

University of Southern Queensland

**Carbon risk management, carbon disclosure and stock
market effects: An international perspective.**

A dissertation submitted by

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ABSTRACT

This research investigates interrelations between carbon risk management, carbon disclosure, and two measures of stock market effects: the ex-ante cost of equity capital and market value. It is conducted based on a sample comprising the 500 largest global companies (G500) in 2009. Carbon risk management in this research is defined as the firm's ability to estimate its historical and expected carbon intensity, identify potential carbon and climate change risks and associated opportunities, actions undertaken or planning to undertake to minimise risks and maximise opportunities, and the firm's efficiency and effectiveness in managing these issues. Carbon disclosure is defined as set of quantitative and qualitative information that relates to a firm's past and forecasted carbon emissions levels; its exposure to and financial implications of climate change associated risk and opportunities; and its past and future actions to manage these risks and opportunities.

Three major contributions to the literature are made by this research. First, this study extends the literature on the relationship between environmental performance and disclosure by examining a specific and topical type of environmental performance and disclosure: carbon risk management and carbon disclosure. The results provide new evidence and support the prediction of economics-based disclosure theories (signalling and voluntary disclosure theories) that environmental disclosure is positively associated with environmental performance. Firms with superior carbon risk management tend to provide high quality and detailed disclosure about their carbon and climate change performance. When carbon risk management is controlled, these results reject the conjecture of socio-political theories (legitimacy and stakeholder theories) that inferior carbon risk performers provide more positive

carbon disclosures. These results are further supported by intra-country and industry analyses as well as disaggregation of carbon risk management and disclosure into its components (sub-scores).

The disaggregated scores analyses reveals the role of particular carbon risk management practices in enhancing disclosure quality about them. Firm's historical carbon risk management as measured by its carbon emissions intensity is not associated with disclosure quality about the actual emissions and accounting standards to calculate them. In contrast, all other current and future carbon risk management strategies are positively associated with the disclosure quality about these strategies. This suggests that firms' management are more likely to disclose high quality and credible information about their commitment to tackle climate change risks than their historical emissions since it reflects their historical emissions performance. These results, therefore, highlight the importance of partitioning carbon risk management and disclosure measurements to their components rather than relying on aggregated indices.

Second, it develops comprehensive definitions and measurements for carbon risk management and disclosure. These new definitions and measurements tackle some shortcomings prevalent in prior research; thus, enhancing the rigour of results. Third, this research contributes to the debate about the economic consequences of environmental performance-disclosure activities by investigating the stock market effects of carbon risk management and carbon disclosure. This study fails to find a significant association between carbon risk management and disclosure and stock market indicators as expressed by the ex-ante cost of equity capital and market value.

These results suggest that better carbon risk management and disclosure practices do not lower the ex-ante cost of equity capital or increase a firm's market value. These results could be viewed in two ways. First, investors may not know how to interpret carbon risk management related information; thus they do not consider this information to be useful or they do not know how to value it. Second, investors are not interested in carbon risk management and disclosure activities or do not believe that engaging with such activities could lead to change in a firm's reputation and competitive advantage or a reduction in risk. Hence, they do not make investment decisions on this basis. These results are robust to several additional analyses. Intra-industry and country analyses show similar results. Additionally, other tests are performed to check whether investors are interested in particular carbon risk management activities or disclosure categories such as historical emissions data or future carbon risk management strategies and activities. Once again, no association between stock market indicators and carbon risk management and disclosure categories is observed.

CERTIFICATION OF DISSERTATION

I certify that the ideas, analyses, results and conclusions contained in this dissertation are entirely my own effort, except where otherwise acknowledged. I also certify that the work is original and has not been previously submitted for any other award, except where otherwise acknowledged.

Signature of Candidate

Date

ENDORSEMENT

Signature of Supervisor

Date

Signature of Supervisor

Date

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CANDIDATE'S PUBLICATIONS

Journal papers with other authors (note, this work is indirectly related to my PhD research):

Cotter, J., Lokman, N. And Najah, M., 2011 “Voluntary disclosure research: Which theory is relevant?” *Journal of Theoretical Accounting Research*, vol. 6, no. 2, pp. 77-95.

Cotter, J., Najah, M. and Wang, S., 2011 “Standardized reporting of climate change information in Australia”, *Sustainability Accounting, Management and Policy Journal*, vol. 2, no. 2, pp. 294-321

Cotter, J. and Najah, M., 2012 “Institutional investor influence on global climate change disclosure practices” forthcoming in *Australian Journal of Management*, Special Issue on Sustainable Finance and Investing.

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