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Analysts' preference for growth firms in a changing interest rate environment

Evidence from the Nordic Markets

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ABSTRACT:

Sell-side analysts act as important information intermediaries in financial markets by producing forecasts and investment recommendations that support investors' decision-making. Analysts' recommendations may reflect systematic preferences for firm characteristics rather than pure valuation. This thesis focuses on whether analysts favor firms with stronger expected growth and whether the presumed preference varies with a changing interest rate environment. Analysts' growth preference is a widely documented phenomenon in existing literature. However, there is a clear shortage of Nordic evidence and direct examination of the effect of changing interest rates.

The present thesis offers two main hypotheses. First, it is hypothesized that there is a positive association between expected firm growth and analyst recommendations. The second hypothesis poses that the presumed positive association becomes stronger when interest rates are lower. The data is gathered from the Institutional Brokers' Estimate System (I/B/E/S), which is a global financial database that collects analyst data, such as earnings forecasts and recommendations. Growth is measured through long-term growth (LTG) forecasts, sales growth, earnings-to-price and book-to-price. The study focuses on four main Nordic equity markets: Finland, Sweden, Norway and Denmark.

Consistent with prior literature, the statistical analysis shows a strong positive and statistically significant relationship between analysts' LTG forecasts and recommendation favorableness, and the relationship generally persists across countries and time periods. However, sales growth shows a weak negative relationship, while E/P and B/P show no statistically significant relationship in any direction. Regarding the effect of interest rates on analysts' growth preference, the analysis shows a negative and statistically significant relationship between Euro-area 10-year government bond yields and the LTG-recommendation correlation, suggesting that analysts' preference for high-LTG firms is stronger in lower-rate environments.

KEYWORDS: Analysts, Valuation, Recommendations, Stock Exchanges, Shares, Market Efficiency

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TIIVISTELMÄ:

Osakeanalyytikot toimivat tärkeinä tiedonvälittäjinä rahoitusmarkkinoilla tuottamalla ennusteita ja sijoitussuosituksia, jotka tukevat sijoittajien päätöksentekoa. Analyytikoiden suositukset voivat puhtaan arvonmäärityksen sijaan heijastaa systemaattisia mieltymyksiä tiettyjä yritysten ominaisuuksia kohtaan. Tässä tutkielmassa tarkastellaan, suosivatko analyytikot yrityksiä, joiden odotettu kasvu on voimakkaampaa, sekä sitä, vaihteleeko oletettu kasvuun kohdistuva mieltymys korkoympäristön muuttuessa. Analyytikoiden kasvuun kohdistuva mieltymys on laajasti dokumentoitu ilmiö aiemmassa kirjallisuudessa. Pohjoismaista näyttöä aiheesta on kuitenkin vähän, eikä muuttuvien korkotasojen vaikutusta ole tarkasteltu suoraan.

Tutkielmassa esitetään kaksi päähypoteesia. Ensimmäisen hypoteesin mukaan yrityksen odotetun kasvun ja analyytikkosuositusten välillä on positiivinen yhteys. Toisen hypoteesin mukaan tämän oletetun positiivisen yhteyden odotetaan vahvistuvan korkotason ollessa matalampi. Aineisto on kerätty Institutional Brokers' Estimate System (I/B/E/S) -tietokannasta, joka on globaali rahoitustietokanta ja sisältää analyytikkodataa, kuten tulosennusteita ja suosituksia. Kasvua mitataan LTG (long-term growth) -ennusteilla, liikevaihdon kasvulla, earnings-to-price (E/P) -luvulla sekä book-to-price (B/P) -luvulla. Tutkimus keskittyy neljään keskeiseen pohjoismaiseen osakemarkkinaan: Suomeen, Ruotsiin, Norjaan ja Tanskaan.

Aiemman kirjallisuuden mukaisesti tilastollinen analyysi osoittaa vahvan positiivisen ja tilastollisesti merkitsevän yhteyden analyytikoiden LTG-ennusteiden ja suositusten suotuisuuden välillä. Yhteys säilyy yleisesti eri maiden ja ajanjaksojen välillä. Liikevaihdon kasvun ja suositusten välillä havaitaan kuitenkin heikko negatiivinen yhteys, kun taas E/P- ja B/P-lukujen osalta ei havaita tilastollisesti merkitsevää yhteyttä kumpaankaan suuntaan. Tarkasteltaessa korkotason vaikutusta analyytikoiden kasvuun kohdistuvaan mieltymykseen analyysi osoittaa negatiivisen ja tilastollisesti merkitsevän yhteyden euroalueen 10 vuoden valtionlainojen korkojen ja LTG:n sekä suositusten välisen korrelaation välillä. Tämä viittaa siihen, että analyytikoiden mieltymys korkean LTG:n yrityksiä kohtaan on voimakkaampi matalan korkotason ympäristössä.

AVAINSANAT: Analyytikot, valuaatio, suositukset, osakemarkkinat, osakkeet, tehokkaat markkinat

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1 Introduction

Equity research analysts play an important role in capital markets by producing recommendations that may influence investor decisions and impact equity prices. Sell-side analyst recommendations are often considered important signals by both institutional and private investors, as analysts use their access to resources, financial expertise, and extensive firm-specific knowledge to provide information for investors. Therefore, analysts are expected to provide objective evaluations of their target companies. However, their recommendations may be shaped by firm-specific characteristics as well as the broader economic environment. The factors that contribute to analysts' recommendations are still not entirely clear, and researchers such as Peasnell et al. (2018, p. 2) have highlighted a need for more research on the topic.

Firms with strong growth prospects are often viewed favorably by the market, even though they are found to earn lower returns (Bradshaw, 2004; Lakonishok et al., 1994). It is unclear whether analysts systematically prefer such firms in the Nordics, and how these preferences may alter with changing discount rate environments. Understanding these patterns would be beneficial for interpreting analyst reports, evaluating market efficiency, and identifying potential biases in analyst recommendations. The purpose of this study is to investigate whether sell-side equity analysts systematically prefer growth-oriented firms when issuing positive recommendations. It also seeks to find out whether a low-interest rate environment further strengthens analysts' preference for growth firms.

1.1 Research gap

The study aims to provide evidence on how firm characteristics interact with market conditions in shaping analyst recommendations. Analysts' view on growth stocks is not necessarily a new subject. Bradshaw (2004) studied the effect of long-term growth forecasts (LTG) and found that they are positively associated with better recommendations.

Additionally, Peasnell et al. (2018) aimed to understand analyst stock recommendation decisions and found that while LTG has a positive effect on stock recommendations, the effect declines as LTG further increases. Miwa & Ueda (2016) studied analysts' preference for growth companies and how it changes during times of different market sentiments, which they used as a proxy for discount rate environment. Campbell et al. (2010), Dechow et al. (2021), Gormsen & Lazarus (2023), and Weber (2018) study duration and valuation mechanisms, but do not examine whether analysts issue relatively more favorable recommendations for high-growth firms when interest rates are lower. Ademmer & Rush (2024, p. 2) and Bhamra et al. (2023, p. 1195) emphasize the importance of long-term borrowing costs to the discounting of future cash flows. Existing research lacks a direct examination on the influence of the risk-free rate component of the discount rate environment on analysts' growth preferences, and, to the author's knowledge, there is no current research on the phenomenon in the Nordic stock markets.

Based on the identified research gaps, the present study addresses two main research questions. The first question seeks to answer whether analyst recommendations systematically reflect firms' expected growth in the Nordic equity markets, and the second examines whether this relationship varies with a changing long-term interest rate environment. Overall, the examination of the relationship between expected growth and stock recommendations contributes to the understanding of how analysts perceive different firm characteristics.

1.2 Hypothesis development

The hypotheses for the thesis are constructed based on findings in existing literature. Prior literature consistently documents a positive relationship between firms' growth expectations and analyst recommendations. Bradshaw (2004), Jegadeesh et al. (2004), and Miwa & Ueda (2016) find a strong positive association between analysts' long-term growth forecasts (LTG) and recommendation consensus, while Peasnell et al. (2018) confirm the positive relation, although finding that it weakens at very high growth

expectations. This relationship should be expected to persist in the Nordics. Therefore, the first hypothesis is:

H1: Analyst recommendations are positively associated with expected firm growth.

The hypothesis that analysts would prefer stocks with higher long-term growth forecasts and other high-growth indicators is relatively counterintuitive, since firms with lower future growth expectations seem to offer better returns (Lakonishok et al., 1994). Additionally, low EP and low BP firms, associated with higher expected growth, have been found to underperform those with higher EP and BP ratios (Miwa & Ueda, 2016, p. 42). Thus, if hypothesis 1 is confirmed, it could indicate a biased preference towards growth firms in the recommendations.

The value of equity is dependent on the timing of the cash flows, as well as the rate used to discount those cash flows (Miwa & Ueda, 2016, p. 41). When discount rates are low, future earnings become more valuable in present value terms, making high-growth firms appear more attractive from a valuation standpoint, since their earnings are further in the future (Bodie et al., 2023, p. 454). Campbell et al. (2010) explain that growth-stock profits accrue further in the future and that these firms are consequently more sensitive to changes in market discount rates. Previous evidence suggests that analysts' optimism toward long-duration growth firms becomes stronger during favorable market conditions, meaning that the relationship may reflect both rational valuation effects and increased optimism (Miwa & Ueda, 2016; Weber, 2018). Additionally, long-term cash flows are more sensitive to changes in assumptions, creating a platform for biases, such as analysts' overoptimism (Capstaff et al., 2001). One of the key components affecting equity discount rates is the long-term risk-free rate (Ademmer & Rush, 2024, p. 2; Bhamra et al., 2023, p. 1195-1196). Hence, the second hypothesis is:

H2: The positive relationship between expected firm growth and analyst recommendations is stronger in lower long-term interest rate environments.

If the Efficient Market Hypothesis holds, changing market conditions should not significantly affect analysts' market outlook and optimism, since according to the theory, all available information should already be priced in the financial assets. Prior literature suggests that analyst recommendations are not influenced solely by firm fundamentals, but also by firm traits such as growth prospects or valuation ratios. These patterns suggest that analysts' preferences vary depending on the type of firms they evaluate, and the preference for firms with high growth expectations seems to be exceptionally clear. However, neither the preference for growth stocks, nor the effect of long-term interest rates on that preference, have been studied directly in the Nordic markets by using multiple market- and analyst-implied growth proxies, which is the gap this thesis seeks to cover.

1.3 Structure of the thesis

First, chapter 2 presents the theoretical foundation of asset pricing and valuation, introducing the most important equity valuation models and valuation theories, such as Capital Asset Pricing Model (CAPM), and Limits to arbitrage. It then discusses market efficiency, covering the Efficient Market theory and limits to arbitrage. Information asymmetry and principal-agent theory are then covered to explain the frictions and problems that might influence analyst behavior. After the theoretical overview, chapter 3 reviews the existing literature around the topic, including overall properties of recommendations, analysts' preferences for firm characteristics, and the impact of market conditions on their recommendations. Chapters 4 and 5 will cover the data and empirical methodology used to test the study's hypotheses and present the overall results of the study. Finally, chapter 6 concludes the thesis by summarizing the key findings, as well as discussing their implications, while addressing limitations of the study and suggesting possibilities for future research.

2 Theoretical background

This chapter covers important theoretical background to better understand the overall theoretical concepts of the present thesis. Valuation models are covered to understand how analysts' recommendations are formed, while Efficient Market Hypothesis and limits to arbitrage provide the benchmark for whether systematic analyst preferences should exist. Finally, information asymmetry and agency problems explain why analysts can provide information to the market but potentially be biased when doing so.

2.1 Valuation models

When analysts provide recommendations for stocks, they first need to analyze whether the stock in question is mispriced relative to its intrinsic value that can be derived from existing financial data or future expectations (Bodie et al., 2023, chapter 18). Analysts use various valuation models, which often complement each other, and are used in combination (Imam et al., 2008, p. 515). The two main valuation model categories used by analysts are cash-flow based models, and accrual-based models (Imam et al., 2008, 2013). After all, analysts issue recommendations based on their valuation estimate and how much it differs from the market (Kecskés et al., 2017, p. 1855). To understand analyst recommendations, it is important to first understand the valuation principles that those recommendations build on.

2.1.1 Cash-flow based models

Cash-flow based models' main idea is to discount future cash-flows into their present value using a discount rate that reflects the risk and time value of money associated with those cash flows (Bodie et al., 2023, chapter 18). This mechanism is particularly relevant for growth firms because a larger share of their expected cash flows is realized further in the future, making their valuations more sensitive to changes in discount rates

(Campbell et al., 2010). Cash flow models include two main approaches: Discounted cash flow (DCF) model and dividend discount model (DDM), of which the former is more relevant for the valuation of growth firms. (Imam et al., 2013, p. 12). Free cash flow is the cash flow available for the firm after capital expenditures. Free Cash-Flow (FCF) formula is defined as follows by Bodie et al. (2023, p. 611):

$$FCF = EBIT\ (1 - t_c) + Depreciation - Capital\ expenditures - Change\ in\ NWC \quad (1)$$

Where $EBIT$ is the earnings before interest and taxes, t_c is the corporate tax rate, and NWC is the net working capital. DCF model discounts all future cash flows into their present value, usually at the weighted-average cost of capital (WACC), which will be covered in chapter 2.3 (Bodie et al., 2023, chapter 18). DCF model estimates and discounts year-by-year future cash flows and adds the discounted estimate of terminal value V_T to calculate the firm value, which is defined as:

$$Firm\ value = \sum_{t=1}^{T} \frac{FCF_t}{(1+WACC)^t} + \frac{V_T}{(1+WACC)^T} \quad (2)$$

Where $V_T = \frac{FCF_{T+1}}{WACC-g}$, and g represents terminal growth of the cash flow. Finally, to find the equity value of the firm analyzed, the market value of all outstanding debt needs to be subtracted from the derived value (Bodie et al., 2023, chapter 18). By replacing the FCF in the formulas with dividends, the model becomes a dividend discount model (DDM), which is often used in valuation of dividend-oriented companies.

DCF model is one of the most widely used models used by modern equity analysts, alongside accrual-based models (Imam et al., 2008, 2013). Huang et al. (2023, p. 884) show that sales growth has a positive and statistically significant effect on analysts' use of DCF model, while they also show a positive and significant relation between buy recommendations and use of DCF. These findings could indicate that analysts' potential growth preferences may not necessarily be a preference for growth itself, but rather a

potential preference for valuation models commonly applied to growth firms, which tend to produce more optimistic valuations.

2.1.2 Accrual- and multiple-based models

Accrual- or multiple-based models are used by analysts as an alternative or complimentary valuation method to cash flow-based valuation. Accrual-based models include ratios such as price to earnings (P/E), price to earnings growth (PEG), price to sales (P/S), and price to book value (P/B), alongside many other multiples (Imam et al., 2013, p. 12). The idea of these models is to identify stocks' fair value by comparing specific multiples with market peers, including companies in the same industry or companies with similar business models (Bodie et al., 2023, chapter 18). Imam et al. (2008) conducted survey-based research and found that P/E and P/B ratios are perceived as the most important individual valuation multiples by sell-side analysts (p. 513). Jegadeesh et al. (2004) and Miwa & Ueda (2016) argue that P/E and P/B ratios act as proxies for market expectations for future growth. The overall use of these market-implied growth proxies as valuation measures provides theoretical motivation for the use of earnings-to-price and book-to-price as market-implied growth proxies in the empirical analysis of the present thesis.

2.2 Capital Asset Pricing Model

A core principle of finance and portfolio theory is the trade-off between risk and return, meaning that higher expected returns are typically associated with greater risk. Markowitz (1952) was a pioneer in this field by addressing the importance of reducing variance and maximizing expected return. Sharpe (1964) introduced the capital asset pricing model (CAPM) and capital market line (CML), which is a representation of risk and return in the capital market. He argues that rational investors can place themselves at their desired point on the capital market line, based on their risk appetite. Both theories are widely accepted to this day, and modern finance builds upon those theories.

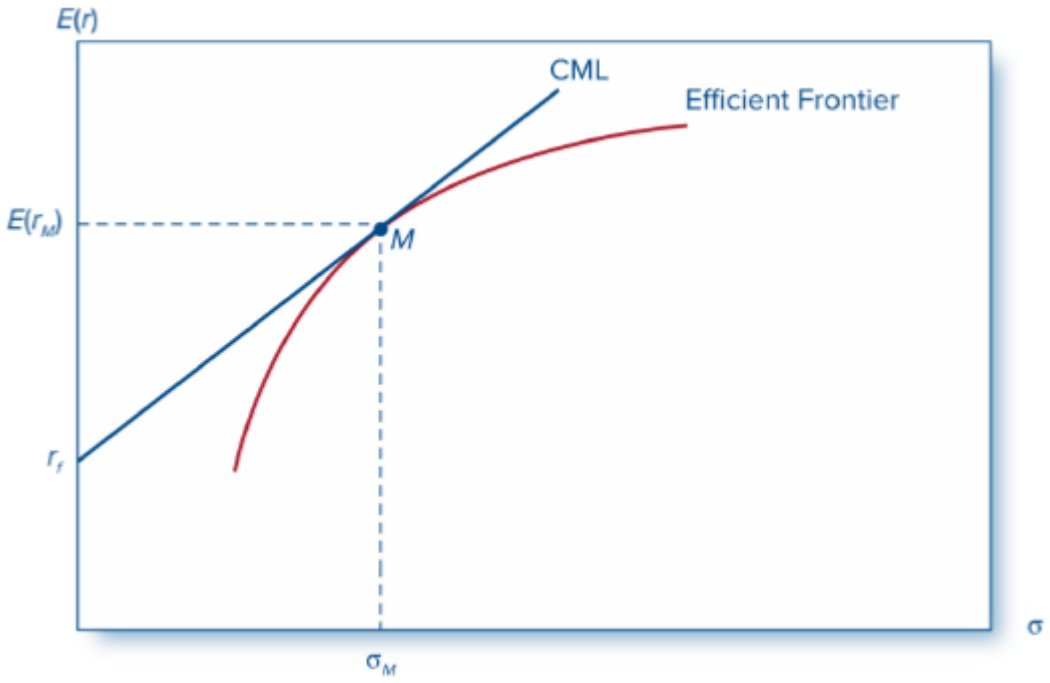

Figure 1. The capital market line and efficient frontier (Bodie et al., 2023, p. 284).

Figure 1 illustrates the efficient frontier and the capital market line. The efficient frontier represents the set of portfolios that offer the highest expected return for a given level of risk, measured by the standard deviation of returns. The CML is formed by combining the risk-free asset with risky portfolios, representing the highest expected return for each level of risk. The point where the CML and the efficient frontier meet represents the market portfolio (Bodie et al., 2023).

CAPM is based on certain assumptions. The first set of assumptions addresses individual behavior. It assumes that investors are rational mean-variance optimizers, possess a single-period investment horizon, and use identical information input, often referred to as homogeneous expectations. The second set of assumptions addresses market structure, stating that all assets must be freely tradable, investors can borrow and lend at a risk-free rate and take short positions, and there are no trading costs (Bodie et al., 2023, p. 284).

Table 1. CAPM assumptions (Bodie et al., 2023, p. 284).

1. Individual behavior
a. Investors are rational, mean-variance optimizers.
b. Their common planning horizon is single period.
c. Investors all use identical input lists.
2. Market structure
a. All assets are publicly held and trade on public exchanges.
b. Investors can borrow or lend at a common risk-free rate, and they can take short positions.
c. No taxes.
d. No trading costs.

CAPM is built on three components: risk-free rate as the baseline return with no risk, and the market risk premium, which compensates investors for taking systematic risk, and beta, which captures an asset's sensitivity to market movements and therefore systematic risk. Treasury bill rates are often referred to as risk-free rate, and 10-year euro-area bond yield is the discount rate component examined in the present study. Beta is the relative risk of the particular asset, as it measures the sensitivity to systematic risk of the asset in question. Portfolio beta can be calculated by multiplying the weights of each asset by their betas. Therefore, the weighted-average beta of all assets in a market portfolio must be 1. Assets with a beta higher than 1 can be considered aggressive, as they contain above-average sensitivity to market movements. Similarly, assets with a beta lower than 1 can be considered defensive. Hence, by multiplying the market risk premium by the beta of an individual stock, we can obtain the risk premium of the individual stock or portfolio (Bodie et al., 2023). CAPM is based on the idea that the risk premium and therefore the expected return of a stock is directly based on its beta. CAPM formula is defined as follows:

$$E(R_i) = R_f + \beta_i \times [E(R_m) - R_f] \quad (3)$$

Where $E(R_i)$ is the expected return on investment, R_f represents the risk-free rate, β_i is the beta of the investment, $E(R_m)$ denotes the expected return of the market, and $[E(R_m) - R_f]$ is the market risk premium. Government bond yields are commonly used as proxies for risk-free rates, with longer-maturity yields providing a benchmark for long-term valuation. CAPM is an important concept in analysts' asset valuation, as it is typically used to estimate the cost of equity, which is then used in calculating the weighted average cost of capital (WACC) (Bodie et al., 2023, chapter 18). Since the WACC is frequently applied as the discount rate in DCF models, CAPM plays an indirect role in analysts' target prices and recommendations, and the effect of the risk-free rate channel on analyst recommendations is examined in the present study.

2.2.1 Fama-French Three Factor Model

Fama & French (1992) provide evidence that other firm characteristics in addition to market beta are relevant for explaining stock returns. While the Sharpe-Lintner-Black model predicts that expected returns are positively associated with market beta, Fama and French find a weak relationship during their sample period of 1963-1990 (p. 427-428). However, they show that firm size has a negative relationship with average stock returns, while book-to-market shows a positive relationship. These relationships remain, while the combination largely absorbs explanatory power of earnings-to-price and leverage (p. 428). Their findings suggest that stock risk and expected returns may be more multidimensional than CAPM suggests.

Based on their findings, Fama & French (1993) develop a multifactor model, in which stock returns are explained by two factors additional to the overall market factor (p. 9). Small Minus Big (SMB) represents the difference in returns on small cap and large cap portfolios with similar book-to-market. The book-to-market factor, referred to as High Minus Low (HML), represents the difference between returns on high- and low-book-to-

market portfolios of similar firm size. Their analysis shows that these factors capture variation in stock returns that is not fully explained by the market factor alone (p. 5). Their framework provides support for the use of firm size as a control variable in the present study, while book-to-price is used as one of the measures of firms' growth prospects.

2.3 WACC

Weighted average cost of capital (WACC), which is the yearly weighted average of cost of equity and after-tax cost of debt, is often used as the primary discount factor in valuation models such as DCF (Bodie et al., 2023, p. 612). Hence, to calculate WACC, cost of equity and cost of debt need to be first determined. CAPM, as discussed in the previous subchapter, is often considered as the primary method for estimating cost of equity.

Cost of equity is the expected return for stockholders, whereas cost of debt can be defined as the expected return for bondholders (Baule, 2019, p. 722). The actual cost of debt therefore is the risk-free rate and risk premium added together. The simplest way of determining a company's cost of debt is to divide the total annual interest expense by total debt in the firm's balance sheet (Bernström, 2014). Once cost of equity and debt have been calculated, WACC formula can be used:

$$WACC = (K_e \times W_e) + (K_d \times W_d) \times (1 - T) \quad (4)$$

Where K_e is the cost of equity, K_d is the cost of debt, T is the corporate tax rate, and W_e and W_d are the weights of equity and debt in the firm's capital structure, respectively (Bernström, 2014, pp. 90-91).

As the cost of equity and cost of debt can change over time, WACC should be forecasted for all discounted periods (Bodie et al., 2023, p. 866). Therefore, analysts face yet another variable in equity valuation, especially for growth firms for which most of the cash flow will be further in the future. Consequently, changes in the interest rate component

of the discount rate should theoretically have a larger valuation effect on long-duration growth firms than on firms whose cash flows are realized sooner (Campbell et al., 2010).

2.4 Market efficiency

Capital markets provide a mechanism for allocating ownership of capital within the economy. In a perfect market, security prices reflect all available information, which allows investors to make investment decisions without concern for mispricing (Fama, 1970, p. 383). Under such conditions, resources should be allocated to their most productive destinations. If markets truly are fully efficient, investors should not be able to consistently outperform the overall market in the long run, which would also reduce the informativeness of analysts' recommendations. This theory is commonly referred to as Efficient Market Hypothesis (EMH). Market efficiency is an important theory to cover, as analysts contribute to the overall efficiency of the capital markets by providing valuable information to investors (Jung et al., 2012, p. 74; Peasnell et al., 2018, p. 252). Additionally, its existence has an impact on the informativeness of equity analysts' recommendations.

2.4.1 Efficient market hypothesis

Fama (1970) divided market efficiency into three forms, which are still often referred to in modern financial theory. Weak form efficiency only includes historical prices, implying that past price patterns and trends cannot be used to achieve excess returns. Hence, weak form of market efficiency suggests that trend analysis on stocks is not effective. However, there are documented patterns, such as momentum, that contradict the weak form of market efficiency (Jegadeesh & Titman, 1993). Semi-strong form efficiency additionally includes all public information, such as earnings, macroeconomic news, and analyst forecasts, meaning that new public information is instantly reflected in stock prices and cannot be exploited for abnormal returns. Public data includes not only financial data but also fundamental data on firms' other traits, such as quality of management,

patents, and analyst forecasts (Bodie et al., 2023, p. 346). Strong form efficiency, which is the most extreme form of market efficiency, includes all public and private information, indicating that even insider knowledge cannot consistently produce returns higher than the market, as prices already reflect all relevant data.

A theory strongly linked to efficient market hypothesis is random walk theory, which suggests that stock prices move in an unpredictable pattern, implying that future price movements cannot be reliably forecasted based on past price movements, and all new information is immediately reflected in stock prices (Malkiel, 2003, p. 59).

2.4.2 Limits to arbitrage

Another extension linked to efficient markets is limits to arbitrage, which states that mispricing persists on the market due to financial constraints on arbitrageurs (Malkiel, 2003, p. 26). Shleifer & Vishny (1997) define arbitrage as:

The simultaneous purchase and sale of the same, or essentially similar, security in two different markets for advantageously different prices. (p. 1)

While efficient market hypothesis assumes that arbitrage causes mispriced securities to quickly correct, in practice there are several factors that limit the effectiveness of arbitrage. These limits arise when rational traders are unable to exploit mispricing of securities due to risks, costs, or other constraints. Hombert & Thesmar (2014) demonstrated that hedge funds with lock-up periods can partially overcome these limitations and therefore pursue arbitrage strategies more effectively.

Analyst optimism toward growth firms could contribute to mispricing without being immediately corrected by rational investors. Growth firms may be difficult to value, since most of their present value depends on distant cash flows. Even if analysts favor growth

firms more than is fundamentally justified, limits to arbitrage may allow such mispricings to persist.

2.5 Information asymmetry and principal-agent theory

Information in financial markets is not always distributed equally to all participants. When one party holds more information than another, the less informed participant could take decisions not in their best interests. This relationship is called information asymmetry, and it is a key concept for understanding analyst recommendations, since asset valuation is subjective to some extent, and market participants use different sets of information to value financial assets (Li, 2020, p. 1). When decreasing analyst coverage is used as a proxy for information asymmetry, it can lead to outcomes such as suboptimal investment decisions and decrease in financing and investments (Derrien & Kecskés, 2013, p. 1436), as well as a decrease in market value of companies with terminated analyst coverage (Kelly & Ljungqvist, 2012, p. 1390).

Previous literature has shown that analyst coverage can be subject to information asymmetry. Li (2020) found that higher (lower) analyst coverage leads to smaller (larger) misvaluation in equity prices. He argues that high-coverage firms are less prone to overvaluation, compared to low-coverage firms. Therefore, it can be argued that high analyst coverage reduces information asymmetry in the stock market, highlighting the relevance of analysts in the financial markets. High analyst coverage offers financial market participants more information, making misvaluations less prone to persist. The presence of information asymmetry in the financial markets motivates controlling for analyst coverage in the empirical analysis of the present study, since differences in firms' information environments may independently affect recommendation behavior.

Two market participants are often referred to as principal and agent. Another central concept regarding analyst recommendations builds on those participants and is called principal-agent theory. Principal-agent problems arise when one market participant

(principal) relies on another party (agent) to perform tasks on their behalf. This dynamic can lead to misalignment of interests, where agent's interests do not align with those of the principal. An example of a principal-agent problem occurs when stockholders (principals) trust managers (agents) to operate a company, with the aim of maximizing the value of their shares in the long run (Markovitch et al., 2005, p. 1469). Problems arise, for instance, when managers do not have the incentives to maximize shareholder value, but may possess different incentives, such as short-term performance, due to performance-based compensation.

Principal-agent theory is relevant to the relationship between analysts (agents) and investors (principals) when their interests do not align. Investors can use analysts' recommendations for investment decisions, but it can lead to suboptimal outcomes if the equity analysis is disrupted by misalignment of interests between analysts and investors. Analysts can shape investor demand for firms' shares and influence share prices, which affects companies' positions within their industries (Kuperman, 1998, p. 401).

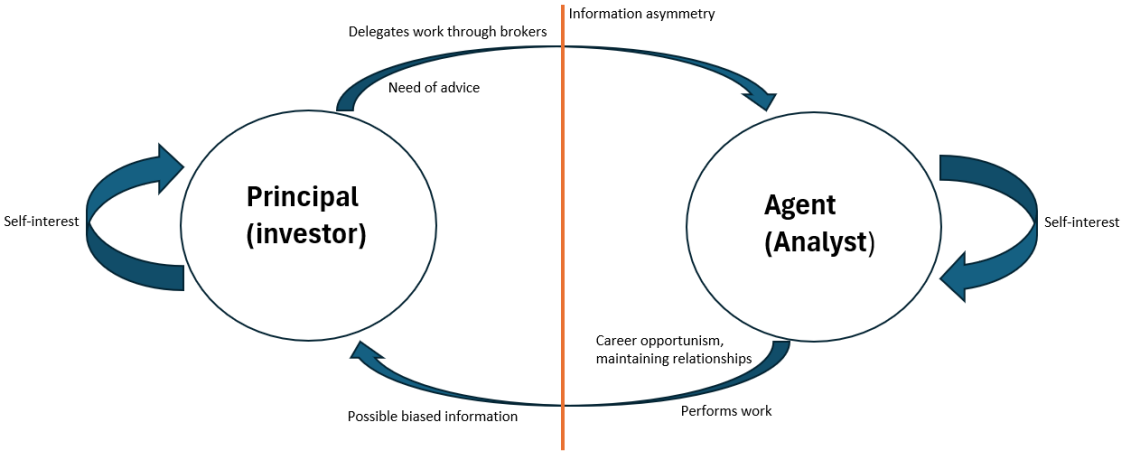

Figure 2. Principal-Agent problem and information asymmetry.

3 Review of existing literature

Analyst recommendations are a widely studied subject in financial and accounting research. First, this chapter covers overall recommendation properties and the role of equity analysts in financial markets. Second, it reviews prior literature to examine important considerations regarding the central themes of this thesis, through analysts' preferences for growth, and the role of interest rate levels on valuation and analysts' preferences.

3.1 Equity analysts and their ability to predict stock returns

Equity analysts have an important role in modern capital market as an information source for both private and institutional investors, and they help reduce information asymmetry between market participants. Their outputs, including forecasts, target prices, and recommendations, are inputs for market participants who seek to value firms or forecast their future performance. Analysts gather and process information that would otherwise be costly for investors to obtain, thereby improving market efficiency (Healy & Palepu, 2001; Schipper, 1991).

The informational value of analyst research has been widely documented. Schipper (1991) emphasizes that analysts' forecasts and recommendations are among the most widely followed sources of firm-level information. Similarly, Healy & Palepu (2001) highlight that analysts are one of the key interpreters of company disclosures, arguing that their work can complement firms' reports by combining the information into useful insights. Analysts' work can therefore contribute to the pricing of stocks in financial markets.

Analyst reports not only contain quantitative financial information and forecasts, but also qualitative analysis (Asquith et al., 2005). Therefore, stock prices do not only react to recommendation or target price changes, but also to the qualitative components of

analyst reports. Information provided by analysts can influence immediate market reactions. Although Altınkılıç & Hansen (2009) and Altınkılıç et al. (2013) found intraday price reactions to recommendations to be insignificant, Bradley et al. (2014) resolve part of a disagreement in earlier literature by showing that observed weak intraday reactions can result from measurement errors in I/B/E/S data. Bradley et al. (2014) adjusted the data and examined short-term returns for NYSE-listed stocks from January 2002 to December 2007 and found large and directionally consistent announcement-period returns after recommendation upgrades and downgrades. The price reactions are considerably stronger for recommendations released before the market opens (p. 652).

Studies, including Womack (1996) and Kudryavtsev (2019) have found evidence of high informativeness in analysts' work, as they found strong post-revision drift (PRD) after analyst recommendation revisions, meaning that stock prices continue to drift into the direction of the recommendation for a period after it is issued. PRD has been found especially strong in negative recommendations (Hsieh et al., 2023; Womack, 1996). Even more pronounced PRD has been recorded for stocks that initially reacted in the opposite direction compared to the recommendation (Kudryavtsev, 2019, p. 358). Hsieh et al. (2023) add to the evidence by finding that changes in consensus analyst recommendations predict the following month's abnormal returns, with a one-notch increase in recommendation level associated with a 0.478% higher one-month abnormal return, adjusted for firm characteristics. However, the effect is found to be primarily driven by recommendation downgrades, adding to the evidence of earlier literature. There is also contradictory evidence, as Altınkılıç et al. (2016) found no evidence of PRD between 2003 and 2010, suggesting that analysts' ability to predict stock returns may have weakened.

Overall, analysts can seem to predict future stock returns, but the return prediction ability is strongly asymmetric. Analysts appear to be more capable of identifying future underperformance through downgrades than future overperformance through upgrades. This asymmetry is relevant to the present study, since prior research, such as Bradshaw

(2004), Jegadeesh et al. (2004), Miwa & Ueda (2016), and Peasnell et al. (2018) have found that analysts prefer growth firms. If positive recommendations contain less predictive power than negative ones, the recommendations may largely reflect analyst optimism or preference for "glamour" traits rather than actual ability to identify future stock performance. Therefore, any results supporting H1 of the present study would further demonstrate analysts' growth preference, but they would not necessarily imply that those recommendations have any greater value for investors.

While analysts provide valuable information to market participants, they are not always rational. Existing research documents systematic overoptimism and bias in analyst forecasts and recommendations. Francis & Philbrick (1993) argue that analysts balance many different objectives at the same time, such as forecast accuracy and management relationships, some of which can act as incentives for analysts' overly optimistic forecasts and reporting. Conflicts of interest are one of the main explanations for upwardly biased forecasts. Lin & McNichols (1998) argue that analysts affiliated with underwriter banks issue more favorable recommendations for client firms. Michaely & Womack (1999) provide similar evidence that buy recommendations from affiliated analysts are overly optimistic and underperform the market. Cowen et al. (2006) and Mehran & Stulz (2007) document more indirect channels of analyst incentives, such as compensation structures and internal performance evaluations.

As existing literature shows that analysts seem to favor growth, it would be logical to assume that growth firms would provide better risk-return tradeoffs for investors. However, existing literature suggests the opposite. Fama & French (2015, p. 3) show that high-BP firm portfolios show higher excess returns than low BP portfolios, suggesting that firms with high growth expectations (growth stocks) underperform ones with lower ones (value stocks). Bradshaw (2004) and Lakonishok et al. (1994) find similar results, as the latter document a clear value premium in the U.S. stock market. In their examination period, Lakonishok et al. (1994, p. 1547) show that higher book-to-market stocks earned average annual returns of 19.8% compared to 9.3% for low book-to-market stocks.

Overall, analyst optimism and other biases could result from various incentives, such as reputation concerns and institutional pressure. Analysts can face pressure to appear positive about the firms they follow, to maintain access to the management of those firms, and to meet the expectations of their employers as well as investors. These are important insights for understanding why analysts may favor certain types of firms, such as high-growth firms.

3.2 Analyst recommendations, long-term growth forecasts, and firms' growth prospects

Jung et al. (2012) examined the properties of recommendations accompanied by an analyst's long-term growth (LTG) forecast and recommendations without one. They show that recommendations accompanied by LTG forecasts were slightly more favorable than ones without them, while both groups received median recommendation consensus of "Buy". Additionally, they found that recommendations accompanied by higher LTG forecasts generate stronger market reactions. Recommendation revisions accompanied by LTG forecasts contain more value-relevant information, as the market reacts 27% more strongly to both upgrades and downgrades on such recommendations (Jung et al., 2012, p. 64), with the effect being even more pronounced for recommendation revisions with higher LTG forecasts. They also find that analysts who regularly publish LTG estimates have more favorable career outcomes in the form of better job security, providing a possible incentive for publishing the forecasts. LTG forecasts have also been shown to enhance the incorporation of information into equity prices, enhancing market efficiency (Jung et al., 2012, p. 74; Peasnell et al., 2018, p. 252).

A substantial amount of literature shows that stocks with the highest LTG forecasts receive substantially more favorable recommendations (Bradshaw, 2004; Jegadeesh et al., 2004; Miwa & Ueda, 2016; Peasnell et al., 2018). Bradshaw (2004, p. 28) states that expected earnings growth, specifically analysts' LTG forecasts, are one of the most

important factors contributing to analyst recommendations, regardless of whether the growth is already reflected in the stock prices. Peasnell et al. (2018) showed that both long-term and short-term expected growth are positively associated with the recommendations. The consistency of the positive relationship across several studies and forecast horizons provides strong evidence that LTG appears to have a particularly important role in recommendation decisions.

There is also evidence of analysts' preference for market- and accounting-based proxies for growth. First, analysts seem to favor firms with higher prior sales growth (Jegadeesh et al., 2004; Miwa & Ueda, 2016). However, this does not necessarily mean that analysts place emphasis on historical performance, as past growers are also often expected to grow in the future. In terms of market-implied growth expectations, Moshirian et al. (2009) used market-to-book ratio as the proxy for growth opportunities in the emerging markets, as higher market-to-book values represent growth prospects. They found that higher P/B ratios are associated with better recommendations. However, evidence on earnings-to-price is mixed. Miwa & Ueda (2016) reported that analysts favor low-EP firms, which on average possess better growth prospects. Conversely, Jegadeesh et al. (2004) reported an opposite effect, as they found that analysts favor high-EP firms. The conflicting evidence indicates that conclusions about analysts' growth preferences may depend on how growth is defined, supporting the use of multiple growth proxies in the statistical analysis later.

Analysts' growth preference forms part of a broader preference for firms with "glamour" characteristics, as highly recommended firms tend to have positive price momentum, high trading activity, positive accruals and high capital expenditure (Jegadeesh et al., 2004; Moshirian et al., 2009). Therefore, the observed growth preference may partly reflect a broader preference for firms with other attractive traits. Bradshaw (2004) studied whether analysts' recommendations are linked to earnings forecasts through valuation models and LTG projections and found that analysts do not solely rely on traditional valuation models but also place weight on additional information and personal

preferences, including a preference for growth (p.47). Additionally, price/earnings to growth (PEG)-based valuation showed significant explanatory power for positive recommendations, even after controlling for LTG, showing that analysts do, on average, issue the highest recommendations for high-LTG stocks which receive the highest valuation with the PEG model. From these findings it can be interpreted that analysts appear to consider both expected growth and the relationship between growth and valuation. However, Bradshaw (2004, p. 28) suggests that analysts do favor growth expectations even if those expectations are already reflected in stock prices.

There are some possible limitations and conditions to the growth preference of analysts, and the preference is not necessarily unlimited. Peasnell et al. (2018) reported that the positive relationship between LTG and recommendation consensus becomes weaker at very high LTG levels, meaning that exceptionally high LTG forecasts receive progressively less additional weight in analyst recommendations. They report that analysts appear to some extent to recognize that unusually high profitability and growth tend to revert towards normal levels. It is also reported that growth firms with higher beta receive favorable recommendations, suggesting that analysts place less weight on growth forecasts for stocks that are more sensitive to overall economy. Thus, preference for growth appears to be conditional on risk.

Although analysts do seem to persistently favor stocks with high growth prospects, LTG forecasts have been found to be negatively associated with subsequent stock returns (Bradshaw, 2004; La Porta, 1996). Bradshaw (2004) argues that analysts seem to place more weight on growth expectations than subsequent firm performance justifies and La Porta (1996) shows that stocks with lower expected growth substantially outperform stocks with higher expected growth after controlling for firm and industry specific effects, suggesting that the return pattern is mainly associated with firm-specific expected growth rather than high-growth industries. More favorable recommendations for growth firms do not necessarily indicate that these firms are better investments.

Analysts may favor attractive growth prospects even when the expected growth is already reflected too strongly in stock prices.

Additional literature suggests that analysts' preference for growth and high-valuation firms is shaped not only by fundamentals but also by market sentiment. Miwa & Ueda (2016) document that analysts show greater preference for growth stocks when investor sentiment is elevated and tend to overvalue growth firms relative to more stable firms. Analysts appear to be even more sentiment-prone than other market participants, as they favor firms with high growth expectations in optimistic markets. This sentiment sensitivity may help explain why analyst recommendations tend to be skewed towards high-growth firms even when fundamentals do not always justify such optimism.

Commercial incentives and conflicts of interest may act as a potential mechanism behind analysts' growth preference. Jegadeesh et al. (2004) and Moshirian et al. (2009) argue that growth firms may be attractive clients for brokerage firms or investment banks. This could lead to analysts consciously or unconsciously issuing more favorable recommendations for growth firms because of commercial incentives, as growing firms may avoid brokerage firms whose analysts issue negative recommendations, especially when selecting underwriters (Moshirian et al., 2009, p. 82). However, the proposed commercial-incentive explanations are interpretations rather than directly identified causal results. Additionally, Dechow et al. (2000) report that around equity offerings analysts tend to issue excessively optimistic growth forecasts, reflecting either conflicts of interest or a tendency to be vulnerable to market sentiment. Therefore, analyst biases may be even more relevant when firms participate in activities associated with growth or expansion.

3.3 Valuation and analyst preferences in changing interest rate environments

Growth firms can be viewed as long-duration equities because most of their value comes from cash flows expected further in the future. Campbell et al. (2010, p. 307) state that

growth stocks' profits "accrue further in the future", while Gormsen & Lazarus (2023, p. 1397) explain that growth firms naturally have longer cash-flow duration due to the high present value of their growth opportunities. Dechow et al. (2021) and Weber (2018) provide similar characterization on equity duration. Higher expected growth and lower discount rates both increase the relative weight of distant cash flows (Gormsen & Lazarus, 2023, p. 1401) and stocks with distant cash flows are consequently more sensitive to changes in discount rates, as Campbell et al. (2010) provide evidence that growth stocks are particularly exposed.

Bhamra et al. (2023) provide an asset-pricing perspective on how changes in nominal risk-free rate affect equity valuation through the discounting of future cash flows. They explain that higher expected inflation raises nominal cash flows, which by itself should theoretically raise equity value. However, at the same time cash-flows are discounted with a higher nominal discount rate, reducing equity value and the discount rate dominates the positive effect of inflation on nominal cash-flow growth (p. 1195). Additionally, they provide evidence that the effect of the nominal risk-free rate on equity valuation is nonlinear and stronger when expected inflation is low (p. 1203). Overall, they provide theoretical support for the interest rate effect for discounting cash-flows examined in the present thesis by showing that valuation is affected through the discounting of future cash-flows. Combined with prior evidence of growth firms having longer cash-flow duration, the findings suggest that changes in the risk-free rate are relevant for the valuation of growth firms.

Miwa & Ueda (2016) use market sentiment as a proxy for discount rates, and provide evidence that analysts systematically prefer growth firms, especially during high-sentiment periods, which they assume to indicate lower discount rates. As the value of a firm's future cash flows is sensitive to discount rates, they studied whether analysts' preference for growth components is affected by market sentiment. They find that growth stocks, with high LTG forecasts, receive more favorable recommendations during high market sentiment periods (p. 45). They also find that these recommended stocks

exhibit lower returns following bullish markets (p. 46). Hence, this supports the hypothesis that when discount rates are low, analysts become increasingly optimistic about growth firms, leading to potential overvaluation and weaker subsequent returns. Weber (2018) provides related evidence using analyst target prices instead of recommendations. After high-sentiment periods, expected returns implied by analyst target prices vary from 16.73% for low-duration stocks to 22.13% for high-duration stocks, while after low-sentiment periods they vary from 17.88% for low-duration stocks to 15.43% for high-duration stocks. Hence, analysts seem to be more optimistic about growing companies in high-sentiment periods, which reflect a lower discount rate environment (Miwa & Ueda, 2016, p. 41). Existing evidence indicates that analysts' views on growth firms vary depending on market conditions. However, Miwa and Ueda examine investor sentiment, and Weber examines target-price expectations. Neither study directly examines the long-term interest rate component of discount rates.

A stronger preference for growth firms may have a rational basis because growth firms are fundamentally more sensitive to movements in discount rates (Campbell et al., 2010). The relationship may also reflect analyst overoptimism. Miwa and Ueda (2016, p. 50) find that growth stocks receive more favorable recommendations during high-sentiment periods even though they are more overvalued. Similarly, Weber (2018, p. 14) reports that analysts initially forecast approximately 26% LTG for the highest duration stocks, compared to 13% for the lowest duration stocks. The high duration forecast then declines substantially, and the realized five-year growth is nearly the same in both groups. The possible stronger relationship between growth and recommendations in low-rate environments could therefore reflect multiple mechanisms, such as a rational increase in present value of distant cash flows and excessive analyst optimism towards such stocks.

4 Data and methodology

This chapter outlines the data and methodologies used in the statistical analysis of this thesis. Excel is used for data handling and cleaning, while EViews 13 statistical software is used for all statistical analysis. The purpose of the data and statistical analysis is to test the initial hypotheses of the thesis, which are the following:

H1: Analyst recommendations are positively associated with expected firm growth.

H2: The positive relationship between expected firm growth and analyst recommendations is stronger in lower long-term interest rate environments.

4.1 Data and descriptive statistics

As the market of interest in this analysis is the Nordic stock market, the analysis focuses on four main Nordic exchanges: Nasdaq Helsinki, Nasdaq Stockholm, Oslo Børs, and Nasdaq Copenhagen. The data is gathered from the Institutional Brokers' Estimate System (I/B/E/S) database, which consists of analyst forecasts, recommendations, and other relevant analyst data. The period examined is 2005 – 2025. A relatively long-term horizon is employed to more accurately capture analysts' long-term behavior, rather than relying on recommendations observed over a shorter period, but the analysis is additionally divided into sub-period examinations.

The data consists of yearly analyst data, firm-level data, and market data. The main variable is recommendation consensus, which represents the average analyst rating given to a stock during a calendar year. Recommendation consensus data in I/B/E/S ranges from 1 to 5, with 1 representing a strong buy recommendation and 5 representing a strong sell recommendation, although in this analysis a reverse value is used for more intuitive interpretation. Thus, a value of 5 represents strong buy and value of 1 strong sell. The data includes the annual average percentage of positive (buy), neutral (hold),

and negative (sell) recommendations. Analyst coverage is proxied by number of recommendations, while variation is proxied by standard deviation of recommendations. Finally, the analyst-based proxy for firm growth is the long-term growth (LTG) estimate mean and median. LTG measures the average analyst estimate for long-term earnings growth and therefore offers a robust proxy for examining the effect of analysts' growth expectations on their recommendations.

Firm level data was acquired for all companies in the dataset. Book-to-price (B/P) and earnings-to-price (E/P) ratios can be interpreted as market-implied proxies for expected growth, since firms with lower ratios are generally priced by the market as having stronger future growth prospects (Miwa & Ueda, 2016). Sales growth offers an accounting-based backward-looking proxy for realized growth in sales during the past year. A set of control variables, discussed in chapter 4.4., are included.

For testing the effect of interest rate levels on recommendations, the analysis uses average monthly and yearly 10-year euro-area government bond yields as a proxy for the long-term interest rate environment. Ten-year government bond yields provide an important benchmark for equity discount rates (Ademmer & Rush, 2024, p. 2). This is particularly relevant for growth firms, which are sensitive to changes in discount rates because a larger share of their cash flows accrues further in the future (Campbell et al., 2010). Government bond data is gathered from Federal Reserve Bank of St. Louis database (FRED, 2026).

It should be noted that the data does not come without limitations. The data collected was not initially in a ready-to-use format and required manual processing to make it suitable for statistical analysis in EViews. This introduces a risk of human error during data handling, which must be considered for the credibility of the results. However, extensive cross-checking was conducted to minimize the risk of human error in data handling. Another possible bias in the dataset could result from the fact that it only contains data from currently active firms listed in each stock exchange. Hence, it does not contain

companies delisted from the exchange during the examination period. Excluding these companies introduces a possible survivorship bias, as the sample overrepresents successful firms that remained listed, potentially overstating the accuracy or persistence of growth preferences of analysts. Another limitation arises from incomplete data in the I/B/E/S database, as some firms are missing data partly or entirely. This reduces the overall sample size and may introduce a degree of selection bias, since firms with available data are more likely to be larger or more actively followed by analysts. The data is adjusted for stock splits, and all local currencies are converted into euros.

Table 2. Descriptive statistics.

	RECOMMENDATION CONSENSUS			LTG MEAN ESTIMATE			NO. OF RECOMMENDATIONS (LN)		
	ALL	*FI* *NO*	*SE* *DK*	*ALL*	*FI* *NO*	*SE* *DK*	*ALL*	*FI* *NO*	*SE* *DK*
Mean	**3,46**	3,31 3,60	3,50 3,41	**0,11**	0,10 0,13	0,10 0,13	**2,19**	2,33 2,40	1,99 2,37
Median	**3,48**	3,33 3,66	3,48 3,46	**0,08**	0,07 0,09	0,08 0,11	**2,31**	2,44 2,45	2,06 2,52
Max	**5,00**	5,00 4,55	5,00 5,00	**0,84**	0,84 0,84	0,84 0,84	**3,96**	3,96 3,67	3,79 3,56
Min	**1,00**	1,00 1,73	1,00 1,37	**-0,32**	-0,32 -0,32	-0,32 -0,32	**0,00**	0,00 0,00	0,00 0,00
Std. Dev.	**0,51**	0,52 0,47	0,51 0,49	**0,16**	0,16 0,20	0,14 0,16	**0,87**	0,76 0,71	0,97 0,76
Skewnesss	**-0,36**	-0,59 -0,80	-0,19 -0,15	**1,66**	1,88 1,58	1,61 1,05	**-0,66**	-0,77 -0,76	-0,42 -0,66
Kurtosis	**4,00**	4,27 3,98	4,08 3,51	**9,06**	9,80 6,55	10,15 7,63	**2,83**	3,48 3,71	2,27 2,82
Obs.	**3292**	667 568	1539 518	**3292**	667 568	1539 518	**3292**	667 568	1539 518

	MARKET CAP MEUR (LN)			BP			ROA		
	ALL	*FI* *NO*	*SE* *DK*	*ALL*	*FI* *NO*	*SE* *DK*	*ALL*	*FI* *NO*	*SE* *DK*
Mean	**14,59**	14,30 14,79	14,43 15,19	**0,60**	0,65 0,72	0,56 0,52	**0,07**	0,06 0,06	0,07 0,08
Median	**14,57**	14,38 14,69	14,47 15,06	**0,45**	0,52 0,56	0,43 0,36	**0,06**	0,06 0,05	0,07 0,06
Max	**20,20**	18,44 18,74	20,20 19,85	**3,70**	3,70 3,70	3,70 3,57	**0,38**	0,38 0,38	0,38 0,38
Min	**7,99**	8,92 7,99	9,59 10,44	**-0,26**	-0,26 0,06	-0,23 0,01	**-0,80**	-0,80 -0,41	-0,68 -0,42
Std. Dev.	**1,95**	1,78 1,92	2,01 1,85	**0,50**	0,48 0,59	0,46 0,50	**0,09**	0,09 0,09	0,09 0,11
Skewnesss	**0,02**	-0,21 -0,15	0,12 0,16	**2,31**	1,76 2,14	2,76 1,97	**-0,88**	-2,18 -0,32	-1,27 0,05
Kurtosis	**2,79**	2,53 2,61	2,86 2,71	**11,12**	7,58 9,25	15,14 7,95	**14,21**	27,90 8,45	16,53 6,11
Obs.	**3292**	667 568	1539 518	**3 292**	667 568	1539 518	**3 292**	667 568	1539 518

Table 2 presents descriptive statistics for six key variables across the full sample and separately for Finland (667 observations), Sweden (1539 observations), Norway (568 observations), and Denmark (518 observations), with a total of 3292 observations across the sample. Descriptive statistics are calculated at the firm-year level, meaning that each observation represents one company each year. Thus, this table presents the distribution

of firm-year observations and should not be interpreted as describing characteristics of unique firms or markets. The table indicates a moderately positive analyst sentiment, as the average overall recommendation consensus is 3.46. However, analysts seem to be slightly less optimistic in Finland, compared to other Nordic countries. Additionally, the standard deviation of recommendations is slightly higher in Finland, meaning that analysts seem to be more divided in their opinions.

LTG data are winsorized at the 1st and 99th percentiles to minimize the effect of extreme outliers. In terms of growth expectations, analysts expect a mean annual earnings growth of 10%, while the realized average annual earnings growth rate in the sample is 7.7%. Realized earnings growth was calculated from the dataset, although it is not presented in table 2. This observed overoptimism of analysts' forecasts in the sample is consistent with prior literature, such as Capstaff et al. (2001), who found overoptimism bias in analysts' EPS forecasts. The forecasted growth is higher in Norway and Denmark at 13%, compared to Finland and Sweden, where it is 10%.

The natural logarithm of mean analyst coverage across the sample is 2.19. The most heavily covered company in the sample has an average annual log analyst coverage of 3.96. On average, Swedish firms receive lower analyst coverage than firms in the other Nordic markets. However, all subsamples display a similar structure, with median values exceeding means and minimum coverage consistently at only one analyst, suggesting that limited coverage is a common feature for smaller or less visible firms. Overall, the results indicate that analyst coverage is unevenly distributed, with a concentration of attention on a relatively small number of firms.

There is a substantial variation in firm size across the sample. For the full sample, the mean log market capitalization in EUR is 14.59, while the median is approximately the same at 14.57. The values vary heavily, with market natural logarithms of capitalizations differing from as little as 7.99 to 20.20. In country-level inspection, Denmark shows the highest average firm size, followed by Norway, Sweden and Finland, respectively.

Book-to-price (BP) ratios, winsorized at the 1st and 99th percentiles, indicate variation in market-implied growth expectations between Nordic countries. For the full sample, the mean BP ratio is 0.60, while median is much lower at 0.45, showing a right-skewed distribution. Some variation can be seen at the country level. Finnish and Norwegian firms display slightly higher average BP ratios compared to Swedish and Danish firms. Despite these differences, the overall pattern remains somewhat consistent across all subsamples, with mean values exceeding medians. This suggests that most firms in the sample are priced with relatively low BP ratios, which implies higher growth expectations, while a smaller number of firms show higher BP ratios, potentially reflecting more mature "value" stocks. Overall, the sample indicates that market-implied growth expectations vary considerably across firms.

Return on assets (ROA) data is also winsorized at the 1st and 99th percentiles. Descriptive statistics show that firms in the sample are profitable on average, with a mean annual ROA of 7% and median of 6% for the full sample. Nevertheless, there is substantial variation across firms, which is reflected in the wide range of values from negative values to 38%. Across different markets, average ROA varies between 6 – 8%, with the highest average ROA in Denmark at 8%.

Table 3. Yearly recommendation distribution and bond yields.

	Positive	Neutral	Negative	Yield
2005-2025	58	27	15	2,37
2005	51	24	25	3,44
2006	57	21	22	3,86
2007	56	26	18	4,33
2008	54	27	19	4,36
2009	46	26	28	4,03
2010	55	26	19	3,78
2011	55	28	18	4,31
2012	54	28	18	3,05
2013	54	28	18	3,01
2014	57	27	16	2,28
2015	58	27	15	1,27
2016	58	27	15	0,93
2017	55	29	16	1,17
2018	59	27	14	1,26
2019	56	29	15	0,58
2020	59	27	14	0,21
2021	66	24	10	0,20
2022	64	24	12	2,04
2023	62	27	11	3,27
2024	61	27	12	2,98
2025	62	26	12	3,15

Note: Numbers for Positive, Neutral, and Negative describe the percentage share of recommendations for each ranking on a given year. Yield-column presents the average long-term government bond yield on a given year in Euro-area.

Table 3 presents the yearly recommendation distribution in the dataset. Columns 'Positive' to 'Negative' show the percentage of recommendations in each category in a given period shown in the first column. Positive level includes recommendations of strong buy, buy, and moderate buy recommendations. Conversely, negative level includes strong sell, sell, and moderate sell. Neutral indicates a hold-recommendation. Overall, the full sample shows a positive analyst view on equity in the Nordics, as 58% of all recommendations during 2005-2025 are positive. In the examination period, a clear pattern of growing optimism in recommendations can be observed, as the relative number of positive

recommendations increases and negative ones decreases. Only one year exhibits positive recommendations of under 50%, during the aftermath of the Financial Crisis of 2008, highlighting the overall optimism of analysts over time. A substantial rise in optimism can be observed in 2021, as the relative number of positive recommendations rises to 66%. Levels remain high for the rest of the examination period, moderately decreasing to 62% in 2025.

The yield column presents the average yearly 10-year government bond yields from Euro-area during the examination period, which reflects the broader discount-rate and monetary policy environment faced by market participants. In the full sample, the average yield was 2.37% but showed substantial variation in different periods. Bond yields were relatively high during the mid-2000s and around the Global Financial Crisis period but declined substantially during the post-crisis low-interest rate environment. The lowest yields, ranging from 0.20% to 1.27%, occurred during 2015-2021. After 2021 yields increased again following inflationary pressures and monetary tightening. Overall, the variation in the yields reflects major macroeconomic and monetary regimes during the sample period and the yield serves as a proxy for the discount-rate environment used later in the analysis of H2.

4.2 Empirical methods

The dependent variable in the statistical analysis for H1 is recommendation consensus, which captures the annual mean consensus of all analysts for each firm, calculated as the average daily analyst consensus for each year. In I/B/E/S database, ratings are coded using numerical values that vary between 1 and 5 (1 = strong buy, 5 = strong sell). However, the scale is reversed so that higher values indicate more favorable recommendations, meaning that a higher value reflects a stronger view from analysts that the stock is undervalued. This reverse score reflects the methodology of prior research such as Bradshaw (2004, p. 34) and Jegadeesh et al. (2004, p. 1089).

The objective is to test whether analysts systematically favor growth firms (H1) and whether that preference is stronger in a low-interest rate environment (H2). This approach is grounded in two main research articles. First, Jegadeesh et al. (2004) show that analyst recommendations are systematically shaped by firm characteristics, as they found that analysts tend to favor "glamour" stocks, which possess characteristics such as high expected growth, low book-to-price ratios, and other metrics that promote high future growth. Their analysis shows that higher analyst (LTG) and market-implied (BP, EP) expectations are associated with more favorable analyst recommendations.

Miwa & Ueda (2016) found that analysts are vulnerable to market-wide sentiment as they tend to favor growth stocks in bullish market conditions. They state that higher sentiment could indicate a lower discount rate and therefore offer a more lucrative discount rate for growth firms' future cash flows (Miwa & Ueda, 2016, p. 41). However, existing literature has not, to the best of the author's knowledge, directly examined the link between analysts' growth preference and risk-free rate component of discount rates, which is one of the main components affecting equity valuation (Ademmer & Rush, 2024, p. 2). The 10-year euro-area government bond yield is used as a proxy for the long-term interest rate, consistent with Jiménez et al. (2026), who also use the 10-year government bond yield as a proxy for long-term safe interest rates. The relevance of this rate for equity valuation follows Ademmer & Rush (2024) and Bhamra et al. (2023), who show that the risk-free rate directly affects equity valuation through discounting of firms' future cash flows. To test both hypotheses, the statistical analysis is divided into two sections.

To test whether analyst recommendation consensus is positively associated with firm growth characteristics, ordinary least squares (OLS) regression is used on a firm-year panel, since the research question addresses how differences in firm characteristics are associated with differences in analyst recommendations across firms and over time. In line with Jegadeesh et al. (2004), the following baseline model is defined:

$$REC_{CON_{i,t}} = \beta_0 + \beta_1 Growth_{i,t} + \gamma Controls_{i,t} + \varepsilon_{i,t} \quad (5)$$

where $REC_{CON_{i,t}}$ is the annual recommendation consensus for firm i in year t, $Growth_{i,t}$ is a proxy for firm growth, and $Controls_{i,t}$ are a set of firm-level control variables, explained in subchapter 4.4. This model follows the logic of Jegadeesh et al. (2004), who regress analyst recommendations on firm characteristics to identify analyst preferences for firm types. However, Jegadeesh et al. (2004, p. 1104) simultaneously include expected long-term growth, sales growth, book-to-price, accruals and capital expenditure. I estimate separate regressions for each proxy to test whether the relationship between growth and recommendation level is consistent across different growth proxies, and to avoid a potential multicollinearity problem with overlapping growth measures. Separate models avoid placing several closely related variables in direct competition, making the coefficients easier to interpret and potentially more stable. The expected sign on β_1 is positive in each regression, since the used growth variables are coded in the dataset so that higher values represent higher growth.

H2 is tested using Spearman rank correlation analysis. A panel regression could be used to examine whether analysts' growth preferences vary with market conditions. However, Miwa & Ueda (2016, p. 44) note that absolute growth measures may not be directly comparable across time, since the same growth rate can represent relatively high growth in a weak economic environment but relatively low growth during expansion. For this reason, I follow their cross-sectional approach. For each month in the observation period, the cross-sectional association between recommendation consensus and LTG is measured using Spearman rank correlation coefficients. The monthly correlation coefficients are then regressed on the monthly 10-year Euro-area government bond yield to examine whether the relationship varies systematically in changing interest rate environment. This approach closely follows the methodology of Miwa & Ueda (2016), who used a similar framework with a proxy of market sentiment for discount rates. Additionally, the use of a time-varying correlation as the dependent variable is consistent with Aslanidis & Christiansen (2014), as they look at how macroeconomic variables explain changes in monthly realized correlations. Yang et al. (2009) use a similar framework and

demonstrate that financial market correlations change with macroeconomic conditions, including interest rates. The monthly Spearman correlations are calculated separately for each month using the cross-section of firms available in that month, rather than using a rolling-window approach. The model is defined as:

$$Corr_t = \alpha + \beta yield_t + \varepsilon_t \quad (6)$$

Where the coefficient β is expected to be negative for H2 to be confirmed, meaning that lower long-term interest rates are expected to strengthen analysts' preference for growth firms.

4.3 Growth proxies

To capture growth from multiple perspectives, the analysis uses multiple proxies for growth, consistent with Jegadeesh et al. (2004) and Miwa & Ueda (2016). This is particularly useful as it allows distinguishing between analyst-based, direct, and market-implied growth indicators.

As this analysis examines analyst behavior, the primary growth variable is the analyst-based long-term growth (LTG) forecast. Mean LTG measures the average analyst expectation for growth. LTG acts as the most direct measure of expected firm growth in the dataset and therefore is the most important variable for testing both hypotheses. Both Jegadeesh et al. (2004) and Miwa & Ueda (2016) use LTG as a direct growth indicator and show that analysts do favor high-LTG firms.

To capture backward-looking and accounting-based growth, the analysis uses the firm's realized sales growth over the last year, consistent with both Jegadeesh et al. (2004) and Miwa & Ueda (2016). This offers a realized growth performance proxy instead of potentially biased future expectations. By including a backward-looking proxy, the analysis can examine whether analysts' favorable recommendations are driven by objective growth

performance or subjective expectations about future growth. Prior literature shows that firms with stronger past sales growth tend to receive more favorable analyst recommendations (Jegadeesh et al., 2004).

Book-to-price (BP) and earnings-to-price (EP) ratios are used as indirect market-based growth proxies. In existing literature, such as Miwa & Ueda (2016), firms with low BP and EP are typically classified as growth firms, as their relatively high valuation multiples reflect high growth expectations by the market. Both Jegadeesh et al. (2004) and Miwa and Ueda (2016) use these variables and show that analysts tend to favor firms with market-implied growth expectations. BP captures growth expectations relative to book value of the firm, whereas EP captures valuation relative to firms' current earnings. Therefore, they provide a robust proxy for growth that considers both balance sheet and income statement driven valuation. For consistency purposes, both variables are applied in a way that higher values reflect stronger growth expectations, which ensures a consistent interpretation of the results.

4.4 Control variables

The analysis includes a set of controls to ensure that the estimated relationships are not driven by analyst coverage, dispersion, or other firm characteristics, such as firm size or profitability. If these factors are not considered, the estimated effect could be biased, as growth firms could share common characteristics.

Hsieh et al. (2023, p. 6) emphasize the importance of controlling for level of coverage because it can directly affect the consensus recommendation independently of expected growth. They find that consensus recommendations based only on a few analysts may be systematically more extreme, and firms with lower coverage could show different recommendation levels regardless of whether their growth prospects are similar to highly covered firms. In addition, Ioannou & Serafeim (2015) study recommendation consensus as a dependent variable and control for the number of analysts following a

firm each year and find that differences in attention may affect the information environment. It could therefore contribute to recommendation levels independently of growth expectations. The present study uses a similar framework and therefore controlling for the level of coverage is necessary. The variable is defined as the natural logarithm of the average number of analysts following a firm during the year.

Recommendation dispersion, measured by the standard deviation of all recommendations, controls for differences in the degree of disagreement among analysts following the same firm. A low standard deviation would indicate that analysts agree about the pricing of the stock and are concentrated around the consensus recommendation. Conversely, a high value indicates that analysts are more divided in their opinion of the valuation. Jegadeesh & Kim (2010, p. 922) argue that dispersion in recommendations should be controlled for, since it can influence analysts' incentives to herd around the consensus, meaning that they adjust their own expectations based on other analysts' consensus. Therefore, including recommendation dispersion helps separate the growth relationship from herding behavior. Hence, recommendation dispersion acts as a proxy for herding.

Firm size should be controlled because it is a firm characteristic that may be independently associated with analyst recommendation levels. Fama & French (1992) demonstrate that firm size is a relevant firm characteristic when examining average stock returns. Jegadeesh et al. (2004, p. 1088) provide justification to include firm size alongside growth expectations, since small firms have been found to earn better returns than larger firms. Peasnell et al. (2018) use a similar framework and include size as a control variable. They state that smaller firms generally have poorer information environments, which can make recommendations more informative (p. 245). If firm size is correlated with expected growth, excluding it could cause the estimated growth coefficient to capture analysts' preference for size rather than growth itself. The coefficient is computed as the natural logarithm of firms' market capitalization in EUR.

The final control variable Return on Assets (ROA) is included because profitability may independently influence analyst recommendations. ROA is an accounting measure that describes a firm's profitability by dividing operating profit by total assets (Zheng et al., 2024). Both Ioannou & Serafeim (2015, p. 1063) and Zheng et al. (2024, p.7) show that ROA is positively associated with analyst consensus recommendations with statistical significance. Therefore, ROA helps distinguish analysts' preference for firms with high growth from a more general preference for highly profitable firms.

5 Results

This chapter presents the empirical results of the study. First, the relationship between analyst recommendations and growth proxies is examined to test whether analysts systematically prefer growth firms, and how this relationship varies across different Nordic regions and time periods. Second, the chapter presents results for the evaluation of the effect of interest rate environment on this preference.

5.1 Analysts and growth

Table 4 presents the regression results regarding the relationship between analysts' recommendation consensus and different growth proxies for the full sample between years 2005-2025. Four model specifications are estimated, each of which considers one proxy of firm growth. All models include the same control variables, company fixed effects, and year fixed effects.

Table 4. Regression results for H1.

Dependent variable: Recommendation consensus

	1	2	3	4
Mean LTG	0.356***			
	[3.71]			
Sales Growth		-0.0003**		
		[-2.33]		
EP			-0.002	
			[-0.04]	
BP				0.018
				[0.48]
Level of Coverage	-0.036	-0.020	-0.008	-0.037
	[-0.87]	[-0.56]	[0.23]	[-1.03]
Recommendations Dispersion	-0.413***	-0.277***	-0.318***	-0.279***
	[-7.52]	[-6,56]	[-7.64]	[-6.63]
Market Capitalization	0.083***	0.098***	0.007	0.107***
	[3.12]	[4.13]	[0.25]	[3.82]
Return on Assets	0.599***	0.358***	0.396**	0.201**
	[4.70]	[4.04]	[2.67]	[2.27]
Constant	2.620***	2.454***	3.678***	2.389***
	[7.08]	[8.08]	[10.09]	[6.48]
No. Of obs.	3829	9973	6967	9160
R-squared	0.54	0.49	0.50	0.50
Company fixed effects	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes

Source: Author's calculations in eViews

Note: ***, ** and * indicate the significance at the 1%, 5% and 10% levels, respectively.

The Durbin–Watson statistic indicates potential serial correlation in the residuals.

To address this, clustered standard errors are employed, which are robust to such dependence.

As a robustness check, the model is re-estimated using standard errors clustered only at the firm level.

The results remain qualitatively unchanged.

Column 1 shows the regression results using analysts' long-term growth forecasts as an explanatory variable. The coefficient of 0.356 with a t-statistic of 3.71 shows a significant positive relationship between LTG and analyst recommendations. This result aligns with hypothesis 1 and the findings of prior literature such as Jegadeesh et al. (2004), who report that firms with high LTG-ratings are associated with more favorable recommendations. Column 2 represents the regression estimated using past year's sales growth as the explanatory variable. Coefficient of -0.0003 shows a small negative relationship between sales growth and analyst positivity at the 5% significance level.

Columns 3 and 4 represent regressions estimated using reversed EP and BP, which capture market-implied growth expectations. The coefficient on EP is negative but not statistically significant (β = -0.002, t = -0.04), while the coefficient on BP is positive but also not statistically significant (β = 0.018, t = 0.48). These results suggest that there is no statistically significant relationship between valuation-based growth proxies and analyst recommendations.

The regression result for LTG is highly consistent with prior literature, with Jegadeesh et al. (2004), Peasnell et al. (2018), and Miwa & Ueda (2016) all providing similar results. This suggests that the systematic preference for growth firms among analysts persists in the Nordic stock markets. However, the negative coefficient of sales growth provides contradicting results, as both Jegadeesh et al. (2004) and Miwa & Ueda (2016) report a positive relationship between past sales growth and recommendations.

Results on coefficients of E/P and B/P are relatively neutral and statistically insignificant, and therefore no further interpretations can be made. While Moshirian et al. (2009) found a positive relationship between BP-implied growth expectations and recommendations, prior evidence on E/P remains mixed. Miwa & Ueda (2016) report that analysts favor low-EP firms with better growth prospects, while Jegadeesh et al. (2004) provide opposite results and report that analysts favor high-EP firms with lower market-implied growth expectations. Therefore, in the context of market-implied growth, the regression results do not provide further evidence on the topic. Together with the positive LTG coefficient, these results may suggest that Nordic analysts place more weight on subjective future growth forecasts rather than realized growth or market-implied growth expectations.

Across all four regressions, the control variables show relatively consistent patterns. Recommendation dispersion, proxied by standard deviation in analysts' recommendations shows a negative coefficient in all models with a significance at the 1% level, suggesting

that higher disagreement in analyst recommendations, on average, is associated with less favorable consensus. Market capitalization shows a significant positive coefficient in all models, except model 3. This suggests that analysts seem to favor larger firms and issue them more favorable recommendations, on average. ROA presents a similar pattern, showing a positive and significant coefficient in all four models, suggesting an analyst preference for more profitable firms, measured by return on assets. The preference for more profitable firms is consistent with the findings of Ioannou & Serafeim (2015, p. 1063) and Zheng et al. (2024, p.7), who report a positive relationship between ROA and analyst consensus. Level of coverage, measured by the natural logarithm of the average number of recommendations for a firm, seems to have no impact on the level of recommendation consensus, as all four models show no statistically significant coefficient.

The overall model fit is relatively consistent across all four models. R-squared ranges from 0.49 to 0.54, with the LTG model showing the highest R-squared value. It must be noted that the number of observations varies significantly between the models, and LTG model (1) has the lowest number of observations at 3829 due to the limited availability of LTG data in the I/B/E/S database. Models 2, 3, and 4 include 9973, 6967, and 9160 observations, respectively.

5.2 Time-period analysis of analysts' growth preference

Table 5 presents the results for time-period analysis of analysts' growth preferences. The analysis examines whether the relationship between analyst recommendation consensus differs across time periods. The sample is divided into three seven-year subperiods: 2005-2011, 2012-2018, and 2019-2025. Dependent variable is recommendation consensus, and mean LTG is used as the growth proxy, as it presented the highest statistical significance in the regressions presented in table 4. Each regression includes company and year fixed effects, and white two-way cluster covariance method to account for heteroskedasticity and serial correlation within firms. T-statistics are presented in brackets underneath each coefficient. Table 6 presents the same regressions for subperiods 2005-

2008, 2009-2019, and 2020-2025 to better capture divided market regimes, such as pre-crisis period, low-rate and quantitative easing, COVID and post-COVID period with inflation and rising interest rates, respectively.

Table 5. Regression results for time-period analysis (1).

Dependent variable: Recommendation consensus

	2005-2011	**2012-2018**	**2019-2025**
Mean LTG	0.185	0.495**	0.292**
	[1.07]	[3.11]	[3.43]
Level of Coverage	-0.094	0.038	0.195
	[-1.09]	[0.35]	[1.82]
Recommendations Dispersion	-0.321**	-0.308***	-0.355**
	[-3.52]	[-4.02]	[-3.09]
Market Capitalization	0.173***	0.138**	-0.037
	[3.98]	[2.54]	[-0.79]
Return on Assets	0.781**	0.431***	0.179
	[2.95]	[4.06]	[0.58]
Constant	1.453*	1.538	3.907***
	[2.35]	[1.75]	[5.12]
No. Of obs.	1414	1502	913
R-squared	0.65	0.74	0.66
Company fixed effects	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes

Source: Author's calculations in eViews

Note: ***, ** and * indicate the significance at the 1%, 5% and 10% levels, respectively.

During 2005-2011 mean LTG presents a positive but insignificant coefficient, providing no evidence that analysts' growth expectations explain their recommendation levels during that period. However, during 2012-2018 and 2019-2025, the coefficients are positive and significant at 5% level, suggesting a positive relationship after 2011. Coefficients of control variables remain consistent with table 4, as level of coverage shows no statistically significant relationship with recommendations and recommendations dispersion measured by standard deviation of recommendations shows a negative and statistically significant effect in all three periods. Similarly, market capitalization and ROA show positive and statistically significant relationships in 2005-2011 and 2012-2018 but show

statistically insignificant t-value in 2019-2025. This suggests that analysts may have altered their preference for highly profitable and large-cap firms after 2018.

R-squared values vary between 0.65 and 0.74 between the periods, indicating a relatively strong explanatory power for panel data. Regression results suggest that analysts' preference for growth firms seems to persist after 2012, but during 2005-2011 there is no evidence of such preference in analyst recommendations.

Table 6. Regression results for time-period analysis (2).

Dependent variable: Recommendation consensus

	2005-2008	**2009-2019**	**2020-2025**
Mean LTG	0,331*	0,450***	0,312**
	[2,94]	[3,79]	[3,24]
Level of Coverage	-0,004	0,030	0,208
	[-0,03]	[-0,52]	[1,65]
Recommendations Dispersion	-0,419**	-0,314***	-0,372**
	[-3,37]	[-4,52]	[-2,73]
Market Capitalization	0,160**	0,117***	0,019
	[4.64]	[3,17]	[-0,36]
Return on Assets	1,310**	0,536***	-0,101
	[3,88]	[4,30]	[-0,46]
Constant	1,488	2,015***	3,63**
	[2,29]	[3,59]	[4,00]
No. Of obs.	717	2329	783
R-squared	0.74	0.66	0.70
Company fixed effects	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes

Source: Author's calculations in eViews

Note: ***, ** and * indicate the significance at the 1%, 5% and 10% levels, respectively.

Table 6 presents the regression results for subperiods 2005-2008, 2009-2019, and 2020-2025. Mean LTG is positive and statistically significant in all subperiods, and the coefficient is strongest during 2009-2019. This could suggest that analysts' preference for high-growth firms was particularly strong during the low-interest rate period. The results indicate that analyst recommendations became more growth-focused after the Financial Crisis of 2008, as there is a 36% increase in the mean LTG coefficient between the first

two subperiods. The overall signs on control variables remain mainly unchanged between the subperiod analyses in tables 5 and 6, as recommendation dispersion shows a statistically significant negative relationship with recommendation consensus in all subperiods, while market capitalization and ROA show statistically significant positive relationship only in the first two subperiods. Overall, the time-period analysis points towards the connection between macroeconomic conditions and growth preference previously documented by Miwa & Ueda (2016), as different sub-periods show substantial variation in coefficients.

5.3 Cross-market analysis of analysts' growth preference

Table 7 presents the results for the cross-market analysis across the Nordic countries for the full sample, to uncover possible differences in analyst preferences between the four countries. The regressions are estimated separately for Finland, Sweden, Norway, and Denmark.

Table 7. Regression results for cross-market analysis.

Dependent variable: Recommendation consensus

	FIN	**SWE**	**NOR**	**DEN**
Mean LTG	0.284**	0.471**	0.224*	0.276
	[2.53]	[2.64]	[2.08]	[1.68]
Level of Coverage	-0.199	-0.013	-0.006	-0.160
	[-1.47]	[-0.22]	[-0.055]	[-1.63]
Recommendations Dispersion	-0.204	-0.353***	-0.718***	-0.411***
	[-1.39]	[-5.49]	[-6.01]	[-2.93]
Market Capitalization	0.174**	0.089**	0.086	0.088*
	[2.52]	[2.18]	[1.68]	[1.92]
Return on Assets	0.951***	0.572**	0.431	0.198
	[2.88]	[2.79]	[1.38]	[0.56]
Constant	1.369	2.45***	2.925***	2.772***
	[1.45]	[4.49]	[3.91]	[3.76]
No. Of obs.	759	1893	608	569
R-squared	0.52	0.57	0.61	0.50
Company fixed effects	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes

Source: Author's calculations in eViews

Note: ***, ** and * indicate the significance at the 1%, 5% and 10% levels, respectively.

Regression shows a positive coefficient for mean LTG in all markets, with statistical significance in all markets but Denmark, where the coefficient is still positive, but shows no statistical significance. The strongest positive relationship appears in Sweden, where the mean LTG exhibits the highest coefficient. Consistent with earlier results, level of coverage seems to have no statistically significant relationship with recommendation consensus in any of the markets. Recommendation dispersion is negative in all four markets, and shows statistical significance in Sweden, Norway, and Denmark, with the strongest coefficient in Norway. This suggests that greater disagreement among analysts is generally associated with less favorable recommendation consensus in all markets except for Finland. Market capitalization and ROA show a positive coefficient in all four markets. However, for market capitalization, the sign is not statistically significant in Norway. Additionally, ROA is statistically insignificant in both Norway and Denmark. Overall, the positive LTG coefficient in all four countries suggests that the growth preference previously documented mainly in non-Nordic studies is also persistent across Nordic markets, although its statistical strength varies by country.

5.4 Analyst preferences and interest rates

To test hypothesis 2, table 8 presents a Spearman rank correlation analysis, which follows the approach of Miwa & Ueda (2016), who used a similar framework to study the effect of market-wide sentiment on analysts' preference for growth investing. The table presents the yearly Spearman rank correlations between recommendation consensus and analysts' LTG expectations, which measure the strength of the cross-sectional association between analysts' recommendations and growth characteristics each year. Positive values would indicate that firms with higher mean LTG values would receive more favorable recommendations. Additionally, the table presents the average 10-year government bond yields in the Euro-area. Finally, the regression analysis examines whether monthly

variation in the Spearman rank correlation is associated with the monthly government bond yield.

Table 8. Spearman rank correlation analysis for H2.

	LTG corr.	Bond Yield
2005	-0,134	0,0344
2006	-0,070	0,0386
2007	0,235	0,0433
2008	0,167	0,0436
2009	0,079	0,0403
2010	0,245	0,0378
2011	0,108	0,0431
2012	0,051	0,0305
2013	0,136	0,0301
2014	0,193	0,0228
2015	0,316	0,0127
2016	0,211	0,0093
2017	0,166	0,0117
2018	0,214	0,0126
2019	0,140	0,0058
2020	0,200	0,0021
2021	0,190	0,0020
2022	0,276	0,0204
2023	0,179	0,0327
2024	0,211	0,0298
2025	0,265	0,0315

Dependent variable: LTG and recommendation consensus monthly Spearman rank correlation	
	1
Bond Yield	-0,027***
	[-6.10]
Constant	0,231***
	[17,92]
Obs.	252
R-squared	0.13

Source: Author's calculations in eViews

Note: ***, ** and * indicate the significance at the 1%, 5% and 10% levels, respectively.

The yearly descriptive analysis shows substantial variation across the observation period. The relationship is weak and even negative in the mid-2000s. However, the relationship becomes noticeably stronger during the low-interest rate period after the Global Financial Crisis of 2008. The regression analysis shows that the coefficient on bond yield is negative, and statistically significant at the 1% level. A one-point increase in the 10-year

government bond yield is associated with a 0.027 decrease in the monthly correlation between LTG forecasts and analysts' recommendation consensus. This suggests that analysts' preference for growth firms is higher when interest rates are lower, therefore providing statistical support for H2. With R-squared of 0.13, the model explains 13% of the monthly variation in the correlation.

Consistent with Campbell et al. (2010) and Gormsen & Lazarus (2023), the results suggest that growth firms' longer-duration cash flows become more valuable in low-rate environments, presumably because the present value of those cash flows is higher. The result also supports the earlier findings of Miwa & Ueda (2016) but adds to the evidence by using the risk-free component of discount rates as a variable rather than market sentiment. From the perspective of Efficient Market Hypothesis, changes in the interest rate environment should already be reflected in market prices. Therefore, if analysts' stronger preference for growth firms exceeds what can be justified, the relationship may also reflect systematic analyst overoptimism or other behavioral biases.

To assess whether the statistical significance of the results was affected by heteroskedasticity or serial correlation, the regression was re-estimated using Newey–West heteroskedasticity and autocorrelation-consistent standard errors. This adjustment was examined because the low Durbin–Watson statistic in the original regression showed some positive autocorrelation. The coefficient on the 10-year government bond yield remained approximately at −0.0270 in all specifications. It had a p-value of 0.0017 with a bandwidth of 5, 0.0033 with a bandwidth of 6 and 0.0146 with a bandwidth of 12. Hence, the coefficient remained statistically significant at the 5% level with all bandwidths. This indicates that the negative relationship between bond yields and the monthly correlation between LTG and recommendation is not driven solely by underestimated standard errors and its support for H2 is affirmed.

6 Conclusions

The purpose of the study was to examine whether analysts systematically favor growth firms in the Nordic equity markets. The study also investigated whether analysts' preference for growth firms becomes stronger during low interest rate environments. The analysis primarily extends prior research by Jegadeesh et al. (2004) and Miwa and Ueda (2016) to Nordic markets and examines the risk-free rate channel of discount rates as a proxy for the discount-rate environment.

Hypothesis 1 suggests that analyst recommendations are positively associated with expected firm growth. Statistical analysis showed that analysts do seem to favor firms with higher expected growth in their recommendations. This phenomenon is persistent in almost all time periods and markets, except the Danish market where the relationship between long-term growth forecasts and recommendations was positive but not statistically significant. During 2005-2011, there was no statistical significance shown for the relationship between LTG and analyst recommendations. Overall, analysts' expected growth for firms seems to be a significant factor in shaping analysts' view on stocks, consistent with prior literature, such as Bradshaw (2004), Jegadeesh et al. (2004), Miwa & Ueda (2016), and Peasnell et al. (2018).

However, sales growth showed a statistically significant negative coefficient, indicating that expected growth and realized growth are not viewed similarly by analysts in the Nordic market, providing contradictory evidence to Jegadeesh et al. (2004). The results suggest that in the Nordic markets, analysts place greater weight on future growth expectations compared to realized historical growth. In addition, there is no evidence that analysts would favor low book-to-price and earnings-to-price companies, which provide a measure for market-expected growth, suggesting that analyst recommendations are more strongly linked to analysts' self-generated growth expectations than to market-based valuation measures. Together, regression analysis on different growth proxies suggests that LTG may be a more relevant measure of analyst growth preference in the Nordic markets and different measures of growth should not be treated as interchangeable.

Overall, investors may benefit from examining the assumptions behind analyst recommendations, not only the recommendations themselves.

Hypothesis 2 suggests that the positive relationship between expected firm growth and analyst recommendations is stronger in lower interest rate environments. The analysis reveals a negative and statistically significant relationship between the 10-year euro-area government bond yield and the monthly Spearman rank correlation between LTG forecasts and analyst recommendation consensus, which indicates that lower interest rates are associated with a stronger relationship between growth expectations and analyst recommendations. This finding supports previous findings of Miwa & Ueda (2016), and the hypothesis that lower government bond yields are associated with a stronger relationship between analysts' growth expectations and recommendations.

In addition to the two main hypotheses, the study also provides secondary evidence regarding other firm characteristics affecting analysts' recommendations. First, analysts seem to favor larger and more profitable firms measured by return on assets. Larger firms may be viewed by analysts as less risky, more stable and more liquid, while analysts also seem to place emphasis on current financial performance through profitability. Recommendation dispersion showed a consistently negative and statistically significant relationship with recommendation levels across nearly all regressions, suggesting that firms with greater disagreement among analysts tend to receive less favorable recommendations. Hence, analysts appear to be on average less optimistic when there is high uncertainty and disagreement about a firm's prospects, suggesting that analysts may value consensus and could exhibit herding behavior.

This study contributes to existing literature in two important ways. First, it extends Jegadeesh et al. (2004) by testing growth preferences in Nordic equity markets over a longer, 21-year period. In addition, it provides more recent evidence on the topic, by examining years 2005-2025. Second, it adds to Miwa and Ueda (2016) by examining the

risk-free rate component of discount rates, rather than using market sentiment as a proxy for discount rate environment.

However, the study does not come without limitations. It is difficult to isolate the interest rate effect on analyst recommendations, as interest rates are only one factor affecting analyst behavior. Investor sentiment, momentum, risk appetite, macroeconomic conditions, and other factors may influence analyst behavior, thereby complicating the observed relationship between interest rates and analyst growth preference.

The data used in the analysis also comes with limitations. The sample only includes firms that were listed at the end of the sample period, resulting in exclusion of delisted firms. This may cause an overrepresentation of successful firms and underrepresentation of distressed, acquired, or otherwise delisted firms. Analyst preference toward those types of firms may therefore not be fully captured. Additionally, data availability varied substantially across markets and firms. Growth proxies and control variables had different sample sizes and missing data may create selection bias if firms with available data differ systematically from firms with unavailable data. The data also required a substantial amount of data cleaning and processing, which could potentially have led to human error despite careful validation and extensive double-checking. As noted by Payne & Thomas (2003), stock split adjustment procedures in I/B/E/S data can additionally introduce forecast-related distortions and affect measures such as forecast dispersion.

6.1 Suggestions for further research

While providing robust evidence regarding analyst preferences and other firm characteristics in the Nordic markets, the study also leaves significant avenues for future research. Characteristics such as size and profitability could be studied with more robust and extensive methods to further enhance the understanding of analyst preferences for alternative firm characteristics. Future studies could also examine whether preference for

growth firms differs across industries, as growth opportunities and valuation dynamics could vary substantially between sectors.

Additionally, separating the interest rate channel from investor sentiment could be a useful approach to reach more robust results on the relationship between risk-free rates and analyst preference for growth. Future research could include both a long-term government yield and a sentiment measure to examine whether the interest rate relationship remains after controlling for market sentiment. Equity risk premium and behavioral optimism could also be tested to fully understand what drives analysts' valuation of equity.

Finally, while this study adds to the evidence of existing literature for analysts' growth preferences, the reasons behind this preference remain less clear. Huang et al. (2023, p. 884) show that analysts' use of DCF valuation model is more frequent among firms with higher sales growth, while analysts also tend to issue more positive recommendations for firms valued with DCF. Thereby, the growth preference could simply stem from the use of overly optimistic valuation of future cash flows. Understanding what drives analysts' preferences and biases could help individual and institutional investors understand recommendations better and allow them to make more informed decisions.

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