# Is investment capital cheaper for green firms? Evidence from equity listings at Euronext – Oslo

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We investigate whether the sustainability profile of a firm affects the terms at which the firm list on a stock market. Given the evidence that sustainable firms have a lower cost of capital, we expect this to also be reflected in the issue terms at an IPO. The laboratory for our investigation is stock listings (IPOs) at Euronext Oslo. We find that firms which emphasize environmental issues in their prospectus have lower implied cost of capital. We find no link between the degree of (first day) underpricing and environmental issues. We also provide evidence on recent changes in the IPO landscape, where pure listings are becoming more common, and stock exchanges introduce tiered markets that attract younger and smaller companies.

**Keywords**: IPO; Cost of Capital; ESG; Underpricing
**JEL Codes**: G12; G24; G30

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Concerns about climate change lead to a drive for economic and social transition towards a zero-emission society. But the necessary changes, such as transforming energy systems from fossil fuels to renewables, comes with a need for substantial capital investments. Raising large amounts of capital is a prime function of stock markets. Stock markets are also key when small, innovative firms want to scale up. Well functioning stock markets that can both provide capital for large infrastructure investments and provide risk capital for innovative green investments are therefore key to the success of a transition to a more sustainable society. To what degree this is the case is an empirical question.

In this paper we investigate to what extent the environmental stance (greenness) of a firm affects the terms at which firms list (the initial public offer – IPO) on a stock exchange. Our laboratory is recent listings at the Oslo Stock Exchange

Our motivation is the current asset pricing literature that links environmental, social and governance (ESG) issues and stock market returns.[1] This theoretical literature is driven by hypothesized investor preferences for "good" ESG companies (green firms), which in the theory is modeled as utility from holding companies that satisfy the investors' ESG criteria, beyond the pure monetary return. This leads to an increased demand for high quality ESG companies. This increased demand translates to higher prices (and lower expected returns) for these high quality ESG firms.

Such demand effects should also be present in the new issue (IPO) market. One reason to suspect that the effects may be even stronger in this market is the degree to which the new issue market is dominated by institutional investors. The mutual fund market has seen a remarkable increase in funds marketed as "sustainable." Such funds are constrained in what type of firms they can choose to invest in, and will be

[1] See Starks (2023) for a survey of this asset pricing literature.

particularly interested in capital issues from firms classifiable as environmentally friendly.

Our research investigates whether such considerations are reflected either in the terms of issue (pricing) at the IPO, or the subsequent stock performance. Specifically, we are investigating a sample of IPOs at Euronext-Oslo (Norway). There are several reasons why the Oslo case is well suited for this study.

First, the nature of the economic environment. Norway is a large oil and gas producer. Following the Paris Climate Agreement Norway saw the need to transit the economy away from oil and gas, and introduced substantial incentives for companies to develop in alternative, more sustainable directions. The Norwegian equity market is well suited to study sustainability, as the other parts of ESG, S and G, are not varying much in the Norwegian context, due to social coherence and strongly regulated governance. For example, Norway was the first country to introduce a gender quota for corporate boards. Our analysis will therefore concentrate on environmental aspects of ESG.

Second, the Norwegian equity market (Oslo Børs), has recently developed the market place, introducing a menu of tiered markets, where the new markets allow listing at lower costs and lower formal requirements. This has resulted in many new listings, particularly of companies with sustainable goals.

Thirdly, Norway offers substantial scope for measurement of environmental quality. New accounting regulations means all OSE listed firms must report various climate related measures, such as greenhouse gas emissions. We use the measures most relevant for environmental quality. An alternative measure uses the prospectuses of the IPOs. Text analysis is used to estimate the degree to which the company's business plans show a concern with sustainability. Finally, we manually do a rough categorization into three different groups: green/neutral/brown.

Our estimations look for differences in issue terms linked to measures of the environmental quality of the firm. First, we investigate to what degree IPO issues are underpriced using fundamental (ratio) analysis. Second, we look at the usual measure of (first-day) underpricing in the IPO, the market price change from the issue price to the closing price during the first day trading. Is this underpricing linked to the sustainability profile of the firm? Thirdly, we look at secondary trading at the IPO date. Do sustainable firms have higher trading interest? Finally, we investigate the post-IPO performance.

We find evidence that firms who focus more on environmental issues in their prospectus are priced higher (their implied cost of capital is decreasing in our measure of environmental focus). This is consistent with empirical evidence of a negative

"greenium" for more sustainable firms. We do however find no evidence that the IPO (first-day) underpricing is linked to environmental issues. This result contrast with other studies that look at IPO and ESG issues. For example, in a study of the US market that looks at gender issues (the "S" part of ESG) in IPOs, Rau, Sandvik, and Vermaelen (2024) finds that first-day underpricing is linked significantly to the degree to which company boards are gender diversified.

The main implication of our results concerns the hypothesized negative return premium for green investment. Our results confirm that the negative estimates in the literature (Chava, 2014; Pástor, Stambaugh, and Taylor, 2022; Berle, He, and Ødegaard, 2024) is also present in the new issue (IPO) market.

In terms of policy implications, the negative link implies that financial markets subsidize funds raised for climate purposes. This is important input to the debate on financing the green transition. We show that the magnitudes of the implied interest rate effects are large. The cost of capital is lowered by more than one percentage point for a firm moving from the medium to the third quartile of our measure of corporate environment concerns. We do attempt to estimate the interest rate differential in an alternative way, by looking at return differences in the post-IPO market, but can not find a significant return differences, which may indicate that the magnitude is small. As such our estimates are in line with the estimates of expected greenium in Eskildsen, Ibert, Jensen, and Pedersen (2024) and Zhang (2025). We do however note that the time period is short for an estimation of average returns.

Our analysis also provides some evidence on the dynamics of recent IPO markets. The OSE's introduction of a lower-tiered market (now called Euronext Growth) was successful in attracting younger, smaller firms onto more regulated market places. We also find that almost 40% of the cases involve pure listings that do not raise additional capital at the listing date, which is very high by international historical standards. We do however note that most of these cases are for listings at the lower tiered markets.

The structure of the paper is as follows. We start with a literature discussion and hypothesis development, before section 2 introduces the setting, the market(s) for Oslo-listed equities, and provide some descriptives. We also discuss ESG data. Section 3 contains the results. Section 4 offers a conclusion.

# 1 Literature and hypothesis development

This work intersects several financial research fields. In the following, we attempt to summarize the two key subplots of particular relevance (ESG linked asset pricing and IPOs) before looking at the intersection of the two and develop the hypotheses

to be tested.

## 1.1 ESG and asset pricing

Our research questions concern whether differences in corporate environmental stance are linked to differences in IPO outcomes. A necessary condition for this is that stock returns vary with environmental issues, or more generally, ESG. Are there theoretical frameworks that allow us to make this case? To simplify the discussion, let us label stocks with high-quality ESG "green" and those with low-quality ESG "brown." There are two theoretical approaches to generating a price (return) difference between brown and green stocks.

The first is a mispricing argument. With this view, current stock prices do not fully reflect the ESG consequences of firms' choices, which could be due to brown stocks' prices not endogenizing the future climate consequences, or because the stock market does not appreciate the potential higher future returns for green firms "preparing for the new circular economy." A possible theoretical approach that generates such results is the classical short-termism argument of e.g. Stein (1989). While the short-termism argument is general, a prime source of disagreement in the context of ESG concerns future *regulation*. This is particularly the case for environmental issues. As countries must adapt to international agreements such as the Paris Climate Accords, firms may face intrusive regulation of climate-related aspects of their operations. Disagreement about the degree of intrusion will translate into different views on future cash flow. If the short-term view does not fully incorporate future negative climate consequences, long term returns will be higher for green firms.

This first theoretical argument is framed in a traditional risk-return framework. The second type of theoretical argument moves beyond this by introducing non-pecuniary preferences, where the ESG component of a firm directly affects utility functions. The argument of e.g. Pástor, Stambaugh, and Taylor (2021) is that when a subset of investors gets utility from green stocks beyond their pure monetary return, green stocks can sustain lower returns.[2] There is, however, a trade-off. The higher expected returns for brown firms also translate to higher capital costs for these firms. Thus, when financing new investments, brown firms will face a steeper hurdle rate than green firms. These brown firms will then have an incentive to become greener to access cheaper capital. In equilibrium, this will be a true trade-off, where greener firms can sustain lower costs of capital.

There is a voluminous empirical literature that provides estimates of a green re-

[2]Models with similar results include Pedersen, Fitzgibbons, and Pomorski (2021) and Zerbib (2022).

turn premium with various assumptions as to what ESG aspect is relevant, and variations in asset choice. Hong and Shore (2023) summarizes much of this literature.[3] Most studies find negative estimates of the green return premium. For example Chava (2014), using a sample of environmental firms, finds a premium in the range ($-0.7\%$ to $-1.4\%$). Similarly, Bolton and Kacperczyk (2021) finds a premium in the range ($-1.5\%$ to $-3.6\%$) related to Carbon, and Pástor et al. (2022) estimates a green premium of $-1.4\%$. We conclude that the empirical evidence predominately points to a negative estimate of the green return premium.

If we maintain the assumption of a negative "greenium," what is the implication for new issues, IPOs? To develop testable predictions, we first discuss IPOs in general, before looking at how environmental/sustainability issues can be linked to IPOs.

## 1.2 Stock Market Listings

The Initial Public Offer (IPO) is one of the most important events in a firm's life, where the company moves away from being closely held to a wide ownership of liquid equity. At the point of the IPO firms usually issue additional stocks. The listing also open for future raising of capital through seasoned equity offers (SEOs).

A company's way to an exchange listing is facilitated by investment banks that acts as underwriters. A company selects a lead underwriter.[4] This underwriter manages the investment process. As part of the listing process a prospectus is filed with the Norwegian Financial Authority (Finanstilsynet). The prospectus is partly standardized, containing historical accounts, legal statements and so on. But the prospectus also details the business plan of the company.

The most important role of the lead underwriter is in promoting the listing among its institutional customers, and maintaining a book of indications of interest among these. Based on this interest, the lead underwriter sets the issue price, and allocates the stocks according to the book. IPOs are often over-subscribed, and the interested customers face rationing.

During the first day of trading, stocks starts trading at the beginning of the day, with the issue price as a starting point. The price then evolves as interested buyers are able to trade the stock during the day. If there is a large pent-up demand for the stock, this will be pushing up the price during the first day of trading. The closing price at the first trading day is often viewed as an estimate of the "true"

[3]Other surveys of empirical studies of ESG and performance include Coqueret (2021), Whelan, Atz, and Clark (2021), and Atz, Van Holt, Liu, and Bruno (2023).

[4]For Nordic Issues, important underwriters include Carnegie, ABG Sundal collier, SEB, Nordea, Pareto Securities, DNB Markets, Danske Bank, Sparebank 1 Markets, Barclays and City.

(efficient) price of the stock. The difference between these two prices is called (first day) underpricing. This underpricing represents a cost for the firm, because the firm's stock could theoretically have been issued at the "true" price and still not been under-subscribed. Note that for an issuing firm, underpricing is only part of the cost of listing. The firm will additionally be paying fees to underwriters. There may also be other ways the underwriters are remunerated.

### 1.2.1 IPO theory

Historically underpricing has been substantial. For example, Lowry, Michaely, and Volkova (2017) find an average of 17% first day return for US IPOs in the period 1973–2016. The research on the IPO process is therefore primarily concerned with the cause of underpricing.[5] The focus is on asymmetric information models of underpricing in the setting of bookbuilt IPOs.

We will concentrate on theories that can link ESG and underpricing. We follow Rau et al. (2024) and consider two theoretical approaches that can generate underpricing. The first, *partial adjustment*, builds on the model of Benveniste and Spindt (1989), where the potential investors have private information relevant for the valuation of the company. To encourage revelation of the information, underwriters will set an issue price that involves underpricing.

Secondly, underwriters may not understand the degree to which certain properties are valued by investor, or even whether these properties matter to investors. Rau et al. (2024) terms this the *neglected demand* hypothesis.

Both of these theories are general, and can be specialized to incorporate environmental effects. We will do such further developments when we formulate the hypotheses.

### 1.2.2 Trends in IPOs

The IPO research focus has recently shifted to the dynamics of when firms list, and the method of listing,[6] prompted by the apparent decline of the number of listed firms, particularly in the US (Doidge, Karolyi, and Stulz, 2013; Gao, Ritter, and Zhu, 2013). While some of the decline is due to mergers (Eckbo and Lithell, 2023) which increases the size of the typical firm, McDonald (2022) argues that most listed firms are later in their life cycle. A related trend is the increased interest among private equity (PE) companies in retaining control and the larger amounts of capital invested

[5] See Ritter (2011) and Lowry et al. (2017) for overviews of much of this literature.
[6] See Huang, Ritter, and Zhang (2023) and Huang and Zhang (2022) for surveys.

in PE (Ewens and Farre-Mensa, 2022). Firms remain private longer, and the size of private firms grows. Concern about decline in listings is also voiced by practitioners.[7]

These trends have led to political concerns that traditional listing and capital raising through IPOs and SEOs are losing their important role in allowing innovative companies to realize their full growth potential. These trends have also led to innovation in the listing sphere. A recent example is the emergence of special purpose acquisition companies (SPACs), which are alternative ways for private companies to go public. More directly, companies choose alternative listing methods, such as auctions and direct listings.

Finally, exchanges have tried to lower the costs of the traditional listing by introducing lower-cost listing possibilities, creating a menu of tiered markets within an exchange. The lower-cost alternatives lower listing requirements, such as the amount of financial information necessary for listing and the number of distinct owners. OSE is an example of an exchange that has taken the step of creating separate markets with lower listing requirements.[8]

### 1.2.3 Research on IPOs in Norway

Research on IPOs in the Norwegian context is limited. Large, international investigations of IPO crossections typically include Norwegian companies. For example Banerjee, Dai, and Shrestha (2011) investigates IPOs in the period 2000 to 2006, and find an average of underpricing for Norway of 4.33%. Norway has the lowest average underpricing in their sample of 36 countries.

A couple of investigations of Norwegian IPOS are Fjesme (2016) and Fjesme (2019). He uses OSE data for the period 1993–2007 to investigate price support in the post-IPO period. He finds an average underpricing of 10% for his sample.

Axenrod, Bienz, and Cornelli (2024) investigate an innovation in Nordic IPO markets, Cornerstone Investors, which are investors that pre-commit to invest. They also have a useful overview of the institutional environment of Nordic IPOs. Their analysis looks at the period 2014–2018, and their focus is on the dynamics of the price setting before the first date. They do however provide some statistics on underpricing, where their full sample (which also contains other Nordic IPOs) has a mean (median) underpricing of 8.3% (4.4%).

[7] See e.g. "Why the stockmarket is disappearing", *The Economist* 18 apr 2024.

[8] Empirically, Kaserer and Trebel (2023) investigate the consequences of the simplified listings, specifically the EU growth prospectus, and find that simplified listing is less complex and streamline the listing process. However, they find no robust evidence that the simplified process caused an increase in IPO activity for small and medium companies.

### 1.2.4 ESG and capital raising – empirical evidence

Several empirical studies link ESG to IPO outcomes. For example, in cross-country studies, Baker, Boulton, Braga-Alves, and Morey (2021) and Boulton (2024) find that underpricing tends to be lower in countries with more transparent financial disclosures and higher liability standards. Economidou, Gounopoulos, Konstantios, and Tsiritakis (2022) find that disclosure of ESG information prior to an IPO increases the level of underpricing, increasing the cost of capital for companies revealing ESG performance. The study does not take into account the content of the ESG disclosure, just its existence. Similarly, but with the opposite conclusion, Ferri, Tron, Colantoni, and Savio (2023) find that in their sample of European stocks ESG disclosure is related to lower IPO underpricing compared with companies that do not provide ESG disclosure. Chen, Khoo, and Peng (2023) find that climate change disclosures are associated with lower IPO underpricing. The study which is closest to our paper, Fenili and Raimondo (2021), also use text analysis of the prospectuses and links it to underpricing, finding that the amount of ESG disclosures is negatively associate with IPO underpricing.

Where our analysis differ from the above analysis is the theoretical starting point. Our analysis starts with the cost of capital consequences of ESG. The literature discussed above generally views disclosure as a general reduction in information asymmetry, without linking it to the raising of capital for green investment. (See e.g. Zazzaro, Oliviero, and Rondinella (2024) for a discussion of availability for capital to green investment.)

Related to the issue of asymmetric information, ESG disclosure is found to reduce idiosyncratic volatility and downside tail risk. Reber, Gold, and Gold (2022) further find that higher ESG ratings have lower firm-specific volatility and downside tail risk the first year of trading after listing. Wang and Xu (2023) investigate IPOs for the Hong Kong stock market and find that ESG is a key driver for price stability.

Investigating US SEOs, Feng, Chen, and Tseng (2018) find that firms with high corporate social responsibility (CSR) scores experience fewer adverse reactions to SEOs than firms with lower scores. Firms with high ethical scores decrease SEO underpricing through extensive information disclosure, decreasing information asymmetry. Further, they differentiate the types of CSR concerns and find that environmental concerns or improving the rights of minorities and women are the most effective in reducing negative announcement returns and underpricing.

## 1.3 Hypothesis development

Let us now develop the hypotheses to be tested. We start with the stock pricing at the IPO stage. Suppose we make the assumption that greener firms have lower cost of capital, and this is public knowledge. Then, if we look at two firms with the same projected future cash flows, the greener firm will be priced higher. If we then do the standard finance fundamental valuation, using e.g. the ratio between Earnings per share and the IPO issue price, greener firms will have higher multiples. These multiples can be used to estimate an implied cost of capital. This leads to our *Hypothesis 1*: The environmental qualities of a firm are linked to the implied cost of capital at the IPO.

Our first hypothesis assumes that the necessary information to evaluate how environmental issues affect the cost of capital is public. However, in IPO theory it is common to assume information differentials involving the investment bank setting the price and the potential buyers of stocks in the IPO. We therefore consider theories motivated by the two theoretical approaches we discussed earlier, partial adjustment and neglected demand.

In the partial adjustment type of argument, suppose some potential investors are better at evaluating the environmental stance than the investment banker setting the price. Under an asset pricing model where good environmental stance can support a higher price (and lower return), this means these investors have private information about valuation. To elicit that information, the investment banker must give the "good" case more in terms of price difference between the price set and the "true" price. With this argument (first-day) underpricing will be higher the better the environmental ranking of the listing firm.

With the neglected demand type of argument, the investment banker is unaware of the (additional) value that investors puts on more environmentally sound firms. The ESG aspect is therefore not reflected in the issue price. The first day of trading will therefore induce a price increasing in environmental quality.

Thus, both these theories predict that underpricing will be increasing in the firm's environmental quality, which leads to our formulation of *Hypothesis 2*: Measures of (first-day) underpricing increases with the firm's environmental quality.

If we only observe the first day of trading, it will be hard to empirically distinguish the two theories. Rau et al. (2024) gives a couple of methods that can be used to distinguish them. One concerns the pattern of price revisions leading up to the IPO. Unfortunately we do not have access to data from the book-building process, so we can not go in that direction. Another of their arguments does have some promise. Under the neglected demand argument the investment banker should be learning

over time about the piece of the demand, and adjust pricing accordingly. One can therefore expect underpricing due to ESG issues to decline over time. But then we need a longer time period.

There is another possible way to distinguish the two hypotheses. The neglected demand hypothesis potentially requires more trading to move prices from the initial price to the closing price. We therefore investigate early trading to evaluate *Hypothesis 3*. Early trading interest (which we measure as turnover) is increasing in the measure of environmental quality of the firm.

Suppose we assume that prices at the end of the first day of trading has settled on the efficient price. Then, if we have an asset pricing model with a negative greenium, the cross-sectional return will be decreasing in environmental quality. We can then introduce *Hypothesis 4*: The post-IPO expected return depends on the company's environmental stance.

# 2 Economic Environment and Data

In this section, we discuss the economic setting of the study, discuss data sources, and give some descriptives. As part of the discussion we will cover the introduction of tiered market places at the OSE.

## 2.1 The Oslo Stock Exchange (now Euronext Oslo)

We analyze stocks traded at the Oslo Stock Exchange (OSE), which was an independent market until 2020, when it was acquired by Euronext. After the merger, trading of stocks listed at the OSE gradually integrated with the rest of Euronext. For simplicity, we will use OSE to refer to both the earlier independent market and Euronext's trading of Oslo stocks.

Stocks traded at the OSE can be listed on the main list or on two alternative markets with lighter listing requirements, Euronext Expand (earlier named Oslo Axess), or Euronext Growth (earlier named Merkur Markets). Oslo Axess was introduced in 2007, and Merkur Markets was introduced in 2017. For the companies, listing on the alternative marketplaces involves lower fees to the exchange, fewer requirements on accounts, free float, and less marketplace regulation.[9] From the exchange's point of view, these new marketplaces are attempts to convince smaller companies that would otherwise stay private to list. The exchanges are interested in attracting young companies, as one of the loosened requirements concerns the number of years of accounts

[9]Euronext Growth is regulated as a Multilateral Trading Facility.

necessary before one can list. In the standard market, this is typically three, but the newer markets lower this threshold to two or one.

We start the analysis in 2018. Since we are concerned with environmental and climate issues, this is an appropriate timing relative to the Paris climate agreement, which came into effect in 2016. Earlier IPOs are not likely to pay as much attention to climate issues. Figure 1 breaks the sample down by year and market place.[10] More detail is given in Panel A of Table 1. We distinguish between traditional IPOs, where new stocks are issued as part of the listing, or pure listings, where the stock starts trading on the exchange, without any stock issuance.

This latter form of listing is one of the more recent market innovations. Internationally, a well known example is Spotify, which went for a pure listing on the NYSE. In this Norwegian sample, IPOs are still the majority, but especially at the less regulated Euronext Growth (Merkur) pure listings are also common. For the IPO cases, there are some differences in formalities. At Euronext Growth (Merkur) stock issuance is formally a private placement that happens at the same time as the company list. However, this seems to be mainly a formal difference. As part of the listing announcements, firms will often state that listing is conditional on raising sufficient capital in the accompanying private placement. For our purposes, we do not distinguish these cases. We apply the IPO label to any listing where new stock is issued (and capital raised) at the same time as the stock starts trading on the exchange.

To further give some understanding of the sample, in Panel B we provide a breakdown of listings by industry. The industries are the ICB categories used by the Exchange. The largest categories are industrials and energy companies. Note that these industry categories are not necessarily informative about environmental classifications. For example companies in Energy can be very brown (oil & gas) or very green (renewable energy).

Additionally, panels C and D breaks down the market capitalization of the firms in the OSE sample. The mean(median) IPO firm on the main list has market capitalizations of 15(3) bill NOK, corresponding to 1.5(0.3) bill USD, while the IPO firms on Euronext Growth have market caps of 2.3(1.4) bill NOK, corresponding to 0.2(0.1) bill USD. These are low figures compared to for example listings at the large US exchanges. A useful comparison is made by comparing this to a sample of large US Unicorns (large private companies) in Davydova, Fahlenbrach, Sanz, and Stulz (2024). They identify 639 private companies with company market valuations over USD 1 billion. A number of these went public at mean (median) valuations of 7.6 (3.5) billion USD. While these are not directly comparable, as they are company val-

[10] In the internet appendix we provide further detail.

uations, as opposed to the equity values in the Norwegian case, they illustrate that firms are listing at Euronext Growth, in particular, at much lower valuations (and at an earlier stage) than the case in the US. A consequence of this is a higher failure rate for companies that list at the OSE.

## 2.2 Stock Market Data

Stock market data are sourced from various data providers. OSE and Euronext newsweb and reports provide information about stock listings and corporate events. Stock prices are from the OSE/Euronext data services, Yahoo Finance, and Refinitiv Eikon. We also gather accounting data from Refinitiv Eikon. Table 2 gives some descriptives for relevant variables.

We go into some detail on underpricing, as shown in panel E. For the typical IPO case, with issuance of stock, the underpricing is around 3% for the Main list and 5% for the Euronext Growth (Merkur) case.

For pure listings, on average prices fall on the first day of listing. But for pure listings it may take longer for prices to stabilize. For the cases where new stocks are issued, more information is released to the market, in particular the IPO price, which shows what price the IPO participants are willing to accept. For pure listings there may be less price relevant information. The market may therefore take longer to settle down to the efficient price. To account for this we also investigate the price evolution during the first week of trading, measuring the return from the IPO price (or open) to the close one week later. These one week returns are described in Panel B. Here we see that the average first week return for the Euronext Growth (Merkur) stocks is above 7%.

## 2.3 Environmental data

Our research question asks whether companies' environmental stance is reflected in IPO pricing and post-IPO performance. In order to implement this analysis, we need proxies of company environmental properties. We use several methods of proxy construction. First, we use the information in the prospectus. Using text analysis, we measure the extent to which a company describes itself in environmental dimension(s). Second, we use granular reporting data. The availability of this data is a result of recent regulations, where firms must report environmental properties, such as greenhouse gas emissions. Finally, as a third categorization, we use the firms main business area to sort companies into three categories: green/neutral/brown, based on (rough) sustainability criteria.

### 2.3.1 Inferring environmental properties from prospectus

One first method for classifying the environmental properties of companies involves the prospectus. We use natural language processing on the prospectus text to rank firms. We are chiefly interested in measuring the environmental properties. It is hard to distinguish the governance dimension from a standardized document like the prospectus, where much of the governance information is mandated.

We want to capture to what extent a given company prospectus is concerned with environmental issues. The relevant comparison is with the other IPOs at the OSE. Can we rank the degree to which each prospectus talks about environmental issues? To estimate such a ranking we construct dictionaries of relevant words, one for general environmental issues and one for "brown" issues. The latter captures known pollutants and terms used to describe non-renewable energy. We then rank prospectuses based on their use of these words, relative to the rest the prospectuses.

Let us give some details on the construction procedure. IPO documents are collected as PDFs from the Oslo Stock Exchange, Euronext, or companies. The documents vary in length and structure. We are particularly interested in the information describing the business, risks, history, and prospects. We remove the appendixes, some containing historic audit statements, annual accounts, and ownership information, as they generally carry little information about the company's future strategy and sales pitch.

To extract the text features, we extend the ESG dictionary created by Baier, Berninger, and Kiesel (2020), complementing with terms from Uni (2023); Coley (2011), and synonyms obtained from Merriam-Webster Dictionary.[11]

After extracting the words from the IPO admission documents based on the dictionary, we evaluate the relative importance of a word in the IPO admission document in the context of the other IPO documents in the sample, using the Term Frequency - Inverse Document Frequency measurement (TF-IDF), where TF can be described as:

$$\text{TF}(t,d) = \frac{\text{Number of times term } t \text{ appears in document } d}{\text{Total number of terms in document } d}, \tag{1}$$

where $t$ represent a specific dictionary term, $d$ an admission document, and $TF_{t,d}$ the frequency of term $t$ in document $d$.

[11] For some words and terms, we have included a wildcard (*) at the end of the term to allow us to find words with different endings, e.g. Labor right* – this will identify both singular and plural forms. In this way, we do not risk forgetting to specify all versions of the word. Wildcards should be used cautiously, so we do not include this for all words. For example, we search for the word "insider" specifically, as it has a particular meaning concerning transparency. We remove words with less than two characters and stopwords to ease processing. See Appendix for details.

The IDF can be expressed as:

$$\text{IDF}(t, D) = \log\left(\frac{\text{Total number of documents in set } D}{\text{Number of documents containing term } t}\right), \tag{2}$$

where $D$ represents the set of all admission documents. $IDF_{t,D}$ is the inverse document frequency of term $t$ across all documents in $D$. The TF-IDF score is then estimated as:

$$\text{TF-IDF}(t, d, D) = \text{TF}(t, d) \times \text{IDF}(t, D) \tag{3}$$

This score reflects both the frequency of the term in a specific document and its uniqueness across all documents. Table 3 shows an overview of topics and frequencies for all documents. High TF-IDF scores indicate terms more relevant to a particular document in the context of a given corpus. In this context, low scores are interpreted as ubiquitous terms across all documents so that the IDF component (Equation (2)) is close to zero. Terms that are common across all documents are less informative for distinguishing one document from another.

Panel A of Table 4 include descriptive statistics for the two resulting variables. We note that these should not be interpreted as identifying a *direction* of environmental quality, higher values rather identify firms that are *concerned* enough about these issues to spend time on them in their business plans. If for example an oil firm is seeking funds to diversify into offshore wind power, this would lead to a lot of discussion of sustainability issues in the prospectus, and financing the wind project would be positive for the environment, but the firm would be "brown" since it is currently an oil company.[12]

### 2.3.2 Mandated self-reported data

OSE listed firms are subject to regulation which mandates extensive reporting on ESG related information. We will in our analysis use three items. The first is related to the firm's reported greenhouse gas emissions, *Scope 1* defined as "Scope 1 emissions are direct greenhouse (GHG) emissions that occur from sources controlled or owned by an organization"[13] The magnitude of the emissions are normalized by dividing the Scope 1 variable (measured in $tCO_2$), with the firm's enterprise value (EV). Similarly, the *Total GHG Emissions* is the sum of the firm's reported Scope 1, 2 and 3 emissions. These are also normalized by EV. Finally, we also consider a dummy variable for whether a firm is in the fossil fuel sector. Panel A of Table 4 gives some descrip-

[12]For discussion of such issues see Hartzmark and Shue (2024).

[13]These data are sourced from the Stamdata database. The definitions are from Stamdata's documentation.

tive statistics for the variables. Note that there are differences in the coverage, the emissions data in particular is only available for less than half of the sample.

### 2.3.3 Categorizing the firm's business plan

To complement the text analysis and reported data, we manually go into each firm's business plan, attempting to identify the firms that are clearly in a sustainable category (green), or clearly in a non-sustainable category (brown), such as oil and gas. Specifically, we put in the green category firms that work in areas like renewable energy, sustainability innovation, and circular economy. The brown category is chiefly oil and gas related firms. Firms that are not easily categorized, such as financials, are put in a neutral category. Panel B of Table 4 breaks down the firms in the sample by category.

The reader may be surprised that our environmental proxies do not include scores provided by ESG data providers. The reason is the spotty coverage of these providers, which concentrate on large, established companies. The small startups in our sample have yet to be evaluated.[14]

# 3 Results

## 3.1 Inferring cost of capital from the IPO price

We start by investigating the first hypothesis, whether the cost of capital implied in the issue price is linked to environmental properties of the firm. Our method for inferring the cost of capital is based on standard ratio analysis. If we let $EPS_i$ be the earnings per share (i.e. cash flow), $P_i$ the issue price and $r_i$ the cost of capital, all for stock $i$, the standard pricing relationship for a perpetual cash flow, $P_i = EPS_i/r_i$ leads to $\widehat{r_i} = EPS_i/P_i$ as an estimate of the implied cost of capital. Under Hypothesis 1 this cost of capital will be related to firm's environmental qualities. This leads us to the regression specification (4):

$$\widehat{r_i} = \frac{EPS_i}{P_i} = \alpha + \beta^E \textbf{Environmental measures}_i + \beta^2 \textbf{Controls}_i + \varepsilon_i, \tag{4}$$

where **Environmental measures** are proxies for environmental properties of the firm, and **Controls** a set of control variables. One control variable is the firm size. We also control for market places, with a dummy variable for whether the firm lists on

[14]We investigated the coverage of our sample in Refinitiv, and did not find enough rankings for meaningful analysis.

Euronext Growth (Merkur). Further, ratios tend to vary with industry. To control for this we use sector dummy variables, using the ICB sector categorization provided by the stock exchange. We only use dummies for the ICB sectors with a substantial number of firms (see Panel B in Table 1), which are ICB sectors 10, 45, 50 and 60.

In implementing this analysis, there is one problem. Ratio analysis is only meaningful if EPS is positive. We therefore limit the analysis to cases where $EPS > 0$. Table 5 describes the estimates of EPS/Issue price for this sample. We see that quite a number of these companies are listing with negative EPS. This is additional evidence that they are younger and less mature than the typical IPO company internationally, and that the new market place(s) are succeeding in attracting companies earlier in their life cycle.

To estimate the implied cost of capital at the issue date we need an estimate of EPS known at the time. In the regression analysis we therefore use the EPS of the year before the IPO year, which is what will have been in the prospectus.[15]

Table 6 shows the results of regressions with EPS/(IPO Issue Price) as dependent variable, and with various proxies for Environmental Score. Under Hypothesis 1, we would expect EPS/(IPO Issue price) to be decreasing in environmental quality. Our results partially support this hypothesis. The coefficient estimates on the variables measuring environmental concerns in the prospectus are negative and strongly significant. For the other two we do not find significant results. There are several possible reasons for why these other variables do not have significant effects. For the emissions variables, the number of observations is smaller. The emissions are also reported later, and not known at the time of the IPO. Our manual categorization may be too "rough."

We note that these regression specifications allows us to make some estimates of magnitudes. If we consider the most basic specifications (2) and (3), by plugging in representative values of the explanatory variables, we can show how the implied cost of capital changes if we change the environmental proxy. So for example, if we start by fixing all the explanatory variables at their median values, and plug into a regression with `ESG(environment)` as the proxy for environment, we would predict a cost of capital of 3.54%. If we instead used the observation at the third quartile of `ESG(environment)` we would predict the cost of capital falling to 1.88%, a decline of 1.7 percentage points. Similarly, doing the same for `ESG(Brown)`, we would predict a cost of capital change from 4.16% to 2.95%, a decline of 1.21 percentage points.

The reader may react to the level of these estimates, they are on the low side

[15] We have also calculated regressions using EPS estimates the year of the IPO, and the year after the IPO. The results of these analyses are in an appendix.

for corporate costs of capital. For persective we note that this was a period of low interest rates. In the period 2018-2020 three year Norwegian government treasuries were trading at yields around one percent. At the onset of Covid in 2020 yields fell to essentially zero, at which level they were until central banks started pushing up rates in 2022. In 2023-2024 Treasury yields have been between 3% and 4%. As our IPO sample is concentrated in 2020-2021, the majority of IPOs in the sample were issued when interest rates were artificially low.

## 3.2 IPO (first-day) underpricing inferred from market reaction after listing

The first hypothesis was made under an assumption of public understanding of the relationship between the cost of capital and environmental properties of the companies. We next turn to the more traditional IPO setting, with information differences between the price setter in the IPO (investment bank), and the potential buyers of the stock. This leads to a focus on a different dependent variable, the measure of underpricing in the IPO, involving the price difference between the IPO issue price and an estimate of the efficient price. We ask: Are environmental properties of the company related to the magnitude of underpricing? To formally investigate the hypothesis we rely on regressions of the form specified in equation (5):

$$\text{Underpricing}_i = \alpha + \mathbf{b}^E\mathbf{Environmental\ measures}_i + \mathbf{b}^2\mathbf{Controls}_i + \varepsilon_i, \qquad (5)$$

where the environmental measures are the same as in the previous regressions. The control variables here are limited to the size of the firm (market capitalization) and listing market.

Table 7 provides a summary of the results for the various regressions. In these regressions we only use IPOs, where the underpricing is measured relative to the actual issue price. Under hypothesis 2 underpricing should be increasing with environmental quality. The results do not support this hypothesis. Here we have no significant environmentally related coefficients.

For robustness purposes we also looked at adding the listing cases to the analysis, using the opening price to estimate the underpricing for pure listings. We again find no significant coefficients on the environmental variables. We do not show the estimates in the paper.[16] Our results are thus not supportive of Hypothesis 2.

[16]The results are shown in the appendix. We have also added annual fixed effects to the analysis, which also does not make a difference to the inferences.

## 3.3 Liquidity and environmental quality

Our third hypothesis concerns the early trading interest. We ask whether liquidity is increasing with sustainability. As liquidity proxy we use the turnover (trading volume divided by shares outstanding), either during the first day of trading, or the first week.

To investigate the link between environmental variables and turnover we employ a similar specification to our earlier regressions, with measures of liquidity as dependent variable:

$$\text{Turnover}_i = \alpha + \mathbf{b}^E\mathbf{Environmental\ measures}_i + \mathbf{b}^2\mathbf{Controls}_i + \varepsilon_i, \tag{6}$$

The explanatory variables employed are the same as used in the previous analysis.

Table 8 provides the results. Here we find a significant coefficient on the manual categorization, stocks categorized as green have significantly higher turnover both the first day and the first week.

## 3.4 Post IPO analysis

Our first three hypotheses involved the price setting at the IPO. An alternative way of estimating an effect of environmental properties on the cost of capital is to look at the Post-IPO returns. Is there a difference in the realized returns linked to environmental qualities? This corresponds to the many crossectional analysis of return differences linked to environmental issues (or ESG in general). In our case we limit the analysis to the return for a relatively short post-IPO period, comparing groups of stocks with different characteristics.

To estimate the return difference, we form portfolios meant to capture a "green return premium." For example, we calculate the "ESG environment" measure for the stocks in the sample, and sort the stocks into those with a low or high value of this measure. The difference portfolio is the return difference between these two portfolios. We do the same for the "Scope 1" variable, but here we take the difference low minus high value of Scope 1. The "Green (Brown)" portfolios contain stocks the manual categorization puts in the "Green (Brown)" category. We let the stocks stay in these portfolios two years post-IPO. To evaluate the hypothesis of a return difference, we evaluate the alpha in the context of the Fama-French estimation in (7):

$$R_{p,t} - R_{f,t} = \alpha_p + b^m(R_{m,t} - R_{f,t}) + b^{HML}HML_t + b^{SMB}SMB_t + \varepsilon_t. \tag{7}$$

In this estimation $R_{p,t}$ is the portfolio return, $R_{f,t}$ the risk-free rate, $R_{m,t}$ the market

return, and *HML* and *SMB* are the Fama and French (1996) risk factors. In this estimation we are interested in the coefficient $\alpha_p$ (alpha), which measures the excess return of the portfolio. If we find it to be negative, it means that we estimate a negative green return premium, which is the typical finding in the academic literature.

Table 9 shows the results of the alpha estimation. We find that in no case do we find a significant alpha, and we can thus reject Hypothesis 4. There are however caveats to this analysis. This is a short time frame for an analysis of returns. There are also external factors that lead us to be concerned that it will be hard to identify a return difference.

To help the reader understand these qualifications, consider Figure 2, which uses the "green" vs "brown" manual categorization. On the bottom is shown the number of stocks in the two portfolios. We see a marked increase in the number of green companies in 2021. The stocks are kept in the portfolio for two years. The marked fall in the number of green stocks in 2023 means that there were very few IPOs in 2022. That is linked to the Russian invasion of Ukraine starting in February 2022. As a result of the war, the Norwegian oil and gas industry received a boost. Interest in new listings also declined markedly. The steadily declining returns of the green portfolio indicate a lowered interest in green firms.

## 3.5 The conflicting conclusions

Let us now take stock of the results. We found evidence that the implied cost of capital at the IPO is linked to environmental issues, firms more concerned with sustainability in the prospectus have lower costs of capital. When we test whether (first-day) underpricing is related to environmental characteristics, our results are exclusively negative, we find no significant relationships between our various environmental proxies and underpricing. One possible interpretation is that the understanding of the relationship between environmental quality and cost of capital is public knowledge, and is used to set the IPO price. If there is no asymmetric information about this issue at the IPO point, the investment bank will set the correct price, and underpricing will not be related to sustainability. But then we would not expect the green firms to have higher turnover...

There is one way we can dig into the interactions between the first three hypotheses. The first hypothesis looks at the consequences if the environmental effects on the cost of capital are public. In the second hypothesis this relationship is understood only by some of the market participants. On the face of it these are mutually exclusive, but the story may be more complex: There may be a public understanding of

environmental quality affecting cost of capital, but part of the magnitude of the effect may be private information. In that case the effects in Hypotheses 1 and 2 may still be there, but weaker, making it harder to identify them in the estimations.

To evaluate this possibility, consider the EPS based analysis used to test Hypothesis 1. In that analysis we used the IPO price when backing out the implied cost of capital. Under Hypotheses 2 and 3 this price will move to reflect private information, and typically the closing price will be argued to incorporate this private information. Arguably, if we use the closing price on day one to estimate EPS/P, this will incorporate both Hypothesis 1 and 2, which will be a stronger test. If these tests find more significance, it can be argued that there is a first-day underpricing effect, just not large enough to identify in the direct estimations.

The results of doing this analysis are shown in Table 10. Comparing these results to the results using the IPO issue price in the estimation in Table 6, we see that there are no major differences. In particular, the coefficients on the Green manual category remain insignificant, in spite of the significantly higher turnover for these stocks. We choose to interpret this against the presence of asymmetric information about the effect of environmental quality on cost of capital.

# 4 Conclusion

We ask whether the environmental properties of a firm affect the firm's cost of capital at the IPO point. Can green firms tap into funds at a lower cost of capital? Or, formulated alternatively, is the demand by green institutional investors, such as sustainable funds, high enough to affect the pricing at the IPO (and later)?

We ask these questions in the context of IPOs at the Oslo Stock Exchange (OSE). On the face of it the OSE is an interesting market for studying such IPOs. The OSE has recently introduced new market places with lower cost and lower requirements for listing. OSE post-Covid witnessed many listings, particularly of smaller firms, with sustainable profiles.

We started by an assumption of a negative "greenium." With this assumption we show a number of hypothesed consequences for IPO terms related to the environmental quality of the IPO firm. The hypotheses are distinguished by assumptions about information. In the first, if understanding of the link between environmental issues and cost of capital is universal, the IPO issue price will reflect this information, and be higher for higher quality environmental firms. If there is some asymmetric information about this relationship it will be reflected in the (first-day) underpricing at issue, and we will find a link between this underpricing and environment, which

are the second and third hypotheses. Our results show evidence consistent with the first hypotheses, that the IPO *issue price* reflect environmental quality, but not with the asymmetric information hypotheses.

Viewed together, these results are informative about the mechansism of listings. As discussed in the theory section, most academic research is concerned with information effects asymmetric in nature. We show that the effect on IPO terms of ESG differences are driven by symmetric information, which is not often discussed in the typical IPO research.

In policy terms our results show some evidence that financial markets subsidize green investments. We used some illustrative calculations to show that the magnitudes implied in the regressions are substantial, the firm at the third quartile of our measure of ESG concerns would have a cost of capital more than one percentage point lower than the median one. These magnitudes seem implausibly large. We therefore pursued an alternative method to evaluate the magnitudes of the cost of capital difference, by looking at return averages in the post-IPO period. We failed to identify a significant difference here. This can be due to the small sample, but can also be an artifact of events hitting the Norwegian economy. Our sample period contains Russia's invasion of Ukraine. The resulting boycotts of Russia may have hit the Norwegian Economy in an atypical manner, as Norway's oil and gas industry received a boost from the need to replace Russian gas supplies to Europe. In this period the returns to oil and gas producers (which are in the Brown portfolio) have been large. Investment in green energy may have suffered as a consequence, as we see a drying out of listings at the OSE in the last few years. The implication is that the regression estimates are mainly driven by listings before the war, but returns are more influenced by the war period.

This leads to a suggestion for an avenue for further research: Expanding the sample beyond Norway. By extending the investigation to more markets one can build confidence that the effects we find for Norway are universal. Or, alternatively, it may be that Norway is a special case.

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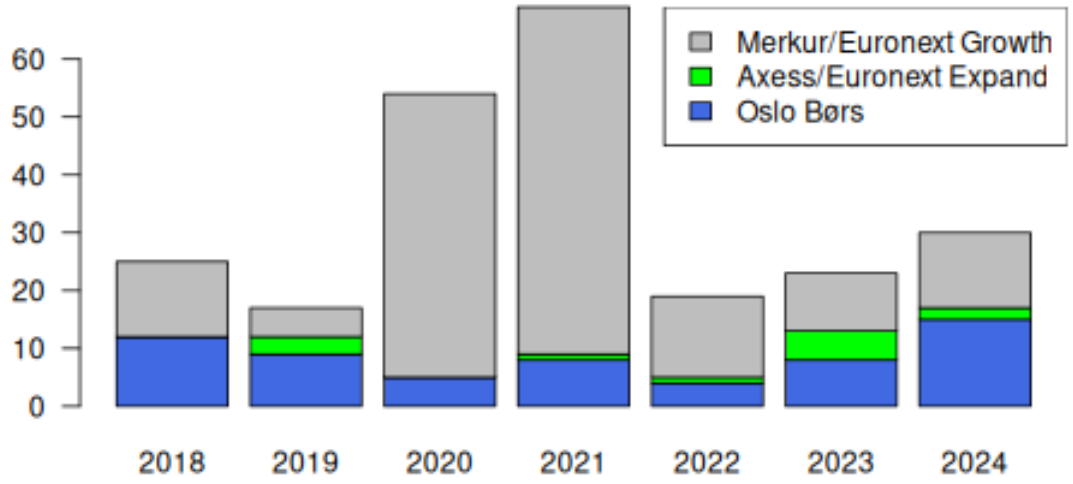
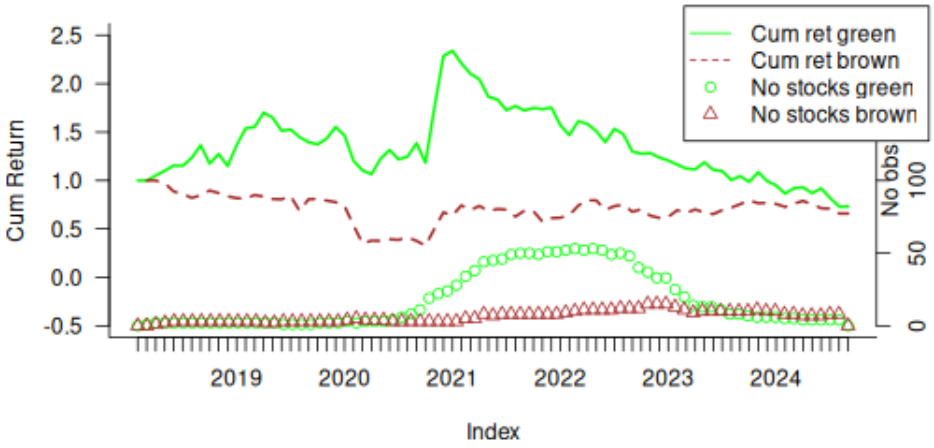
**Figure 1: New stocks at OSE. 2018-2024.**



## Figure 2: Cumulative returns and portfolio size for the 2 year green and brown portfolios

The figure illustrate the evolution of the green and the brown portfolios. The lines (on top) show the cumulative return for the green (brown) portfolios. Also indicated (at the bottom, right axis) is the number of stocks in each portfolio.



## Table 1: Characterizing companies listing at the OSE 2018–2024

The tables describe the sample of companies in our analysis. In panel A we count the number of companies listing, split between traditional IPO's with an issue of stock accompanying the listing, or pure listings. The numbers are also broken down on the three market places (Oslo Børs (main list), Axess, and Merkur/Euronext Growth). In panel B we break the companies down by the Industry Classification Benchmark (ICB). Panels C and D provide descriptives on the Market Capitalization (in millions of NOK) broken down by market place and listing method. Panel C gives averages. Panel D gives medians.

Panel A: The number of companies.

| | IPO | Listing | Total |
|---|---|---|---|
| Oslo Børs(Main List) | 26 | 7 | 33 |
| Euronext Expand(Axess) | 3 | 1 | 4 |
| Euronext Growth(Merkur) | 78 | 62 | 140 |
| Total | 107 | 70 | 177 |

Panel B: Industry Classification

| ICB | ICB label | Number |
|---|---|---|
| 10 | Technology | 20 |
| 15 | Telecommunications | 5 |
| 20 | Healthcare | 11 |
| 30 | Financials | 11 |
| 35 | Real Estate | 3 |
| 40 | Consumer Discretionary | 10 |
| 45 | Consumer Staples | 21 |
| 50 | Industrials | 36 |
| 55 | Basic Materials | 11 |
| 60 | Energy | 33 |
| 65 | Utilities | 16 |
| | Total | 177 |

Panel C: Mean Market Capitalization (millions)

| | IPO | Listing |
|---|---|---|
| Oslo Børs(Main List) | 12741 | 6455 |
| Axess/Euronext Expand | 4651 | |
| Merkur/Euronext Growth | 2173 | 2315 |

Panel D: Median Market Capitalization (millions)

| | IPO | Listing |
|---|---|---|
| Oslo Børs(Main List) | 3710 | 1038 |
| Euronext Expand(Axess) | 3054 | |
| Euronext Growth(Merkur) | 1241 | 871 |

## Table 2: Stock market variables. Descriptives

The tables provide descriptives (mean, standard deviation, min, median, max, number of observations) and correlations. The variables are *Underpricing (first day)* The difference between the IPO price and closing price, relative to the closing price. *Underpricing (first week)* The difference between the IPO price and closing price one week later, relative to the IPO price. *Turnover* is the number of shares traded relative to the number of shares outstanding, for either the first trading day or the first trading week. *MarketCap* is the market capitalization of the stock (in bill NOK). Panel E shows measures of underpricing. For the IPO sample, measured as the difference between the closing price and the IPO price, relative to the closing price. For the listing sample, measured as the difference between the closing price and the opening price, relative to the closing price. Panel F shows the first week return. For the IPO sample this is measured as the difference between the closing price one week later and the IPO price, relative to the IPO price. For the listing sample, measured as the difference between the closing price one week later and the opening price, relative to the opening price. Numbers in percent. The last two tables describe the turnover, either for the first day (Panel G), or first week (Panel H). Turnover measured as the volume in the period relative to shares outstanding. Numbers in percent.

### Panel A: Descriptive

| | mean | std | min | med | max | n |
|---|---|---|---|---|---|---|
| Underpricing (%) | 4.3 | 15.4 | -37.4 | 0.0 | 65.7 | 107 |
| First week return (%) | 6.4 | 24.0 | -30.3 | 0.1 | 131.6 | 107 |
| Turnover First Day (%) | 0.4 | 1.0 | 0.0 | 0.2 | 8.9 | 166 |
| Turnover First Week (%) | 2.12 | 4.40 | 0.00 | 0.88 | 41.25 | 174 |
| MktCap(bill) | 4 | 12 | 0 | 1 | 123 | 175 |

### Panel B: Correlation

| | Underpricing (day) | Underpricing (week) | Turnover (day) | Turnover (week) |
|---|---|---|---|---|
| Underpricing (week) | 0.68 | | | |
| Turnover (day) | 0.15 | 0.46 | | |
| Turnover (week) | 0.11 | 0.32 | 0.83 | |
| MktCap | -0.01 | 0.03 | -0.07 | -0.06 |

### Panel C: Rank Correlation

| | Underpricing (day) | Underpricing (week) | Turnover (day) | Turnover (week) |
|---|---|---|---|---|
| Underpricing (week) | 0.58 | | | |
| Turnover (day) | 0.12 | 0.14 | | |
| Turnover (week) | 0.03 | 0.08 | 0.69 | |
| MktCap | -0.07 | 0.06 | -0.02 | 0.03 |

**Table 2: (continued)**

**Panel E: Opening day underpricing (%)**

| | min | med | mean | sd | max | n |
|---|---|---|---|---|---|---|
| IPO Oslo Bors(Main List) | -8.25 | 0.00 | 2.82 | 7.97 | 28.00 | 26 |
| IPO Euronext Expand (Axess) | -5.17 | 0.00 | -1.72 | 2.98 | 0.00 | 3 |
| IPO Euronext Growth (Merkur) | -37.36 | 2.47 | 4.96 | 17.44 | 65.69 | 78 |
| Listing Oslo Bors | -28.57 | 0.00 | -4.28 | 16.13 | 17.76 | 7 |
| Listing Euronext Growth | -129.06 | -1.60 | -3.70 | 22.21 | 40.97 | 60 |

**Panel F: First week underpricing (%)**

| | min | med | mean | sd | max | n |
|---|---|---|---|---|---|---|
| IPO Oslo Bors (Main List) | -19.09 | 2.23 | 4.04 | 13.38 | 58.73 | 26 |
| IPO Euronext Expand (Axess) | -21.67 | -1.18 | -7.72 | 12.09 | -0.31 | 3 |
| IPO Euronext Growth (Merkur) | -30.31 | 0.03 | 7.73 | 26.76 | 131.60 | 78 |
| Listing Oslo Bors | -26.39 | -1.53 | -0.97 | 15.27 | 17.57 | 7 |
| Listing Euronext Growth | -33.50 | -2.33 | 7.47 | 52.24 | 282.80 | 59 |

**Panel G: Opening day turnover (%)**

| | min | med | mean | sd | max | n |
|---|---|---|---|---|---|---|
| IPO Oslo Bors (Main List) | 0.0 | 0.2 | 0.3 | 0.3 | 1.2 | 25 |
| IPO Euronext Expand (Axess) | 0.0 | 0.1 | 0.1 | 0.1 | 0.3 | 3 |
| IPO Euronext Growth (Merkur) | 0.0 | 0.2 | 0.4 | 0.7 | 4.2 | 75 |
| Listing Oslo Bors | 0.0 | 0.2 | 1.4 | 3.3 | 8.9 | 7 |
| Listing Euronext Growth | 0.0 | 0.2 | 0.4 | 1.0 | 7.2 | 56 |

**Panel H: First week turnover (%)**

| | min | med | mean | sd | max | n |
|---|---|---|---|---|---|---|
| IPO Oslo Bors (Main List) | 0.2 | 0.9 | 1.4 | 1.4 | 6.9 | 26 |
| IPO Euronext Expand (Axess) | 0.2 | 0.9 | 0.7 | 0.5 | 1.1 | 3 |
| IPO Euronext Growth (Merkur) | 0.0 | 1.1 | 2.1 | 3.0 | 15.4 | 78 |
| Listing Oslo Bors | 0.0 | 1.5 | 4.1 | 8.2 | 22.6 | 7 |
| Listing Euronext Growth | 0.0 | 0.8 | 2.3 | 6.0 | 41.2 | 60 |

## Table 3: Details about text analysis. Frequency Table

Feature corresponds to the dictionary category. Frequency shows the number of times each category appears in the corpus. A higher frequency indicates it is more common and corresponds to the rank. Doc. Frequency indicates the document frequency, the number of documents in the corpus in which the dictionary category appears at least once.

| Feature | Frequency | Rank | Doc. Frequency |
|---|---|---|---|
| Non Renewable | 909.45 | 1 | 104 |
| Renewable Technology | 764.05 | 2 | 70 |
| Provisional | 454.27 | 3 | 101 |
| Waste Recycle | 406.46 | 4 | 41 |
| Ecosystem Service | 232.90 | 5 | 90 |
| Pollutants | 192.73 | 6 | 58 |
| Pollution control | 163.99 | 7 | 102 |
| Regulating | 163.67 | 8 | 83 |
| Bribery / Corruption | 130.98 | 9 | 59 |
| Product Opportunities | 114.55 | 10 | 21 |
| UN Global Compact Compliance | 111.17 | 11 | 50 |
| climate Change | 88.27 | 12 | 48 |
| Human Rights | 87.30 | 13 | 36 |
| Public Health | 83.86 | 14 | 135 |
| Abate | 82.30 | 15 | 20 |
| Charity | 79.77 | 16 | 96 |
| Society | 75.96 | 17 | 81 |
| Laborstandards | 75.79 | 18 | 101 |
| Business ethics | 73.79 | 19 | 79 |
| Environmental Management | 72.78 | 20 | 42 |
| Diversity | 68.04 | 21 | 122 |
| Community relations | 66.06 | 22 | 63 |
| Environmental Standards | 60.73 | 23 | 14 |
| Board Structure | 54.66 | 24 | 102 |
| Sustainability Management_reporting | 53.58 | 25 | 72 |
| Health Safety | 53.15 | 26 | 133 |
| Political Influence | 46.47 | 27 | 114 |
| Transparency | 40.35 | 28 | 110 |
| Pollution | 40.13 | 29 | 126 |
| Family | 34.54 | 30 | 117 |
| Diverse Board | 26.02 | 31 | 26 |
| Whistleblowing System | 23.46 | 32 | 6 |
| Environmental | 23.34 | 33 | 140 |
| Education | 19.91 | 34 | 139 |
| Labor Rights | 19.69 | 35 | 10 |
| Supply chain environmental standards | 19.27 | 36 | 9 |
| Social | 15.02 | 37 | 141 |
| Support | 14.52 | 38 | 11 |
| Security | 11.44 | 39 | 143 |
| Governance Sustainability_issues | 8.28 | 40 | 6 |
| Responsible Marketing | 7.43 | 41 | 2 |
| Responsible Sourcing | 2.16 | 42 | 1 |

## Table 4: Environmental data. Descriptives.

The table describes the environmental data. Data for firms at the OSE listing in the period 2018-2024. Panel A provides the mean, standard deviation, minimum, median and maximal observations for the variables: *ESG(Environment)* – Measure of positive environmental measures discussed in the prospectus. *ESG(Brown)* – Measure of negative environmental (pollutants, non-renewable energy) discussed in prospectus. *Scope 1/EV* – The firms reported Scope 1 emissions in the year of the IPO, divided by the firm's enterprise value. *Scope 3/EV* – The firms reported Scope 3 emissions in the year of the IPO, divided by the firm's enterprise value. *ind(FossilFuel)* – indicator variable equal to 1 if the firm's main business is related to fossil fuels. *MktCap* – Market capitalization (in billions NOK). Panel B lists the number of firms in each of three manual categories: Green – renewables, etc., Neutral, and Brown – non-renewables, pollutants.

### Panel A. Descriptive statistics

| | mean | std | min | med | max | n |
|---|---|---|---|---|---|---|
| ESG(environment) | 0.5 | 0.6 | 0.0 | 0.3 | 4.2 | 125 |
| ESG(brown) | 1.0 | 2.3 | 0.0 | 0.3 | 14.4 | 125 |
| Scope1/EV | 40.5 | 143.1 | 0.0 | 0.0 | 817.4 | 59 |
| TotalGHGEmissions/EV | 668.3 | 3120.4 | 0.0 | 41.0 | 24378.8 | 63 |
| ind(FossilFuel) | 0.15 | 0.36 | 0.00 | 0.00 | 1.00 | 177 |
| MktCap(bill) | 4 | 12 | 0 | 1 | 123 | 175 |

### Panel B. Manual Categorization

| | No Obs |
|---|---|
| Green | 66 |
| Neutral | 85 |
| Brown | 26 |
| Total | 177 |

### Panel C. Correlations

| | ESG(Envir) | ESG(Brown) | Scope1 | TotalGHG | FossilFuel |
|---|---|---|---|---|---|
| ESG(Brown) | 0.04 | | | | |
| Scope1 | -0.17 | 0.15 | | | |
| TotalGHG | 0.20 | 0.14 | 0.00 | | |
| FossilFuel | -0.12 | 0.56 | 0.58 | -0.03 | |
| MktCap | 0.05 | 0.25 | -0.08 | -0.09 | 0.04 |

### Panel D. Rank Correlations

| | ESG(Envir) | ESG(Brown) | Scope1 | TotalGHG | FossilFuel |
|---|---|---|---|---|---|
| ESG(Brown) | 0.32 | | | | |
| Scope1 | -0.06 | 0.26 | | | |
| TotalGHG | 0.17 | 0.32 | 0.53 | | |
| FossilFuel | 0.01 | 0.41 | 0.21 | 0.19 | |
| MktCap | 0.19 | 0.14 | 0.11 | 0.11 | 0.07 |

## Table 5: EPS/Price. Descriptives

The table describes estimates of EPS/Issue price for sample of IPO companies 2018–2024. The EPS is calculated using accounts the year before, the year of, and the year after the IPO. We divide with the IPO price if available. Alternatively we use the opening price at the IPO date. In the estimates we only use companies with a positive EPS.

| | min | med | mean | max | no EPS $> 0$ |
|---|---|---|---|---|---|
| EPS Year before IPO/Issue Price | 0.00 | 0.02 | 0.09 | 1.24 | 53 |
| EPS Year of IPO/Issue Price | 0.00 | 0.03 | 0.07 | 0.65 | 62 |
| EPS Year after IPO/Issue Price | 0.00 | 0.03 | 0.06 | 0.41 | 49 |

## Table 6: Regressing EPS/(IPO Issue Price) on Environmental measures

The tables report the results of regressions of the form $\text{EPS/P}_i = \alpha + \beta^E \textbf{Environmental measures}_i + \beta^2 \textbf{Controls}_i + \varepsilon_i$, where the dependent variable is Earnings per Share divided by the IPO issue price (E/P). EPS from accounts the year before the IPO. The environmental measures are: Panel A: *ln(ESG Environment)* – log of inferred Environmental stance from text analysis of prospectus; *ln(ESG Brown)* – log of ESG Brown measure inferred from the prospectus. Panel B: *FossilFuel* – indicator variable equal to one if the company is involved in fossil fuel extraction; *Scope 1/EV* – Company's Scope 1 $CO_2$ emissions, divided by the company enterprise value; *Total GHG/EV* – Company's total greenhouse gas emissions (the sum of the company's reported Scope 1, Scope 2 and Scope 3, divided by company enterprise value). Panel C: Dummies for the green and brown categories. The control variables are *ln(MarketCap)*, the log of the firm's market capitalization, a dummy variable for whether the stock is listed on Euronext Growth (Merkur), and dummy variables for the ICB sectors 10 (Tech), 45 (Consumer Staples), 50 (Industrials) and 60 (Energy). Data for both IPOs and listings. Only companies with positive EPS. Significance levels indicated as $^{*}$p<0.05; $^{**}$p<0.025; $^{***}$p<0.01.

**Panel A** Regressing EPS/Price on measures of environmental concerns inferred from prospectus

| | (1) | (2) | (3) | (4) | (5) | (6) |
|---|---|---|---|---|---|---|
| (Intercept) | −0.072 | −0.051 | 0.004 | 0.004 | 0.024 | 0.072 |
| | (0.324) | (0.320) | (0.365) | (0.328) | (0.320) | (0.351) |
| ln(ESG Environment) | −0.027*** | −0.022*** | | −0.023** | −0.020*** | |
| | (0.008) | (0.005) | | (0.009) | (0.005) | |
| ln(ESG Brown) | 0.004 | | −0.011*** | 0.003 | | −0.010** |
| | (0.006) | | (0.004) | (0.006) | | (0.004) |
| ln(MktCap) | 0.005 | 0.004 | 0.002 | 0.004 | 0.003 | 0.002 |
| | (0.014) | (0.014) | (0.016) | (0.015) | (0.014) | (0.016) |
| Merkur | −0.060 | −0.056 | −0.024 | −0.060 | −0.058 | −0.029 |
| | (0.038) | (0.038) | (0.042) | (0.039) | (0.038) | (0.040) |
| ICB-10 (Tech) | | | | −0.099 | −0.106* | −0.142** |
| | | | | (0.052) | (0.048) | (0.052) |
| ICB-45 (Cons Stapl) | | | | −0.034 | −0.040 | −0.101 |
| | | | | (0.056) | (0.053) | (0.053) |
| ICB-50 (Indus) | | | | −0.064 | −0.065 | −0.089* |
| | | | | (0.039) | (0.038) | (0.041) |
| ICB-60 (Energy) | | | | −0.068 | −0.065 | −0.076 |
| | | | | (0.045) | (0.043) | (0.048) |
| Adj. $R^2$ | 0.306 | 0.314 | 0.110 | 0.331 | 0.348 | 0.227 |
| Num. obs. | 42 | 42 | 42 | 42 | 42 | 42 |

$^{***}p < 0.01$; $^{**}p < 0.025$; $^{*}p < 0.05$

**Table 6: (Continued)**

**Panel B** Regressing EPS/Price on reported emissions

| | (1) | (2) | (3) | (4) | (5) | (6) |
|---|---|---|---|---|---|---|
| (Intercept) | 0.356 | 0.375 | 1.046** | 0.173 | 0.306 | 0.989* |
| | (0.435) | (0.388) | (0.435) | (0.455) | (0.414) | (0.436) |
| Scope1/EV | −0.000 | | | −0.000 | | |
| | (0.000) | | | (0.000) | | |
| Tot GHG/EV | | 0.000 | | | 0.000 | |
| | | (0.000) | | | (0.000) | |
| FossilFuel | | | 0.067 | | | 0.083 |
| | | | (0.070) | | | (0.085) |
| ln(MktCap) | −0.013 | −0.015 | −0.045** | −0.001 | −0.009 | −0.040* |
| | (0.019) | (0.017) | (0.019) | (0.021) | (0.019) | (0.020) |
| Merkur | −0.062 | −0.051 | −0.039 | −0.041 | −0.045 | −0.033 |
| | (0.053) | (0.044) | (0.063) | (0.054) | (0.044) | (0.064) |
| ICB-10 (Tech) | | | | −0.128 | −0.089 | −0.103 |
| | | | | (0.067) | (0.062) | (0.090) |
| ICB-45 (Cons Stapl) | | | | −0.094 | −0.077 | −0.119 |
| | | | | (0.085) | (0.076) | (0.084) |
| ICB-50 (Indus) | | | | −0.098 | −0.094* | −0.114 |
| | | | | (0.053) | (0.045) | (0.068) |
| ICB-60 (Energy) | | | | −0.107 | −0.086 | −0.058 |
| | | | | (0.074) | (0.063) | (0.086) |
| Adj. $R^2$ | −0.058 | 0.058 | 0.066 | 0.014 | 0.113 | 0.066 |
| Num. obs. | 24 | 26 | 59 | 24 | 26 | 59 |

**Panel C** Regressing EPS/Price on green/brown manual categorization

| | (1) | (2) | (3) | (4) | (5) | (6) |
|---|---|---|---|---|---|---|
| (Intercept) | 1.03* | 1.06** | 1.10** | 0.89 | 1.03* | 1.00** |
| | (0.45) | (0.45) | (0.43) | (0.46) | (0.46) | (0.43) |
| Green | −0.03 | −0.02 | | −0.04 | 0.00 | |
| | (0.06) | (0.06) | | (0.07) | (0.06) | |
| Brown | −0.07 | | −0.06 | −0.15 | | −0.12 |
| | (0.07) | | (0.07) | (0.09) | | (0.08) |
| ln(MktCap) | −0.04* | −0.05* | −0.05** | −0.03 | −0.04 | −0.04* |
| | (0.02) | (0.02) | (0.02) | (0.02) | (0.02) | (0.02) |
| Merkur | −0.04 | −0.04 | −0.05 | −0.03 | −0.04 | −0.04 |
| | (0.07) | (0.06) | (0.06) | (0.06) | (0.07) | (0.06) |
| ICB-10 (Tech) | | | | −0.11 | −0.10 | −0.11 |
| | | | | (0.09) | (0.09) | (0.09) |
| ICB-45 (Cons Stapl) | | | | −0.11 | −0.12 | −0.12 |
| | | | | (0.09) | (0.09) | (0.08) |
| ICB-50 (Indus) | | | | −0.08 | −0.10 | −0.09 |
| | | | | (0.07) | (0.07) | (0.07) |
| ICB-60 (Energy) | | | | 0.07 | −0.01 | 0.05 |
| | | | | (0.09) | (0.07) | (0.08) |
| Adj. $R^2$ | 0.05 | 0.05 | 0.06 | 0.08 | 0.05 | 0.09 |
| Num. obs. | 59 | 59 | 59 | 59 | 59 | 59 |

$^{***}p < 0.01$; $^{**}p < 0.025$; $^{*}p < 0.05$

## Table 7: Regressing underpricing on environmental quality. Only IPOs

The tables report the results of regressions of the form $\text{Underpricing}_i = \alpha + \mathbf{b}^E\mathbf{Environmental\ measures}_i + \mathbf{b}^2\mathbf{Controls}_i + \varepsilon_i$, where the dependent variable is the measure of underpricing: Either first-day return, measured as return difference from IPO price to the closing price on the IPO date, or the first week return from the IPO price to the closing price one week later. The Environmental measures are Panel A: *ln(ESG Environment)* – log of inferred Environmental stance from text analysis of prospectus. *ln(ESG Brown)* log of corresponding ESG Brown measure inferred from the prospectus. Panel B: *FossilFuel* indicator variable equal to one if the company is involved in fossil fuel extraction. *Scope 1/EV* Company's Scope 1 $CO_2$ emissions, divided by the company enterprise value. *Total GHG/EV* Company's total greenhouse gas emissions (the sum of the company's reported Scope 1, Scope 2 and Scope 3, divided by company enterprise value). Panel C: Dummies for the green and brown categories. The control variables are *ln(MarketCap)*, log of the firm's market capitalization, and a dummy variable for whether the stock is listed on Euronext Growth (Merkur), The first three columns ((1)–(3)) use the first day return to measure underpricing. The last three ((4)–(6)) use the first week return as a measure of underpricing. Significance levels indicated as $^{*}$p<0.05; $^{**}$p<0.025; $^{***}$p<0.01.

**Panel A** Regressing underpricing on measures of environmental concern inferred from prospectus

| | First Day | | | First Week | | |
|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| (Intercept) | 3.3 | −0.2 | 7.6 | −81.8 | −90.5 | −79.6 |
| | (39.2) | (38.6) | (38.9) | (53.9) | (53.5) | (53.2) |
| ln(ESG Environment) | −0.8 | −1.1 | | −0.4 | −1.2 | |
| | (0.9) | (0.7) | | (1.2) | (1.0) | |
| ln(ESG Brown) | −0.3 | | −0.6 | −0.8 | | −1.0 |
| | (0.5) | | (0.4) | (0.7) | | (0.6) |
| ln(MktCap) | −0.1 | 0.1 | −0.2 | 3.7 | 4.1 | 3.7 |
| | (1.7) | (1.7) | (1.7) | (2.4) | (2.4) | (2.4) |
| Merkur | 2.0 | 2.4 | 1.9 | 9.0 | 10.0 | 9.0 |
| | (4.9) | (4.8) | (4.9) | (6.7) | (6.7) | (6.7) |
| Adj. $R^2$ | −0.0 | 0.0 | −0.0 | 0.0 | 0.0 | 0.0 |
| Num. obs. | 82 | 82 | 82 | 82 | 82 | 82 |

**Panel B** Regressing underpricing on reported emissions data.

| | First Day | | | First Week | | |
|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| (Intercept) | −69.5 | −36.4 | 4.0 | −124.1 | −62.5 | −45.6 |
| | (61.5) | (67.6) | (31.1) | (81.0) | (86.0) | (47.9) |
| Scope1/EV | 0.0 | | | −0.0 | | |
| | (0.0) | | | (0.0) | | |
| Tot GHG/EV | | −0.0 | | | −0.0 | |
| | | (0.0) | | | (0.0) | |
| FossilFuel | | | 0.1 | | | −6.2 |
| | | | (5.0) | | | (7.6) |
| ln(MktCap) | 3.2 | 1.7 | −0.1 | 5.7 | 3.0 | 2.2 |
| | (2.7) | (3.0) | (1.4) | (3.6) | (3.8) | (2.2) |
| Merkur | 4.0 | 4.4 | 2.5 | 6.5 | 7.3 | 6.6 |
| | (5.0) | (5.1) | (3.9) | (6.6) | (6.4) | (6.0) |
| Adj. $R^2$ | −0.0 | −0.0 | −0.0 | −0.0 | 0.0 | −0.0 |
| Num. obs. | 39 | 43 | 107 | 39 | 43 | 107 |

**Panel C** Regressing underpricing on green/brown manual categorization

| | First Day | | | First Week | | |
|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| (Intercept) | 4.2 | 4.0 | 4.5 | −45.2 | −44.1 | −44.7 |
| | (31.2) | (31.0) | (31.1) | (48.1) | (47.9) | (48.0) |
| Green | −2.4 | −2.6 | | −3.7 | −2.9 | |
| | (3.4) | (3.2) | | (5.2) | (5.0) | |
| Brown | 0.6 | | 1.6 | −3.6 | | −2.0 |
| | (4.6) | | (4.4) | (7.1) | | (6.7) |
| ln(MktCap) | −0.1 | −0.1 | −0.1 | 2.2 | 2.1 | 2.2 |
| | (1.4) | (1.4) | (1.4) | (2.2) | (2.1) | (2.2) |
| Merkur | 3.2 | 3.2 | 2.5 | 8.5 | 8.4 | 7.5 |
| | (3.9) | (3.9) | (3.8) | (6.1) | (6.0) | (5.9) |
| Adj. $R^2$ | −0.0 | −0.0 | −0.0 | −0.0 | −0.0 | −0.0 |
| Num. obs. | 107 | 107 | 107 | 107 | 107 | 107 |

$^{***}p < 0.01$; $^{**}p < 0.025$; $^{*}p < 0.05$

## Table 8: Regressing liquidity on Environmental quality. IPOs and listings

The tables report the results of regressions of the form $\text{Turnover}_i = \alpha + \beta^E \textbf{Environmental measures}_i + \beta^2 \textbf{Controls}_i + \varepsilon_i$, where the dependent variable is the measure of liquidity during the first day of trading – the trading volume divided by shares outstanding. The Environmental measures are: Panel A: *ln(ESG Environment)* – log of inferred Environmental stance from text analysis of prospectus. *ln(ESG Brown)* log of ESG Brown measure inferred from the prospectus. Panel B: *FossilFuel* indicator variable equal to one if the company is involved in fossil fuel extraction. *Scope 1/EV* Company's Scope 1 $CO_2$ emissions, divided by the company enterprise value. *Total GHG/EV* Company's total greenhouse gas emissions (the sum of the company's reported Scope 1, Scope 2 and Scope 3), divided by company enterprise value. Panel C: Dummies for the green and brown categories. The control variables are *ln(MarketCap)*, log of the firm's market capitalization, and a dummy variable for whether the stock is listed on Euronext Growth (Merkur), The first three columns ((1)–(3)) use the first day turnover. The last three ((4)–(6)) use the first week turnover. Significance levels indicated as $^{*}$p<0.05; $^{**}$p<0.025; $^{***}$p<0.01.

**Panel A** Regressing turnover on measures of environmental concern inferred from prospectus

| | First Day | | | First Week | | |
|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| (Intercept) | 2.6 | 2.7 | 2.9 | 33.6 | 2.1 | 34.0 |
| | (1.6) | (1.5) | (1.5) | (27.6) | (1.1) | (27.5) |
| ln(ESG Environment) | −0.1 | −0.0 | | 0.0 | 0.0 | |
| | (0.0) | (0.0) | | (0.1) | (0.1) | |
| ln(ESG Brown) | 0.0 | | 0.0 | −10.2 | | −10.3 |
| | (0.0) | | (0.0) | (8.9) | | (8.9) |
| ln(MktCap) | −0.1 | −0.1 | −0.1 | −0.9 | −1.0 | −0.8 |
| | (0.1) | (0.1) | (0.1) | (0.7) | (0.7) | (0.7) |
| Merkur | −0.0 | −0.0 | −0.0 | 0.1 | 0.8 | 0.0 |
| | (0.2) | (0.2) | (0.2) | (1.3) | (1.1) | (1.3) |
| Adj. $R^2$ | 0.0 | 0.0 | 0.0 | −0.0 | −0.0 | 0.0 |
| Num. obs. | 120 | 120 | 120 | 124 | 124 | 124 |

**Panel B** Regressing turnover on reported emissions data

| | First Day | | | First Week | | |
|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| (Intercept) | 0.9 | 1.6 | 3.1* | 0.4 | 3.8 | 8.3 |
| | (1.0) | (1.1) | (1.4) | (6.2) | (6.7) | (6.1) |
| Scope1/EV | −0.0 | | | −0.0 | | |
| | (0.0) | | | (0.0) | | |
| Total GHG Emissions/EV | | −0.0 | | | −0.0 | |
| | | (0.0) | | | (0.0) | |
| FossilFuel | | | −0.1 | | | −0.5 |
| | | | (0.2) | | | (1.0) |
| ln(MktCap) | −0.0 | −0.1 | −0.1 | 0.0 | −0.1 | −0.3 |
| | (0.0) | (0.0) | (0.1) | (0.3) | (0.3) | (0.3) |
| Merkur | 0.0 | 0.0 | −0.2 | 0.3 | 0.4 | −0.1 |
| | (0.1) | (0.1) | (0.2) | (0.7) | (0.7) | (0.9) |
| Adj. $R^2$ | −0.0 | −0.0 | 0.0 | −0.0 | −0.0 | −0.0 |
| Num. obs. | 55 | 59 | 166 | 59 | 63 | 174 |

**Panel C** Regressing turnover on green/brown manual categorization

| | First Day | | | First Week | | |
|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| (Intercept) | 3.2** | 3.1** | 3.0* | 9.2 | 9.0 | 8.2 |
| | (1.4) | (1.4) | (1.4) | (6.0) | (6.0) | (6.1) |
| Green | 0.4** | 0.4* | | 1.8** | 1.5* | |
| | (0.2) | (0.2) | | (0.7) | (0.7) | |
| Brown | 0.1 | | −0.0 | 1.3 | | 0.5 |
| | (0.2) | | (0.2) | (1.0) | | (1.0) |
| ln(MktCap) | −0.1* | −0.1 | −0.1 | −0.4 | −0.3 | −0.3 |
| | (0.1) | (0.1) | (0.1) | (0.3) | (0.3) | (0.3) |
| Merkur | −0.3 | −0.3 | −0.2 | −0.5 | −0.5 | −0.0 |
| | (0.2) | (0.2) | (0.2) | (0.9) | (0.9) | (0.9) |
| Adj. $R^2$ | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | −0.0 |
| Num. obs. | 166 | 166 | 166 | 174 | 174 | 174 |

$^{***}p < 0.01$; $^{**}p < 0.025$; $^{*}p < 0.05$

## Table 9: Estimating the excess return (alpha) of portfolios capturing a green premium

The table report results of the regression $R_{p,t} - R_{f,t} = \alpha_p + b^m(R_{m,t} - R_{f,t}) + b^{HML}HML_t + b^{SMB}SMB_t + \varepsilon_t$, where $R_p$ is the return of the difference portfolio $R_{green} - R_{brown}$. The "ESG Environment" portfolios are the difference return between a portfolio of high vs low values of this variable. The "Scope 1" portfolio is the difference between portfolios of low vs high Scope 1. The "Green (Brown)" portfolios contain stocks the manual categorization puts in the "Green (Brown)" category. The stocks stay in these portfolios two years post-IPO. The factors $(R_{mt} - R_{ft})$, SMB and HML are the Norwegian Fama French factors. The factors are sourced from Bernt Arne Ødegaard's homepage.

| | ESG Envir | Scope1 | Green-Brown |
|---|---|---|---|
| alpha | −0.013 | 0.008 | 0.002 |
| | (0.013) | (0.013) | (0.012) |
| RMRF | 0.109 | 0.296 | −0.233 |
| | (0.229) | (0.205) | (0.214) |
| HML | 0.174 | 0.342 | −0.438** |
| | (0.190) | (0.191) | (0.177) |
| SMB | −0.213 | 0.006 | 0.181 |
| | (0.359) | (0.358) | (0.337) |
| Adj. $R^2$ | −0.003 | 0.139 | 0.147 |
| Num. obs. | 69 | 56 | 68 |

$^{***}p < 0.01$; $^{**}p < 0.025$; $^{*}p < 0.05$

## Table 10: Regressing EPS/(Close Price) on Environmental quality

The tables report the results of regressions of the form $\text{EPS/P}_i = \alpha + \beta^E \textbf{Environmental measures}_i + \beta^2 \textbf{Controls}_i + \varepsilon_i$, where the dependent variable is Earnings per Share divided by the close price (E/P). EPS from accounts the year before the IPO. The Environmental measures are: Panel A: *ln(ESG Environment)* – log of inferred Environmental stance inferred from prospectus; *ln(ESG Brown)* – log of ESG Brown measure inferred from prospectus. Panel B: *FossilFuel* – indicator variable equal to one if the company is involved in fossil fuel extraction; *Scope 1/EV* – Company's Scope 1 $CO_2$ emissions, divided by the company enterprise value; *Total GHG/EV* – Company's total greenhouse gas emissions (the sum of the company's reported Scope 1, Scope 2 and Scope 3, divided by company enterprise value). Panel C: Dummies for the green and brown categories. The control variables are *ln(MarketCap)*, the log of the firm's market capitalization, a dummy variable equal to one if the stocks lists on Euronext Growth (Merkur) and dummy variables for the ICB sectors 10 (Tech), 45 (Consumer Staples), 50 (Industrials) and 60 (Energy). Data for both IPOs and listings. Only companies with positive EPS. Significance levels indicated as $^{*}$p<0.05; $^{**}$p<0.025; $^{***}$p<0.01.

**Panel A** Regressing EPS/(Close Price) on measures of environmental concern inferred from prospectus

| | (1) | (2) | (3) | (4) | (5) | (6) |
|---|---|---|---|---|---|---|
| (Intercept) | −0.00 | 0.02 | 0.06 | 0.06 | 0.07 | 0.11 |
| | (0.30) | (0.30) | (0.33) | (0.31) | (0.30) | (0.32) |
| ln(ESG Environment) | −0.02*** | −0.02*** | | −0.02 | −0.01*** | |
| | (0.01) | (0.00) | | (0.01) | (0.01) | |
| ln(ESG Brown) | 0.00 | | −0.01* | 0.00 | | −0.01 |
| | (0.01) | | (0.00) | (0.01) | | (0.00) |
| ln(MktCap) | 0.00 | 0.00 | −0.00 | 0.00 | 0.00 | 0.00 |
| | (0.01) | (0.01) | (0.01) | (0.01) | (0.01) | (0.01) |
| Merkur | −0.06 | −0.06 | −0.03 | −0.06 | −0.06 | −0.04 |
| | (0.04) | (0.04) | (0.04) | (0.04) | (0.04) | (0.04) |
| ICB-10 (Tech) | | | | −0.09 | −0.10* | −0.12** |
| | | | | (0.05) | (0.04) | (0.05) |
| ICB-45 (Cons Stapl) | | | | −0.04 | −0.05 | −0.09 |
| | | | | (0.05) | (0.05) | (0.05) |
| ICB-50 (Indus) | | | | −0.06 | −0.06 | −0.08* |
| | | | | (0.04) | (0.04) | (0.04) |
| ICB-60 (Energy) | | | | −0.07 | −0.07 | −0.07 |
| | | | | (0.04) | (0.04) | (0.04) |
| Adj. $R^2$ | 0.21 | 0.23 | 0.07 | 0.25 | 0.27 | 0.19 |
| Num. obs. | 42 | 42 | 42 | 42 | 42 | 42 |

$^{***}p < 0.01$; $^{**}p < 0.025$; $^{*}p < 0.05$

**Table 10: (Continued)**

**Panel B** Regressing EPS/(Close Price) on reported emissions

| | (1) | (2) | (3) | (4) | (5) | (6) |
|---|---|---|---|---|---|---|
| (Intercept) | 0.381 | 0.398 | 1.075** | 0.205 | 0.334 | 1.023** |
| | (0.427) | (0.379) | (0.419) | (0.450) | (0.407) | (0.423) |
| Scope1/EV | −0.000 | | | −0.000 | | |
| | (0.000) | | | (0.000) | | |
| Tot GHG/EV | | 0.000 | | | 0.000 | |
| | | (0.000) | | | (0.000) | |
| FossilFuel | | | 0.070 | | | 0.083 |
| | | | (0.067) | | | (0.083) |
| ln(MktCap) | −0.014 | −0.016 | −0.047** | −0.003 | −0.010 | −0.042* |
| | (0.019) | (0.017) | (0.019) | (0.020) | (0.019) | (0.019) |
| Merkur | −0.067 | −0.055 | −0.046 | −0.047 | −0.050 | −0.041 |
| | (0.052) | (0.043) | (0.061) | (0.053) | (0.043) | (0.062) |
| ICB-10 (Tech) | | | | −0.124 | −0.085 | −0.093 |
| | | | | (0.066) | (0.061) | (0.087) |
| ICB-45 (Cons Stapl) | | | | −0.089 | −0.073 | −0.107 |
| | | | | (0.084) | (0.075) | (0.082) |
| ICB-50 (Indus) | | | | −0.093 | −0.090 | −0.104 |
| | | | | (0.053) | (0.044) | (0.066) |
| ICB-60 (Energy) | | | | −0.100 | −0.081 | −0.051 |
| | | | | (0.073) | (0.062) | (0.083) |
| Adj. $R^2$ | −0.044 | 0.078 | 0.080 | 0.009 | 0.120 | 0.072 |
| Num. obs. | 24 | 26 | 59 | 24 | 26 | 59 |

**Panel C** Regressing EPS/(Close Price) on green/brown manual categorization

| | (1) | (2) | (3) | (4) | (5) | (6) |
|---|---|---|---|---|---|---|
| (Intercept) | 1.08** | 1.11** | 1.14*** | 0.94* | 1.08** | 1.04** |
| | (0.44) | (0.44) | (0.42) | (0.45) | (0.45) | (0.42) |
| Green | −0.03 | −0.01 | | −0.04 | 0.01 | |
| | (0.06) | (0.06) | | (0.06) | (0.06) | |
| Brown | −0.07 | | −0.06 | −0.14 | | −0.12 |
| | (0.07) | | (0.07) | (0.09) | | (0.08) |
| ln(MktCap) | −0.05* | −0.05** | −0.05** | −0.04 | −0.04* | −0.04* |
| | (0.02) | (0.02) | (0.02) | (0.02) | (0.02) | (0.02) |
| Merkur | −0.05 | −0.05 | −0.05 | −0.04 | −0.05 | −0.05 |
| | (0.06) | (0.06) | (0.06) | (0.06) | (0.06) | (0.06) |
| ICB-10 (Tech) | | | | −0.10 | −0.09 | −0.10 |
| | | | | (0.09) | (0.09) | (0.09) |
| ICB-45 (Cons Stapl) | | | | −0.10 | −0.11 | −0.11 |
| | | | | (0.08) | (0.09) | (0.08) |
| ICB-50 (Indus) | | | | −0.07 | −0.09 | −0.08 |
| | | | | (0.06) | (0.07) | (0.06) |
| ICB-60 (Energy) | | | | 0.08 | −0.01 | 0.06 |
| | | | | (0.09) | (0.07) | (0.08) |
| Adj. $R^2$ | 0.06 | 0.06 | 0.07 | 0.08 | 0.05 | 0.10 |
| Num. obs. | 59 | 59 | 59 | 59 | 59 | 59 |

$^{***}p < 0.01$; $^{**}p < 0.025$; $^{*}p < 0.05$