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The Impact of Multilistings on Returns: Evidence from the Finnish Market

ABSTRACT

The purpose of this paper is to provide an additional insight into the stock returns of all Finnish companies that have been listed on international foreign exchanges. This paper is concerned to study whether the previous evidence suggesting that international listing will lead to a reduction in the expected return on a security if the capital markets are either completely or "mildly" segmented. The purpose of the paper is to find out, if there exists a short-term or a long-term trend, that would have a statistically significant influence on the market value of Finnish companies that have been listed on a new market. This is done by employing the market model and the residual analysis technique in order to estimate the CAR (Cumulative Abnormal Returns) for the internationally listed Finnish stocks. The CARs turns out to be negative for the data reorganised by the order of listings. The only exception in the data is the fifth listing of Nokia. The CARs are also negative for the most of the listings organised by the foreign stock exchange.

***Key Words**: Multilisting, regulation, returns*

***JEL classification codes**: G14, G15*

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1. INTRODUCTION

The work done by Solnik (1974) showed the benefits of international diversification. Alike Stapleton & Subrahmanyam (1977) showed that in a situation characterised by segmented markets, a possible method to circumvent problems caused by segmentation is the international listing of shares. They also hypothesised, that the international listing of a security should accompany a reduction in its expected returns that would generate a higher market price for the security. Since the beginning of the 1980's an increasing number of Finnish companies have chosen to list their common stock outside the Helsinki Stock Exchange (henceforth HeSE). The purpose of this paper is to provide an additional insight into the stock returns of all Finnish companies that have been listed on international foreign exchanges. The Finnish market is especially interesting to study, because local legal constraints limited the Finnish investors' ability to diversify internationally but did not fully restrict the foreign investors' to invest in Finland. The legislation led to a partial segmentation of the Finnish market (Hietala 1989), but the gradual liberalisation of the legislation has nowadays led to a full liberalisation of the Finnish capital markets. The small size of the market and the small number of internationally listed companies make the Finnish market interesting to study, because these facts enable us to do research in a way which would not be possible for markets which are larger and originally not so segmented as the Finnish market was as late as the 1980's.

Before 1986 the Finnish and foreign investors were not equally treated in terms of investment opportunities, because Finnish legislation restricted Finnish investors from investing in foreign securities.[1] However, foreign investors were allowed to own up to 20% of the shares of Finnish companies.[2] The main intention of these restrictions was to limit foreign ownership of Finnish resources in the forest or in the mining industries as well as strategically important companies in publishing, telecommunication and energy production. However, these restrictions did not prove to be fully binding because some stocks were actually listed as DRS[3] on foreign stock markets before 1986 (see Appendix I & II). Foreign investors became interested in Scandinavian markets during the year 1982 which resulted in a soar in the price of unrestricted shares that were quoted initially together with restricted ones. The excess demand of free shares led to a development of unofficial markets arranged by the brokers. This arrange-

1 From December 1st 1984 banks received expanded authorities in foreign lending and to trade with foreign securities, especially with stocks.

2 Actually, the legislation had some exceptions. In 1987 foreigners could own 40% of the equity but the voting rights remained on the previous 20% level. Insurance companies were free from the 20% rule as well as companies established by foreigners which did not have the right to own or to enter strategically important sectors like the forest or mining industries.

3 Depository Receipts = DRS of the Stockholm Stock Exchange were a similar arrangement than the New York Stock Exchange employs for foreign companies through it's ADR program.

ment was later abandoned when HeSE started parallel listing of free and restricted shares from the beginning of January 1984 (Hietala 1988, 1989).

Due to Finnish legislation, before 1989 Finnish investors had less interest in following international developments or in including foreign information in their evaluation of Finnish securities. A logical consequence was that foreign institutional investors or banks lacked the interest to locate personnel or open branches in Finland because the only products they could sell –because of the legislation– were the free shares of companies that investors could only own up to a certain limit. The lack of presence of foreign investors before the changes in legislation reduced the ability of security analysts to correctly follow the development of the relatively small and closed Finnish security market. This implies that Finnish securities would be expected to be efficiently priced mainly in terms of local information. However, it does not imply that Finnish shares were necessarily correctly priced in the sense of the hypothesis of efficient markets if the sum of the information mass gathered by Finnish and foreign investors had used to price Finnish securities.[4] Since 1986 the restrictions concerning capital markets were gradually eased and finally on July 1st 1990 all restrictions concerning investments made by Finnish investors abroad were totally relaxed. The final step in the liberalisation of Finnish stock markets occurred on January 1st 1992 when the division of shares with respect to foreign ownership was released.

1.1 Literature review

According to signalling models, international listing of a company's equity to a foreign exchange market convoys a signal to the market. The strength of the signal and either positive or negative sign of the signal in the model developed by Cheung and Lee (1995) depends on several characteristics. Their model suggests that a stock market with high disclosure requirements can have potential economic effects on a foreign listed company. They further claim that the reason why the New York Stock Exchange (henceforth NYSE) has fewer foreign listings as the Stock Exchange of Great Britain and Ireland (henceforth LSE) but the quality of NYSE listed companies is higher depends on stringent disclosure requirements. Biddle and Saudagaran (1989) support Cheung and Lee (1995) by concluding that firms are less likely to list their stocks on foreign exchanges with higher disclosure levels than those of their home stock exchanges. This implies that the disclosure costs associated with foreign listing affect the firm's listing decision. According to Siconolfi and Sawen (1992), Siconolfi (1992) and Wood (1992) the U.S. and NYSE have the highest disclosure requirements in the world. This fact benefits

4 In the beginning of the 1980's e.g. the regulation of the Danish equity markets resembled the Finnish legislation. Stonehill and Dullum (1982) discussed the impact of the Danish legislation and concluded that it could lead to a situation where different investors do not posses same information mass.

the pricing process of high quality firms in two means. First, the quantity of required information in 20-F reports is large compared to several countries accounting standards.[5] Second, the quality of information has been set to a very high level and is controlled by the SEC.[6] Actually, these standards have been set to a such a high level, that companies from countries with lower disclosure requirements (like e.g. the German firms) may consider 20-F report as an entry barrier to the NYSE. However, as stated by Cheung and Lee, there are also strong pros with the listing in NYSE with high information standards.

> "A higher level of disclosures conveys to investors the management's confidence in its future earnings. This means that the listing on exchanges with stricter standards will result in better pricing for the shares of high quality firms."

The high-quality signal sent by the listing firm to the market can thus have two effects. The markets can anticipate that listing has either positive or negative effects on the value of the company through making adjustments on the future cash flows of the company or through changing the expected rate of return.

Saudagaran (1988) studied firm specific motives to multilist abroad and found a significant relationship between overseas listings and both the relative size of a firm in its domestic stock market and the ratio of foreign to total sales. Foerster and Karolyi (1993) studied Canadian firms multilisted in the U.S. market. They concluded, that it is intuitively appealing to think that the choice of Canadian firms to multilist has been affected by the facts that Canada and the U.S. are the world's largest trading partners and share many cultural and business practices as well as close geographic proximity. This finding is even supported by Ibbotson, Carr and Robinson (1982) who reported that the comovements of equity returns are related to geography, trade partnerships, cultural similarities and economic ties. Harvey (1991), Bailey, Stults and Yen (1990) confirm also, that capital market comovements are related to trading blocs.

Alexander, Eun and Janakiramanan (1988) concluded that a new listing in the NASDAQ-system actually increased the value of foreign companies. This results also supports the hypothesis of market segmentation. E.g. Lee (1992) used the market model method and reports that listing of Japanese and UK companies to Tokyo versus London Stock Exchanges did not have permanent negative influence on market values of companies. In contrast, Lee (1991) reports no significant wealth effects for the U.S. firms that interlist on either the LSE or Toronto exchanges when abnormal returns were estimated with the mean adjusted returns technique.

5 The 20-F file discloses more information than an annual report. For more detailed information concerning disclosure requirements for foreign companies, see Choi & Mueller (1984). Empirical evidence (Foster & Vickrey 1978) reports that incremental information disclosed in application reports is used by the market in price setting process of the shares.

6 SEC = The Securities and Exchange Commission of the NYSE.

More recent evidence is provided by Jayararam, Shastri, Tandon (1993) who found that foreign firms that interlisted their shares in the form of the American Depository Receipts (ADRs) in the U.S. market experienced positive abnormal returns and permanent increase in volatility. Lau, Diltz and Apilado (1994) studied U.S. companies listed on foreign exchanges and found that abnormal returns were positive around the day of acceptance but negative on the first trading day as well as on the post-listing period for Tokyo and Basel exchanges. The same abnormal return pattern is even reported by Reilly, Wright and Wagasuki (1990) who reported weak positive abnormal returns at the application period. Howe and Kelm (1987) attempted to take account to the effects of the listing order or exchange. They studied the effects of listings by U.S. firms on the Basel, Frankfurt and Paris stock exchanges and reported statistically significant company value erosion on the post-listing period for the North-American companies were listed on the European stock exchanges. Even if negative returns did not consistently characterise the post-listing period, they draw the normative conclusion that the U.S. firms should avoid listing on the foreign exchanges.

2. PURPOSE AND TEST HYPOTHESIS

In contrast to Howe and Kelm (1987), who were first to analyse international multilistings by exchange and order, this paper utilises two findings. Foerster and Karolyi (1993) point out that it is intuitively appealing to think that the first international listings would occur at smaller international markets which are similar to the home stock market or within closely related trading blocks. Second, signalling theorists (Cheung and Lee 1995) propose, that listing on foreign exchanges conveys a signal. The level of the signal is dependent on the disclosure requirements of the exchange.

If we combine signalling theories further by assuming that firms tend to list their shares on ”the familiar foreign stock markets”, it could be concluded that the strength of the signal should subsequently increase if the equity is first listed on a small international market within its own trading block but is later introduced to the larger investor community through listing on a major international exchange with stringent disclosure requirements. The change in the signal level due to the listing event would have direct implications on the markets' valuation of the firm. Therefore, the value of the firm should change due to subsequent changes in the signal level.

Howe and Kelm have missed these points to some extent. They have analysed listings by exchange or by order, but they have not developed the interpretation of the results enough. They have not discussed why U.S. companies have chosen a certain foreign exchange or why there might be differences between first, second or third listing. They even openly state, that

there might be problems with the correctness of the data they used.

In contrast, the Finnish evidence supports the thoughts of Foerster & Karoyi because the Finnish companies have started the internationalisation of the equity on the European exchanges and especially in Sweden. Finland and Sweden have traditionally been seen as one economic entity. Bos, Fetherson, Martikainen and Perttunen (1995) who use monthly data in their study report strong co-movements of Finnish and Swedish stocks and that Swedish returns lead Finnish returns with approximately two months. There are several reason for this, perhaps the most obvious are historical or geographical reasons and the mental closeness of these markets. After the development process of the companies has gone far enough listings in other exchanges outside the original trading block or with stringent disclosure requirements have been more appropriate. The Finnish market is also an excellent research laboratory because all foreign listings by Finnish firms have been recorded accurately. This fact removes the concerns of true identification of listings which Howe and Kelm had in their previous work.

This paper is concerned to study whether the previous evidence suggesting that international listing will lead to a reduction in the expected return on a security if the capital markets are either completely or "mildly" segmented. The purpose of the paper is to find out, if there exists a short-term or a long-term trend, that would have a statistically significant influence on the market value of Finnish companies that have been listed on a new market. This is done by employing the market model and the residual analysis technique in order to estimate the CAR (Cumulative Abnormal Returns) for the internationally multilisted Finnish stocks. The purpose of residual analysis is to determine whether the event of multilisting stocks has caused a change in the expected returns on the stocks or whether abnormal returns have been occurred around the event date. From these questions, three testable hypotheses can be derived.

The primary methodology employed to measure the average magnitude and timing of the Finnish stock price adjustments to a multilisting event is the market model technique. Using weekly estimation period returns –50 to –26 weeks prior to the listing the following market model is estimated;

$$R_{it} = \hat{\alpha} + \hat{\beta}_i R_{mt} + \varepsilon_{it}$$

where

R_{it} = the return on a security i for period t=–50 to t=–26

R_{mt} = the return of the market portfolio (the Finnish return index) for period t = –50 to t = –26

ε_{it} = the random error term

then, ex post abnormal returns for test period –25 weeks pre to +25 weeks post listing are computed for every individual share through employing the equation;

$$AR_{it} = R_{it} - (\hat{\alpha}_i + \hat{\beta}_i R_{mt})$$

where

AR_{it} = abnormal return for the security i for period t = –25 to t = +25.

Next, the average abnormal returns for the event period are computed as;

$$\overline{AR}_t = \sum_{i=1}^{N} \frac{AR_{it}}{N}$$

where N is the number of multilisted stocks in the portfolio during the observation period.

The cumulative average abnormal returns are examined and computed as;

$$CAR_t = \sum_{k=-25}^{t} \overline{AR}_k$$

for the observation period 25 week prior to the listing event to 25 weeks after.

In order to test the null-hypothesis of a zero abnormal return, a t-test statistic is computed for every week during the observation period t = –25 to t = +25 as;

$$Z_t = \overline{AR}_t \Big/ S(\overline{AR}).$$

Z-statistic for $CAR(t_1, t_2)$ is computed as;

$$Z_{CAR} = \frac{CAR(t_1, t_2)}{S(\overline{AR}) * \sqrt{T}}$$

where T is the number of the days for the CAR (number of days from t_1 to t_2). $S(\overline{AR})$ is estimated from the time-series during the estimation period from t = –50 to t = –26 and defined as;

$$S(\overline{AR}) = \sqrt{\frac{\sum_{t=1}^{T} (\overline{AR}_t - \overline{\overline{AR}})^2}{T-1}},$$

where $\overline{\overline{AR}}$ is defined as $\overline{\overline{AR}} = \frac{\sum_{t=-50}^{-26} \overline{AR}_t}{25}$.

In other words, through employing the market model equation, the ordinary least squares (OLS) estimator for a and b are estimated for the estimation period t = –50 to t = –26 and the price reactions are tested for the weeks t = –25 to t = +25.

The testable hypotheses of this research are concerned with whether the returns of the

post means of multilisted stocks and whether they have changed.

$H_0: R_{bl} = R_{al}$
$H_1: R_{bl} \neq R_{al}$

where

R_{bl} = *before listing*
R_{al} = *after listing*

The second testable hypothesis is whether returns of restricted and unrestricted series of stocks with respect to foreign ownership are similar. This hypothesis relates back to Stapleton and Subrahmanyam (1977) or to Pagano (1985).[7] Stapleton et. all demonstrated through examples that the share prices of stocks in a country with restrictions in foreign ownership leads to lower stock prices in the country with imposed restrictions. Therefore it is possible to assume, that even the returns of different classes of stocks might not be the same. The same methodology is employed empirically by Berglund & Liljeblom (1990) where they study whether the standard deviations of different classes of shares are same.

The second hypothesis is tested from three different perspectives. *First,* we study whether the pre- and post-listing means of restricted stocks are different from 0. *Second,* we test whether the pre-listing means of unrestricted stocks are different from the means of the restricted stocks. *Third,* we test whether the post-listing means of unrestricted stocks are different from the means of the restricted stocks.

Hypothesis 2.1	Hypothesis 2.2	Hypothesis 2.3
$H_0: R_{r,bl} = R_{r,al}$	$H_0: R_{ur,bl} = R_{r,bl}$	$H_0: R_{ur,al} = R_{r,al}$
$H_1: R_{r,bl} \neq R_{r,al}$	$H_1: R_{ur,bl} \neq R_{r,bl}$	$H_1: R_{ur,al} \neq R_{r,al}$
where		
$R_{r,bl}$ = *resricted, before*	$R_{ur,bl}$ = *unresricted, before*	$R_{ur,al}$ = *unresricted, after*
$R_{r,al}$ = *resricted, after*	$R_{r,bl}$ = *resricted, before*	$R_{r,al}$ = *resricted, after*

The limitations of the study are closely related to the availability of the reliable stock market data. I have defined the day when the stocks or the ADR's became available to all investors as the event day of the study.[8] Other alternatives could be days like when the com-

7 Pagano suggested that unrestricted shares might in fact be more risky than restricted shares. Unrestricted shares are actively traded by few foreign traders and are therefore exposed to larger shifts in demand than unrestricted shares because a sole foreign trader can cause larger idiosyncratic demand shifts than a local broker with restricted shares would do.

pany announced that it will apply for a membership on a foreign stock exchange or when the Finnish company applied for the membership in the foreign stock market or when the foreign exchange approved the application of the membership. It is also normal that large financial institutions begin unofficial trading before the official listing day on a brokers list.

The reason why I have chosen the first official trading day as the starting point of this research is the reliability of the data because all definitions of event-day are defective. Because of the differences in the policy of information releasing between individual companies and stock exchanges the time from the announcement of possible listing to actual listing is not constant over time to all companies or to stock exchanges. Few companies or exchanges may even not release the information in advance and therefore finding of the correct event-day is difficult ex. post. The first trade is not a reliable starting point for the study because the first trades before official listing are often between large investors or between the arrangers of the listing or between the market quarantines. Therefore, these trades can be classified as outside the capacity of the "small-investor" and the trading can also be infrequent.

Market value changes on multilisted stocks can depend on several factors that may be difficult to measure or quantify because together with the announcement of listing on multiple exchanges even other information is often released. This new information may include announcements of becoming changes in management or in operations of the company which may affect the markets view of the value of the company. However, because the aim of this paper is to conduct an event-study, but not of the immediate price reaction to the listing event, but of the more permanent changes to the stock returns brought by trading on many markets, the choice of the listing date or releasement of new information should not cause any statistical problems.

3. DATA AND DESCRIPTIVE STATISTICS

The data used in this study covers all foreign listings of Finnish companies during the period from 1982 (when the first listing occurred) to the end of 1995. A complete list of Finnish companies listed on foreign exchanges is provided in Appendix II. Firms with 76 weeks or more of missing stock return data in the interval from t = –50 to t = +25 were excluded from the study. The pre-listing estimation period covers the weeks t = –50 to t = –26 and is used to estimate risk return relationship for multilisted stocks when CAR's are estimated with the market model technique. The pre-listing observation period covers the weeks t = –25 to t = –1 before the

8 The same definition has been employed in e.g. Howe & Kelm (1987), Jaynaram et. all (1993) and in Varela & Lee (1993).

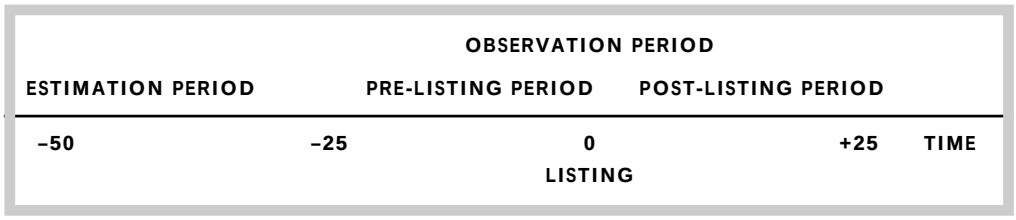

FIGURE 1.

listing and the post-listing period is covers the weeks from t = +1 to t = +25. The day t = 0 denotes the week of actual listing. The data collection procedure is graphically illustrated in Figure 1. The change in the value of the shares is estimated through calculating weekly logarithmic returns for each class of multilisted stocks. All calculated returns are corrected for stock splits, rights issues and dividends by reinvesting the proceeds into the stock. Then an index of internationally listed shares is formed by taking an average of the statistics measured on shares listed on a specific exchange.

Because of the data requirements, some companies are excluded totally from the study. In some tests, only a limited population of companies is included on the data set. The reasons to these decisions were various, in two cases the exact listing days could not be defined accurately or the equity issue was directed to foreign investors only by the creation of a new stock series, which was not listed in Finland. Even the requirement of data 50 weeks prior to the international listing proved to be a tricky perquisite for some companies that had, unfortunately, to be excluded from the study. In order to test the second hypothesis concerning the difference between restricted versus unrestricted shares, a comparable restricted share had to be found. Such a class of shares did not exist for all companies which unavoidably limited the test to some extent.

Table 1 shows the location of the Finnish foreign listed companies in 1982–1995. In terms of number of listings, London seems to be the by far most popular financial centre for the Finnish companies, because four companies are listed on the LSE and another 17 at SEAQ. The U.S. market comes on the second place, even if only three companies (Nokia, Rauma and Valmet) are fully listed on the NYSE list. The StSE market has been especially important for the Finnish companies although it comes only on the fourth place in the ranking by frequency. The reason to this fact is that the very first companies started the internationalising of their capital on the Swedish market. This fact supports the idea presented in Forester and Karolyi (1993) in a sense that the Finnish companies began from markets that were easy to entry and familiar to the companies. The Swedish stock market has functioned as a feasible market for internationalising Finnish companies because the stock market much larger than the Finnish

TABLE 1. Frequency distribution of listings of Finnish companies in different exchanges. Table 1 reports where and in which extent Finnish companies have listed on foreign exchanges during the period 1982–95. London (LSE and SEAQ) has been the most frequently listed market followed by the New York Stock Exchange and the Stockholm Stock Exchange.

EXCHANGE	NUMBER
SEAQ	17
ADR	7
LSE	4
STSE	3
FRU	2
PAR	1
NASDAQ	1

Notes: ADR denotes stocks listed by the American depository receipts program at the New York Stock exchange, LSE denotes the Stock Exchange of Great Britain and Ireland and SEAQ denotes the electronic list at the same exchange, NASDAQ denotes shares listed on the OTC market in the USA, StSE is the Stockholm Stock Exchange, PAR denotes Paris Stock Exchange, FRU is Frankfurt Stock Exchange.

one and so listing in Sweden introduces the firms to a larger investor community. Even other factors, like similarity in the legislation and in the accounting standards have made the Swedish market easy to access for Finnish firms. There exists also factors, like the mental closeness of the Nordic countries and the common language which has eased communication between participants and thus reduced the barriers to list on a foreign market on a way which is not possible to quantify.

From Table 2 and from Figure 2 it can be seen, that there has actually been three periods characterised by high listing activity. Table 2 reports the amount listings on foreign exchanges and the Finnish return index per annum. Figure 2 provides the same information in a diagram form. The base for the return index was 100 at the end of the year 1981. The first multilisting period started on the September 13th 1982 when Kone B shares were listed on StSE. Another six listings occurred on NASDAQ, LSE, SEAQ and StSE. These listings were accompanied by simultaneous strong growth of the Swedish market. Hietala (1988) reports same results and explains the strong growth of the Swedish and the Finnish markets as a result of increased foreign demand but does not give any explanations why foreign investors became interested in

TABLE 2. Frequency distribution of foreign listings of Finnish companies by year. The table reports three periods since 1982 characterised by high international listing activity and by the booming Finnish markets.

YEAR	NUMBER	INDEX
1982	1	140
1983	3	236
1984	2	228
1985	1	264
1986	–	436
1987	3	559
1988	5	750
1989	6	626
1990	2	431
1991	2	342
1992	–	361
1993	2	681
1994	5	791
1995	3	724

these two Nordic markets simultaneously.

This research provides three explanations why the multilisting activity increased so dramatically in the beginning of the 1980's. First, the soaring Nordic markets offered an lucrative opportunity for the Finnish companies to raise capital from the equity markets. Secondly, many Finnish firms had expanded on foreign markets and thus wanted more publicity provided by multilisting. Finally, the example of other successfully multilisted Nordic companies like e.g. Novo increased interest on international equity markets.

The second period of foreign listings took place at the end of the eighties. The main economic reason lies on favourable development of the world economy. In spite of the October crash in 1987 the financial markets grew fast in Finland and economic activity was on a high level. In this environment companies were able to show strongly improving results which led to management's belief that multilisting would have favourable consequences on the value of

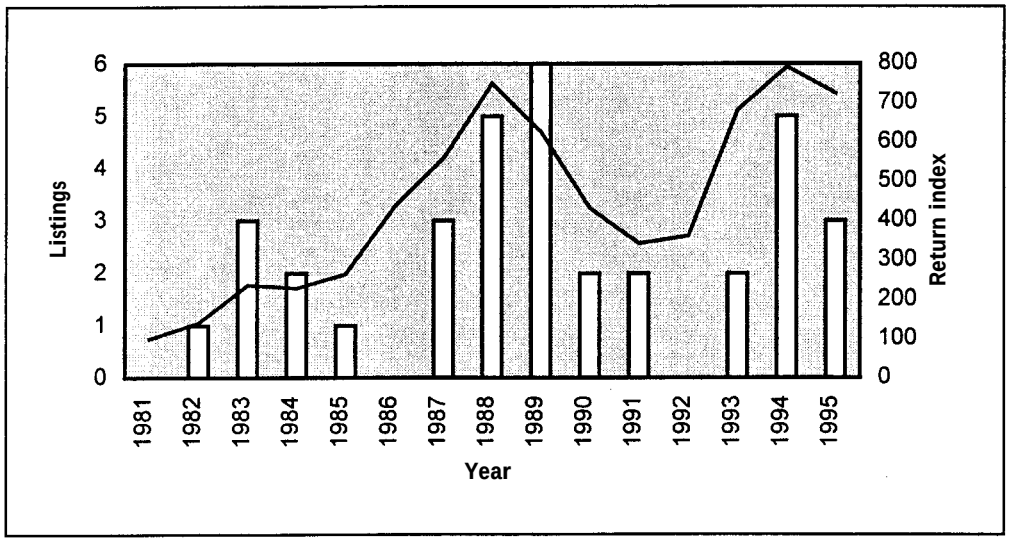

FIGURE 2. The Return index and foreign listings of Finnish companies during the study period 1982–1995. The figure shows the relation between the Finnish stock market returns and the degree of foreign listing activity. The firms tend to list their stocks on foreign exchanges when the local market out-look is good.

the firms.

The third peak in foreign listing activity was in 1994. It is remarkable to notice that no Finnish company did list its shares on foreign exchanges in 1992, when the law of foreign ownership was abandoned in Finland and only two listings were recorded in the following year. Possible explanations to this phenomena are twofold. First, Finland, like all other industrialised nations, was in a deep recession and thus foreign capital markets did not appear to be very lucrative for new listings. Second, abandonment of the law of foreign ownership reduced the initiative of financially distressed Finnish firms to seek new capital from new stock markets. These findings are an analogy to some degree to results reported by e.g. Lucas & McDonald (1990) and Bayless & Chaplinsky (1996) who found that equity issues are likely to come on bullish markets when even the negative price reaction tends to be significantly lower.

Table 3 reports the descriptive statistics for companies included in the study for the 51 weeks long observation period covering the weeks from –25 pre- to +25 post-listing. Table reports the average mean values of the return distributions for individual stocks as well as the average mean values of the return distributions for the control variable. The control variable employed is the HEX-index (prior to 1990 the WI-index), which is a value weighted index of all stock returns listed at HeSE. Lilliefors-t tests the normality assumption of the distribution,

TABLE 3. Descriptive Statistics for the period 1982–95 covering both the pre- and the post-listing periods. Table reports the average mean values of the return distributions for individual stocks as well as the average mean values of the return distributions for the control variable. The control variable employed is the market return, which is a value weighted index of all stock returns listed at HeSE. Lilliefors-t tests the normality assumption of the distribution, average p-values of individual stocks and statistically significant companies deviating from normality are reported. The time period used covers the Finnish stocks listed at different exchanges during the period 1982–95 for 51 weeks period which includes the pre-listing period, listing week and the post-listing period.

	Average of				Average of			
	shares	Lilliefors-t	no. of	Companies sign.	control	Lilliefors-t	no. of	no. of
Market	mean	p-value	companies	at α = 5 %	mean	p-value	obs.	sign. obs.
All	0,003	0,284	24		0,003	0,382	24	2
LSE	0,005	0,381	4	Amer	0,003	0,260	4	1
SEAQ	–0,001	0,323	11	Metsä-Serla, Wärtsilä	0,000	0,504	11	1
ADR	0,009	0,297	3	Amer	0,007	0,487	3	0
StSE	0,013	0,060	3	Kone	0,009	0,093	3	0
FRU	–0,004	0,122	2	Nokia	0,004	0,136	2	0
PAR	–0,007	0,044	1	Nokia	0,005	0,319	1	0
Subsample of companies listed after 1992								
	Average of				Average of			
	shares	Lilliefors-t	no. of	Companies sign.	control	Lilliefors-t	no. of	no. of
Market	mean	p-value	companies	at α = 5 %	mean	p-value	obs.	sign. obs.
	0,009	0,340	4	Metsä-Serla	0,008	0,527	4	0

average p-values of individual stocks and statistically significant companies deviating from normality are reported. When p-values from Lilliefors-t test are being researched, we can observe that the assumption of normal distribution is rejected in few cases. Totally in 29% (7/24) of multilistings the normality assumption is rejected for stocks and in 8% (2/24) for the control.

4. RESULTS

Table 4 shows the results from the first testable hypothesis. The null-hypothesis that the pre- and the post-listing periods mean returns of the unrestricted stocks are similar is tested in two distinct ways. The pre-event period is defined as week –25 through week –1 and the post-event period is week 1 to week 25. The event week, denoted as 0 is left out from the tests. The

two first columns show results from the paired t-test which has the normality assumption.[9,10] The two last columns report results from the non-parametric Wilcoxon signed rank test, which test is an analogue of the parametric paired t-test. However, the power of the test is lower.

The results from Table 4 show, that the mean returns of multilisted unrestricted stocks do not change remarkably. All individual stocks listed at the different exchanges show insignificant differences in the mean returns and the results even appear to have low sensitiveness to the testing method. Based on the sample of the Finnish multilisted companies, we can not draw the conclusion that the mean returns of those companies would be significantly different.

Table 5 presents results from the second hypothesis. The purpose of test is to study, whether the pre- and the post-listing means of restricted stocks are different. The organisation of the table is similar to the previous one. We can see that the results are in line with the previous table which tested restricted stocks on the pre- and the post-periods, actually only Nokia in StSE shows significant values from the paired t-test. There is slight discrepancy between the results from parametric and non-parametric tests because test statistics form the Wilcoxon Signed Rank test do not reveal significant results for Nokia. However, in general, the conclusion based on the results is that the mean returns of restricted stocks are not significantly different on the pre- and the post-listing periods.

Table 6 reports results from two tests. The first test studies whether the mean stock returns on the pre-listing period are similar between unrestricted and restricted stocks. The second test investigates if the mean stock returns on the post-listing period are similar between unrestricted and restricted stocks. From Table 6 we can see that both on the pre- and the post-listing periods there is no difference between restricted and unrestricted stocks with exception of Nokia. Multilisting in StSE on both the pre- and the post-listing periods and in FRU on the post-listing period has caused statistically significant differences between the mean values of restricted and unrestricted stocks. From Table 3 we can see that the normality assumption is rejected for Nokia due to the FRU listing. However, because even non-parametric Wilcoxon test shows significant results we can assume that FRU listing causes significant differences between dual classes of stocks. The results are in line with previous Finnish evidence provided by Booth, Chowdhury and Martikainen (1994) who studied daily differences in mean returns and variances between restricted and unrestricted stocks during the 1984–89 period. They found that the difference in mean returns between restricted and unrestricted stocks is statistically insignificant but the variance of unrestricted stocks is considerably higher than the variance of

9 Average Lilliefors-t test p-values are reported in Table 3. Normality assumption is rejected in 29% of multilistings and in 8% for the control sample. Because deviations from normality are relatively few and the deviating companies are identified, paired t-test can be seen as an appropriate test method.

10 Due to Behrens-Fisher problem, this test is valid only if $\sigma^2_{bl} = \sigma^2_{al}$.

TABLE 4. Comparison of mean returns of unrestricted stocks before and after the listing. The pre-event period is defined as week –25 through week –1 and the post-event period is week 1 to week 25. The table reports results from two distinct test. The first two columns reveal the results (t-statistic and p-value) from a paired t-test which has been used to study whether the mean stock returns on pre- and post-listing periods are similar on different markets. The last two columns reports results (Wilcoxon z-value and p-value) from a Wilcoxon signed rank test, which tests non-parametrically whether two population means are different.

	PAIRED t-test		WILCOXON TEST	
COMPANY	t-statistic	p-value	Z-value	p-value
LSE				
AMER	0,772	0,448	–1,224	0,221
ENSO	0,182	0,857	–0,363	0,716
KYMMENE	–0,461	0,649	–0,04	0,968
NOKIA	–0,648	0,523	0,309	0,757
SEAQ				
AMER	0,403	0,691	–0,767	0,443
ENSO	0,507	0,617	–0,767	0,443
HUHTAMÄKI	0,391	0,699	0,067	0,946
KOP	0,013	0,990	0,175	0,861
METSÄ-SERLA	0,200	0,843	–0,336	0,737
POHJOLA	0,100	0,921	–0,605	0,545
RAUMA-REPOLA	0,232	0,818	0,013	0,989
REPOLA YHTYMÄ	0,019	0,985	–0.309	0,757
SAMPO	1,862	0,075	–1,735	0,083
UNITAS	0,505	0,618	–0,74	0,459
WÄRTSILÄ	1,393	0,177	–1,17	0,242
ADR				
AMER	–1,734	0,096	1,251	0,211
NOKIA	–0,009	0,993	–0,013	0,989
REPOLA YHTYMÄ	–0,556	0,584	0,874	0,382
StSE				
KONE	0,829	0,415	–0,444	0,657
NOKIA	0,484	0,633	–0,686	0,493
WÄRTSILÄ	0,513	0,613	0,171	0,864
FRU				
NOKIA	0,609	0,549	–0,202	0,84
YHTYNEET	1,893	0,071	–1,714	0,086
PAR				
NOKIA	0,956	0,349	–0,713	0,476

TABLE 5. Comparison of mean returns of restricted stocks before and after the listing event. The pre-event period is defined as week –25 through week –1 and the post-event period is week 1 to week 25. The table reports results from two distinct tests. The first two columns reveal the results (t-statistic and p-value) from a paired t-test which has been used to study whether the mean stock returns of restricted stocks on pre- and post-listing periods are similar on different markets. The last two columns report results (Wilcoxon z-value and p-value) from a Wilcoxon signed rank test, which tests non-parametrically whether two population means are different.

	t-test	t-test	WILCOXON	WILCOXON
COMPANY	STATISTIC	p-value	Z-stat	p-value
LSE				
ENSO R	1,332	0,195	–1,413	0,158
KYMMENE	–0,234	0,817	0,578	0,563
NOKIA	–0,432	0,670	0,229	0,819
SEAQ				
ENSO R	0,124	0,903	–0,283	0,778
HUHTAMÄKI	1,369	0,184	–1,520	0,128
METSÄ-SERLA	0,903	0,375	–0,538	0,590
RAUMA-REPOLA	–0,807	0,428	0,671	0,502
REPOLA YHTYMÄ	–0,819	0,421	0,659	0,510
UNITAS	–1,008	0,323	1,144	0,253
WÄRTSILÄ	1,257	0,221	–1,278	0,201
ADR				
NOKIA	0,512	0,613	–0,605	0,545
StSE				
NOKIA	2,075	0,049	–1,036	0,300
WÄRTSILÄ	0,635	0,531	0,175	0,861
FRU				
NOKIA	0,511	0,614	–0,283	0,778
YHTYNEET	1,870	0,074	–1,655	0,098
PAR				
NOKIA	0,449	0,657	–0,256	0,798

restricted stocks.

Table 7 reports results for five multilistings for the observation period surrounding –25 weeks pre and +25 post the event week. For each subsequently following listing, the first row reveals the CAR and the second row reveals the Z-statistic for the CAR for the specific time period being studied. The actual multilisting week is included in the study and is denoted as 0,

TABLE 6. Comparison of mean returns of unrestricted versus restricted stocks on the pre-listing period versus on the post-listing periods. The pre-event periods is defined as week –25 through week –1 and the post-even period is week 1 to week 25. Table reports results from two distinct tests and time intervals. The first two columns for pre-listing period reveal the results (t-statistic and p-value) from a paired t-test which has been used to study whether the mean stock returns on pre-listing period are similar between unresticted and restricted stocks. The following two columns reports results (Wilcoxon z-value and p-value) from a Wilcoxon signed rank test, which tests non-parametrically whether two population means of restricted versus unrestricted stocks are different. Following columns show results from similar tests as previous ones to test whether the mean stock returns on post-listing period are similar between unrestricted and restricted stocks.

	Average parameters for pre-listing period				Average parameters for post-listing period			
Company	t-test statistic	t-test p-value	Wilcoxon Z-stat	Wilcoxon p-value	t-test statistic	t-test p-values	Wilcoxon Z-stat	Wilcoxon p-value
LSE								
ENSO R	–1,043	0,307	0,848	0,397	–0,934	0,360	0,901	0,367
KYMMENE	1,524	0,141	–1,547	0,122	4,559	0,000	–3,377	0,001
NOKIA	–1,108	0,279	1,090	0,276	–1,019	0,318	0,821	0,412
SEAQ								
ENSO R	–1,124	0,272	1,251	0,211	0,198	0,845	–0,148	0,882
HUHTAMÄKI	–1,960	0,062	1,843	0,065	–1,111	0,277	0,982	0,326
METSÄ-SERLA	–1,638	0,114	0,122	0,150	–1,845	0,077	1,816	0,069
RAUMA-REPOLA	0,067	0,947	0,202	0,840	–0,604	0,552	0,713	0,476
REPOLA YHTYMÄ	–0,028	0,978	0,094	0,925	–0,788	0,439	1,278	0,201
UNITAS	0,957	0,348	–0,767	0,443	–1,890	0,071	1,268	0,201
WÄRTSILÄ	–0,203	0,841	0,471	0,638	–0,184	0,856	0,257	0,797
ADR								
NOKIA	–1,067	0,297	1,197	0,231	–0,255	0,801	0,256	0,798
StSE								
NOKIA	–5,116	0,000	3,646	0,000	–4,544	0,000	3,565	0,000
WÄRTSILÄ	–0,580	0,567	0,000	1,000	–0,208	0,837	0,091	0,927
FRU								
NOKIA	–1,696	0,103	1,493	0,135	–3,350	0,003	2,812	0,005
YHTYNEET	–0,065	0,948	–0,067	0,946	–0,852	0,403	0,552	0,581
PAR								
NOKIA	0,403	0,691	–0,417	0,677	–0,261	0,796	–0,040	0,968

Z-statistic for the listing week's AR is reported on the following row. The results show that the first listing has generated positive abnormal returns on the pre-listing period t= –25 t= –1. The second and the third listing have negative CAR values. The reason to the highly negative val-

TABLE 7. Cumulative average residuals for five subsequent listings. Cumulative abnormal returns and t-values (below CAR values) are reported for different time intervals for five subsequent listings.

CUMULATIVE ABNORMAL RETURNS	FIRST LISTING	SECOND LISTING	THIRD LISTING	FOURTH LISTING	FIFTH LISTING
CAR (–25,25)	–0,102	–0,163	–0,574	–0,130	0,559
	–1,440	–0,996	–5,291	–0,494	2,031
CAR (–25,1)	0,053	–0,101	–0,270	0,095	0,254
	1,063	–0,882	–3,558	0,514	1,318
CAR (–10,–1)	–0,019	0,024	–0,039	0,037	–0,034
	–0,604	0,326	–0,811	0,316	–0,276
CAR (–5,–1)	0,015	0,051	–0,048	–0,088	–0,118
	0,681	0,992	–1,425	–1,070	–1,367
AR 0	–0,012	0,006	–0,001	–0,027	0,049
	–1,251	0,254	–0,063	–0,722	1,261
CAR (–1,1)	–0,012	–0,002	–0,030	–0,021	–0,033
	–0,721	–0,053	–1,138	–0,326	–0,500
CAR (–5,5)	–0,048	0,052	–0,039	–0,173	–0,220
	–1,466	0,678	–0,775	–1,416	–1,723
CAR (1,5)	–0,051	–0,005	0,010	–0,058	–0,151
	–2,296	–0,100	0,304	–0,707	–1,753
CAR (1,10)	–0,071	0,006	–0,019	–0,142	–0,075
	–2,268	0,080	–0,388	–1,218	–0,613
CAR (1,25)	–0,143	–0,068	–0,303	–0,198	0,257
	–2,869	–0,591	–3,987	–1,075	1,331
SAMPLE SIZE (NUMBER OF LISTINGS)					
Σ = 24	14	5	3	1	1

ues on the third listing depends on Nokia and Repola Yhtymä. The fourth and the fifth listings are positive, but the sample consists of only one company (Nokia). Even if the results are not significantly different from 0 we can see that all subsequently following listings have negative CAR (–1,1) around the listing week. Furthermore, the abnormal returns begin to diminish immediately after the event week generating losses at the end of the post-listing period. Especially interesting are the statistically significant CAR values at a=5% for the first listing on the post-listing period. One could interpret results as support to the previous research e.g. Howe and Kelm (1987) who state that multilisting harms shareholder value.

Table 8 reports results for listings that are ordered by listings on different foreign exchanges

TABLE 8. Cumulative average residuals for different foreign exchanges. Cumulative abnormal returns and t-values (below CAR values) are reported for different time intervals for StSE, SEAQ, LSE, FRU, PAR and ADR listings.

CUMULATIVE ABNORMAL RETURNS	ADR LISTING	FRU LISTING	LSE LISTING	PAR LISTING	SEAQ LISTING	StSE LISTING
CAR (–25,25)	–0,132	–0,463	–0,013	–0,130	–0,277	0,335
	–1,106	–3,117	–0,093	–0,494	–2,721	2,816
CAR (–25,–1)	–0,156	–0,006	0,019	0,095	–0,063	0,258
	–1,871	–0,060	0,203	0,514	–0,885	3,102
CAR (–10,–1)	–0,085	–0,034	–0,039	0,037	0,015	0,004
	–1,613	–0,522	–0,651	0,316	0,340	0,080
CAR (–5,–1)	–0,061	–0,057	–0,055	–0,088	0,059	0,024
	–1,643	–1,233	–1,290	–1,070	1,854	0,637
AR 0	0,010	0,022	0,006	–0,027	–0,015	–0,012
	0,629	1,078	0,305	–0,722	–1,032	–0,747
CAR (–1,1)	–0,027	–0,005	–0,001	–0,021	–0,015	–0,016
	–0,947	–0,126	–0,043	–0,326	–0,599	–0,561
CAR (–5,5)	–0,072	–0,029	–0,070	–0,173	–0,035	0,062
	–1,296	–0,421	–1,115	–1,416	–0,750	1,121
CAR (1,5)	–0,021	0,006	–0,021	–0,058	–0,080	0,051
	–0,561	0,126	–0,501	–0,707	–2,505	1,360
CAR (1,10)	0,035	–0,065	–0,010	–0,142	–0,113	0,069
	0,662	–0,990	–0,159	–1,218	–2,514	1,313
CAR (1,25)	0,014	–0,479	–0,038	–0,198	–0,199	0,089
	0,165	–4,608	–0,398	–1,075	–2,796	1,071
SAMPLE SIZE (NUMBER OF LISTINGS)						
Σ = 24	3	2	4	1	11	3

for the observation period surrounding –25 weeks pre and +25 post the event week. For each listing at different exchanges, the first row reveals the CAR and the second row reveals the Z-statistic for the CAR for the specific time period being studied. The actual multilisting week is included in the study and is denoted as 0, Z-statistic for the listing week's AR is reported on the following row. The reason to report AR's and CAR's even by exchange lies in the possibility that the market's view of the exchanges may differ. Therefore, an analysis based on the location of the exchange may reveal new information about the effects of multilisting in share value.

The first column reports listings as ADRs in NYSE. We can see that the observation period

is characterised by positive AR on the listing week and by positive CARs at the end of post-listing period. However, the whole observation period reports negative CARs for ADRs. This could mean that listing on NYSE does not have a general favourable share price effect for all foreign stocks listed there. The fifth column reports listings in the SEAQ. We can see that the CARs are increasing in the middle of the pre-listing period. Thereafter the abnormal returns decrease ending with a slight statistically significant decrease in value. Multilisting in both the SEAQ and the ADR is associated with negative abnormal returns but the evidence is vague because of insignificant t-values in NYSE. The value erosion is most dramatic for the shares listed in the FRU.

The contrary evidence is provided from listings in the StSE. The first foreign listings made by the Finnish companies in the StSE were value creating. Actually, they were the only listings that were correct from the share holder view in this narrow time perspective. This can mean, that the first listings actually increased the capital market integration between the Nordic countries. The lower segmentation level would in turn lower the expected return requirement of the financial intermediaries operating in Scandinavia. The evidence, however, is weak because of small sample size.

One possible explanation for negative AR's on the post-listing period is that the market model $AR_{it} = R_{it} - (\hat{\alpha}_i + \hat{\beta}_i R_{mt})$ is a segmented benchmark. If the cost of capital goes down after the listing due to the multilisting benefits, it is also consistent that the ARs can be negative because the benchmark used to estimate ARs is segmented and may thus overestimate the cost of capital. The second reason is much more practical. As we can see from Figure 2, international multilistings have occurred on "bullish markets" which is rational in a sense that during good periods it is easier to get investor attention to new listings or to often following new equity issues. Therefore the simple cause for decreasing abnormal post-listing returns might be that only firms that have performed especially well would choose to list on foreign exchanges. If companies have performed better than the markets, the momentum for positive returns could have been exploited on the bullish pre-listing period leaving no upward-potential for the post-listing period. Bullish pre-listing period tends to result in an overestimation of the market model parameter values on the estimation period. This can cause negatively biased ARs. Even if the benchmark employed may have some shortcomings due to the estimation of the cost of capital, this study reports results that are obtained employing the same methodology than e.g. Howe and Kelm (1987). Otherwise a meaningful comparison of the new results to previous studies would the difficult or meaningless.

5. SUMMARY

This paper poses a new insight into relationship between returns and listing of stocks on multiple exchanges.

The small number of internationally listed stocks and the restrictions in the legislation of the Finnish stock market have led to relatively late and well documented international listing activity. These characteristics make it possible to study the relationship between returns and international listing through employing extensive sample of all companies which would not be possible for other larger markets. The sample of Finnish companies shows, that there exists tendency to expand first to close markets with low or similar information releasing requirements and first after international success or recognition to newer more demanding markets.

Through using the stock market return data of internationally multilisted Finnish companies, the following conclusions are made. Through utilising both parametric and non-parametric tests, we draw the conclusion that the mean returns of internationally listed unrestricted stocks do not change remarkably. The same conclusion is also made for restricted stocks when mean returns are compared on the pre- and the post-listing periods. We also studied whether the mean stock returns on pre-listing period are different between unrestricted and restricted stocks and if the mean stock returns on post-listing period are different between unrestricted and restricted stocks, but few significant results are found.

The cumulative abnormal returns turned out to be negative for the data reorganised by the order of listings. The only exception in the data is the fifth listing of Nokia. The CARs were also negative for the most of the listings organised by the foreign stock exchange. Only StSE reports positive CARs for the period from –25 weeks pre to +25 weeks post. We interpret results as additional support to the previous research stating that multilisting has either neutral or negative impact on shareholder value but this indication is very weak due to many statistically insignificant but overwhelmingly negative t-values. ■

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Appendix I: A short history of the liberalisation of the Finnish Capital Markets

1984 December	Banks received expanded authorities in foreign lending and to trade with foreign securities, especially with stocks.
1985 March	Dividend gains from foreign investors could be removed abroad without the permission of Bank of Finland.
1986 January	Investments in foreign stocks allowed, maximum investment amount 10 000 mk/year per person.
1987 June	Direct investments up to 30 000 000 mk allowed and the limit for investments in foreign stocks was set up to 50 000 mk.
1988 August	The limit for investments in foreign stocks was set up to 300 000 mk/ year per person
1989 1st June	The regulations concerning direct investments abroad were totally released for the investment- and insurance sectors.
1989 1st September	Ownership of apartments and real estate were released. Investments in foreign securities, accounts and goods allowed without the permission of the Bank of Finland. Most of the direct investments made by foreigners in Finland were freed from the regulation of the Bank of Finland.
1990 February	Finnish companies had no longer to ask the permission from the Bank of Finland for raising equity abroad. Foreign investors were released from obligation to buy Finnish shares from Finland.
1990 1st July	Private investments abroad were totally released.
1990 1st September	Derivatives for bounded shares were allowed for foreign investors.
1992 January	Division of shares with respect to foreign ownership was released.
1993 January	The law concerning foreign ownership in Finland was released.

Appendix II: Foreign listings during the period 1982–1995

Companies or listings in parentheses are not included in the survey. The reasons are that the exact listing dates are not identified (Finnair, the 1st listing of Huhtamäki) or the equity issue is restricted to foreign investors only (Instrumentarium) or it is a question of an IPO (Kemira, Metra, Rauma, Valmet). We have treated Rauma-Repola, Repola and Rauma as separate companies. The reason to this choice is that the line of business of companies that were one unity until 31.12.90 have changed remarkably. Yhtyneet Paperitehtaat and Repola were forest companies (a new company named UPM-Kymmene was created through merger of Yhtyneet and Repola on the 1st of May 1996) and Rauma is a steel company. We can see that some listings are overlapping (e.g. Nokia in both LSE and SEAQ) or there are listings where different series of stocks (Pohjola) are listed to the same exchange. In these cases we have excluded stocks listed on the smaller exchanges or less liquid stocks from the study. We have, however, tried to collect an extensive sample of Finnish companies to the study because otherwise the sample size would be too small. We have estimated that 24 listings fulfil our criterion's to be included in the survey. Most tables include individual test statistics for all 24 listings included in the survey so that a critical reader can form his or her own view over the impact of multilisting on specific Finnish firms. Due to the identification problems or merges of companies we have even conducted tests with smaller sample sizes than 24. The results are, as expected, in line with the full sample so results consisting of 24 listings are reported through the paper.

Company	Stock	Exchange and Date
Amer Yhtymä Oy	A-series	LSE 29.5.1984
		ADR 6.4.1987
		SEAQ 11.12.1989
Enso-Qutzeit Oy	A-series free	LSE 19.6.1989
	R-series free	LSE 19.6.1989
		SEAQ 22.2.1989
Finnair Oy		[SEAQ January 1995]
Huhtamäki Oy	I-series free	SEAQ 14.8.1990
		[ADR April 1990]
[Instrumentarium Oy	B-series	NASDAQ 18.8.1983]
Kansallis-Osake-Pankki		SEAQ 16.1.1989
[Kemira Oy	A-series	SEAQ 10.11.1994]
		[ADS 10.11.1994]
Kone	B-series free	StSE 13.9.1982

Kymmene Oy	free	LSE	20.6.1988
	free	SEAQ	20.6.1988
[Metra Oy AB	B-series free	SEAQ	25.3.1991]
Metsä-Serla Oy	B-series	SEAQ	22.3.1993
Nokia-Yhtymä	A-series free	StSE	23.6.1983
		LSE	15.5.1987
		[SEAQ	15.5.1987]
		FRU	20.5.1988
		PAR	27.5.1988
		ADR	1.7.1994
[Outokumpu		SEAQ	11.6.1993]
Pohjola	A-series free	SEAQ	27.12.1989
	B-series free	SEAQ	27.12.1989
[Rauma Oy		ADR	22.6.1995]
		SEAQ	22.6.1995]
Rauma-Repola	I-series free	SEAQ	19.6.1985
Repola Yhtymä	free	SEAQ	2.1.1991
		ADR	16.5.1994
Sampo	A-series	SEAQ	3.5.1994
Unitas Oy	A-series	SEAQ	16.1.1989
[Valmet Oy	A-series	SEAQ	24.10.1988]
		[ADR	24.10.1988]
Wärtsilä	II-series free	StSE	30.6.1983
		SEAQ	26.4.1984
Yhtyneet paperitehtaat	pref. free	FRU	17.7.1987

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