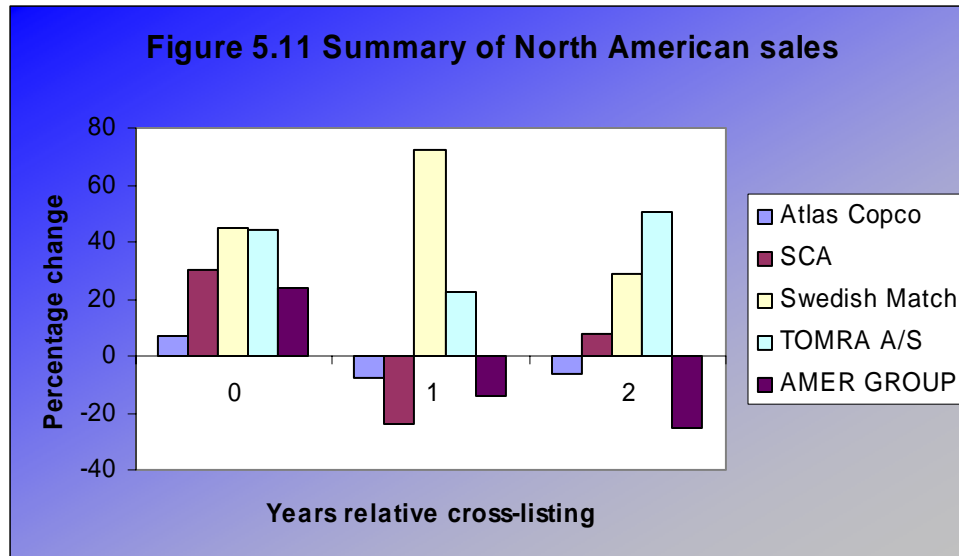


As can be seen from the figure, Atlas Copco's and the Amer Group's North American sales continues to evolve negatively during the second year after the actual cross-listings. However, Swedish Match and Tomra Systems A/S both maintain their positive sales trend, whereas SCA has gone from a decline in Sales Revenue at $t=1$ to a slight increase at $t=2$. What these factors might depend on is discussed in the final part of this section.

IV). As mentioned earlier, the results should be analyzed with understanding for the effect of the low number of research units that were included in the statistical tests. Therefore generalizations are hard to make. However, certain characteristics can be observed from the performed tests and thereby a few conclusions can be drawn.

First of all, it should be stressed that all three of the tests resulted in positive average sales changes, even though only the first test regarding the actual cross-listing years resulted in a significantly positive t-value. However, the formula to calculate t-values (see chapter 4.3), illustrates the difficulty to achieve significant values due to the adverse effect of having few research units and high standard deviations. The latter are partly caused by the fact that the tests only include a low number of companies. Moreover, the North American sales development, and hence the source of the high standard deviations, for each company during the test period is illustrated in figure 5.1¹⁶.

¹⁶ SCA experienced an extremely large sales increase by 351.93 percent at $t=0$, but in order to construct figure 5.9 this value has been replaced by the average of the other for companies' sales changes at $t=0$.



As the figure illustrates, both Swedish Atlas Copco and Finnish Amer Group showed relatively negative sales changes on the North American market. According to Mattias Olsson, Investor Relations Manager at Atlas Copco, the weak changes in the company's North American sales was due to the US recession in the beginning of the 1990's¹⁷. Since Amer Group initiated its ADR program at the beginning of the 90's as well, their negative sales could also be a reaction to the overall depressing business environment in the US.

Furthermore, Swedish Match and Norwegian Tomra Systems A/S, that issued their ADR programs in March 1999 respectively August 1993, experienced the greatest sales increases of the companies included in the data sample. However, SCA's sales also increased dramatically during $t=0$ by more than 350 percent, which might probably be the reason for the decrease in sales the year after. During the last year in the test period the company, once again, experiences sales growth even though it is modest.

Most of the observations during the test period are positive, which therefore to a certain extent gives support for the conjecture regarding cross-listings as a direct product- and service marketing tool. These findings suggests that companies that wish to expand its customer base and increase its market share on the North American markets should consider cross-listing their stocks on the American stock exchanges despite the negative stock price reactions, which were presented in section 5.1. There exist more important factors than stock prices, which are very hard to control and predict. However, the changes in earnings and sales are of a more concrete nature, which therefore should be of great interest for companies in general.

¹⁷ Mail correspondence on 8th August 2004.

6. Conclusions

In the final chapter of the dissertation, concluding remarks regarding the stock market response to the events of ADR issuances are presented. Further, conclusions concerning the results obtained when studying the cross-listings affect on company earnings and sales are made. Moreover, managerial and theoretical implications of the results are given. Finally, suggestions for further research are provided.

6.1 Concluding remarks

This dissertation has investigated how different factors are affected by cross-listings on the American stock exchanges through the issuance of ADR programs. The research has been conducted by using an event study methodology to examine the research topics. The variables that are examined are domestic stock returns, company EBITs, and Sales Revenue.

The theoretical connection between cross-listings and domestic stock returns was explained by Sundaram and Logue (1996), who stated that if markets were completely integrated there should not be any abnormal effects on stock prices following a company's listing from one market to another. However, if markets are not completely integrated, then the international listings should be perceived as positive news and thereby increase stock prices.

The study was partly motivated by the ambiguous results found in previous research regarding the effects of international cross-listings, and partly because of the fact that important factors have been neglected in previous research. It would therefore be interesting to discover alternative features affecting managers' decision making process.

In order to examine the effects from foreign cross-listings on US stock exchanges during the time period between January 1989 and May 2003, a sample of 504 ADR programs from 42 countries was analyzed. When studying the stock market response three different event windows were analyzed. The event windows are created to capture the effects in the pre-listing-, listing-, and pos-listing periods.

Interestingly, the results obtained regarding the stock market impact followed by the initiation of ADR programs were negative implying drawbacks from internationalization, which contradicts all traditional economic theory. Moreover, both the pre- and post-listing event windows experienced significantly decreases in stock returns. Despite the fact that an increasing number of companies choose to cross-list on US stock exchanges, the benefits are not at all evident by exclusively considering the reaction of domestic stock prices.

However, different conclusions are stated after the analysis is made regarding companies' EBITs and Sales Revenues. The changes in the variables were studied for the actual cross-listing year, along with the following year. All four statistical tests were significantly positive, implying actual operational benefits through international cross-listings. The positive responses of the variables could be due to increased analyst- and media coverage, which might work as a marketing tool for the companies' products and services. From a managerial viewpoint these findings are extremely important for the basis of decision making regarding whether to cross-list or not.

Furthermore, a test is undertaken in order to study Scandinavian companies' North American sales changes following the issuance of ADRs. The purpose of this test is to investigate whether the ADR market can be used as a direct marketing tool. This test also results in positive sales changes, however only significant for the actual listing year. This could be due to the low number of companies included.

Since no previous research has examined the impact of ADR issuance on EBIT and Sales Revenues, and since these variables are of great importance for companies' operational activities, the findings in this study should be of immense interest for managers and should motivate them to consider internationalizing their companies despite the adverse effect on stock returns proven in several studies.

A drawback regarding this event study is that it does not filter out other news that could distort the affects of cross-listings on the studied variables. However, with aim at minimizing the possibility of distortion, 504 ADR programs have been taken into account. Hence, the probability of "contaminated" news altering the results is considered to be limited due to the large data sample. Furthermore, the results could have been affected by the fact that companies with different characteristics have been clustered together. Therefore, it would be very interesting to conduct an in-depth study of a more limited data sample in order to investigate whether company-specific factors, such as size-, industry- or country specific aspects affects the impact of the foreign cross-listings on the US stock exchanges.

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Appendix A - Underlying companies

Company	Listing date	Exchange	Type	Industry
Argentina				
TRANSPORTADORA DE GAS DEL SUR	21-okt-02	NYSE	Level II	Gas Utilities
Australia				
AGENIX LTD	29-maj-02	OTC	Level I	Biotechnology
AGT BIOSCIENCES LTD	6-dec-02	OTC	Level I	Biotechnology
ALPHA TECHNOLOGIES CORP LTD	1-sep-98	OTC	Level I	Adv. Indust. Equip.
AMRAD CORP LTD	20-okt-98	OTC	Level I	Biotechnology
AQUARIUS PLATINUM LTD	30-apr-01	OTC	Level I	Mining & Metals
ATLAS PACIFIC LTD	26-okt-94	NASDAQ	Level II	Mining & Metals
BIONOMICS LTD	30-sep-02	OTC	Level I	Biotechnology
BIOTA HOLDINGS LTD	9-sep-93	OTC	Level I	Pharmaceutical
BRESAGEN LTD	26-feb-01	OTC	Level I	Biotechnology
CAPE RANGE LTD	1-aug-93	OTC	Level I	Wireless Comm.
CHARTERS TOWERS GOLD MINES NL	1-okt-96	OTC	Level I	Mining & Metals
COCA-COLA AMATIL LTD	1-jun-91	OTC	Level I	Beverage
COMPUTERSHARE LTD	7-jun-02	OTC	Level I	Gen. Industrial Svcs
CUE ENERGY RESOURCES LTD	20-mar-03	OTC	Level I	Energy
ENVIROMISSION LTD	13-feb-03	OTC	Level I	Electric Utilities
FEDERATION GROUP LTD	15-okt-01	OTC	Level I	Mining & Metals
FIRST AUSTRALIAN RESOURCES LTD	28-aug-01	OTC	Level I	Energy
GENETIC TECHNOLOGIES LTD	14-jan-02	OTC	Level I	Biotechnology
GLOBAL PETROLEUM LTD	14-apr-97	OTC	Level I	Energy
HERALD RESOURCES LTD	9-dec-96	OTC	Level I	Mining & Metals
HYDROMET CORP LTD	1-dec-93	OTC	Level I	Gen. Industrial Svcs
JAMES HARDIE INDUSTRIES N.V.	22-okt-01	NYSE	Level II	Building Materials
LEND LEASE CORP LTD	10-maj-00	OTC	Level I	Real Estate
LEYSHON RESOURCES LTD	21-maj-91	OTC	Level I	Mining & Metals
MENZIES GOLD N.L.	1-apr-97	OTC	Level I	Mining & Metals
METAL STORM LTD	12-dec-01	NASDAQ	Level II	Aerospace
MONTERAY GROUP LTD	1-dec-96	OTC	Level I	Software
NEWCREST MINING LTD	1-aug-92	OTC	Level I	Mining & Metals
NOVOGEN LTD	29-dec-98	NASDAQ	Level II	Pharmaceutical
OIL SEARCH LTD	1-maj-93	OTC	Level I	Energy
ORIGIN ENERGY LTD	17-feb-00	OTC	Level I	Energy
PETSEC ENERGY LTD	6-mar-00	OTC	Level I	Energy
PRANA BIOTECHNOLOGY LTD	5-sep-02	NASDAQ	Level II	Biotechnology
SILEX SYSTEMS LTD	17-maj-99	OTC	Level I	Adv. Indust. Equip.
SIMS GROUP LTD	25-okt-94	OTC	Level I	Gen. Industrial Svcs
SOUTHERN PACIFIC PETROLEUM	1-mar-02	NASDAQ	Level II	Energy
ST. BARBARA MINES LTD	5-aug-94	OTC	Level I	Mining & Metals
ST. GEORGE BANK	7-jun-02	OTC	Level I	Banks
STRIKER RESOURCES	1-dec-93	OTC	Level I	Mining & Metals
THE NEWS CORP LTD	1-nov-94	NYSE	Level II	Broadcasting
UXC LTD	25-feb-00	OTC	Level I	Fixed Line Comm.
VANGUARD PETROLEUM LTD.	1-aug-93	OTC	Level I	Energy
VENTRACOR LTD	5-aug-97	OTC	Level I	Medical Products
VILLAGE ROADSHOW LTD	21-maj-97	OTC	Level I	Leisure Goods & Svcs
VIROTEC INTERNATIONAL LTD	12-sep-00	OTC	Level I	Gen. Industrial Svcs
VRI BIOMEDICAL LTD	24-okt-02	OTC	Level I	Biotechnology
WOODSIDE PETROLEUM LTD	1-jun-92	OTC	Level I	Energy
Austria				
BWT AG	12-dec-01	OTC	Level I	Water Utilities
ERSTE BANK D. O. SPARKASSEN AG	22-dec-00	OTC	Level I	Banks
EVN AG	1-apr-93	OTC	Level I	Electric Utilities
JULIUS MEINL INTERNATIONAL AG	27-mar-97	OTC	Level I	FoodRetail&Wholesale
MAYR-MELNHOF KARTON AG	6-apr-98	OTC	Level I	ForestProducts&Paper
OMV AG	1-maj-96	OTC	Level I	Energy
VA TECHNOLOGIE AG	1-sep-95	OTC	Level I	Gen. Industrial Svcs
VERBUND	11-mar-97	OTC	Level I	Electric Utilities
VIENNA INTERNATIONAL AIRPORT (VIE)	1-dec-94	OTC	Level I	Gen. Industrial Svcs
WIENERBERGER AG	28-okt-96	OTC	Level I	Building Materials
WMP BANK AG	9-dec-98	OTC	Level I	Banks
WOLFORD AG	1-nov-96	OTC	Level I	Textiles & Apparel

Appendix A - Continued

Company	Listing date	Exchange	Type	Industry
Belgium				
DELHAIZE GROUP	26-apr-01	NYSE	Level II	FoodRetail&Wholesale
SOLVAY	1-okt-94	OTC	Level I	Chemicals
TESSENDERLO CHEMIE	29-jun-98	OTC	Level I	Chemicals
Brazil				
ACESITA	24-sep-01	OTC	Level I	Mining & Metals
AMBEV	15-sep-00	NYSE	Level II	Beverage
ARACRUZ CELULOSE	3-mar-97	NYSE	Level II	ForestProducts&Paper
BANCO BRADESCO	21-nov-01	NYSE	Level II	Banks
BANCO ITAU HOLDING FINANCEIRA	21-feb-02	NYSE	Level II	Banks
BOMBRIIL-CIRIO	5-aug-97	OTC	Level I	Household Products
BRASIL TELECOM PARTICIPACOES	1-aug-02	NYSE	Level II	Fixed Line Comm.
BRASIL TELECOM	16-nov-01	NYSE	Level II	Fixed Line Comm.
CENTRAIS ELET. DE SANTA CATARINA	12-jun-02	OTC	Level I	Electric Utilities
CIA. FORCA E LUZ CATAGUAZES LEOPOLDINA -	1-mar-02	OTC	Level I	Electric Utilities
COMPANHIA ENERGETICA DE SAO PAULO	24-sep-99	OTC	Level I	Electric Utilities
COMPANHIA PARANAENSE DE ENERGIA	9-maj-96	OTC	Level I	Electric Utilities
COMPANHIA ENERGETICA DE MINAS GERAIS	19-sep-01	NYSE	Level II	Electric Utilities
COMPANHIA SIDERURGICA BELGO	22-dec-97	OTC	Level I	Mining & Metals
COMPANHIA SIDERURGICA NACIONAL	3-nov-97	NYSE	Level II	Mining & Metals
COMPANHIA VALE DO RIO DOCE	20-jun-00	NYSE	Level II	Mining & Metals
PARANAPANEMA	21-dec-00	OTC	Level I	Mining & Metals
PERDIGAO	20-okt-00	NYSE	Level II	Food
PETROLEO BRASILEIRO	22-feb-01	NYSE	Level II	Energy
ROSSI RESIDENCIAL	21-apr-00	OTC	Level I	HomeConstruc&Furnish
SADIA	30-dec-02	NYSE	Level II	Food
TELE CELULAR SUL	24-jun-02	NYSE	Level II	Wireless Comm.
TELE NORDESTE CELULAR	24-jun-02	NYSE	Level II	Wireless Comm.
TRACTEBEL	27-jun-02	OTC	Level I	Electric Utilities
USIMINAS-USINAS SID. DE MINAS GERAIS	25-sep-01	OTC	Level I	Mining & Metals
Chile				
BANCO DE CHILE	2-jan-02	NYSE	Level II	Banks
BANCO SANTANDER CHILE	1-aug-02	NYSE	Level II	Banks
COMPANIA DE TELECOM. DE CHILE	1-jan-97	NYSE	Level II	Fixed Line Comm.
EMBOTELLADORA ANDINA	14-dec-00	NYSE	Level II	Beverage
China				
ANGANG NEW STEEL COMPANY LTD	6-dec-02	OTC	Level I	Mining & Metals
CHINA SHIPPING DEVELOPMENT COMPANY LTD	1-mar-96	OTC	Level I	Industrial Transport
GUANGZHOU SHIPYARD INTERNATIONAL COMPANY	13-jul-95	OTC	Level I	Industrial Transport
SHANGHAI CHLOR-ALKALI CHEMICAL CO., LTD	1-mar-94	OTC	Level I	Chemicals
SHANGHAI ERFANGJI CO. LTD	1-dec-93	OTC	Level I	Textiles & Apparel
SHANGHAI JINQIAO PROCESSING DEV CO. LTD	1-jul-96	OTC	Level I	Real Estate
SHANGHAI LUJIAZUI FINANCE & TRADE ZONE	1-jul-96	OTC	Level I	Real Estate
SHANGHAI TYRE AND RUBBER CO. LTD	1-okt-95	OTC	Level I	Auto Parts & Tires
SHANGHAI WAIGAOQIAO FREE TRADE ZONE	1-maj-95	OTC	Level I	Heavy Construction
TSINGTAO BREWERY COMPANY LTD	1-feb-96	OTC	Level I	Beverage
Czech Republic				
KOMERCNI BANKA	25-nov-96	OTC	Level I	Banks
Denmark				
DAMPSKIBSSELSKABET TORM	16-apr-02	NASDAQ	Level II	Industrial Transport
Finland				
AMER GROUP PLC	1-sep-90	OTC	Level I	Leisure Goods & Svcs
EIMO OYJ	30-aug-02	OTC	Level I	Indust. Diversified
UPM-KYMMENE CORP	29-jun-99	NYSE	Level II	ForestProducts&Paper

Appendix A - Continued

Company	Listing date	Exchange	Type	Industry
France				
ACCOR	4-dec-97	OTC	Level I	Leisure Goods & Svcs
ALCATEL	10-mar-97	NYSE	Level II	Communications Tech.
ALTRAN TECHNOLOGIES S.A.	21-jun-01	OTC	Level I	Gen. Industrial Svcs
BNP PARIBAS	4-nov-02	OTC	Level I	Banks
CIMENTS FRANCAIS	1-apr-93	OTC	Level I	Building Materials
CLARINS	1-dec-90	OTC	Level I	Cosmetics
COFLEXIP STENA OFFSHORE	22-okt-01	OTC	Level I	Energy
FRANCE TELECOM - CONTINGENT VALUE RIGHTS	29-jun-01	NYSE	Level II	Fixed Line Comm.
HAVAS	27-sep-00	NASDAQ	Level II	Advertising
LAFARGE	23-jul-01	NYSE	Level II	Building Materials
LAGARDERE S.C.A.	1-okt-94	OTC	Level I	Publishing
PERNOD RICARD	1-nov-92	OTC	Level I	Beverage
PEUGEOT CITROEN	1-jan-94	OTC	Level I	Auto Manufacturers
PUBLICIS GROUPE	12-sep-00	NYSE	Level II	Advertising
SANOFI-SYNTHELABO	1-jul-02	NYSE	Level II	Pharmaceutical
SOCIETE GENERALE	1-jul-93	OTC	Level I	Banks
SODEXHO ALLIANCE	3-apr-02	NYSE	Level II	Leisure Goods & Svcs
SUEZ	21-sep-01	NYSE	Level II	Electric Utilities
TECHNIP	19-okt-01	NYSE	Level II	Energy
THALES	3-jul-96	OTC	Level I	Aerospace
VALEO	1-jul-94	OTC	Level I	Auto Parts & Tires
VEOLIA ENVIRONNEMENT	5-okt-01	NYSE	Level II	Water Utilities
VIVENDI UNIVERSAL	8-dec-00	NYSE	Level II	Broadcasting
Germany				
ALLIANZ AG	3-nov-00	NYSE	Level II	Insurance
ALTANA AG	22-maj-02	NYSE	Level II	Pharmaceutical
BASF AKTIENGESELLSCHAFT	7-jun-00	NYSE	Level II	Chemicals
BAYER AG	24-jan-02	NYSE	Level II	Chemicals
BAYERISCHE HYPO-UND VEREINSBANK AG	8-feb-01	OTC	Level I	Banks
BERLINER HANDELS-UND FRANKFURTER BANK	1-dec-92	OTC	Level I	Banks
BETA SYSTEMS SOFTWARE AG	1-dec-98	OTC	Level I	Software
CEYONIQ AG	24-apr-02	OTC	Level I	Software
COMMERZBANK AKTIENGESELLSCHAFT	16-dec-99	OTC	Level I	Banks
DEUTSCHE LUFTHANSA	27-apr-00	OTC	Level I	Airlines
E.ON AG	1-okt-97	NYSE	Level II	Electric Utilities
HENKEL KGAA	7-dec-01	OTC	Level I	Household Products
PRIMACOM AG	18-jul-02	OTC	Level I	Broadcasting
PROSIEBENSAT.1 MEDIA AG	15-maj-01	OTC	Level I	Broadcasting
PUMA AG RUDOLF DASSLER SPORT	10-dec-01	OTC	Level I	Textiles & Apparel
RWE AG	1-mar-95	OTC	Level I	Electric Utilities
SAP AG	3-aug-98	NYSE	Level II	Software
SCHERING AG	12-okt-00	NYSE	Level II	Pharmaceutical
SCHWARZ PHARMA	1-mar-02	OTC	Level I	Pharmaceutical
SIEMENS AG	12-mar-01	NYSE	Level II	Adv. Indust. Equip.
WASHTEC AG	18-mar-99	OTC	Level I	Industrial Equip.
Greece				
ALPHA BANK A.E.	1-jan-98	OTC	Level I	Banks
COCA-COLA HBC	10-okt-02	NYSE	Level II	Beverage
M J MAILLIS	31-mar-00	OTC	Level I	Containers&Packaging
Hong Kong				
ARTEL SOLUTIONS GROUP HOLDINGS LTD	10-jan-03	OTC	Level I	Gen. Industrial Svcs
BANK OF EAST ASIA, LTD	1-jul-93	OTC	Level I	Banks
BEIJING ENTERPRISES HOLDINGS LTD	1-maj-02	OTC	Level I	Communications Tech.
C.P. POKPHAND CO. LTD	3-aug-92	OTC	Level I	Food
CATHAY PACIFIC AIRWAYS LTD	1-aug-94	OTC	Level I	Airlines
CHEVALIER INTERNATIONAL HOLDINGS LTD	18-sep-96	OTC	Level I	Indust. Diversified
CHEVALIER ITECH HOLDINGS LTD	18-sep-96	OTC	Level I	Communications Tech.
CHINA GAS HOLDINGS LTD	28-feb-00	OTC	Level I	Retail
CHINA ONLINE (BERMUDA) LTD	1-maj-94	OTC	Level I	Investment Services
CHINA PHARMACEUTICAL GROUP LTD	1-sep-95	OTC	Level I	Pharmaceutical
CHINA RESOURCES ENTERPRISE, LTD	18-okt-96	OTC	Level I	Beverage
CHINA RICH HOLDINGS LTD	20-jan-00	OTC	Level I	Heavy Construction

Appendix A - Continued

Company	Listing date	Exchange	Type	Industry
CHINA STRATEGIC HOLDINGS LTD	1-jun-94	OTC	Level I	Auto Parts & Tires
CITIC PACIFIC LTD	22-jan-02	OTC	Level I	Heavy Construction
CITY E-SOLUTIONS LTD	20-feb-96	OTC	Level I	Leisure Goods & Svcs
CLP HOLDINGS LTD	19-nov-97	OTC	Level I	Electric Utilities
DAIWA ASSOCIATE HOLDINGS LTD	1-sep-96	OTC	Level I	Elec.Component&Equip
DYNAMIC GLOBAL HOLDINGS LTD	1-maj-96	OTC	Level I	Real Estate
EGANAGOLDPFEIL (HOLDINGS) LTD	25-jul-02	OTC	Level I	Textiles & Apparel
EMPEROR INTERNATIONAL HOLDINGS LTD	8-nov-94	OTC	Level I	Real Estate
EMPEROR(CHINA CONCEPT)INVESTMENTS LTD	8-nov-94	OTC	Level I	Indust. Diversified
E-NEW MEDIA COMPANY LTD	16-nov-00	OTC	Level I	Fixed Line Comm.
FRANKIE DOMINION INTERNATIONAL LTD	1-dec-93	OTC	Level I	Household Products
GIORDANO INTERNATIONAL LTD	23-sep-94	OTC	Level I	Retail
GLORIOUS SUN ENTERPRISES LTD	11-sep-97	OTC	Level I	Textiles & Apparel
GOLD PEAK INDUSTRIES (HOLDINGS) LTD	1-mar-94	OTC	Level I	Elec.Component&Equip
GOLDEN RESOURCES DEVELOPMENT INT'L. LTD	5-maj-95	OTC	Level I	FoodRetail&Wholesale
GRANEAGLE HOLDINGS LTD	8-nov-94	OTC	Level I	Publishing
GREAT WALL CYBERTECH LTD	15-dec-97	OTC	Level I	Leisure Goods & Svcs
GUANGNAN (HOLDINGS) LTD	13-maj-98	OTC	Level I	Food
GUANGZHOU INVESTMENT	9-dec-99	OTC	Level I	Building Materials
HANG LUNG GROUP LTD	17-feb-93	OTC	Level I	Real Estate
HANG LUNG PROPERTIES LTD	1-feb-93	OTC	Level I	Real Estate
HANG SENG BANK	1-okt-94	OTC	Level I	Banks
HANNY HOLDINGS LTD	23-feb-00	OTC	Level I	Tech.Hardware&Equip.
HANSOM EASTERN (HOLDINGS) LTD	21-nov-95	OTC	Level I	Pharmaceutical
HENDERSON INVESTMENTS LTD	10-jul-95	OTC	Level I	Real Estate
HENDERSON LAND DEVELOPMENT CO., LTD	10-jul-95	OTC	Level I	Real Estate
HENG FUNG HOLDINGS LTD	27-dec-99	OTC	Level I	Investment Services
HONG KONG & CHINA GAS CO. LTD	1-jan-95	OTC	Level I	Gas Utilities
HONG KONG AIRCRAFT ENGINEERING CO. LTD	1-nov-94	OTC	Level I	Aerospace
HONG KONG CONSTRUCTION (HOLDINGS) LTD	24-apr-95	OTC	Level I	Heavy Construction
HONG KONG ELECTRIC HOLDINGS, LTD	1-aug-96	OTC	Level I	Electric Utilities
HOPEWELL HOLDINGS LTD	28-jun-93	OTC	Level I	Real Estate
HUALING HOLDINGS LTD	20-apr-97	OTC	Level I	Leisure Goods & Svcs
HYSAN DEVELOPMENT CO., LTD	1-nov-93	OTC	Level I	Real Estate
JINHUI HOLDINGS COMPANY LTD	9-aug-94	OTC	Level I	Gen. Industrial Svcs
K. WAH CONSTRUCTION MATERIALS LTD	22-feb-95	OTC	Level I	Building Materials
K. WAH INTERNATIONAL HOLDINGS LTD	1-feb-95	OTC	Level I	Building Materials
KINGBOARD CHEMICAL HOLDINGS LTD	8-maj-96	OTC	Level I	Chemicals
LEGEND GROUP LTD	28-mar-95	OTC	Level I	Tech.Hardware&Equip.
NEW WORLD DEVELOPMENT COMPANY LTD	1-feb-94	OTC	Level I	Real Estate
ONFEM HOLDINGS LTD	30-jun-94	OTC	Level I	Indust. Diversified
PAUL Y. - ITC CONSTRUCTION HOLDINGS LTD	1-jan-96	OTC	Level I	Heavy Construction
PCCW LTD	22-aug-00	NYSE	Level II	Fixed Line Comm.
SCMP GROUP LTD	1-sep-92	OTC	Level I	Publishing
SHANGHAI INDUSTRIAL HOLDINGS LTD	16-maj-01	OTC	Level I	Indust. Diversified
SHANGRI-LA ASIA LTD	2-jan-00	OTC	Level I	Leisure Goods & Svcs
SHUN TAK HOLDINGS LTD	1-nov-92	OTC	Level I	Industrial Transport
SINO LAND COMPANY LTD	1-dec-93	OTC	Level I	Real Estate
SMARTONE TELECOM. HOLDINGS LTD	31-jan-01	OTC	Level I	Wireless Comm.
STARBOW HOLDINGS LTD	1-jan-95	OTC	Level I	Leisure Goods & Svcs
STARLIGHT INTERNATIONAL HOLDINGS LTD	1-apr-94	OTC	Level I	Elec.Component&Equip
SUN HUNG KAI PROPERTIES LTD	1-dec-95	OTC	Level I	Real Estate
SWIRE PACIFIC LTD	1-jul-94	OTC	Level I	Real Estate
TAI CHEUNG HOLDINGS LTD	1-nov-93	OTC	Level I	Real Estate
TECHTRONIC INDUSTRIES COMPANY LTD	1-jan-94	OTC	Level I	Indust. Diversified
TELEVISION BROADCASTS LTD	8-dec-97	OTC	Level I	Broadcasting
TERABIT ACCESS TECHNOLOGY	1-dec-93	OTC	Level I	Leisure Goods & Svcs
THE SUN'S GROUP LTD	1-nov-96	OTC	Level I	Real Estate
THEME INTERNATIONAL HOLDINGS LTD	23-dec-96	OTC	Level I	Retail
THIZ TECHNOLOGY GROUP LTD	15-okt-02	OTC	Level I	Software
TRULY INTERNATIONAL HOLDINGS LTD	1-maj-94	OTC	Level I	Leisure Goods & Svcs
UDL HOLDINGS LTD	1-mar-96	OTC	Level I	Gen. Industrial Svcs
VARITRONIX INTERNATIONAL LTD	1-dec-94	OTC	Level I	Elec.Component&Equip
VODATEL NETWORKS HOLDINGS LTD	29-mar-01	OTC	Level I	Communications Tech.
WO KEE HONG (HOLDINGS) LTD	30-jun-95	OTC	Level I	Gen. Industrial Svcs

Appendix A - Continued

Company	Listing date	Exchange	Type	Industry
Hungary				
NORTH AMERICAN BUS INDUSTRIES RT.	11-feb-99	OTC	Level I	Industrial Transport
PANNONPLAST RT.	1-okt-97	OTC	Level I	Chemicals
India				
GRASIM INDUSTRIES LTD	29-jul-99	OTC	Level I	Indust. Diversified
MAHANAGAR TELEPHONE NIGAM LTD	28-sep-01	NYSE	Level II	Fixed Line Comm.
VIDESH SANCHAR NIGAM LTD	15-aug-00	NYSE	Level II	Fixed Line Comm.
Indonesia				
PT JAKARTA INT'L HOTELS & DEVELOPMENT	1-sep-96	OTC	Level I	Leisure Goods & Svcs
Ireland				
ALLIED IRISH BANKS	1-nov-90	NYSE	Level II	Banks
ANGLO IRISH BANK CORP	1-okt-94	OTC	Level I	Banks
ARCON INTERNATIONAL RESOURCES	26-aug-98	OTC	Level I	Mining & Metals
BANK OF IRELAND	1-nov-95	NYSE	Level II	Banks
DATALEX	26-apr-02	OTC	Level I	Gen. Industrial Svcs
GLANBIA	8-nov-02	OTC	Level I	Food
GLENCAR MINING	1-sep-96	OTC	Level I	Mining & Metals
GREENCORE GROUP	26-apr-99	OTC	Level I	Food
Israel				
FORMULA SYSTEMS (1985) LTD	17-okt-97	NASDAQ	Level II	Software
ISRAEL LAND DEVELOPMENT CO. LTD	12-jun-01	OTC	Level I	Real Estate
Italy				
FIAT S.P.A.	23-aug-99	NYSE	Level II	Auto Manufacturers
ISTITUTO NAZIONALE DELLE ASSICURAZIONI S.P.A.	4-jan-00	OTC	Level I	Insurance
INTERPUMP GROUP S.P.A.	26-maj-00	OTC	Level I	Indust. Diversified
IT HOLDING S.P.A.	13-dec-02	OTC	Level I	Textiles & Apparel
SAN PAOLO - IMI S.P.A.	2-nov-98	NYSE	Level II	Banks
Japan				
ADVANTEST CORP	17-sep-01	NYSE	Level II	Adv. Indust. Equip.
ALL NIPPON AIRWAYS	28-nov-00	OTC	Level I	Airlines
ARISAWA MANUFACTURING CO., LTD	10-okt-97	OTC	Level I	Elec.Component&Equip
BANDAI CO. LTD	30-dec-94	OTC	Level I	Leisure Goods & Svcs
BELLUNA CO., LTD	20-dec-01	OTC	Level I	Retail
CSK CORP	1-jul-94	NASDAQ	Level II	Technology Services
EISAI COMPANY	1-dec-95	OTC	Level I	Pharmaceutical
JAPAN FUTURE INFO. TECH. & SYSTEMS CO.	18-jul-02	OTC	Level I	Gen. Industrial Svcs
KAWASAKI HEAVY INDUSTRIES, LTD	6-nov-97	OTC	Level I	Indust. Diversified
KAWASAKI STEEL CORP	1-jan-93	OTC	Level I	Mining & Metals
KIRIN BREWERY COMPANY	3-sep-02	NASDAQ	Level II	Beverage
KOBE STEEL, LTD	1-okt-92	OTC	Level I	Mining & Metals
KONAMI CORP	30-sep-02	NYSE	Level II	Software
MAKITA CORP	1-apr-91	NASDAQ	Level II	Household Products
MINEBEA CO., LTD	11-apr-97	OTC	Level I	Elec.Component&Equip
MITSUBISHI CORP	1-jul-94	OTC	Level I	Gen. Industrial Svcs
NIDEC	27-sep-01	NYSE	Level II	Elec.Component&Equip
NIPPON TELEGRAPH AND TELEPHONE CORP	1-sep-94	NYSE	Level II	Fixed Line Comm.
NISSAN MOTOR CO., LTD	1-mar-92	NASDAQ	Level II	Auto Manufacturers
NOMURA HOLDINGS, INC.	17-dec-01	NYSE	Level II	Investment Services
NTT DOCOMO, INC.	1-mar-02	NYSE	Level II	Wireless Comm.
OLYMPUS CORP	1-jun-93	OTC	Level I	Medical Products
OMEGA PROJECT CO., LTD	28-mar-00	OTC	Level I	Leisure Goods & Svcs
ORIX CORP	16-sep-98	NYSE	Level II	Diversified Finan.
Q.P. CORP	18-feb-98	OTC	Level I	Food
RICOH COMPANY, LTD	1-apr-91	OTC	Level I	Tech.Hardware&Equip.
SAMMY CORP	18-dec-01	OTC	Level I	Leisure Goods & Svcs
SEGA CORP, LTD	1-mar-93	OTC	Level I	Leisure Goods & Svcs
SEKISUI HOUSE, LTD	28-mar-01	OTC	Level I	HomeConstruc&Furnish

Appendix A - Continued

Company	Listing date	Exchange	Type	Industry
SHISEIDO CO., LTD	1-jul-92	OTC	Level I	Cosmetics
SUMITOMO CORP	20-sep-02	OTC	Level I	Gen. Industrial Svcs
SUMITOMO METAL INDUSTRIES, LTD	1-jul-93	OTC	Level I	Mining & Metals
THE DAIEI, INC.	31-mar-00	NASDAQ	Level II	Retail
WACOAL CORP	1-dec-97	NASDAQ	Level II	Textiles & Apparel
JORDAN KUWAIT BANK	15-nov-00	OTC	Level I	Banks
THE HOUSING BANK	14-feb-00	OTC	Level I	Banks
Malaysia				
AMSTEEL CORP BERHAD	1-jan-93	OTC	Level I	Mining & Metals
GENTING BERHAD	13-aug-99	OTC	Level I	Leisure Goods & Svcs
KUALA LUMPUR KEPONG BERHAD	18-mar-02	OTC	Level I	Food
LION INDUSTRIES CORP BERHAD	1-jan-93	OTC	Level I	Mining & Metals
MBF HOLDINGS BERHAD	1-sep-93	OTC	Level I	Tech. Hardware & Equip.
PATIMAS COMPUTERS BERHAD	31-dec-98	OTC	Level I	Software
RESORTS WORLD BERHAD	1-aug-92	OTC	Level I	Leisure Goods & Svcs
SILVERSTONE CORP BERHAD	1-jan-93	OTC	Level I	Auto Parts & Tires
SIME DARBY BERHAD	17-maj-00	OTC	Level I	Gen. Industrial Svcs
TENAGA NASIONAL BERHAD	31-aug-98	OTC	Level I	Electric Utilities
México				
CEMEX S.A. DE CV	1-sep-99	NYSE	Level II	Building Materials
CORPORACION GEO, S.A. DE C.V.	7-mar-02	OTC	Level I	Real Estate
GRUMA, S.A. DE C.V.	6-nov-98	NYSE	Level II	Food
GRUPO CONTINENTAL	1-dec-95	OTC	Level I	Beverage
GRUPO DATAFLUX	8-mar-99	OTC	Level I	Gen. Industrial Svcs
GRUPO FINANCIERO BBVA BANCOMER	12-feb-96	OTC	Level I	Diversified Finan.
GRUPO FINANCIERO INBURSA S.A. DE C.V.	20-mar-96	OTC	Level I	Diversified Finan.
GRUPO HERDEZ	29-jan-97	OTC	Level I	Food
GRUPO INDUSTRIAL SALTILLO	20-mar-00	OTC	Level I	Indust. Diversified
HILASAL MEXICANA	28-jan-98	OTC	Level I	Household Products
HYLSAMEX	1-maj-96	OTC	Level I	Mining & Metals
TELEFONOS DE MEXICO SA DE CV	4-dec-00	NASDAQ	Level II	Fixed Line Comm.
WAL-MART DE MEXICO, S.A. DE C.V.	24-dec-97	OTC	Level I	Retail
Netherlands				
AEGON N.V.	10-jun-97	NYSE	Level II	Insurance
AIRSPRAY N.V.	31-jan-03	OTC	Level I	Containers & Packaging
ASML HOLDING NV	1-okt-97	NASDAQ	Level II	Semiconductors
BUHRMANN NV	20-sep-01	NYSE	Level II	Gen. Industrial Svcs
DSM NV	3-dec-01	OTC	Level I	Chemicals
FORTIS N.V.	1-jun-91	OTC	Level I	Diversified Finan.
KONINKLIJKE AHOLD N.V.	20-jan-98	NYSE	Level II	Food Retail & Wholesale
KPNQWEST N.V.	31-maj-02	OTC	Level I	Fixed Line Comm.
N.V. KONINK. NEDER. Vlieg. FOKKER	1-apr-91	OTC	Level I	Aerospace
ROYAL DUTCH PETROLEUM CO.	1-dec-95	NYSE	Level II	Energy
UNITED PAN-EUROPE COMMUNICATIONS N.V.	24-maj-02	OTC	Level I	Broadcasting
VAN DER MOOLEN HOLDING NV	18-okt-01	NYSE	Level II	Investment Services
VERSATEL TELECOM INTERNATIONAL N.V.	27-jun-02	OTC	Level I	Fixed Line Comm.
VODAFONE LIBERTEL N.V.	10-jul-00	OTC	Level I	Wireless Comm.
New Zealand				
EVERGREEN FORESTS LTD	1-maj-96	OTC	Level I	Forest Products & Paper
SKY NETWORK TELEVISION LTD	26-jun-00	OTC	Level I	Broadcasting
FLETCHER BUILDING LTD	14-jun-02	OTC	Level I	Heavy Construction
Norway				
NERA A.S.	30-maj-02	OTC	Level I	Communications Tech.
ODFJELL ASA	20-okt-94	OTC	Level I	Industrial Transport
ORKLA ASA	12-nov-02	OTC	Level I	Food
SMEDVIG A.S.	1-nov-93	NYSE	Level II	Energy
TOMRA SYSTEMS, A/S	1-aug-93	OTC	Level I	Adv. Indust. Equip.

Appendix A - Continued

Company	Listing date	Exchange	Type	Industry
Péru				
BANCO WIESE SUDAMERIS S.A.	23-apr-01	OTC	Level I	Banks
FERREYROS, S.A.	15-aug-97	OTC	Level I	Gen. Industrial Svcs
GRANA Y MONTERO, S.A.	1-jun-99	OTC	Level I	Heavy Construction
Philippines				
BASIC CONSOLIDATED INC.	18-feb-97	OTC	Level I	Energy
PHILIPPINE LONG DISTANCE TELEPHONE	10-feb-03	NYSE	Level II	Fixed Line Comm.
RFM CORP	6-nov-95	OTC	Level I	Food
UNITED PARAGON MINING CORP	1-apr-96	OTC	Level I	Mining & Metals
Poland				
MOSTOSTAL EXPORT CORP.	18-feb-97	OTC	Level I	Household Products
POLSKI KONCERN NAFTOWY ORLEN S.A.	9-maj-01	OTC	Level I	Energy
UNIVERSAL S.A.	29-apr-97	OTC	Level I	Retail
Portugal				
INAPA GROUP	29-sep-98	OTC	Level I	ForestProducts&Paper
Russia				
AO MOSENERGO	17-jul-97	OTC	Level I	Electric Utilities
AO SURGUTNEFTEGAZ	30-dec-96	OTC	Level I	Energy
BANK VOZROZHDIENIYE	3-jul-96	OTC	Level I	Banks
GUM (AO TORGOVY DOM)	7-jun-96	OTC	Level I	Retail
INKOMBANK	28-maj-96	OTC	Level I	Banks
IRKUTSKENERGO	23-jan-97	OTC	Level I	Electric Utilities
OJSC ROSTELECOM	30-dec-02	NYSE	Level II	Fixed Line Comm.
TATNEFT	25-mar-98	NYSE	Level II	Energy
UNIFIED ENERGY SYSTEMS	10-dec-01	OTC	Level I	Electric Utilities
YUKOS	22-dec-00	OTC	Level I	Energy
Singapore				
CAPITALAND LTD	23-mar-01	OTC	Level I	Real Estate
CITY DEVELOPMENTS LTD	17-nov-95	OTC	Level I	Real Estate
COSCO INVESTMENT LTD	27-jun-95	OTC	Level I	Industrial Transport
DBS GROUP HOLDINGS LTD	1-jan-92	OTC	Level I	Banks
FLEXTECH HOLDINGS LTD	7-maj-97	OTC	Level I	Gen. Industrial Svcs
KEPPEL CORP LTD	31-maj-89	OTC	Level I	Energy
NEPTUNE ORIENT LINES, LTD	7-sep-89	OTC	Level I	Industrial Transport
RAFFLES MEDICAL GROUP	5-mar-99	OTC	Level I	Healthcare Providers
SEBACORP INDUSTRIES LTD	1-feb-01	OTC	Level I	Heavy Construction
SINGAPORE TELECOMMUNICATIONS LTD	1-aug-95	OTC	Level I	Fixed Line Comm.
STAMFORD LAND CORP LTD	1-dec-93	OTC	Level I	Real Estate
UNITED OVERSEAS BANK LTD	1-mar-91	OTC	Level I	Banks
UNITED OVERSEAS LAND LTD	27-okt-97	OTC	Level I	Real Estate
WANT WANT HOLDINGS CO., LTD	10-dec-97	OTC	Level I	Food
XPRESS HOLDINGS LTD	4-dec-00	OTC	Level I	Gen. Industrial Svcs
South Africa				
AFRICAN GEM RESOURCES LTD	22-mar-02	OTC	Level I	Mining & Metals
AFRIKANDER LEASE LTD	11-mar-02	OTC	Level I	Mining & Metals
AVGOLD LTD	1-jan-97	OTC	Level I	Mining & Metals
BIDVEST GROUP LTD	23-jan-02	OTC	Level I	Gen. Industrial Svcs
DURBAN ROODEPOORT DEEP LTD	1-aug-96	NASDAQ	Level II	Mining & Metals
FOSCHINI GROUP LTD	17-dec-97	OTC	Level I	Retail
GOLD FIELDS LTD	10-maj-99	NYSE	Level II	Mining & Metals
HARMONY GOLD MINING COMPANY	1-aug-96	NYSE	Level II	Mining & Metals
IMPALA PLATINUM HOLDINGS LTD	23-dec-02	OTC	Level I	Mining & Metals
JD GROUP LTD	30-dec-96	OTC	Level I	Retail
JOHNNIC COMMUNICATIONS	11-dec-01	OTC	Level I	Wireless Comm.
JOHNNIC HOLDINGS LTD	24-jul-01	OTC	Level I	Wireless Comm.
METRO CASH & CARRY LTD	1-aug-96	OTC	Level I	FoodRetail&Wholesale
MTN GROUP LTD	13-dec-01	OTC	Level I	Wireless Comm.

Appendix A - Continued

Company	Listing date	Exchange	Type	Industry
NASPERS LTD	23-dec-02	NASDAQ	Level II	Publishing
NEDCOR LTD	8-feb-99	OTC	Level I	Banks
RANDGOLD & EXPLORATION CO. LTD	28-feb-97	NASDAQ	Level II	Mining & Metals
SAPPI LTD	5-nov-98	NYSE	Level II	ForestProducts&Paper
TRADEHOLD LTD	21-dec-01	OTC	Level I	Retail
WOOLWORTHS HOLDINGS LTD	16-dec-99	OTC	Level I	Retail
South Korea				
MIRAE CORP	16-nov-99	NASDAQ	Level II	Adv. Indust. Equip.
S-OIL CORP	1-mar-02	OTC	Level I	Energy
Spain				
BANKINTER, S.A.	29-maj-98	OTC	Level I	Banks
NH HOTELES, S.A.	27-maj-98	OTC	Level I	Leisure Goods & Svcs
TELEPIZZA, S.A.	5-dec-00	OTC	Level I	Leisure Goods & Svcs
Sweden				
ATLAS COPCO AB	26-nov-90	OTC	Level I	Indust. Diversified
BIORA AB	1-feb-02	OTC	Level I	Biotechnology
FORENINGSSPARBANKEN AB	2-feb-98	OTC	Level I	Banks
PRICER AB	1-mar-98	OTC	Level I	Adv. Indust. Equip.
SCANIA AB	15-jan-03	OTC	Level I	Industrial Transport
SONG NETWORKS HOLDING AKTIEBOLAG	29-aug-02	OTC	Level I	Fixed Line Comm.
SVENSKA CELLULOSA AKTIEBOLAGET (SCA)	1-dec-95	OTC	Level I	Household Products
SWEDISH MATCH AB	1-mar-99	NASDAQ	Level II	Tobacco
TELIASONERA AB	9-dec-02	NASDAQ	Level II	Fixed Line Comm.
Switzerland				
ABB LTD	6-apr-01	NYSE	Level II	Adv. Indust. Equip.
ADECCO	1-jan-95	NYSE	Level II	Gen. Industrial Svcs
CIBA SPECIALTY CHEMICALS HOLDING INC.	2-aug-00	NYSE	Level II	Chemicals
COMPAGNIE FINANCIERE RICHEMONT AG	1-sep-95	OTC	Level I	Leisure Goods & Svcs
CREDIT SUISSE GROUP	25-sep-01	NYSE	Level II	Banks
HOLCIM LTD.	1-okt-95	OTC	Level I	Building Materials
NOVARTIS AG	11-maj-00	NYSE	Level II	Pharmaceutical
ROCHE HOLDINGS LTD	5-dec-02	OTC	Level I	Pharmaceutical
SWISS REINSURANCE COMPANY	1-feb-96	OTC	Level I	Insurance
ZURICH FINANCIAL SERVICES	17-okt-00	OTC	Level I	Insurance
Thailand				
ASIA FIBER COMPANY LTD	24-apr-91	OTC	Level I	Textiles & Apparel
CHAROEN POKPHAND FOODS PCL	1-feb-92	OTC	Level I	Food
DELTA ELECTRONICS (THAILAND) PCL.	11-aug-98	OTC	Level I	Elec.Component&Equip
HANA MICROELECTRONICS PCL	1-apr-94	OTC	Level I	Semiconductors
JASMINE INTERNATIONAL PCL	12-feb-99	OTC	Level I	Communications Tech.
PTT EXPLORATION AND PRODUCTION PCL	14-apr-99	OTC	Level I	Energy
SAHAVIRIYA STEEL INDUSTRIES	1-nov-99	OTC	Level I	Mining & Metals
SHIN SATELLITE PUBLIC COMPANY LTD	28-apr-97	OTC	Level I	Communications Tech.
SWEDISH MOTORS CORP. PUBLIC COMPANY LTD.	19-feb-97	OTC	Level I	Retail
TT&T PUBLIC COMPANY LTD	20-mar-00	OTC	Level I	Fixed Line Comm.
Turkey				
ALARKO CARRIER SANAYI VE TICARET A.S.	17-dec-96	OTC	Level I	Heavy Construction
ANADOLU EFES BIRACILIK VE MALT SANAYI A. S	11-jun-02	OTC	Level I	Beverage
MEDYA HOLDINGS A.S.	15-dec-98	OTC	Level I	Publishing
RAKS ELEKTRONIK SANAYI VE TICARET A.S.	5-feb-96	OTC	Level I	Leisure Goods & Svcs
TURKIYE GARANTI BANKASI	1-nov-94	OTC	Level I	Banks

Appendix A - Continued

Company	Listing date	Exchange	Type	Industry
United Kingdom				
4IMPRINT GROUP PLC	6-nov-00	OTC	Level I	Advertising
ABBEY NATIONAL PLC	1-mar-95	OTC	Level I	Banks
ACAMBIS	20-feb-01	NASDAQ	Level II	Biotechnology
ALLIED DOMEQ PLC	31-jul-02	NYSE	Level II	Beverage
AMERSHAM PLC	22-okt-97	NYSE	Level II	Biotechnology
AMVESCAP PLC	2-nov-98	NYSE	Level II	Investment Services
ANTOFAGASTA PLC	9-dec-99	OTC	Level I	Mining & Metals
APPLIED OPTICAL TECHNOLOGIES PLC	4-okt-01	OTC	Level I	Adv. Indust. Equip.
ASTRAZENECA PLC	1-apr-99	NYSE	Level II	Pharmaceutical
ATLANTIC CASPIAN RESOURCES PLC	18-dec-97	OTC	Level I	Energy
BAA PLC	1-dec-92	OTC	Level I	Industrial Transport
BAE SYSTEMS PLC	1-sep-98	OTC	Level I	Aerospace
BALTIMORE TECHNOLOGIES PLC	2-okt-01	OTC	Level I	Software
BERKELEY TECHNOLOGY LTD	9-jul-02	OTC	Level I	Diversified Finan.
BESPAK PLC	1-okt-92	OTC	Level I	Medical Products
BODY SHOP INTERNATIONAL PLC	11-aug-95	OTC	Level I	Retail
BP PLC	1-jan-97	NYSE	Level II	Energy
BRITISH ENERGY PLC	8-dec-99	NYSE	Level II	Electric Utilities
BUNZL PLC	29-okt-98	NYSE	Level II	Gen. Industrial Svcs
CABLE & WIRELESS PLC	6-dec-96	NYSE	Level II	Fixed Line Comm.
CAMBRIDGE ANTIBODY TECH. GROUP PLC	7-jun-01	NASDAQ	Level II	Biotechnology
CATER BARNARD PLC	14-feb-01	OTC	Level I	Investment Services
CELLTECH GROUP PLC	26-jan-00	NYSE	Level II	Biotechnology
CENTRICA PLC	10-feb-98	OTC	Level I	Gas Utilities
CML MICROSYSTEMS PLC	1-nov-91	OTC	Level I	Elec.Component&Equip
COOKSON GROUP PLC	21-sep-98	OTC	Level I	Indust. Diversified
DIAGEO PLC	17-dec-97	NYSE	Level II	Beverage
DIXONS GROUP PLC	10-mar-97	OTC	Level I	Retail
ECISOFT GROUP PLC	19-mar-01	OTC	Level I	Gen. Industrial Svcs
EMI PLC	1-jul-97	OTC	Level I	Entertainment
ENODIS PLC	12-jul-00	NYSE	Level II	HomeConstruc&Furnish
GALEN HOLDINGS PLC	29-sep-00	NASDAQ	Level II	Pharmaceutical
GKN PLC	31-jul-00	OTC	Level I	Auto Parts & Tires
GUS PLC	9-dec-99	OTC	Level I	Retail
HANSON PLC	21-feb-97	NYSE	Level II	Building Materials
HENLYS GROUP PLC	18-apr-00	OTC	Level I	Auto Manufacturers
HILTON GROUP PLC	22-maj-98	OTC	Level I	Leisure Goods & Svcs
HSBC (UK)	22-mar-01	NYSE	Level II	Banks
IMPERIAL TOBACCO GROUP PLC	9-nov-98	NYSE	Level II	Tobacco
INVENSYS PLC	28-okt-02	OTC	Level I	Indust. Diversified
J. SAINSBURY	17-maj-95	OTC	Level I	FoodRetail&Wholesale
JD WETHERSPOON PLC	22-jan-97	OTC	Level I	Leisure Goods & Svcs
JOHNSON MATTHEY	22-maj-98	OTC	Level I	Chemicals
LAURA ASHLEY HOLDINGS PLC	19-apr-93	OTC	Level I	Retail
LEGAL & GENERAL GROUP PLC	1-jun-95	OTC	Level I	Insurance
LLOYDS TSB GROUP PLC	27-nov-01	NYSE	Level II	Banks
LONMIN PLC	1-feb-95	OTC	Level I	Mining & Metals
NATIONAL GRID TRANSCO PLC	7-okt-99	NYSE	Level II	Electric Utilities
NEWSPLAYER GROUP PLC	2-okt-01	OTC	Level I	Entertainment
OMNIMEDIA, PLC	1-sep-97	OTC	Level I	Entertainment
PEARSON PLC	1-sep-00	NYSE	Level II	Publishing
PLANESTATION GROUP PLC	18-aug-98	OTC	Level I	Heavy Construction
PREMIER OIL PLC	14-feb-97	OTC	Level I	Energy
PROTEUS INTERNATIONAL PLC	1-jun-95	OTC	Level I	Biotechnology
QXL RICARDO PLC	31-mar-03	OTC	Level I	Consumer Services
REGUS PLC	8-nov-02	OTC	Level I	Real Estate
RENTOKIL INITIAL PLC	1-aug-94	OTC	Level I	Gen. Industrial Svcs
ROLLS ROYCE GROUP PLC	1-maj-90	OTC	Level I	Aerospace
ROYAL & SUN ALLIANCE INSURANCE GROUP PLC	24-okt-00	NYSE	Level II	Insurance
SCOTTISH POWER PLC	1-maj-01	NYSE	Level II	Electric Utilities
SIGNET GROUP PLC	4-sep-97	NASDAQ	Level II	Retail
SMITH & NEPHEW PLC	16-nov-99	NYSE	Level II	Medical Products
SOPHEON PLC	19-jun-01	OTC	Level I	Software
SPIRENT PLC	10-jul-01	NYSE	Level II	Adv. Indust. Equip.
TATE & LYLE	14-okt-97	OTC	Level I	Food
TAYLOR NELSON SOFRES	5-dec-97	OTC	Level I	Advertising
TESCO PLC	1-apr-92	OTC	Level I	FoodRetail&Wholesale
THE BOC GROUP PLC	1-sep-96	NYSE	Level II	Chemicals

Appendix A - Continued

Company	Listing date	Exchange	Type	Industry
TULLOW OIL PLC	4-sep-01	OTC	Level I	Energy
UNITED UTILITIES PLC	29-jan-98	NYSE	Level II	Water Utilities
VI GROUP PLC	28-okt-02	AMEX	Level II	Software
VODAFONE GROUP PLC	1-sep-91	NYSE	Level II	Wireless Comm.
WOLSELEY PLC	31-maj-01	NYSE	Level II	Retail
Venezuela				
C.A. LA ELECTRICIDAD DE CARACAS - CORP. EDC	30-nov-98	OTC	Level I	Electric Utilities
C.A. NACIONAL TELEFONOS DE VENEZUELA	11-sep-00	NYSE	Level II	Fixed Line Comm.
SIVENSA	23-aug-96	OTC	Level I	Mining & Metals

Appendix B - Domestic Market Indexes

Country	Index	Country	Index
Argentina	ARGENTINA Merval INDEX		
Australia	ASX ALL ORDINARIES INDEX		
Austria	AUSTRIAN TRADED ATX INDEX		
Belgium	BEL20 INDEX		
Brazil	BRAZIL BOVESPA STOCK INDEX		
Chile	CHILE STOCK MKT SELECT		
China	SSE CONSTITUENT STOCK INDEX		
Czech Republic	PRAGUE STOCK EXCH PX 50		
Denmark	KFX COPENHAGEN SHARE INDEX		
Finland	HEX GENERAL INDEX		
France	CAC 40 INDEX		
Germany	DAX INDEX		
Greece	ASE GENERAL INDEX		
Hong Kong	HANG SENG INDEX		
Hungary	BUDAPEST STOCK EXCH INDEX		
India	MUMBAI SENSEX 30 INDEX		
Indonesia	JAKARTA COMPOSITE INDEX		
Ireland	IRISH OVERALL INDEX		
Israel	TEL AVIV 25 INDEX		
Italy	MILAN INDEX		
Japan	NIKKEI 225 INDEX		
Jordan	JORDAN STOCK MARKET GENERAL		
Malaysia	KUALA LUMPUR COMP INDEX		
Mexico	MEXICO BOLSA INDEX		
Netherlands	AMSTERDAM EXCHANGES INDEX		
New Zealand	NZSE ALL ORDINARIES INDEX		
Norway	OBX STOCK INDEX		
Peru	PERU LIMA GENERAL INDEX		
Philippines	PHILIPPINES COMPOSITE INDEX		
Poland	POLISH TRADED INDEX		
Portugal	PORTUGAL PSI-30 INDEX		
Russia	RUSSIAN RTS INDEX		
Singapore	SING: SES ALL INDEX		
South Africa	JOHAN ALL-SHARE INDEX		
South Korea	KOREA COMPOSITE INDEX		
Spain	IBEX 35 INDEX		
Sweden	OMX (STOCKHOLM) INDEX		
Switzerland	SWISS MARKET INDEX		
Taiwan	TAIWAN: WEIGHTED INDEX		
Turkey	XUSIN INDEX		
United Kingdom	FTSE ALL-SHARE INDEX		
Venezuela	VENEZUELA STOCK MKT INDEX		