

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

Erika Berle, Kjell Jørgensen and Bernt Arne Ødegaard

November 2024

# Overview

- 1 Research Issue
- 2 Literature and hypotheses
  - Literature – ESG and stock returns
  - Our research
- 3 Data and Economic Environment
  - ESG measurement
- 4 Results
  - Inferring cost of capital from the IPO price
  - Results - IPO Underpricing
  - Results – Liquidity and ESG
  - Post IPO analysis
- 5 Conclusion
- 6 Extra results
  - Descriptive
  - Inferring cost of capital from the IPO price
  - Digging into information effects

# Research issue

Stock markets key to financing the circular economy

- Financing large green investments (e.g. Renewable energy generation).
- Financing green innovations – IPO and subsequent SEO's finance the scaling up of startups – particularly green innovations.

Question: Is “green” investment different?

- Do investor demand different returns depending on ESG properties?
  - Is there an additional “green glow”?
    - investors demand less return from green projects (subsidized financing)
  - Reluctance to finance “brown” projects (exclusions)?
    - brown projects have to offer higher returns?

→ Investigate in context of recent Norwegian IPO (Initial Public Offers):

## Research question

Are IPO terms linked to firm ESG properties?

# Summarizing findings

- Find some evidence that IPO price is higher for firms concerned about climate issues.
- But no evidence that underpricing is linked to ESG.
- Magnitudes: Small

# Literature – ESG and stock returns

## Modelling differences in cost of capital due to ESG

- The pecuniary view.
  - Stock prices do not fully reflect future ESG consequences (e.g. climate).
  - Short-termism (Stein, 1989)

→ Green stocks higher long term return
- The non-pecuniary view (ESG in utility function)
  - Equilibrium models – tradeoff ESG/Cost of Capital
    - Pástor et al. (2021) Pedersen et al. (2021)

→ Green stocks can sustain lower return

# Literature - ESG and stock returns

## Estimates of a Green Return Premium

- Evidence support non-pecuniary view (Green Return Premium  $< 0$ )

### Examples (estimated return difference)

- Sin (Hong and Kacperczyk, 2009) ( $-3.5\%$ )
- Environment (Chava, 2014) ( $-0.7\%$  to  $-1.4\%$ )
- Carbon (Bolton and Kacperczyk, 2021) ( $-1.5\%$  to  $-3.6\%$ ).
- Green vs Brown (Pástor, Stambaugh, and Taylor, 2022) ( $-1.4\%$ )
- Exclusions from The Oil Fund (Berle, He, and Ødegaard, 2025) ( $-5\%$ )

# Hypothesis development – ESG in context of IPOs

Argument from asset pricing theory:

→ Cost of capital depend on ESG properties.

Implications for IPO outcomes

- IPO price depend on cost of capital  
→ IPO price *should* depend on ESG.

Ways to test – depend on theoretical framing.

## Hypothesis development – Tests based on IPO *price*

Theoretical framing: The link between ESG and Cost of Capital is understood by all (no asymmetrical information).

→ IPO *issue price* reflect the ESG properties of the firm.

→ Method: Infer cost of capital from issue price.

*Hypothesis 1:* Measures of environmental/ESG qualities of a firm are linked to the implied cost of capital of the IPO price.

# Hypothesis development – Tests based on IPO *underpricing*

*Underpricing*: Price evolution from IPO price to efficient price.

Common empirical finding: Underpricing in IPOs substantial.

Typical assumption that generate underpricing:

Informational differences between parties in IPO:

- Investment bank – set price
- Buyers of stocks at IPO stage.

Theories

- *Partial adjustment* theory: Investors better informed about their valuations (ESG preferences). To elicit true revelation (during bookbuilding) from investors, issue price lower than true price.
- *Neglected demand* theory: ESG aspects of cost of capital ignored by investment bank in price setting

# Hypothesis development - Tests based on *underpricing*(ctd)

Implication of both theories

→ Underpricing increasing in sustainability.

*Hypothesis 2:* Measures of underpricing increases with the firm's environmental quality.

Also: To move prices to their correct price trading is necessary

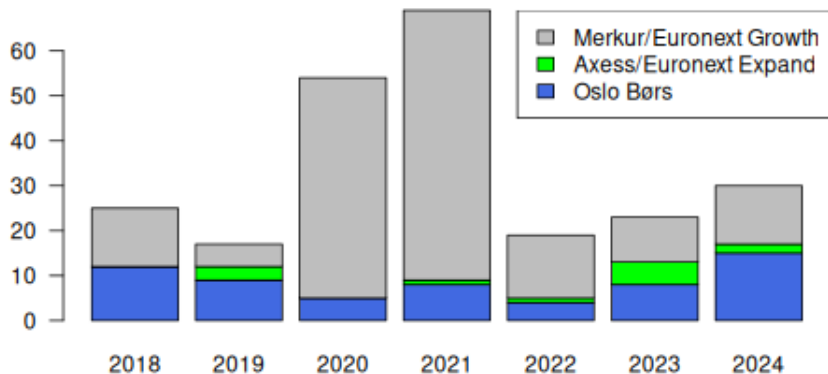
→ first day trading increasing in sustainability.

*Hypothesis 3.* Early trading interest (which we measure as turnover) is increasing in the measure of environmental quality of the firm.

# Hypothesis development – Tests based on Post-IPO returns

If cost of capital differ with ESG, will be reflected in realized return:  
*Hypothesis 4:* The post-IPO return depends on the company's environmental stance.

## Data – New stocks at OSE. 2018-2024.



# Data – Listings in period (2018–2024)

Analysis start in 2018 (Limited by ESG data)

Distinguish

- IPO – raising additional capital
- Pure listing – no additional capital

|                         | 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   |

# Data - ESG measurement - How to?

ESG - Environmental Social Governance

Of particular concern for this paper: E

- Environment
- Sustainability
- Climate

# Data – ESG measurement –

## Proxy 1 - Firms' emphasis in prospectus

### Text analysis

- Nonstandard part of prospectus (business plan)
- Among the IPOs at OSE, relative occurrence of terms:
  - Positive towards environment. ESG(environment).
  - Negative towards environment. ESG(brown)

→ Idea: Measure how central these issues are to business plan of firm.

### Note

- Ranking is relative to the corpus of OSE IPOs.
- Does not imply ranking by “Greenness”

# Data – ESG measurement –

## Proxy 2 – Self-reported emissions

Reporting (accounts) requirements widen

- *Scope 1* – Direct greenhouse (GHG) emissions from firm. Normalized by Enterprise Value (EV).
- *Total GHG Emissions* – Sum of the firms Scope 1, 2 and 3 emissions. also normalized by EV.
- Fossil fuel sector – dummy variable

|                      | mean | std  | min | med | max   | n   |
|----------------------|------|------|-----|-----|-------|-----|
| Scope1/EV            | 40   | 143  | 0   | 0   | 817   | 59  |
| TotalGHGEmissions/EV | 668  | 3120 | 0   | 41  | 24379 | 63  |
| ind(FossilFuel)      | 0    | 0    | 0   | 0   | 1     | 140 |

# Data – ESG measurement –

## Proxy 3 – Categorizing business plan

Manual group firms into 3 types

- 1 **Green.** Renewable energy. Sustainability innovation. Circular Economy.
- 2 **Neutral.** Firms not easily categorized. Example: Financials.
- 3 **Brown.** Oil and Gas related.

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

(listings since 2018).

## Results - IPO price inferred cost of capital (Hypothesis 1)

From finance 101

$$P_i = \frac{EPS_i}{r_i}$$

→ Estimate *implied cost of capital*

$$\hat{r}_i = \frac{EPS_i}{P_i}$$

Only use companies with  $EPS_i \geq 0$ .

|                                 | 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         |

# Results - IPO price inferred cost of capital (Hypothesis 1)

## Asking whether ESG matters

$$\text{EPS}_i/P_i = \alpha + \beta^{\text{ESG}} \text{ESG measures}_i + \beta^2 \text{Controls}_i + \varepsilon_i$$

- **ESG measures**

- Three ESG proxy groups

- **Controls**

- Firm size
- Industry sector (ICB)
- Listing market (Merkur dummy)

# Results - IPO price inferred cost of capital (Hypothesis 1)

$$\text{EPS}_i/P_i = \alpha + \beta^{\text{ESG}} \text{ESG measures}_i + \beta^2 \text{Controls}_i + \varepsilon_i$$

ESG measure: Group 1 – ESG inferred from prospectus

|                     | (4)              | (5)               | (6)              |
|---------------------|------------------|-------------------|------------------|
| (Intercept)         | 0.004 (0.328)    | 0.024 (0.320)     | 0.072 (0.351)    |
| ln(ESG Environment) | -0.023 (0.009)** | -0.020 (0.005)*** |                  |
| ln(ESG Brown)       | 0.003 (0.006)    |                   | -0.010 (0.004)** |
| ln(MktCap)          | 0.004 (0.015)    | 0.003 (0.014)     | 0.002 (0.016)    |
| Merkur              | -0.060 (0.039)   | -0.058 (0.038)    | -0.029 (0.040)   |
| ICB-10 (Tech)       | -0.099 (0.052)   | -0.106 (0.048)*   | -0.142 (0.052)** |
| ICB-45 (Cons Stapl) | -0.034 (0.056)   | -0.040 (0.053)    | -0.101 (0.053)   |
| ICB-50 (Indus)      | -0.064 (0.039)   | -0.065 (0.038)    | -0.089 (0.041)*  |
| ICB-60 (Energy)     | -0.068 (0.045)   | -0.065 (0.043)    | -0.076 (0.048)   |
| Adj. R <sup>2</sup> | 0.331            | 0.348             | 0.227            |
| Num. obs.           | 42               | 42                | 42               |

\*\*\*  $p < 0.01$ ; \*\*  $p < 0.025$ ; \*  $p < 0.05$

# Results - IPO Underpricing and ESG (Hypothesis 2)

To estimate

$$\text{Underpricing}_i = \alpha + \mathbf{b}^{ESG} \text{ESG measures}_i + \mathbf{b}^2 \text{Controls}_i + \varepsilon_i,$$

Underpricing:

IPO issue price vs Closing price (efficient price)

## Controls

- Firm size
- Listing market (Merkur dummy)

# Results - IPO Underpricing and ESG (Hypothesis 2)

$$\text{Underpricing}_i = \alpha + \mathbf{b}^{ESG} \text{ESG measures}_i + \mathbf{b}^2 \text{Controls}_i + \varepsilon_i,$$

ESG measure: Group 3 – manual categorization

|                     | (1)           | (2)           | (3)           |
|---------------------|---------------|---------------|---------------|
| (Intercept)         | 4.2<br>(31.2) | 4.0<br>(31.0) | 4.5<br>(31.1) |
| <b>Green</b>        | -2.4<br>(3.4) | -2.6<br>(3.2) |               |
| <b>Brown</b>        | 0.6<br>(4.6)  |               | 1.6<br>(4.4)  |
| ln(MktCap)          | -0.1<br>(1.4) | -0.1<br>(1.4) | -0.1<br>(1.4) |
| Merkur              | 3.2<br>(3.9)  | 3.2<br>(3.9)  | 2.5<br>(3.8)  |
| Adj. R <sup>2</sup> | -0.0          | -0.0          | -0.0          |
| Num. obs.           | 107           | 107           | 107           |

\*\*\*  $p < 0.01$ ; \*\*  $p < 0.025$ ; \*  $p < 0.05$

## Results – Liquidity and ESG (Hypothesis 3)

Idea: More under-priced stocks need more activity to move prices to efficient price.

To test

$$\text{Liquidity}_i = \alpha + \mathbf{b}^{ESG} \text{ESG measures}_i + \mathbf{b}^2 \text{Controls}_i + \varepsilon_i,$$

Liquidity measure: Turnover

### Controls

- Firm size
- Listing market (Merkur dummy)

# Results – Liquidity and ESG (Hypothesis 3)

$$\text{Liquidity}_i = \alpha + \mathbf{b}^{ESG} \mathbf{ESG\ measures}_i + \mathbf{b}^2 \mathbf{Controls}_i + \varepsilon_i,$$

ESG measure: Group 3 – manual categorization

|                     | First Day      |                |               |
|---------------------|----------------|----------------|---------------|
|                     | (1)            | (2)            | (3)           |
| (Intercept)         | 3.2**<br>(1.4) | 3.1**<br>(1.4) | 3.0*<br>(1.4) |
| Green               | 0.4**<br>(0.2) | 0.4*<br>(0.2)  |               |
| Brown               | 0.1<br>(0.2)   |                | -0.0<br>(0.2) |
| ln(MktCap)          | -0.1*<br>(0.1) | -0.1<br>(0.1)  | -0.1<br>(0.1) |
| Merkur              | -0.3<br>(0.2)  | -0.3<br>(0.2)  | -0.2<br>(0.2) |
| Adj. R <sup>2</sup> | 0.0            | 0.0            | 0.0           |
| Num. obs.           | 166            | 166            | 166           |

\*\*\*  $p < 0.01$ ; \*\*  $p < 0.025$ ; \*  $p < 0.05$

## Results: Post IPO analysis (Hypothesis 4)

Standard crosssectional investigation:

Is there a return difference linked to ESG?

Apply to IPO sample:

Estimate a difference portfolio  $p$ . For example  $p = \text{Green Stocks minus Brown stocks}$ .

Estimate alpha

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

# Results: Post IPO analysis (Hypothesis 4)

## Alpha estimation

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

|                     | 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 <sup>2</sup> | -0.003    | 0.139   | 0.147       |
| Num. obs.           | 69        | 56      | 68          |

\*\*\*  $p < 0.01$ ; \*\*  $p < 0.025$ ; \*  $p < 0.05$

# Conclusion

Results support link between ESG properties of firms and IPO issue price.  
But no link with underpricing

Attempting to look at magnitude: No significant return difference.

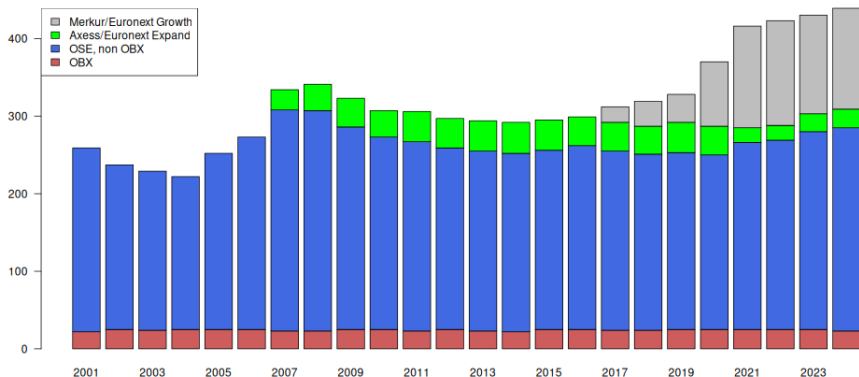
Issues

- Norway is only one country, is it representative?
- The sample period is special, with the Ukrainian war coinciding with drying up of the IPO market.

# Extra results

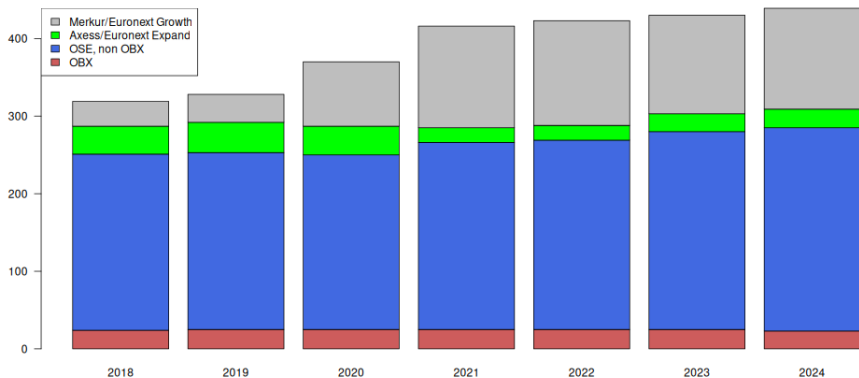
# Data – Stocks traded at OSE – 2001-2024

- OSE (main board)
- Axess / Euronext Expand
- Merkur / Euronext Growth



# Data – Stocks traded at OSE – 2018-2024

- OSE (main board)
- Axess / Euronext Expand
- Merkur / Euronext Growth



# Descriptive – underpricing

## *Opening day underpricing (in %)*

|                              | 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 (Acess)  | -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 |

## *First week underpricing (in %)*

|                              | 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 (Acess)  | -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 |

# Descriptive – turnover

## Describing turnover

### *Opening day turnover (in %)*

|                              | 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 |

### *First week turnover (in %)*

|                              | 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 |

# Results - IPO price inferred cost of capital

$$\text{EPS}_i/P_i = \alpha + \beta^{\text{ESG}} \text{ESG measures}_i + \beta^2 \text{Controls}_i + \varepsilon_i$$

Regressing EPS/Price on measures of ESG inferred from prospectus

|                     | (1)             | (2)             | (3)             | (4)                | (5)                | (6)               |
|---------------------|-----------------|-----------------|-----------------|--------------------|--------------------|-------------------|
| (Intercept)         | 0.16<br>(0.52)  | 0.16<br>(0.53)  | 0.11<br>(0.45)  | 0.30<br>(0.48)     | 0.26<br>(0.50)     | -0.01<br>(0.41)   |
| ln(ESG Environment) | 0.00<br>(0.02)  | -0.00<br>(0.02) |                 | 0.02<br>(0.02)     | 0.01<br>(0.02)     |                   |
| ln(ESG Brown)       | -0.01<br>(0.00) |                 | -0.01<br>(0.00) | -0.01*<br>(0.00)   |                    | -0.01<br>(0.00)   |
| ln(MktCap)          | -0.00<br>(0.02) | -0.00<br>(0.02) | -0.00<br>(0.02) | -0.00<br>(0.02)    | -0.00<br>(0.02)    | 0.01<br>(0.02)    |
| ICB-10 (Tech)       |                 |                 |                 | -0.19**<br>(0.07)  | -0.17*<br>(0.08)   | -0.19**<br>(0.07) |
| ICB-45 (Cons Stapl) |                 |                 |                 | -0.20***<br>(0.07) | -0.17*<br>(0.07)   | -0.16**<br>(0.06) |
| ICB-50 (Indus)      |                 |                 |                 | -0.15***<br>(0.05) | -0.16***<br>(0.05) | -0.13**<br>(0.05) |
| ICB-60 (Energy)     |                 |                 |                 | -0.07<br>(0.07)    | -0.11<br>(0.07)    | -0.07<br>(0.07)   |

# Results - IPO price inferred cost of capital

$$\text{EPS}_i/P_i = \alpha + \beta^{\text{ESG}} \text{ESG measures}_i + \beta^2 \text{Controls}_i + \varepsilon_i$$

Regressing EPS/Price on reported emissions

|                     | (1)               | (2)               | (3)               | (4)               | (5)                 | (6)                 |
|---------------------|-------------------|-------------------|-------------------|-------------------|---------------------|---------------------|
| (Intercept)         | 0.198<br>(0.540)  | 0.224<br>(0.532)  | 0.021<br>(0.284)  | 0.186<br>(0.596)  | 0.257<br>(0.570)    | -0.059<br>(0.294)   |
| Scope1/EV           | -0.000<br>(0.000) |                   |                   | -0.000<br>(0.000) |                     |                     |
| Tot GHG/EV          |                   | 0.000<br>(0.000)  |                   |                   | 0.000<br>(0.000)    |                     |
| FossilFuel          |                   |                   | -0.059<br>(0.048) |                   |                     | -0.014<br>(0.054)   |
| ln(MktCap)          | -0.004<br>(0.025) | -0.007<br>(0.024) | 0.003<br>(0.013)  | -0.000<br>(0.027) | -0.004<br>(0.026)   | 0.009<br>(0.014)    |
| ICB-10 (Tech)       |                   |                   |                   | -0.173<br>(0.109) | -0.152<br>(0.106)   | -0.140*<br>(0.067)  |
| ICB-45 (Cons Stapl) |                   |                   |                   | -0.126<br>(0.136) | -0.117<br>(0.129)   | -0.094<br>(0.060)   |
| ICB-50 (Indus)      |                   |                   |                   | -0.143<br>(0.073) | -0.166**<br>(0.067) | -0.105**<br>(0.042) |

## Results - IPO Underpricing and ESG

Regressing first day underpricing on measures of ESG inferred from prospectus

|                     | (1)            | (2)            | (3)            |
|---------------------|----------------|----------------|----------------|
| (Intercept)         | 12.5<br>(31.8) | 10.8<br>(31.6) | 16.6<br>(31.5) |
| ln(ESG Environment) | -0.8<br>(0.9)  | -1.2<br>(0.7)  |                |
| ln(ESG Brown)       | -0.4<br>(0.5)  |                | -0.6<br>(0.4)  |
| ln(MktCap)          | -0.4<br>(1.5)  | -0.3<br>(1.5)  | -0.6<br>(1.5)  |
| Adj. R <sup>2</sup> | 0.0            | 0.0            | 0.0            |
| Num. obs.           | 82             | 82             | 82             |

# Results - IPO Underpricing and ESG

Regressing underpricing on reported emissions data.

|                     | (1)               | (2)              | (3)              |
|---------------------|-------------------|------------------|------------------|
| (Intercept)         | -44.59<br>(52.64) | -7.96<br>(58.80) | -5.47<br>(28.58) |
| Scope1/EV           | -0.00<br>(0.02)   |                  |                  |
| Tot GHG/EV          |                   | -0.00<br>(0.00)  |                  |
| FossilFuel          |                   |                  | -3.17<br>(5.54)  |
| ln(MktCap)          | 2.18<br>(2.39)    | 0.55<br>(2.67)   | 0.44<br>(1.35)   |
| Adj. R <sup>2</sup> | -0.03             | -0.04            | -0.02            |
| Num. obs.           | 39                | 43               | 90               |

# Results – Liquidity and ESG

Regressing turnover on measures of ESG inferred from prospectus

|                     | First Day     |               |               | First Week     |                 |                |
|---------------------|---------------|---------------|---------------|----------------|-----------------|----------------|
|                     | (1)           | (2)           | (3)           | (4)            | (5)             | (6)            |
| (Intercept)         | 2.5<br>(1.3)  | 2.5<br>(1.3)  | 2.8*<br>(1.3) | 34.5<br>(23.8) | 2.7***<br>(0.6) | 34.4<br>(23.7) |
| ln(ESG Environment) | -0.1<br>(0.0) | -0.0<br>(0.0) |               | 0.0<br>(0.1)   | 0.0<br>(0.1)    |                |
| ln(ESG Brown)       | 0.0<br>(0.0)  |               | 0.0<br>(0.0)  | -10.4<br>(7.8) |                 | -10.4<br>(7.8) |
| ln(MktCap)          | -0.1<br>(0.1) | -0.1<br>(0.1) | -0.1<br>(0.1) | -0.9<br>(0.7)  | -1.0<br>(0.7)   | -0.8<br>(0.7)  |
| Adj. R <sup>2</sup> | 0.0           | 0.0           | 0.0           | 0.0            | 0.0             | 0.0            |
| Num. obs.           | 120           | 120           | 120           | 124            | 124             | 124            |

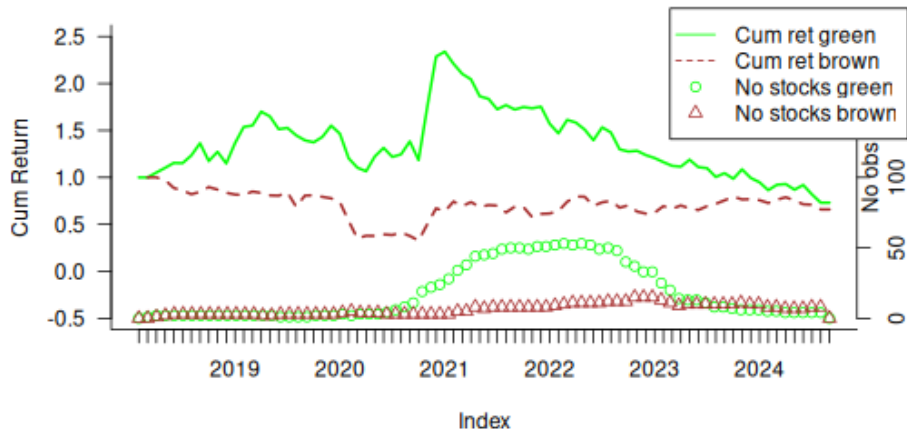
# Results – Liquidity and ESG

## Regressing turnover on emissions data

|                        | First Day     |               |               | First Week    |               |               |
|------------------------|---------------|---------------|---------------|---------------|---------------|---------------|
|                        | (1)           | (2)           | (3)           | (4)           | (5)           | (6)           |
| (Intercept)            | 1.0<br>(0.9)  | 1.8<br>(1.0)  | 2.5*<br>(1.1) | 1.9<br>(5.4)  | 5.4<br>(5.9)  | 10.1<br>(6.2) |
| Scope1/EV              | -0.0<br>(0.0) |               |               | -0.0<br>(0.0) |               |               |
| Total GHG Emissions/EV |               | -0.0<br>(0.0) |               |               | -0.0<br>(0.0) |               |
| FossilFuel             |               |               | -0.2<br>(0.2) |               |               | -1.1<br>(1.1) |
| ln(MktCap)             | -0.0<br>(0.0) | -0.1<br>(0.0) | -0.1<br>(0.1) | -0.0<br>(0.3) | -0.2<br>(0.3) | -0.4<br>(0.3) |
| Adj. R <sup>2</sup>    | -0.0          | 0.0           | 0.0           | -0.0          | -0.0          | 0.0           |
| Num. obs.              | 55            | 59            | 132           | 59            | 63            | 139           |

# Results: Post IPO analysis

What is going on?



## Merging hypothesis 1 and 2

Hypothesis 1 – symmetric info – IPO price correct

Hypothesis 2 – asymmetric info – Price moves to the close price.

Joining the hypotheses: Use the close price to estimate implied cost of capital.

Results

→ Only *ESG Environment* significant.

→ Sign negative, as before.

## Results - close price used in inferring cost of capital

|                     | (1)          | (2)                         | (3)                        |
|---------------------|--------------|-----------------------------|----------------------------|
| (Intercept)         | 0.06 (0.31)  | 0.07 (0.30)                 | 0.11 (0.32)                |
| ln(ESG Environment) | -0.02 (0.01) | -0.01 (0.01) <sup>***</sup> |                            |
| ln(ESG Brown)       | 0.00 (0.01)  |                             | -0.01 (0.00)               |
| ln(MktCap)          | 0.00 (0.01)  | 0.00 (0.01)                 | 0.00 (0.01)                |
| Merkur              | -0.06 (0.04) | -0.06 (0.04)                | -0.04 (0.04)               |
| ICB-10 (Tech)       | -0.09 (0.05) | -0.10 (0.04) <sup>*</sup>   | -0.12 (0.05) <sup>**</sup> |
| ICB-45 (Cons Stapl) | -0.04 (0.05) | -0.05 (0.05)                | -0.09 (0.05)               |
| ICB-50 (Indus)      | -0.06 (0.04) | -0.06 (0.04)                | -0.08 (0.04) <sup>*</sup>  |
| ICB-60 (Energy)     | -0.07 (0.04) | -0.07 (0.04)                | -0.07 (0.04)               |
| Adj. R <sup>2</sup> | 0.25         | 0.27                        | 0.19                       |
| Num. obs.           | 42           | 42                          | 42                         |

\*\*\*  $p < 0.01$ ; \*\*  $p < 0.025$ ; \*  $p < 0.05$

- Erika Berle, Wanwei (Angela) He, and Bernt Arne Ødegaard. The stock market and corporate consequences of ethical exclusions by the world's largest fund. 2025.
- Patrick Bolton and Marcin Kacperczyk. Do investors care about carbon risk? *Journal of Financial Economics*, 142(2):517–549, 2021. doi: 10.1016/j.jfineco.2021.05.008.
- Sudheer Chava. Environmental externalities and cost of capital. *Management Science*, 60(9):2223–2247, 2014. doi: 10.1287/mnsc.2013.1863.
- Harrison Hong and Marcin Kacperczyk. The price of sin: The effects of social norms on markets. *Journal of Financial Economics*, 93(1):15–36, 2009. doi: 10.1016/j.jfineco.2008.09.001.
- Lúboš Pástor, Robert F Stambaugh, and Lucian A Taylor. Sustainable investing in equilibrium. *Journal of Financial Economics*, 142(2):550–571, 2021. doi: 10.1016/j.jfineco.2020.12.011.
- Lúboš Pástor, Robert F Stambaugh, and Lucian A Taylor. Dissecting green returns. *Journal of Financial Economics*, 146(2):403–424, 2022. doi: 10.1016/j.jfineco.2022.07.007.
- Lasse Heje Pedersen, Shaun Fitzgibbons, and Lukasz Pomorski. Responsible investing: The ESG-efficient frontier. *Journal of Financial Economics*, 142(2):572–597, 2021. doi: 10.1016/j.jfineco.2020.11.001.
- Jeremy Stein. Overreactions in the options market. *Journal of Finance*, 44(4):1011–23, 1989. doi: 10.1111/j.1540-6261.1989.tb02635.x.