Discussion: The Greenium Matters

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Praise

- Timely

- State of the art measurement of risk premium (follows Gagliardini et al., 2016)

- Innovative approach to measuring “greenness”

- Applications for financials and for supervisors:
  - Hedging against transition risk
  - Measuring financial stability implications of the energy transition (stress testing)
Questions

- Scope of emissions?

- What is the green factor coefficient? Not shown in paper.

- How does the green factor lead to portfolio losses in MES-approach? Set-up differs from Acharya et al. (2010).
Comments (i/iv)

- How flexible is the definition of the “greenness”-indicator?
  
  - Berg et al. (2019): ESG-ratings diverge substantially between rating agencies, due to reliance on different indicators and aggregation rules.
  
  - Would results differ much if a different indicator is used?
Comments (ii/iv)

- What would the risk premium be if you add oil and ETS-prices as additional factors?
  - Consider table 1: it’s based on Jan 2017 to Aug 2018 – a period in which
    - Oil prices ranged from less than 45 USD/barrel to more than 70 USD/barrel
    - The carbon price under the EU Emmissions Trading System ranged from ca. 5 EUR/ton to more than 20 EUR/ton

<table>
<thead>
<tr>
<th>Portfolio</th>
<th>Mean</th>
<th>Std</th>
<th>Kurt</th>
<th>Skew</th>
<th>Sharpe</th>
<th>t-stat</th>
</tr>
</thead>
<tbody>
<tr>
<td>$\tilde{R}$</td>
<td>1.102</td>
<td>0.497</td>
<td>3.744</td>
<td>-0.391</td>
<td>0.204</td>
<td>2.522</td>
</tr>
<tr>
<td>$\tilde{R}^g$</td>
<td>0.943</td>
<td>0.502</td>
<td>4.097</td>
<td>-0.593</td>
<td>0.188</td>
<td>2.315</td>
</tr>
<tr>
<td>$\tilde{R}^c$</td>
<td>1.732</td>
<td>0.586</td>
<td>5.210</td>
<td>-0.632</td>
<td>0.296</td>
<td>3.643</td>
</tr>
<tr>
<td>$\tilde{R}^b$</td>
<td>1.425</td>
<td>0.638</td>
<td>6.985</td>
<td>-0.909</td>
<td>0.224</td>
<td>2.754</td>
</tr>
</tbody>
</table>
Can you say that green stocks are “less risky” (ceteris paribus)? Could it be that demand and supply are unbalanced?

Comparison: Green bonds are issued at a premium, which is likely caused by demand exceeding supply (see, e.g., Ehlers and Packer, 2017)
Comments (iv/iv)

- Are T-bills the right proxy for the risk-free rate in European context?
  - Why not use a risk-free rate based on European data?
Suggestions for further research

- Is it possible to obtain more specific results?
  - Sector-specific greeniums
  - The “marginal greenium” for becoming slightly more green

- Apply methodology to broader ESG-factors
Practical application: DNB stress test (i)

- DNB transition risk stress test: Vermeulen et al., 2018/2019

- Sector-level equity losses:
  1) Macro-economic model to calculate market return, $f_{m,t}$
  2) Sector-specific loading-factor, TVF (Transition Vulnerability Factor)

$$\Delta Equity value_{Sector \, i, t} = TVF_{Sector \, i} \cdot f_{m,t}$$
Practical application: DNB stress test (ii)

- TVF is a hypothetical loading-coefficient, based on embodied emissions

- Could be replaced by a sector-specific “green factor”-loading:

\[ \Delta \text{Equity value}_{\text{sector } i, t} = b_{g, \text{sector } i} \cdot f_{g, t} \]

- This would “ground” the DNB stress test in market data
References


Thank you!