

Integrating nature-based carbon sequestration into asset pricing models

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Abstract

This research project seeks to integrate forest ecosystem carbon sequestration into asset pricing models, enhancing financial tools with environmental valuation. It aims to redefine asset pricing mechanisms by incorporating the carbon sequestration potential of forests, offering a novel approach to valuing natural assets. The project combines ecological sustainability with economic theory, influencing investment strategies towards environmentally responsible practices. This research expects to produce a validated model for asset pricing that accounts for carbon sequestration, contributing to a greener economy and providing a template for future research in environmental finance as well as supporting the sustainability reporting requirements as per *International Financial Reporting Standard S1* and *S2*.

Further details

The adoption of international agreements like the *United Nations Framework Convention on Climate Change* (UNFCCC) and the *Sustainable Development Goals* (SDGs) underscores the urgent need for economically viable, socially acceptable, and environmentally sound solutions to climate change. The urgency of the matter prompts the *International Accounting Standards Board*, which is responsible for the International Financial Reporting Standards (IFRS) for over 140 countries to adopt, to issue two standards, S1 and S2, on sustainability reporting requirements.

Companies have been actively looking into reducing their greenhouse gasses emissions, and offsetting what they are unable to eliminate, even before S1 and S2. These efforts involve investments in forestry carbon sequestration to offset their emission. In Australia for example, 53% of the Australian Carbon Credit Unit issued in the first quarter of 2024 are forest-based. This is translated into 2 million tonnes of CO₂ equivalent being removed from the air.

Forest ecosystems play a crucial role in global carbon cycles, sequestering atmospheric carbon and mitigating climate impacts. However, current asset pricing models often overlook the environmental benefits provided by these ecosystems, particularly their carbon sequestration potential.

The current market dynamics also present a challenge in which carbon pricing alone may not be as financially attractive as other land use options. This situation underscores the need for a more comprehensive valuation of forest ecosystems that includes the full range of benefits they provide, including carbon sequestration, biodiversity conservation, and other ecosystem services.

Given the growing recognition of forests in carbon sequestration, this area of research aims to redefine asset pricing mechanisms by incorporating this crucial ecosystem service. This integration not only enhances the valuation of natural assets but also supports the development of environmentally responsible investment strategies. Furthermore, it aligns with emerging sustainability reporting requirements, such as those outlined in the IFRS S1 and S2, which emphasise the need for transparency in climate-related financial disclosures.

Given the aims of this research stream, a PhD and master by research (MBR) project is likely to combine traditional financial data with environmental data of primary and/or secondary data. The following indicative research questions form the basis of this research.

1. How does forestry carbon sequestration influence a land asset value?
2. How are the effects of nature-based carbon sequestration transmitted to financial assets?
3. What are factors driving corporates to invest in nature-based carbon sequestration projects?
4. To what extent do local and global carbon sequestration standards influence board decisions on greenhouse gas emissions?
5. What are the challenges in and criticisms against nature-based carbon sequestration projects and how the authorities respond?

References

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Desired skills: Data analytics, financial modelling, Python, economic theory.

Project area: Accounting and Finance

Project level: PhD, MBR