

**"AN IMPLICIT DIVIDEND INCREASE IN
RIGHTS ISSUES: THEORY AND EVIDENCE"**

by

**Pekka HIETALA,*
and
Timo LÖYTTYNIEMI****

N° 91/03/FIN

* Associate Professor of Finance, INSEAD, Boulevard de Constance,
Fontainebleau 77305 Cedex, France.

** Kansallis-Osake-Pankki, Finland.

**Printed at INSEAD,
Fontainebleau, France.**

**AN IMPLICIT DIVIDEND INCREASE IN RIGHTS ISSUES:
THEORY AND EVIDENCE***

by

Pekka Hietala

Associate Professor of Finance, INSEAD, France

and

Timo Löyttyniemi

Kansallis-Osake-Pankki, Finland

January 6, 1991

Abstract:

This paper analyzes the implicit dividend increase associated with rights issues. If a company issues new equity for existing shareholders for less than the market price and keeps the dividend per share constant, the share issue has a dividend increase implication. This implied dividend increase is a signal for the market as any other dividend announcement. We have tested our hypothesis with the Finnish data from 1975-1988. Empirical evidence from cross-sectional data gives strong support for the proposed hypothesis. The announcement reaction to rights issues and to combined issues of a rights issue and a stock dividend is positively correlated with the size of the implicit dividend increase measured with an adjustment (a split) factor.

* An earlier version of this paper has been presented at the following seminars: Workshop on Financial markets, investment and taxation at the University of Tampere, London Business School, INSEAD, Group HEC International Conference in Finance, and European Finance Association Conference in Athens. We are thankful for comments from Richard Brealey, Sankar De, Eva Liljebloom, Eric Noreen, Marshall Sarnat, Pasi Sorjonen and Theo Vermaelen. The second author wants to thank for partial financial support from the Union Bank of Finland Doctorate Program.

1. Introduction

Explanations for announcement effects of general cash offerings are more developed than for announcement effects of rights issues. The purpose of this paper is to explain the announcement effect of rights issues in terms of an implicit dividend increase.

The use of rights issues as a means of raising equity varies across countries. From the World War II to 1960's rights issues were widely used in the U.S. For example, Nelson (1965) reported that two thirds of all issues during this period were rights issues. The picture has, however, changed dramatically thereafter. Smith (1977) reported that between 1971-75 only 17 of primary and secondary offerings in the U.S. were either rights offerings or standby underwritten rights offerings. Loderer and Zimmermann (1988) found in the Corporate Financing Directory 47 rights issues and 3,000 general cash offers during 1980-82.

On the other hand in Europe rights issues are still the most typical form of external equity financing. Marsh (1979) stated that virtually all new equity capital was raised via the rights issue method in the UK during 1962-75. In 1975, even after the London Stock Exchange changed its rules to allow general cash offerings, over 99 % of new equity was raised via rights offerings. In Finland and Switzerland companies have almost without exception used rights issues. And in Canada rights issues have been the predominant method of external equity

financing. Dipchand (1977) found that between 1956-74 two thirds of new Canadian stock issues were sold through rights offerings and 76 % of new equity funds were raised through them.

Subscription prices differ markedly between countries. Loderer and Zimmermann (1988) report that the average subscription price was 92 % of the market price in the U.S. whereas in the Swiss market the subscription price was only 39.8 % of the before-announcement stock price. In our sample from Finland this ratio is 49.3 %.

Barclay and Litzenberger (1987) classified the hypotheses on announcement day effects in share issues into three categories: information hypotheses, price pressure hypotheses and leverage hypotheses. Information hypotheses include arguments presented by Myers and Majluf (1984) on existing asset value signalling, Miller and Rock (1985) on cash flow signalling and Jensen (1986) on wasteful investment. There also exist arguments which are based on signalling through ownership of the company presented by Leland and Pyle (1977) and Jensen and Meckling (1976). The price pressure hypothesis comes in two forms. Scholes (1972) states that securities are not perfect substitutes and therefore have downward sloping demand curves. The transaction cost hypothesis holds that temporary price pressure is due to the costs associated with portfolio adjustments by investors. According to the leverage hypothesis debt has tax advantages and a share issue does not. There exists, however, a counter argument which states that companies issue shares to adjust their capital structure towards the optimum and therefore tax advantages of debt do not always dominate. Another form of

leverage hypothesis relies on option theory. As equity can be viewed as a call option, a decrease in leverage reduces riskiness and raises the value of debt and therefore decreases the value of the call option. This argument has been presented by Merton (1974) and Galai and Masulis (1976).

Information, price pressure and leverage hypotheses can be applied to some extent also to rights issues. Rights issues do not, however, incorporate any ownership structure changes if existing shareholders fully subscribe to the issue. Therefore signalling through ownership of the company is not a plausible hypothesis for rights issues.

Models specific to rights issues have been developed by Levy and Sarnat (1971) and Heinkel and Schwartz (1986). Levy and Sarnat (1971) divide the costs of a rights issue into direct and indirect costs. The direct cost is the risk of undersubscription in the case when the market price falls below the subscription price. The indirect cost arises "from the possibility that an unintended change in dividend policy may be induced by the stock dividend implicit in a rights offering"¹. They assume that the indirect cost arises from the need to change future dividends and that a simple downward adjustment of dividends after a share issue might lead to a depressed stock price. They did not show explicitly how the stock dividend component of a rights issue could be interpreted. Heinkel and Schwartz (1986) interpret a high subscription price to market price ratio as a piece of positive information as the company signals that it believes that the market price will stay above the subscription price

¹ Levy and Sarnat (1971, p. 842)

also in the future. Brealey and Myers (1988) argue that the only thing a firm should worry about in rights issues is to set the subscription price so that the share price will not fall under it to guarantee full subscription of the issue.

Assuming that the dividend per share must for some reason not fall, a rights issue can be interpreted as an implicit dividend increase if the subscription price is less than the market price. The same argument applies also for stock dividends. The extent of the implicit dividend increase is tied to the discount and to the subscription ratio and can be measured with an adjustment factor² for the share issue. This implicit dividend increase is assumed to reveal positive information about the company's future prospects just as would a normal dividend increase.³

Another reason why there is a positive reaction to rights issues is related to taxation. In some countries such as Finland shares bought in a rights issue are taxed differently than shares bought in the secondary market. The day of purchase for shares in the rights issue is the day of purchase of the original shares and some of the possible capital gains are tax exempt after a five year holding period starting from this original date. Because of this tax effect investors would prefer buying shares from share issues than from the secondary market.

Announcement effects in general cash offerings have been mainly

² An adjustment factor is similar to a split factor. See section 2 and appendix for definitions.

³ See, e.g., Bhattacharya (1979).

negative in the U.S.⁴ In the case of rights issues both negative and positive announcement effects have been reported. The announcement effect seems to be more positive with European data than with the U.S. data.

Scholes (1972) found an insignificant -0.3 % reaction at the month of the rights issue for 696 rights issues in the U.S. from 1926 to 1966⁵. Smith (1977) found an insignificant -0.7 % immediate announcement effect but a positive 7.9 % abnormal reaction when looking at a two year window surrounding the announcement for a sample of 853 rights issues in the U.S. from 1926 to 1975. Eckbo and Masulis (1989) reported an insignificant -0.99 % two day abnormal return for 29 rights issues for industrial companies during 1963-1981. For 27 utility companies this reaction was marginally positive.

Marsh (1979) reported a significant 2 % one month abnormal return with U.K. data. The reaction was partially explained by the company size. Marsh also analyzed the price pressure hypothesis but concluded that the price reaction did not significantly depend on the size of the share issue.

Berglund, Liljeblom and Wahlroos (1987) found a 2-3 % abnormal positive return during the announcement week for rights issues in Finland but a -1 % return for a -10 week to +13 week window.

⁴ Asquith and Mullins (1986), Barclay and Litzenberger (1988) and Eckbo and Masulis (1989) all report significantly negative announcement effects of a general magnitude of -3 %.

⁵ Earlier work by Nelson (1965) reported an insignificant -0.2 % announcement effect.

When they also included issues where the company had a stock dividend executed at the same time as the rights issue (called a combined issue) their results show a 5-6 % abnormal positive return during the announcement week.

Loderer and Zimmermann (1988) found with the Swiss data a 2.0 % statistically insignificant abnormal return during the announcement month. They also found evidence that the right value relative to the share price (similar to our adjustment factor) is positively related to the market announcement effect. They were unable to explain this result. The announcement reaction was found to be negatively related to the size of the share issue. They reported some evidence that the market uses the ratio of the offer price to the market price as a positive signal. This latter variable was insignificant with the U.S. data. One reason for this is that the offer price is set after the announcement in the U.S. and is therefore unknown at the announcement.

Liljeblom (1989) found an insignificant -0.58 % two day announcement effect to 41 rights issues in Sweden during 1977-87. Neither the leverage nor the price pressure hypothesis received support in the cross-sectional analysis.

The different announcement effect hypotheses to share issues mainly predict a negative announcement effect. However, the announcement effects of rights issues are less negative than the effects of general cash offerings and in some cases they are even positive. Thus it seems that the rights issues contain an additional component compared to the general cash offerings and

that the market interprets this component positively. In this paper we put forth a hypothesis which can explain this "positive news component" in rights issues. Our hypothesis can also partially explain the observed difference in announcement reactions to rights issues between the U.S. and some European countries, positive reactions to stock dividend announcements, and the puzzling phenomenon of underwritten rights issues.

2. An implicit dividend increase hypothesis

A rights issue can be viewed as an implicit dividend increase if the subscription price is under the current market price for the share and the dividend per share does not decrease.⁶ The following example demonstrates⁷ our claim.

Let the price of the share with the right ($P_{cum-right}$) be \$100 and the subscription price (X) be \$50. With 5 old shares one is entitled to buy one new share in the rights issue. If we assume that the announcement of the rights issue will not affect the value of the company, the ex-right price of the share ($P_{ex-right}$) is

$$P_{ex-right} = P_{cum-right} - \text{Right} \quad (1)$$

and the value of one right⁸ is

⁶ Fama, Fisher, Jensen and Roll (1969) presented verbally a similar argument when studying the impacts of splits on stock returns.

⁷ See appendix for a formal proof.

⁸ Omitting the option value of the right.

$$\text{Right} = \text{Pcum-right} - \text{Pex-right}$$

$$\langle \Rightarrow \rangle \quad \text{Right} = \text{Pcum-right} - [5 * \text{Pcum-right} + X] / [5+1]$$

$$\langle \Rightarrow \rangle \quad \text{Right} = \$100 - \$91.67 = \$8.33$$

The price of the share will decrease by the value of one right or by the factor of $\$100/\$91.67 = 1.09087$.

If the current dividend per share is \$10 and it is expected to be unchanged, the dividend yield is increased from 10 % to 10.9087 % or by a ratio of $10.9087\%/10\% = 1.09087$ which is equal to the dilution effect in the share price. This dilution effect which is also called a stock dividend effect is an adjustment in the share price due to the share issue. We call this ratio an adjustment factor (AF)⁹. As shown above this adjustment factor can be interpreted as a dividend yield increase if the dividend per share is kept constant.

In this paper we analyze this implicit dividend increase element

⁹ Term adjustment factor is used here to measure the share price before the issue in relation to a technical price after the issue. Terms quasi-split effect (Nelson (1965)), stock dividend effect (Levy and Sarnat (1971)), split effect and dilution effect are used in the literature and they all have the same meaning. Our adjustment factor is computed from the information in the market at day -1 and it takes into account possible dividends before the ex-right day. A similar adjustment factor (with cum-right day prices) is officially used in Finland during the later years of our study. The adjustment factor is used in Finland to adjust the stock price before the issue to that after the issue for comparison purposes like computing returns or just drawing graphs and also to adjust the dividend per share and the EPS information. After this adjustment share prices are not expected to fall at the time when the issue begins. The appendix contains a formal proof that the adjustment factor can be interpreted as an increase in the dividend yield if the dividend per share is held constant.

in the share issues and our hypothesis is that a large implied dividend increase (large adjustment factor) is equivalent to a dividend increase which can be interpreted as a signal about better future prospects for the company.

A constant or non-decreasing dividend is a crucial assumption in our dividend increase hypothesis. Our justification for this assumption relies on three arguments: managerial behaviour, asymmetric market reaction and data from our sample.

Firstly, Lintner (1956) and Edwards and Mayer (1989) have shown that managers tend to avoid dividend per share decreases.

Lintner reported that managers have a target dividend payout ratio and they are reluctant to decrease the dividend per share. Edwards and Mayer found using UK data that managers give a top priority to non-decreasing dividends.

Secondly, dividend decreases tend to be stronger signals than dividend increases. This has been shown empirically by Charest (1978) and Eades, Hess and Kim (1985). Thus if a company first implicitly promises higher dividends in the share issue but reduces the subsequent dividend per share, the share price will fall under the price where it started before the announcement of the share issue. The net fall in the share price is the cost of false signalling.

Thirdly, our data from Finland shows that dividends tend to be non-decreasing after rights issues and stock dividends.

Decreases in dividends were rare.¹⁰

In Finland dividend increases channeled through share issues are a major dividend increase mechanism. On average 72 % of dividend increases were channeled through share issues (rights issues and stock dividends) and only 28 % were channeled through dividend per share increases between 1975 and 1989.¹¹ All data like share price development, dividends and EPS are adjusted by the share issue adjustment factor. One example is a bank share KOP for which the adjusted dividend¹² has increased from FIM 0.98 in 1980 to FIM 2.40 in 1988. A dividend per share of FIM 2.40 has existed throughout this period but shareholders have received modestly priced share issues along the way which explains the increase in the adjusted dividend. One can ask why companies do not increase dividend per share instead of implicitly promising new dividends for low priced new shares. It seems that companies

¹⁰ There were 7 cases out of 74 or 9.5 % in our panel A and 4 cases out of 63 or 6.3 % in panel B where the next dividend per share was lower than the previous one. For all the companies listed on the Helsinki Stock Exchange between 1975-1988 an average percentage reducing their dividends was 13.5 %. In our panel A 62.2 % of the companies kept their dividend constant and 28.4 % raised their dividend. Companies which decreased the dividend per share had issues with very high adjustment factors in the share issue. The average net change in dividends after an implicit dividend increase and a cash dividend per share decrease was +51.8 %. The minimum net dividend increase was 8 %.

An average implicit dividend increase promise in our sample was 36.4 % (adjustment factor of 1.3640). As a matter of fact the realized dividend increase was even higher at 42.9 %. That is, on average companies in our sample did not only hold their dividend per share constant after the share issue but even increased the dividend per share.

¹¹ Löyttyniemi (1991).

¹² The adjusted dividend is calculated by dividing the pre-issue dividend by the adjustment factor and keeping the current dividend as such.

in Finland keep "dividend increases" in reserve to be used in rights issues. This can be explained by the fact that dividends paid for the new share capital are partially tax deductible in Finland.¹³

In the U.S. where the subscription price is, on average, roughly 90 % of the prevailing market price, the adjustment factor in a rights issue is not very large. Thus it is quite conceivable that the positive effect from a small implicit dividend increase is outweighed by the general negative announcement effects (information, leverage and price pressure hypotheses).

One has to make a clear distinction between a rights issue, a stock dividend and a stock split. It can be shown that a rights issue and a stock dividend involve an implicit dividend increase but a stock split does not. We use the term stock dividend in a slightly different way than it is used in the U.S.¹⁴ In Finland

¹³ During our sample period dividends paid for the new capital were 100 % tax deductible for five years after the year of the share issue and 40 % or 60 % deductible thereafter. Tax deductibility of dividends encourages companies to raise new capital. Companies are required to use rights issues in Finland according to the Finnish Companies Act. Non-rights issues may be used only if 2/3 of votes cast and shares represented at the shareholders' meeting are in favor of the issue.

¹⁴ According to our definition a stock dividend is an issue where new shares with existing par value are given for old shareholders for free. This definition does not make any distinction for the terms of the stock dividend whereas in the US this distinction is often made. According to Grinblatt, Masulis and Titman (1984) the Generally Accepted Accounting Principles in the U.S. require firms to deduct the dollar value of the stock dividend from retained earnings if the stock distribution is less or equal to 20 % (5:1). Stock dividends larger than 25 % (4:1) are treated as splits and do not affect retained earnings.

there is a very clear distinction between a stock dividend (also called a bonus issue) and a split. A stock split is a means of changing the par value of the share whereas a stock dividend is an issue where new shares with existing par value are distributed. This distinction between a split and a stock dividend is relevant for their informational content about dividends. A stock dividend is an implicit dividend increase whereas a split does not cause any implicit change in the dividend.¹⁵

Our implicit dividend increase hypothesis is thus applicable for both rights issues and stock dividends. Both a rights offering and a stock dividend may involve the same implicit promise of dividends. One can reach the same implicit dividend increase from a 5:1 stock dividend and from a 2:1 rights offering where a subscription price is 50 % of the market price. For both of these issues the adjustment factor would be 1.200. Loderer and Zimmermann (1988) have reported in a study on rights issues and McNichols and Dravid (1990) in a study on stock splits and stock dividends that the adjustment factor or the split factor is positively related to the share price reaction in cross-sectional analysis but they did not interpret their results as

¹⁵ In Finland companies express their dividends relative to the par value (10 %, 8 % etc.). A 10 % dividend for a share with FIM 100 par value is FIM 10. After a split of one share with FIM 100 par value to two shares with FIM 50 par value, the dividend is assumed by investors to be still 10 % or two times FIM 5. The stock split is therefore automatically associated with a split in the dividend and there is no expectation of a change in the total dividends received.

A stock dividend, however, is associated with an implicit dividend increase if investors expect the dividend per share to be non-decreasing. In a stock dividend where an old shareholder receives one new share for each old share the dividend is implicitly raised from 1*FIM 10 to 2*FIM 10.

implicit dividend increase information.

A theoretical paper by Heinkel and Schwartz (1986) claimed that in rights issues the subscription price to current market price ratio (X/P) is a signal of firm's future prospects and it is assumed to be positively related to the announcement effect of share issues. According to our implicit dividend increase hypothesis this idea is reversed. Lowering the subscription price (X) relative to the current market price (P) increases the implicit dividend. The subscription ratio ($N:1$) is inversely related to the implicit dividend increase.¹⁶ In rights issues the joint value from X/P and $N:1$ determines the implicit dividend increase and this joint value is represented in the adjustment factor.

Our paper gives one possible reason why companies cannot lower X/P in rights issues at will. This occurs because if the issue size is kept constant, lowering X would mean a larger and larger dividend increase promise. The managers may not want to give this large dividend increase promise if they know they cannot keep it, as this would result to an undesirable reduction in the dividend per share. Thus companies may choose to underwrite their rights issues as they are forced to use a high X/P ratio to avoid giving a large implicit dividend increase.

¹⁶ N stands for the number of shares that entitles to one new share in the rights issue.

3. Empirical tests on the implicit dividend increase hypothesis

3.1. The methodology

In studying the impact of the announcement of rights issues, stock dividends and combined issues on security returns, we use the following two steps. First we compute the abnormal daily returns for each security using the standard¹⁷ market model

$$\bar{AR}_{it} = \bar{R}_{it} - E[\bar{R}_{it}] = \bar{R}_{it} - (\hat{\alpha}_i + \hat{\beta}_i \bar{R}_{mt}) \quad (2)$$

where

\bar{AR}_{it} = Abnormal return for security i at t

\bar{R}_{it} = Return for security i at t

$\hat{\alpha}_i, \hat{\beta}_i$ = Market model estimates for security i

\bar{R}_{mt} = Market portfolio return at t

For each of the events, the market model estimates for $\hat{\alpha}$ and $\hat{\beta}$ are estimated using monthly returns over the 36 month period ending 30 days before the announcement of the share issue. If the company had not been listed for the 36 month period before the announcement we use a shorter estimation period. Abnormal returns are computed for a period of -30 to +30 days from the announcement of the share issue. Abnormal returns were also calculated as excess market returns¹⁸ where

¹⁷ A comprehensive analysis of abnormal return adjustments using monthly and daily data was carried out by Brown and Warner (1980, 1985).

¹⁸ Market model α 's and β 's might be affected by the share issue because capital structure changes affect the financial risk carried by shareholders. An equity issue should lower the beta of the share by reducing the financial risk. Using U.K. data Marsh (1979) has found on the contrary that betas increased after the share issue. His results of abnormal price behaviour were not

$$AR_{it} = R_{it} - E[R_{it}] = R_{it} - R_{mt} . \quad (3)$$

However, results using this model are practically the same as using the market model and are not reported here. After abnormal returns are computed for all share issues we apply OLS regression analysis as a second step to examine the cross-sectional dependence between the cumulative abnormal return and the adjustment factor as well as other characteristics of the share issue. The analysis is carried out for the whole sample of issues and also for subclasses of issues and for subperiods.

3.2. Sample

This study focuses on the effect of the announcement of rights issues, stock dividends and combined issues on the Helsinki Stock Exchange (HSE). The time period of this study is 1975-88.

A rights issue is the most widely used method of public equity financing by Finnish companies. Rights are normally attached to the share certificate like dividend coupons. When a rights issue is authorized, it is detached from the certificate. A certain number of rights entitles their holder to subscribe to one new share in the company for a certain subscription price. In rights issues this subscription price is positive and in stock dividends it is zero. A stock dividend is defined here as an issue where new shares are given for no charge and the par value is kept unchanged. The most widely used type of equity issue is a combination of the two.

One characteristic of the Finnish equity market is the classification of shares into A-shares (or ordinary shares) and B-shares (or preferred shares) and into restricted and non-

affected by using pre- or post-issue betas. Liljeblom (1989) found with Swedish data that pre- and post-event estimates of α and β were seldom significantly different.

restricted shares. A-shares typically carry 10 votes compared to 1 vote for B-shares. In some companies there is also a dividend difference between A- and B-shares. Non-restricted shares are allowed to be held both by foreign and domestic investors whereas restricted shares must be held by domestic investors.¹⁹ These classifications affect also the terms of share issues.

We made the following restrictions when forming our sample²⁰:

1. Only those companies with a single type of voting share are included in the study.²¹
2. Only restricted shares are examined.
3. Splits are not examined.
4. Companies which announced a change in their cash dividend at the same day as they announced the share issue are left out. This paper focuses on the dividend increase consequences of a share issue and therefore cash dividend changes had to be left out.
5. We are forced to leave 6 more issues out of our sample because of various reasons.²²

The total number of issues (74) in our sample consists of 19

¹⁹ Hietala (1989) has analyzed the relative pricing of restricted and non-restricted shares.

²⁰ The company and issue data were collected from the following publications: Gunhard Kock, Pörssitieto 1977-88; KOP, Listed companies in Finland 1980-89; Union Bank of Finland, Share highlights 1981-89; and the terms of the issues were double checked from each prospectus.

²¹ If two or more series are listed we are excluding the issue from our sample because of possible wealth transfers between share class owners.

²² Instrumentarium 1977 was left out due to a major merger and related share issue in which more shares were offered to the owners of the acquired company than for the existing shareholders in the rights issue. Three Kemi issues (1978, 1979, 1980) were left out because issues were decided all in once in 1978 in a package to save the company from bankruptcy and the subscription price was above the prevailing market price. Two more issues (ÅAB 1977 and TOK 1975) were left out because no announcement date was available.

rights issues, 11 stock dividends and 44 combined issues²³. Year by year classification of issues is reported in table 1. There was only one share issue announcement in 1977. Otherwise issues are well distributed over the years. Our main focus is panel B which consists of 19 rights issues and 44 combined issues.

Monthly α and β estimates and abnormal daily returns are computed using WI-indices²⁴. The market index is market value weighted. All returns are natural logarithmic returns adjusted for dividends, share issues and splits.

The announcement day is defined here as the day when the company's announcement should have its first effect on the share price. If the announcement was after trading hours, the following trading day was used as an announcement day. Announcement days were obtained from official announcements sent to the HSE and from the most widely read newspaper Helsingin Sanomat. Announcements are usually proposals by the board of directors and have to be approved by the shareholders meetings. A three day cumulative abnormal return (CAR) for days (-1,+1) is used in order to allow for uncertainty in the announcement day²⁵.

²³ A combined issue is a combination of a rights issue and a stock dividend. Two separate rights are detached from the share certificate.

²⁴ See Berglund, Wahlroos and Grandell (1983) for a full description of the indices. For daily data in 1988 we used the Unitas General Index and the Infostock datafile prices and adjusted prices for dividends, share issues and splits.

²⁵ Interpretation of an announcement date from the company's announcement was difficult in some cases when they were day stamped but not time stamped. Also from some of the announcements in Helsingin Sanomat it was hard to interpret whether the announcement had its first effect on that day or the day before.

3.3. Empirical results

3.3.1. Tests of announcement effect significance

Figure 1 shows behaviour of average CAR's for all issue types (rights issues, stock dividends and combined issues) around the announcement day. Panel B at table 2 examines rights issues and combined issues and excludes the 11 observations which are just stock dividends. The cross-sectional average for the announcement day abnormal return is 3.8 % in panel B.

INSERT FIGURE 1 HERE

The significance of the announcement effect is tested using five methods to compute the t-values²⁶. Table 2 reports t-values²⁷ for announcement effects for CAR(-1,+1), CAR(0) and CAR(-1,+30) using market model adjustments. Results indicate that the null hypothesis (H_0) of no abnormal return is rejected for panel A (74 rights issues, stock dividends and combined issues) and for panel B (63 rights and combined issues) at the 0.01 level using a one-sided t-test.

We also divided the panel B into three subsamples according to the size of the adjustment factor (low, medium and large). Each subsample consists of 21 issues. Results in table 2 indicate that H_0 is rejected at the 1 % significance level for all CAR periods for the largest adjustment (AF) group and for CAR(-1,+1) and CAR(0) for the medium AF group. H_0 is not rejected for the lowest AF group and for CAR(-1,30) in the medium AF group. The abnormal returns are seen in figure 2.

INSERT FIGURE 2 HERE

Abnormal returns are significantly positive for the event windows (-1,+1) and (0) at the 1 % level for all except the low AF group. Results are not sensitive to the abnormal return

²⁶ See table 2 for the t-statistic formulas.

²⁷ Because CAR(-1,+1) and CAR(0) are not normally distributed our t-values must be interpreted with caution.

method used. It seems that we can safely conclude that announcements of a sample of rights issues and combined issues in Finland have economic meaning and the average announcement effect is positive. Abnormal return behaviour is tied to the AF of the share issue with the larger the AF larger the price reaction. This relationship is further studied in our cross-sectional regressions.

3.3.2. Cross-sectional analysis

The cross-sectional analysis is displayed in table 3 for rights issues, combined issues and stock dividends in panel A, for rights and combined issues in panel B for the whole period 1975-88, and for two subperiods for rights and combined issues (panel C and panel D).²⁸ We focus on results from panel B.

In earlier pages we presented various hypotheses of price behaviour following a rights issue announcement. These hypotheses (with assumed effects on abnormal returns in parentheses) concern leverage (-), existing asset value signalling (-), cash flow signalling (-), wasteful investment (-), price pressure (-), subscription price signalling (+), implicit dividend increase (+) and tax advantage (+). Last three hypotheses are only related to the rights issues whereas other hypotheses originate from research done on general cash offerings.

In empirical tests we use cumulative abnormal returns (CAR) for event windows (-1,+1) and (-1,+30) as dependent variables. Table 3 reports the results when regressing these two CARs on the

²⁸ We tested the normality of our variables with the goodness of fit test at the 5 % significance level using Chi-squared distribution. After natural log transformations for most of our variables the normality was not rejected in panel A and B for $\ln AF$, $EXPR$, $\ln NEWCAP$, $CAR(-1,+30)$ and $RELDIV\%$. The normality was rejected in both panels for $CAR(-1,+1)$ and $CAR(0)$.

natural log of adjustment factor (AF)²⁹. The coefficient for lnAF is significantly different from zero at the 1 % level for all regressions in both panels.³⁰ Also for a sample of pure rights issues (panel H) lnAF is statistically significantly positive. Thus, even if the announcement effect on pure rights issues is on average very small (see figure 1), our implicit dividend increase hypothesis can explain some cross-sectional variation in abnormal returns.

In general cash offerings which are not studied here the adjustment factor is equal to 1 which means that the price before the issue would not be adjusted. In the U.S., where the offering prices in the rights offerings are close to the market price, the adjustment factor would be very close to 1 as well. Therefore there do not exist very high implicit dividend increases associated with rights issues in the U.S. market and thus, according to our hypothesis, the "positive news component" in the rights issues in the U.S. is relatively small.

Heinkel and Schwartz (1986) have hypothesized that the price

²⁹ The mean adjustment factor (AF) is 1.3640. According to our signalling hypothesis this can be interpreted as a 36.4 % average dividend increase which will be realized at the next cash dividend payment. The lowest adjustment factor was 1.0172. Our regression in table 3 was also executed for AF instead of lnAF. The relationship between market reaction and AF does not seem to be exactly linear. We could not reject the hypothesis that lnAF is normally distributed whereas in case of AF we could reject this hypothesis at the 5 % significance level.

³⁰ According to the optimal trading range hypothesis announcement reaction to a cut in share price due to a stock dividend or a split is positive. We used an other estimation technique to check whether this optimal trading range hypothesis affects our results or not. We regressed natural log of absolute price level at day - 1 on natural log of adjustment factor and used the residuals for explaining cross-sectional announcement reaction. This procedure was used by McNichols and Dravid (1990) in their study on stock splits and stock dividends. Their result was that the residual is a significant factor in explaining cross-sectional abnormal returns. Our results were not altered much with this procedure and the t-values for various panels were on the same levels as with lnAF as an explanatory variable.

behaviour around the announcement date is positively related to the ratio of the subscription price to the market price (EXPR). The closer this ratio is to one the higher the probability for the share price to fall under the issue price, causing losses for all those participating in the issue. Therefore only good companies can set the issue price high. In the case of rights issues in Finland this ratio is not that important. The average subscription price to market price ratio was 49.2 % and at the maximum it reached 83.3 %.

When using the subscription price to market price ratio (EXPR) instead of lnAF as an explanatory variable for CARs results are much weaker and have a sign opposite to what is predicted by Heinkel and Schwartz model. The coefficients are significantly negative for EXPR and the t-statistics are only half of those for lnAF. The adjusted R^2 falls dramatically to 0.094 at the maximum. These results indicate that lnAF conveys much more information to the market than EXPR. EXPR is one part of the adjustment factor which increases as EXPR gets smaller. The negative coefficient for EXPR is not consistent with the hypothesis presented by Heinkel and Schwartz (1986) but it is consistent with our hypothesis. This result is similar to the one reported in Eckbo and Masulis (1989) who did not also find any evidence in favor of Heinkel and Schwartz model when studying rights issues in the U.S.

Our focus has so far been on dividend signalling. Additionally we want to test whether the so far unexplained portion of the abnormal returns can be explained by the three traditional announcement effect hypotheses: leverage, asymmetrical information and price pressure hypotheses. According to all these hypotheses the announcement effect should be negatively correlated with the increase in equity due to the share issue. Coincidentally in Finland taxation benefits of rights issues explained earlier³¹ predict that the announcement effect should

³¹ Shares bought in a rights issue can be sold tax-exempt after five years have elapsed from the purchase of the original cum-rights shares. Shares bought in the secondary market can be sold tax-exempt after five years from the purchase.

be positively correlated with this increase in equity.

Our proxy for the increase in the relative supply of equity is natural log of the increase in the equity relative to the market capitalization before the issue ($\ln\text{NEWCAP}\%$)³². $\text{NEWCAP}\%$ is thus a proxy for leverage, asymmetric information, price pressure and tax effects.

To proxy the importance of the dividend component in the total return for a share we also use a dividend yield relative to market average ($\text{RELDIV}\%$) variable. When a company with a large dividend yield announces a large implicit dividend increase in terms of a large adjustment factor it is assumed to cause a larger reaction than in the case of a smaller dividend yield company. The dividend conveys more information for investors in the former company and the dividend yield is expected to strengthen the impact of an implicit dividend increase on the share price.

Thus our last cross-sectional regression is

$$\text{CAR}(\text{period})_i = a_0 + a_1 \ln \text{AF}_i + a_2 \ln \text{NEWCAP}\%_i + a_3 \text{RELDIV}\%_i + e_i \quad (4)$$

The results are reported in table 4. The negative effect of $\ln\text{NEWCAP}\%$ gives support for leverage, asymmetric information and price pressure hypotheses but not for the taxation hypothesis. The effect of $\ln\text{AF}$ is still significantly positive. The positive effect of $\text{RELDIV}\%$ strengthens the evidence in favor of our dividend increase argument. The larger the relative dividend yield, the more favorable the market reaction to the implicit dividend increase. We ran regressions in table 4 also for 19 pure rights issues in our sample (panel H) to see if stock dividends per se have a dominant effect in our regressions. The results for rights issues are very similar to those for the

³² The average increase in the market value for the existing share series was 22.37 % ($\text{NEWCAP}\%$). In the largest expansion company wanted to increase its market value of equity by 87.3 %.

whole panel B.³³

Our cross-sectional results support the implicit dividend increase hypothesis. Abnormal returns are associated with measures of the implicit dividend increase. The reaction is also positively related to the relative dividend yield of the company. The results also provide evidence in favor of the normal negative share issue effects from leverage, asymmetric information and price pressure hypotheses measured by the relative size of the issue.

6. Conclusions

In this paper we have analyzed the announcement effect of rights issues. We have shown that if the company will not subsequently lower the dividend per share a rights issue always implies an implicit dividend increase. We hypothesize that this dividend increase component in rights issues makes the announcement effect in these share issues more positive (or less negative) than in general cash offerings which do not have this dividend increase implication.

Our implicit dividend increase hypothesis receives strong support in our empirical tests which use data from the Helsinki Stock Exchange for years 1975-1988. The adjustment factor, which measures the size of the implicit dividend increase in share issues, is shown to explain a large portion of the cross-sectional variation in the announcement effect abnormal returns. On the other hand we found no support in our tests for Heinkel and Schwartz (1986) model for subscription price signalling.

We also show in the paper that our hypothesis can explain the observed difference in the announcement effects in rights issues between the U.S. and the European countries, as well as the high positive announcement effects in stock dividends. Our paper also gives one possible reason why companies cannot lower the

³³ The usage of funds raised in rights issues are not announced in Finland. If available this information would presumably effect the cross-sectional results.

subscription price in rights issues at will. This occurs because if the issue size is kept constant, lowering the subscription price would mean a larger implicit dividend increase. Thus some companies, which may not want to commit themselves to an increase in the dividend, may rationally choose a high subscription price and an underwritten rights issue. Thus underwritten rights issues are not a puzzle in our model but a rational behavior by those companies which cannot commit themselves to increase their dividend.

Appendix: The derivation of the implicit dividend increase in rights issues, stock dividends and combined issues

Assumptions:

1. No changes in the current dividend per share.
2. No transaction costs and no taxes.
3. No dividend or other differences between the cum-right, the ex-right share and the new shares.
4. No time factor (the rate of interest is zero)

Notations:

- Pcum = The cum-right price of the share
Pex = The ex-right price of the share (Pex=Pcum-R)
R = The price of the right
X = The subscription price of the new share (>0 for a rights issue and =0 for a stock dividend). In this analysis we assume that Pcum>X and R>0.
N = N cum-right shares entitle the owner to buy 1 new ex-right share (N is a general symbol for issues where rights are used)
r = r cum-right shares entitle to 1 new ex-right share in a rights issue
b = b cum-right shares entitle to get 1 new ex-right share in a stock dividend
ED = The expected next dividend per share

An adjustment factor (AF) is defined as a correction term for the share price because of the right which is detached from the share certificate and from the share price.

$$\begin{aligned}
 \text{AF} &= \frac{\text{The price of the cum-right share}}{\text{The price of the ex-right share}} \\
 &= \frac{\text{The value of equity per share before the share issue}}{\text{The value of equity per share after the share issue}} \\
 &= \frac{\text{Pcum}}{(N * \text{Pcum} + X) / (N + 1)}
 \end{aligned}$$

The adjustment factor can be used for rights issues (X>0) and for stock dividends (X=0).

The current dividend yield for the investor before the announcement of the rights issue is

$$\frac{\text{ED}}{\text{Pcum}}$$

After the announcement of the rights issue all other things equal the new expected dividend yield perceived by the investor becomes

$$\frac{(N+1) * \text{ED}}{N * \text{Pcum} + X}$$

because we assume that the dividend per share is kept constant. We can now see how the perceived dividend yield has changed. The ratio of these two dividend yields is

$$\frac{\text{Dividend yield after the announcement}}{\text{Dividend yield before the announcement}}$$

$$= \frac{[(N+1)*ED/(N*Pcum + X)]}{ED/Pcum}$$

$$= \frac{Pcum}{(N*Pcum + X)/(N+1)}$$

The last expression is the standard adjustment factor (AF) for rights issues and stock dividends. The adjustment factor thus measures the implicit dividend increase in a share issue.

The same result can be shown also for a combined issue. A combined issue is an issue where one new share is subscribed for $X > 0$ for r old shares and one new share is received for free ($X = 0$) for b old shares. We assume that the company has $r*b$ number of shares before the share issue.

The adjustment factor is

$$AF = \frac{\text{The price of the cum-right share}}{\text{The price of the ex-right share}}$$

$$= \frac{\text{The value of equity per share before the share issue}}{\text{The value of equity per share after the share issue}}$$

$$= \frac{Pcum}{(r*b*Pcum + \frac{r*b*X}{r}) / (r*b + \frac{r*b}{r} + \frac{r*b}{b})}$$

$$= \frac{Pcum}{(r*b*Pcum + b*X) / (r*b + b + r)}$$

The dividend yield is

$$\frac{ED}{Pcum}$$

After the announcement the expected dividend yield is

$$\frac{(r*b + r + b) * ED}{(r*b*Pcum + b*X)}$$

The ratio of after the announcement dividend yield to before the announcement dividend yield is

$$\frac{\text{Dividend yield after the announcement}}{\text{Dividend yield before the announcement}}$$

$$= \frac{Pcum}{(r*b*Pcum + b*X) / (r*b + b + r)}$$

$$= AF$$

Table 1. Rights issues, stock dividends and combined issues in Finland during 1975-1988 classified according to the announcement year.^{a b}

Year	Rights	Combined ^b	Total Panel B	Stock dividend	Total Panel A
1975	1	2	3		3
1976	1	1	2	1	3
1977		1	1		1
1978	3	2	5		5
1979	1	3	4	2	6
1980	3	5	8	1	9
1981		7	7	1	8
1982	1	4	5		5
1983		3	3	1	4
1984		5	5	2	7
1985	1	3	4	3	7
1986		4	4		4
1987	4	1	5		5
1988	4	3	7		7
Total	19	44	63	11	74

- ^a
- Share issues which satisfy the following criteria:
1. One type of voting series listed and equal terms of the issue for non-listed series.
 2. Only restricted share series are examined.
 3. Splits were not allowed.
 4. No changes in cash dividends at the announcement date.
 5. Some more restrictions due to data.

- ^b
- A combined issue is an issue where the company is raising capital (rights issue) and giving shares for free (stock dividend) at the same time.

Table 2. Tests of the announcement effect significance for share issue announcements in Finland during 1975-1988 using market model adjustments.

Market model adjusted returns:

CAR(period)	CAR	t-value ^a	t-value ^b	t-value ^c	% Positive
Panel A: All issues (N=74)					
CAR(-1,+1)	0.05576	17.93031**	17.00957**	5.62237**	78.38**
CAR(0)	0.04896	27.27157**	25.87117**	5.55960**	82.43**
CAR(-1,+30)	0.04780	4.70291**	4.46143**	2.64389*	62.16**
Panel B: Rights and combined issues (N=63)					
CAR(-1,+1)	0.04147	12.21490**	11.67937**	4.68369**	74.60**
CAR(0)	0.03802	19.39673**	18.54634**	5.17382**	84.13**
CAR(-1,+30)	0.04121	3.71659**	3.55365**	2.28648*	61.90*
Panel C: Rights and combined issues (low^d adjustment factor (N=21))					
CAR(-1,+1)	-0.00027	-0.07686	-0.05065	-0.02200	57.14
CAR(0)	0.00188	0.93665	0.61732	0.18592	71.43*
CAR(-1,+30)	-0.01088	-0.88924	-0.58607	-0.40512	57.14
Panel D: Rights and combined issues (medium^e adjustment factor (N=21))					
CAR(-1,+1)	0.04202	12.09080**	5.85097**	3.05937**	71.43*
CAR(0)	0.04264	21.25038**	10.28345**	3.91122**	80.95**
CAR(-1,+30)	0.00134	0.11830	0.05725	0.04875	38.10
Panel E: Rights and combined issues (high^f adjustment factor (N=21))					
CAR(-1,+1)	0.08265	22.07692**	12.41991**	5.55161**	95.24**
CAR(0)	0.06953	32.16674**	18.09619**	5.40481**	100.00**
CAR(-1,+30)	0.13237	10.82587**	6.09036**	4.15057**	90.48**

Table 2 (continued)

a The t-statistic is calculated using the market model adjusted abnormal returns and the standard deviations of the market model residuals

$$\frac{1}{N} \sum_{i=1}^N \text{CAR}_i(Z,T)$$

$$t = \frac{\left[\frac{1}{19.8} \right]^{1/2} \left[\frac{1}{N} \sum_{i=1}^N \left[\frac{1}{36-2} \sum_{t=-2}^{-37} \text{AR}_{it} - \frac{1}{36} \sum_{t=-2}^{-37} \text{AR}_{it} \right]^2 \right]^{1/2}}$$

where

Z,T = Days for cumulative abnormal daily returns e.g. (-1,+1)

t = Month t

CAR_i(Z,T) = Abnormal daily return for company i during days (Z,T)

AR_{it} = Abnormal return or residual of the market model for company i in month t

N = Number of issues in the sample

19.8 = Average number of trading days in the month

36 = Number of monthly observations used in the market model

The t-statistic has (36-1) degrees of freedom.

b The t-statistic is calculated using the market model adjusted abnormal returns and the standard deviations from the portfolio residuals from days (-30,-2)

$$\frac{1}{N} \sum_{i=1}^N \text{CAR}_i(Z,T)$$

$$t = \frac{\left[\frac{1}{|T-Z|+1} \right]^{1/2} \left[\frac{1}{29-1} \sum_{t=-2}^{-30} \left[\frac{1}{N} \sum_{i=1}^N \text{AR}_{it} - \overline{\text{AR}}(-30,-2) \right]^2 \right]^{1/2}}$$

where

$$\overline{\text{AR}}(-30,-2) = \frac{1}{29*N} \sum_{t=-2}^{-30} \sum_{i=1}^N \text{AR}_{it}$$

Z,T = Days for cumulative abnormal daily returns e.g. (-1,+1)

CAR_i(Z,T) = Abnormal daily return for company i during days (Z,T)

N = Number of issues in the sample

29 = Number of trading days (-30,-2) before the announcement day to compute standard deviations

The t-statistic has (29-1) degrees of freedom.

c The t-statistic is calculated using the market model adjusted abnormal return and the standard deviation from the cross-sectional standard deviation

$$\frac{1}{N} \sum_{i=1}^N \text{CAR}_i(Z,T)$$

$$t = \frac{N^{1/2} \left[\frac{1}{N-1} \sum_{i=1}^N [\text{CAR}_i(Z,T) - \overline{\text{CAR}}(Z,T)]^2 \right]^{1/2}}$$

Table 2 (continued)

Where

$$\overline{\text{CAR}}(Z,T) = \frac{1}{N} * \sum_{i=1}^N \text{CAR}_i(Z,T)$$

Z,T = Days for cumulative abnormal daily returns e.g. (-1,+1)

$\text{CAR}_i(Z,T)$ = Abnormal daily return for company *i* during days (Z,T)

N = Number of issues in the sample

The t-statistic has (N-1) degrees of freedom.

d
e
f

Issues with an adjustment factor from range 1.017 to under 1.2

Issues with an adjustment factor from range 1.2 to under 1.375

Issues with an adjustment factor over 1.375

**

H_0 for no abnormal return is rejected with the one-sided student t-test statistic or the sign test at the 1 % level.

*

H_0 for no abnormal return is rejected with the one-sided student t-test statistic or the sign test at the 5 % level.

Table 3. Effects of an implicit dividend increase measured by an adjustment factor (AF) on the cumulative market model adjusted abnormal return (CAR) in Finland during 1975-1988 using OLS estimation (t-statistics are given in parenthesis) for equation

$$\text{CAR}(\text{period})_i = a_0 + a_1 \ln \text{AF}_i + e_i, \quad i=1, \dots, N.$$

CAR(period)	a_0	a_1	Adjusted R^2	F-statistic
Panel A: All issues (N=74)				
CAR(-1,+1)	-0.0196 (-1.275)	0.2581** (5.803)	0.309	33.67
CAR(-1,+30)	-0.0945** (-3.431)	0.4873** (6.121)	0.333	37.46
Panel B: Rights and combined issues (N=63)				
CAR(-1,+1)	-0.0171 (-1.247)	0.2063** (5.082)	0.286	25.83
CAR(-1,+30)	-0.0868** (-3.205)	0.4504** (5.634)	0.331	31.74
Panel F: Rights and combined issues (from 1/1975 to 4/1982 (N=32))				
CAR(-1,+1)	-0.0200 (-0.871)	0.2170** (3.505)	0.267	12.28
CAR(-1,+30)	-0.0761 (-1.961)	0.4354** (4.160)	0.345	17.31
Panel G: Rights and combined issues (from 5/1982 to 12/1988 (N=31))				
CAR(-1,+1)	-0.0120 (-0.772)	0.1846** (3.604)	0.286	12.99
CAR(-1,+30)	-0.0975* (-2.404)	0.4673** (3.484)	0.271	12.14
Panel H: Rights issues (N=19)				
CAR(-1,+1)	-0.0238 (-1.323)	0.2103* (2.513)	0.228	6.31
CAR(-1,+30)	-0.0795 (-1.521)	0.4259 (1.753)	0.103	3.07

** H_0 for the coefficient to be equal to zero is rejected with two-sided student t-test statistic at the 1 % level.

* H_0 for the coefficient to be equal to zero is rejected with two-sided student t-test statistic at the 5 % level.

Table 4. Effects of an implicit dividend increase measured by the adjustment factor (AF), new capital raised relative to equity value (NEWCAP%) and the relative dividend yield (RELDIV%) on the cumulative market model adjusted abnormal return (CAR) in Finland during 1975-1988 using OLS estimation (the t-statistics are given in parentheses) for equation

$$\text{CAR}(\text{period})_i = a_0 + a_1 \ln \text{AF}_i + a_2 \ln \text{NEWCAP}\%_i + a_3 \text{RELDIV}\%_i + e_i, \\ i=1, \dots, N.$$

CAR(period)	a_0	a_1	a_2	a_3	Adjusted R^2	F-statistic
Panel B: Rights and combined issues (N=63)						
CAR(-1,+1)	0.0802* (2.372)	0.2554** (6.006)	-0.0366** (-3.286)	0.0117** (2.830)	0.395	14.49
Panel H: Rights issues (N=19)						
CAR(-1,+1)	0.0877 (2.047)	0.3589** (4.668)	-0.0443* (-2.879)	0.0153** (3.285)	0.539	8.02

** H_0 for the coefficient to be equal to zero is rejected with two-sided student t-test statistic or sign test at the 1 % level.

* H_0 for the coefficient to be equal to zero is rejected with two-sided student t-test statistic or sign test at the 5 % level.

Figure 1. The announcement reaction to rights issues, stock dividends and combined issues (= a combination of a rights issue and a stock dividend) in Finland during 1975-1988 using market model adjusted cumulative abnormal returns. Numbers in parentheses indicate the sample size.

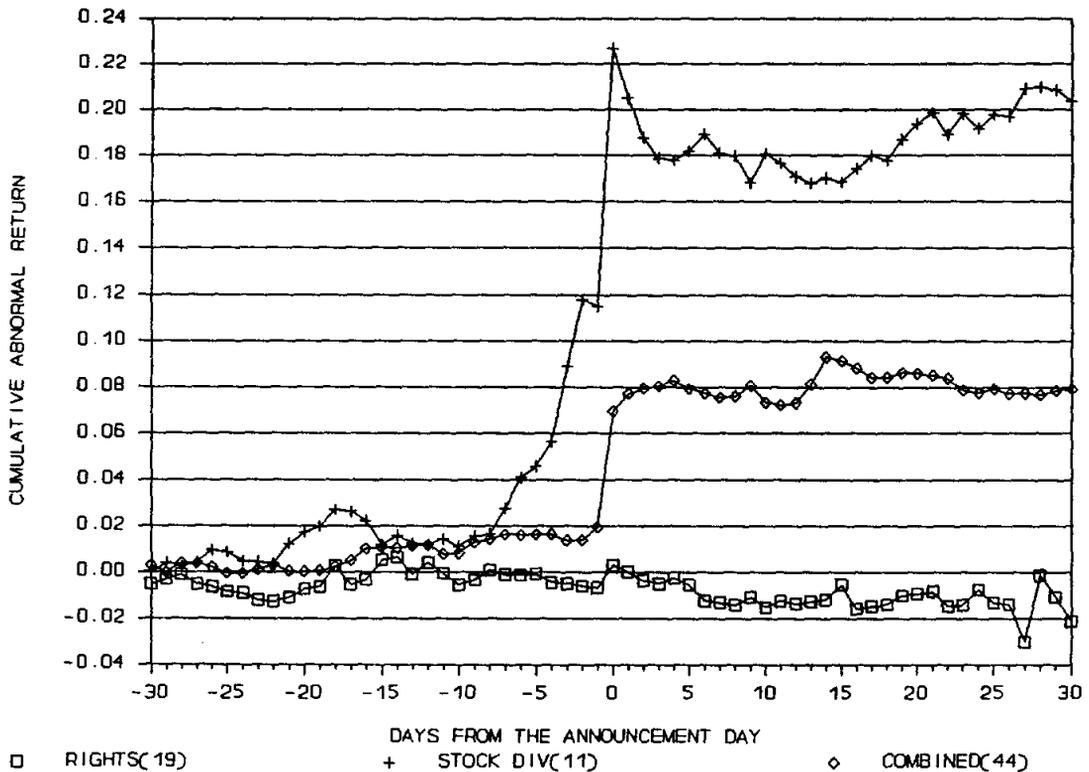
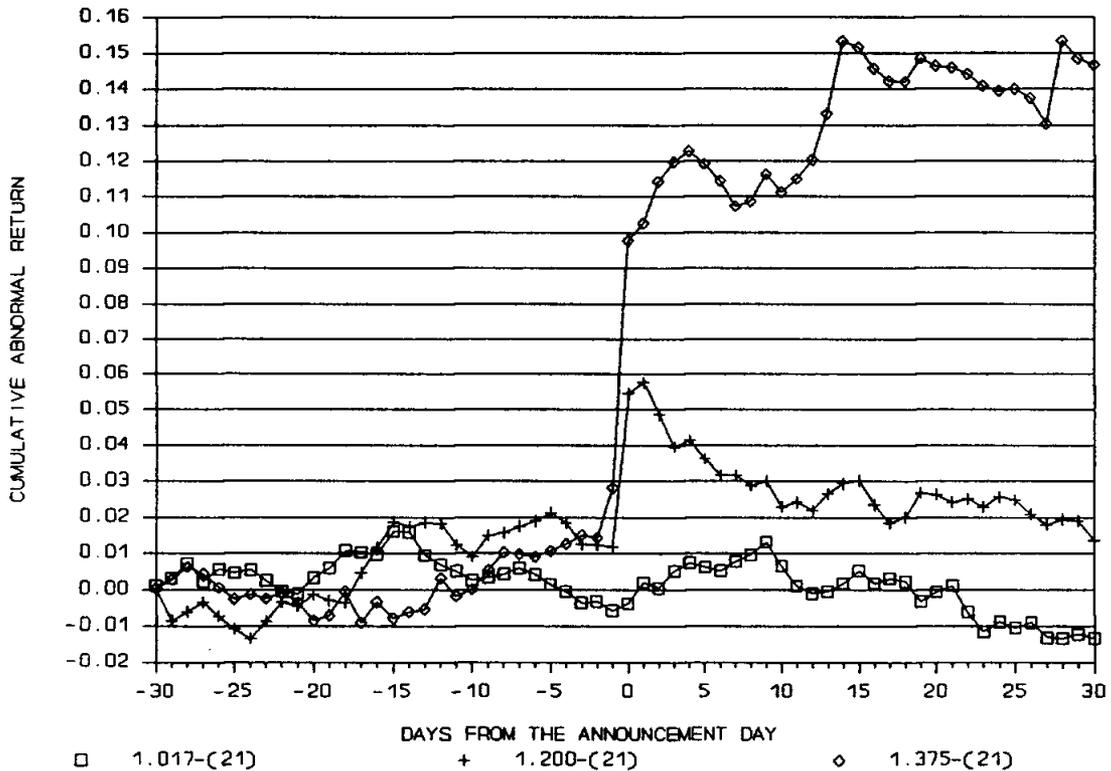


Figure 2. Announcement reactions to rights issues and combined issues (= a combination of a rights issue and a stock dividend) in Finland during 1975-1988 grouped according to the size of the adjustment factor (split factor). Groups are (1.017 to under 1.2), (1.2 to under 1.375) and (1.375 or higher). The numbers in parentheses indicate the sample size.



References

- Asquith, P. and D. Mullins, 1986, Equity issues and offering dilution, *Journal of Financial Economics* 15, 61-89.
- Barclay, M. and R. Litzenberger, 1988, Announcement effects of new equity issues and the use of intraday price data, *Journal of Financial Economics* 21, 71-99.
- Berglund, T., E. Liljeblom and B. Wahlroos, 1987, Stock price reactions to announcements of stock dividends and rights issues: a test of liquidity and signalling hypotheses on the Helsinki Stock Exchange, *Finance* 8, 109-132.
- Berglund, T., B. Wahlroos and L. Grandell, 1983, The KOP and UNITAS indices for the Helsinki Stock Exchange in light of a new value weighted index, *Finnish Journal of Business Economics* 32, 30-41.
- Bhattacharya, S., 1979, Imperfect information, dividend policy, and "the bird-in-the-hand" fallacy, *Bell Journal of Economics* 10, 259-270.
- Brealey, R. and S. Myers, 1988, *Principles of Corporate Finance*, (McGraw-Hill Book Company International Editions, New York).
- Brown, S. and J. Warner, 1980, Measuring security price performance, *Journal of Financial Economics* 8, 205-258.
- Brown, S. and J. Warner, 1985, Using daily stock returns: the case of event studies, *Journal of Financial Economics* 14, 3-31.
- Charest, G., 1978, Dividend information, stock returns and market efficiency II, *Journal of Financial Economics* 6, 297-330.
- Dipchand, C. 1977, The Canadian experience with inherent stock splits of rights issues, *Financial Management* 6, 34-41.
- Eades, K., Hess P. and E. Kim, 1985, Market rationality and dividend announcements, *Journal of Financial Economics* 14, 581-604.
- Eckbo, E. and R. Masulis, 1989, Rights vs. firm commitment offerings of common stock: an empirical analysis, Working paper (Southern Methodist University, Dallas, Texas).
- Edwards, J., and C. Mayer, 1989, Dividends and new equity issues: evidence from survey information, Unpublished research paper.
- Fama, E., L. Fisher, M. Jensen and R. Roll, 1969, The adjustment of stock prices to new information, *International Economic Review* 10, 1-21.
- Galai, D. and R. Masulis, 1976, The option pricing model and the risk factor in stock returns, *Journal of Financial Economics* 3, 53-82.

INSEAD WORKING PAPERS SERIES

			88/12	Spyros MAKRIDAKIS	"Business firms and managers in the 21st century", February 1988
			88/13	Manfred KETS DE VRIES	"Alexithymia in organizational life: the organization man revisited", February 1988.
<u>1988</u>			88/14	Alain NOEL	"The interpretation of strategies: a study of the impact of CEOs on the corporation", March 1988.
88/01	Michael LAWRENCE and Spyros MAKRIDAKIS	"Factors affecting judgemental forecasts and confidence intervals", January 1988.			
88/02	Spyros MAKRIDAKIS	"Predicting recessions and other turning points", January 1988.	88/15	Anil DEOLALIKAR and Lars-Hendrik RÖLLER	"The production of and returns from industrial innovation: an econometric analysis for a developing country", December 1987.
88/03	James TEBOUL	"De-industrialize service for quality", January 1988.			
88/04	Susan SCHNEIDER	"National vs. corporate culture: implications for human resource management", January 1988.	88/16	Gabriel HAWAWINI	"Market efficiency and equity pricing: international evidence and implications for global investing", March 1988.
88/05	Charles WYPLOSZ	"The swinging dollar: is Europe out of step?", January 1988.	88/17	Michael BURDA	"Monopolistic competition, costs of adjustment and the behavior of European employment", September 1987.
88/06	Reinhard ANGELMAR	"Les conflits dans les canaux de distribution", January 1988.	88/18	Michael BURDA	"Reflections on "Wait Unemployment" in Europe", November 1987, revised February 1988.
88/07	Ingemar DIERICKX and Karel COOL	"Competitive advantage: a resource based perspective", January 1988.	88/19	M.J. LAWRENCE and Spyros MAKRIDAKIS	"Individual bias in judgements of confidence", March 1988.
88/08	Reinhard ANGELMAR and Susan SCHNEIDER	"Issues in the study of organizational cognition", February 1988.	88/20	Jean DERMINE, Damien NEVEN and J.F. THISSE	"Portfolio selection by mutual funds, an equilibrium model", March 1988.
88/09	Bernard SINCLAIR-DESGAGNÉ	"Price formation and product design through bidding", February 1988.	88/21	James TEBOUL	"De-industrialize service for quality", March 1988 (88/03 Revised).
88/10	Bernard SINCLAIR-DESGAGNÉ	"The robustness of some standard auction game forms", February 1988.	88/22	Lars-Hendrik RÖLLER	"Proper Quadratic Functions with an Application to AT&T", May 1987 (Revised March 1988).
88/11	Bernard SINCLAIR-DESGAGNÉ	"When stationary strategies are equilibrium bidding strategy: The single-crossing property", February 1988.			

88/23	Sjur Didrik FLAM and Georges ZACCOUR	"Equilibres de Nash-Cournot dans le marché européen du gaz: un cas où les solutions en boucle ouverte et en feedback coïncident", Mars 1988.	88/34	Mihkel M. TOMBAK	"Flexibility: an important dimension in manufacturing", June 1988.
88/24	B. Espen ECKBO and Herwig LANGOHR	"Information disclosure, means of payment, and takeover premia. Public and Private tender offers in France", July 1985, Sixth revision, April 1988.	88/35	Mihkel M. TOMBAK	"A strategic analysis of investment in flexible manufacturing systems", July 1988.
88/25	Everette S. GARDNER and Spyros MAKRIDAKIS	"The future of forecasting", April 1988.	88/36	Vikas TIBREWALA and Bruce BUCHANAN	"A Predictive Test of the NBD Model that Controls for Non-stationarity", June 1988.
88/26	Sjur Didrik FLAM and Georges ZACCOUR	"Semi-competitive Cournot equilibrium in multistage oligopolies", April 1988.	88/37	Murugappa KRISHNAN Lars-Hendrik RÖLLER	"Regulating Price-Liability Competition To Improve Welfare", July 1988.
88/27	Murugappa KRISHNAN Lars-Hendrik RÖLLER	"Entry game with resalable capacity", April 1988.	88/38	Manfred KETS DE VRIES	"The Motivating Role of Envy : A Forgotten Factor in Management", April 88.
88/28	Sumantra GHOSHAL and C. A. BARTLETT	"The multinational corporation as a network: perspectives from interorganizational theory", May 1988.	88/39	Manfred KETS DE VRIES	"The Leader as Mirror : Clinical Reflections", July 1988.
88/29	Naresh K. MALHOTRA, Christian PINSON and Arun K. JAIN	"Consumer cognitive complexity and the dimensionality of multidimensional scaling configurations", May 1988.	88/40	Josef LAKONISHOK and Theo VERMAELEN	"Anomalous price behavior around repurchase tender offers", August 1988.
88/30	Catherine C. ECKEL and Theo VERMAELEN	"The financial fallout from Chernobyl: risk perceptions and regulatory response", May 1988.	88/41	Charles WYPLOSZ	"Assymetry in the EMS: intentional or systemic?", August 1988.
88/31	Sumantra GHOSHAL and Christopher BARTLETT	"Creation, adoption, and diffusion of innovations by subsidiaries of multinational corporations", June 1988.	88/42	Paul EVANS	"Organizational development in the transnational enterprise", June 1988.
88/32	Kaara FERDOWS and David SACKRIDER	"International manufacturing: positioning plants for success", June 1988.	88/43	B. SINCLAIR-DESGAGNÉ	"Group decision support systems implement Bayesian rationality", September 1988.
88/33	Mihkel M. TOMBAK	"The importance of flexibility in manufacturing", June 1988.	88/44	Essam MAHMOUD and Spyros MAKRIDAKIS	"The state of the art and future directions in combining forecasts", September 1988.
			88/45	Robert KORAJCZYK and Claude VIALLET	"An empirical investigation of international asset pricing", November 1986, revised August 1988.
			88/46	Yves DOZ and Amy SHUEN	"From intent to outcome: a process framework for partnerships", August 1988.
			88/47	Alain BULTEZ, Els GUSBRECHTS,	"Asymmetric cannibalism between substitute items listed by retailers", September 1988.

	Philippe NAERT and Piet VANDEN ABEELE		88/59	Martin KILDUFF	"The interpersonal structure of decision making: a social comparison approach to organizational choice", November 1988.
88/48	Michael BURDA	"Reflections on 'Wait unemployment' in Europe, II", April 1988 revised September 1988.	88/60	Michael BURDA	"Is mismatch really the problem? Some estimates of the Chelwood Gate II model with US data", September 1988.
88/49	Nathalie DIERKENS	"Information asymmetry and equity issues", September 1988.	88/61	Lars-Hendrik RÖLLER	"Modelling cost structure: the Bell System revisited", November 1988.
88/50	Rob WEITZ and Arnoud DE MEYER	"Managing expert systems: from inception through updating", October 1987.	88/62	Cynthia VAN HULLE, Theo VERMAELEN and Paul DE WOUTERS	"Regulation, taxes and the market for corporate control in Belgium", September 1988.
88/51	Rob WEITZ	"Technology, work, and the organization: the impact of expert systems", July 1988.	88/63	Fernando NASCIMENTO and Wilfried R. VANHONACKER	"Strategic pricing of differentiated consumer durables in a dynamic duopoly: a numerical analysis", October 1988.
88/52	Susan SCHNEIDER and Reinhard ANGELMAR	"Cognition and organizational analysis: who's minding the store?", September 1988.	88/64	Kasra FERDOWS	"Charting strategic roles for international factories", December 1988.
88/53	Manfred KETS DE VRIES	"Whatever happened to the philosopher-king: the leader's addiction to power, September 1988.	88/65	Arnoud DE MEYER and Kasra FERDOWS	"Quality up, technology down", October 1988
88/54	Lars-Hendrik RÖLLER and Mihkel M. TOMBAK	"Strategic choice of flexible production technologies and welfare implications", October 1988	88/66	Nathalie DIERKENS	"A discussion of exact measures of information asymmetry: the example of Myers and Majluf model or the importance of the asset structure of the firm", December 1988.
88/55	Peter BOSSAERTS and Pierre HILLION	"Method of moments tests of contingent claims asset pricing models", October 1988.	88/67	Paul S. ADLER and Kasra FERDOWS	"The chief technology officer", December 1988.
88/56	Pierre HILLION	"Size-sorted portfolios and the violation of the random walk hypothesis: Additional empirical evidence and implication for tests of asset pricing models", June 1988.			
			<u>1989</u>		
88/57	Wilfried VANHONACKER and Lydia PRICE	"Data transferability: estimating the response effect of future events based on historical analogy", October 1988.	89/01	Joyce K. BYRER and Tawfik JELASSI	"The impact of language theories on DSS dialog", January 1989.
88/58	B. SINCLAIR-DESAGNÉ and Mihkel M. TOMBAK	"Assessing economic inequality", November 1988.	89/02	Louis A. LE BLANC and Tawfik JELASSI	"DSS software selection: a multiple criteria decision methodology", January 1989.

89/03	Beth H. JONES and Tawfik JELASSI	"Negotiation support: the effects of computer intervention and conflict level on bargaining outcome", January 1989.	89/13	Manfred KETS DE VRIES	"The impostor syndrome: a disquieting phenomenon in organizational life", February 1989.
89/04	Kasra FERDOWS and Arnoud DE MEYER	"Lasting improvement in manufacturing performance: In search of a new theory", January 1989.	89/14	Reinhard ANGELMAR	"Product innovation: a tool for competitive advantage", March 1989.
89/05	Martin KILDUFF and Reinhard ANGELMAR	"Shared history or shared culture? The effects of time, culture, and performance on institutionalization in simulated organizations", January 1989.	89/15	Reinhard ANGELMAR	"Evaluating a firm's product innovation performance", March 1989.
89/06	Mihkel M. TOMBAK and B. SINCLAIR-DESGAGNÉ	"Coordinating manufacturing and business strategies: I", February 1989.	89/16	Wilfried VANHONACKER, Donald LEHMANN and Fareena SULTAN	"Combining related and sparse data in linear regression models", February 1989.
89/07	Damien J. NEVEN	"Structural adjustment in European retail banking. Some view from industrial organisation", January 1989.	89/17	Gilles AMADO, Claude FAUCHEUX and André LAURENT	"Changement organisationnel et réalités culturelles: contrastes franco-américains", March 1989.
89/08	Arnoud DE MEYER and Hellmut SCHÜTTE	"Trends in the development of technology and their effects on the production structure in the European Community", January 1989.	89/18	Srinivasan BALAK- RISHNAN and Mitchell KOZA	"Information asymmetry, market failure and joint-ventures: theory and evidence", March 1989.
89/09	Damien NEVEN, Carmen MATUTES and Marcel CORSTJENS	"Brand proliferation and entry deterrence", February 1989.	89/19	Wilfried VANHONACKER, Donald LEHMANN and Fareena SULTAN	"Combining related and sparse data in linear regression models", Revised March 1989.
89/10	Nathalie DIERKENS, Bruno GERARD and Pierre HILLION	"A market based approach to the valuation of the assets in place and the growth opportunities of the firm", December 1988.	89/20	Wilfried VANHONACKER and Russell WINER	"A rational random behavior model of choice", Revised March 1989.
89/11	Manfred KETS DE VRIES and Alain NOEL	"Understanding the leader-strategy interface: application of the strategic relationship interview method", February 1989.	89/21	Arnoud de MEYER and Kasra FERDOWS	"Influence of manufacturing improvement programmes on performance", April 1989.
89/12	Wilfried VANHONACKER	"Estimating dynamic response models when the data are subject to different temporal aggregation", January 1989.	89/22	Manfred KETS DE VRIES and Sydney PERZOW	"What is the role of character in psychoanalysis?" April 1989.
			89/23	Robert KORAJCZYK and Claude VIALLET	"Equity risk premia and the pricing of foreign exchange risk" April 1989.
			89/24	Martin KILDUFF and Mitchei ABOLAFIA	"The social destruction of reality: Organisational conflict as social drama" zApril 1989.

89/25	Roger BETANCOURT and David GAUTSCHI	"Two essential characteristics of retail markets and their economic consequences" March 1989.	89/36	Martin KILDUFF	"A dispositional approach to social networks: the case of organizational choice", May 1989.
89/26	Charles BEAN, Edmond MALINVAUD, Peter BERNHOLZ, Francesco GIAVAZZI and Charles WYPLOSZ	"Macroeconomic policies for 1992: the transition and after", April 1989.	89/37	Manfred KETS DE VRIES	"The organisational fool: balancing a leader's hubris", May 1989.
89/27	David KRACKHARDT and Martin KILDUFF	"Friendship patterns and cultural attributions: the control of organizational diversity", April 1989.	89/38	Manfred KETS DE VRIES	"The CEO blues", June 1989.
89/28	Martin KILDUFF	"The interpersonal structure of decision making: a social comparison approach to organizational choice", Revised April 1989.	89/39	Robert KORAJCZYK and Claude VIALLET	"An empirical investigation of international asset pricing", (Revised June 1989).
89/29	Robert GOGEL and Jean-Claude LARRECHE	"The battlefield for 1992: product strength and geographic coverage", May 1989.	89/40	Balaji CHAKRAVARTHY	"Management systems for innovation and productivity", June 1989.
89/30	Lars-Hendrik ROLLER and Mihkel M. TOMBAK	"Competition and Investment in Flexible Technologies", May 1989.	89/41	B. SINCLAIR-DESGAGNE and Nathalie DIERKENS	"The strategic supply of precisions", June 1989.
89/31	Michael C. BURDA and Stefan GERLACH	"Intertemporal prices and the US trade balance in durable goods", July 1989.	89/42	Robert ANSON and Tawfik JELASSI	"A development framework for computer-supported conflict resolution", July 1989.
89/32	Peter HAUG and Tawfik JELASSI	"Application and evaluation of a multi-criteria decision support system for the dynamic selection of U.S. manufacturing locations", May 1989.	89/43	Michael BURDA	"A note on firing costs and severance benefits in equilibrium unemployment", June 1989.
89/33	Bernard SINCLAIR-DESGAGNÉ	"Design flexibility in monopsonistic industries", May 1989.	89/44	Balaji CHAKRAVARTHY and Peter LORANGE	"Strategic adaptation in multi-business firms", June 1989.
89/34	Sumantra GHOSHAL and Nitin NOHRIA	"Requisite variety versus shared values: managing corporate-division relationships in the M-Form organisation", May 1989.	89/45	Rob WEITZ and Arnoud DE MEYER	"Managing expert systems: a framework and case study", June 1989.
89/35	Jean DERMINE and Pierre HILLION	"Deposit rate ceilings and the market value of banks: The case of France 1971-1981", May 1989.	89/46	Marcel CORSTJENS, Carmen MATUTES and Damien NEVEN	"Entry Encouragement", July 1989.
			89/47	Manfred KETS DE VRIES and Christine MEAD	"The global dimension in leadership and organization: issues and controversies", April 1989.
			89/48	Damien NEVEN and Lars-Hendrik RÖLLER	"European integration and trade flows", August 1989.

89/49	Jean DERMINE	"Home country control and mutual recognition", July 1989.	89/62 (TM)	Arnoud DE MEYER	"Technology strategy and international R&D operations", October 1989.
89/50	Jean DERMINE	"The specialization of financial institutions, the EEC model", August 1989.	89/63 (TM)	Enver YUCESAN and Lee SCHRUBEN	"Equivalence of simulations: A graph approach", November 1989.
89/51	Spyros MAKRIDAKIS	"Sliding simulation: a new approach to time series forecasting", July 1989.	89/64 (TM)	Enver YUCESAN and Lee SCHRUBEN	"Complexity of simulation models: A graph theoretic approach", November 1989.
89/52	Arnoud DE MEYER	"Shortening development cycle times: a manufacturer's perspective", August 1989.	89/65 (TM, AC, FIN)	Soumitra DUTTA and Piero BONISSONE	"MARS: A mergers and acquisitions reasoning system", November 1989.
89/53	Spyros MAKRIDAKIS	"Why combining works?", July 1989.	89/66 (TM,EP)	B. SINCLAIR-DESGAGNÉ	"On the regulation of procurement bids", November 1989.
89/54	S. BALAKRISHNAN and Mitchell KOZA	"Organisation costs and a theory of joint ventures", September 1989.	89/67 (FIN)	Peter BOSSAERTS and Pierre HILLION	"Market microstructure effects of government intervention in the foreign exchange market", December 1989.
89/55	H. SCHUTTE	"Euro-Japanese cooperation in information technology", September 1989.			
89/56	Wilfried VANHONACKER and Lydia PRICE	"On the practical usefulness of meta-analysis results", September 1989.			
			<u>1990</u>		
89/57	TaeKwon KIM, Lars-Hendrik RÖLLER and Mihkel TOMBAK	"Market growth and the diffusion of multiproduct technologies", September 1989.	90/01 TM/EP/AC	B. SINCLAIR-DESGAGNÉ	"Unavoidable Mechanisms", January 1990.
89/58 (EP,TM)	Lars-Hendrik RÖLLER and Mihkel TOMBAK	"Strategic aspects of flexible production technologies", October 1989.	90/02 EP	Michael BURDA	"Monopolistic Competition, Costs of Adjustment, and the Behaviour of European Manufacturing Employment", January 1990.
89/59 (OB)	Manfred KETS DE VRIES, Daphna ZEVADI, Alain NOEL and Mihkel TOMBAK	"Locus of control and entrepreneurship: a three-country comparative study", October 1989.	90/03 TM	Arnoud DE MEYER	"Management of Communication in International Research and Development", January 1990.
89/60 (TM)	Enver YUCESAN and Lee SCHRUBEN	"Simulation graphs for design and analysis of discrete event simulation models", October 1989.	90/04 FIN/EP	Gabriel HAWAWINI and Eric RAJENDRA	"The Transformation of the European Financial Services Industry: From Fragmentation to Integration", January 1990.
89/61 (All)	Susan SCHNEIDER and Arnoud DE MEYER	"Interpreting and responding to strategic issues: The impact of national culture", October 1989.	90/05 FIN/EP	Gabriel HAWAWINI and Bertrand JACQUILLAT	"European Equity Markets: Toward 1992 and Beyond", January 1990.

90/06 FIN/EP	Gabriel HAWAWINI and Eric RAJENDRA	"Integration of European Equity Markets: Implications of Structural Change for Key Market Participants to and Beyond 1992", January 1990.	90/17 FIN	Nathalie DIERKENS	"Information Asymmetry and Equity Issues", Revised January 1990.
90/07 FIN/EP	Gabriel HAWAWINI	"Stock Market Anomalies and the Pricing of Equity on the Tokyo Stock Exchange", January 1990.	90/18 MKT	Wilfried VANHONACKER	"Managerial Decision Rules and the Estimation of Dynamic Sales Response Models", Revised January 1990.
90/08 TM/EP	Tawfik JELASSI and B. SINCLAIR-DESGAGNÉ	"Modelling with MCDSS: What about Ethics?", January 1990.	90/19 TM	Beth JONES and Tawfik JELASSI	"The Effect of Computer Intervention and Task Structure on Bargaining Outcome", February 1990.
90/09 EP/FIN	Alberto GIOVANNINI and Jae WON PARK	"Capital Controls and International Trade Finance", January 1990.	90/20 TM	Tawfik JELASSI, Gregory KERSTEN and Stanley ZIONTS	"An Introduction to Group Decision and Negotiation Support", February 1990.
90/10 TM	Joyce BRYER and Tawfik JELASSI	"The Impact of Language Theories on DSS Dialog", January 1990.	90/21 FIN	Roy SMITH and Ingo WALTER	"Reconfiguration of the Global Securities Industry in the 1990's", February 1990.
90/11 TM	Enver YUCESAN	"An Overview of Frequency Domain Methodology for Simulation Sensitivity Analysis", January 1990.	90/22 FIN	Ingo WALTER	"European Financial Integration and Its Implications for the United States", February 1990.
90/12 EP	Michael BURDA	"Structural Change, Unemployment Benefits and High Unemployment: A U.S.-European Comparison", January 1990.	90/23 EP/SM	Damien NEVEN	"EEC Integration towards 1992: Some Distributional Aspects", Revised December 1989
90/13 TM	Soumitra DUTTA and Shashi SHEKHAR	"Approximate Reasoning about Temporal Constraints in Real Time Planning and Search", January 1990.	90/24 FIN/EP	Lars Tyge NIELSEN	"Positive Prices in CAPM", January 1990.
90/14 TM	Albert ANGEHRN and Hans-Jakob LÜTHI	"Visual Interactive Modelling and Intelligent DSS: Putting Theory Into Practice", January 1990.	90/25 FIN/EP	Lars Tyge NIELSEN	"Existence of Equilibrium in CAPM", January 1990.
90/15 TM	Arnoud DE MEYER, Dirk DESCHOOLMEESTER, Rudy MOENAERT and Jan BARBE	"The Internal Technological Renewal of a Business Unit with a Mature Technology", January 1990.	90/26 OB/BP	Charles KADUSHIN and Michael BRIMM	"Why networking Fails: Double Binds and the Limitations of Shadow Networks", February 1990.
90/16 FIN	Richard LEVICH and Ingo WALTER	"Tax-Driven Regulatory Drag: European Financial Centers in the 1990's", January 1990.	90/27 TM	Abbas FOROUGHFI and Tawfik JELASSI	"NSS Solutions to Major Negotiation Stumbling Blocks", February 1990.
			90/28 TM	Arnoud DE MEYER	"The Manufacturing Contribution to Innovation", February 1990.

90/29 FIN/AC	Nathalie DIERKENS	"A Discussion of Correct Measures of Information Asymmetry", January 1990.	90/40 OB	Manfred KETS DE VRIES	"Leaders on the Couch: The case of Roberto Calvi", April 1990.
90/30 FIN/EP	Lars Tyge NIELSEN	"The Expected Utility of Portfolios of Assets", March 1990.	90/41 FIN/EP	Gabriel HAWAWINI, Itzhak SWARY and Ik HWAN JANG	"Capital Market Reaction to the Announcement of Interstate Banking Legislation", March 1990.
90/31 MKT/EP	David GAUTSCHI and Roger BETANCOURT	"What Determines U.S. Retail Margins?", February 1990.	90/42 MKT	Joel STECKEL and Wilfried VANHONACKER	"Cross-Validating Regression Models in Marketing Research", (Revised April 1990).
90/32 SM	Srinivasan BALAK- RISHNAN and Mitchell KOZA	"Information Asymmetry, Adverse Selection and Joint-Ventures: Theory and Evidence", Revised, January 1990.	90/43 FIN	Robert KORAJCZYK and Claude VIALLET	"Equity Risk Premia and the Pricing of Foreign Exchange Risk", May 1990.
90/33 OB	Caren SIEHL, David BOWEN and Christine PEARSON	"The Role of Rites of Integration in Service Delivery", March 1990.	90/44 OB	Gilles AMADO, Claude FAUCHEUX and André LAURENT	"Organisational Change and Cultural Realities: Franco-American Contrasts", April 1990.
90/34 FIN/EP	Jean DERMINE	"The Gains from European Banking Integration, a Call for a Pro-Active Competition Policy", April 1990.	90/45 TM	Soumitra DUTTA and Piero BONISSONE	"Integrating Case Based and Rule Based Reasoning: The Possibilistic Connection", May 1990.
90/35 EP	Jae Won PARK	"Changing Uncertainty and the Time-Varying Risk Premia in the Term Structure of Nominal Interest Rates", December 1988, Revised March 1990.	90/46 TM	Spyros MAKRIDAKIS and Michèle HIBON	"Exponential Smoothing: The Effect of Initial Values and Loss Functions on Post-Sample Forecasting Accuracy".
90/36 TM	Arnoud DE MEYER	"An Empirical Investigation of Manufacturing Strategies in European Industry", April 1990.	90/47 MKT	Lydia PRICE and Wilfried VANHONACKER	"Improper Sampling in Natural Experiments: Limitations on the Use of Meta-Analysis Results in Bayesian Updating", Revised May 1990.
90/37 TM/OB/SM	William CATS-BARIL	"Executive Information Systems: Developing an Approach to Open the Possibles", April 1990.	90/48 EP	Jae WON PARK	"The Information in the Term Structure of Interest Rates: Out-of-Sample Forecasting Performance", June 1990.
90/38 MKT	Wilfried VANHONACKER	"Managerial Decision Behaviour and the Estimation of Dynamic Sales Response Models", (Revised February 1990).	90/49 TM	Soumitra DUTTA	"Approximate Reasoning by Analogy to Answer Null Queries", June 1990.
90/39 TM	Louis LE BLANC and Tawfik JELASSI	"An Evaluation and Selection Methodology for Expert System Shells", May 1990.	90/50 EP	Daniel COHEN and Charles WYPLOSZ	"Price and Trade Effects of Exchange Rates Fluctuations and the Design of Policy Coordination", April 1990.

90/51 EP	Michael BURDA and Charles WYPLOSZ	"Gross Labour Market Flows in Europe: Some Stylized Facts", June 1990.	90/63 SM	Sumantra GHOSHAL and Eleanor WESTNEY	"Organising Competitor Analysis Systems", August 1990
90/52 FIN	Lars Tyge NIELSEN	"The Utility of Infinite Menus", June 1990.	90/64 SM	Sumantra GHOSHAL	"Internal Differentiation and Corporate Performance: Case of the Multinational Corporation", August 1990
90/53 EP	Michael Burda	"The Consequences of German Economic and Monetary Union", June 1990.	90/65 EP	Charles WYPLOSZ	"A Note on the Real Exchange Rate Effect of German Unification", August 1990
90/54 EP	Damien NEVEN and Colin MEYER	"European Financial Regulation: A Framework for Policy Analysis", (Revised May 1990).	90/66 TM/SE/FIN	Soumitra DUTTA and Piero BONISSONE	"Computer Support for Strategic and Tactical Planning in Mergers and Acquisitions", September 1990
90/55 EP	Michael BURDA and Stefan GERLACH	"Intertemporal Prices and the US Trade Balance", (Revised July 1990).	90/67 TM/SE/FIN	Soumitra DUTTA and Piero BONISSONE	"Integrating Prior Cases and Expert Knowledge In a Mergers and Acquisitions Reasoning System", September 1990
90/56 EP	Damien NEVEN and Lars-Hendrik RÖLLER	"The Structure and Determinants of East-West Trade: A Preliminary Analysis of the Manufacturing Sector", July 1990	90/68 TM/SE	Soumitra DUTTA	"A Framework and Methodology for Enhancing the Business Impact of Artificial Intelligence Applications", September 1990
90/57 FIN/EP/ TM	Lars Tyge NIELSEN	Common Knowledge of a Multivariate Aggregate Statistic", July 1990	90/69 TM	Soumitra DUTTA	"A Model for Temporal Reasoning in Medical Expert Systems", September 1990
90/58 FIN/EP/TM	Lars Tyge NIELSEN	"Common Knowledge of Price and Expected Cost in an Oligopolistic Market", August 1990	90/70 TM	Albert ANGEHRN	"Triple C': A Visual Interactive MCDSS", September 1990
90/59 FIN	Jean DERMINE and Lars-Hendrik RÖLLER	"Economies of Scale and Scope in the French Mutual Funds (SICAV) Industry", August 1990	90/71 MKT	Philip PARKER and Hubert GATIGNON	"Competitive Effects in Diffusion Models: An Empirical Analysis", September 1990
90/60 TM	Peri IZ and Tawfik JELASSI	"An Interactive Group Decision Aid for Multiobjective Problems: An Empirical Assessment", September 1990	90/72 TM	Enver YÜCESAN	"Analysis of Markov Chains Using Simulation Graph Models", October 1990
90/61 TM	Pankaj CHANDRA and Mihkel TOMBAK	"Models for the Evaluation of Manufacturing Flexibility", August 1990	90/73 TM	Arnoud DE MEYER and Kasra FERDOWS	"Removing the Barriers in Manufacturing", October 1990
90/62 EP	Damien NEVEN and Memmo VAN DIJK	"Public Policy Towards TV Broadcasting in the Netherlands", August 1990	90/74 SM	Sumantra GHOSHAL and Nitin NOHRIA	"Requisite Complexity: Organising Headquarters- Subsidiary Relations in MNCs", October 1990

90/75 MKT	Roger BETANCOURT and David GAUTSCHI	"The Outputs of Retail Activities: Concepts, Measurement and Evidence", October 1990	90/87 FIN/EP	Lars Tyge NIELSEN	"Existence of Equilibrium in CAPM: Further Results", December 1990
90/76 MKT	Wilfried VANHONACKER	"Managerial Decision Behaviour and the Estimation of Dynamic Sales Response Models", Revised October 1990	90/88 OB/MKT	Susan C. SCHNEIDER and Reinhard ANGELMAR	"Cognition in Organisational Analysis: Who's Minding the Store?" Revised, December 1990
90/77 MKT	Wilfried VANHONACKER	"Testing the Keyck Scheme of Sales Response to Advertising: An Aggregation-Independent Autocorrelation Test", October 1990	90/89 OB	Manfred F.R. KETS DE VRIES	"The CEO Who Couldn't Talk Straight and Other Tales from the Board Room," December 1990
90/78 EP	Michael BURDA and Stefan GERLACH	"Exchange Rate Dynamics and Currency Unification: The Ostmark - DM Rate", October 1990	90/90 MKT	Philip PARKER	"Price Elasticity Dynamics over the Adoption Lifecycle: An Empirical Study," December 1990
90/79 TM	Anil GABA	"Inferences with an Unknown Noise Level in a Bernoulli Process", October 1990			
90/80 TM	Anil GABA and Robert WINKLER	"Using Survey Data in Inferences about Purchase Behaviour", October 1990	<u>1991</u>		
90/81 TM	Tawfik JELASSI	"Du Présent au Futur: Bilan et Orientations des Systèmes Interactifs d'Aide à la Décision," October 1990	91/01 TM/SM	Luk VAN WASSENHOVE, Leonard FORTUIN and Paul VAN BEEK	"Operational Research Can Do More for Managers Than They Think!," January 1991
90/82 EP	Charles WYPLOSZ	"Monetary Union and Fiscal Policy Discipline," November 1990	91/02 TM/SM	Luk VAN WASSENHOVE, Leonard FORTUIN and Paul VAN BEEK	"Operational Research and Environment," January 1991
90/83 FIN/TM	Nathalie DIERKENS and Bernard SINCLAIR-DESGAGNE	"Information Asymmetry and Corporate Communication: Results of a Pilot Study", November 1990			
90/84 MKT	Philip M. PARKER	"The Effect of Advertising on Price and Quality: The Optometric Industry Revisited," December 1990			
90/85 MKT	Avijit GHOSH and Vikas TIBREWALA	"Optimal Timing and Location in Competitive Markets," November 1990			
90/86 EP/TM	Olivier CADOT and Bernard SINCLAIR-DESGAGNE	"Prudence and Success in Politics," November 1990			