

Organization Capital and Firm-level Climate Risk Exposure

Emmanuel Edache Michael

Email: Edache.michael@vuw.ac.nz
School of Accounting and Commercial Law,
Victoria University of Wellington, New Zealand.

Extended abstract

Background and Motivation

Climate change poses a significant and urgent threat to corporations, the financial system, and the broader economy, as evidenced by its substantial economic consequences (Litterman et al., 2020). This growing challenge has heightened global awareness and fostered international collaboration aimed at mitigating its causes and impacts. The economic impact of climate-related disasters could range from \$1.7 to \$3.1 trillion by 2050 (Bennett, 2023), with the United States alone incurring over \$2.74 trillion in damages since 1980 (NOAA's National Centers for Environmental Information, 2020). Despite the ambitious goals of the 2015 Paris Agreement to limit global warming to well below 2°C, ideally 1.5°C, by 2100 (Michael et al., 2023; Ginglinger and Moreau, 2023), the risks associated with climate change remain a critical concern (World Economic Forum, 2023).

Given this context, it is surprising that no scholarly research has yet examined the relationship between organization capital and firm-level climate risk exposure¹, particularly since the Paris Agreement, which represents a significant milestone in international climate policy. The Paris Agreement has increased global awareness of climate risks exposure and heightens regulatory pressure on corporations in signatory countries, imposing compliance requirements and pushing firms to actively implement measures that reduce carbon emissions (Ramadorai & Zeni, 2024; Seltzer et al., 2024). This shift requires decarbonization strategies and sustainable practices (Ramadorai & Zeni, 2024), linking organization capital to climate risk exposure in line with the goals of the Paris Agreement. Organization capital, which encompasses a firm's unique knowledge base integrated into its core processes and systems, offers a competitive advantage that is difficult for competitors to replicate and fosters the development of capabilities that drive strategic goals (Hasan and Cheung, 2018; Lev et al., 2009; Lev et al., 2016). Companies with high organization capital, such as Microsoft and Apple, have proactively invested in climate-risk mitigation technologies. Thus, understanding how organization capital influences firms' climate risk exposure is crucial for both long-term viability and environmental stewardship.

¹ In this study, the terms 'climate change exposure' and 'climate risk exposure' are used interchangeably to refer to the same concept.

Theoretical Framework and Hypotheses Developments

This study adopts a multi-theoretical framework that integrates resource-based theory, signaling theory, financial constraints arguments, and agency theory to examine the relationship between organization capital and climate risk exposure (e.g., Provaty et al., 2024). From a resource-based perspective, organization capital, which is characterized by a firm's deeply ingrained knowledge, specialized capabilities, and processes, represents a rare, valuable and hard-to-imitate resource. This endows firms with a competitive edge not only in market performance but also in their capacity to strategically navigate and mitigate climate risks, enabling them to align with the Paris Agreement. Signaling theory complements this by suggesting that firms with robust climate risk management signal their commitment to stakeholders through public disclosures, such as earnings conference calls, reinforcing their responsible image. These perspectives suggest a negative relationship between organization capital and climate risk exposure post-Paris Agreement.

Conversely, financial constraints and agency theories suggest a positive relationship. The substantial investments needed for carbon neutrality and compliance with the Paris Agreement may financially burden firms with high organization capital, limiting their capacity to reduce climate risk. Additionally, organization capital, being intangible, may not be easily collateralized, further restricting external financing (Marwick et al., 2020), potentially hindering climate risk mitigation efforts. Agency problems, such as managers prioritizing personal gains over climate initiatives, could also exacerbate risk exposure.

Methodology and Findings

Using a panel of US firms, I investigate the relationship between organization capital and climate risk exposure post-Paris Agreement. The analysis reveals a significant negative relationship, supporting resource-based and signaling theories. This relationship is robust to various tests, including difference-in-differences combined with entropy balancing, propensity score matching, and instrumental variable approaches. Further, organization capital is linked to actual reductions in greenhouse gas emissions following the Paris Agreement.

Contributions

This study makes two key contributions. First, it extends the discourse on organization capital by demonstrating its role in mitigating climate risk exposure, providing a novel perspective on its importance in environmental sustainability. Second, it adds to the literature on firm-level climate risk exposure by establishing a link between organization capital and climate risk exposure after 2015. These insights are especially relevant as global climate disclosure policies, such as the IFRS S2 (2023), the ESRS E1 (2022), and the U.S. SEC's 2024 climate disclosure rules, increasingly influence corporate sustainability strategies.

References

- Bennett, P. (2023). *This website uses cookies*.
<https://www.weforum.org/agenda/2023/10/climate-loss-and-damage-cost-16-million-per-hour/2/12>
- Ginglinger, E., & Moreau, Q. (2023). Climate Risk and Capital Structure. *Management Science*, 69(12), 7492–7516. <https://doi.org/10.1287/mnsc.2023.4952>
- Hasan, M. M., & Cheung, A. W. K. (2018). Organization capital and firm life cycle. *Journal of Corporate Finance*, 48, 556–578. <https://doi.org/10.1016/j.jcorpfin.2017.12.003>
- Lev, B., Radhakrishnan, S., & Evans, P. C. (2016). *Measuring and Managing Organizational Capital*.
- Lev, B., Radhakrishnan, S., & Zhang, W. (2009). Organization capital. *Abacus*, 45(3), 275–298.
<https://doi.org/10.1111/j.1467-6281.2009.00289.x>
- Litterman, R. B., Anderson, C. E., Bullard, N., Caldecott, B., & et al. (2020). *Managing Climate Risk in the U.S. Financial System*.
- Makadok, R. (2001). Toward a synthesis of the resource-based and dynamic-capability views of rent creation. *Strategic Management Journal*, 22(5), 387–401. <https://doi.org/10.1002/smj.158>
- Marwick, A., Hasan, M. M., & Luo, T. (2020). Organization capital and corporate cash holdings. *International Review of Financial Analysis*, 68. <https://doi.org/10.1016/j.irfa.2020.101458>
- Michael, E. E., Dabel-Moses, J. N., Olateju, D. J., Emmanuel, I. D., & Michael, V. E. (2023). *Greenhouse Gas Emissions Research in Top-Ranked Journals: A Meta-Analysis*. 11–27.
<https://doi.org/10.1108/S1479-359820230000011002>
- NOAA National Centers for Environmental Information (NCEI). (2024). *NOAA National Centers for Environmental Information (NCEI) U.S. Billion-Dollar Weather and Climate Disasters*.
<https://doi.org/10.25921/stkw-7w73>
- Provaty, S. S., Hasan, M. M., & Luo, L. (2024). Organization capital and GHG emissions. *Energy Economics*, 131. <https://doi.org/10.1016/j.eneco.2024.107372>
- Seltzer, L., Starks, L. T., & Zhu, Q. (2024). Climate Regulatory Risks and Corporate Bonds. In *Working Paper*.
- World Economic Forum. (2023). *The global risks report 2023* (Vol. 18). World Economic Forum.
<https://www.weforum.org/publications/global-risks-report-2023/>