HKUST IEMS
INSTITUTE FOR EMERGING MARKET STUDIES

SUMMER 2025 **no.97**

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# SUSTAINABILITY & CLIMATE RISKS

## THOUGHT LEADERSHIP BRIEF SERIES


# The Double-Edged Sword of Firm's Net Zero Commitment on the Carbon Risk Premium

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## KEY POINTS

- In financial markets, more institutional investors and asset managers have started to include firms' GHG emissions in their investment decisions. Given the combined pressure from the government, the public and the financial market participants, firms' GHG emissions have become a new source of risk for investors.
- After firms declare a net zero commitment, the carbon risk premium may increase or decrease depending on firms' transition readiness.
- Institutional investors shape the premium by divesting from high-emitting firms that have declared NZC.

## ISSUE

Achieving net zero is the only way to avoid the irreversible impact of global warming. The carbon risk premium represents the excess return that equity investors demand to compensate for their exposure to a company's carbon risk. In response to this risk, a growing number of firms have declared net zero commitment (NZC) to signal their intention to address carbon risk. According to the net zero tracker, more than half of the world's largest 2,000 publicly listed companies by revenue have committed to net zero and have declared that they are willing to contribute to the world achieving climate neutrality.

By estimating the carbon risk premium in a cross-section of 1,100 listed firms that have declared NZC as of December 2022 worldwide, we find that after firms declare NZC, the carbon risk premium may increase or decrease depending on firms' transition readiness. A firm's declaration of

NZC could reduce its carbon risk premium if investors perceive that net zero is optimal for the firm in the long run. For instance, suppose that a firm has sufficient transition capacity to achieve a low carbon transition in a cost-efficient manner. As such, firms enjoy greater net benefits during GHG abatement, and the carbon risk premium decreases with the declaration of NZC. On the other hand, such a declaration could increase the carbon risk premium if investors perceive that net zero is suboptimal. For instance, some firms in countries with loose climate policies might face minimal urgency in low-carbon transitions. Achieving net zero might actually bring negligible benefits to these firms while they have to pay abatement costs. When the benefits are smaller than the costs, net zero is a suboptimal decision, and a declaration of NZC could result in a larger carbon risk premium. Institutional investors further divest from high-emitting firms that declare NZC, channelling carbon risk into stock markets.

## ASSESSMENT

Our primary database covers the period ranging from 2016 to 2022 and includes six datasets: Trucost, which provides annual information on firm-level GHG emissions; Science Based Targets initiative, which provides data on companies that have committed themselves to net-zero targets; S&P Capital IQ, which provides data on firms' financial statements, and environmental performance-related reports, such as ESG reports, sustainability reports, CDP questionnaires, and TCFD reports; Bloomberg, which supplies data on stock returns and institutional ownerships; Our World in Data, which provides annual data on energy use per capita, renewable electricity output as a percentage of total electricity output by countries, and coverage of carbon pricing; Yale Center for Environmental Law & Policy, which has developed an indicator of the ambition and stringency of government climate policies.

### Net Zero Commitment

Given the importance of net zero in mitigating climate change, it is natural to study whether and the channel through which the carbon risk premium is explained by a firm's declaration of NZC and, in turn, allows policy-makers to identify the implications of financial instability originating from such a declaration.

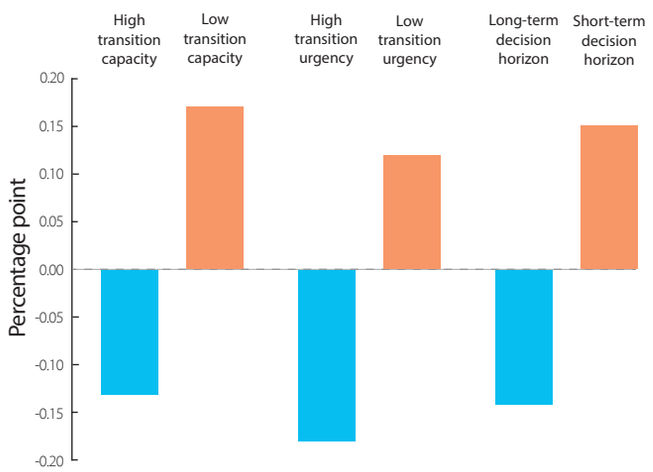
We find that the carbon risk premium is positively related to the level of greenhouse gas (GHG) emission intensity, which is measured as the ratio of total GHG emissions to sales revenue, but not to the level of total GHG emissions, controlling for characteristics that predict stock returns. This result is statistically and economically significant in that a 1% increase in GHG emission intensity is associated with a 1.7% increase in annualized stock returns. Hartzmark and Shue (2023) mentioned that investors almost exclusively focus on carbon intensity when discussing net zero investments. As such, the relative importance of GHG emissions intensity in pricing carbon risk has increased.

### Transition Readiness as a Key Factor

We find that, in general, a firm's carbon risk premium did not significantly change after its declaration of NZC. However, we find that the impact of NZC on the carbon risk premium varies substantially with the firm's transition readiness.

Based on the theoretical foundation laid in Chan et al. (2024), the authors characterize a firm's transition readiness by three components: (i) transition capacity, measuring the cost-effectiveness of its available means to abate emissions; (ii) transition urgency, measuring the external pressure it faces to abate emissions; and (iii) discount rate, measuring the decision horizon of its investors.

*Figure 1: Change in carbon risk premium following a firms' NZC by transition readiness*



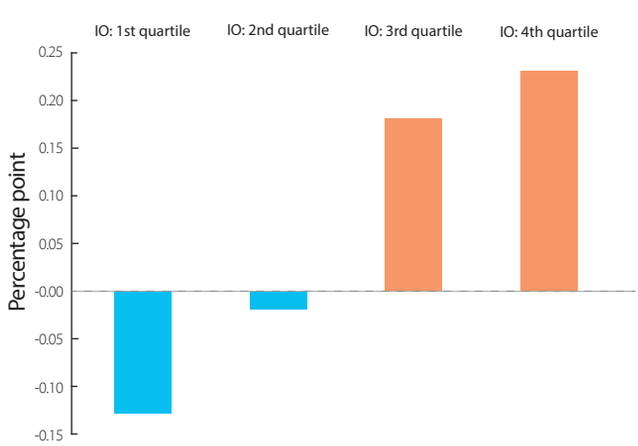

We study how the enterprise value of a firm is affected by its transition ambition as signalled by its NZC declaration, and then empirically examine the impact of NZC on the carbon risk premium using a sample of 1,177 firms that had declared NZC by the end of 2022. The empirical findings corroborate the theoretical propositions, suggesting two distinct scenarios:

- For firms with low transition readiness, the future benefits of addressing carbon risk are negligible relative to the abatement cost and are insufficiently valued by their investors given the latter's short-termism. Consequently, the higher transition ambition of these firms communicated by their NZC is perceived negatively, as evidenced by an increase in their carbon risk premium.
- For firms with high transition readiness, emissions abatement can be achieved in a cost-effective manner, duly addressing the high carbon risk that concerns their investors given the latter's long-termism. Thus, the higher transition ambition of these firms communicated by their NZC is perceived positively, as evidenced by a decrease in their carbon risk premium.

### Institutional Investors as a Key Channel

We also find that institutional investors divest companies with high GHG emission intensity. Additionally, we find that the divestment behaviour of firms with high GHG emission intensity is more significant if they have declared NZC. This result is statistically and economically significant: a 1% increase in GHG emission intensity is associated with a 1.36% decrease in institutional ownership if the company has not declared its NZC, compared to a 1.71% reduction if the company has declared such a commitment. Furthermore, we find that compared to firms with smaller institutional ownership, not only are the carbon risk premiums of firms with larger institutional ownership greater, but also the carbon risk premium will increase because of firms' declarations of NZC. Overall, we find that institutional investors tend to divest more from brown firms that have declared their NZC, implying that they focus more on concrete actions rather than merely verbal declarations.

*Figure 2: Change in carbon risk premium following a firms' NZC by share of institutional ownership*




## RECOMMENDATIONS

Achieving net zero is the only way to avoid any irreversible impact of global warming. Coordinated actions around the globe must be taken. More climate policies will be rolled out from policymakers, and the general public is expected to place greater demand on firms to take climate actions. To support the low-carbon transition of their economies, governments should adopt a dual approach: encouraging companies to make NZC, while simultaneously devising policies to support their transition readiness. The latter comprise building transition capacity, raising transition urgency, and extending decision horizons.

Building transition capacity involves boosting the carbon and energy efficiency of the economy. Reducing the emissions intensity of the energy mix is vital. Apart from directly providing subsidies to support green R&D, governments could leverage private capital by promoting the development of the green finance market to facilitate the diffusion of low-carbon technologies.

Raising transition urgency involves substantiating the national commitment to net zero. The government could project the trajectory of carbon prices and their sector coverage, stipulate how the technical screening criteria in their green taxonomies are to be tightened over time, and provide a clear roadmap of climate policies to affirm companies of the necessity to take climate actions.

Extending decision horizons involves aligning corporate governance with the long-term interests of companies. For instance, in April 2021, the Securities Commission Malaysia updated its Code of Corporate Governance to include performance evaluations of the board and senior management in addressing the company's material sustainability risks and opportunities.

By enhancing transition readiness at the institutional level, companies can benefit from a lower cost of equity by declaring NZC. At the system level, this can also enhance financial stability by preventing the buildup of carbon risk premium in the financial market, which could intensify co-movement of asset prices and abrupt price correction. Future research should take a granular look at the different types of institutional investors, differences in investment horizons and environmental consciousness to increase our understanding of the variation in importance in channelling carbon risk.

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