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EXCLUSION OF RETAIL INVESTORS AFFECTING RETURNS AND STOCK PRICES

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Abstract

Despite the existing economic difficulties, both the number of IPOs and retail investors in Norway has surged lately. Hence, we find it interesting to empirically analyze the following two research questions:

How are the returns of retail investors affected by the exclusion from IPOs, and how are the developments of recently listed companies' stocks affected by retail investor ownership?

Based on observations of 46 IPOs, we find that retail investors lose to their institutional counterparts due to considerable underpricing, causing one-day-pops. Generally, retail investors' returns are affected by their exclusion from IPOs. Notably, we find that listings within the ESG category outperform the non-ESG companies. Although the results are conspicuous, various reasons beyond IPO exclusion explain retail investors' unfavorable returns. Among those reasons, information asymmetry between institutions and retail investors and irrational behavior appear prominent.

Subsequently, we examined both graphical and statistical tests to determine whether retail investor ownership correlated with IPO returns. Despite some visual correlation being evident, our statistical results disallow affirmation of statistical significance. However, the correlation of ESG IPOs and retail ownership surpassed that of the entire selection, causing us to conclude that the impact is greater in the ESG category.

Yet, given our restricting assumptions, the results should be interpreted with caution.

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1 Introduction

"The stock market is filled with individuals who know the price of everything, but the value of nothing." – Philip A. Fisher

In the words of legendary investor Philip Fisher, thorough research is a vital part of all investment decisions. Moreover, Fisher emphasizes the importance of research beyond popular opinion, referring to often less educated retail investors participating in the market. Increasing the relevance of Fisher's statement, retail investors constituted more than 22 percent of the total turnover in the Norwegian stock market during the rally subsequent to the COVID-related crash (Oslo Børs, 2020). Oslo Børs has been subject to a significant increase of retail investors, substantiated by the Norwegian online retail broker Nordnet's considerable customer growth. Anders Skar (2020), country manager in Norway, attributes the growth to increased leisure time and decreased spending caused by the COVID-related restrictions.

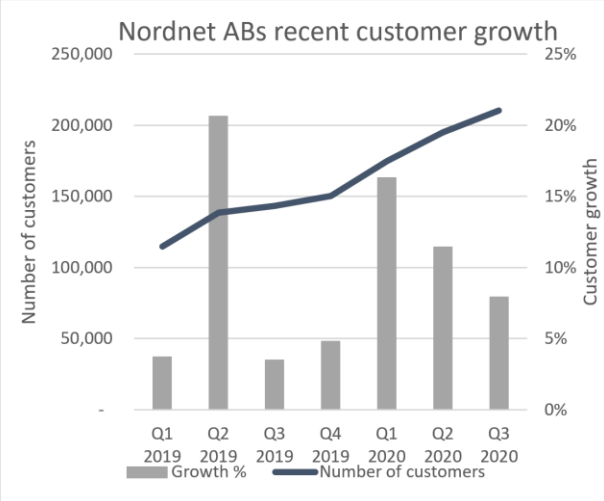


Figure 1: Quarterly customer growth for Nordnet AB

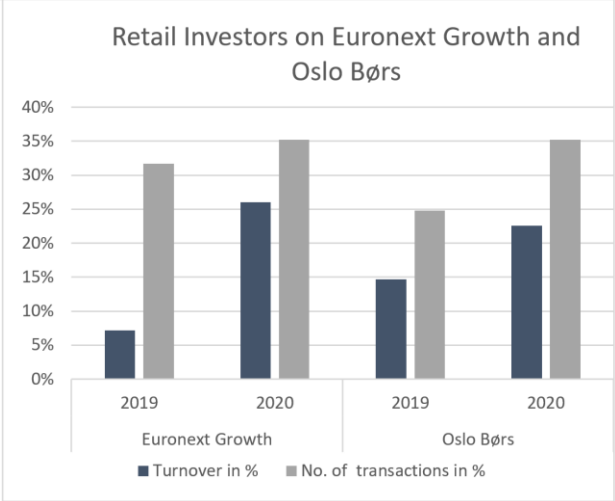


Figure 2: Percentage growth in retail investors on Euronext Growth and Oslo Børs

Contrary to the societal economic situation, the sentiment in the financial markets has remained mostly positive in the two middle quarters of 2020, highlighted by a record-high number of IPOs (Slettedal, 2020). Simultaneously, Nordea investment manager Robert Næss (2020) observes high risk willingness in the market, illuminated by surges in stocks of companies with minimal to no revenue. Næss further underscores the conjunction between high-risk investments and initial public offerings (IPOs) on Oslo Børs. However, most retail investors cannot partake in IPOs due to significant minimum order requirements and a lack of opportunity. Consequently, the exclusion leads to retail investors buying stocks subsequent to listings, at prices often differentiating highly from IPO price.

Given retail investors' inherent informational disadvantage compared to their institutional counterparts, we aim to examine the implications of retail investors being excluded in IPOs with regards to returns. Moreover, the effect of retail investors' ownership in recently listed companies will be analyzed. Hence, we seek to discuss the following two research questions:

How are the returns of retail investors affected by the exclusion from IPOs, and how are the developments of recently listed companies' stocks affected by retail investor ownership?

First, we will provide a basis for analysis by presenting theories regarding the mechanics of IPOs, the composition of the Norwegian stock exchanges, and relevant phenomena in listing processes. Second, the data and measurements utilized in the analysis will be accounted for. Third, we will present various portfolios constructed to portray results originating from our data. These portfolios constitute a basis for analysis and coherent discussion of the mentioned research questions, with subsections concerning the implication of IPO exclusion on retail investors' returns. Coherently, reasons for deviating returns between retail investors and institutional investors will be analyzed. Additionally, the impact of retail investor ownership on stock development of recently listed companies, especially considering the recent environmental, social and governance (ESG) trend, will be discussed. Last, a conclusion will summarize and reflect upon the empirical analysis findings with the object of answering the research questions.

2 Theoretical Framework

The theories presented reflect our views on the relevant context and prior knowledge required to analyze the paper's research questions. First, IPO fundamentals with coherent types of investors will be described. Second, the composition of the Norwegian stock market is accounted for. Last, the phenomena of IPO underpricing are explained to analyze the potential effects of retail investors' IPO exclusion later.

2.1 IPO Fundamentals

An IPO is the process by which a company is transformed from being privately held to be publicly traded (Harris, 2003). Further, Harris (2003) describes how IPO facilitates new investors to purchase a stock, allowing private shareholders such as founders and other early investors to reduce their positions by selling stocks. For companies conducting IPOs, the primary purpose is to raise equity capital in the company (Harris, 2003). Listing companies allow new investors to buy shares in the firm, effectively supplying them with accessible liquidity. Moreover, IPOs redistribute ownership of the company by offering stocks to various investors. The inclusion of additional investors, thus increasing the stock's liquidity, simultaneously entail higher volatility. However, underwriters discriminate against some investors in the listing process, imposing various participation prerequisites (Ellis, Michaely, & O'Hara, 1999).

Further, Eckbo (2007) argues for distinguishing between two types of investors: retail investors and institutional investors. Although the reality is more nuanced than this, our distinction is well suited for answering the research question. First, a retail investor is an individual or non-institutional investor who buys and sells securities through brokerage firms or savings accounts (Ibbotson, Sindelar, & Ritter, 1994). Second, an institutional investor is a person or organization that trades adequately large quantities of securities to qualify for lower fees, preferential treatment and greater access to deal-flow, such as IPOs. Consequently, retail investors of weaker purchasing power typically have to pay higher fees (Ibbotson, Sindelar, & Ritter, 1994). The Securities and Exchange Commission (SEC) considers retail investors unsophisticated investors, who are afforded certain protections and barred from making some high risk and complex investments (Linford, 2020).

2.2 Underpricing of IPOs

IPO underpricing is a well-documented phenomenon in finance, suggesting that underwriters set IPO prices below a company's intrinsic value (Ljungqvist, 2007). Thus, underpricing is present when a stock closes higher than its initial listing price, entailing the occurrence of an effect defined as *one-day-pop* (Katti, 2016). The IPO price depends on several factors such as the company's cash flow, reputation, respective sector, and the intentions of the main parties involved in the process. However, Baron (1982) argues that underpricing originates from both underwriters and company representatives' alternate motives, making other factors than those used in conventional valuation more critical in determining IPO price. We define two as the most prominent among those factors: (1) *asymmetric information* and (2) *signaling effect*.

First, the determining factor of information asymmetry appears prominent. Katti and Phani (2016) suggest a significant information gap between retail investors and informed parties in IPO processes. Breon-Drish (2010) illustrates levels of information varying with prices, with low degrees of information correlating positively with low price levels. Moreover, one expects reaction toward investors' news at low price levels to be amplified, as they are inherently less informed, and the news thereby increases their information base. Whereas uninformed investors will participate in all IPOs, informed investors would limit their participation to undervalued listings. Hence, deliberate underpricing can attract demand from all types of investors (Baron, 1982). Short term undervaluation is generally considered low risk, as one expects supply and demand to drive prices to levels reflecting intrinsic value in the long run (Katti, 2016). Rock (1985) further argues that high demand in IPOs may lead to the *"winner's curse",* ultimately leading to winning bids exceeding the stock's intrinsic value.

Second, the utilization of underpricing to send signals to investors may affect the determination of IPO prices. Bebczuk (2003) underscores the effect of signaling, arguing the financial institutions use various signals to convey the fundamental value of the proposed object. Among those signals, underpricing is prominent, suggesting that an issuer would underprice its IPO to ensure future equity offerings' success. Further, Welch (1989) argues that high-quality companies will differentiate themselves from lower-quality companies by inducing a higher degree of underpricing in its IPO; the lower marginal cost of underpricing is higher for low-quality firms, supporting the presumption. Therefore, the degree of underpricing correlates positively with the company's quality (Welch, 1989). Moreover, Allen and Fluhaber (2020) suggest that high-quality companies underprice their IPO to signal a favorable dividend yield in the future. Resultantly, investors will assume that the initial underpricing will apply to future offerings as well. Hence,

their theory suggests that high degrees of IPO underpricing will ensure companies' fulfillment of future capital requirements.

2.3 Investor Behavior

To further explain the phenomenon of underpricing, the impact of investors' behavior on stock prices should be described. In addition to the mentioned factors, underpricing is affected by investors' irrational behavior through demand surpassing prices equaling to the intrinsic value. Moreover, observed one-day-pops of other listings lead retail investors to be overly overoptimistic, therefore neglecting assets' real value (Aggarwal & Rivoli, 1990). Linford (2020) further states that retail investors often act on more informal tips, trends and discussions they encounter on social media, feeds and forums, illustrating their irrational behavior towards investment decisions. Highlighting this point, Perras and Wagner (2020) argue that the *fear of missing out* (FOMO-effect) affects expected returns by leading investors to mimic others' investment decisions rather than depending on self-made analyses, leading to situations where the success of IPOs is determined in large part by fads.

2.4 Structure of the Norwegian Stock Exchanges

Historically, most of the listed companies have been listed on Oslo Børs. However, the introduction of the less regulated Euronext Growth in 2016 altered the composition of the exchanges. While Oslo Børs is fully regulated according to EU requirements and the Norwegian securities law, Euronext Growth is not (Slettedal & Burum, 2020). Rather, Euronext Growth is a multilateral trading facility (MTF) and is inherently viewed as less strict (Finanstilsynet, 2020). Highlighted in table 1, the differences between Euronext Growth and Oslo stock exchange are evident. Emphasizing the significantly lower fee-structure of Euronext Growth, one could understand this market's appeal to privately held companies.

	Euronext Growth	Oslo Stock Exchange
Regulation	Mulitlateral trading system	Fully regulated in regards to EU requirements and norwegian securities law
Duration of the recording process	1-2 weeks	4-8 weeks
Min Market Cap	0 MNOK	300 MNOK
Min number of share owners	30	500
Accounting standard	GAAP,IFRS or any other recognized standard	IFRS
Corporate governance	No requriements	Required

Table 1: Differences between the Norwegian stock exchanges

The level of activity in the first years after the exchange's launch was moderate. However, this changed fundamentally in 2020, with the number of IPOs surging towards a total of 46 (Oslo Børs, 2020). The arrival of Euronext Growth made listings more appealing for privately held companies; compared to earlier, there are fewer requirements, lower fees, and quicker processing time. Yet, per the SEC's perception of retail investors, this lack of requirements constitutes an increased risk for uninformed parties. Underscored by Norwegian financial regulator Finanstilsynet (2020), the absence of shareholder protection on Euronext Growth similarly increases risk.



Figure 3: Number of IPOs ranging from 2016 to 2020

3 Data and Methodology

The observations utilized in the empirical analysis consists of 46 IPOs listed on the Norwegian exchanges Oslo Børs and Euronext Growth during the period 01.01.2019 - 30.11.2020. We limit the observations to the first 20 trading days following the respective IPOs. Data regarding stock returns has been gathered from Oslo Børs' database. Moreover, Infront's registers portray the 50 largest shareholders, displayed with a three-day delay; this information is used as a foundation to analyze the change in retail investors over time. We have also used Yahoo Finance and some prospectuses from the underwriters of the IPOs to obtain the accurate offering price.

3.1 Data and Restrictions

Our research questions in this paper require excluding retail investors from IPOs, preventing them from buying stocks at IPO prices before listings. An inherent assumption is thereby that the retail investors' share of companies before IPOs is non-existent. Moreover, another assumption is that the online retail broker Nordnet AB is representative of the total number of retail investors on the Norwegian stock exchanges, as the extraction of retail ownership otherwise would be either impossible or significantly more time demanding.

To increase the quality of the selected data, various companies were excluded from the analysis. The criteria for exclusion include the following: (1) companies failing to fulfill our criteria of Nordnet AB ownership; (2) companies with IPOs either prior to- or subsequent to our observation period; (3) companies with other nationalities than Norwegian, i.e., ASA company structure is a requirement; and (4) companies transferring to Oslo Børs from another exchange. Besides, data ranging further than one month subsequent to the respective IPOs were omitted.

3.2 Calculations Utilized in the Analysis

3.2.1 Returns Measurements

To quantitatively measure the performance of newly listed stocks, various calculations are utilized. First, *total asset return* is expediently included to evaluate the development in unadjusted percentage terms. The total asset return is the asset price's appreciation from the IPO price, including any dividends, divided by the initial IPO price. Specifically, the return is calculated using the following formula:

$$R_i = \frac{(P_i - P_0) + D_i}{P_0}$$

R_i = *Total asset return*

P_0 = *IPO price*

P_i = *Asset price at close day i*

D_i = *Dividends*

i = *(1-20)*

Equation 1: Total asset return

Second, one should examine how stocks are performing relative to various indices to account for the expected returns in similar assets. In our case, we have used an average return of the benchmark OSEBX index, providing returns of 0.43% in our observation period. Coherently, the abnormal returns are calculated using the following formula:

$$AR_i = R_i\text{-}R_M = \frac{(P_i - P_0) + D_i}{P_0} - \frac{(P_{M1} - P_{M0}) + D_m}{P_{M0}}$$

$AR_i = Abnormal\ return$

$R_M = Total\ index\ return$

$P_{M0} = Index\ price(value)$

$P_{M1} = Index\ price(value) at\ close$

Equation 2: Abnormal Return

3.2.2 VWAP

Further, the *Volume Weighted Average Price* (VWAP) is a trading benchmark that portrays the average price a share is traded at during a given period regarding both volume and price. Therefore, the VWAP provides an insight into the trend and value of a stock (Harris, 2003). The formula to calculate the VWAP is defined below:

$$WVAP = \frac{\sum_{i=1}^{n} p_i * Q_i}{\sum_{i=1}^{n} Q_i}$$

P_i = *price trade i*

Q_i = *quantity trade i*

i = individual trade that takes place on day 1-20

Equation 3: Volume Weighted Average Price

3.2.3 Wilcoxon Test

To determine whether our retail ownership observations correlate with stock returns of recently listed companies, we utilized R-statistics to conduct numerous Wilcoxon Rank Sum Tests. The test calculates differences between sets of pairs and analyzes the differences to establish if they are statistically significantly dissimilar from one other. Additionally, the test facilitates testing non-normalized data, advantageous with our data (Keller, 2013). The hypothesis test requires the formulation of a null hypothesis (H0) aiming to be rejected, and an alternative hypothesis (Ha) aiming to be accepted if the correlation is statistically significant. Further, P-values indicating the probability that the observed correlation occurred by chance are given; these P-values are later used to determine the results' statistical significance.

4 Empirical Analysis

To analyze the findings with empirical evidence, we found the construction of various portfolios expedient. Notably, the portfolios differ regarding ownership; two are owned by institutional investors, while retail investors own the remaining two. Thus, we can illustrate deviating results using findings extracted from portfolios. Utilizing the portfolio returns as a basis, the analysis is further divided into two main parts: (1) how and why retail investors lose to institutional investors, and (2) whether retail investor ownership itself has impacted the returns of stocks subsequent to listings. This section of the paper utilizes the depth of the dataset to perform empirical analysis. Moreover, the findings are discussed with emphasis on the presented theory.

4.1 Portfolio Construction

Four portfolios were constructed for analytical purposes. All portfolios are measured on returns as well as abnormal returns, both in percentage terms. Portfolio numbers with coherent explanations are illustrated in Table 2.

Portfolio No.	Explanations
P1	Group with equally weighted portfolio of 46 IPO companies Institutional
P2	Group with equally weighted portfolio of ESG IPO companies Institutional
P3	Group with equally weighted portfolio of 46 IPO companies Retail
P4	Group with equally weighted portfolio of ESG IPO companies Retail

Table 2: Constructed Portfolios

Worth noting, all portfolios are equally weighted in the total number of companies. Although market capitalization-weighted portfolios would be interesting, we have chosen to exclude such weightings due to high deviations between valuation at the time of listing and the period to

follow. Additionally, Breon-Drish (2010) argues that the behavior of less informed parties varies more at low price levels. Hence, arguments can be made towards retail investors not weighing their investments in recently listed companies regarding market capitalization, ultimately highlighting the lack of relevance of the measurement.

The portfolios have been constructed for two main reasons. First, we aim to illustrate deviations in results achieved by institutional investors and retail investors. Differentiating between institutions presumed to be buying stocks of companies listed at IPO prices and retail investors presumed to be buying the same companies at prices equal to VWAP of the first trading day, we can somewhat isolate the effect of IPO participation. Coherently, this differentiation facilitates analysis of reasons for these deviations existing. Second, the portfolios consisting of ESG-companies entirely supply valuable insights into retail investors' behavioral patterns and external influence sources.

4.2 Portfolios Returns

To analyze the results originating from the portfolio construction, observations have been divided into two categories. Specifically, these categories vary with respect to time elapsed after listing. First, the 20-day trading period is utilized to gain insight into the totality of the portfolio returns. Second, to isolate the effects of the deviating IPO price and VWAP faced by institutions and retail investors, respectively, results from the first trading day alone are observed. Further, prominent observations common for the two categories are discussed.

In essence, two main findings can be abstracted from the analysis of the 20-day portfolios viewed in table 3 and figure 4. First, an important aspect is the significant deviation between the returns of the institutional- and retail investors, respectively. Whereas the institutional investors achieve an attractive abnormal return of 18.90% in the first portfolio, retail investors lose 0.41% of their initial investment. Caused by sizeable price increases during the first day of trading, retail investors thus on aggregate lose 19.31% to the institutional investors having the opportunity to partake in the IPO.

Portfolio	Returns	Abnormal Returns
P1	19.33%	18.90%
P2	30.49%	30.06%
P3	0.02%	-0.41%
P4	4.86%	4.43%

Table 3: Return and abnormal return from constructed portfolios

Second, portfolio two – consisting of the ESG-companies that proved attractive to retail investors – has outperformed the broader first portfolio, gaining abnormal returns of 30.06%. Simultaneously, retail investors in portfolio four have gained 4.43%, effectively losing 25.63% to their institutional counterparts buying at IPO prices.

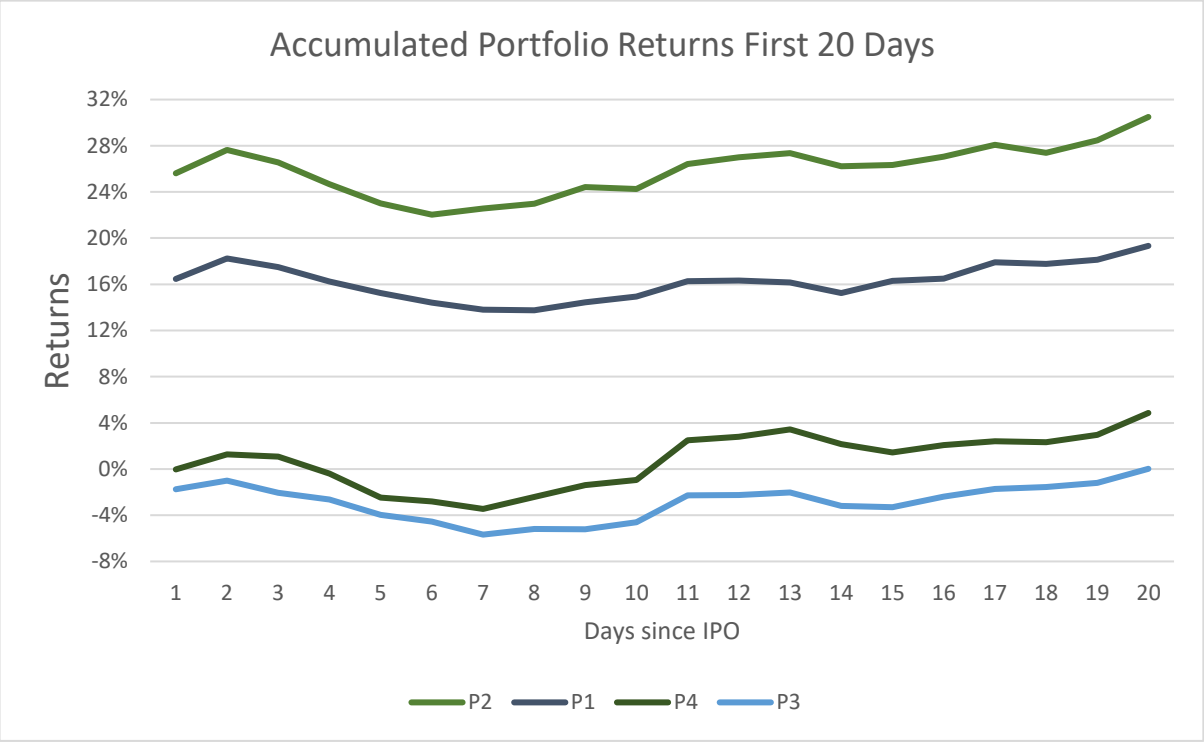


Figure 4: Accumulated portfolio returns the first 20 trading days following listing

Evidently, retail investors lose significantly on the lack of opportunity to partake in the listings. To analyze the effects of IPO exclusion, isolating returns achieved on listing day would be of interest.

Table 4 portrays the returns on listing day exclusively. Thus, the results observed effectively illustrate the deviation between close price of the first trading day and IPO price for institutions and VWAP for retail investors, respectively. That way, the institutional investors' results illustrate the real development of stocks of listed companies, providing an insightful basis itself. As table 4 demonstrates, portfolio one including all listed companies, gains 16.14% on the first trading day. Contrarily, retail investors' returns in the same companies equal to -2.07%. Hence, while institutions have reason to favor stocks of companies being listed, retail investors should not.

Portfolio	Return day one
P1	16.14%
P2	27.52%
P3	-2.07%
P4	-1.05%

Table 4: Portfolio return day one

Further, the ESG portfolios substantiate this claim. Whereas the deviation between institutions' and retail investors' returns amounted to 18.21% in the portfolios including all companies, removing all non-ESG companies increased this deviation to 28.57%, with institutional investors gaining 27.52% and retail investors losing 1.05%. Interestingly, one could note that both parties are more successful when investing in ESG, despite the larger deviation. Yet, retail investors benefit from holding their position in the full 20 days, with returns gaining 5.91% subsequent to listing day.

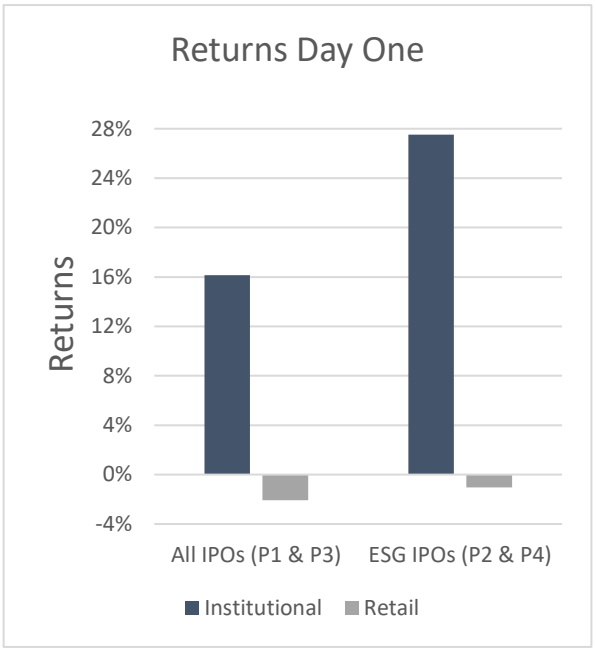


Figure 5: Comparison of institutional- and retail investors return day one

Compared with first day gains, returns gained in the 20-day portfolios on average differ by approximately 3.5%. Thus, most positive gains occur during listing day. Resultantly, questions regarding occurrences of the phenomena one day-pop should be raised. The median return of 4.69% indicates more than 50% of the IPOs ended with prices higher than their initial IPO price. Analysis of the 46 listings shows that 27 companies experienced positive returns on their first trading day, while 19 companies returned 0% or less. Despite not providing unambiguous evidence for the existence of one day-pop in the observed stocks, the numbers indeed underscore the relevance of the further analysis.

Although the number of IPOs with positive and negative first day returns nearly equals each other, the median return differs highly from 0%, making for an interesting observation. As figure 6 suggests, stocks gaining on listing day tend to increase in value relatively more than losing stocks lose. Moreover, the large deviations between institutional investors'- and retail investors' returns are illustrated in the figure 6.



Figure 6: Institutional and retail return for all the included IPOs

Despite the evident disadvantages of being excluded in IPOs, retail investors are more successful in some cases. In 11 of the 46 observed listings, retail investors win compared to the institutions. Noteworthy, however, only two of those 11 wins are in stocks with positive gains; the remaining nine stocks decrease in value, illustrated in figure 7. This suggests that although the VWAP to large extents limits the potential upside for retail investors compared to institutional investors, it simultaneously limits the potential downside in losing cases.

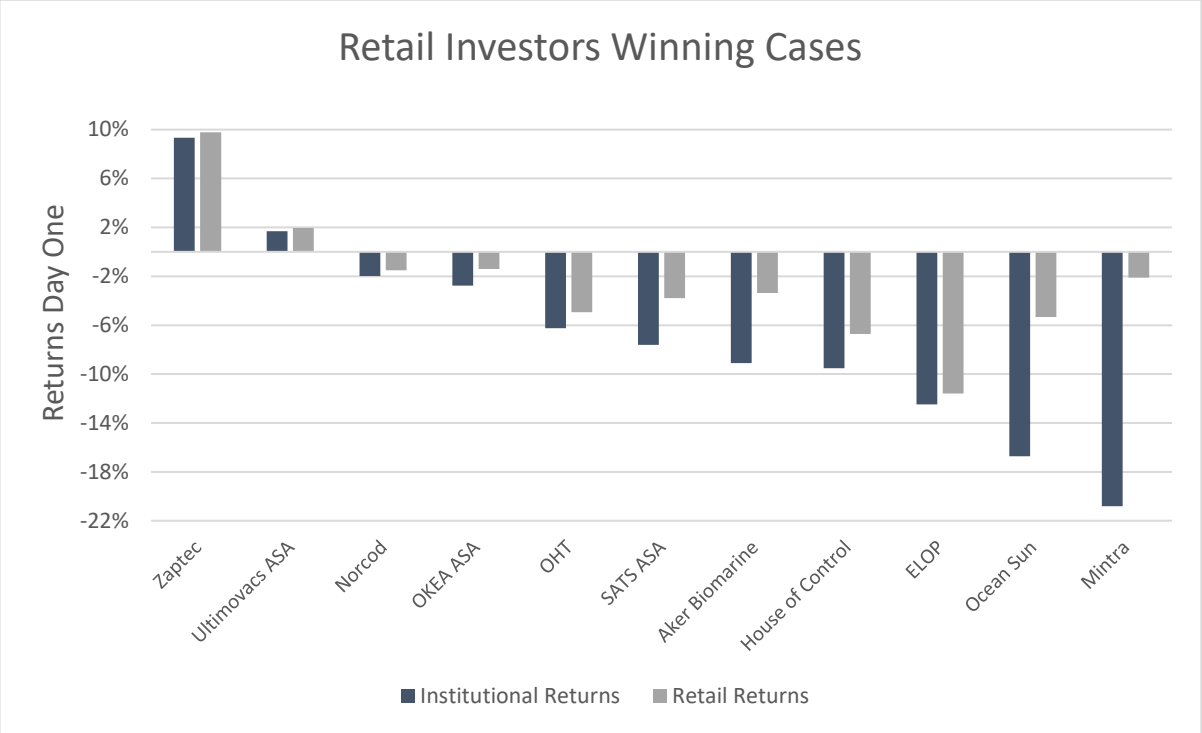


Figure 7: Illustration of companies where retail investors outperform institutional investors on the first day

Conclusively, the various portfolio returns demonstrate retail investors losing significantly to their institutional counterparts. The lack of opportunity to participate in IPOs, thereby having to buy newly listed stocks at prices equaling to first day VWAP, prevent retail investors from benefiting from the tendency of one day-pop observed.

4.3 Why Retail Investors Fail

However, participation in IPOs does not constitute an adequate explanation for retail investors' unfavorable returns itself. Therefore, the reasons affecting the outcome of retail investors beyond mere participation will be discussed. Our analysis has defined two leading causes behind retail investors' deviating results: (1) *underpricing* and (2) *irrational behavior*. First, the underpricing of the listed companies' stocks will be analyzed. Second, retail investors' irrational behavior, mostly seen in relation to external influence and trends, is discussed.

4.3.1 Underpricing of IPOs

Underpricing of IPOs occurs when a stock's closing price on listing day is higher than its initial listing price. Thus, the observations made underscore the occurrence of underpricing, as a substantial share of the listed stocks ended at price levels well above listing price. Further, this implies the current market situation is well-fit for utilization of the Allen and Fluhaber-theory (2020), saying the surging stocks are simply products of underpricing. In line with its definition, underpricing indicates market willingness exceeding the underwriters' impression of a stock's intrinsic value. Evidently, underpricing of stocks are not necessarily products of a deliberate misleading from the underwriters; it may well occur because of exceeding demand posed by parties uninformed by the stock's fair value. Hence, these two reasons for underpricing – *asymmetric information* and *signaling* – should be discussed.

First, asymmetric information between the lesser informed retail investors and their institutional counterparts may influence retail investors' success. Like Rock (1985), we limit our analysis of information asymmetry to that existing between investor types, presuming the issuer and underwriter act as one. Breon-Drish (2010) shows how price varies highly with different levels of information. Specifically, price-informativeness varies with price levels, ultimately indicating a tendency of lesser information at low price levels with learning effects strengthening investors' reactions toward news. Significant parts of the companies have been listed on the less regulated exchange Euronext Growth, where prominent deviations from Oslo Børs with regards to requirements include no minimum market capitalization and less diversification of ownership. Numerous listed companies have low market capitalizations, illuminating the point made by Breon-Dish (2010) of information lacking at seemingly low price levels. Resultantly, retail investors who are unaware of these deviations may fail to perceive listings on the exchange as more risky investments. Simultaneously, this low level of knowledge of retail investors may amplify reactions to price information.

Further, Baron (1982) suggests higher price sensitivity among retail investors constitute incentives for underwriters to lower prices to increase retail demand in IPOs. That way, demand among both institutions and retail investors remains high. Highlighting the potential strategy of deliberately underpricing stocks, the initial price will have to be lower than the fair value perceived by informed investors to attract interest. Conversely, the relatively uninformed retail investors are expected to participate in IPOs whenever given the opportunity. However, the losses experienced by retail parties mainly originate from IPO exclusion, leaving them with

nothing but increased uncertainty regarding intrinsic value. Additionally, Rock (1985) argues for the implications of information being difficult and expensive to obtain. Especially true for the less regulated exchange Euronext Growth, the high cost of information increases the information asymmetry, leaving retail investors with flawed perceptions of risk and fair value in listed stocks. Inherently, retail investors stand at a disadvantage.

Second, deliberate underpricing of stocks prior to listings may attract retail investors, as the following potential oversubscription sends signals of high demand. As Bebczuk (2003) underscores, information enhancing retail investors' impression of quality in stocks of companies being listed may be issued by underwriters or institutional investors involved. Hence, retail investors perceive this information as reassuring regarding the stock's intrinsic value, ultimately leading to increased interest upon listing. Similarly, Welch (1989) suggests that high-quality companies will strive for higher degrees of underpricing to differentiate themselves from others with signals of high demand on the first trading days. Thus, receiving information regarding companies with IPO prices differing from traded prices at listing day should increase retail investors' demand. Further, the larger one-day-pop effect observed in the ESG portfolio suggests the degree of underpricing may surpass that of the portfolio including all companies.

Additionally, Breon-Dish (2010) finds that observations of signed trading volume, in our case illustrated by the size of IPO subscriptions, may be of value in terms of refining the IPO price information. That way, institutional investors subscribing in large orders due to underpriced listings may cause overly optimistic retail investors upon listing day. Rock (1985) describes this unwarranted positivity as the winner's curse, causing retail investors' bids on newly listed stocks to exceed the stock's intrinsic value. This phenomenon can be viewed in table 5 concerning the probability of returns on day one and day 20, respectively. Coherently, both the absolute and conditional probabilities of the outcomes *positive return* and *negative return* on are illustrated in figure 8. Various interesting observations concerning the effect of large IPO subscriptions can be made by utilizing the results in these figures.

Day 1 / Day 20	Returns	Abnormal Returns	Sum
Positive	54.35%	6.52%	60.87%
Negative	8.70%	30.43%	39.13%
Sum	63.04%	36.96%	100%

Table 5: Probability of return outcomes

Interestingly, more than 60% of the total number of IPOs returned positively on listing day, possibly contributing to increased demand among retail investors by signaling oversubscription. Second, no more than approximately 6.5% of the stocks with positive returns on day one has prices below IPO price on day 20. Presuming markets will stabilize prices somewhat during the first 20 days, the low percentage of stock returns turning negative during the days subsequent to listing day may imply a low degree of overvaluation in IPO prices. Thus, the results extracted from positive returns on the first day underscore an occurrence of underpricing. Although underpricing primarily remains disadvantageous for retail investors uninformed about the stock's intrinsic value, the results in the figures illustrate the underpricing generally returns positively in a 20-day perspective.

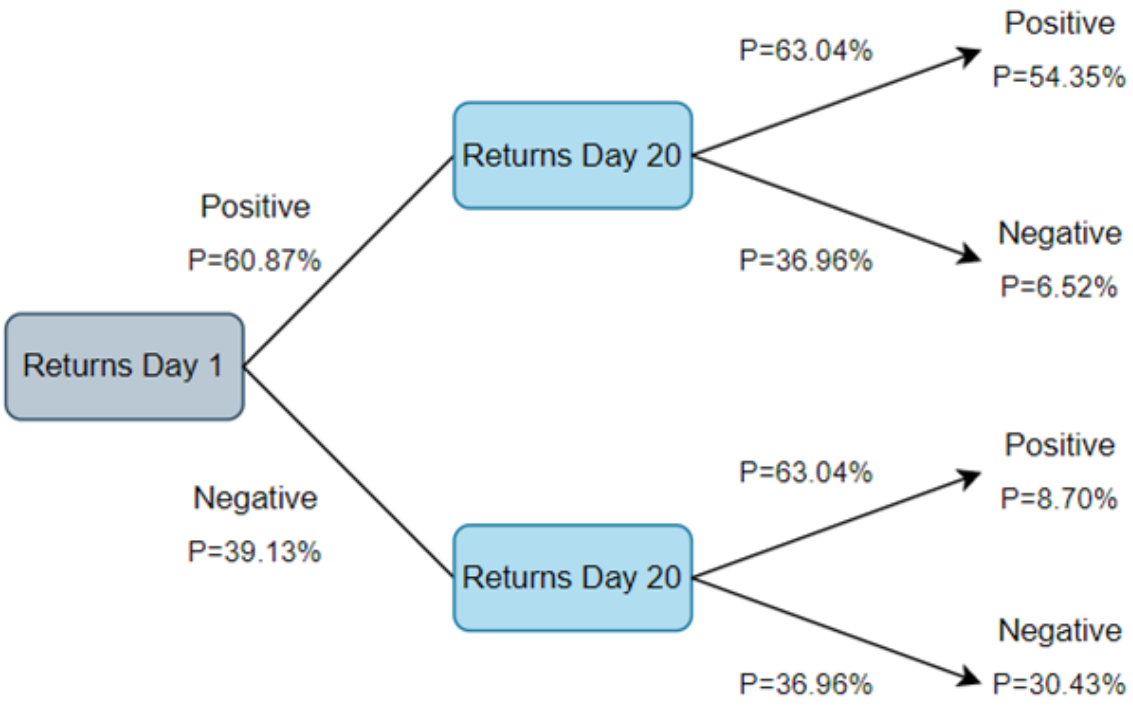


Figure 8: Probability tree of return outcomes

Conclusively, underwriters' signals through either direct communication of value or underpricing with coherent oversubscription may increase interest in newly listed companies among elsewhere uninformed retail investors. Further, the conjunction between less information at low price levels and strengthened reactions among retail investors caused by knowledge acquiring leads to unwarranted price jumps upon listing.

4.3.2 Irrational Behavior

In addition to the explanations provided regarding the underpricing of IPOs, Aggarwal and Rivoli (1990) suggest fads in the aftermarket of IPOs affect returns of buyers unable to participate in listings. These fads, portrayed through buyers' irrational price behavior after listings, have increased in relevance through the rapidly growing ESG segment. Hence, retail investors' behavior, seen in relation to their presence in the ESG companies, will be the basis of our behavioral analysis.

First, a significant amount of the IPOs has been of companies categorized as ESG companies – many of whom operate within renewable energy. In recent years, an increased focus on climate change has enabled ESG companies to outperform the general market for the majority of 2019 and 2020. The large average first-day return in IPO over the last two years can partly be explained by the rise in interest in these assets. Substantiated by the premium returns achieved in the mentioned ESG portfolios of both institutional- and retail investors, these IPOs have been a source of much publicity. Somewhat one-sided portrayal regarding the success of IPOs in the ESG category, with stories of returns doubling the first day of trading, has led to an increase in retail investors involved in these transactions (Egan, 2020). Moreover, Næss (2020) observes a significant risk willingness towards ESG investments. Combined with the mentioned information asymmetry, news of high-profile investors investing effectively amplifies retail investors' engagement. Holding all else equal, this increase in retail demand will result in prices increasing similarly. Hence, as observed in figure 9, retail investors' ownership in ESG companies correlates positively with the accumulated returns subsequent to listing. Moreover, both retail ownership and returns in ESG companies highly surpass those of non-ESG companies.

Nicholas Colas (2020) states that FOMO-effect is among the reasons for the increased interest in ESG-assets. Colas alleges the rally experienced in the stock market in 2019 and 2020 led to the influx of money from first-time investors and the newspaper pushing stories about the bullish market, thereby explaining retail brokerage Nordnet's customer growth. As figure 9 describes, the largest return is observed in ESG companies, caused by the asset category's recent fads. According to Robin Döttling (2020), prolonged economic distress such as the COVID-19 pandemic has the potential to alter preferences in the market. Thus, the pandemic might explain the redistribution of institutional- and retail investors in different sectors. Döttling further states that this change in preferences, ultimately increasing retail investors' presence in ESG companies,

may impair institutional ESG engagement, thus destabilizing stocks of companies being listed. With empirical evidence, Döttling (2020) claims that retail investors to a more considerable extent affect the recent fluctuation on ESG stock prices due to their increasing presence in the market.

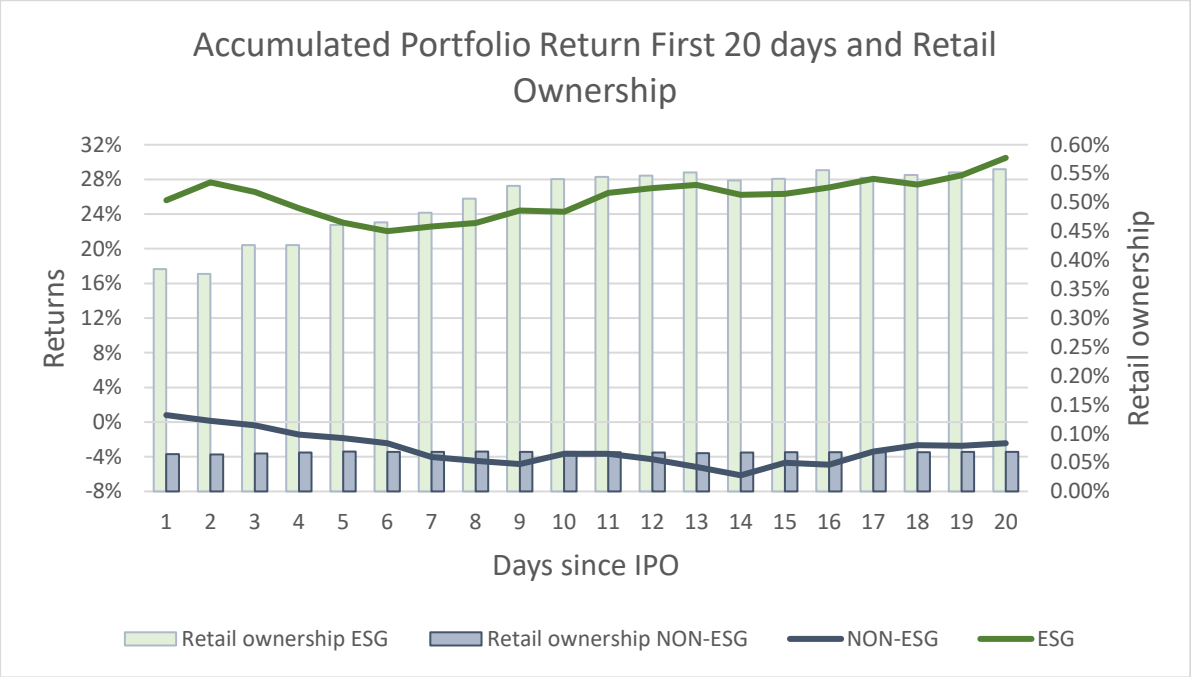


Figure 9: Accumulated portfolio return and percentage retail ownership

Contrary to Aggarwal and Rivoli's (1990), neither institutions nor retail investors lose on their ESG investments. Overpriced as the stocks may be after listings, the demand remains on levels adequate to prevent any significant decrease. Originating partly from retail investors' irrational price behavior, substantiated by news and FOMO, the returns from recently listed ESG companies remain high. However, as noted, the returns gained by institutional- and retail investors deviate significantly. Notably, retail investors' returns are negative on the first trading day of newly listed companies. An important notion is thus that while both parties earn on ESG IPOs, the evident fads in the segment may itself affect the returns turning positive after 20 days. Resultantly, questions regarding the impact of retail investors' ownership on IPO returns in recently listed stocks will be discussed.

4.4 Retail Investors' Impact on IPO Returns

Further, an examination of the influence of retail investor ownership on IPO returns will be conducted. Hence, the following section will utilize the observations made to test, both graphically and statistically, whether increasing shares of retail investor ownership affects the returns achieved. The part is expediently divided into two parts: (1) examination of the impact on *all listed companies* and (2) examination of the impact on *ESG-companies exclusively*. First, a thorough explanation of the findings follows in the next section. Subsequently, a coherent analysis of the findings concludes the section on retail investors' impact on results.

We aim to examine the possible correlation through a Wilcoxon Rank Sum Test with the following null hypothesis:

H_0: Retail investors do not have an impact on IPO returns following listings

The hypothesis will be tested at a 5% level of significance, meaning the hypothesis will be rejected at P-levels below 5%. Contrarily, the null hypothesis will be accepted at P-levels above 5%. Rejecting our null hypothesis entails correlation between retail investor ownership and returns have been proved. By applying equal weights to all the companies (1/46) and then accumulating them for each of the first 20 trading days, the aggregate level is achieved. Institutional investors' returns have been utilized, as they are representative of the IPOs total return.

4.4.1 Impact on All IPOs

Figure 10 illustrates returns and retail ownership changes for all companies, where fluctuations in retail investors' ownership align closely with the institutional investors' returns in the first days. The two variables' alignment is especially evident on the first day of trading, which illustrates a significantly increased share of retail investors with a coherent daily return of 16.46%. Thus, a correlation between the two during the first seven trading days – entailing retail investors affecting results – appears eminent.

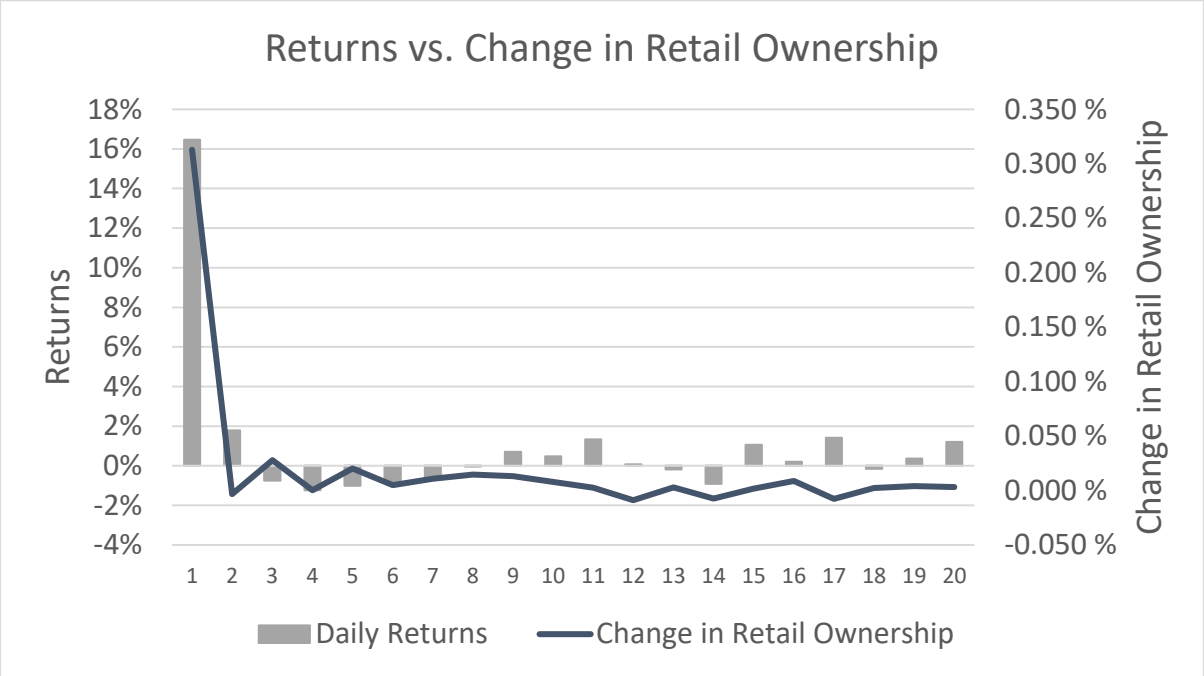


Figure 10: Daily return and change in retail ownership

Based on the visual correlation displayed in figure 10, we ran the statistical test to affirm the visual correlation possibly. The test results can be observed in table 6. The observed P-value is high relative to our level of significance, thereby implying a lack of correlation. The statistical test results confirm the null hypothesis, thus disregarding the correlation between retail investors' ownership and IPO returns. Resultantly, this stands in contradiction with the conclusion of correlation from the graphical analysis. The correlation between retail investor ownership and returns depends on various reasons, reaching beyond merely the retail investors and their ownership. Therefore, although the visual correlation is present, the impact may not be large enough to reject the null hypothesis.

Wilcoxon Rank Sum Test (All)	P-value
Returns vs. Change in Share of Retail (All)	0.6395

Table 6: Results from Wilcoxon Rank Sum Test for all IPOs

4.4.2 Impact on ESG IPOs

To examine another possible correlation, the selection is narrowed down by utilizing the ESG-portfolio exclusively. The ESG fads and FOMO-effect have increased demand for stocks of recently listed ESG companies among retail investors. Resultantly, the correlation between retail investor ownership and returns may be affected by excluding all non-ESG companies.

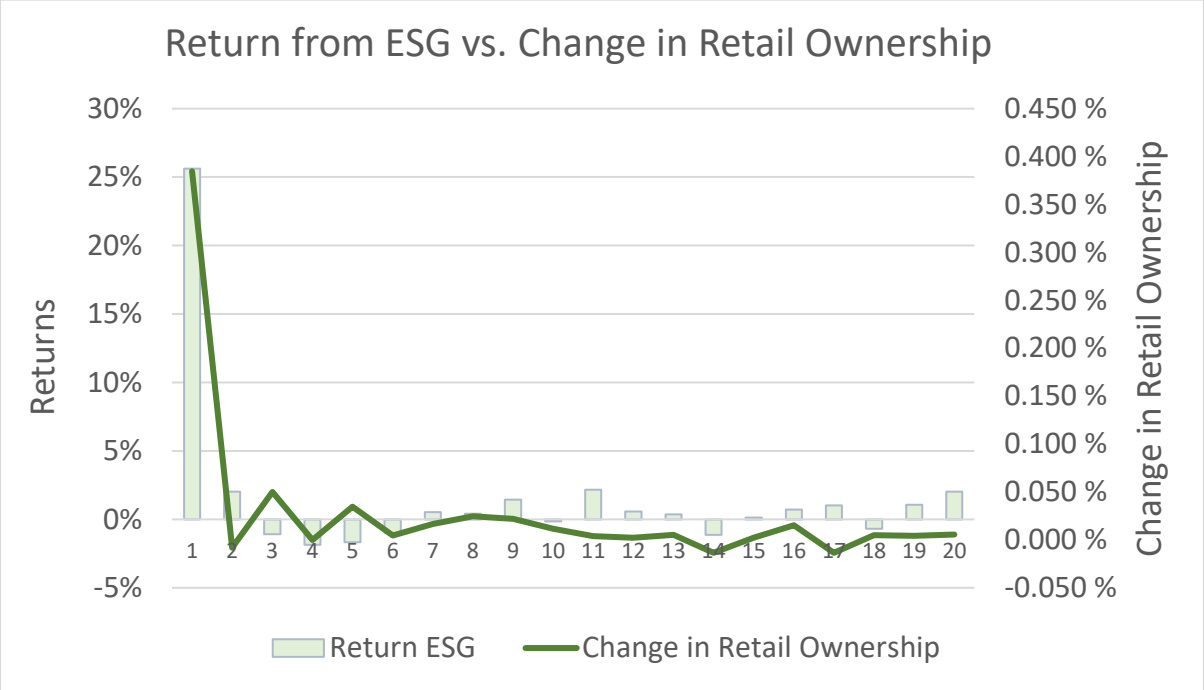


Figure 11: Daily return and change in retail ownership for ESG IPOs

Figure 11 portrays returns and change in retail ownership for all ESG companies, seemingly illustrating a higher degree of alignment in the movements during the period's entirety. As the retail investors are limited to buying shares on listing day, the mentioned one-day-pop is visually evident.

To affirm the visual correlation viewed in figure 11, another statistical test has been run. The test results are listed in table 7, displaying a substantially lower P-value than was the case in the test of all companies. The relatively low P-value implies a higher degree of correlation, though still insignificant at a 5% level of significance. Yet, an interesting point can be made regarding the P-value deviating 0.5188 from the P-value observed in the test including non-ESG companies; while we cannot reject the null hypothesis, the large deviation indicated a more significant impact of retail ownership on returns of newly listed ESG stocks.

Wilcoxon Rank Sum Test (ESG)	P-value
Returns vs. Change in Share of Retail (ESG)	0.1207

Table 7: Wilcoxon Rank Sum Test for ESG-IPOs

4.4.3 Reasons for the Impacts Deviating

In light of the observed visual- and statistical correlations and lack thereof, utilization of possible underlying factors provided previously in the analysis in a discussion is expedient.

The assumption of retail investors being excluded from IPOs, forcing them to buy on the first day of trading, substantiates the occurrence of a one-day-pop. Graphically, figure 11 displays retail investors increasing their positions significantly on the first day compared to the following 19 days. The substantial increase in ownership, combined with great first day returns, likely affect the correlations. Moreover, the effect is less present for the portfolio including non-ESG companies, explaining the deviating P-values. Hence, the varying occurrence of the one-day-pop substantiates the statistically greater impact of retail investor ownership in the ESG portfolio.

Concerning the underlying reasons causing the one day-pop effect, media fads and FOMO predominantly remain explanatory. The increased coverage of IPOs and ESG coincides with the surge in retail investors, especially within ESG assets. Colas (2020) points to the flow of money from first-time investors and the FOMO-effect as two primary drivers behind the increased interest in ESG-assets. Based on both the graphical evidence and statistical tests, this appears a plausible explanation; the larger share of retail ownership with a similarly higher degree of correlation with returns points in the direction of fads and FOMO affecting.

As opposed to retail investors, institutional investors to a larger extent make decisions based on earnings announcements, SEC filings, research reports, and other official sources of validated information. The fact that retail investors often act on more informal tips, trends, and discussions they encounter on different platforms has resulted in a more volatile market and more deviation in their investments (Linford, 2020). This corresponds with the increased retail ownership in ESG assets, as the increased media coverage and societal awareness within this sector relate to retail investors' more informal information gathering. The substantially lower P-values for the ESG portfolio supports the argument of asymmetric information's impact on retail investors' actions.

Conclusively, retail investor ownership portrayed more significant impacts on the portfolio returns of newly listed ESG-companies compared to the portfolio including non-ESG

companies as well. However, none of the correlations were statistically significant at a 5% level of significance. Among the factors affecting retail investors' greater impact on ESG IPOs is the occurrence of one-day-pop, which is amplified by fads and FOMO, as well as information asymmetry.

5 Conclusion

With observations of the increasing number of retail investors' ownership in recently listed companies on the Norwegian stock exchanges, the purpose of this paper has been to both quantitively and qualitatively discuss the following two research questions:

How are the returns of retail investors affected by the exclusion from IPOs, and how are the developments of recently listed companies' stocks affected by retail investor ownership?

First, by utilizing the data gathered, we have examined how the returns of the numerous IPOs have varied, both in absolute terms and relative to retail investors' buy price. Second, by applying knowledge of IPO fundamentals and coherent underpricing, as well as investor characteristics and composition of the Norwegian exchanges, the underlying reasons for retail investors' unfavorable returns have been discussed. Further, the impact of retail investor ownership on IPO returns have been both graphically and statistically studied.

5.1 Summary of the Main Findings

Initially, the assumption that retail investors' ownerships prior to IPOs are non-existent enables examination of the relative advantage entailed by partaking. Moreover, the construction of portfolios for analytical purposes facilitated quantitatively based discussion concerning retail investors' losses to institutions. Based on the portfolio returns, we find that retail investors lose significantly to the institutional investors as the buy price equaling to VWAP surpasses the IPO price in many cases. However, the exception to the rule exists in cases with negative first day returns as VWAP provides some downside protection. Nonetheless, these cases are too few and not adequately negative to alter the results.

Further, the underpricing of IPOs amplified by asymmetric information and signaling effects explains the evident one-day-pop. Specifically, retail investors inherently being uninformed entails involvement in higher than realized risk investments on the less regulated exchange Euronext Growth. Additionally, the low degree of information regarding stocks' intrinsic value

allows the informed parties to utilize signaling effects to increase demand. Ultimately, the evident underpricing and coherent oversubscription lead to the winner's curse, although retail investors seldom lose big on their investments.

Next, the irrational behavior of retail investors may have affected their returns. Fads effectively impact retail investors' behavior, highlighted by their relatively large ownerships in trending ESG IPOs. Moreover, we find that return of newly listed ESG companies correlates positively with retail investor ownership. Interestingly, despite high prices subsequent to listings, prices remain high in the entirety of our observation period. Thus, neither institutional investors nor retail investors lose in absolute terms.

Following, we conducted both graphical and statistical tests to analyze whether retail investors' ownership in newly listed companies significantly impacted the returns. First, although some visual correlation was apparent in the sample including all IPOs, the correlation was far from statistically significant. Second, retail investors appeared to impact the returns of ESG IPOs in a higher degree, with increased visual correlation and decreased P-values. However, none of the tests demonstrated statistical significance regarding the correlation between retail investors and returns.

5.2 Answers to the Research Questions

Conclusively, retail investors' returns are negatively affected by being excluded from IPOs; buying stocks at VWAP often deviating highly from underpriced IPO prices makes the retail investors losers to institutions. Inherently, retail investors' returns suffer from information asymmetry with signals being sent to increase demand and, ultimately, prices. Moreover, the development of recently listed stocks correlates somewhat with retail investors' ownership, especially in ESG companies. However, the impact is not statistically significant in either sample.

5.3 Limitations of the Paper

To facilitate meaningful empirical analysis, we have imposed numerous restrictions limiting the value of our results. First, by assuming that Nordnet AB represents all retail investor ownership, we exclude many investors adding depth to our analysis. Second, our omittance of observations outside of the observation period of 20 days following IPOs restricts width. However, the decision is based upon a belief that the constriction increases the overall quality of the analysis while also increasing the event's relevance. Third, we note that historical occurrences do not indicate future events. Fourth, retail investors' impact in some companies may be diluted in the utilization of observation aggregation in the portfolios' composition. Last, failing to adjust for market capitalization may impact our results regarding retail ownership impact on returns.

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