“Current state of and outlook on carbon disclosure research - A systematic literature review”

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Overview

• **Relevance**: rising climate change awareness, interest in non-financial information

• **Previous research**: literature review on carbon accounting (Stechemesser & Günther, 2012)

• **Goal of the paper**: overview on the topic of carbon disclosure, unveil inconsistencies, and point out paths for future research

• **Methodology**: systematic literature review
Conceptual Background

- Reporting non-financial information shown to improve shareholder value, stakeholder relations, and transparency (compare, Schaltegger, Bennett, & Burritt, 2006)

- Different definitions of the term “carbon”

- De facto standard: Carbon Disclosure Project (CDP) – “it reduces transaction costs, creates first-mover advantage, provides technical support and using the GHG Protocol it is a consistent standard” (Green, 2010).
Methodology

• Systematic literature review in four steps (Fink, 2010)
• Two databases: Social Sciences Citation Index (SSCI) and Business Source Premier (BSP)
• Only peer-reviewed Anglophone papers included
→ 69 papers for the review
• Qualitative content analysis (Mayring, 2010)
• Limitations in ensuring objectivity, reliability, and internal and external validity
Methodology –
Systematic literature review (Fink, 2010)

1) research questions, databases, and search terms
2) practical screening criteria → 547 papers filtered
3) methodological screening criteria (content analysis by Mayring 2010 - material collection, descriptive analysis, category selection, and material evaluation) → literature review abstraction form
4) synthesis and assessment of the findings
### Annex A: Keywords entered in the search engines of EBSCO and Web of Science

<table>
<thead>
<tr>
<th>Anchor Keywords</th>
<th>Report*</th>
<th>Disclos*</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Carbon</strong></td>
<td>“carbon* report*”, “carbon* * report*”, “report* carbon*”, “report* * carbon*”</td>
<td>“carbon* disclos*”, “carbon* * disclos*”, “disclos* carbon*”, “disclos* * carbon*”</td>
</tr>
<tr>
<td><strong>Emission</strong></td>
<td>“emission* report*”, “emission* * report*”, “report* emmission*”, “report* * emmission*”</td>
<td>“emission* disclos*”, “emission* * disclos*”, “disclos* * emmission*”</td>
</tr>
<tr>
<td><strong>Climate Change</strong></td>
<td>“climat* chang* report*”, “climat* chang* * report*”, “report* climat* chang*”, “report* * climat* chang*”</td>
<td>“climat* chang* disclos*”, “climat* chang* * disclos*”, “disclos* climat* chang*”, “disclos* * climat* chang*”</td>
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<tr>
<td><strong>Pollution</strong></td>
<td>“pollut* report*”, “pollut* * report*”, “report* pollut*”, “report* * pollut*”</td>
<td>“pollut* disclos*”, “pollut* * disclos*”, “disclos* pollut*”, “disclos* * pollut*”</td>
</tr>
<tr>
<td><strong>Global Warming</strong></td>
<td>“global warm* report*”, “global warm* * report*”, “report* global warm*”, “report* * global warm*”</td>
<td>“global warm* disclos*”, “global warm* * disclos*”, “disclos* global warm*”, “disclos* * global warm*”</td>
</tr>
</tbody>
</table>
Descriptive Analysis

- Majority of publications in last 5 years
- Distribution over several kinds of journals
- Widespread regional distribution underlines the international relevance of the topic
- About half without regional focus of investigation
- Few papers with industry-specific focus (mainly electricity and power plant sector)
- Focus on investors as addressees of carbon disclosure
**Fig. 1.** Distribution of literature over time and methodology

- **Non-empirical**
- **Empirical**

<table>
<thead>
<tr>
<th>Year</th>
<th>Non-Empirical</th>
<th>Empirical</th>
</tr>
</thead>
<tbody>
<tr>
<td>1976</td>
<td>1 (N=1)</td>
<td></td>
</tr>
<tr>
<td>1987</td>
<td>1 (N=1)</td>
<td></td>
</tr>
<tr>
<td>1993</td>
<td>1 (N=1)</td>
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<tr>
<td>2005</td>
<td>1 (N=1)</td>
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<td>2008</td>
<td>2 (N=3)</td>
<td></td>
</tr>
<tr>
<td>2009</td>
<td>4 (N=9)</td>
<td>5</td>
</tr>
<tr>
<td>2010</td>
<td>4 (N=6)</td>
<td>2</td>
</tr>
<tr>
<td>2011</td>
<td></td>
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<td>2012</td>
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<td></td>
<td>9</td>
</tr>
<tr>
<td>2016</td>
<td></td>
<td>12</td>
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</table>

(N=1)
Categories

- Carbon Disclosure
  - Assurance (5.3)
  - Determinants (5.1)
  - Contractors (5.1.3)
  - External (5.1.2)
  - Institutional investors (5.1.3)
  - Private (5.2)
- Actors (5.3)
- Quality (5.2)
- Measurement and Management (5. and 5.1.1)
- Emission reduction (5.2)
- Policy (5.1.2 and 5.2)
- Internal (5.1.1)
- Private (5.2)
Findings - Highlights

• Regulatory threat has a positive effect on disclosure (e.g., Choi et al., 2013; Freedman & Jaggi, 2005; Fried, Holtzman, & Duan, 2012)

• Low quality of information disclosed (e.g., Eccles, Krzus, Rogers, & Serafeim, 2012)

• Demand for more standardized reporting (e.g., Kolk et al., 2008; Stanny, 2013; Wegener, 2013)

• Mandatory reporting scheme necessary (e.g., McFarland, 2009; Raingold, 2010)
Theoretical Implications of Findings

- Theoretical background: stakeholder, legitimacy, institutional, and signaling theory
- Multi-theoretical approach
Implications for Future Research

• More longitudinal and large studies
• Interdisciplinary character of research because of the interconnections between the categories
• Develop practical solutions to address carbon disclosure
• Drivers for first movers and ‘spillover effects’ to draw conclusions for effective policies and incentives
• Disclosure on scope 2 and 3 emissions
Thank you for your attention!
### Table 1
Distribution of journals and articles over types of journals

<table>
<thead>
<tr>
<th>Type of Journal</th>
<th>Number of Journals</th>
<th>~ %</th>
<th>Number of Papers</th>
<th>~ %</th>
</tr>
</thead>
<tbody>
<tr>
<td>General business and Management</td>
<td>6</td>
<td>13</td>
<td>7</td>
<td>10</td>
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<tr>
<td>General accounting and finance</td>
<td>18</td>
<td>40</td>
<td>26</td>
<td>38</td>
</tr>
<tr>
<td>Environment and CSR</td>
<td>12</td>
<td>27</td>
<td>25</td>
<td>36</td>
</tr>
<tr>
<td>Economics, policy and law</td>
<td>9</td>
<td>20</td>
<td>11</td>
<td>16</td>
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<tr>
<td><strong>Total</strong></td>
<td><strong>45</strong></td>
<td><strong>100</strong></td>
<td><strong>69</strong></td>
<td><strong>100</strong></td>
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</table>
Annex B: Excerpt of the literature review abstraction form

<table>
<thead>
<tr>
<th>Authors</th>
<th>Place of work of first author</th>
<th>Type of Journal</th>
<th>Category in Fig. 4</th>
<th>Theoretical bases</th>
<th>Empirical</th>
<th>Method</th>
<th>Regional/local focus</th>
<th>Sector's</th>
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<tbody>
<tr>
<td>Andrew and Cortese, 2011a</td>
<td>Australia</td>
<td>General accounting and finance</td>
<td>Policy: Private</td>
<td>n</td>
<td>document analysis</td>
<td>energy firms</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Andrew and Cortese, 2011b</td>
<td>Australia</td>
<td>General accounting and finance</td>
<td>Policy: Private</td>
<td>n</td>
<td>document analysis</td>
<td>Australasian metals and mining companies</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Apergis et al., 2013</td>
<td>Greece</td>
<td>Environment and CSR</td>
<td>Emission reduction</td>
<td>new growth theory</td>
<td>y</td>
<td>document analysis</td>
<td>Germany, France and UK</td>
<td>manufacturing firms</td>
</tr>
<tr>
<td>Armstrong, 2011</td>
<td>USA</td>
<td>Environment and CSR</td>
<td>Determinants</td>
<td>n</td>
<td>conceptual/ theoretical</td>
<td>USA</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- Further Categories: Content, Definition, Reporting Programs used or discussed, Gases/scope of emissions included, Quality of disclosed information, Effect of disclosure on share value/stock market, Effect of disclosure on emission reduction/environmental performance, Assurance of carbon disclosure, ...
References