UNIVERSITY OF TURKU
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Pre-Announcement Price Dynamics in Nordic Follow-on Equity Offerings

Evidence of Directed Share Issues and Accelerated Bookbuildings

Department of Accounting and Finance
Bachelor's thesis

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Declaration of the Use of Artificial Intelligence (AI)

I hereby declare that generative artificial intelligence was used as a tool to support the work in this thesis. In accordance with the policies of the Turku School of Economics, a detailed description of the tools used and their specific application in the research process is provided in Appendix 4.

The originality of this thesis has been checked in accordance with the University of Turku quality assurance system using the Turnitin Originality Check service.

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This thesis investigates whether Nordic follow-on equity offerings executed through accelerated bookbuildings and directed share issues exhibit systematic short-horizon pricing dynamics prior to public disclosure. The inquiry is motivated by the conceptual tension within the literature on issuance timing: information-asymmetry models, behavioural pricing mechanisms, market-efficiency arguments and rational real-options frameworks generate diverging expectations for pre-announcement return behaviour, and none yields a definitive prediction in the Nordic institutional setting. The Nordic markets combine high transparency, dense institutional monitoring and rapid execution mechanisms, implying that any informational or behavioural frictions capable of generating short-term valuation deviations are confined to a narrowly bounded pre-announcement window.

Methodologically, the study applies a short-horizon event-study design that estimates market-model abnormal returns over a pre-announcement period ending immediately before disclosure. Using a hand-collected sample of 40 offerings issued between 2007 and 2025, the analysis integrates both time-series evidence on cumulative return patterns and cross-sectional diagnostics based on firm-level idiosyncratic volatility. This framework enables the identification of valuation drift, the assessment of its heterogeneity across informational environments and the evaluation of how efficiently the market incorporates issuance information once it becomes public.

The results indicate that short-lived pricing deviations arise exclusively within the pre-announcement window. A smooth and temporally distributed upward drift appears before disclosure, while announcement-day and post-announcement abnormal returns remain statistically indistinguishable from zero. This asymmetric pattern suggests that investors form expectations under partial or unevenly processed information prior to the event, but that any interpretive ambiguity is eliminated once definitive issuance information is released. Cross-sectional evidence provides modest support for the view that informational frictions condition the magnitude of pre-announcement effects, although these frictions do not persist beyond disclosure.

Taken together, the findings refine theoretical understanding of issuance timing in the Nordic context by demonstrating that temporary valuation effects originate within and are confined to the informational ambiguity preceding public announcement. The study thereby clarifies the empirical preconditions under which timing incentives may become relevant and provides a framework for interpreting short-horizon pricing behaviour in markets characterised by both high transparency and rapid execution.

Key words: Follow-on Public Offering (FPO), Directed Share Issue, Accelerated Bookbuilding (ABB), Market Timing, Mispricing, Information Asymmetry, Behavioural Finance, Cumulative Abnormal Return (CAR).

Kandidaatintutkielma

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Tutkielma tarkastelee, esiintyykö Pohjoismaissa toteutetuissa listayhtiöiden myöhemmissä osakeanneissa systemaattisia lyhyen aikavälin tuottopoikkeamia ennen annin julkista ilmoittamista. Tutkimus kohdistuu erityisesti nopeutettua tarjousmenettelyä ja suunnattuja osakeanteja hyödyntäviin järjestelyihin, joissa annin toteutus tapahtuu nopeasti rajatulle sijoittajaryhmälle. Tutkimusaihe pohjautuu liikkeeseenlaskun ajoitusta käsittelevän kirjallisuuden sisäiseen teoreettiseen jännitteeseen: informaation epäsymmetriaan perustuvat mallit, käyttäytymispohjaiset hinnoittelumekanismit, markkinatehokkuutta korostavat näkökulmat sekä rationaalisiin reaalivaihtoehtoihin nojaavat viitekehykset tuottavat keskenään ristiriitaisia odotuksia ilmoitusta edeltävästä tuottokäyttäytymisestä.

Yksikään näistä viitekehyksistä ei kuitenkaan anna yksiselitteistä ennustetta Pohjoismaiden institutionaalisessa ympäristössä, jota luonnehtivat korkea läpinäkyvyys, tiivis institutionaalinen seuranta ja poikkeuksellisen nopeat toteutusmekanismit. Näin ollen mahdollisten informaatio- tai käyttäytymisperäisten ilmiöiden on synnyttävä ja purkauduttava hyvin rajatussa ikkunassa, jotta ne voisivat ilmetä havaittavina lyhytaikaisina arvostuspoikkeamina.

Menetelmällisesti tutkielma hyödyntää lyhyen aikavälin tapahtumatutkimus -asetelmaa, jossa markkinamalliin perustuvat epänormaalit tuotot estimoidaan ilmoitusta edeltävältä ajanjaksolta. Aineisto koostuu käsin kootusta 40 osakeannin otoksesta vuosilta 2007–2025. Asetelma yhdistää kumulatiivisten tuottokehitysten aikasarja-analyysin ja poikkileikkaustarkastelun, jossa yrityskohtaisia idiosynkraattisen volatiliteetin mittareita hyödynnetään informaatioympäristöjen erojen tunnistamisessa.

Empiiriset tulokset osoittavat, että lyhytaikaiset hinnoitteluvaikutukset rajoittuvat yksinomaan ilmoitusta edeltävään ajanjaksoon. Ennen julkistusta havaitaan tasainen positiivinen tuottokehitys, kun taas ilmoituspäivän ja sitä seuraavien päivien epänormaalit tuotot eivät ole tilastollisesti merkitseviä. Tämä viittaa siihen, että sijoittajien odotukset muotoutuvat ennen tapahtumaa epäselvän tai osittaisen informaation varassa, mutta purkautuvat välittömästi annin julkistamisen myötä.

Kokonaisuutena tulokset täsmentävät liikkeeseenlaskun ajoitusta koskevaa teoreettista ymmärrystä Pohjoismaiden kontekstissa osoittamalla, että lyhytikäiset arvostusvaikutukset syntyvät vain ennen julkista ilmoitusta vallitsevan informaatioepäselvyyden aikana ja rajoittuvat siihen.

Avainsanat: Listayhtöiden myöhemmät osakeannit, Suunnattu osakeanti, Kiihdytetty tarjousmenettely, Markkina-ajoitus, Virhehinnoittelu, Informaation epäsymmetria, Käyttäytymisrahoitus, Kumulatiivinen epänormaali tuotto.

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1 Introduction

Valuation dynamics play a central role in understanding why firms may choose to issue follow-on equity at particular times. A substantial body of research indicates that managers may exploit brief intervals during which market prices diverge from their fair value, especially when managers possess information that has not yet diffused to outside investors (Dierkens 1991). Pre-issue valuation run-ups may also reflect behavioural forces, as investor optimism and selective information processing elevate prices in the days preceding an offering, making this interval analytically revealing for detecting short-lived valuation deviations rather than financing-driven motives (Hirshleifer 2001). In issuance environments characterised by rapid execution and minimal pre-disclosure, these short-horizon price dynamics become particularly salient for assessing whether managers time offerings to exploit temporary mispricing.

These considerations motivate the central question of this thesis: do Nordic follow-on offerings exhibit systematic pre-announcement overpricing before disclosure? The academic relevance of this question is pronounced because influential theoretical frameworks yield diverging predictions. Information-based theories suggest that managers with private knowledge may strategically issue equity when valuations appear temporarily inflated (Foerster & Karolyi 2000). Behavioural finance offers a complementary mechanism, attributing such deviations to investor overconfidence, selective information processing and momentum-driven pricing (Hertzel & Li 2010). In contrast, rational real-options models show that positive price drift prior to issuance can emerge endogenously as firms approach the exercise of growth options, expected returns mechanically decline, thereby producing rising prices in fully efficient markets (Carlson et al. 2006).

Issuance timing is further shaped by broader market conditions. Firms tend to issue more frequently when aggregate valuations are favourable and shifts in investor sentiment may attenuate the negative announcement effects typically associated with follow-on offerings (Bayless & Chaplinsky 1996). These findings underscore that short-horizon valuation dynamics reflect an interplay between firm-specific information, behavioural forces and market-wide pricing environments.

The Nordic region provides an unusually informative context for evaluating these mechanisms. This thesis focuses on accelerated bookbuildings and directed share issues, both of which feature rapid execution via overnight and give managers substantial discretion over timing. The structural compression inherent to these offering mechanisms defines a sharply delimited pre-announcement window that is particularly well suited to identifying short-lived valuation deviations. At the same time, Nordic markets are characterised by strong institutional ownership and governance systems that

typically constrain opportunistic behaviour (Hovakimian & Hu 2016). This combination of managerial discretion and robust monitoring offers a unique opportunity to assess whether temporary valuation deviations arise despite institutional safeguards.

Yet systematic evidence on pre-announcement pricing in Nordic markets remains scarce. It is therefore unknown whether the short-horizon patterns documented internationally also characterise Nordic accelerated bookbuildings and directed share issues. Identifying whether systematic price run-ups occur is critical because the empirical pattern helps discriminate between competing theoretical explanations: observed appreciation would be consistent with information-based or behavioural accounts (Loughran & Ritter 1995), while its absence would be more in line with rational investment-based interpretations and suggest that Nordic issuance practices may mitigate frictions that promote timing incentives elsewhere (Baker & Wurgler 2002).

Understanding whether short-lived valuation deviations occur also has broader capital-market implications. Pre-announcement overpricing influences the allocation of value between existing and new shareholders, shapes the interpretation of issuance announcements and informs assessments of allocative efficiency (Brav, Geczy & Gompers 2000). Establishing whether such deviations arise is therefore a necessary empirical precondition for evaluating issuance timing. To address this question, the thesis applies an event-study methodology to estimate abnormal returns over a pre-announcement window ending immediately before public disclosure, consistent with established procedures for isolating short-term price effects (MacKinlay 1997).

1.1 Research Gap, Contribution and Scope of the Research

Building on the conceptual foundations outlined in the introduction, a central gap remains in the empirical literature: existing research has not examined whether short-horizon pricing patterns precede follow-on equity offerings in the Nordic markets. Although international studies show that firms may exploit valuation conditions or issue equity under asymmetric information or behavioural mispricing, these insights arise from institutional environments that differ structurally from the Nordic region (Foerster & Karolyi 2000).

Rational real-options models further demonstrate that short-horizon price increases may arise endogenously as firms approach growth opportunities (Carlson et al. 2006), yet it remains unknown whether these mechanisms manifest in markets characterised by concentrated institutional ownership and distinctive issuance procedures (Wruck 1989). The absence of evidence leaves an unresolved

question regarding whether the valuation patterns documented internationally emerge under Nordic issuance practices or whether the region exhibits different pre-announcement price behaviour.

This thesis contributes to filling this gap through three avenues. First, it contributes among the early event-study analyses of pre-announcement abnormal returns in Nordic follow-on offerings, establishing whether short-term valuation deviations arise before disclosure. Second, by juxtaposing empirical results with the predictions of asymmetric-information theories, behavioural finance frameworks, market-wide timing models and rational real-options explanations, the study evaluates which mechanism aligns with pricing behaviour in this environment. Third, the analysis clarifies the empirical preconditions under which timing incentives become meaningful, offering a structured approach to interpreting short-horizon valuation patterns in follow-on equity markets.

To ensure that the empirical results address the research question directly, the scope is deliberately focused. The dataset includes Nordic accelerated bookbuildings and directed share issues conducted between 2007 and 2025. By restricting the analysis to the pre-announcement period, the study isolates valuation dynamics that materialise before the public disclosure. Long-run stock performance is excluded, as it does not inform whether price appreciation occurs prior to disclosure. This delineation ensures that the analysis speaks precisely to the guiding question of the thesis: do Nordic follow-on offerings exhibit systematic price appreciation immediately before public announcement?

1.2 Structure of the Thesis

The thesis proceeds systematically from theoretical foundations to empirical analysis. Chapter 2 establishes the conceptual basis by examining information environments, behavioural dynamics, market efficiency considerations, rational pricing mechanisms and Nordic institutional features relevant to short-horizon valuation. Chapter 3 formulates the research question, develops the hypotheses and presents the conceptual framework underpinning the empirical tests.

Chapter 4 outlines the data and methodology, including sample construction, the event-study design, return estimation procedures, statistical testing logic and robustness considerations. Chapter 5 reports the empirical results, detailing descriptive evidence and formal tests of pre-announcement price behaviour. Chapter 6 concludes by integrating the findings, interpreting them relative to prior literature, outlining limitations and identifying avenues for further research.

2 Theoretical Framework

The purpose of this chapter is to establish a clear conceptual foundation for understanding why short-horizon pricing patterns may emerge prior to equity issuance and how different theoretical mechanisms shape their interpretation. By presenting the main informational, behavioural and rational explanations in an integrated manner, the chapter guides the reader in evaluating which mechanisms are theoretically plausible in the Nordic market environment and why the empirical analysis focuses specifically on the pre-announcement interval.

2.1 Information Environments and Behavioural Dynamics

A central premise in the literature on equity issuance timing is that information does not reach all market participants simultaneously. Classical models argue that insiders may briefly observe shifts in fundamentals before outside investors, allowing equity values to become temporarily inflated relative to publicly available information and motivating issuance decisions during such periods of transitory overvaluation (Dierkens 1991). This intertemporal information gap links issuance timing to short-lived valuation conditions rather than to long-run fundamentals. Related assumptions appear in the event-study literature, which treats public disclosure as the point at which prices adjust rapidly, and abnormal returns dissipate (MacKinlay 1997).

This logic is particularly relevant for follow-on offerings, where the pre-announcement interval is inherently short and sharply defined. Because issuance decisions are finalised before disclosure, the pre-announcement period constitutes the only phase in which managerial assessments can diverge meaningfully from prevailing market valuations in an empirically observable way. Such divergence is most likely when signals regarding firm prospects are subtle, fragmented or only partially reflected in prices, allowing temporary valuation pressures to accumulate before uncertainty is resolved.

At the same time, international evidence indicates that firm-specific information is rarely the sole driver of issuance behaviour. Bayless and Chaplinsky (1996) show that equity issuance activity co-moves with broad valuation conditions, suggesting that managers respond to favourable aggregate pricing environments as well as to firm-level considerations. Subsequent research similarly emphasises that market-wide conditions, investor demand and liquidity cycles shape issuance decisions beyond narrow informational advantages (Kim & Weisbach 2008). These findings challenge a purely informational interpretation of issuance timing and suggest that pre-announcement price dynamics may reflect broader valuation regimes rather than firm-specific mispricing alone.

Behavioural research further complicates the picture by demonstrating that short-horizon price drift can emerge without insider advantage. Investors may overweight recent performance, salient news or dominant narratives, generating deviations from fundamental value (Brav, Geczy & Gompers 2000). Around equity issuance events, such behavioural dynamics may be amplified, as issuance activity itself can be interpreted as a signal of firm quality or growth prospects. Pre-announcement appreciation may therefore reflect collective sentiment and narrative-driven revaluation rather than deliberate managerial timing.

Importantly, behavioural mechanisms operate through public information channels. Even when information is broadly available, heterogeneous interpretation and differential attention can produce temporary valuation pressure. Behavioural explanations thus provide a distinct rationale for pre-announcement returns that does not rely on private information but instead highlights gradual price adjustment as investors process and reinterpret shared signals.

These informational and behavioural channels need not operate independently. A modest informational advantage may be amplified if markets initially underreact to emerging signals, while behavioural biases increase sensitivity to both firm-level and aggregate cues (Daniel & Titman 1999). Conversely, market-wide valuation signals may dominate issuance incentives even when firm-specific information is limited, blurring the distinction between informational timing and opportunistic issuance during favourable market conditions (Kim & Weisbach 2008). Empirical evidence therefore suggests that sentiment, liquidity conditions and informational frictions frequently coexist around equity issuance events, implying that observed pricing patterns are unlikely to be driven by a single mechanism (Hertzel & Li 2010).

Taken together, the theoretical literature does not yield clear-cut expectations for short-horizon price dynamics prior to follow-on offerings. Information asymmetry models, behavioural frameworks and market-wide valuation perspectives generate overlapping yet distinct implications for pre-announcement returns. Rather than providing definitive predictions, these perspectives function as competing interpretive lenses whose relative relevance must be evaluated empirically. This conceptual indeterminacy motivates the empirical analysis that follows, which seeks to establish whether systematic pre-announcement abnormal returns are present and how their characteristics align with the mechanisms outlined above.

2.2 Market Efficiency, Expectations, and Rational Price Dynamics

Market efficiency and rational valuation models introduce a perspective that both challenges and complements the informational and behavioural mechanisms outlined earlier, and their implications are central when assessing whether systematic pre-announcement patterns should exist in Nordic follow-on offerings. In markets that process information rapidly, even minor public signals should be incorporated almost instantaneously, thereby raising the question of whether the short pre-announcement window examined in this thesis is long enough for any predictable deviation to materialise at all (Fama 1998).

This framing aligns with the efficient market hypothesis, under which prices continuously reflect available information and abnormal returns should be difficult to earn even over short horizons. This observation creates an analytical tension: if investors revise expectations continuously, then subtle adjustments in strategic focus, liquidity positioning or corporate communication that precede an offering may produce a rational upward drift that resembles mispricing. Efficiency therefore does not exclude pre-announcement returns; it reframes them by indicating that rational expectation updating can generate patterns easily mistaken for timing-driven behaviour (MacKinlay 1997).

Rational real-options theory deepens this tension by emphasising the dynamic link between investment opportunities and required returns. As firms approach the point where future projects become sufficiently mature to exercise, their risk profiles adjust endogenously: expected returns decline and equity values rise even without discrete news (Carlson, Fisher & Giammarino 2006). Exercising growth options effectively converts risky optionality into less risky assets in place, generating valuation changes that may appear as short-horizon drift. Within this framework, price movements need not reflect mispricing or behavioural bias but instead arise from forward-looking valuation of evolving investment opportunities. Related work shows that investors respond to signals embedded in firms' evolving opportunity sets, implying that price movements may stem from rational reassessment rather than transitory overvaluation (Daniel & Titman 1999).

Rather than relying on assumptions of intensive monitoring or institutional oversight, this perspective emphasises that valuation effects can emerge purely from the timing of information revelation and expectation formation. Investors may incorporate project-related information into prices before any financing decision is formally communicated, particularly when signals about future cash flows or strategic direction become incrementally clearer (Hovakimian & Hu 2016). A modest upward drift occurring in this phase may therefore reflect decreasing uncertainty surrounding the firm's opportunity set rather than behavioural distortion. Research also shows that rational revaluation can

produce return patterns that resemble opportunistic timing, complicating any attempt to infer managerial intent directly from observed returns (Brav, Geczy & Gompers 2000).

A measured price increase may reflect rational valuation of maturing investment opportunities rather than strategic exploitation of transient overpricing. Behavioural biases can also generate momentum-like price dynamics even in informationally sophisticated environments (Hertzel & Li 2010). Conversely, the absence of abnormal returns does not conclusively indicate that timing incentives or behavioural forces are irrelevant; it may instead imply that expectation adjustment had already effectively occurred earlier than the empirical window captures, consistent with semi-strong market efficiency (Kim & Weisbach 2008). Thus, short-horizon pricing dynamics create an interpretive tension that only empirical evidence can resolve (Fama 1998).

The interaction between efficiency, real-options dynamics and the possibility of short-lived informational or behavioural frictions illustrates why interpretation is challenging. These forces may operate simultaneously and interact in nonlinear ways, making empirical investigation necessary for determining which mechanism dominates in practice. Whether data reveal detectable pre-announcement pricing patterns therefore becomes the means through which competing theoretical narratives such as rational revaluation, behavioural misinterpretation and managerial discretion are weighed against one another. Even fully rational processes can generate return patterns that resemble mispricing, reinforcing the need for empirical discrimination (Carlson et al. 2006).

Together, efficiency-based arguments and real-options theory highlight that similar short-horizon price patterns may arise from fundamentally different processes. Gradual valuation changes can therefore reflect rational expectation updating as plausibly as behavioural or informational frictions, underscoring the need for empirical discrimination.

For this thesis, the empirical design focuses on the narrow interval immediately preceding announcement, where execution speed and information timing are most likely to compress the mechanisms under scrutiny. This design choice allows the analysis to test whether any residual valuation adjustment remains observable once rational expectation updating and forward-looking pricing have largely occurred. Consequently, the presence or absence of abnormal returns must be interpreted through the joint lens of market efficiency and real-options valuation, rather than being attributed unambiguously to mispricing or managerial timing.

2.3 Institutional Characteristics of Nordic Equity Markets

The institutional structure of the Nordic equity markets is characterised by transparency, concentrated institutional ownership and frequent reporting practices that reduce informational distance between firms and investors. Ownership is dominated by sophisticated institutions that actively monitor firms, particularly around equity issuance events, which limits managerial discretion and narrows the scope for persistent valuation anomalies (Brav, Geczy & Gompers 2000). These monitoring mechanisms operate continuously and with considerable discipline, meaning that deviations from fundamental value are typically identified and corrected quickly, especially in markets where information flows are standardised and disclosure norms are strongly enforced.

Similar dynamics arise in classical asymmetric-information settings, where greater disclosure reduces managers' informational advantage (Hertzel & Li 2010). Nordic markets also exhibit deep liquidity and extensive analyst coverage, meaning that the major participants who drive price discovery typically observe similar information simultaneously (Kim & Weisbach 2008). This institutional configuration therefore creates an expectation that short-horizon pricing deviations prior to follow-on offerings should be limited, as informational asymmetries and behavioural distortions have less room to persist in such an environment. Moreover, the coordinated presence of institutional blockholders tends to homogenise informational interpretations, reinforcing the efficiency of price adjustment even in rapidly evolving contexts.

Yet the mechanics of Nordic follow-on offerings introduce frictions that challenge this expectation. Accelerated bookbuildings and directed share issues operate under extremely compressed timelines, often overnight or within a single trading session, restricting the gradual incorporation of emerging signals and forcing investors to process information under time pressure. Even when information is fully public, subtle cues in corporate communication or liquidity positioning may influence expectations before formal disclosure. Such dynamics reflect that institutional investors, despite their sophistication, do not always interpret information uniformly or adjust positions simultaneously (Loughran & Ritter 1995). Behavioural research further shows that common information can trigger divergent reactions when signals appear ambiguous or salient (Hertzel & Li 2010), especially when market participants face tight execution windows.

Market-wide valuation environments also reinforce these institutional effects. Issuance activity tends to increase during periods of favourable aggregate valuations (Loughran & Ritter 1995), and investor sentiment can shape the magnitude of pricing responses to equity issues. Short-lived misvaluation components cluster around issuance windows, suggesting that market-level and firm-level forces

interact even over narrow horizons. In addition, soft strategic signals such as shifts in communication tone or observable changes in liquidity behaviour may affect valuations ahead of disclosure, even when they do not constitute private information or actionable news. These mechanisms introduce interpretive complexity into markets that are otherwise highly informationally efficient.

Although sophisticated investors reduce the likelihood of persistent behavioural anomalies, the immediate transition from normal trading to issuance execution may amplify short-run responses that would otherwise be arbitraged away. Together, these elements produce a rich but theoretically indeterminate environment.

Building on this theoretical foundation, the next chapter develops the hypotheses that follow from these mechanisms and outlines the empirical framework through which pre-announcement abnormal returns can be systematically examined.

3 Research Design and Hypotheses

The purpose of this chapter is to translate the theoretical tension identified in Chapter 2 into an empirically falsifiable framework. Rather than attempting to discriminate between competing causal mechanisms, the analysis focuses on establishing whether the necessary empirical precondition for any of them, namely the presence of systematic pre-announcement abnormal returns, can be detected in the data. To this end, the chapter formulates a tightly defined research question and derives hypotheses that isolate observable manifestations of potential pricing dynamics. These hypotheses are explicitly linked to the empirical design and estimation choices introduced in Chapter 4, thereby providing the analytical bridge between the theoretical tensions of the preceding chapter and the empirical tests that follow.

3.1 Research Question

The theoretical perspectives yield fundamentally different expectations regarding whether short-horizon price movements should arise before a follow-on offering. Efficiency-based models imply that no systematic abnormal returns should emerge if markets incorporate information promptly and issuance decisions are broadly anticipated. In contrast, informational and behavioural frameworks allow prices to drift upward when information is processed unevenly or when investors interpret public signals heterogeneously. Real-options and investment-based perspectives do not predict mispricing, but they allow equity values to rise rationally as uncertainty surrounding future projects declines. This pattern is consistent with the gradual adjustment of expectations documented in empirical market studies (Loughran & Ritter 1995).

Because theoretical predictions do not converge, the remaining uncertainty concerns the existence of the phenomenon itself. The task is not to infer motives but to determine whether market data reveal the empirical pattern that any explanatory mechanism must accommodate. Abnormal returns provide the appropriate diagnostic measure because they offer a direct benchmark for detecting valuation deviations in short event windows (MacKinlay 1997). If no systematic pre-announcement abnormal returns are detected, theories implying such patterns lose empirical relevance.

Central Research Question: Do Nordic follow-on equity offerings exhibit pre-announcement abnormal returns?

This formulation positions the research design around the observable signature of the phenomenon rather than its underlying drivers. By defining the question in these terms, the empirical analysis allows the data to establish whether short-horizon valuation deviations are a feature of Nordic

issuance markets, thereby providing the foundation on which competing theoretical interpretations can later be evaluated.

3.2 Hypothesis Development

With the research question centred on the existence of pre-announcement abnormal returns, the next step is to develop a hypothesis structure that converts this into empirically testable propositions. The hypotheses draw on the theoretical tensions outlined in Chapter 2 while remaining agnostic about which specific mechanism drives potential pricing patterns. Each hypothesis isolates a distinct dimension of the phenomenon: its aggregate existence, its variation across firms and its adjustment once the offering becomes public. AR refers to abnormal return, CAR to cumulative abnormal return, CAAR to cumulative average abnormal return and IVOL to idiosyncratic volatility.

The first hypothesis addresses the central question by turning the theoretical indeterminacy into a direct empirical test. If Nordic follow-on offerings are preceded by short-lived valuation deviations, these should appear in cumulative abnormal returns immediately before the announcement, as consistent with the pre-issuance drift documented in asymmetric-information and behavioural settings (Daniel & Titman 1999). This implication aligns with mechanisms that allow prices to drift prior to financing decisions, whether due to temporary mispricing or rational expectation adjustment. The hypothesis does not attempt to distinguish among these mechanisms; instead, it targets their shared empirical signature: a positive accumulation of abnormal returns in the pre-announcement window. Detecting such a pattern would indicate pricing dynamics not fully consistent with semi-strong efficiency, whereas its absence would imply no systematic effects in this period.

Hypothesis H1 (Pre-Announcement Abnormal Returns)
Alternative (H1): CAR and CAAR in the pre-announcement window $[-20, -2]$ are positive.

$$CAR > 0, \qquad CAAR > 0$$

H0 (Null): CAR and CAAR do not differ from zero.

$$CAR = 0\,, \qquad CAAR = 0$$

Evidence consistent with H1 would indicate the presence of systematic valuation deviations prior to issuance.

The second hypothesis examines whether pre-announcement abnormal returns relate systematically to firm-level informational conditions. Idiosyncratic volatility reflects opacity that can heighten valuation sensitivity around issuance events. If short-horizon pricing deviations emerge, they may be stronger for firms facing greater uncertainty (Hirshleifer 2001). The hypothesis tests whether idiosyncratic volatility is positively associated with CAR, consistent with informational opacity amplifying pre-announcement price behaviour in this specific market and across varying conditions.

Hypothesis H2 (Return Variation and Informational Conditions)

Alternative (H2): Idiosyncratic volatility (IVOL) is positively correlated with firm-level CAR.

$$\mathrm{Corr}(IVOL, CAR) > 0$$

H0 (Null): There is no correlation between idiosyncratic volatility and CAR.

$$\mathrm{Corr}(IVOL, CAR) = 0$$

Evidence in favour of H2 would suggest that informational conditions are systematically associated with the cross-sectional variation in pre-announcement returns

The third hypothesis evaluates whether any pricing deviations observed around the announcement are consistent with efficient information incorporation in the Nordic institutional setting. If markets process the issuance information rapidly, post announcement cumulative abnormal returns should be statistically indistinguishable from zero. In that case, the announcement window would not generate additional systematic performance beyond any pre-announcement dynamics, which would align with the view that Nordic investors adjust to the new financing information quickly. Detectable post announcement drift, in contrast, would indicate a slower adjustment process and weaken the efficiency-based interpretation. Post-announcement efficiency expectations reflect the empirical regularity that markets adjust rapidly once issuance information becomes public (MacKinlay 1997)

Hypothesis H3 (Post-Announcement Adjustment)

Alternative (H3): Post-announcement CAAR differs from zero:

$$CAAR \neq 0.$$

H0 (Null): The CAAR in the post-announcement window $[0, +5]$ does not differ from zero:

$$CAAR \approx 0.$$

Failure to reject H0 would be consistent with efficient information incorporation, whereas rejection of H0 would indicate that pricing adjustments persist beyond the announcement.

3.3 Integrated Conceptual and Empirical Framework

The three hypotheses together form a sequential diagnostic structure that translates the theoretical indeterminacy of Chapter 2 into testable implications. The first hypothesis establishes whether any pre-announcement abnormal returns exist, reflecting the empirical signature associated with short-lived valuation adjustments in such environments where investors interpret signals heterogeneously (Daniel & Titman 1999). The second hypothesis evaluates whether these valuation patterns vary with informational conditions, drawing on evidence that firms facing higher informational frictions experience stronger pricing sensitivity (Wruck 1989). The third hypothesis tests whether any pre-announcement deviations dissipate once issuance information becomes public, consistent with rapid information incorporation observed around disclosure events (Foerster & Karolyi 2000).

Rather than attributing causality, the framework determines whether the phenomenon exists, how it varies across firms and whether the market resolves it upon disclosure. Each hypothesis corresponds to a distinct empirical measure: pre-announcement CAR and CAAR for H1, the CAR–IVOL correlation for H2 and post-announcement CAAR for H3. This structure ensures conceptual alignment between theoretical expectations and the event-study design by anchoring each test in measurement approaches commonly used to detect short-horizon pricing behaviour.

The next chapter builds on this foundation by detailing the dataset, event-study procedures and statistical tests employed to assess whether short-horizon price dynamics materialise in the Nordic follow-on offering environment.

Table 1: Summary of Hypotheses, Theoretical Foundations, and Empirical Measures

Hypothesis	Theoretical Foundation	Empirical Measure	Expected Outcome
H1: Pre-Announcement Abnormal Returns	Models allowing short-lived valuation deviations prior to issuance	CAR and CAAR in the pre-announcement window [-20, -2]	CAR > 0, CAAR > 0
H2: Return Variation under Informational Uncertainty	Asymmetric information and valuation opacity increasing sensitivity of prices to uncertainty (IVOL)	Correlation between firm-level CAR and idiosyncratic volatility (IVOL)	Corr(IVOL, CAR) > 0
H3: Post-Announcement Adjustment	Semi-strong efficiency predicting rapid incorporation of issuance information	CAAR in the post-announcement window [0, +5]	CAAR ≈ 0

Table 1 summarises the hypotheses, their theoretical anchors and their empirical measures, and serves as the operational bridge to the methodological implementation in Chapter 4.

4 Data and Methodology

This chapter details the empirical framework that operationalises all three hypotheses introduced in Chapter 3 by converting the theoretical constructs of information asymmetry, behavioural pricing dynamics, and market efficiency into measurable statistical quantities. Rather than addressing only pre-announcement abnormal returns, the methodological design provides an integrated structure through which the study identifies whether price run-ups occur prior to follow-on public offerings, examines whether these valuation patterns vary systematically with firm-specific informational conditions, and lastly evaluates whether any pre-announcement effects dissipate once the offering is publicly disclosed.

To achieve this, the chapter proceeds in four stages. First, it outlines the construction of a clean and comparable sample of Nordic follow-on offerings and the transformation of raw price data into daily excess returns. Second, it introduces the short-horizon event-study framework used to estimate firm-level and sample-level abnormal performance before and after the announcement date. Third, it presents the market-model estimation of expected returns and the derivation of abnormal returns, cumulative abnormal returns (CAR), and cumulative average abnormal returns (CAAR), which form the core empirical indicators for H1 and H3. Finally, the chapter incorporates firm-level idiosyncratic volatility (IVOL) as a diagnostic measure of informational frictions, enabling hypothesis H2 to be assessed by conditioning abnormal performance on differences in information asymmetry.

Collectively, this methodological architecture ensures that each hypothesis is tested using internally consistent, theoretically aligned, and empirically rigorous procedures, allowing the analysis to distinguish between normal market variation, persistent valuation deviations, and informational conditions that may amplify or constrain managerial timing discretion.

4.1 Sample and Data Construction

The empirical analysis relies on a hand-collected dataset of follow-on public offerings (FPOs) executed by already listed firms in the Nordic equity markets covering Finland, Sweden, Denmark, Iceland and Norway from 2007 to 2025. The construction of the sample is guided by the theoretical motivations outlined in Chapters 2 and 3, which emphasise managerial discretion and the informational environment surrounding equity issuance decisions. For this reason, the sample focuses exclusively on transactions in which firms issue new shares, since only these offerings alter the firm's capital structure, generate new funding, and create the potential for timing behaviour related to temporary valuation conditions.

To preserve this focus, secondary share sales were systematically excluded. In a secondary sale, existing shareholders sell previously issued shares to the market, and the proceeds accrue entirely to the selling shareholders rather than to the firm. The firm neither raises new capital nor increases its share count, and it does not exercise discretion over the initiation or timing of the sale. As a result, secondary sales do not constitute equity issuance in the sense relevant to Hypotheses H1–H3. Their price effects primarily reflect ownership rebalancing and liquidity considerations rather than managerial timing or valuation decisions, and their inclusion would therefore confound the empirical identification of valuation dynamics preceding genuine capital-raising events.

Issuance-level observations were retrieved from the LSEG Deals Screener and subjected to a series of data-quality filters. Each transaction required a clearly identifiable public announcement date and uninterrupted daily price history for both the issuing firm and the corresponding domestic market index to allow consistent event-time alignment. To ensure reliable estimation of expected returns, only firms with sufficient price history over the pre-event estimation window from −250 to −60 trading days were included. Offerings below EUR 5 million and above EUR 500 million were removed to avoid distortions from extremely small or unusually large transactions.

The final sample consists of accelerated bookbuildings (ABBs) and directed share issues, collectively referred to as placements. These mechanisms permit rapid execution with minimal pre-announcement disclosure and therefore provide the cleanest setting for detecting valuation patterns that may arise prior to the public release of issuance information. Daily dividend-adjusted and split-adjusted closing prices were collected for all firms, along with domestic market indices, and converted into continuously compounded returns to ensure additivity and comparability across markets. The daily return for firm i at time t is defined as:

$$r_{i,t} = \ln\left(\frac{P_{i,t}}{P_{i,t-1}}\right) \tag{1}$$

where $P_{i,t}$ denotes the adjusted closing price. Market index returns were computed analogously:

$$r_{M,t} = \ln\left(\frac{M_t}{M_{t-1}}\right). \tag{2}$$

Because monetary conditions differ across the Nordic countries, daily excess returns were computed using country-specific risk-free rates based on the domestic three-month interbank rate such as EURIBOR, STIBOR, NIBOR, CIBOR or REIBOR. These rates were converted into daily logarithmic returns according to:

$$rf_{c,t} = \frac{\ln\left(1 + r_{f,c}^{3\text{M},\text{p.a.}}\right)}{252} \tag{3}$$

Table 2: Sample Distribution by Year, Issuance Method, and Country[1] Expressing all return series on a common daily scale ensures consistency across countries and prevents distortions arising from differences in short-term interest-rate environments. The resulting dataset provides a methodologically coherent and cross-country comparable foundation for the subsequent event-study analysis, enabling the identification of pre-announcement valuation dynamics and the evaluation of opportunistic issuance behaviour in Nordic FPOs.

Year	Number of observations	Share -%
2007	1	2,5 %
2009	1	2,5 %
2011	1	2,5 %
2012	2	5,0 %
2013	1	2,5 %
2015	1	2,5 %
2016	2	5,0 %
2017	1	2,5 %
2018	1	2,5 %
2019	2	5,0 %
2020	6	15,0 %
2021	11	27,5 %
2022	2	5,0 %
2023	3	7,5 %
2024	4	10,0 %
2025	1	2,5 %

Issuing technique	Number of observations	Share -%	Median Deal Size (Meur)
Accelerated bookbuilding	22	55,0 %	91,4
Placement	18	45,0 %	22,6

Country	Number of observations	Share(%)	Median Deal Size (Meur)
Finland	10	25,0 %	18,6
Sweden	10	25,0 %	77,8
Norway	10	25,0 %	96,0
Denmark	8	20,0 %	24,5
Iceland	2	5,0 %	51,8

1 Years not displayed reflect periods without eligible follow-on offerings or cases where transactions fell below the EUR 5 million threshold. The distribution is also skewed, with issuance activity concentrated in a limited number of high-volume years.

4.2 Event study framework

The empirical analysis applies a short-horizon event study framework consistent with the methodological foundations established in the literature (MacKinlay 1997). Consistent with the theoretical foundation developed in earlier chapters, the purpose of this framework is to compare realized stock returns with a benchmark of expected normal returns and thereby identify deviations that may signal temporary overvaluation, informational frictions or rapid post-announcement price adjustment.

In an efficient market, stock prices should not diverge predictably from their expected values unless new information or valuation-relevant signals are incorporated. This logic follows the standard formulation in the event-study literature, where abnormal returns serve as direct measures of departures from the normal return-generation process. Abnormal returns serve as a clean measure of the economic effect associated with an event, provided that the model for normal returns is correctly specified.

The event date ($t = 0$) is defined as the first public announcement of the FPO. The primary focus of the analysis lies in the pre-announcement window $[-20, -2]$, which captures short-term price dynamics immediately preceding disclosure while excluding trading on the announcement day itself. Selecting a narrow pre-announcement window ensures that the empirical tests focus on valuation patterns that could plausibly relate to managerial timing behaviour, rather than long-run price drift, and avoids artificially inflating cumulative abnormal returns through horizon length alone, as longer windows tend to accumulate unrelated noise that increases the likelihood of spurious statistical significance, thereby isolating effects most plausibly linked to imminent issuance-related expectations.

Expected normal returns are estimated within a pre-event estimation window of $[-250, -60]$, following the methodological recommendations of MacKinlay (1997). This window length is chosen because a sufficiently long estimation period increases the precision of the alpha and beta coefficients, thereby reducing noise in expected-return forecasts. Equally important, positioning the estimation window well before the event avoids distortions arising from information leakage or anticipatory trading. By ensuring that the estimation period is free from event-related influences, the interval between $[-250, -60]$ provides a stable basis for modelling the asset's normal return behaviour while remaining distant enough from the announcement to prevent contamination.

Figure 1: Event-study estimation window

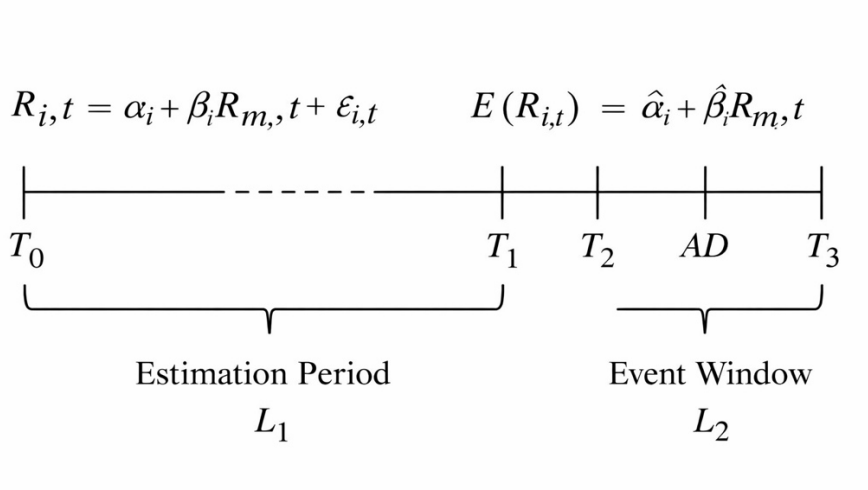


Figure 1. Event-study timeline illustrating the separation between the estimation period and the event window. The structure follows the standard framework outlined in MacKinlay (1997), in which expected returns are estimated over a period assumed to be unaffected by event-related information.

(Source: Adapted from MacKinlay, A. C. (1997). Event Studies in Economics and Finance. Journal of Economic Literature, 35(1), 13–39.)

4.3 Return Measures and Expected-Return Modelling

A central requirement of the empirical analysis is to obtain a reliable measure of how stock prices behave relative to their expected normal levels. This section introduces the return transformations and expected-return model that serve as the basis for identifying abnormal performance around follow-on public offerings. The objective is to ensure that abnormal returns reflect genuine deviations from normal pricing dynamics rather than distortions arising from cross-country monetary differences or firm-specific risk exposure. The construction follows established event-study procedures and the econometric guidelines outlined in literature introduced earlier, which emphasises that an appropriate model for normal returns is essential for isolating the economic effect of an event.

4.3.1 Excess Return Construction

Constructing excess returns follows standard event-study practice, ensuring market comparability and isolating the event's economic effect. To maintain consistency across the five Nordic markets, firm- and market-level returns are expressed relative to each country's short-term risk-free rate, aligning the data with domestic funding conditions and removing differences in short-term interest-rate regimes before estimating expected returns.

Excess returns for firm i in country c are obtained by subtracting the daily country-specific risk-free rate from the firm's log return:

$$R_{i,c,t} = r_{i,c,t} - rf_{c,t} \ , R_{M,t} = r_{M,t} - rf_{c,t} \tag{4}$$

Here, $r_{i,c,t}$ and $r_{M,t}$ denote the firm and market log returns computed in Section 4.1, and $rf_{c,t}$ is the daily log-converted interbank rate also defined earlier. By constructing returns in excess form, the subsequent market-model estimation isolates firm-specific co-movement with the domestic market rather than movements that reflect short-term monetary conditions.

These excess-return series form the basis of the market model introduced in Section 4.3.2 and provide the clean benchmark against which abnormal performance is evaluated in the event windows.

4.3.2 Market Model and Abnormal Return Estimation

Expected normal returns are estimated using a market model applied to the excess-return series constructed in Section 4.3.1. The market model provides a parsimonious representation of the return-generating process by linking a firm's excess return to movements in the domestic market. This specification is widely used in short-horizon event studies due to its ability to reduce unexplained return variance and increase the power of abnormal-return tests (MacKinlay 1997).

For firm i in country c, the market model is:

$$R_{i,c,t} = \alpha_{i,c} + \beta_{i,c} R_{M,,t} + \varepsilon_{i,c,t} \tag{5}$$

The parameters are estimated over the pre-event estimation window $\mathcal{T}_0 = [-250, -60]$, which is sufficiently distant from the announcement to remain free of event-related disturbances. Ordinary least squares provide the following estimators:

$$\hat{\beta}_{i,c} = \frac{\sum_{t \in \mathcal{T}_0} \left(R_{M,t} - \bar{R}_M\right)\left(R_{i,c,t} - \bar{R}_{i,c}\right)}{\sum_{t \in \mathcal{T}_0} (R_{M,t} - \bar{R}_M)^2} \tag{6}$$

$$\hat{\alpha}_{i,c} = \bar{R}_{i,c} - \hat{\beta}_{i,c}\, \bar{R}_M. \tag{7}$$

These estimates describe how the firm typically co-moves with its domestic equity market during a period uncontaminated by issuance-related information.

For any day t, expected normal returns are computed as:

$$\hat{R}_{i,c,t} = \hat{\alpha}_{i,c} + \hat{\beta}_{i,c} R_{M,t}. \tag{8}$$

Abnormal returns (AR) are the realised deviations from these expected values:

$$AR_{i,c,t} = R_{i,c,t} - \hat{R}_{i,c,t}. \tag{9}$$

These abnormal returns form the central empirical measure of short-horizon pricing behaviour. Under the null hypothesis of informational efficiency, their expected value is zero, providing a benchmark for evaluating pricing patterns both before and after the announcement.

4.4 CAR and CAAR

Once daily abnormal returns have been obtained for each firm during the pre-announcement period, the next step is to aggregate these observations into cumulative measures that capture the total valuation effect over the relevant event window. Cumulative abnormal returns provide a clearer metric of short-horizon pricing behaviour preceding equity issuances. These aggregates form the empirical backbone of H1, and the cross-sectional diagnostics used later in the analysis.

The firm-level cumulative abnormal return (CAR) is calculated to capture valuation deviations over the pre-announcement window. For each firm i in country c, the cumulative abnormal return over the pre-announcement interval $\mathcal{T}_1 = [-20, -2]$ is computed as the time-sum of its daily abnormal returns:

$$CAR_{i,c}[-20, -2] = \sum_{t=-20}^{-2} AR_{i,c,t}. \tag{10}$$

This construction aggregates short-horizon deviations from expected normal performance into a single firm-level statistic. A positive $CAR_{i,c}$ indicates that the firm's stock price exhibited elevated valuations relative to fair value during the days immediately preceding the issuance announcement. If temporary pre-announcement valuation effects are present in the sample, these firm-level measures will tend to deviate from zero in a common direction.

To evaluate whether pre-announcement valuation patterns emerge systematically across the sample, individual CARs are averaged to produce the cumulative average abnormal return (CAAR):

$$CAAR[-20, -2] = \frac{1}{N} \sum_{c} \sum_{i=1}^{N_c} CAR_{i,c}[-20, -2], \tag{11}$$

where N_c denotes the number of issuers in country c and $N = \sum_c N_c$ is the total number of firm-level observations.

The CAAR statistic summarises the overall magnitude and direction of pre-announcement stock-price behaviour across the entire cross-section. A positive CAAR value suggests that, on average, firms in the sample experienced elevated abnormal returns in the period leading up to the offering

announcement. A statistically insignificant CAAR, in contrast, indicates that observed price changes fall within the range of normal market fluctuations and thus do not constitute systematic valuation drift.

4.5 Idiosyncratic Volatility

In addition to abnormal returns, the analysis incorporates a firm-specific measure of idiosyncratic volatility (IVOL) to characterise the informational environment in which equity issuance decisions are made. Prior research shows that when investors interpret public signals heterogeneously and firm-level information plays a more prominent role in pricing, a greater share of return variation reflects firm-specific rather than market-wide influences. Idiosyncratic volatility therefore functions as an indicator of how reliably public information captures a firm's underlying value at the time issuance decisions are formed (Daniel & Titman 1999).

Idiosyncratic volatility is derived from the residuals of the market model introduced in Section 4.3. For each firm i in country c, excess returns are decomposed as:

$$R_{i,c,t} = \hat{\alpha}_{i,c} + \hat{\beta}_{i,c} R_{M,t} + \hat{\varepsilon}_{i,c,t} \tag{12}$$

, where the residual component $\hat{\varepsilon}_{i,c,t}$ captures the portion of the firm's excess return not explained by movements in the domestic market index. Rearranging yields:

$$\hat{\varepsilon}_{i,c,t} = R_{i,c,t} - (\hat{\alpha}_{i,c} + \hat{\beta}_{i,c} R_{M,t}). \tag{13}$$

Idiosyncratic volatility is computed as the standard deviation of these residuals over the pre-event estimation window $\mathcal{T}_0 = [-250, -60]$:

$$IVOL_{i,c} = \sqrt{\frac{1}{T-1} \sum_{t=-250}^{-60} (\hat{\varepsilon}_{i,c,t} - \bar{\varepsilon}_{i,c})^2}. \tag{14}$$

Because OLS residuals are mean-centred ($\bar{\varepsilon}_{i,c} \approx 0$), the estimator simplifies to:

$$IVOL_{i,c} \approx \sqrt{\frac{1}{T-1} \sum_{t=-250}^{-60} \hat{\varepsilon}_{i,c,t}^2}. \tag{15}$$

This formulation ensures that idiosyncratic volatility is expressed on the same daily scale as the abnormal-return measures used throughout the event-study analysis.

A higher value of $IVOL_{i,c}$ indicates that a larger fraction of a firm's return behaviour is driven by firm-specific uncertainty rather than market-wide movements. Such patterns commonly arise in settings where disclosure quality is weaker or information is distributed unevenly across market participants, increasing the relative influence of firm-specific signals (Ali et al. 2007). Conversely, lower levels of idiosyncratic volatility are consistent with environments in which ownership concentration strengthens external monitoring and constrains managerial discretion, as documented in institutional ownership settings (Wruck 1989).

Within this study, idiosyncratic volatility is not used as a direct input in abnormal-return estimation. Instead, it functions as a conditioning variable for interpreting Hypothesis H2, which examines whether the strength of pre-announcement valuation patterns varies across informational environments. If firms with higher idiosyncratic volatility exhibit stronger pre-announcement CAR or CAAR values, this would indicate that timing discretion becomes more pronounced under conditions of greater informational frictions. If no such pattern is observed, it would suggest that institutional features of the Nordic markets may constrain timing behaviour even when informational environments differ across firms.

Thus, idiosyncratic volatility provides a diagnostic lens through which the cross-sectional variation in abnormal returns can be interpreted, complementing the event-study measures developed in earlier sections.

4.6 Statistical Testing

The purpose of this section is to determine whether the cumulative abnormal return measures developed in Section 4.4 indicate systematic pre-announcement valuation patterns rather than normal market variation. Because daily abnormal returns are subject to short-lived noise and firm-specific fluctuations, inference relies solely on cumulative measures, which offer a more stable representation of pricing behaviour over the event window. Under informational efficiency, cumulative abnormal returns should not exhibit predictable patterns outside the immediate impact of new information, providing the natural null hypothesis for event-study analysis (Jegadeesh, 1990; MacKinlay, 1997). Statistically significant deviations from this benchmark serve as evidence of short-horizon valuation dynamics relevant to the hypotheses developed in Chapter 3.

For completeness, the analysis reports the average abnormal return (AAR) for each event day t, defined as:

$$AAR_t = \frac{1}{N}\sum_{c}\sum_{i=1}^{N_c} AR_{i,c,t}. \tag{16}$$

The AAR series illustrates day-to-day return behaviour around the announcement. However, due to its sensitivity to idiosyncratic fluctuations, it is used solely for descriptive visualisation and is not employed for hypothesis testing. The inferential analysis focuses on cumulative event windows, which mitigate daily noise and offer a more stable basis for statistical evaluation.

To examine whether abnormal performance deviates systematically from normal market behaviour, the study tests cumulative abnormal returns at the sample level (CAAR).

For a generic event window $[t_1, t_2]$, firm-level cumulative abnormal returns are:

$$CAR_{i,c}[t_1, t_2] = \sum_{t=t_1}^{t_2} AR_{i,c,t}. \tag{17}$$

The sample-wide mean of these values is the cumulative average abnormal return:

$$CAAR[t_1, t_2] = \frac{1}{N}\sum_{c}\sum_{i=1}^{N_c} CAR_{i,c}[t_1, t_2]. \tag{18}$$

The hypotheses for each event window are:

$$H_0: CAAR[t_1, t_2] = 0\,, \qquad H_1: CAAR[t_1, t_2] > 0. \tag{19}$$

4.6.1 Testing Logic and Interpretation

The statistical significance of $CAAR[t_1, t_2]$ is evaluated using the cross-sectional J_1-statistic, which standardises the sample-wide abnormal return by its estimated cross-sectional variance:

$$J_1 = \frac{CAAR[t_1, t_2]}{\sqrt{Var(CAAR[t_1, t_2])}}. \tag{20}$$

Here, $Var(CAAR)$ is computed from the cross-sectional dispersion of firm-level CAR values:

$$Var(CAAR[t_1, t_2]) = \frac{1}{N(N-1)} \sum_{c} \sum_{i=1}^{N_c} (CAR_{i,c}[t_1, t_2] - CAAR[t_1, t_2])^2. \quad (21)$$

Under the null hypothesis, and assuming cross-sectional independence, J_1 approximately follows a standard normal distribution (MacKinlay 1997). A significantly positive J_1 indicates that aggregate cumulative abnormal returns exceed zero, consistent with short-horizon valuation effects preceding the announcement. A non-significant statistic implies that observed cumulative returns are indistinguishable from normal market variation, aligning with informational efficiency.

4.7 Robustness

Several checks were conducted to ensure that the findings are not driven by specific modelling choices or market conditions. Cumulative abnormal returns were recalculated using alternative pre-announcement windows [−20, −2], [−15, −2], [−10, −2], [−5, −2], and two post-announcement intervals [0, 0] and [0, +5]; the stability of J_1-statistics across these intervals indicates that the results are not sensitive to window length within the short-horizon domain. Abnormal returns were also adjusted using country-specific three-month interbank rates to ensure consistent scaling across Nordic markets. The market model was estimated over [−250, −60] days to avoid contamination from issuance-related information and to ensure parameter stability. Finally, idiosyncratic volatility, derived from market-model residuals, was incorporated as a diagnostic measure to contextualise cumulative abnormal returns across different informational environments.

Although robustness tests focused on narrower windows, the choice not to extend the pre-announcement period beyond 20 days was deliberate. Longer horizons accumulate a larger proportion of unrelated return noise, increasing the likelihood that cumulative abnormal returns appear statistically significant for mechanical rather than economic reasons. As emphasised in the event-study literature, cumulative measures expand in magnitude with window length, complicating inference in settings where the theoretical mechanisms of interest operate over short intervals (MacKinlay 1997). In this study, consistency across multiple short pre-announcement windows provides sufficient evidence that the results do not depend on the precise cutoff chosen, while avoiding the interpretational ambiguities associated with longer horizons. For this reason, longer windows were not included in the formal robustness battery, even though their limitations were considered at the design stage of the analysis.

5 Empirical Results

This chapter presents the empirical evidence generated by the hypotheses and methods developed in Chapters 3 and 4. Whereas the previous chapters established what should be tested and how, the purpose here is to document what the data show about short-horizon price behaviour around Nordic follow-on offerings. The structure mirrors the empirical framework: Section 5.1 summarises the descriptive features of the sample; Section 5.2 evaluates whether abnormal returns accumulate before the announcement (H1); Section 5.3 examines whether these effects vary with firm-level informational conditions (H2); and Section 5.4 analyses post-announcement pricing to assess whether any pre-announcement patterns dissipate once the issuance becomes public (H3). Together, these results provide the evidential basis for interpreting the return dynamics identified in this study.

5.1 Descriptive Return Patterns Around the Announcement Window

Across the event window, the return data exhibit a clear and economically meaningful asymmetry between the pre-announcement and post-announcement periods. The cumulative abnormal return measures, which form the analytical core of this study, reveal a smooth and monotonic build-up of valuation gains before the offering becomes public. CAAR increases systematically as the pre-announcement window widens, and firm-level CAR values are predominantly positive. This temporal structure indicates that the price adjustment process unfolds gradually rather than being driven by isolated shocks. If the run-up were the consequence of a singular information release or a mechanical microstructure effect, the CAR and CAAR profiles would show abrupt discontinuities and similar magnitudes across window lengths. Their divergence instead signals that the mechanism underlying the drift is distributed across time.

Daily AAR results reinforce this reading. Positive abnormal returns emerge intermittently early in the window but become increasingly persistent as the announcement approaches. Although descriptive rather than inferentially decisive, their alignment with cumulative measures strengthens the interpretation that the run-up reflects sustained rather than episodic pressures driven by gradually evolving expectations. This distinction is central in event-study methodology, which assumes that abnormal returns reflect market responses to information flows within short horizons (MacKinlay 1997). The coherence between daily and cumulative measures suggests that the estimation captures the intended economic signal rather than noise or model artefacts, thereby enhancing confidence in the underlying inference.

Firm-level CAR values exhibit substantial cross-sectional dispersion, analytically important for two reasons. First, such variation aligns with heterogeneity in firms' informational environments. Prior

research shows that differences in uncertainty and information production shape the timing and magnitude of valuation adjustments prior to key disclosures (Dierkens 1991). Informational frictions' relevance to short-horizon price behaviour is further reinforced by evidence that firms with higher idiosyncratic noise or weaker information environments experience greater abnormal-return variation (Ali, Klasa & Yeung 2009). Second, dispersion strengthens the rationale for cumulative return metrics. When valuation dynamics develop gradually, cumulative measures better isolate the persistent component of price adjustment, consistent with real-options interpretations in which uncertainty resolution generates slow-moving price effects (Carlson, Fisher & Giammarino 2006).

The descriptive contrast between the pre- and post-announcement windows further sharpens the empirical picture. Once the offering is announced, CAAR becomes statistically indistinguishable from zero, and no continuation or reversal is observed. This immediate flattening is consistent with evidence that issuance-related price effects are concentrated around the disclosure event itself, suggesting that markets incorporate the relevant financing information rapidly once it becomes public (Asquith & Mullins, 1986). The result is also consistent with issuance-timing research showing that favourable pre-issue pricing conditions typically dissipate at the moment the transaction becomes public (Hertzel & Li 2010). The absence of post-event drift reduces the plausibility that the pre-announcement pattern reflects omitted market-wide factors or temporary mispricing; such artefacts would manifest symmetrically around the event, which is not observed.

Figure 2 & 3

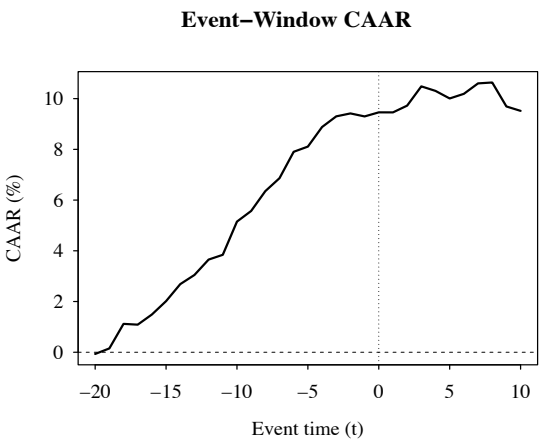


Figure 2 Cumulative abnormal returns from day –20 to +10. The pre-announcement window shows a sustained run-up, whereas post-announcement returns flatten, indicating that price adjustment occurs before disclosure

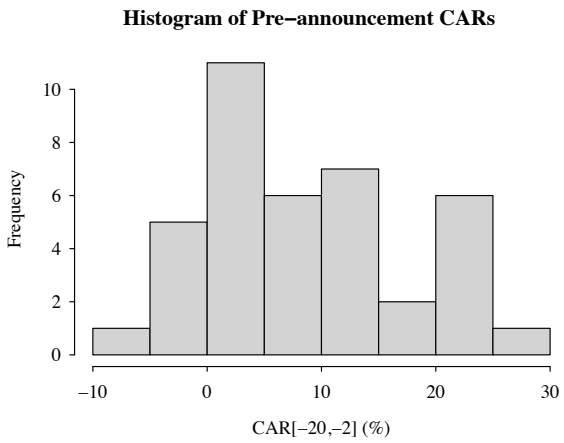


Figure 3 Distribution of firm-level CAR [–20, –2]. The median is positive, and the wide dispersion highlights substantial cross-sectional heterogeneity in pre-announcement price dynamics.

5.2 Pre-Announcement Price Dynamics (H1)

The results show a clear and statistically significant upward drift in valuations before the offering announcement. The cumulative average abnormal return over the full window is:

$$CAAR[-20, -2] = 9.45\% \qquad J_1 = 3.95 \qquad p < 0.01$$

which is economically meaningful and statistically decisive. This supports the core prediction of H1, namely that firms exhibit non-zero cumulative abnormal performance in the pre-announcement window.

Across alternative window specifications, the results remain consistent. The [−15, −2] interval yields a CAAR of 7.93%, and the [−10, −2] window 5.58%, each significantly different from zero at conventional confidence levels. The shorter [−5, −2] interval produces a more modest estimate of 1.51%, which approaches significance but remains less precise. The progressive decline in magnitude across shorter windows is coherent with the temporal structure documented before: abnormal performance accumulates gradually rather than arising from an isolated disclosure shock. This gradation also indicates that investors likely interpret emerging signals cumulatively, rather than reacting to discrete informational events.

This dynamic is consistent with established event-study methodology. MacKinlay (1997) emphasises that cumulative measures identify persistent information effects more reliably than day-level returns, particularly when signals diffuse over multiple trading days rather than arriving as discrete announcements. The daily AAR pattern supports this logic: multiple small positive increments collectively generate the observed drift, and no single day dominates the cumulative outcome. This distribution strengthens confidence that the pattern reflects a genuine pricing mechanism rather than noise, outlier distortion or data-driven artefacts.

The sustained pre-announcement drift also accords with asymmetric-information interpretations. Dierkens (1991) demonstrates that when informational frictions are elevated, valuation adjustments occur progressively as investors update beliefs in response to imperfect or partial signals. Similarly, Ali, Klasa and Yeung (2009) show that firms characterised by higher idiosyncratic information environments exhibit stronger and more variable short-horizon pricing effects, consistent with the dispersion and gradual accumulation documented in the pre-event windows. These dynamics suggest that pricing sensitivity increases when signal precision declines, even without overt information releases.

Real-options-based interpretations provide an additional mechanism. Carlson, Fisher and Giammarino (2006) show that valuation increases may emerge as markets anticipate the resolution of uncertainty surrounding future investment or financing decisions, producing systematic upward drift before formal disclosure. This prediction aligns closely with the pattern observed in the data and implies that investors may price optionality even in the absence of explicit managerial communication, especially when uncertainty interacts with evolving market expectations.

An alternative explanation concerns market-level issuance conditions. Hertzel and Li (2010) find that favourable pricing environments ahead of equity offerings often reflect transient reductions in misvaluation-related frictions, generating positive valuation pressure that dissipates once the offering becomes public. The confinement of abnormal performance to the pre-announcement period in this study is consistent with that interpretation. Finally, empirical evidence on equity-issue announcements indicates that once disclosure occurs, uncertainty is rapidly resolved and abnormal pricing effects cease (Mikkelson & Partch 1986), matching the flattening observed at the announcement date and reinforcing the interpretation that pre-announcement dynamics are uniquely contingent on pre-disclosure ambiguity.

Taken together, the results across all estimation windows reveal that cumulative abnormal returns are positive, statistically significant, and economically meaningful. The coherence between empirical patterns and theoretical expectations justifies rejecting the null hypothesis of no pre-announcement abnormal performance. Firms in the sample experience systematic valuation increases before the offering becomes public, providing a clear foundation for the cross-sectional analysis that follows in the next section and underscoring the relevance of studying how informational conditions shape these dynamics.

Table 3: Cumulative Average Abnormal Returns Around the Announcement Window

$[t_1,t_2]$	CAAR	VAR	J1	p-value
[-20,-2]	9,42 %	0,00057	3,95	0,0000
[-15,-2]	7,93 %	0,00042	3,87	0,0001
[-10,-2]	5,58 %	0,00027	3,40	0,0003
[-5,-2]	1,51 %	0,00012	1,38	0,0835
[0,0]	0,16 %	0,00003	0,29	0,3847
[+0,+5]	0,71 %	0,00015	0,58	0,2815

Table 3 summarises CAAR results, showing significant pre-announcement increases, while announcement-day and post-announcement windows exhibit negligible abnormal returns.

5.3 Cross-Sectional Variation in Pre-Announcement Abnormal Returns (H2)

Hypothesis H2 examines whether idiosyncratic volatility contributes to explaining cross-sectional differences in cumulative abnormal returns during the pre-announcement period. As defined in Chapter 3, idiosyncratic volatility captures the extent of firm-specific uncertainty once market-wide influences are removed. This measure is theoretically relevant because asymmetric-information frameworks suggest that when uncertainty is elevated, markets react more strongly to diffuse or ambiguous signals (Dierkens 1991). In such environments, investors may therefore place greater weight on partial cues in the days preceding disclosure, generating a stronger upward drift in valuations. Relatedly, Brav, Geczy and Gompers (2000) document that variation in informational environments affects how rapidly investors incorporate firm-specific information, implying that uncertainty can amplify short-horizon price adjustments. Moreover, higher informational noise increases the likelihood that investors anchor on recent or salient developments, magnifying the influence of small interpretive signals that would otherwise be arbitraged away in more transparent settings.

The empirical correlation of 0.22 between idiosyncratic volatility and CAR [−20, −2], with a t-value of 1.41 and p-value of 0.083, supports this conceptual expectation but only moderately. While the estimate falls short of the conventional 5 per cent significance threshold, its marginal 10 per cent significance indicates a directional and economically interpretable relationship. Firms with higher volatility appear to experience slightly larger valuation run-ups, consistent with the idea that uncertainty facilitates stronger anticipatory price responses. This aligns with real-options perspectives, where higher volatility increases the sensitivity of equity values to changes in expected growth opportunities prior to issuance (Carlson, Fisher & Giammarino 2006). The magnitude of the coefficient, although modest, suggests that investors may rely more heavily on heuristic interpretations of available signals when facing elevated ambiguity, thereby generating incremental upward drift.

Nevertheless, several methodological considerations warrant caution. First, idiosyncratic volatility, being derived from market-model residuals, is inherently noisy and may partially reflect event-induced variance, a well-documented source of distortion in event-study regressions (MacKinlay 1997). Second, volatility is a broad proxy that may conflate informational opacity with heterogeneity in risk, disclosure quality, or operational complexity. Consequently, the correlation cannot be interpreted as causal, nor does it rule out alternative mechanisms shaping pre-announcement pricing dynamics. Third, the modest size of the relationship suggests that uncertainty explains only a portion

of the cross-sectional variation, implying the presence of additional behavioural, structural or institutional channels influencing short-horizon valuation adjustment. For instance, differences in investor composition, liquidity conditions or timing of external news could contribute to the dispersion observed across firms.

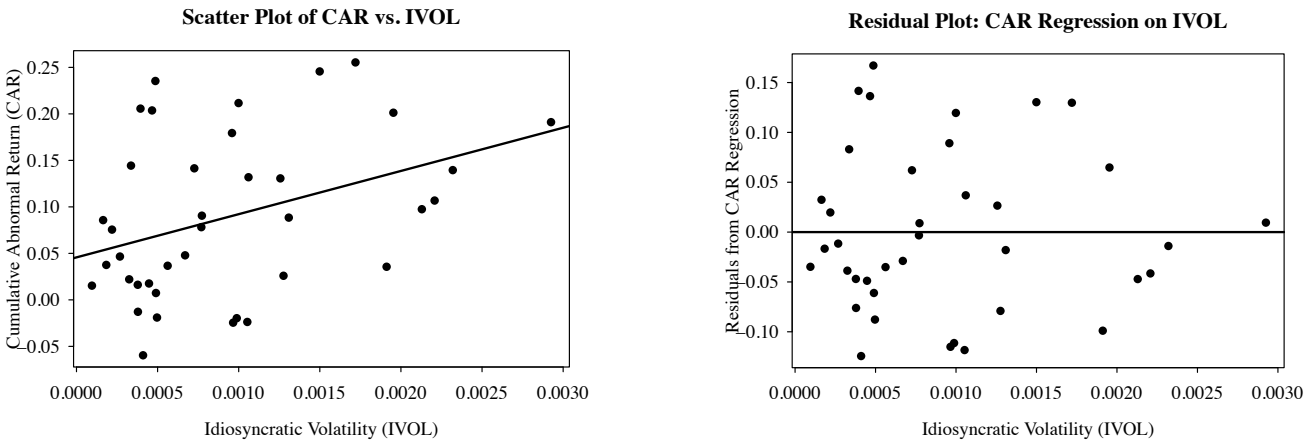
Taken together, the findings provide moderate support for H2. Idiosyncratic volatility captures part of the information-related mechanism behind pre-announcement abnormal returns, though its explanatory power remains incomplete. This interpretation motivates the transition to Section 5.4, which investigates whether these valuation dynamics persist or dissipate once public disclosure resolves informational frictions.

Table 4: IVOL–CAR Correlation and Test Statistics

Correlation	T-value	P-value	N
0,2230	1,4101	0,0833	40

Table 4 summarises the correlation between IVOL and CAR, along with the corresponding test statistics. The positive estimate attains only marginal significance, indicating a weak cross-sectional association.

Figure 4 & 5



Figures 4 and 5 Illustrate the cross-sectional association between idiosyncratic volatility (IVOL) and firm-level cumulative abnormal returns (CAR) in the pre-announcement window. Figure 4 displays the scatter plot with fitted regression line, showing a weak but positive relationship consistent with the hypothesis that informational opacity amplifies valuation sensitivity. Figure 5 presents the residual distribution from the same linear specification, indicating moderate dispersion and no clear systematic pattern, suggesting that while IVOL explains part of the variation in CAR, substantial heterogeneity remains across firms.

5.4 Post-Announcement Price Adjustment (H3)

Hypothesis H3 evaluates whether valuation dynamics persist after the offering becomes public or whether the pre-announcement drift documented earlier fully dissipates at the announcement date. The empirical results reveal no statistically significant abnormal returns at the event date. The CAAR for the [0,0] window is 0.16% ($p = 0.3847$), indicating that prices remain effectively unchanged when the disclosure occurs. The post-announcement interval shows a similarly muted pattern: CAAR [0,+5] equals 0.71% with a p-value of 0.2815, providing no evidence of either continuation or reversal of the pre-announcement run-up.

This stability is theoretically consistent with asymmetric-information frameworks in which the announcement resolves key informational frictions, eliminating the scope for further valuation adjustment. Empirical studies show that once uncertainty collapses at a public disclosure, markets rapidly incorporate the new information, and abnormal returns vanish (Mikkelson & Partch 1986). This mechanism helps explain the absence of a price reaction at the announcement: the relevant information was already reflected in valuations during the pre-announcement period.

The neutrality at the disclosure date also aligns with issuance-timing evidence. Hertzel and Li (2010) find that favourable pre-announcement pricing conditions reflect transitory reductions in misvaluation-related frictions rather than information released at the offering itself. Consequently, the announcement adds little incremental informational content, consistent with the flat abnormal-return profile observed here. A similar implication arises from Brav, Geczy and Gompers (2000), who show that stronger investor monitoring and more transparent information environments compress post-announcement valuation dynamics, producing muted reactions when equity offerings are disclosed.

Furthermore, the absence of post-announcement repricing contrasts with settings where disclosures trigger reassessments of growth opportunities or risk. Real-options models predict adjustments when new information materially alters expectations about future investments. No such effect is evident in this sample, reinforcing the interpretation that economically relevant information had already been incorporated before the announcement.

From a methodological perspective, the lack of event-day movement reduces concerns about confounding announcements or delayed market reactions. Event-study principles emphasise that when markets efficiently process information as it becomes public, abnormal returns around the event

day should be indistinguishable from zero (MacKinlay 1997). The results conform to this prediction: the pre-announcement drift does not continue beyond disclosure, nor reverse.

Taken together, the evidence indicates that pre-announcement valuation dynamics fully dissipate at the event date. Abnormal returns become negligible once the offering is publicly disclosed, supporting H3 and confirming that the mechanisms generating pre-announcement drift operate exclusively within the pre-disclosure window.

Table 5: Announcement and Post-Announcement CAAR Statistics

$[t_1,t_2]$	CAAR	VAR	J1	p-value
[0,0]	0,16 %	0,00003	0,29	0,3847
[+0,+5]	0,71 %	0,00015	0,58	0,2815

Table 5 reports the cumulative average abnormal returns for the announcement day and the immediate post-announcement window. Both intervals display values close to zero, and neither estimate is statistically significant, indicating that prices remain stable once the offering is disclosed and no further abnormal returns accumulate after the announcement.

5.5 Discussion of the Results

The empirical evidence reveals a coherent pricing pattern around Nordic accelerated bookbuildings and directed share issues, characterised by three interconnected features: (i) a gradual and persistent pre-announcement drift, (ii) a modest but interpretable conditioning effect of informational frictions, and (iii) the complete disappearance of abnormal returns once the offering is disclosed. Together these findings form a unified narrative linking the data to the theoretical mechanisms outlined in Chapters 2 and 3.

The first key result is the smooth pre-announcement drift. Rather than being driven by discrete news or microstructural artefacts, valuations rise cumulatively across the [−20, −2] window, indicating a temporally distributed adjustment process. This dynamic aligns with models in which investors update expectations under incomplete or noisy information. As Dierkens (1991) shows, partial and weakly processed signals generate gradual belief revisions, and behavioural frameworks reach similar conclusions: investors may overweight salient or ambiguous cues, producing momentum-like drift even in sophisticated markets (Brav, Geczy & Gompers 2000). Real-options models likewise predict upward drift without mispricing, as uncertainty surrounding future opportunities resolves before financing (Carlson, Fisher & Giammarino 2006). Thus, the empirical pattern matches mechanisms

permitting expectation adjustment before disclosure and contradicts those predicting no anticipatory movement under semi-strong efficiency.

The second empirical component moderates this interpretation. Idiosyncratic volatility, used as a proxy for informational heterogeneity, exhibits a positive but modest association with firm-level CARs. This directional effect supports the idea that noisier informational environments widen investors' interpretive latitude (Hertzel and Li 2010), amplifying pre-announcement valuation responses. Yet its limited magnitude implies that informational frictions do not cause the drift; instead, they shape its cross-sectional intensity. The underlying mechanism therefore appears market-wide, consistent with an environment where transparency constrains deep asymmetry but does not eliminate interpretative variation.

The third result, the immediate neutralisation of abnormal returns at the event date, provides the strongest discriminating insight. Both announcement-day and post-announcement CAARs are statistically indistinguishable from zero. This sharp temporal break accords with semi-strong efficiency: once definitive information becomes public, interpretative ambiguity collapses and prices cease adjusting (MacKinlay 1997; Kim and Weisbach 2008). The absence of reversal further suggests that pre-announcement appreciation reflects temporary expectation distortions rather than persistent misvaluation. This weakens interpretations relying on managerial private information or long-lived mispricing, which would typically generate corrective movement at disclosure.

Finally, the persistence of the drift across tranquil and high-issuance years indicates that windows of opportunity (Bayless and Chaplinsky 1996) may amplify but do not determine the pattern. The mechanism appears structural rather than cyclical: expectation-based adjustment occurs even when aggregate conditions are not unusually favourable.

Synthesising the theoretical and empirical components, the results show that Nordic follow-on offerings exhibit systematic abnormal returns exclusively prior to disclosure. The evidence is most consistent with mechanisms that generate gradual expectation updating under noisy or ambiguous conditions. Informational frictions modulate these effects, but the decisive discontinuity at disclosure reveals that anticipatory pricing is extinguished once uncertainty resolves. This constellation of features indicates that no single theoretical framework fully explains the dynamics; rather, the interaction of transparency, compressed issuance procedures and heterogeneous interpretation best accounts for the observed pre-announcement drift.

6 Conclusions

The introduction established that the theoretical foundations of issuance timing generate conflicting expectations regarding short-horizon valuation behaviour. Information-based models allow temporary pricing deviations before disclosure. Behavioural frameworks highlight the role of noisy interpretation and sentiment. Real-options theory permits rational pre-announcement appreciation without misvaluation. Nordic institutional features, including transparency and concentrated ownership, were expected to narrow but not completely eliminate these mechanisms. The central question arising from this landscape concerned whether any systematic pre-announcement pricing pattern would emerge under these constraints.

The empirical results provide a definitive answer. The presence of a smooth and cumulative pre-announcement drift demonstrates that short-horizon valuation adjustments occur consistently across Nordic accelerated bookbuildings and directed share issues. This finding directly responds to the introductory uncertainty regarding whether pricing effects survive in a transparent, institutionally monitored market. The evidence shows that they do, and that they do so in a way that is neither sporadic nor event-driven but instead develops incrementally as expectations adjust in the period preceding disclosure. The pattern indicates that even in highly regulated environments, interpretative processes around corporate actions generate measurable valuation effects.

The behaviour of returns at the announcement date further clarifies how these dynamics arise. Once the issuance becomes public, abnormal performance disappears immediately. This termination of the drift confirms that the underlying mechanism operates only while interpretative ambiguity persists. The introduction emphasised that informational and behavioural theories diverge most strongly in their predictions about the moment of disclosure. The absence of any announcement reaction eliminates explanations that depend on managerial private information or durable mispricing. Instead, the data support the view that investors adjust valuations gradually in response to incomplete or weakly processed signals. When uncertainty collapses, the adjustment process ends abruptly, reinforcing the idea that pre-announcement pricing reflects expectation formation rather than errors in fundamental valuation.

The cross-sectional evidence refines this interpretation. Variation in idiosyncratic volatility explains differences in the magnitude of the drift but does not alter its existence. This pattern aligns with the introductory discussion, which characterised informational, behavioural and rational mechanisms as interdependent rather than mutually exclusive. The empirical results reveal exactly such interdependence. Uncertainty conditions shape the amplitude of short-horizon pricing responses, but

the structural pattern of pre-announcement appreciation persists across firms regardless of informational environment. This indicates that the pricing mechanism is broad-based and not reliant on extreme informational frictions. The results therefore suggest that Nordic markets accommodate subtle expectation-driven adjustments even when institutional monitoring is strong.

The temporal consistency of the drift offers an additional insight relevant to the thesis motivation. Noted in the introduction that issuance clustering can arise in favourable valuation environments, raising the possibility that observed price behaviour might reflect market cycles rather than inherent issuance dynamics. The results show that this is not the case. Pre-announcement appreciation occurs both in high-volume issuance periods and in calm years. This confirms that windows of opportunity amplify but do not create the underlying phenomenon. The drift is therefore a stable feature of Nordic follow-on offerings rather than a by-product of cyclical conditions. Its persistence indicates an equilibrium response embedded in how Nordic investors process preparatory signals around financing decisions.

In sum, the findings resolve the theoretical uncertainty presented in the introduction. Nordic follow-on offerings exhibit systematic, economically meaningful and temporally concentrated valuation adjustments. These adjustments emerge exclusively before disclosure, cease immediately once information becomes public and vary in intensity according to firm-specific uncertainty without losing their structural form. The results demonstrate that the pricing mechanisms described in the introduction do not merely coexist in theory but manifest empirically in a coherent and interpretable pattern that defines the short-horizon behaviour of Nordic issuance markets. They also reveal that even in transparent, tightly monitored markets, expectation-driven valuation dynamics retain predictive and explanatory power, thereby refining how issuance timing should be understood in institutional settings characterised by high informational efficiency.

6.1 Methodological and Empirical Limitations

The event-study framework offers a structured and transparent means of analysing short-horizon pricing behaviour, yet several methodological constraints necessarily shape how the findings can be interpreted. The most fundamental limitation concerns the temporal reach of the empirical design. By concentrating on the twenty trading days that precede the announcement, the analysis observes only the final stage of expectation formation. If valuation adjustments begin earlier, or if investors incorporate information through sequences of interpretation shaped by strategic communication, liquidity repositioning or gradually shifting sentiment, the documented drift may represent only the visible endpoint of a longer and more diffuse adjustment process. Such a possibility implies that the

study captures the culmination rather than the origin or full path of the pricing dynamics. This restricts the ability of the analysis to describe the complete temporal evolution of pre-announcement behaviour and confines inference to the portion of the adjustment mechanism that manifests within the selected window.

A second limitation arises from the assumptions embedded in the expected-return model. The market model requires that firms' risk exposures remain stable over the estimation window and that the pre-event period is uncontaminated by information leakage. In reality, risk parameters may drift due to macroeconomic transitions, sector-specific shocks or developments in firms' operating characteristics. Volatility regimes may shift without explicit triggering events, generating subtle structural breaks that influence alpha and beta estimates and therefore the computation of abnormal returns. Although the absence of an announcement reaction strengthens confidence that the model is not seriously mis-specified, the potential for partial instability remains. The magnitude of the observed drift may consequently be influenced by parameter variation, even though its directional consistency and temporal concentration suggest a robust underlying phenomenon.

A third limitation concerns the empirical capture of informational frictions. Idiosyncratic volatility is conceptually well suited as a proxy for informational heterogeneity, yet in the Nordic context its dispersion is naturally narrow due to strong disclosure requirements, extensive institutional monitoring and mature governance practices. These characteristics compress firm-level informational differences and reduce the discriminatory power of IVOL as a cross-sectional measure. The weak empirical link between IVOL and pre-announcement CARs may therefore reflect restricted measurement sensitivity rather than an absence of informational influence. This limits the ability of the study to differentiate among theoretical mechanisms that produce similar empirical signatures when informational dispersion is low.

A fourth limitation relates to the temporal clustering of observations in 2020 and 2021. These years resemble conditions described in the literature on windows of opportunity, where elevated valuations, abundant liquidity and heightened investor engagement may intensify the market's responsiveness to ambiguous or weak signals. Even though robustness checks show that the drift is not confined to these years, the concentration of offerings inevitably shapes the aggregate pattern and may accentuate dynamics that are less pronounced in quieter issuance periods. This complicates the generalisation of results to environments characterised by lower trading intensity, differing liquidity structures or alternative macroeconomic conditions, and calls for caution when extending the findings beyond the specific temporal composition of the dataset.

A final and overarching limitation concerns the non-causal nature of the empirical design. The event-study methodology identifies a clear and internally coherent pattern in which valuations appreciate before disclosure and become neutral immediately once the announcement is made. Although analytically informative, this pattern does not reveal which of the theoretically plausible mechanisms generates the observed behaviour or how these mechanisms interact. The findings narrow the set of possible explanations by demonstrating which theoretical claims are compatible with the empirical evidence, yet they do not assign relative causal weight.

6.2 Implications for Future Research

The findings of this thesis carry implications that reach beyond the empirical patterns documented and speak to the informational dynamics that shape short-horizon valuation behaviour. The pronounced temporal asymmetry between a persistent pre-announcement drift and complete neutrality at the moment of disclosure reveals a structural tension between how expectations evolve under uncertainty and how quickly they converge once definitive information becomes available. This tension suggests that short-run pricing deviations in Nordic follow-on offerings do not arise from systematic misvaluation, but from an informational environment in which ambiguity permits directional expectation shifts that cannot persist once disclosure removes interpretative latitude. For practitioners, this underscores that pre-announcement price strength should not be interpreted as evidence of durable revaluation. The observed drift reflects a fragile and transient informational state that extinguishes immediately at the announcement, and issuers as well as investors should therefore view such movements with caution.

On the theoretical level, the findings expose limitations in existing explanatory frameworks. Informational, behavioural and investment-based mechanisms each capture aspects of the empirical pattern, yet none fully accounts for the abrupt transition from cumulative drift to complete neutrality. The absence of a post-announcement reaction is incompatible with asymmetric-information theories that rely on announcements to reveal managerial intent, while the lack of reversal challenges behavioural interpretations that attribute pre-announcement run-ups to mispricing that subsequently corrects. At the same time, market-timing perspectives, including those related to temporally favourable issuance conditions, offer only partial explanatory power because the drift persists across heterogeneous market environments. Together, these features indicate that the drivers of short-horizon deviations likely lie in more subtle processes of expectation formation that operate under dispersed, incomplete or unevenly integrated information, rather than in any single mechanism emphasised by prior literature.

Future empirical research can build on these insights by extending analytical visibility into the phase preceding the documented drift. Because the current design captures only the final segment of expectation formation, it remains unclear whether earlier adjustments occur outside the observed window or whether belief formation intensifies as disclosure approaches. Longer pre-event horizons, intra-day or order-book data, and textual or news-based measures of information flow could reveal whether expectation drift originates gradually or accelerates as informational ambiguity deepens. Equally, richer proxies for informational conditions such as analyst coverage, forecast dispersion, disclosure intensity or firm-level news volume would allow future studies to isolate the specific informational frictions that govern short-horizon dynamics and to distinguish environments that facilitate expectation drift from those that suppress it.

Finally, comparative research across institutional settings would clarify the degree to which the identified pattern reflects features unique to Nordic accelerated bookbuildings and directed share issues or constitutes a more general characteristic of follow-on offerings. The compressed informational environments surrounding rapid-execution transactions may not be mirrored in jurisdictions with extended pre-marketing periods, differing regulatory requirements or more heterogeneous investor bases. Cross-market analysis would therefore illuminate whether the dynamics observed here represent a localised informational equilibrium or a broader structural phenomenon in equity issuance markets. By outlining these theoretical and empirical gaps, the present study provides a foundation for future inquiry into how expectations, information and institutional structures jointly shape short-horizon pricing behaviour.

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Appendices

Appendix 1 Issuer, Country, CAR [-20,-2] and IVOL

Issuer Name	Country	CAR [-20,-2]	IVOL
Revenio Group Oyj	Finland	26,52 %	0,03 %
Bioporto A/S	Denmark	25,53 %	0,17 %
Kahoot! ASA	Norway	24,56 %	0,15 %
Vitrolife AB	Sweden	23,54 %	0,05 %
Nel ASA	Norway	21,16 %	0,10 %
WithSecure Oyj	Finland	20,57 %	0,04 %
Yit Oyj	Finland	20,37 %	0,05 %
Nexam Chemical Holding AB	Sweden	20,12 %	0,20 %
Enedo Oyj	Finland	19,11 %	0,29 %
Pandora A/S	Denmark	17,94 %	0,10 %
Dometic Group AB	Sweden	14,44 %	0,03 %
Duell Oyj	Finland	14,14 %	0,07 %
Tecnotree	Finland	13,95 %	0,23 %
Solar A/S	Denmark	13,19 %	0,11 %
Carasent ASA	Norway	13,06 %	0,13 %
Norwegian Air Shuttle ASA	Norway	11,23 %	1,20 %
Xspray Farma AB	Sweden	10,68 %	0,22 %
Cloudberry Clean Energy ASA	Norway	9,75 %	0,21 %
BHG Group AB	Sweden	9,05 %	0,08 %
Hunter Group ASA	Norway	8,84 %	0,13 %
Danske Andelskassers Bank A/S	Denmark	8,57 %	0,02 %
Aiforia Technologies Oyj	Finland	7,82 %	0,08 %
Strategic partners A/S	Denmark	7,56 %	0,02 %
Cxense ASA	Norway	4,79 %	0,07 %
Veidekke ASA	Norway	4,66 %	0,03 %
Jeudan A/S	Denmark	3,76 %	0,02 %
Nyfosa AB	Sweden	3,67 %	0,06 %
Ixonos Oyj (Digitalist Group Oyj)	Finland	3,56 %	0,19 %
Remedy Entertainment Oyj	Finland	2,59 %	0,13 %
Componenta Oyj	Finland	2,21 %	0,03 %
Fastighetsbolaget Emilshus AB	Sweden	1,76 %	0,04 %
Det norske oljeselskap ASA	Norway	1,62 %	0,04 %
Jeudan A/S	Denmark	1,53 %	0,01 %
Scatec ASA	Norway	0,74 %	0,05 %
Reitir fasteignafélag hf	Iceland	-1,28 %	0,04 %
TCM Group A/S	Denmark	-1,90 %	0,05 %
Renewcell AB	Sweden	-1,97 %	0,10 %
Orexo AB	Sweden	-2,37 %	0,11 %
Powercell Sweden AB	Sweden	-2,45 %	0,10 %
Hampidjan hf	Iceland	-5,96 %	0,04 %

Appendix 2 Issuer, Issue Date, Announcement Date and CAR [-20,-2]

Issuer Name	Issue Date	Announcement Date	CAR [-20,-2]
Fastighetsbolaget Emilshus AB	20.5.2025	20.5.2025	1,76 %
Bioporto A/S	18.6.2024	17.6.2024	25,53 %
Aiforia Technologies Oyj	22.5.2024	22.5.2024	7,82 %
Nyfosa AB	16.5.2024	16.5.2024	3,67 %
Yit Oyj	12.3.2024	12.3.2024	20,37 %
TCM Group A/S	26.6.2023	26.6.2023	-1,90 %
Hampidjan hf	2.6.2023	24.5.2023	-5,96 %
Duell Oyj	1.3.2023	1.3.2023	14,14 %
BHG Group AB	4.5.2022	3.5.2022	9,05 %
WithSecure Oyj	23.3.2022	23.3.2022	20,57 %
Enedo Oyj	23.12.2021	23.12.2021	19,11 %
Xspray Farma AB	8.11.2021	8.11.2021	10,68 %
Renewcell AB	7.1.2021	7.10.2021	-1,97 %
Norwegian Air Shuttle ASA	2.9.2021	1.9.2021	11,23 %
Tecnotree	6.8.2021	30.7.2021	13,95 %
Carasent ASA	22.7.2021	22.7.2021	13,06 %
Vitrolife AB	8.7.2021	8.7.2021	23,54 %
Dometic Group AB	2.6.2021	1.6.2021	14,44 %
Cloudberry Clean Energy ASA	1.6.2021	1.6.2021	9,75 %
Orexo AB	10.3.2021	10.3.2021	-2,37 %
Remedy Entertainment Oyj	19.2.2021	18.2.2021	2,59 %
Kahoot! ASA	13.10.2020	13.10.2020	24,56 %
Reitir fasteignafélag hf	28.9.2020	28.9.2020	-1,28 %
Nel ASA	15.6.2020	15.6.2020	21,16 %
Pandora A/S	5.5.2020	5.5.2020	17,94 %
Danske Andelskassers Bank A/S	21.4.2020	20.4.2020	8,57 %
Strategic partners A/S	7.2.2020	6.2.2020	7,56 %
Scatec ASA	24.9.2019	24.9.2019	0,74 %
Revenio Group Oyj	25.4.2019	24.4.2019	26,52 %
Hunter Group ASA	18.5.2018	16.5.2018	8,84 %
Powercell Sweden AB	4.5.2017	3.5.2017	-2,45 %
Cxense ASA	24.5.2016	24.5.2016	4,79 %
Nexam Chemical Holding AB	11.3.2016	10.3.2016	20,12 %
Ixonos Oyj (Digitalist Group Oyj)	10.2.2015	10.2.2015	3,56 %
Jeudan A/S	17.6.2013	17.6.2013	1,53 %
Det norske oljeselskap ASA	5.12.2012	4.12.2012	1,62 %
Componenta Oyj	26.3.2012	20.3.2012	2,21 %
Veidekke ASA	13.4.2011	13.4.2011	4,66 %
Solar A/S	24.11.2009	24.11.2009	13,19 %
Jeudan A/S	30.11.2007	30.11.2007	3,76 %

Appendix 3 Estimated Alphas and Betas by Issuer

Issuer Name	CAR [-20,-2]	Alpha	Beta	VAR (ei)
Revenio Group Oyj	0,265159951	0,000470813	0,230169514	0,000339979
Bioporto A/S	0,255343277	0,000324688	0,384538158	0,001719813
Kahoot! ASA	0,245642776	0,00469151	0,897973001	0,001499165
Vitrolife AB	0,235368836	0,000371592	0,556223406	0,000486352
Nel ASA	0,211629598	0,004311442	1,721513202	0,000999037
WithSecure Oyj	0,205657801	0,00102131	0,805154757	0,000394525
Yit Oyj	0,203701265	-0,001070427	0,85566431	0,000465822
Nexam Chemical Holding AB	0,201249302	0,001684619	0,750018162	0,001953404
Enedo Oyj	0,191103692	0,000141822	0,306004311	0,002925282
Pandora A/S	0,179397402	0,000624777	0,838632246	0,000958613
Dometic Group AB	0,144366941	0,000494967	1,042757601	0,000336036
Duell Oyj	0,141441423	-0,006074439	0,575362018	0,00072624
Tecnotree	0,139526563	0,004342467	1,191616767	0,00231955
Solar A/S	0,131865102	-0,000674895	0,411572819	0,001060397
Carasent ASA	0,130643273	0,002599016	0,751152129	0,001256786
Norwegian Air Shuttle ASA	0,112280947	-0,010496544	1,806919417	0,011983905
Xspray Farma AB	0,10680127	-0,000833551	0,137783443	0,002207655
Cloudberry Clean Energy ASA	0,097480282	0,000415827	0,72033466	0,002128946
BHG Group AB	0,090535861	-0,002761055	0,98607051	0,000773014
Hunter Group ASA	0,088446709	-0,003272842	0,771851023	0,00130867
Danske Andelskassers Bank A/S	0,085743629	0,001153799	-0,074900343	0,0001642
Aiforia Technologies Oyj	0,078182935	-0,000549904	-0,002481515	0,000769698
Strategic partners A/S	0,075551432	0,00232596	0,087042989	0,000219019
Cxense ASA	0,047892279	0,000331075	0,390049896	0,000669498
Veidekke ASA	0,046598232	-0,000137027	0,513329839	0,000267799
Jeudan A/S	0,037585069	-0,001252272	0,219555797	0,000183708
Nyfosa AB	0,036692895	0,001306991	1,629853795	0,000561952
Ixonos Oyj (Digitalist Group Oyj)	0,035602611	-0,002683387	0,834775216	0,001911672
Remedy Entertainment Oyj	0,025921549	0,003771437	0,689472184	0,001276129
Componenta Oyj	0,022106743	-0,001927662	0,377561417	0,000325007
Fastighetsbolaget Emilshus AB	0,017625237	0,001782559	0,544766524	0,000447059
Det norske oljeselskap ASA	0,016234914	-7,90848E-05	1,233719392	0,0003777
Jeudan A/S	0,015301082	0,000437018	0,114200369	9,52538E-05
Scatec ASA	0,007375067	0,002473015	0,965363758	0,000489817
Reitir fasteignafélag hf	-0,012813232	-0,001800499	-0,086082222	0,00037877
TCM Group A/S	-0,019001057	-0,001065955	0,448154727	0,000496306
Renewcell AB	-0,019695682	-0,002064122	1,190845946	0,000987894
Orexo AB	-0,023726191	0,000745722	0,848333258	0,001053167
Powercell Sweden AB	-0,024515738	-0,000439934	0,45253707	0,000965643
Hampidjan hf	-0,059588319	0,001340993	0,034328688	0,000410393

Appendix 4 Declaration of the Use of Articial Intelligence (AI)

Tool: OpenAI ChatGPT (GPT-4)

Stage of thesis process: Composition and presentation of methodology

Purpose and application:
Generative artificial intelligence was used to generate Figure 1 (Event-study estimation window) as a visual illustration of the standard event-study timeline. The figure was created to support the presentation of the methodology by illustrating the separation between the estimation window and the event window, following the framework described in MacKinlay (1997). The figure serves an illustrative purpose only and does not contain original analysis, data, or results generated by the AI.

Verification measures:
The student verified that the structure, timing conventions, and interpretation of the figure are fully consistent with the original academic source. The methodological design, parameter choices, and empirical interpretation remain entirely the student's own responsibility.