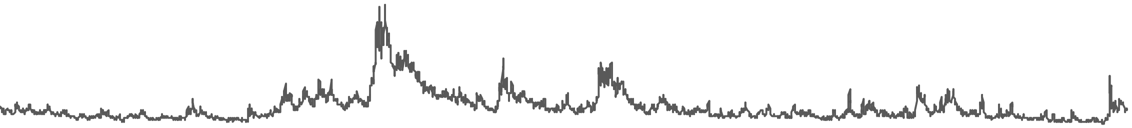

HEC LIÈGE
Management School - Liège Université

Financial modeling and portfolio management

Tutorial

Asset pricing

Gildas Blanchard, Ph.D.

Dissecting Green Returns

Pástor, Ľ., Stambaugh, R. F., & Taylor, L. A. (2022). Dissecting green returns. *Journal of Financial Economics*, 146(2), 403-424.

There is a situation of conflicting narratives in ESG investing.

The performance narrative

Green investing offers superior returns

- Reliance on ESG factor investing performance for marketing purposes

The risk narrative

Brown stocks are more risky

- Brown stocks exposition to physical and transition risk

  e.g. Integration of sustainability risk as per delegated act

Inconsistency in the basic risk-return paradigm

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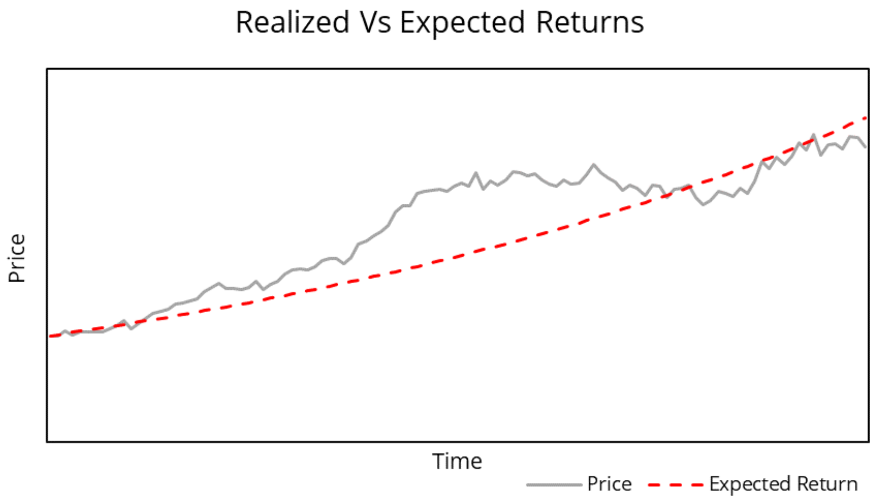


The authors hypothesise that **green stocks** are in one of these **two cases**, implying that:

- **Past overperformance** of green stocks are due **realized returns**; and
- Green stocks **expected returns** remain **lower** than brown stocks reflecting a lower risk.

- **To test this hypothesis, the authors need to estimate the expected returns.**
- **Since expected returns cannot be estimated and that realized returns is a poor proxy the task is non-trivial.**
- **The authors use the following instruments to identify the presence of a “green (brown) premium”:**

1 ➡ German twin bonds

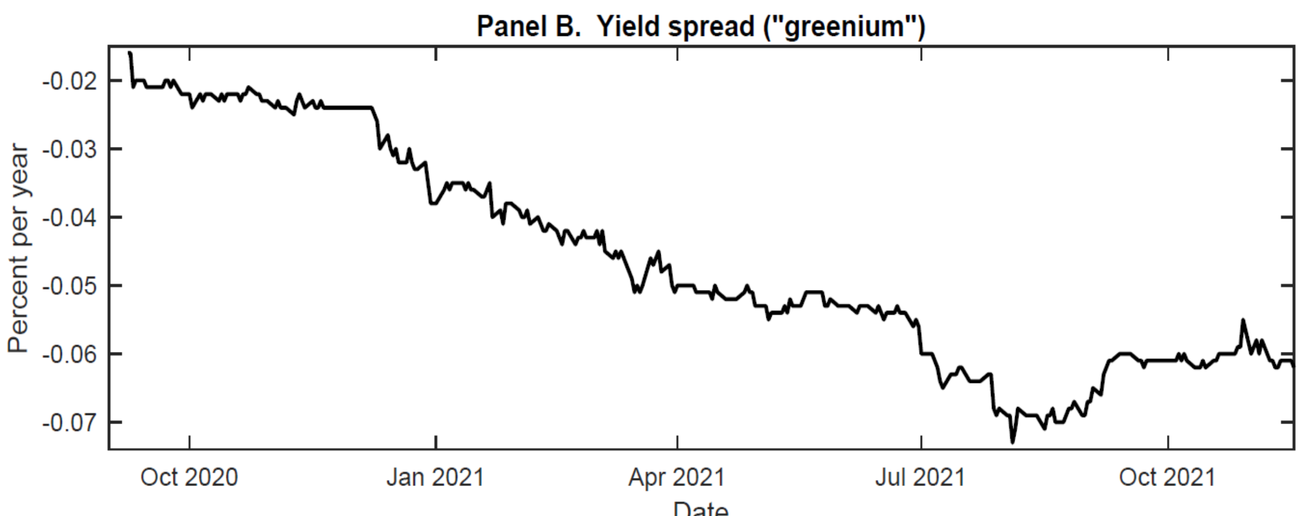
2 ➡ Implied cost of capital (equities)

3 ➡ Unexpected news adjusted returns (equities)

1 **German twin bonds**

Green bonds' proceedings are dedicated to finance only green eligible expenditures.

But they have a non-green counterparty, the "twin", with similar intrinsic characteristics: coupon, payment date, maturity, default probability.



Source – *Pastor et al when still a working paper*

- The '*greenium*' is always negative
- Ranging from -7 and -2 basis points

2 **Implied cost of capital**

The implied cost of capital is the discount factor.

For equities, the discount factor is non-trivial to estimate as this resumes to a single equation with two unknown:

Known – Market price

$$Price = \frac{Expected\ cash\ flows}{(1 + Discount\ rate)^{Time}}$$

Unknown

2 Implied cost of capital

The implied cost of capital is the discount factor.

For equities, the discount factor is non-trivial to estimate as this resumes to a single equation with two unknown:

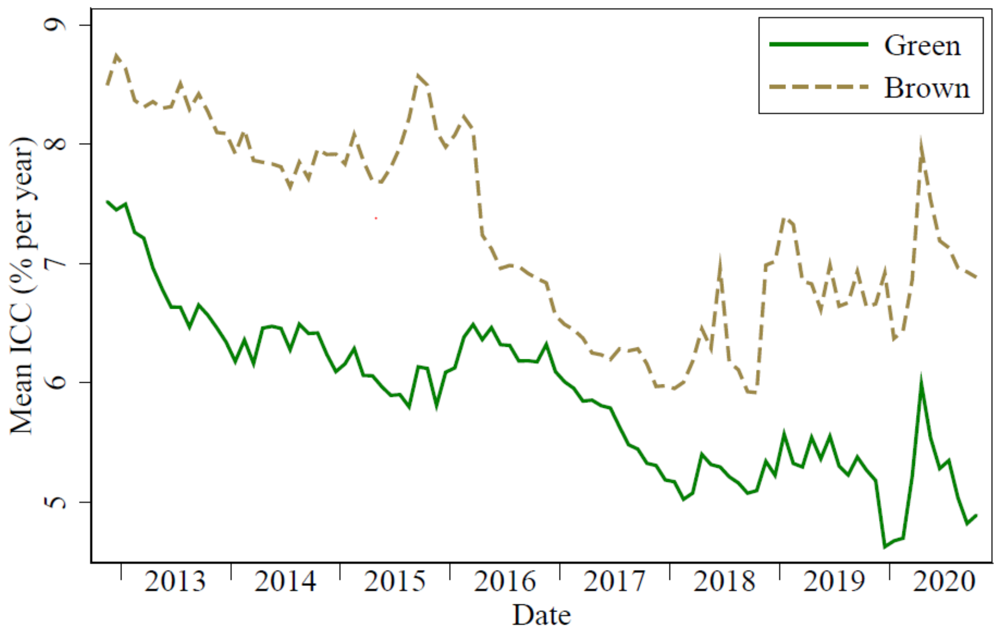
$$Price = \frac{Expected\ cash\ flows}{(1 + Discount\ rate)^{Time}}$$

Estimate:

- *Historical analysts' forecasts*
- *Historical Earning Per Share ("EPS")*
- *Linear projection of analysts forecasts onto EPS*
- *Expected cashflows*

2 Implied cost of capital

Panel A: ICCs of green and brown portfolios



Source *– Pastor et al when still a working paper*

- The discount factor, and expected returns, of brown stocks is systematically higher.
- Consistent with green stocks being safer.

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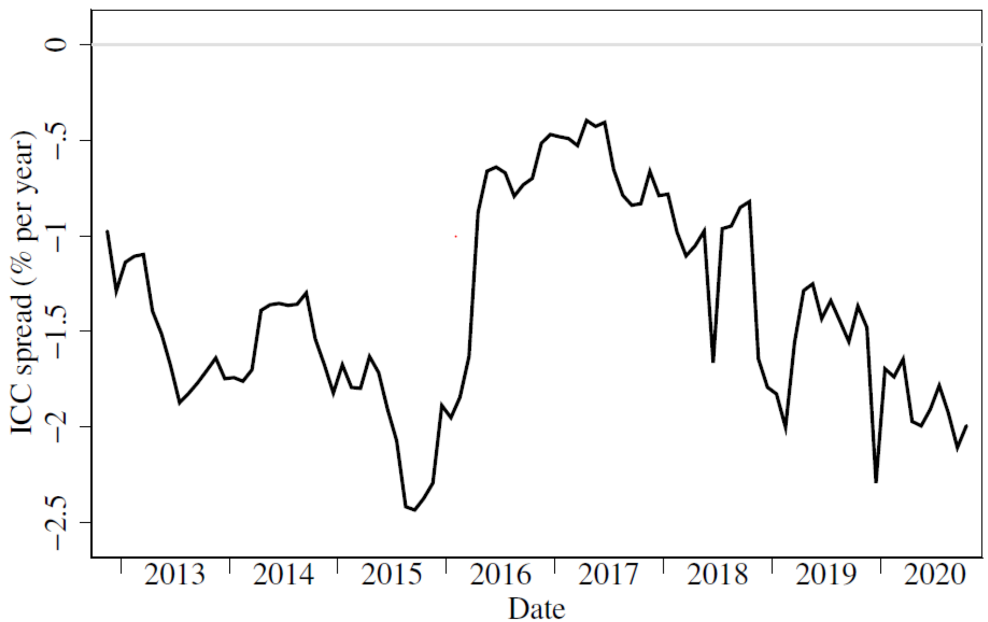
2 **Implied cost of capital**

Panel B: ICC spread (equity greenium)



Source *– Pastor et al when still a working paper*

- Increasing discount factors difference between 2016 and 2020.
- Growing investor demand for green assets.

3 Unexpected news adjusted returns

Since realized returns are made of:

- Cashflow news
- Discount factor news; and
- Expected returns

cleaning realized returns from the two first components would allow to estimate the impact of expected returns on recent green stocks performance.

Observed realized returns

−

Cash flow “true” news

- *Earning announcements*
- *Media news*

Discount factor “true” news

=

Expected returns

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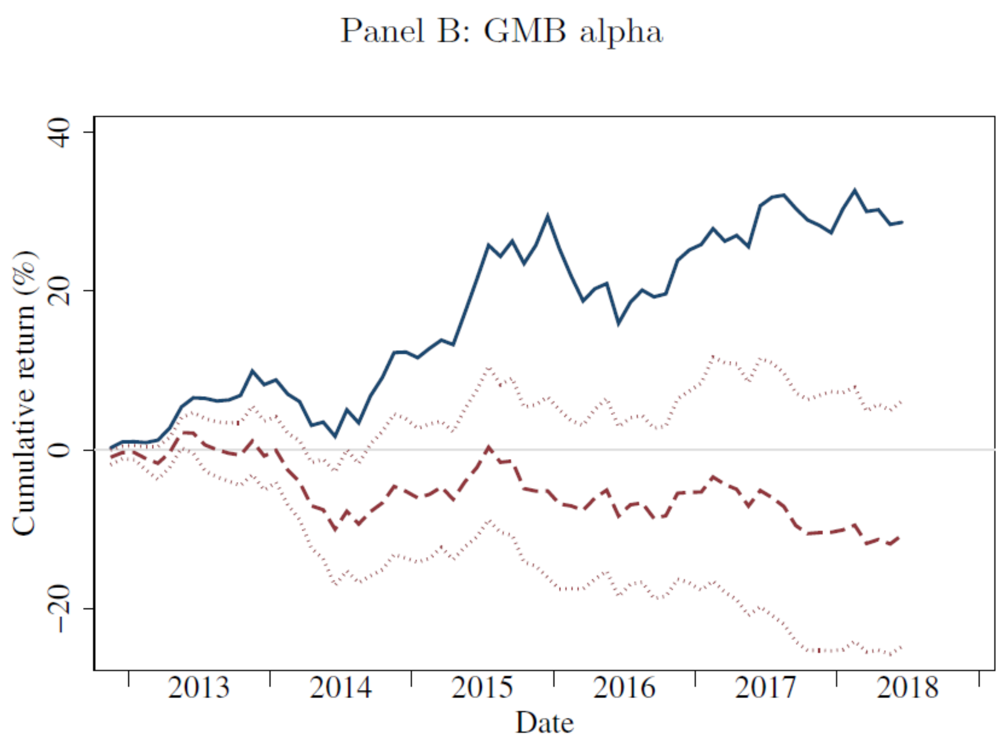
3 **Unexpected news adjusted returns**



Source *– Pastor et al when still a working paper*

- After cleaning realized returns from “true” news, the Green minus Brown portfolio did not generate superior returns.
- The cleaning have a larger impact on brown compared to green stocks.
- Controlling for green investing proportion indicates that realized returns were likely to be more driven by concerns than taste.

3 Unexpected news adjusted returns

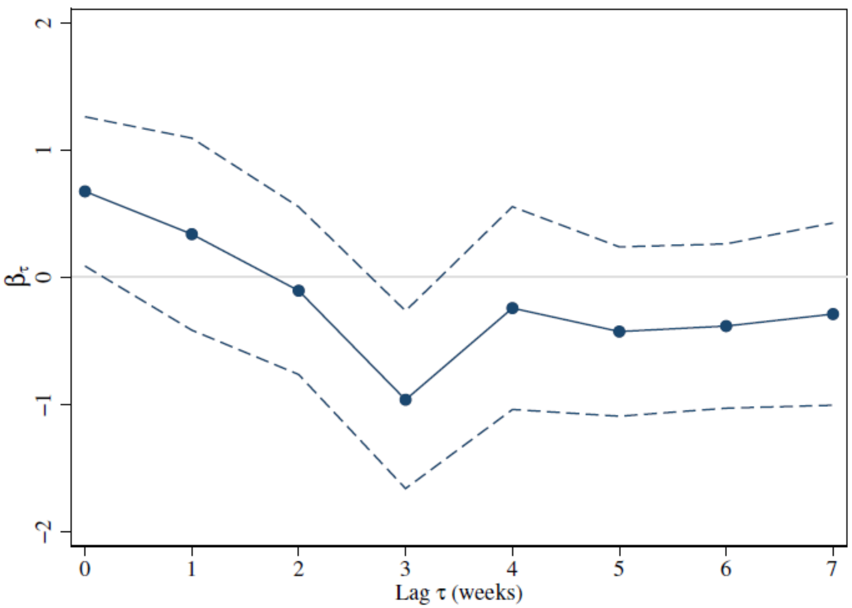


Figure 9. Weekly response of GMB to climate news: Large versus small stocks.

***Source** – Pastor et al when still a working paper*

- Some evidence of underreaction to climate news is found particularly for small stocks.
- Only small brown stocks react to news and with delay.
- Both larger green an brown stocks reacts and more rapidly.
- Some underreaction for larger brown stocks persists.

Key conclusion

- **Past** performance was driven by **realized returns** due to growing concerns, bad climate news and a growing taste for green investments.
- Evidence of a **sustainability risk premia** is suggested.
- The sustainability **risk-return relationship** appears to hold.

Key implication

- The **extrapolation** of past returns as projection for future returns for sustainability investing is **hazardous**.
- This **difference** between **realized** and **expected** returns should be given particular **attention** when designing disclosures and **marketing communications**.

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