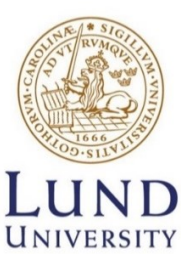

SCHOOL OF ECONOMICS AND MANAGEMENT

Master's Programme in Finance

The Relationship Between the Rights Issue Terms and Post-Issue Stock Price Development in The Short, Medium and Long Term

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Authors:

Jaroslavs Grigoluns & Måns Ingvarson

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Supervisory university professor: Jens Forssbaeck

Supervisory enterprise: Nordea Abp, Corporate and Investment Banking department

Supervisory from Nordea Abp: Harald Strom, Managing Director

Abstract

This thesis investigates the relationship between the terms of rights issues and the subsequent stock price development in the short, medium, and long term within the Nordic markets. Focusing on rights issues conducted by companies in Sweden, Norway, Denmark, and Finland from 2014 to 2024, the study employs an event study methodology to analyze market reactions. Key variables examined include the shares/rights exchange ratio, renounceability, Pari Passu status, discount to the theoretical ex-rights price (TERP), the intended use of proceeds and financial performance factors. The findings reveal that higher shares/rights ratios are perceived negatively, leading to lower cumulative abnormal returns (CARs) due to concerns about dilution. Conversely, the inclusion of Pari Passu clauses positively influences investor confidence by ensuring equitable treatment of new and existing shares, enhancing both short-term and long-term CARs. The research underscores the importance of transparent communication regarding the strategic use of raised capital and suggests that tailoring rights issue strategies to specific market conditions and investor behaviors can optimize outcomes. This study contributes to corporate finance literature by providing evidence-based recommendations for designing effective rights issue strategies that align shareholder interests with corporate goals.

Keywords: Rights Issues, Theoretical Ex-Rights Price (TERP), Discount Pricing, Nordic Markets, Market Conditions, Shareholder Value, Market Response.

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1. Introduction

This study investigates the stock market reaction to rights offerings and examines the terms and conditions on which they occur. Rights issue is a type of equity offering acting as an important financial strategy used by corporations to raise capital directly from their existing shareholders. In a rights issue, companies offer new shares for a limited period, allowing shareholders to purchase additional stock proportionate to their existing holdings. This method not only serves as a mechanism to raise necessary funds but also aims to preserve the interests of existing shareholders by offering them the opportunity to avoid dilution of their ownership. The significance of rights issues lies in their ability to strengthen the company's capital base without incurring the high costs associated with new external equity financing. This approach is particularly beneficial in times of financial stress or when seeking capital for growth opportunities without the pressure of immediate returns required by external equity investors. However, rights issues also present several challenges that can affect both the issuing company and its shareholders. The success of a rights issue is affected by multiple factors characterizing the offering, which are critical in ensuring adequate shareholder participation and sufficient capital mobilization.

All the rights issue terms and parameters are communicated to the investors at the announcement date via the special document (notes) followed shortly by the prospectus. The document communicates to the investors multiple parameters of the issue such as the number of new shares, exchange rates between shares held and rights offered, the size of the discount/premium on the new shares compared to the theoretical ex-rights price (TERP) and many other things as well as planned use of new capital. Market conditions, investor sentiment, and broader economic factors play pivotal roles in shaping the outcome of a rights issue. Special interest has been paid by the industry practitioners and academic researchers to the pricing of the rights issues and the subsequent market reaction. Investor response to rights issues can vary widely, influenced by the perceived

future prospects of the company, offering terms and the general market sentiment at the time of the issue.

The research is conducted by the instrumentality of an event study analysis on the sample of rights issues. Conclusion building has been based on the cross-sectional regression and individual statistical hypothesis tests. The primary objective of this study is to investigate the variables that impact the share price development after the rights offering event.

Following research questions have been addressed within the frame of this study:

I. How do the rights issues influence the short-, medium- and long-term post-issue stock price development?
II. Which numerical and qualitative parameters of rights issues are the most critical in affecting the success of the offering, and what are their impacts on ensuring a successful transaction?

By answering the questions, the study will assess whether different values and offering types correlate with better stock price performance or if they signal negative market perceptions. Understanding these factors will help in formulating recommendations for companies to optimize rights issue strategies under various market scenarios. The fulfillment of these objectives will provide insights into rights issues and offer actionable strategies that companies can adopt to ensure the success of their capital-raising initiatives. This work contributes to the broader discourse on corporate finance by aiming at filling the academic gap and providing evidence-based recommendations that align shareholder interests with corporate goals.

By the request of the supervising institution this thesis specifically investigates large in monetary terms rights issues in the 10-year period (01.01.2014 - 01.01.2024), utilizing proprietary (provided by the charter) and public data (obtained by the authors) for enterprises from Sweden, Norway, Denmark, and Finland. This regional focus provides a comprehensive backdrop to analyze

the impacts of essential transaction variables, and the resulting stock price behaviors in different time periods following rights issues.

With the narrowing extent and coverage of the analysis certain limitations have been outlined. Although the Nordic markets share geographical proximity and similarity across most economic characteristics, they also exhibit distinct differences in several major fundamental qualities, such as economic policies, monetary and legislative authority activities, market conditions, currencies, economic agent behavior patterns and investor profiles. These differences might affect the extrapolation of results across other regions. Quantitative analysis forms the backbone of this study, which may not fully capture the complex investor behaviors and psychological factors that significantly influence the outcomes of rights issues. Moreover, global financial crises, significant regional economic shifts or any other external macroeconomic factors are beyond the scope of this study but can have a substantial impact on rights issues outcomes. These factors introduce a level of unpredictability that may affect the validity of the findings outside the study period.

This study which investigates the impact of rights issues on stock performance over short-term (±1 day and ±5 days), medium-term (+180 days), and long-term (+540 days) periods, found that the inclusion of Pari Passu clauses, shares/rights ratio, issue size in terms of money and new shares, significantly affect cumulative abnormal returns (CAR) in the aftermath of the announcement date. Additionally, changes in key financial metrics also influence CAR. Overall, the findings of this study highlight the importance of managing dilution perceptions and ensuring equal treatment of new and existing shares to maintain investor confidence.

2. Theoretical Framework

2.1. Introduction to Theoretical Foundations

The theoretical foundation of this study centers on the analysis of rights issues. As articulated by Burridge (1981), rights issues can involve complex legal and ethical considerations, which are crucial for ensuring compliance and avoiding any legal repercussions associated with wrongful rights issues. Additionally, the financial details of rights issues are illuminated by Armitage (2007), who discussed the significant hidden costs associated with discounts in the placement of pre-renounced shares due to market uncertainty and inelastic demand, emphasizing the strategic challenges these discounts pose to both issuers and shareholders. Moreover, the anomalies related to the ex-rights day provide a deeper understanding of market reactions and the potential for arbitrage, as explored by Merdi (2012) in his analysis on the Swedish stock market. Merdi's study, which examined stock price behavior from four days before to four days after the ex-right date, underscored the importance of timing and market perception in the success of rights issues. Finally, the paper by Armitage (2012) delved into the returns during seasoned equity offers (SEO) providing a broader perspective on how these financial instruments perform post-issuance, offering insights into long-term value creation and potential impacts on shareholder wealth. This section will explore several theoretical perspectives to provide a deeper understanding of the factors influencing the structure and success of rights issues, guiding the empirical analysis in subsequent chapters.

2.2. Theoretical Perspectives

The exploration of rights issues in the academic financial literature reveals theoretical insights that underscore the complexity and strategic distinctions between different sub-types of equity offerings. At the heart of this, is the work by Brennan and Kraus (1987), who emphasized the challenges of financing under conditions of asymmetric information, a theme that pervades much of the literature on corporate finance mechanisms including rights issues. Significantly, Armitage (1998) provided a fundamental review of the seasoned equity offers and rights issues, underscoring the critical nature

of market timing and the conditions under which companies elect to issue equity. This is complemented by Eckbo and Masulis (1992) who delved into the adverse selection problem inherent in rights offerings, explaining the so-called "rights offer paradox" where companies often face unfavorable terms despite the supposedly pro-shareholder nature of these offerings.

Furthermore, the role of large shareholders in influencing rights issue outcomes is critically examined by various studies. Research indicates that ownership concentration can have both positive and negative effects depending on the shareholders' risk aversion and long-term vision. For example, La Porta et al. (2000) suggested that investor protection and corporate governance significantly impact the outcomes of financial strategies. This analysis is resonated by Giudici and Paleari (2000), who assessed the impact of institutional investors on the pricing and performance of rights issues, pointing to a nuanced understanding of market behaviors and investor influence.

Moreover, Myers and Majluf's (1984) model of corporate financing decisions introduced the pecking order, which helps to explain why companies might prefer rights issues over other financing options under certain conditions, further illustrating the complexity of strategic financial decision-making. Together, these theories and studies provide a framework for understanding the varied scopes of rights issues, from market dynamics and investor behavior to corporate strategy and regulatory impact, forming a solid theoretical foundation for further empirical investigation.

2.3. Theories and Hypotheses

Rights issues is a much less extensively studied field related to corporate financing decision than debt funding and seasoned equity offerings. The repercussions of rights offerings, especially its terms, on price performance after the event, are not clear. Following theories and corresponding hypotheses seeking to address the outlined question have been assembled in order to build an understanding and to form likely explanation/expectation of the market reaction to the rights offering and their terms.

2.3.1. Efficient market hypothesis

The cornerstone theory of most of the finance – efficient market hypothesis (EMH) based on the series of works by Fama (1965, 1970, 1991) suggested that markets should quickly and accurately incorporate any new information that becomes available. The speed and precision of the adjustment is dependent on the form of efficiency prevailing in the market. Fama (1970) outlined 3 forms of market efficiency: strong, semi-strong and weak. Forms are ordered in the decreasing order of the amount of information that is built into the price as well as how quickly it is dispersed. A set of unrealistic and simplifying assumptions related to the types of information and corresponding costs attributable to the strong form of market efficiency led to the selection of semi-strong type as the most likely way of explaining how markets operate. Due to the fact that rights issue announcement date is the first official moment when investors learn about the offering as well as its terms and structure, EMH suggests that any price changes should occur at that date immediately. Speed of adjustment depends on the ease with which rights can be trades, in this regard, renounceability status of the rights issue plays an important role.

2.3.2. Information Asymmetry

Any capital mobilization form implies interaction between two parties, borrower and lender. Due to the natural differences in objectives paired with possession of the unequal amount of information by both sides a conflict of interests arises. Myers and Majluf (1984) found that companies issuing new equity provide a signal of confidence in future prospects suggesting that management believes the shares are undervalued. This is only possible if there is no spilling of this knowledge into the market before the announcement which is possible under the previously accepted for this work semi-strong form of EMH. Smith (1986) together with Masulis and Korwar (1986) concluded that if the issue is unanticipated the announcement would be that spilling, leading to the price adjustment downward resulting in negative abnormal returns as the investors reassess the firm value.

2.3.3. Price Pressure Hypothesis

Separation of short and long-term effects of equity offerings is of particular interest for authors and the chartering institution. Scholes (1972) and Wurgler and Zhuravskaya (2002) found that increased supply of new shares that might not be reflected by equally large demand expansion might lead to the temporary share price decline. However, in the long-term share price should mirror the underlying fundamentals of the firm value (Scholes, 1972). Rights issue size (both in relative and absolute terms) is one of the key factors communicated to the investors at the announcement date as the total number of shares offered is a sign of how much the company needs and wants to get.

2.3.4. Wealth Transfer Hypothesis

Any financing activity results in change of ownership structure and transfer of wealth. Although the objective of the rights issue is preservation or minimization of negative repercussions of new equity offering, the terms on which it happens play a pivotal role in making rights issue either good or bad at fulfilling this objective. Smith (1977) found that right offerings tend to protect existing shareholders' interests better than underwritten offerings, but the price, the amount, the timing and additional factors at the disposal of the offer structurer and term writer still can influence the distribution of wealth between new and old investors. Asquith and Mullins (1986) together with Masulis and Korwar (1986) detected a fall in the share price partly due to the wealth transfer effects following the SEOs, similar effect is anticipated for issues with significant dissimilarities between the characteristics of the new share (dissatisfaction of Pari Passu principle).

2.3.5. Pecking Order Theory

Rights issues are not the only way money can be obtained by the firm. It is unclear how to place rights issues within the capital funding hierarchy proposed by the pecking order theory. Although Myers and Majluf (1984) placed equity issues below internal funds, as firms prefer to utilize internal funds before resorting to external financing options to minimize information asymmetry and adverse

signaling effects. Consequently, the right issues might occupy the place above the debt as they allow firms to raise equity capital without incurring additional financial obligations or constraints associated with debt (Myers and Majluf, 1984). Nevertheless, the location of the sample in the period of very low interest rates might affect this positioning. Myers and Majluf (1984) suggested that equity offerings (and therefore, rights issue as well) are typically viewed negatively by the market as they might be interpreted as a signal that either (or both, depending how to order) internal sources and debt capacity are insufficient and exhausted – bringing the price down. In general, based on pecking order, stock performance following the rights announcement is anticipated to mimic the one of a conventional SEO.

2.3.6. Market Timing Hypothesis

Financial markets are not constant, investors' sentiment and prices change, managers might make use of particular market conditions to take advantage of the situation. Baker and Wurgler (2002) concluded that firms issue equity when their stock is overpriced, leading to more favorable financing terms and subsequent decline in the stock price as market corrects the overvaluation later. This conclusion is backed by Graham and Harvey's (2001) survey of 392 Chief Financial Officers showing that market timing is a significant factor in capital structure decisions. The research by Loughran and Ritter (1995) found that companies issuing new equity experience long-term underperformance, which suggests that these firms might have been overvalued at the time of the issue, thus, bringing the price post announcement down and keeping at the new lower level later.

2.3.7. Investment Opportunities Hypothesis

Companies encounter profitable investment opportunities such as expansion through acquisitions or internal research and development projects. To perform them firms might need money beyond internal funds and debt. Rights offerings provide firms with means to obtain additional capital from existing shareholders without incurring more debt or diluting ownership through public offerings. This allows firms to finance investment opportunities while maintaining control and financial

flexibility. Myers (1984) emphasized the role of equity in situations where debt capacity is constrained or where management seeks to avoid financial distress. Stulz (1990) focused on managerial discretion in deciding financing policies. While these works do not explicitly address the stock performance in the aftermath of the issues, thesis authors expect some effect of the use of proceeds and the time it takes for the investment opportunity to pay back (if at all) on the price. Consequently, an initial stock fall in the short term followed by the improvement in the long(er) term is expected.

Table 1. Consolidated theoretical expectations.

Theory	**Expected effect of the rights issue on price performance**			**Main contributing factor**	**Main rights issue term under effect**
	ST	**MT**	**LT**		
Efficient market hypothesis	Fall	Uncertain	Adj. to normal	Ease and speed of trading	All, especially Renounceability Price (Discount) Issue Size
Information Asymmetry	Fall	Uncertain	Adj. to normal	(Old/new) shares equality, value dilution/loss effect	Pari Passu
Price Pressure Hypothesis	Fall	Uncertain	Adj. to normal	Supply/demand interplay, liquidity effects	Issue Size
Wealth Transfer Hypothesis	Fall	Adj. to normal	Adj. to normal	(Old/new) shares equality, value dilution/loss effect	All terms, especially Pari Passu
Pecking Order Theory	Fall	Uncertain	Adj. to normal	Other financing alternatives.	Price (Discount)
Market Timing Hypothesis	Fall	Uncertain	Adj. to normal	Particularity of market conjuncture	All terms
Investment Opportunities Hypothesis	Fall	Uncertain	Adj. to normal	Why new capital needed, its use	Use of proceeds

2.4. Core Concepts and Definitions

This section defines the fundamental terms critical to understanding the dynamics of rights issues within financial markets.

Key Dates in Rights Issues

Illustration 1. Rights offering timeline and major period length (sample based). Numbers 1-7 and periods A and B are explained in Table 2.

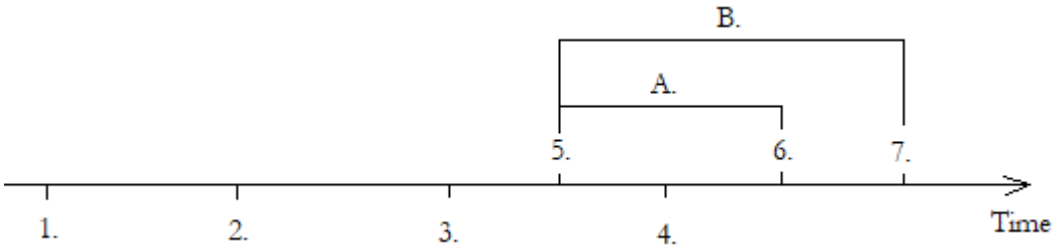


Table 2. Rights offering date and period definitions.

Nr	Date	Definition
1.	Announcement Date	The day when the rights issue is publicly announced to the market, signaling the beginning of the event study period.
2.	Ex-Date	The first trading day the shares are available without entitlement to the rights issue.
3.	Record Date	Date on which the company considers holders of the security, at the close of trading, as being entitled to the rights distribution. Only those registered by this date can purchase new shares at the subscription price.
4.	Pay Date	Date on which holdings statements are issued to shareholders. This marks the point when the capital raised begins to impact the company's financial statements.
5.	Subscription period beginning	Date on which investors are able to commit to purchasing the offering.
7.	Subscription period ending	Date after which investors are no longer able to commit to purchasing the offering.
5.	Trading period beginning	Date on which rights start trading separately as a standalone security.
6.	Trading period beginning	Date after which rights are no longer trading separately, purchased shares are combined with existing shares.

A.	Subscription Period	The time-window during which shareholders can exercise their rights to buy new shares at a set price, generally at a discount to incentivize participation.
B.	Trading period	Period in which rights are trading separately as a standalone security. In some jurisdictions, rights can be traded separately from the underlying stock. This allows shareholders who opt not to subscribe themselves to sell their rights to others who wish to increase their holdings.

Source: Bloomberg Finance L.P. (2024)

Table 3. Rights offering terms.

Factor	**Definition**
Issue renounceability status	Indication of whether subscription rights are separately tradable on the market during the trading period.
Issue Pari Passu status	Indication of whether shares in the rights offer have exactly the same rights and privileges as the existing shares.
Rights offering subscription price	The price by which new shares can be purchased by shareholders for rights. This is a static price which is the same for all shareholders.
Shares/Rights exchange ratio	The amount of new shares that can be acquired for each existing share held.
Total Shares offered Amount to be raised	Total amount of shares being offered for the rights offering The value of the rights offering to be raised.
Use of proceeds	The way how new capital is planned to be used.
Discount to TERP	Discount to the weighted average between the spot price and the subscription price which represents the theoretical share price of the company after the transaction.

3. Literature Review

3.1. Economic Rationale for Offering Terms and Their Impact on Post-Issue Price Development

3.1.1. Renounceability

In the broadest term, there are three options for the investor to act during the rights issue:

1) Ignoring the issue and not buying the shares – ownership diluted.
2) Subscribing to the issue and acquiring the right for himself – ownership preserved.
3) Subscribing to the issue and trading the rights separately as standalone securities – ownership diluted, but profit is generated once the rights are sold.

The fact that the issue is renounceable, i.e., the shareholders can choose between aforementioned options has been researched by Armitage (2000). Armitage found that renounceable right issues tend to perform better in the post-issue period compared to non-renounceable issues. This positive performance is explainable by two factors Firstly, renounceable rights are perceived more positively by the market because they offer shareholders more flexibility. Secondly, renounceable issues often have higher shareholder participation, as shareholders who do not wish to or cannot exercise their rights can sell them, allowing others to buy and exercise them. Similar conclusions have been reached by Kothare (1997) which found that enhanced participation due to renounceability status helps in maintaining or heightening investor confidence and mitigates adverse price effects usually associated with equity issuance.

3.1.2. Pari Passu

Corporate management might decide to change the characteristics of the new shares resulting in them being unequal in their qualities to already outstanding ones, thus, violating Pari Passu principle. According to the Armitage (2000) ensuring new shares are Pari Passu with existing shares, can help maintain investor confidence by preventing concerns about dilution or unequal treatment, which

can otherwise negatively affect stock performance. Closely related findings have been obtained by Smith (1977) and Eckbo et al. (2000) who concluded that Pari Passu status helps to maintain the proportional ownership, voting power and dividend rights of existing shareholders, reducing the perceived risk of value loss. This leads to a more favorable market reaction compared to scenarios where new shares might have inferior rights.

3.1.3. Shares to Rights

Every prospectus specifies how many preferential rights to subscribe to new shares are being granted per existing share. Kothare (1997) indirectly connected this ratio to stock liquidity, as more shares attract a broader investor base and may lead to increased trading activity, which enhances liquidity and lower the oversubscription risks. Heinkel and Schwartz (1986) on the other hand, considered that lower shares/rights ratio may help to mitigate adverse selection concerns and contribute to more favorable stock performance post-issue by reducing the perceived negative signaling effect of the offering.

3.1.4. Issue size

The size of the issue is specified through the maximum number of new shares to be offered providing two possible measures of how big the rights issue is:

1) Offered / Outstanding shares
2) Amount to be raised / Market Capitalization

Both ratios communicate similar information – how much new equity capital is being planned to mobilized by the management. Works by Faulkender and Petersen (2006) as well as Molina (2005), while being focused on corporate bonds, offered insights into equity funding as well. The amount to be raised relative to market capitalization may indirectly influence investor perceptions and market reactions to equity issuances similarly to how they affect debt issuances. They suggested that firms issuing equity in amounts disproportionately big to their market capitalization may face greater

scrutiny from investors and potentially experience disbelief regarding to firm's financial health, management quality, and transparency, thereby influencing market reactions post-issue. Loughran and Ritter (1995) documented that, on average, newly issued shares underperform in the long run compared to seasoned shares. This phenomenon is known as the "new issues puzzle" and has been widely studied in finance literature. In the context of this thesis this might suggest that larger offering will result in larger underperformance in the aftermath of the rights offering.

3.1.5. Use of proceeds

Large part of the prospectus or announcement document is devoted to the management explanations of why the company needs the capital and how it will be used to the firm's benefit. There is no corresponding research that would build the view on how the proceeds utilization affects performance due to the large variability of reasons and their grouping difficulties. Brav and Gompers (1997) examined Initial Public Offerings (IPOs) and found that proceeds from IPOs may indirectly influence stock performance post-issue through its impact on firm operations, growth opportunities, and shareholder perceptions. This conclusion can be applied to the rights offerings as well, meaning that it does not actually matter for the average investor on how exactly the funds are going to be used as long as the reason is well justified resulting in turn in positive investor outlook.

3.1.6. Discount size

Discount size (see definition in Table 3.) is the key point of interest for the chartering financial institution due to its perceived significance in determining the corporate wellbeing after the issue, that is why more attention will be paid on this aspect of the rights issue. Usually, but not always, new shares are offered at a discount, this strategy is favored because of the two main reasons. Firstly, it enables absorption of potential market and share price volatility that can impact the share price during the subscription period. Secondly, subscription rights with a higher nominal value tend to trade more efficiently than subscription rights with a lower nominal value.

and ensures that existing shareholders are given the opportunity to maintain their proportional ownership, avoiding dilution of control (Nordea Abp 2024). According to Myers and Majluf (1984), when firms have information that investors do not have, they prefer internal financing to avoid the adverse selection problem associated with new external equity. Rights issues are perceived as less information-sensitive compared to public offerings because they signal to the market that insiders, who are better informed, are willing to invest more capital into the company. The size of the discount in a rights issue plays a crucial role not purely economically, but through its acceptance by existing shareholders. Larger discounts can compensate for the *perceived* risk of potential dilution by the new investments. Dann and Mikkelson (1984) explored the negative stock price reactions to announcements of convertible debt issuances, highlighting parallels with rights issues where significant discounts are needed to counter market uncertainty and inelastic demand due to behavioral aspects and signaling corporate strategies to the market. In contrary, according to Eckbo and Masulis (1992), larger discounts in rights issues can be perceived negatively as they might reflect internal issues or pessimistic outlooks by the company's management. On the other hand, the findings of Bacon (1972), suggested that while financial managers might be overly concerned with underpricing, increasing the size of the discount does not adversely affect stock performance in the short run and might actually improve it.

3.1.7. Relation to Share Price Development

The impact of the discount size on post-issue stock price development is anticipated to be significant. Discounts are intended to make the offer attractive to shareholders but can also lead to varying interpretations by the market. A substantial discount might be necessary in times of market volatility or when the company's future outlook is uncertain. However, Marsh (1979) found that such discounts often result in an immediate decline in share prices due to perceived desperation or negative signals about the company's valuation. Balachandran et al. (2008) further supported this view by indicating that the perceived quality of a firm and the market's reaction to the rights issue

can vary significantly based on the size of the discount. They found that rights issues with lower subscription price discounts and higher shareholder take-up rates mitigate negative price responses.

In the short term, discounts typically lead to increased interest and participation in the rights issue, potentially boosting the stock price temporarily. However, the medium- and long-term effects are more variable and depend on how the market reassesses the company's value after the dilution and capital increase are absorbed. Heinkel and Schwartz (1986) provided a theoretical model suggesting that firms use subscription prices in rights offers to signal their quality. High-quality firms are willing to set subscription prices that credibly disclose their quality in a dissipative signaling equilibrium. Pham and Yuen (2017) highlighted the role of short selling during rights offerings. They suggest that increased short selling activity can put downward pressure on stock prices, particularly when rights issues are perceived as opportunities for informed investors to exploit information disadvantages of less informed shareholders. Korajczyk et al. (1990) discussed how market conditions at the time of the issue – such as investor sentiment and macroeconomic factors – play a critical role in determining whether the initial positive response to a discount is sustainable. They also found that in stable or bullish markets, moderate discounts are often viewed favorably, leading to a positive short-term price adjustment. Conversely, in bearish or volatile markets, even reasonable discounts can be perceived with skepticism, potentially leading to negative price movements.

Over the longer periods the effect of rights issue discounts on stock prices tends to be more nuanced and is influenced by how the raised capital is employed. Strategic investments that enhance the company's long-term profitability can help mitigate the initial dilutive impact of a rights issue, leading to improved stock performance. Brav et al. (2000) analyzed the long-term performance of firms after equity issuances and find that companies often exhibit return patterns that are part of systematic price movements. Their study suggests that effective communication and strategic use of proceeds can lead to more stable or positive stock price developments post-issue.

Kabir and Roosenboom (2003) found that the relative offer price, i.e., the subscription price relative to the market price, is significantly related to stock return and operating performance. Larger discounts to the market price are associated with larger declines in performance. This suggests that setting an appropriate subscription price is important. Giudici and Paleari (2000) advocated that institutional investors, who are typically more focused on long-term gains, may respond differently to discounts compared to retail investors, who might be more attracted to short-term opportunities. This difference can affect the stock's price stability and performance in the months following the issue.

Marsh (1979) found that in highly liquid markets, the size of the rights issue may not significantly impact stock returns, suggesting that the market can absorb new equity without significant price pressure. This finding is critical in understanding that while larger issues might intuitively seem to cause greater dilution and more substantial stock price declines, they might not always result in adverse outcomes.

3.2. Dilution Effect and Its Implications on Stock Prices

Rights issues inherently involve the dilution of existing shares, which can have an adverse effect on share prices if not managed carefully. The extent of this dilution is often mitigated by the discount offered, which aims to balance the interests of existing shareholders and the need for capital. Brennan and Kraus (1987) argued that the structure of the rights issue, especially the size of the discount, can influence how dilution is perceived by the market. If the dilution is seen as excessive relative to the benefits of the capital raised, the stock price may suffer in the medium term. Conversely, if the dilution is perceived as necessary for strategic growth that could yield future profits, the negative impact on stock prices can be minimized.

An important aspect is how well the company communicates its reasons for the dilution and uses the capital raised. Heinkel and Schwartz (1986) noted that firms do not always set low subscription prices for uninsured rights offers, despite the potential dilution effect. This behavior is

understood as a signal to convey firm quality, as setting too low a price could be seen as a negative signal. Empirical research into the medium- and long-term impacts of share dilution following rights issues suggests that the strategic management of these events, including shareholder communications and financial decision-making, plays a crucial role in influencing stock price performance. Effective communication that clearly outlines the strategic rationale for equity dilution can help mitigate negative perceptions and stabilize stock prices post-issue.

Moreover, the relationship between share dilution and stock price performance is shaped by various factors including market conditions and the investor base composition. Markets dominated by institutional investors tend to exhibit less price volatility following rights issues. This is attributed to institutional investors' focus on long-term gains, which shields short-term dilutive effects. The theoretical frameworks by Bhattacharya (1979) supported these observations by highlighting the signaling role of financial decisions in environments of imperfect information. Transparent communication regarding the use of raised funds and strategic goals reassures investors, potentially stabilizing the stock's market performance in the aftermath of a rights issue.

Kabir and Roosenboom (2003) emphasized that the timing and length of the subscription period can significantly affect trading activity and stock price performance. Their research indicates that stock prices decline significantly upon the announcement of rights issues and that rights are actively traded throughout the subscription period, with trading peaking towards the end. This active trading and well-timed subscription periods can help manage market reactions and stabilize stock prices, despite the observed long-term decline in operating performance of firms conducting rights issues.

3.3. Comparative Analysis of Rights Issues in Different Market Environments

Variation in Rights Issue Mechanisms

Rights issues are subject to a wide range of regulatory environments, which shape how they are structured and perceived across different markets. In the U.S., where securities regulation is robust

yet flexible enough to accommodate rapid corporate actions, rights issues may be structured with more aggressive timelines and potentially smaller discounts. Helwege et al. (2007) noted that this flexibility can lead to quicker market adjustments and less pronounced price volatility post-issue. In contrast, European markets (to which this research's sample data belongs) are characterized by stricter regulatory oversight and longer procedural timelines for rights issues, which can influence the size of the discount offered. These factors often lead to a more cautious approach by companies, aiming to ensure broad shareholder acceptance and minimize market disruption. Ritter and Welch (2002) explored how these differences affect investor response, noting that European investors may perceive rights issues with larger discounts as more equitable and less risky due to the extended review and approval processes.

Impact of Regulatory Environment on Discounts and Pricing

The regulatory quality and investor protection standards in a market significantly affect rights issue pricing strategies. Studies show that in markets with higher regulatory quality, companies tend to offer smaller discounts due to higher market transparency and investor protection, which reassures investors about the fairness and potential value of the rights issue, thereby stabilizing post-issue stock prices (La Porta et al., 2000). Conversely, in markets where regulatory frameworks may be less developed, larger discounts are common to compensate for higher perceived risks and lower levels of investor confidence (Hess et al., 2010).

Cross-Market Comparisons of Investor Behavior

Investor behavior also varies significantly with market maturity and cultural factors. In Asian markets, for example, where retail investment is prevalent, rights issues often feature larger discounts to attract direct participation from a broader investor base. This strategy is linked to cultural preferences for direct ownership and involvement in investment decisions. Loughran and Ritter (2004) discussed how these cultural factors can lead to different pricing strategies and market reactions in Asian versus Western markets.

3.6. Implications and Conclusion

By investigating a range of studies – from foundational theories about rights issues and investor behavior to nuanced analyses of dilution effects and regulatory impacts – the review aims to set a solid basis for this research. However, it is important to note that no previous research directly parallels this study, making direct comparisons challenging. The specific focus on the relationship between the size of the discount in rights issues and post-issue stock price development lacks numerical confirmations. Furthermore, variables such as Pari Passu clauses, renounceability, the ratio of outstanding shares held to new subscription rights granted, and the value issued relative to market capitalization have not been studied in the same manner in prior research. Despite this gap, the findings of this study can still be contextualized within the broader framework of existing research on rights issues, which will be further elaborated in subsequent chapters. The examination of different market environments further enriches the understanding, illustrating how regulatory frameworks and cultural factors influence rights issue outcomes globally. Such insights are valuable for framing the empirical component of the research, which will explore specific cases and market data to derive nuanced understandings of how these dynamics play out in varied contexts. By doing so, it ensures that such strategies are optimally designed to enhance shareholder value, providing actionable insights for corporate managers to navigate the complexities of rights issues effectively. Ultimately, this study seeks to bridge the gap in the literature by providing a comprehensive analysis of the underexplored variables and their impacts, thereby contributing to a more thorough understanding of rights issues and the relationship between these variables and share price development.

3.7. Hypotheses

Authors are completely aware of the downsides of the statistical research aimed at testing multiple hypotheses on the same dataset described amongst others by Yoav and Hochberg (1995). While understanding that the results are accompanied by the elevated likelihood of committing Type I

error, nevertheless, examination of the preceding academic research paired with requests of the supervisory institution to investigate rights issue characteristics resulted in following set of relationships to be studied as well as corresponding hypotheses to test.

For separate hypothesis tests

Effect of **renounceability** on share price abnormal return within the specified time-window (ST, MT, LT).

H0: [$\overline{\mathbf{SCAR}}(\tau_1, \tau_2)$ | Renounceable] = [$\overline{\mathbf{SCAR}}(\tau_1, \tau_2)$ | not Renounceable]
HA: [$\overline{\mathbf{SCAR}}(\tau_1, \tau_2)$ | Renounceable] ≠ [$\overline{\mathbf{SCAR}}(\tau_1, \tau_2)$ | not Renounceable]

Effect of **Pari Passu clause** on share price abnormal return within the specified time-window (ST, MT, LT).

H0: [$\overline{\mathbf{SCAR}}(\tau_1, \tau_2)$ | Renounceable] = [$\overline{\mathbf{SCAR}}(\tau_1, \tau_2)$ | not Renounceable]
HA: [$\overline{\mathbf{SCAR}}(\tau_1, \tau_2)$ | Renounceable] ≠ [$\overline{\mathbf{SCAR}}(\tau_1, \tau_2)$ | not Renounceable]

Effect of **use of proceeds** on share price abnormal return within the specified time-window (ST, MT, LT).

H0: [$\overline{\mathbf{SCAR}}(\tau_1, \tau_2)$ | Offensive] = [$\overline{\mathbf{SCAR}}(\tau_1, \tau_2)$ | Defensive]
HA: [$\overline{\mathbf{SCAR}}(\tau_1, \tau_2)$ | Offensive] ≠ [$\overline{\mathbf{SCAR}}(\tau_1, \tau_2)$ | Defensive]

Effect of **shares / rights ratio** on share price abnormal return within the specified time-window (ST, MT, LT).

H0: [$\overline{\mathbf{SCAR}}(\tau_1, \tau_2)$|Shares/Rights <1] = [$\overline{\mathbf{SCAR}}(\tau_1, \tau_2)$|Shares/Rights >=1]
HA: [$\overline{\mathbf{SCAR}}(\tau_1, \tau_2)$|Shares/Rights <1] ≠ [$\overline{\mathbf{SCAR}}(\tau_1, \tau_2)$|Shares/Rights >=1]

Effect of **value of shares issued / market capitalization** on share price abnormal return within the specified time-window (ST, MT, LT).

H0: [$\overline{\mathbf{SCAR}}(\tau_1, \tau_2)$|Value issued/Market capitalization < 0.5] = [$\overline{\mathbf{SCAR}}(\tau_1, \tau_2)$ | Value issued / Market capitalization >=0.5]
HA: [$\overline{\mathbf{SCAR}}(\tau_1, \tau_2)$ | Value issued / Market capitalization < 0.5] ≠ [$\overline{\mathbf{SCAR}}(\tau_1, \tau_2)$ | Value issued / Market capitalization >=0.5]

Effect of **number of shares issued / market capitalization** on share price abnormal return within the specified time-window (ST, MT, LT).

H0: [$\overline{\mathbf{SCAR}}(\tau_1, \tau_2)$ | Number issued / Outstanding shares < 0.5] = [$\overline{\mathbf{SCAR}}(\tau_1, \tau_2)$ | Amount issued / Outstanding shares >=0.5]
HA: [$\overline{\mathbf{SCAR}}(\tau_1, \tau_2)$ | Number issued / Outstanding shares < 0.5] ≠ [$\overline{\mathbf{SCAR}}(\tau_1, \tau_2)$ | Amount issued / Outstanding shares >=0.5]

Effect of **discount to TERP** on share price abnormal return within the specified time-window (ST, MT, LT).

H0: [$\overline{\mathbf{SCAR}}(\tau_1, \tau_2)$ | Discount to TERP < 0.5] = [$\overline{\mathbf{SCAR}}(\tau_1, \tau_2)$ | Discount to TERP >=0.5]
HA: [$\overline{\mathbf{SCAR}}(\tau_1, \tau_2)$ | Discount to TERP < 0.5] ≠ [$\overline{\mathbf{SCAR}}(\tau_1, \tau_2)$ | Discount to TERP >=0.5]

Broader look, effect of **discount/premium to TERP** on share price abnormal return within the specified time-window (ST, MT, LT).

H0: [$\overline{\mathbf{SCAR}}(\tau_1, \tau_2)$ | Discount to TERP] = [$\overline{\mathbf{SCAR}}(\tau_1, \tau_2)$ | (Par)Premium to TERP]
HA: [$\overline{\mathbf{SCAR}}(\tau_1, \tau_2)$ | Discount to TERP] ≠ [$\overline{\mathbf{SCAR}}(\tau_1, \tau_2)$ | (Par)Premium to TERP]

Chosen cutoff points for the hypotheses are based on the properties of the sample and chosen for higher testing power.

For cross-sectional regression

Table 4. Rights issue terms and their hypothesized relationships with price.

Factor	Hypothesized relationship
Issue renounceability status	Renounceability reduces the negative impact of dilution as shareholders who do not wish to participate can monetize their rights instead of losing value – mitigates the fall of a share price.
Issue Pari Passu status	Softens share price drop in ST as there is no disadvantage to holding the new shares compared to the old one – mitigates the fall of a share price
Rights offering subscription price	A larger discount leads to higher immediate take-up but can also signal financial distress, potentially suppressing short-term stock prices.
Shares/Rights exchange ratio	Higher ratios (e.g., 1:1) lead to more significant dilution, which can affect stock prices negatively if the market perceives it as a signal of financial trouble.
Total Shares offered	Large number of new shares increases dilution. The market reaction will depend on the perceived use of the raised capital and the company's financial health.

Amount to be raised	Larger amounts can be seen as a sign of greater need for capital, which might impact market perception and stock prices depending on the context and use of funds.
Use of proceeds	Better justified and credible reasoning will earn more trust. Depending on the use of funds announcement date can become a "revelation" day for previously unknown to the public management plans either boosting or suppressing the stock.
Discount to TERP	Although in theory the discount to TERP in a rights issue should not have any direct economic impact on the company's shareholders their sentiment changes leading to the negative short-term performance.

4. Methods & Procedures

4.1 Research Approach

This thesis operates within the frame of deductive research method formulating hypotheses grounded in established theories and empirical studies. The current state of academic research surrounding rights issues, as well as utilized econometric models, was collected to answer the research question. Hypothesis formulation for the investigation in the field of the rights issue terms and issuing enterprise characteristics was based on two principally different and separately existing sources of interest:

1. Collegiate inquiry of the university research facility;
2. Occupational inquiry of the industry employed professionals.

Deductive approach has been selected since, nevertheless, the research topic is not completely new, existing knowledge is constrained by numerous limiting factors such as rarity, reciprocal contradictions, high level of geographical and time fragmentation, absence of overarching and exhaustive findings, leading to the lack of general consensus on the topic. Instead, this research paper contributes with insights based on a new sample, time period, and region to complement already established research allowing for academic novelty and extension of erudition in this frame of reference.

Due to the reason that the established objective is to draw inference pertaining to the stock performance a natural choice of a quantitative approach was adopted implying that conclusions of this research are based on econometric tests and models of abnormal returns on the characteristics of interest. Selected research approach is also similar to that of previous publications, which positively affects the level of result comparability and generalizability of the conclusions.

4.2 Research Design

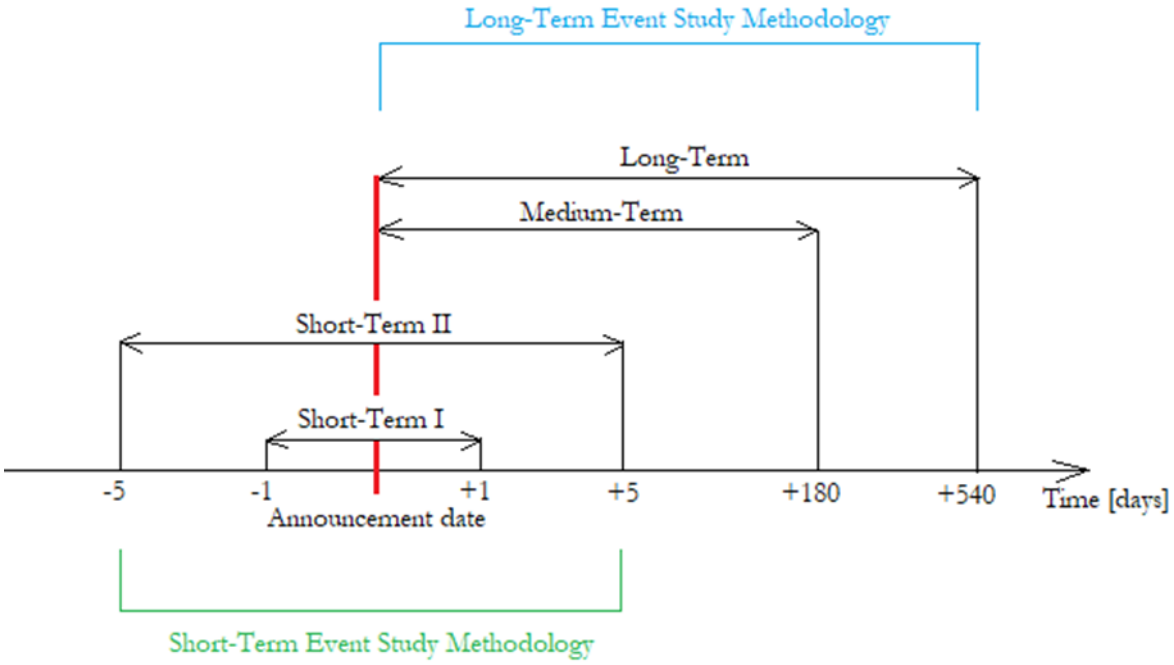
Utilized research design is structured to systematically investigate the effect of rights issue terms on stock performance succeeding the announcement date across three distinct time windows: short-, medium-, and long-term. The design encompasses the specific methods and procedures used to collect, process, analyze, and interpret the data, ensuring that the study is rigorous and reproducible.

4.2.1 Event date specification

Following reasons have led to the choice of announcement date as the event date in the analysis. Firstly, it is the announcement date when the company publicly discloses its intention and communicates to the market the terms at which a dividend of subscription rights to its already existing shareholders to buy additional new shares will be conducted. This announcement contains new (assuming absence no leakage) information that is expected to have an immediate (assuming semi- or strong market efficiency hypothesis) impact on the market, leading to price adjustments. Secondly, market participants, including investors and analysts, react swiftly to new information, adjusting their expectations and trading decisions accordingly. The announcement date captures the initial market response to the rights issue, providing valuable insights into investor sentiment. Thirdly, companies are required by regulatory authorities to disclose material information promptly to ensure transparency and fairness in the financial markets. The announcement date serves as the official disclosure date, aligning with regulatory requirements and industry standards. Lastly, using the announcement date as the event date is a standard practice in event studies across previous research. This consistency facilitates comparability across studies and enhances the validity of the findings.

For better output reliability and consequent output comparability recommendations by Barber et al. (1997) and Fama (1998) have been implemented resulting in following methodological differences between the analysis of different time-windows:

Illustration 2. Time-windows and chosed event-study method.



4.2.2 Event window specification

The justification for the time-window separation is based on the willingness to investigate both immediate and lasting effects of the rights issues on the share price of the issuing enterprise and involved establishing following 3 periods

Short term window - evaluation of the instantaneous effect during the time immediately preceding and succeeding the rights issue announcement and terms' publication date. This evaluation is conducted over two periods.

- 3-day window, from stock exchange opening 1 day before to stock exchange closing 1 day after the announcement. The immediate reaction to a rights issue announcement is often rapid and pronounced. Using a ±1 day window allows to capture the incremental market response, including any sudden price adjustments or volatility spikes. So narrow window suffers from the minimized effect of interfering and overlapping events - noise diluting the effect of the event of interest and deterring from qualitative isolation of the rights issue impact on the share price as shown by Binder (1998).

- 11-day window, from stock exchange opening 5 days before to 5 stock exchange closing days after the announcement. Within the frame of the short-term period analysis authors yet acknowledge existence of time lag and inability of economic agents to perfectly absorb and incorporate all newly available information in the share price, therefore ±5 days window has been added. Extending the short-term window to ±5 days offers a slightly broader perspective, allowing for a more nuanced analysis of short-term price dynamics. This longer window accommodates market reactions that may take a few days to fully materialize, such as delayed information processing or trading adjustments by institutional investors (accounting for calendar differences and information dissemination lags). As outlined by Brown, Warner (1985) the practical advantage of narrow window is the ability to capture more comprehensive short-term trends and mitigate potential noise or anomalies in daily price movements.

Following MacKinlay (1997), both short-term sub-periods have been extended to include a pre-event window to account for possible information leakage, which ensures that any price adjustments due to information becoming available to some investors before the official announcement are captured.

Medium-term window - evaluation of intermediary effects of the rights issue beyond the immediate market reaction. The theoretical advantage of studying this period is the ability to observe how market participants gradually incorporate new information into their valuation models, leading to more informed investment decisions.

- 180-day window from stock exchange opening at the announcement day (or at the first trading day if announcement happened at the weekend or a holiday) to stock exchange closing 181 days after. It provides a sufficient timeframe to capture medium-term trends in stock performance, including price adjustments, trading volume patterns, and changes in market sentiment. This duration also facilitates comparative analyses across different market

conditions and allows for robust statistical tests to evaluate the significance of medium-term abnormal returns.

Long-term window - evaluation of the prolonged effect extending over 1 accounting period.

- 540-day window, from stock exchange opening at the announcement day (or at the first trading day if announcement happened at the weekend or a holiday) to stock exchange closing 541 days after. This timeframe spans across multiple accounting periods (6 quarters), enabling to assess the sustainability and persistence of the market reaction to the rights issue. Theoretical frameworks suggest that certain fundamental changes initiated by the rights issue, such as capital structure adjustments or investment projects for which the equity capital has been mobilized, may take time to fully materialize and impact firm value.

Table 5. Time-window specification.

Type	**Focus**	**Time horizon**	**Purpose**	**Factors to account/control for**
Short-Term event study	Immediate impact	±1 & ±5 days	Capturing market's reaction to new information quickly.	-Rights issue parameters -Issuer parameters
Long-Term event study	Protracted impact	+180 & + 540 days	Capturing market's adjustment to new information in the long(er) term.	-Rights issue parameters -Issuer parameters -Financial performance

Table 6. Return type specification.

Type	**Return**	**Methodology**	**Objective**
Short-Term event study	Standardized Cumulative Abnormal Return (SCAR)	Summation of abnormal returns for each increment within the time-window.	Measuring total impact over a short period, standardized to improve statistical properties.
Long-Term event study	Buy-and-hold Abnormal Return (BHAR)	Multiplication of abnormal returns for each increment within the time-window.	Measuring sustained impact over long period, reflecting the compound effect of holding the asset through time. Standardized to control for cross-sectional variability and market-wide effects.

4.2.3 Selection and inclusion criteria

According to the outlined research paper objectives and explicit supervisory enterprise interest analysis has been naturally constrained to the examination of rights issues occurring within the geographical area and time period relevant to the charterer. Limited coverage of the proprietary numerical data acted as an additional restrictive factor implying that only the issues satisfying following criteria have been processed:

Table 7. Rights offering selection and filtering criteria.

Selection group	**Selection criterion**	**Specification**
Issuer specific	Issuer's operational geographical location	Issuing enterprise is a limited liability company – participant of the Scandinavian equity capital market domesticized in one of the Nordic states (Sweden, Finland, Norway, Denmark).
	Issuer's stock exchange geographical location	Issue exchange nationality and quoting currency is one of the Nordic states (Sweden – Swedish Krona, Finland - Euro, Norway – Norwegian Krona, Denmark – Danish Krona).
Issue specific	Issue's occurrence time-period	Announcement date is constrained to the 10 year-long period spanning between 01.01.2014 and 01.01.2024.
	Issue's amount in currency units	Dear value boundaries are set to have a floor of a minimum 20m Euro (directly for Finland or in local currency equivalent at the exchange rate of the announcement date for Sweden, Norway and Denmark).

In order to ensure better accuracy and result reliability offers that had other ongoing announcements within 10 days prior to the event and 540 days after the event have been excluded. For issuers conducting rights and/or seasoned offerings repeatedly authors made sure that at least 540 days have passed since the previous one. Applying all aforementioned criteria to the unconstrained dataset of 225 issues resulted in following sample sizes for each of the time windows:

Table 8. Time-window specification

Time-window length	Number of issues
Short-term	Total: 204 Unique issuers: 199 Repeated issues from the same issuers: 5
Medium-term	Total: 191 Unique issuers: 187 Repeated issues from the same issuers: 4
Long-term	Total: 165 Unique issuers: 161 Repeated issues from the same issuers: 4

4.2.4 Data collection and variable description

Due to the fact that the research has been conducted by the request and under the auspices of the supervisory financial institution 2 main sources of information have been utilized in the work:

1. Primary - proprietary elsewhere unavailable numerical data. Source: Nordea Abp.
2. Secondary – publicly available numerical and textual (rights offering prospectus) data. Source: Bloomberg Terminal.

As the only source of information that is external to the ordering enterprise, Bloomberg Terminal was selected due to its comprehensive and unquestionably reliable coverage of the data that underwent auditing and regulatory verification procedures ensuring its accuracy and authenticity (Moreale and Zaynutdinova, 2018). Cumulative abnormal for the ST and buy and hold abnormal returns for the MT, LT have been used as dependent variables. Objectives of the research implied examination of the effects attributable only to specified variables of interest - characteristics of the rights offering. Following independent measures specified in the prospectus of each included issue have been obtained:

Table 9. Rights offering-specific variables.

Factor	Data type	Storage/Processing format
Issue renounceability status	Textual, categorical	Dummy-coded category. Renounceable = 1, non-renounceable =0
Issue Pari Passu status	Textual, categorical	Dummy-coded category. Pari Passu = 1, non-Pari Passu =0
Rights offering subscription price	Numerical, ratio	Original, not processed.
Shares/Rights exchange rate	Numerical, ratio	Converted to the fraction (i.e. from 1 against 2 or 1 for 2 written by text into 0.5).
Total Shares offered	Numerical, ratio	Original, not processed.
Amount to be raised	Numerical, ratio	Original, not processed.
Use of proceeds	Textual	Dummy-coded category. Grouping imposed, offensive (growth or expansion oriented) = 1, defensive (strengthening the balance sheet, deleveraging, etc. =0

In order to ensure meaningfulness, consistency and comparability of rights offerings occurring in different circumstances and conditions following researcher-constructed variables have been calculated and introduced as substitutes for some original ones from Table 4. to be used in the regression.

Table 10. Researcher-introduced rights offering parameters

Parameter	Formula
Money size of the issue	$\frac{Amount\ to\ be\ raised}{Market\ Capitalization}$
Share size of the issue	$\frac{Shares\ offered}{Shares\ Outstanding}$
Discount to Theoretical Ex Rights Price (TERP)	$1 - \frac{Market\ Capitalization + Shares\ offered * Rights\ issue\ price}{Shares\ Outstanding}$

Aforementioned list of factors has been retrieved/calculated for all rights offerings no matter what time window to be analyzed at. Nevertheless, exceeding the short-term period introduced new

sources of original rights issue effect corruption – possibility of non-related macro- and microeconomic events to distort and dilute the studied impact, that is why with extending the scope to the 180- and 540-day periods necessity for additional control variables assigned to isolate the effects of rights offering parameters has arisen. Abiding by Kothari and Warner (2007) to utilize control variables as well incorporating direct requests from the supervisory institution's professionals following list of idiosyncratic parameters attributable to the change in company-related features have been introduced in the medium- and long-term modelling to assist the investigation:

Table 11. Control variable specification for medium- and long-term periods.

Parameter	**Rationale for addition**	**Formula**
Issuer's domicile	Control for affection by geographical location.	Dummy-coded categories (total: 4)
Issuer's industry	Control for affection by the business cycle.	Dummy-coded category. According to GICS: Cyclical = 1, non-cyclical =0
Issuer size	Larger firms have different growth opportunities, risk profiles, and access to capital compared to smaller firms Fama, French (1992).	$\frac{Total\ Assets\ 180(540)\ days\ later}{Total\ assets\ announcement\ date}$
Issuer profitability	Profitability influences a firm's ability to generate earnings from its operations, which can affect its stock performance and valuation. Fama, French (2006).	$\frac{Profit\ Margin\ 180(540)\ days\ later}{Profit\ Margin\ announcement\ date}$
Issuer liquidity	Liquidity measures a firm's ability to meet short-term obligations, which impacts its financial stability and risk profile Amihud, Mendelson (1986).	$\frac{Quick\ Ratio\ 180\ (540)\ days\ later}{Quick\ ratio\ announcement\ date}$
Issuer leverage	Leverage affects a firm's financial risk and cost of capital. Raghuram, Zingales (1995).	$\frac{Net\ Debt\ Per\ Share\ 180\ (540)\ days\ later}{Net\ Debt\ Per\ Share\ announcement\ date}$
Issuer growth	Growth potential, as indicated by earnings per share (EPS), impacts a firm's future profitability and valuation Chan et al. (1996).	$\frac{Earnings\ Per\ Share\ 180\ (540)\ days\ later}{Earnings\ Per\ Share\ announcement\ date}$

Issuer capital structure	The debt-to-equity ratio impacts a firm's cost of capital and risk profile, influencing its long-term performance. Modigliani, Miller (1958).	$\frac{Debt\ to\ Equity\ 180\ (540)\ days\ later}{Debt\ to\ Equity\ ratio\ announcement\ date}$
Issuer elasticity to the market	Beta measures a firm's sensitivity to market movements. Controlling for changes in beta helps isolate the firm's specific risk from market risk Fama, French (1993).	$\frac{1Y\ daily\ Beta\ 180\ (540)\ days\ later}{1Y\ daily\ Beta\ announcement\ date}$
Issuer stock volatility	Stock volatility reflects the risk and uncertainty in a firm's returns. Controlling for volatility helps distinguish event-specific effects from general market risk Schwert (1989).	$\frac{90D\ stock\ volatility\ 180\ (540)\ days\ later}{90D\ stock\ volatility\ announcement\ date}$

4.2.5 Modeling Normal Performance

Two broad categories of approaches were available for calculation of the normal return of a share of the enterprise that has undergone a rights issue across the selected time window:

1. **Statistical type** - models that follow from statistical assumptions concerning the behavior of asset returns and do not depend on any economic arguments.

Statistical models have been rejected by the request of the supervisory institution due to the set of negative aspects diminishing reliability and quality of the calculations:

- Too heavy reliance on historical data unrealistically overemphasizing technical analysis and assuming existence and preservation of time-series specific price development through the complete estimation period.
- Ignoring economic realities and increased likelihood of producing biased or misleading results if underlying assumptions are violated.
- While simpler to calculate, statistical models miss complex economic interdependencies and investor behavior nuances, leading to less accurate predictions of normal returns Campbell et al. (1997).

2. **Economic type** - models that rely on assumptions concerning investors' behavior and are not based solely on statistical assumptions.

The primary benefit of using economic models lies not in the elimination of statistical assumptions but in the ability to derive more accurate estimates of normal returns by applying economic constraints. This approach allows for a deeper and more precise analysis, enhancing the reliability of the results by incorporating fundamental economic principles (Campbell et al. 1997).

4.2.6 Modeling normal returns

This and consequent methodology parts follow very closely (Campbell et al. 1997).

The market model is a statistical model which relates the return of a given security to the return of the market portfolio. The model's linear specification assuming joint normality of asset returns has been utilized:

$$R_{it} = a_i + \beta_i R_{mt} + \varepsilon_{it} \quad (1)$$

$$E[\varepsilon_{it}] = 0, \text{Var}[\varepsilon_{it}] = \sigma^2_{\varepsilon i} \quad (2)$$

- Rit = period t returns on security i
- Rmt = period t returns on market portfolio m
- εit = zero mean disturbance term.
- α, β, σ^2 = parameters of the market model

The market model represents an improvement over its main competitor - constant - mean -return model. By removing the portion of the return that is related to variation in the market's return, the variance of the abnormal return is reduced leading to increased ability to detect event effects Campbell et al. (1997).

Sample characteristics, especially its coverage of exclusively Scandinavian enterprises paired with chartering institution's preferences towards a single instead of country specific reference portfolios has led to a choice of NASDAQ OMX Nordic 120 Tradable Sector Composite index as

a market portfolio for the market model numerical estimation. Composite index consists of the 120 largest of the 150 most traded shares on NASDAQ OMX Copenhagen, NASDAQ OMX Helsinki, NASDAQ OMX Stockholm and Oslo Exchange and is considered to be a qualitative representation of the overall Scandinavian equity market (NASDAQ 2024).

4.2.7 Estimation of the Market Model

The estimation - window observations can be expressed as a regression system:

$$\boldsymbol{Ri} = \boldsymbol{Xi}\,\boldsymbol{\theta i} + \boldsymbol{\varepsilon i} \tag{3}$$

- $R_i = [R_{iT0+1}, \ldots, R_{iT1}]'$ – (L_1 x 1) vector of estimation-window returns
- $R_m = [R_{iT0+1}, \ldots, R_{iT1}]'$ - (L_1 x 1) vector of estimation-window market returns
- $X_i = [\iota\ R_m]$ – (L_1 x 2) matrix with a vector of ones in the first column and the vector of market return observations $R_m = [R_{iT0+1}, \ldots, R_{iT1}]'$ in the second column
- $\Theta_i = [\alpha_i \beta_i]'$ - (2 x 1) parameter vector

Under general conditions Ordinary Least Squares (OLS) is a consistent estimation procedure for the market model parameters. If joint normality of asset returns is preserved OLS is efficient.

The OLS estimators of the market-model parameters using an estimation window of L_1 observations are:

$$\widehat{\boldsymbol{\theta}}_i = (X'_i X_i)^{-1} X'_i R_i \tag{4}$$

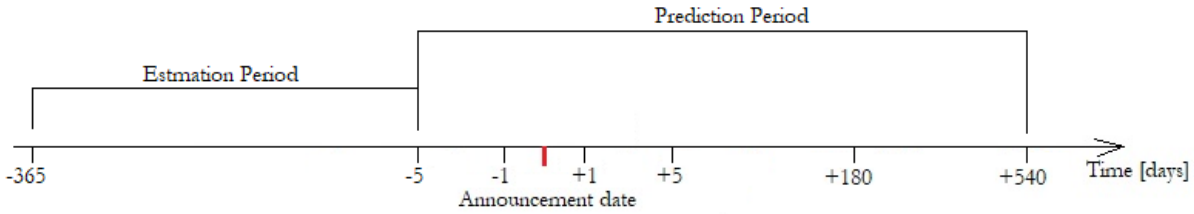
$$\widehat{\boldsymbol{\sigma^2}}_{\varepsilon i} = \frac{\mathbf{1}}{\boldsymbol{L1-2}} \hat{\varepsilon}'_i \hat{\varepsilon}_i \tag{5}$$

$$\hat{\varepsilon}_i = R_i - X_i \widehat{\boldsymbol{\theta}}_i \tag{6}$$

$$\mathrm{Var}[\widehat{\boldsymbol{\theta}}_i] = (X'_i X_i)^{-1} \boldsymbol{\sigma^2}_{\varepsilon i} \tag{7}$$

Estimation period for the market model parameters for every regression related to individual issue has been chosen to last for 360 calendar days (approx. 250 trading days depending on the particular year) before the announcement date.

Illustration 3. Estimation and Prediction period specification.



Class B (common) shares have been selected as the basis for the research due to the following reasons. Firstly, absence of other class stocks for multiple enterprises on the sample. Secondly, too small part of the whole ownership structure attributable to other classes – much larger class B investor base. Lastly, unification of the voting rights and dividend policies – highest uniformity of these parameters have been observed across class B shares within the sample.

Return calculation for all the class B stocks has been conducted while applying the same set of rules for income reinvestment and dividend incorporation:

- Transaction and commission costs were assumed to be nonexistent.
- Capital and dividend income was being reinvested in the purchase of own shares (ensuring better cross-sectional comparability and being the closest thing to a passive buy and hold as well as index return calculation).
- Asset weights in the market portfolio were assumed to remain constant during the 365-day estimation and 180/540 day forecasting period which is not true as NOMXN Nordic 120 is reviewed on a semi-annual basis effective after the third Friday in June and December resulting in a weight and composition change (NASDAQ 2024). However, during the examination of the actual changes over time, discrepancy has been found to be small enough to neglect its effect on the empirical work.

4.2.8 Modeling Abnormal returns

Given the market model parameter estimates, abnormal returns have been obtained by subtraction of the return predicted by the market model (synthetic pricing that would have been occurring) and the actual observed returns.

$\hat{\boldsymbol{\varepsilon}}_i^*$ (L_2 x 1) sample vector of abnormal returns for firm i from the event window (T_1 + 1) to T_2.

$$\hat{\boldsymbol{\varepsilon}}_i^* = R_i^* - \hat{\boldsymbol{\alpha}}_i \iota - \hat{\boldsymbol{\beta}}_i R_m^* = R_i^* - X_i^* \hat{\boldsymbol{\theta}}_i \quad (8)$$

- $R_i = [R_{iT0+1}, \ldots, R_{iT1}]'$ – (L_1 x 1) vector of estimation-window returns
- $R_m = [R_{iT0+1}, \ldots, R_{iT1}]'$ - (L_2 x 1) vector of estimation-window market returns
- $X_i^* = [\iota\ R_m]$ – (L_2 x 2) matrix with a vector of ones in the first column and the vector of market return observations $R_m = [R_{iT0+1}, \ldots, R_{iT1}]'$ in the second column
- $\Theta_i = [\alpha_i \beta_i]'$ - (2 x 1) parameter vector

Conditional on the market return over the event window, the abnormal returns are jointly normally distributed with a zero conditional mean and conditional covariance matrix V_i.

$$E[\hat{\boldsymbol{\varepsilon}}_i^* \mid X_i^*] = 0 \quad (9)$$

$$V_i = I\boldsymbol{\sigma}^2_{\varepsilon i} + X_i^*(X_i'X_i)^{-1} X_i^{*\prime} \boldsymbol{\sigma}^2_{\varepsilon i} \quad (10)$$

The first term in the sum is the variance due to the future disturbances and the second term is the additional variance due to the sampling error in $\hat{\boldsymbol{\theta}}_i$. This sampling error, which is common for all the elements of the abnormal return vector, will lead to serial correlation of the abnormal returns despite the fact that the true disturbances are independent through time. As the length of the estimation window L_1 becomes large, the second term will approach zero as the sampling error of the parameters vanishes, and the abnormal returns across time periods will become independent asymptotically. Fulfillment of this rule has been impeded by relatively small sample (204 companies), nevertheless, tracked with a large number of incremental price observations used in estimation of abnormal returns for every time-window:

Table 12. Specification of the abnormal return estimation for all time-windows.

Type of the time-window	**Abnormal return type**	**Frequency**	**Length of the estimation period**	**Total average number of observations**
Short-term ±1 day	SCAR	1 minute	Announcement day ±1 day	1440 data-points (3 days at 1 minute frequency)
Short-term ±5 days	SCAR	30 minutes	Announcement day ±5 day	176 data-points (11 days at 30-minute frequency)
Medium term	BHAR	1 day	Announcement day +180 days	181 data-points
Long term	BHAR	1 day	Announcement day +540 days	541 data-points

Under the null hypothesis, H0, that the given event has no impact on the mean or variance of returns, authors used (9) and (10) and the joint normality of the abnormal returns to draw inferences. Under H0, for the vector of event-window sample abnormal returns:

$$\hat{\boldsymbol{\varepsilon}}_i^* \sim N(0, V_i) \tag{11}$$

In order to conduct test the hypothesis number X an independent samples t-testing framework has been accepted.

Equation (11) gives us the distribution for any single abnormal return observation.

4.2.9 Aggregating Abnormal Returns

The abnormal return observations must be aggregated in order to draw overall inferences for the event of interest. Long term window following Barber, Lyon (1997) and Lyon, Barber, Tsai (1999) utilizes buy-and-hold abnormal return (BHAR). To accommodate multiple sampling intervals within the short-term event window cumulative abnormal return is used:

$$\widehat{\boldsymbol{CAR}}_i(\tau_1, \tau_2) = \gamma' \, \hat{\boldsymbol{\varepsilon}}_i^* \tag{12}$$

$$\mathrm{Var}[\widehat{\boldsymbol{CAR}}_i(\tau_1, \tau_2)] = \widehat{\boldsymbol{\sigma}^2}_i(\tau_1, \tau_2) = \gamma' \, V_i \, \gamma \tag{13}$$

Standardized cumulative abnormal return:

$$\widehat{\boldsymbol{SCAR}}_i(\tau_1, \tau_2) = \widehat{\boldsymbol{CAR}}_i(\tau_1, \tau_2) \,/\, \widehat{\boldsymbol{\sigma^2}}_i(\tau_1, \tau_2) \tag{15}$$

$\widehat{\boldsymbol{\sigma^2}}_i(\tau_1, \tau_2)$ is calculated with $\widehat{\boldsymbol{\sigma^2}}_\varepsilon$ from (5).

Under the null hypothesis the distribution of $\widehat{\boldsymbol{SCAR}}_i(\tau_1, \tau_2)$ is Student's t with $L_1 - 2$ degrees of freedom. For a large estimation window (for example, $L_1 > 30$, which is easily satisfied with sample size, the distribution of $\widehat{\boldsymbol{SCAR}}_i(\tau_1, \tau_2)$ will be well approximated by the standard normal.

The above result applies to a sample of one event and must be extended for the usual case where a sample of many event observations is aggregated. To aggregate across securities and through time, we assume that there is not any correlation across the abnormal returns of different securities. Based on Campbell et al. (1997) this will generally be the case if there is not any clustering, that is, there is not any overlap in the event windows of the included securities. Due to the fact that short term event study methodology (where SCARs are utilized) is applied only to the short-term window the no-overlap requirement is fulfilled as rights issues in the investigated period have not been occurring that frequently (on average 1.7 issues per month). The absence of any overlap and the distributional assumptions imply that the abnormal returns and the cumulative abnormal returns will be independent across securities.

The individual securities' abnormal returns were averaged using $\hat{\boldsymbol{\varepsilon}}_i^*$ from (8):

$$\bar{\boldsymbol{\varepsilon}}_i^* = \frac{\mathbf{1}}{\boldsymbol{N}} \sum_{\boldsymbol{i=1}}^{\boldsymbol{N}} \hat{\boldsymbol{\varepsilon}} \boldsymbol{i} * \tag{16}$$

$$\mathrm{Var}[\bar{\boldsymbol{\varepsilon}}_i^*] = \mathrm{V} = \frac{\mathbf{1}}{\boldsymbol{N^2}} \sum_{\boldsymbol{i=1}}^{\boldsymbol{N}} \boldsymbol{Vi} \tag{17}$$

Aggregating the elements of average abnormal returns vector across time:

$$\overline{\mathbf{CAR}}(\tau_1, \tau_2) = \gamma' \, \bar{\boldsymbol{\varepsilon}}_i^* \tag{18}$$

$$\mathrm{Var}[\overline{\mathbf{CAR}}(\tau_1, \tau_2)] = \bar{\boldsymbol{\sigma}}^{\mathbf{2}}(\tau_1, \tau_2) = \gamma' \, \mathrm{V} \, \gamma \tag{19}$$

Aggregating the elements of average abnormal returns vector across securities:

$$\overline{\mathbf{CAR}}\,(\tau_1, \tau_2) = \frac{\mathbf{1}}{\boldsymbol{N}}\sum_{\boldsymbol{i=1}}^{\boldsymbol{N}} \widehat{\boldsymbol{CAR}}_i\,(\tau_1, \tau_2) \tag{20}$$

$$\text{Var}[\overline{\mathbf{CAR}}\,(\tau_1, \tau_2)] = \overline{\boldsymbol{\sigma}}^{\boldsymbol{2}}(\tau_1, \tau_2) = \frac{\mathbf{1}}{\boldsymbol{N^2}}\sum_{\boldsymbol{i=1}}^{\boldsymbol{N}} \boldsymbol{\sigma}^{\boldsymbol{2}}{}_i\,(\tau_1, \tau_2) \tag{21}$$

In (18) to (21) we use the assumption that the event windows of the N securities do not overlap to set the covariance terms to zero. Since $\overline{\boldsymbol{\sigma}}^{\boldsymbol{2}}(\tau_1, \tau_2)$ is not known, authors used $\frac{\mathbf{1}}{\boldsymbol{N^2}}\sum_{\boldsymbol{i=1}}^{\boldsymbol{N}} \widehat{\boldsymbol{\sigma}}^{\boldsymbol{2}}{}_i\,(\tau_1, \tau_2)$ as a consistent estimator instead.

In order to draw inferences about the cumulative abnormal returns, authors gave equal weighting to the individual SCARs.

Defining $\widehat{\boldsymbol{SCAR}}_i\,(\tau_1, \tau_2)$ as the average over N securities from event time τ_1, to τ_2,:

$$\overline{\boldsymbol{SCAR}}(\tau_1, \tau_2) = \frac{\mathbf{1}}{\boldsymbol{N}}\sum_{\boldsymbol{i=1}}^{\boldsymbol{N}} \widehat{\boldsymbol{SCAR}}_i\,(\tau_1, \tau_2) \tag{22}$$

Under H_o, $\overline{\boldsymbol{SCAR}}(\tau_1, \tau_2)$ will be normally distributed in large samples with a mean of zero and variance $\frac{\boldsymbol{L1-2}}{\boldsymbol{N(L1-4)}}$.

Therefore, the authors test the null hypotheses using:

$$\boldsymbol{J2} = \left(\frac{\boldsymbol{N(L1-4)}}{\boldsymbol{L1-2}}\right)^{\mathbf{0.5}} \overline{\mathbf{SCAR}}(\tau_1, \tau_2) \text{ approx. } \sim N(0,1)$$

4.2.10 Cross-Sectional Model

As one of the objectives of the research is to investigate the degree of an association between the magnitude of abnormal returns and characteristics specific to the event and consequent corporate changes, a cross - sectional regression of abnormal returns on the parameters of the rights issue plus the addition of theory suggested control variables has been done.

For the finalized model following regression equation has been utilized:

$$y = X\theta + \eta \tag{23}$$

- y = (N x 1) vector of cumulative abnormal return observations

- X = (N x K) matrix of characteristics. The first column of X is a vector of ones and each of the remaining (K - 1) columns is a vector consisting of the characteristic for each event observation.
- Θ = (K x 1) coefficient vector
- η = (K x 1) error term or residuals in the regression model

For the OLS estimator:

$$\widehat{\boldsymbol{\theta}} = (X'X)^{-1} X'y \tag{24}$$

Assuming the elements of η are cross-sectionally uncorrelated, inferences were derived using the usual OLS standard errors.

Defining $\sigma^2\eta$ as the variance of the elements of η and without assuming homoskedasticity, authors constructed heteroskedasticity - consistent statistics using:

$$Var[\hat{\theta}] = \frac{1}{N}(X'X)^{-1}\left[\sum_{i=1}^{N} xix'i\,\hat{\eta}^2 i\right](X'X)^{-1} \tag{25}$$

The resulting cross-sectional regression incorporating all selected variables has following specifications:

For short-term analysis:

$$\overline{\mathbf{CAR}}(\tau_1, \tau_2) = b_{0t} + b_{1t}\,\mathrm{REN}_{nt} + b_{2t}\,\mathrm{PARI\_PASSU}_{nt} + b_{3t}\,\mathrm{USE\_PROC}_{nt} + b_{4t}\mathrm{SHRS/RGHTS}_{nt} + b_{5t}\mathrm{VAL/MRKT\_CAP}_{nt} + b_{6t}\mathrm{OFF/OUTST}_{nt} + b_{7t}\mathrm{DISC\_TERP}_{nt} + \varepsilon nt$$

For long term analysis:

$$\overline{\mathbf{BHAR}}(\tau_1, \tau_2) = b_{0t} + b_{1t}\,\mathrm{REN}_{nt} + b_{2t}\,\mathrm{PARI\_PASSU}_{nt} + b_{3t}\,\mathrm{USE\_PROC}_{nt} + b_{4t}\mathrm{SHRS/RGHTS}_{nt} + b_{5t}\mathrm{VAL/MRKT\_CAP}_{nt} + b_{6t}\mathrm{OFF/OUTST}_{nt} + b_{7t}\mathrm{DISC\_TERP}_{nt} + b_{8t}\,\mathrm{TA}_{nt} + b_{9t}\mathrm{PM}_{nt} + b_{10t}90\_\mathrm{VOL}_{nt} + b_{11t}\mathrm{QR}_{nt} + b_{12t}\mathrm{D/E}_{nt} + b_{13t}\mathrm{EPS}_{nt} + b_{14t}\mathrm{BETA}_{nt} + b_{15t}\,\mathrm{NET\_DEBT\_PS} + \varepsilon nt$$

Table 13. Regression variable encoding

Abbreviated name	Full variable name
REN	Renounceability
USE_PROC	Use of Proceeds
SHRS/RGHTS	Shares outstanding / New Rights
VAL/MRKT_CAP	Value of the new shares / Market Capitalization
OFF/OUTST	Number of shares offered / Number of shares outstanding
DISC_TERP	Discount to TERP
180 and 540 days % changes in:	
TA	Total Asset,
PM	Profit Margin,
90_VOL	90 Day Volatility,
QR	Quick Ratio
D/E	Debt to Equity
EPS	1Year EPS growth,
BETA	1 Year Beta (daily, NOMXN 120 as index),
NET_DEBT_PS	Net Debt per share

5 Results

5.1 Overview of data and sample characteristics

The gathered data provides insights into various financial and operational metrics of the selection of Nordics enterprises that conducted a rights issue(s) within the studied 10-year period. Sample size varies across different time-windows with the largest number of observations (204) coming from the ST(±1) and the smallest from LT(+540) which is explainable with inherent inability to investigate longer time periods after the issues that occurred in relatively recently (in 2023 and the end of 2022). Facilitated by qualitative and overarching data provided by the charterer as well as exhaustive coverage of prospectus details from Bloomberg the researchers made sure to include all the issues satisfying the selection criteria. The data collection result is the sample that, while being not large in absolute terms, is almost equal to the population (sample ≈ 90% of the population of large issues), adjusted by excluded issues lacking either offering terms or price evolution data or dissatisfying the selection criteria (21 offerings eliminated out of 225). Closeness of the sample to the population allows to treat violations of purely statistical properties of the empirical analysis (see Table A4. of the appendix) in terms of modelling quality and hypothesis testing validity with much higher tolerance.

Due to the fact that no filtering except based on initial selection criteria has been applied to the sample the data collected on both the issues and issuer exhibits very large variability and skewness across most variables, indicating a diverse range of observations explainable by companies being assigned to different groups based on industry, currency and other aspects controlled for by specific dummy-variables (see Table 11.). Additionally, the presence of highly leptokurtic distributions suggests heavy-tails and numerous outliers in some variables. To address that issue an attempt to winsorize the dataset by cutting observations located in upper and lower 2.5 percentiles has been done. The results did not lead to major changes of the significance and/or directions and magnitudes of the relationships (no already significant variable has lost its significance and no new variable has

been found to be significant, although the sample size suffered seriously), that is why the results are presented on the whole "raw" dataset.

Table 14. Descriptive statistics for all modelled variables.

	Count	Mean	St. Dev	Median	Mode	Skewness	Kurtosis
Renounceability	204	-	-	-	1	-	-
Pari Passu	204	-	-	-	0	-	-
Use of proceeds	204	-	-	-	0	-	-
Shares/ Rights	204	1.508	3.579	0.500	0.200	6.020	44.522
Value / Market capitalization	204	0.468	7.065	0.308	-	14.261	203.576
Offered / Outstanding	204	0.555	8.762	0.438	-	5.347	30.353
Discount to TERP	204	0.104	0.725	0.180	-	-7.251	69.228
Total Asset 6(18)M% chg.	190	0.218	1.252	-0.005	-	7.545	66.951
	164	0.608	9.322	-0.109	-	9.961	114.515
Profit Margin 6(18) M % chg.	190	-16.639	230.037	-0.261	-	-13.740	189.187
	164	-0.873	25.205	-0.464	-	-9.038	114.018
90 Day Volatility 6(18) M % chg.	190	-0.144	0.352	-0.160	-	0.987	1.786
	164	-0.004	0.537	-0.060	-	2.226	10.093
Quick Ratio 6(18) M % chg.	190	2.295	9.449	0.083	-	8.116	76.896
	164	0.341	2.753	-0.038	-	8.772	92.034
D/E 6(18) M% chg.	190	0.552	4.079	-0.019	-	7.842	67.237
	164	-14.649	181.749	-0.060	-	-12.781	163.574
1Year EPS growth 6(18) M % chg.	190	1.260	17.202	-0.892	-	9.637	116.093
	164	2.902	31.253	-0.883	-	10.786	127.876
Beta 6(18) M % chg.	190	0.344	4.064	-0.061	-	7.721	76.010
	164	-0.001	5.701	-0.091	-	-1.871	37.684
ND PS 6(18) M % chg.	190	0.516	7.852	-0.043	-	4.377	52.208
	164	-0.551	6.298	-0.102	-	-11.330	138.863
CAR (+-1)	204	-0.026	0.137	-0.007	-	-0.718	2.346
CAR (+-5)	204	-0.027	0.171	-0.013	-	0.570	4.461
BHAR (+180)	190	-0.038	0.286	-0.014	-	-0.017	0.556
BHAR (+540)	164	-0.058	0.419	0.029	-	-0.232	-0.529

Table 15. Abnormal return descriptive statistics

Factor	Observations
CAR (+-1)	-2.61% cumulative 3-day abnormal return (annualized -95.994%). Plateau around 0 (not significantly different from 0) before the event followed by the abrupt fall starting from the day before the announcement. Then new plateau between -2% and -3%. The value represents severe negative market response to the offering. Significant part of the effect is attributable to the preceding day implying the presence of information leakage.

CAR (+-5)	-2.665% 10-day return (-62.841% annualized), much less negative abnormal return compared to +-1. No delayed market response (no change after the initial drop).
BHAR (+180)	More negative in absolute terms (-3.665%) but rising in annualized terms (-7.291%) 180-day buy-and-hold return – a sign of gradual improvement and return to normality facilitated by the inflow of capital, the benefits of the rights offering start to show themselves.
BHAR (+540)	The lowest in absolute -5.835% but the highest in annualized (-3.982%) cumulative abnormal return. The mobilized capital is utilized (either offensively or defensively, see Table 9.) resulting in gradual performance improvement.

Table 16. Cumulative abnormal returns for rights issue announcements date

Date	**Value**
-5	0.2472%
-4	0.0818%
-3	0.1932%
-2	-0.7291%*
-1	-0.0081%
0	-2.419%***
1	-2,610%***
2	-2.828%***
3	-3.328%***
4	-2.626%***
5	-2.665%***
100	-2.943%***
180	-3.665%***
250	-4.234%***
400	-4.983%***
540	-5.835%***

*	$0.05 < p < 0.1$
**	$0.01 < p < 0.05$
***	$0 < p < 0.01$

Illustration 4. Cumulative abnormal returns for announcements of rights issues

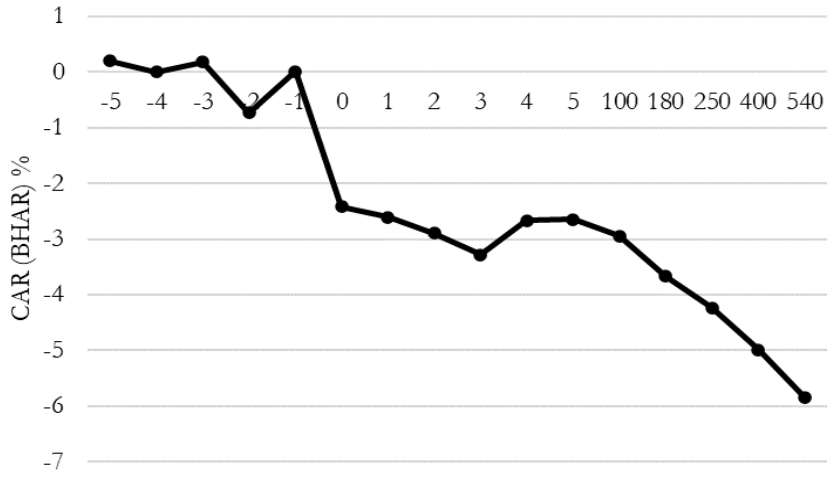


Table 17. Main Rights issue factors and the implications of their descriptive statistics

Factor	Observations
Renounceability	Most of the offerings (96%) are renounceable, implying that the subscription right can be stripped and sold separately during the subscription period, which is not a surprising result as there is no any legislative hinderance for that in any of the covered jurisdictions, but benefits to issue attractiveness are significant (see theory and discussion).
Pari Passu	Less than a half of the issues (46%) is Pari Passu – in most of the cases new shares offered have different qualities than already outstanding ones, unfortunately, no specific data that would shed light on what were the differences (voting, dividend rights, etc.) has been either provided to or found by the authors (Bloomberg does not store information on issues for which subscription period has already ended) – possible field of further research.
Use of proceeds	Because the explanation and promises of the management about how the newly raised capital would be used were very diverse authors imposed quite rough and simplistic transformation attributing all growth/expansion-oriented reasons to the "offensive" group (46%) and all other ones to the "defensive" group (54%). Vast majority of the former were related to acquisitions and/or R&D expenses to be incurred, most of them (86% of all offensive) were related to repayment of established bridge loan facilities for already occurred acquisitions. Defensive issues included two main groups of uses of funds: 1) leverage decreasing and debt servicing; 2) liquidity and solvency improvement.
Shares/Rights	Majority (67%) of the issues had 1 share exchangeable to more than 1 right, with "round" ratios like 1:4, 1:3 or 1:2 being very common. This management behavior was anticipated as granting rights below par increases attractiveness and subscription rate.

Value / Market capitalization	Absence of research in this field prevented authors from building expectation about this ratio. Median of 30% and the mean of 46% imply that it is more common for issuers to mobilize the amount of capital that is only a fraction of the current market capitalization not aiming for larger increase.
Offered / Outstanding	Extending the share number by around a half (median = 0.55508) is the most frequent activity, larger issues (similar to the value/market cap variable, but in money terms) are uncommon.
Discount to TERP	Theory and previous research suggest benefits and resulting frequency of the rights offering at the discount to TERP. This is consistent with the issuers in the studied sample. Par or premium issuance is very uncommon (<16% of the cases).

Large observation volatility resulting in dissimilarity between the measures of central tendency (arithmetic mean and median) leads to inconsistency of conclusions if drawn by using only one of them. Authors have a preference towards the median as it is better able to accommodate large outliers.

Table 18. Main Firm specific factors and the implications of their descriptive statistics

Factor	**Observations**
Total Asset 6(18) Month % change	A half (median) of the issuers experienced a decrease in the value of total asset within 180 by -0.4% and 540 days by -10.8%. Most of this is attributable to the effect of 2019-2020 and 2022 economic disturbances. Much larger positive mean (21.8% and 60.8% respectively) is a sign of a presence of firms that saw the opposite – mostly healthcare firms (47 in companies in the sample) for which the period was much better.
Profit Margin 6(18) Month % change	In the aftermath of the issue in both the MT and LT windows usual change in the profit margin has been strongly negative: -26.1% and -46.4%. (median) respectively, as in the case of total assets this change has been unevenly spread across the sample timeline, with most of the changes happening within the last 5 years and 2014-2019 time being much "calmer".
90 Day Volatility 6(18) Month % change	Stock price volatility during the 90-day period preceding the 180 and 540 days after the announcement has been observed to consistently decrease, reflecting the price turbulence sedation as the time passes further form the announcement date.
Quick Ratio 6(18) Month % change	Liquidity captured by the quick ratio is shown to increase rapidly in the MT and then fall abruptly in the LT logically reflecting the inflow of money form the rights issue that has been finalized by the end of 6 months since the

	announcement. 18 months later, gathered funds are already spent on the projects (see use of proceeds) resulting in quick ratio decrease.
D/E 6(18) Month % change	Capital structure change is changing in favor of the equity (negative median changes of -1.8% and -6% in MT and LT) which is natural as it is one of the reasons why right offer is being conducted. Surprisingly enough this change is nowhere near the amount of equity capital raised during the issue.
1 Year EPS growth 6(18) Month % change	Around half of the companies sees retardation of the EPS growth (median of -89% and -88% in MT and LT respectively) – expected result of inflated outstanding share number. Although rights issues usually result in addition of 40-50% new shares (see Offered/Outstanding) disproportional fall in EPS signifies weakening earning power below the pre-issue levels.
1 Year Beta 6(18) Month % change	Elasticity towards the market portfolio (NOMXN 120 index) decreases in both time-window succeeding the announcement date (by -6% in MT and -9% in LT). Growing equity capital and large amount of available funding arising within the relatively short period of time increases the independence of the firm from the market.
ND PS 6(18) Month % change	Net debt per share exhibits natural decrease (-4.3% and -10.2% in MT and LT respectively) reflecting decreased leverage and improved financial health emanating from the rights offering.

5.1.1. Results of individual hypothesis testing

Table 19. Test statistics (t-values) for individual test

Factor	**Short-Term (±1 day)**	**Short-Term (±5 days)**	**Medium-Term (+6 months)**	**Long-Term (+18 months)**
Overall significance	-2.72415***	-2.23771**	-1.76502*	-1.7823*
Renounceability	-1.51791	0.16827	-0.50425	-0.11590
Pari Passu	2.20446**	1.65944*	2.38729**	3.13376***
Use of proceeds	0.14675	0.37984	1.00173	0.15908
Outstanding shares held / New subscription rights granted	1.67157*	0.85500	1.63137*	2.21793**
Value issued / Market capitalization	1.68081*	0.57290	1.22760	2.24564**
Amount issued / Outstanding shares	2.32617**	0.75344	2.23899**	3.43291***
Discount to TERP	1.26886	-1.14767	0.36081	-0.43428
Discount or premium to TERP	-0.7884	0.656105	-0.15499	0.03911

* $0.05 < p < 0.1$

** $0.01 < p < 0.05$

*** $0 < p < 0.01$

Table 20. Individual hypothesis test result presentation

Factor	Result
Overall significance	Null hypothesis rejected for all time windows – abnormal returns are statistically significantly different from zero (at a CL 1% for ST(±1), 5% for ST(±5) and at 10% for MT and LT). N.B. shorter periods are more significant than the longer ones, significance falls as period lengthens.
Renounceability	Null hypothesis failed to get rejected - abnormal returns between renounceable and not renounceable rights offerings in all the time windows are not statistically significantly different from each other at neither 1%, 5% nor even 10% CL.
Pari Passu	Null hypothesis rejected for all time windows - abnormal returns between issues that are Pari Passu and not Pari Passu are statistically significantly different from each other (at a CL of 5% for ST(±1), 10% for ST(±5) and at 5% for MT and 1% for LT).
Use of proceeds	Null hypothesis failed to get rejected - abnormal returns between offensive and defensive use of rights offerings proceeds in all the time windows are not statistically significantly different from each other at neither 1%, 5% nor even 10% CL.
Outstanding shares held / New subscription rights granted	Null hypothesis rejected for all time windows except ST(±5) - abnormal returns across rights issues with exchange rates between shares and subscription rights below or at 1 and above 1 are statistically significantly different from each other (at a CL of 10% for ST(±1), at 10% for MT and 5% for LT).
Value issued / Market Capitalization	Null hypothesis rejected for ST(±1) and LT, but failed to get rejected for ST(±5) and MT - abnormal returns between rights issues where the amount to be raised comprises less and more than a half of the market capitalization at the announcement date are statistically significantly different from each other in ST(±1) and LT (at a CL of 10% for ST(±1) and 5% for LT). This is not the case for ST(±5) and MT.
Amount issued / Outstanding shares	Null hypothesis rejected for all time windows except ST(±5) - abnormal returns between rights issues where the number of new shares issued comprises less than a half of the amount outstanding are statistically significantly different from rights issues where the number of new shares issued comprises more than a half of the amount outstanding (at a CL of 5% for ST(±1), at 5% for MT and 1% for LT).
Discount to TERP	Null hypothesis failed to get rejected - abnormal returns between right issues offered at the discount (0.5 * market price <= subscription price <= market price) and at a very deep discount (0.01 * market price <= subscription price <= 0.5 * market price) in all the time windows are not statistically significantly different from each other at neither 1%, 5% nor even 10% CL.
Discount or premium to TERP	Null hypothesis failed to get rejected - abnormal returns between right issues offered at the discount and at par or a premium in all time windows are not statistically significantly different from each other at neither 1%, 5% nor even 10% CL.

5.1.2. Cross-Sectional Regression results

Following part presents statistical power and the numerical results of cross-sectional regression analysis.

Table 21. Cross-Sectional Regression overall characteristics and power

Time-Window	**Adj. R^2**	**F-statistic**
ST(±1)	0.055	2.079**
ST(±5)	0.054	2.050**
MT(+180)	0.155	2.823***
LT(+540)	0.126	2.240***

Table 22. Cross-Sectional Regression results

Factor	Short-Term (±1 day)	Short-Term (±5 days)	Medium-Term (+6 months)	Long-Term (+18 months)
Intercept	0.0331**	-0.0296**	0.8241**	0.1622**
Cyclicality of the issuer's industry	0.0303	-0.0177	-0.0131	-0.2021
Issuer's domicile: Sweden	-0.0531	-0.0230	-0.8701***	0.0126
Issuer's domicile: Denmark	-0.0525	0.0217	-0.6429**	-0.2100
Issuer's domicile: Norway	-0.0650	0.0247	-0.9480***	-0.1703
Issuer's domicile: Finland	0.0696	0.0820	-0.7387**	0.0213
Issue's renounceability status	-0.0461	0.0085	-0.0468	-0.1212
Issue's Pari Passu status	0.0348*	0.0446*	0.1302***	0.2009***
Shares/Rights exchange rate	-0.0072**	-0.0065*	-0.0093	-0.0180*
Value issued / Market capitalization	0.0001	-0.0016***	0.0005	0.0038***
Offered shares / Outstanding shares	0.0002	0.0004	-0.0004	-0.0030***
Discount to TERP	-0.0154	0.0025	-0.0717	-0.0021
Total Asset 6(18) M % change	-	-	0.0296*	0.0012
Profit Margin 6(18) M % change	-	-	<0.0000	<0.0000
90 Day Volatility 6(18) M % change	-	-	0.0152	-0.0022
Quick Ratio 6(18) M % change	-	-	-0.0029	-0.0129
D/E 6(18) M % change	-	-	0.0023	-0.0003*
1Year EPS growth 6(18) M % change	-	-	0.0011	-0.0004
Beta 6(18) M % change	-	-	0.0135***	0.0079
ND PS 6(18) M % change	-	-	-0.0027	0.0014

* $0.05 < p < 0.1$

** $0.01 < p < 0.05$

*** $0 < p < 0.01$

Table 23. Cross-Sectional regression result presentation

Factor	Result
Cyclicality of the issuer's industry (see	Not significant in all time-windows.
Issuer's domicile: Sweden/ Denmark/ Norway/ Finland	Not significant in all time-windows except MT, very large, very negative and inconsistent with other periods, likely issues with model specification, multicollinearity, or data anomalies (see limitations).
Issue's renounceability status	Not significant in all time-windows.
Issue's Pari Passu status	Statistically significant, positive coefficients in all time-windows – ceteris paribus, change in issue's status from not Pari Passu to Pari Passu always results in increase in abnormal returns of 3.48% for ST(±1) at 10%, 4.46% for ST(±5) at 10%, 13.02% for MT at 1%, and 20.09% for LT at 1% respective CL. The larger the time window, the larger the total cumulative abnormal return (inverse relationship in annualized terms).
Shares/Rights exchange rate	Statistically significant, negative coefficients in all time-windows except for MT – ceteris paribus, the less subscription rights per 1 share the rights offering proposes the lower the abnormal returns, -0.72% for ST(±1) at 5%, -0.65% for ST(±5) at 10% and -1.8% for LT at 10% respective CL.
Value issued / Market Capitalization	Statistically significant, negative coefficient in ST (±5) and positive in LT and not significant in all other periods. Ceteris paribus, the larger (lower) is the amount to be raised relative to the current market capitalization the lower (larger) is the abnormal return, -0.16% for ST(±5) and 0.38% for LT both at 1% CL.
Offered shares / Outstanding shares	Not significant in all time-windows except for LT, where it has significant negative coefficient – ceteris paribus, the larger the ratio of shares offered to the number of already outstanding ones the lower the abnormal return in LT, -0.38% at 1% CL.
Discount to TERP	Not significant in all time-windows.
Total Asset 6(18) M % change	Not significant in all time-windows except for MT, where it has positive coefficient – ceteris paribus, the larger is the increase in company total assets, the larger are the abnormal returns in MT, 2.98% at 10% CL.
Profit Margin 6(18) M % change	Not significant in all time-windows.
90 Day Volatility 6(18) M % change	Not significant in all time-windows.

Quick Ratio 6(18) M % change	Not significant in all time-windows.
D/E 6(18) M % change	Not significant in all time-windows except for LT, where it has significant negative coefficient – ceteris paribus, the higher is the increase in company's debt to equity, the lower are the abnormal returns in LT, -0.03% at 10% CL. Very small, relatively weakly significant and inconsistent with other time-windows result – negligible randomness.
1Year EPS growth 6(18) M % change	Not significant in all time-windows.
Beta 6(18) M % change	Not significant in all time-windows except for MT, where it has significant positive coefficient – ceteris paribus, the higher is the increase in company's beta, the higher are the abnormal returns in MT, 1.35% at 1% CL.
ND PS 6(18) M % change	Not significant in all time-windows.

5.2 Limitations of the quantitative method and findings

While authors consider the quantitative part of the thesis to be appropriately conducted and able to produce reliable results, although, several potential issues related primarily to model assumptions and specification might negatively affect the credibility of the results and should be acknowledged. Fama and French (1992) mentioned the fact that the assumed linearity of the relationship between stock returns and market returns in equation (1) may not always hold true, especially during periods of market volatility or structural changes, resulting in biased estimates of abnormal returns. Nevertheless, authors consider the model choice to be valid as alternatives are too simplistic and were not recommended to be used by the chartering financial institution.

Another limitation could be the method of aggregating abnormal returns across different event windows. Different days, even within one event-window, may capture different aspects of market reactions, and aggregating abnormal returns across these days may obscure important nuances in the data. MacKinlay (1997) brings out the point that the choice of event window length could impact the magnitude and significance of abnormal returns, potentially influencing the

interpretation of results. Authors have been relying extensively on aggregation technique proposed by Campbell et al. (1997) which assures of necessary quality and reliability. Window-length selection while, being induced by the supervisory institution (MT and LT) has no principal contradictions to Brown and Warner (1980) and should be appropriate.

The most complicated and susceptible to statistical assumption violation is the cross-sectional regression part of the work. According to Wooldridge (2010) and Brooks (2019) the most important thing is satisfaction of Gauss-Markov assumptions ensuring BLUE status of the OLS model, with amongst other important things especially normality (for inference) and multicollinearity (for result credibility) to pay additional attention to. Inability to satisfy aforementioned requirements might be potentially leading to imprecise coefficient estimates and difficulty in interpreting the results (see limitations). Moreover, as mentioned in the hypothesis part multiple hypotheses tests conducted within one research increasing the likelihood of Type 1 errors could not be really overcome as the paper objectives implied comprehensive analysis of rights issue characteristics that could not be done differently, as a mitigation attempt authors introduced new variables combining much more numerous original rights offering descriptors into fewer factors to test.

5.3 Result Comparison to previous research

No exact previous research closely parallels this study, making direct comparisons challenging. Due to the lack of similar research focusing specifically on the relationship between the terms of the right issue and post-issue stock price development, this study can't build on established expectations regarding specific variables, their effects, and their interrelationships. While there is research on rights issues, much of it pertains to aspects such as timing, regulatory impacts, and behavioral finance, rather than the specific terms of rights issues themselves.

6 Discussion

6.1 Key Findings

This section presents and analyzes the key findings from this study, integrating results from short-term (±1 day and ±5 days), medium-term (+180 days), and long-term (+540 days) analyses of the impact of rights issues on stock performance. The results are based on separate hypotheses tests applied on grouped SARs and BHARs as well as OLS regression analyses, considering various factors. N.B. presented coefficient numbers are the changes in abnormal returns, not to be confused with conventional returns, therefore sometimes large (ex. -0.948) values for certain variables imply the change in abnormality instead of the change in usual returns (where these extreme values would be almost impossible to see).

In the short term, specifically within the ±1 day window, the regression model explained 5.5% (Adj. R-squared value) of the variance in (CAR). The significant variables in this model included the shares/rights ratio and Pari Passu clauses. For instance, a higher shares/rights ratio demonstrated a negative impact on CAR, with a coefficient of -0.0072 ($p < 0.05$), indicating that each unit increase in this ratio led to a 0.72% decrease in CAR. This suggests that higher ratios, leading to more significant dilution, are perceived negatively by the market. The Pari Passu clauses had a positive impact on short-term CARs, with a coefficient of 0.0348 ($p < 0.1$), suggesting that ensuring new shares rank equally with existing shares in terms of dividends and voting rights enhances the attractiveness of the issue.

In the ±5 day window, the model explained 5.4% of the variance in CAR (Adj. R-squared). Significant variables included Pari Passu status, the shares/rights exchange rate, value issued relative to market capitalization. As before, Pari Passu status continued to show a positive impact with a coefficient of 0.0446 ($p < 0.1$). The shares/rights exchange rate had a coefficient of -0.0065 ($p < 0.1$), reinforcing the finding that higher dilution ratios are viewed unfavorably. Additionally, the value issued relative to market capitalization had a small but significant negative coefficient of -0.0016 (p

< 0.01), indicating that larger issues relative to the market size can lead to short-term market concerns.

The medium-term analysis explained 15.5% of the variance in CAR (Adj. R-squared). Significant variables included the issuer's domicile, Pari Passu and some changes in key financial metrics. The issuer's domicile had significant negative impacts on CAR, with coefficients of -0.948 ($p < 0.01$) and -0.6429 ($p < 0.05$), respectively, suggesting that issues from these countries were viewed less favorably. Significance of these variables only in the MT is a noticeable peculiarity left without any theoretical explanations, it is, most likely, explainable with the statistical properties of the data and potential modelling issues. The Pari Passu status continued to positively impact CARs, with a coefficient of 0.1302 ($p < 0.01$). Changes in the company's beta over six months also positively influenced CAR, with a coefficient of 0.0135 ($p < 0.01$), indicating that increased elasticity to the market was rewarded. Additionally, the increase in total assets had a positive impact, with a coefficient of 0.0296 ($p < 0.1$).

In the long-term analysis, the model explained a slightly smaller portion of the variance in CAR compared to the medium-term analysis, with an Adj. R-squared value of 0.126. Significant variables included the Pari Passu status, shares/rights exchange rate, value issued relative to market capitalization, and offered shares relative to outstanding shares. The Pari Passu status showed a substantial positive impact on long-term CARs, with a coefficient of 0.2009 ($p < 0.01$), indicating sustained investor confidence in equitable treatment of new and existing shares. The shares/rights exchange rate maintained its negative impact, with a coefficient of -0.018 ($p < 0.1$), highlighting that concerns about dilution remain relevant over a longer horizon. The value issued relative to market capitalization had a significant positive impact, with a coefficient of 0.0038 ($p < 0.01$), suggesting that larger capital raises, when communicated effectively and used strategically, are perceived positively by the market over the long term. However, the ratio of offered shares to outstanding shares had a significant negative coefficient of -0.0030 ($p < 0.01$), indicating that larger offerings

relative to existing shares are viewed negatively. Additionally, the change in debt-to-equity ratio had a small but significant negative coefficient of -0.0003 ($p < 0.1$), suggesting concerns about increasing leverage.

Overall, the study reveals consistent patterns across different time horizons. The shares/rights exchange rate consistently impacted CARs negatively, underscoring the importance of managing dilution perceptions. Higher ratios signal more substantial dilution, which the market perceives negatively, affecting stock performance. The inclusion of Pari Passu clauses positively influenced both short-term and long-term CARs, highlighting the importance of ensuring equal treatment of new and existing shares to maintain investor confidence. For practitioners, these findings suggest that companies should carefully manage the shares/rights ratio and ensure the inclusion of Pari Passu clauses to enhance the attractiveness of rights issues and mitigate negative impacts on stock performance. Proper communication about the rationale for capital raises and the strategic use of raised capital is crucial to managing investor perceptions and maintaining confidence across all time horizons. Tailoring rights issue strategies to specific market conditions and investor behaviors can improve medium-term outcomes and ensure better market reception.

6.2 Comparison to Prior Research

Previous studies, such as Marsh (1979) and Eckbo and Masulis (1992), have demonstrated that markets efficiently incorporate information from rights issues, resulting in minimal abnormal returns around the announcement period. This study's findings support the view that the market quickly absorbs information, consistent with the efficient market hypothesis. This is particularly evident in the short-term windows (± 1 day and ± 5 days), where the Adj. R-squared values of 0.055 and 0.054, respectively, indicate that only a small portion of the variance in cumulative abnormal returns (CAR) is explained by the model. Heinkel and Schwartz (1986) highlighted the importance of signaling in rights issues, explaining that the choice between underwritten offers and rights issues is influenced by signaling costs. They argued that higher quality firms use subscription prices in uninsured rights

offers to credibly disclose their quality, whereas lower quality firms opt for underwritten offers to avoid the high signaling costs. Similarly, Balachandran et al. (2008) noted that the size of the discount and the terms of the issue send important signals to the market. This study supports these findings, particularly in the short-term and medium-term analyses, where signaling through the terms of the issue plays a crucial role in market reactions.

The negative impact of larger discounts to TERP on medium-term suggested to be a signal of possible financial distress, leading to negative market reactions was found to be not significant. There is no difference in abnormal returns based on discount size, suggesting that the market's interpretation of discounts may vary depending on broader market conditions and company-specific factors. Furthermore, Myers and Majluf (1984) and Dann and Mikkelson (1984) emphasized the importance of balancing discount sizes to avoid adverse selection problems and ensure successful capital raising without overly negative signaling effects. Therefore, one could argue that the relationship between discount size and post-issue stock price development is complex. Significant discounts may result in an immediate share price decline due to perceived negative signals about the company's valuation, as noted by Marsh (1979) and Balachandran et al. (2008). The study's findings suggest that while discounts can boost short-term participation, the medium and long-term impacts depend on how the market reassesses the company's value post-dilution and capital increase.

Similarly, the positive impact of Pari Passu clauses on both short-term (coefficient of 0.0348, $p < 0.1$) and long-term CARs (coefficient of 0.2009, $p < 0.01$) aligns with the signaling theory, indicating that equitable treatment of new and existing shares enhances investor confidence. Furthermore, since this study found statistically significant positive coefficients for Pari Passu status across all time windows, it indicates that rights issues following to the Pari Passu principle tend to result in higher abnormal returns. This aligns with the findings of Smith (1977) and Eckbo et al. (2007), who emphasized the importance of maintaining proportional ownership and equal rights to

mitigate negative market reactions. The positive impact of Pari Passu status on CARs reflects investor preference for equitable treatment, which also supports stock performance.

The consistent negative impact of the shares/rights ratio across all time horizons in this study aligns with findings by Bacon (1972) and Kabir and Roosenboom (2003), who noted that higher dilution ratios are perceived negatively by the market. Kabir and Roosenboom (2003) also found that while active trading of rights can occur during the subscription period, the overall long-term performance of firms tends to decline. Bacon (1972) suggested that larger discounts, though initially concerning, can improve the probability of a successful issue without negatively impacting short-term stock performance. The results of this study show that a higher shares/rights ratio leads to significant decreases in CAR, with coefficients of -0.0072 ($p < 0.05$) in the ± 1 day window, -0.0065 ($p < 0.1$) in the ± 5 day window, and -0.0180 ($p < 0.1$) in the long-term analysis. This indicates that concerns about dilution are persistent and significantly affect stock performance.

Pham and Yuen (2017) emphasized the role of renounceability and liquidity in rights issues. They found that renounceable rights, which allow shareholders to trade their rights, can stabilize share prices by providing liquidity. The findings of this study, while not directly measuring renounceability, suggest that mechanisms improving liquidity and providing options to shareholders (like Pari Passu clauses) positively impact stock performance. Additionally, Armitage (2000) and Kothare (1997) found that renounceable rights issues tend to perform better post-issue due to higher participation rates and positive market perception. However, in this study, the null hypothesis for renounceability was not rejected across all time windows, indicating that the abnormal returns for renounceable and non-renounceable rights offerings were not statistically significantly different from each other. This suggests that while renounceability might enhance shareholder options and participation, it may not have a consistently measurable impact on abnormal returns in the short, medium, or long term.

Research by Marsh (1979) suggested that the size of the issue might not significantly impact returns in highly liquid markets, a view partially supported by the long-term analysis. Moreover, Loughran and Ritter (1995) highlighted the potential for larger issues to face greater scrutiny and underperformance. This study found that while larger issues relative to market capitalization negatively impacted short-term CARs, they positively influenced long-term CARs. This suggests that although large capital raises may initially concern investors, effectively communicated and strategically used capital can enhance long-term stock performance, highlighting the importance of transparent and strategic capital utilization. The value issued relative to market capitalization had a significant positive impact on long-term CARs (coefficient of 0.0038, $p < 0.01$), suggesting that larger capital raises can be perceived positively when effectively communicated and strategically utilized. Kothare (1997) as well as Heinkel and Schwartz (1986) suggested that this ratio impacts stock performance by affecting liquidity and adverse selection concerns. The results of this study indicates that higher dilution ratios are perceived unfavorably by the market, reinforcing the need for companies to carefully balance the number of rights issued per share to avoid negative perceptions of excessive dilution. This contrasts with the medium-term negative impact of larger discounts, highlighting the importance of strategic communication and the use of raised capital. Therefore, the strategic rationale for raising capital and its intended use is pivotal in shaping investor perceptions.

Although the study found no statistically significant difference in abnormal returns between offensive and defensive use of proceeds, the underlying rationale remains critical. Brav and Gompers (1997) suggested that well-justified capital use positively influences investor outlook. Therefore, clear and strategic communication regarding the use of proceeds is essential for mitigating negative perceptions and fostering a positive market response. Overall, this study reinforces the efficient market hypothesis, indicating that information from rights issues is quickly absorbed, with minimal long-term abnormal returns. It also supports signaling theory, showing that the market perceives

larger discounts and higher shares/rights ratios negatively, while equitable terms like Pari Passu clauses enhance investor confidence. These findings partially align with prior research and add depth to the understanding of how rights issues impact stock performance across different time horizons.

6.3 Implications of Theory

The findings from this study have several important theoretical implications, particularly in relation to the efficient market hypothesis, signaling theory, and behavioral finance.

Table 24. Predicted/anticipated general effect of rights issue on the share price and the analysis results.

Theory	**Overall Effect of the Rights Issue on the share price**		
	Short Term	***Medium Term***	***Long Term***
Efficient market hypothesis	Negative	Stabilization	No effect
Information Asymmetry	Negative	Stabilization	Positive
Price Pressure Hypothesis	Negative	Stabilization	No effect
Wealth Transfer Hypothesis	Negative	Stabilization	Unclear
Pecking Order Theory	Negative	Stabilization	No effect
Market Timing Hypothesis	Negative	Stabilization	Positive
Investment Opportunities Hypothesis	Uncertain	Stabilization	Positive
Performed Analysis Results	*Very negative*	*Negative*	*Slightly Negative*

Table 25. Predicted or anticipated general effect of rights issue terms on the share price

Factor	**Efficient market**	**Info. Asymmetry**	**Price Pressure**	**Wealth Transfer**	**Pecking Order Theory**	**Market Timing**	**Invest. Opportunities**	**Performed analysis results**
Renounce-ability	+	+	+	+	+	+	+	Insignificant
Pari Passu	+	+	+	+	+	+	+	+
Shares/ Rights	-	+	+	-	-	-	+	-
Money size	-	-	-	-	-	-	+	ST + | LT -
Share size	-	-	-	-	-	-	+	-
Discount to TERP	+	-	+	-	-	-	+	Insignificant
Use of proceeds	Situational	+	Situational	-	+	Situational	Situational	Insignificant

The results of this study provide substantial support for the semi-strong EMH, which suggests that stock prices reflect all past market data and all publicly available information, but not the private knowledge (due to the presence of leakage). This hypothesis is supported by the non-significance of abnormal returns in the period (-5, to -2), but then abrupt change (fall) as market learns new information. This is additionally observed in the short-term analyses, where the Adj. R-squared values were relatively low (0.055 and 0.054). These findings align with prior research by Marsh (1979) and Eckbo and Masulis (1992), indicating that markets quickly incorporate information from rights issues, leaving little room for long-term abnormal returns. This suggests that investors and market participants are adept at processing new information about rights issues, leading to rapid adjustments in stock prices.

Signaling effects being elements of different theories, which suggest that firms use certain financial decisions to signal their quality to the market, are supported by this study's findings. The positive impact of Pari Passu clauses on both short-term (coefficient of 0.0348, $p < 0.1$) and long-term CARs (coefficient of 0.2009, $p < 0.01$) supports the notion that signals of equitable treatment and fairness are well-received by investors, enhancing confidence and potentially improving stock performance. This study also highlights the importance of the shares/rights ratio as a signaling mechanism. The consistent negative impact of higher shares/rights ratios across all time horizons (e.g., coefficient of -0.0072, $p < 0.05$ in the ± 1 day window) suggests that investors interpret higher dilution as a negative signal about the firm's value or future prospects. This aligns with the theoretical frameworks proposed by Brennan and Kraus (1987) and Myers and Majluf (1984), which emphasize the adverse selection problem and the need for firms to signal their quality effectively.

The findings also contribute to the field of behavioral finance by highlighting how investor sentiment and perception influence market reactions to rights issues. The immediate market reaction to rights issues, particularly in stable or bullish markets, where moderate discounts lead to positive short-term price adjustments, underscores the role of investor sentiment as discussed by Korajczyk

et al. (1990). Conversely, in bearish or volatile markets, even reasonable discounts can trigger negative price movements, reflecting the heightened sensitivity of investors to perceived risks and uncertainties during such periods. The role of renounceability and the adjustment factor further illustrates behavioral responses. Balachandran et al. (2008) and Pham and Yuen (2017) suggest that the ability to trade rights (renounceability) provides liquidity and mitigates the negative impact of dilution, aligning with this study's findings that emphasize the positive impact of equitable and well-structured rights issues on stock performance.

This study further extends the understanding of how market conditions and investor behavior interact with theoretical models. The significant impact of market conditions on the medium-term effects of rights issues, as shown by the importance of strategic use of raised capital and effective communication, where (Brav et al. 2000), underscores the dynamic nature of investor behavior. This dynamic is particularly evident in markets with varying regulatory and cultural contexts, where different investor bases (retail vs. institutional) and regional practices can lead to diverse reactions to rights issues (Loughran and Ritter, 2004).

6.4 Implications for Practice

The theoretical implications of this study's findings translate into several practical recommendations for corporate managers contemplating rights issues. Firstly, previously found to be very important need for careful management of discount sizes was not backed by the results of this paper. Larger discounts, while potentially attracting immediate participation were not found to affect abnormal stock performance. Companies should strive to find a balance in other rights issue terms that incentivizes shareholder participation without sending adverse signals to the market. Secondly, in general transparent communication about the use of raised capital is crucial. Effective communication strategies that clearly articulate the strategic rationale for the rights issue and how the capital will be employed can mitigate negative market perceptions and enhance investor confidence. Overwhelming majority of the issuers specify the reasons of the offering and how the

money is planned to be utilized, making it impossible to test whether the fact of giving or not giving the explanation by the management is affecting the price. Nevertheless, due to the high variability of reasons it was possible to examine the effect of offensive and defensive natures of proceeds usage. No difference has been found to be statistically significant reiterating ideas presented by Brav and Gompers (1997). This approach is supported by the positive impact of clear and equitable terms, such as Pari Passu clauses, which have been shown to positively influence stock performance in both short-term and long-term analyses. Additionally, ensuring the inclusion of favorable terms like renounceability could potentially provide liquidity and reduce the negative impact of dilution by allowing shareholders to trade their rights, companies can maintain share price stability and encourage broader participation, this conclusion stemming from previous research was not confirmed by this thesis. Finally, tailoring rights issue strategies to specific market conditions and investor behaviors is essential. Understanding the composition of the investor base (retail vs. institutional) and the prevailing market sentiment can help in designing rights issues that are well-received by the market. In highly liquid markets, larger issues might not result in adverse outcomes if the market can absorb new equity without significant price pressure, as indicated by Marsh (1979). By focusing on these practical strategies, companies can optimize the outcomes of rights issues, balancing immediate financing needs with long-term shareholder value creation. Ensuring that the signaling to the market is clear and positive can help maintain or enhance investor confidence, thereby stabilizing stock prices post-issue.

6.5 Overall limitations of the study

While this study provides insights into the impact of rights issues on stock performance, several limitations must be acknowledged.

Geographical Focus

The study focuses primarily on rights issues within Scandinavian markets. While this regional focus allows for a detailed analysis of these specific markets, it may limit the generalizability of this study's

findings to other geographical regions with different market dynamics, regulatory environments, and investor behaviors. Future research could benefit from a broader geographic scope to assess whether the observed effects hold in diverse global contexts.

Market Conditions and External Factors

The study primarily focuses on the intrinsic factors of rights issues, such as discount size, shares/rights ratio, and Pari Passu clauses, while external market conditions and macroeconomic factors are only indirectly considered. Market conditions at the time of the rights issue, such as overall economic health, investor sentiment, and geopolitical events, can significantly influence stock performance and investor behavior. Future studies should incorporate a more comprehensive analysis of these external factors to provide a more holistic understanding of rights issues' impacts.

Short-Term vs. Long-Term Effects

While this study examines the short-term, medium-term, and long-term effects of rights issues, the time horizons selected (±1 day, ±5 days, 180 days, and 540 days) may not fully capture the complete dynamics of stock performance. Short-term reactions can be influenced by immediate market sentiment and trading behavior, whereas long-term effects might be subject to evolving company performance and broader economic conditions. A more granular analysis over different time intervals could offer deeper insights into the temporal dynamics of rights issues.

Behavioral Aspects

Although this study touches on behavioral finance aspects, such as investor sentiment and perception, it does not delve deeply into the psychological factors driving investor decisions. Understanding the behavioral drivers behind investor responses to rights issues requires a more detailed examination, possibly incorporating qualitative methods such as surveys or interviews with investors to complement the quantitative analysis.

Limited Scope of Variables

This analysis focuses on a specific set of variables, such as discount to TERP, shares/rights ratio, Pari Passu clauses and some other ones. While these are critical factors, other variables such as the company's historical performance, industry sector, competitive position or degree of internationalization were not included. Future research could expand the scope of variables to provide a more comprehensive analysis of the factors influencing stock performance post-rights issue.

6.6 Future Research Directions

Building on the findings and limitations of this study, several paths for future research can be pursued to deepen the understanding of the impact of rights issues on stock performance and to address the gaps identified in the current literature.

Geographic Expansion

Future research should expand beyond Scandinavian markets to include a broader range of geographical regions. By examining rights issues in diverse global markets, researchers can assess the generalizability of this study's findings and explore how different regulatory environments, cultural factors, and market dynamics influence the outcomes of rights issues. Comparative studies across multiple countries would provide valuable insights into the regional variations and commonalities in investor behavior and market reactions.

Extended Time Horizons

While this study focused on short-term (±1 day and ±5 days), medium-term (180 days), and long-term (540 days) effects, future research could benefit from examining additional time intervals to capture a more granular view of the temporal dynamics. Studies could investigate quarterly and annual performance metrics to understand how the impact of rights issues evolves over different stages of the business cycle and economic conditions.

Incorporation of External Factors

Future studies should incorporate a more comprehensive set of external factors, such as macroeconomic indicators, market sentiment indices, and geopolitical events, to understand their influence on the performance of rights issues. Additionally, the underwriting status of the issue (whether it is or not underwritten) and related parameters (advising institution, underwriting terms etc.) can be investigated. By integrating these variables into the analysis, researchers can better isolate the effects of intrinsic factors from broader market influences, providing a more holistic understanding of the determinants of stock performance post-rights issue.

Behavioral Finance Insights

To gain deeper insights into the behavioral aspects of investor responses to rights issues, future research could employ qualitative methods such as surveys, interviews, and case studies. Understanding the psychological drivers and decision-making processes of different investor groups (e.g., retail vs. institutional investors) can shed light on the underlying motivations behind their reactions to rights issues. This approach would complement quantitative analyses and provide a richer, more nuanced understanding of investor behavior.

Statistical Techniques

Addressing the issue of multicollinearity and improving the robustness of regression models is crucial for future research. Statistical techniques such as ridge regression, principal component analysis, and machine learning algorithms can help mitigate multicollinearity and enhance the reliability of coefficient estimates. These methods can also identify complex interactions between variables, offering deeper insights into the factors influencing stock performance.

Sector-Specific Analysis

Future studies could explore the impact of rights issues within specific industry sectors to determine if the effects vary by industry. Different sectors may have unique characteristics and investor bases,

leading to varied reactions to rights issues. Sector-specific analysis would help identify industry-specific best practices and provide tailored recommendations for companies considering rights issues.

Impact of Company Characteristics

Expanding the scope of variables to include company-specific characteristics such as historical performance, corporate governance quality, and competitive positioning can provide a more comprehensive analysis. Understanding how these factors interact with rights issue terms can help identify the conditions under which rights issues are most likely to succeed or fail.

Longitudinal Studies

Conducting longitudinal studies that track the performance of companies over an extended period post-rights issue can provide valuable insights into the long-term implications of these financing decisions. Such studies can examine how the strategic use of raised capital, changes in corporate governance, and evolving market conditions affect long-term stock performance and company growth.

Cross-Market Comparative Studies

Future research could conduct cross-market comparative studies to examine how different regulatory frameworks and investor protection standards influence the outcomes of rights issues. By comparing markets with varying levels of regulation and investor protection, researchers can identify best practices and regulatory approaches that enhance the success of rights issues and protect shareholder interests.

Impact of Technological Advances

The rise of fintech and digital platforms in capital markets presents an opportunity for future research to explore how technological advances affect the execution and reception of rights issues.

Studies could investigate the role of digital communication channels, online trading platforms, and blockchain technology in improving the transparency, efficiency, and accessibility of rights issues.

7 Conclusion

This study examined the impact of rights issues on stock performance for a sample of Nordic enterprises over a ten-year period. The analysis focused on various rights issue terms, such as renounceability, Pari Passu clauses, shares/rights ratios, and discounts to TERP, and their effects on cumulative abnormal returns (CAR) over short-term (±1 day and ±5 days), medium-term (180 days), and long-term (540 days) windows. The short-term analysis revealed that the shares/rights exchange rate and Pari Passu status were significant factors influencing CAR. Higher shares/rights ratios negatively impacted CAR, indicating that greater dilution is perceived unfavorably by the market. Conversely, the inclusion of Pari Passu clauses, which ensure new shares rank equally with existing shares in terms of dividends and voting rights, had a positive impact on CAR. The relatively low R-squared values of 0.055 for the ±1 day window and 0.054 for the ±5 day window suggest that only a small portion of the variance in CAR is explained by the model, supporting the (EMH) that markets quickly incorporate information from rights issues. Positive influences included the Pari Passu status and increases in the company's beta and total assets. These findings indicate that while certain regional factors may negatively influence market reactions, signals of equitable treatment and increases in key financial metrics can positively affect medium-term performance. The long-term analysis, explaining 12.6% of the variance in CAR, showed that the Pari Passu status continued to have a substantial positive impact on CAR, indicating sustained investor confidence in the equitable treatment of new and existing shares.

The shares/rights exchange rate maintained its negative impact, highlighting ongoing concerns about dilution. Additionally, the value issued relative to market capitalization had a significant positive impact, suggesting that larger capital raises are perceived positively when effectively communicated and strategically utilized. However, the ratio of offered shares to outstanding shares had a significant negative impact, and increases in the debt-to-equity ratio were also viewed negatively, suggesting concerns about leverage. A key focus of this study was the

relationship between the size of the discount in rights issues and post-issue stock price development, particularly in the short and medium term. The results indicate that the discount to TERP was not a significant factor in all time-windows. These findings bring a new light to the importance of carefully managing the size of the discount to avoid adverse signaling effects that could harm stock performance beyond the immediate post-issue period.

Overall, the study reveals consistent patterns across different time horizons. It examined the effect of the rights issues on share price in general saying that announcement date is followed by the steep fall in share price and large negative abnormal returns, thus supporting all introduced theories. Pertaining to the rights issue terms lower consistency with the theory has been found. The analysis results are backing majority of the theories, but only fragmentarily. Output is consistent with some of the predictions and is violating others. Most evidence comes in the support of the Efficient market, Information Asymmetry, Wealth Transfer, Pecking order and Market timing theories. Price Pressure and Investment Opportunity theories, on the other hand, showed lower explanatory power. Consequently, the thesis concludes that careful investigation of all the issue conditions and their potential repercussions, both positive and negative, should be done if the issue is set to mitigate the negative share price development observed to follow the offering. Proper communication about the rationale for capital raises and the strategic use of raised capital is crucial to managing investor perceptions and maintaining confidence across all time horizons. Tailoring rights issue strategies to specific market conditions and investor behaviors can improve medium-term outcomes and ensure better market reception.

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9 Appendix

Table A1. Distribution of sample rights offering issuers across sectors

Industry (MSCI GISC Sector)	**Count of sample firms**
Energy	9
Materials	11
Industrials	47
Consumer Discretionary	12
Consumer Staples	5
Health Care	47
Financials	20
Information Technology	14
Communication Services	13
Real Estate	26
Total	***204***

Table A2. Distribution of sample rights offering issuers across countries and currencies

Year of the announcement date	**Count of sample firms**
Sweden	***137***
SEK	135
NOK	1
EUR	1
Norway	***28***
NOK	27
SEK	1
Denmark	***25***
DKK	19
SEK	3
NOK	1
EUR	1
Finland	***15***
EUR	15
Total	***204***

Table A3. Distribution of sample rights offering issuers across sectors

Year of the announcement date	Count of sample firms
2014	16
2015	13
2016	33
2017	21
2018	18
2019	14
2020	23
2021	18
2022	18
2023	30
Total	***204***

Illustration A1. Distribution of sample rights offering announcement dates

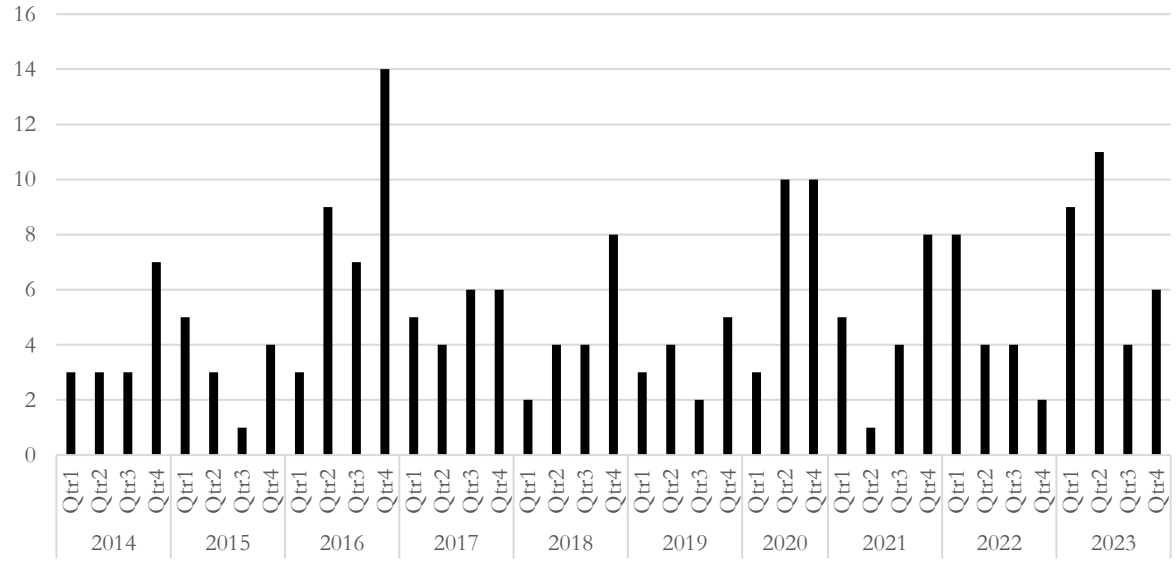

Table A4. Results of the statistical test for the cross-sectional regression.

Time-Window	Adj. R^2	F-statistic	Durbin-Watson	Breusch-Pagan	Shapiro-Wilk	VIF
ST(±1)	0.055	2.079**	0.190693	37.577488***	0.933846***	209.569034
ST(±5)	0.054	2.050**	0.244363	5.559425	0.915634***	209.569034
MT(+180)	0.155	2.823***	0.432319	13.048281	0.987187*	196.458505
LT(+540)	0.126	2.240***	0.533388	21.855372	0.995161	179.105671