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Climate Risks and the Cost of Debt: Why Climate Policy Matters

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At a glance

- Climate policy is key to achieving the required CO_2 emission reductions for the transition towards a sustainable low-carbon economy.
- Climate policy causes direct and indirect compliance costs and negatively affects the financial performance of carbon-intensive firms or firms in the fossil fuel sector, which translates into a higher default probability.
- Recent empirical evidence demonstrates that increases in climate policy ambition increase the credit risks and, therefore, the costs of debt of carbon-intensive firms.
- There are "winners" and "losers" of climate policy: tighter climate regulations increase the credit risks and costs of debt of high-emission firms, while those of low-emission firms decrease.
- Climate policies provide rules and incentives for firms to reduce carbon emissions, while also affecting financing costs and playing a key role in redirecting capital flow towards low-carbon activities.
- Too lenient climate policy provides insufficient incentives for emission reductions and can also reduce the capital flows to firms aligned with the transition.
- Climate policy should be complemented by sustainable finance instruments, such as climate-related reporting, which enable creditors to better asses climate-related risks, and transition plans, which can help high-emission firms raise capital to finance their transition.

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Introduction

One of society's greatest challenges in the 21st century is the transition towards a sustainable low-carbon economy. Countries all over the globe have committed to taking on this challenge through their alignment with the 2015 Paris Agreement whereby the international community agreed to limit global warming to well below 2°C. Climate change can cause acute and chronic physical risks as a result of short and long-term changes in weather patterns such as extreme weather events and rising sea levels, which we are already observing. As a result, there is a growing urgency to combat climate change. However, this could result in a disorderly transition – including substantial frictions – if countries do not take decisive and sufficient action early enough. The recent proposal by the EU Commission for a new EU wide interim emission reduction target of 90% by 2040, inline with recommendation of the scientific advisory board, shows that a big part of the decarbonization needs to be realized within the next 15 years.[1] This means that climate policies in many EU countries will need to be more stringent. The transformation of economies towards carbon neutrality can imply climate-related transition risks for companies, in particular for those that are carbon intensive themselves or in their supply chain and/or produce goods that are carbon intensive in their use.

These climate-related risks are of key importance for financial investors and banks. If an ambitious climate policy is introduced at some point in the future, firms with business models that are not aligned with such a policy are at a higher risk of default. This also represents a substantial risk for investors and banks that have a large share of such firms in their portfolios. Hence, one major theme within sustainable finance evolves around the question of whether financial market actors that provide capital for companies, i.e., debt and equity investors and banks, consider these transition risks in their decisions and price them accordingly. This is not only relevant for financial investors and banks, who want to avoid major risks from so-called stranded assets in their portfolios, but it is also important for the stability of the financial system (Battiston et al. 2017, 2021; Campiglio, 2023).

[1] https://climate.ec.europa.eu/eu-action/climate-strategies-targets/2040-climate-target_en

Not surprisingly, financial investors are increasingly interested in companies' climate risks (Krueger et al., 2020; Bolton and Kacperczyk, 2021, Rink, 2024). There is a vivid societal, political, and academic debate about the effect of climate risks on the real economy and their impacts on financial market actors and the system as a whole. A key challenge is to enable and incentivise financial market actors to appropriately identify, consider, and price climate-related risks. Several approaches and instruments that address this challenge, such as climate-scenario analysis, are already being discussed and implemented. They can be used by companies to assess and manage company-specific climate risks (Kempa et al., 2021) and by banks and banking regulation to assess the financial impacts of climate risks on individual financial institutions or the banking and financial system as a whole (Wilkens et al., 2023). To appropriately assess the risks, financial market actors require climate-related information from firms, highlighting the importance of consistent reporting standards (Bassen et al., 2022). In this policy brief, we focus on the effect of climate policy on climate-related risks on debt.[2] We first present conceptual arguments as to why and how climate policy matters for financial market actors, even though is a real economy regulation. We then present empirical evidence on the impact of climate policy on firms' credit risks and costs of debt before finally discussing policy recommendations.

Why climate policy matters for creditors' valuation of firm-level climate-related risks

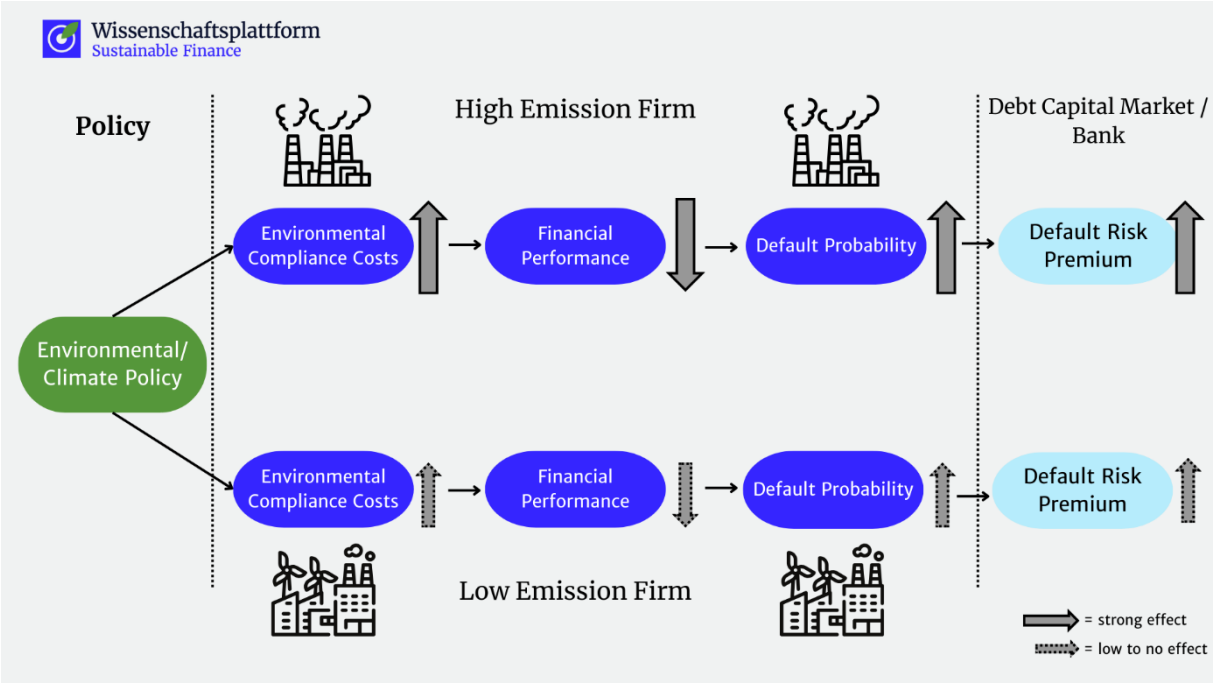
In general, climate policy instruments do not focus on financial market actors, but on companies in the real economy. Kempa and Moslener (2024) argue that these policies and regulations affect a company's risk of default and hence ultimately the default risk premium on debt capital. This relationship is outlined in Figure 1.

Climate policies and regulations focus on firms' climate and environmental externalities, e.g., their CO_2 emissions, or on whole sectors, such as the fossil fuel sector. How these instruments affect firms depends on their type. Command-and-

[2] This relationship is also relevant for equity (see, e.g., Bolton and Kacperczyk, 2023; Basse Mama and Mandaroux, 2022; Görgen et al., 2020; Monastrelo and de Angelis, 2020; Oestreich and Tsiakas, 2015; Chapple et al., 2013).

control instruments, such as bans on the use of certain technologies or emission standards, directly enforce changes in production processes or technologies. In contrast, market-based policies, such as carbon taxes or emission trading systems, put a price on externalities that incentivise organisations to reduce their emissions (Pizer and Kopp, 2005). A regulation can cause direct compliance costs for the firm, such as investment in cleaner production technology or additional expenditures related to the carbon price such as buying emission allowances or paying carbon tax. Climate regulation can lead to further, indirect costs for firms. For example, if investments in abatement to comply with the regulations are high, it can crowd out potential alternative investments. Firms in fossil fuel sectors and firms with high externalities, such as CO_2 emissions, typically incur particularly high costs.

Figure 1: Schematic Illustration of the relationship between climate policy and firms' cost of debt.



Source: Own illustration based on Kempa and Moslener (2024).

Climate policies will have to become more stringent to achieve the required CO_2 emission reductions. On the firm level, however, CO_2 emissions are rather persistent (Bolton and Kacperczyk, 2023). This means that firms with high CO_2 emissions are particularly exposed to transitory climate risk, as they might not be able to quickly reduce their emissions should climate policy become more ambitious. Not surprisingly, rational forward-looking investors consider regulation as a main source

of climate risk for firms (Stroebel and Wurgler, 2021). Overall, both the current level of climate policy ambition and expected changes in policy ambitions are important. An increase in non-expected policy ambition today could be interpreted as a signal for more ambitious policies in the future. It follows that the expectation of higher direct and indirect costs of climate policy translates into higher risks of default, in particular for carbon-intensive firms or firms in the fossil fuel sector. Bond investors and banks that expect that climate policies will become more ambitious in the future might assess these firms as *not aligned with the transition*. Consequently, firms using carbon-intensive and fossil fuel-based technologies would be assessed as riskier, while firms operating with low-carbon or clean energy and energy-efficient technologies are less risky. This may relate to differences within and across sectors. For policymakers, this means that any changes in climate policies do not only affect firms, e.g., by incentivising emission reductions, but also the credit risk and cost of debt and hence ultimately capital flows to low- and high-carbon firms.

A company's financial performance and default probability can also be indirectly affected by the carbon intensity in its supply chain, both upstream and downstream. Consider a company that relies on suppliers from the fossil fuel sector - A sharp increase in climate policy stringency can increase the financial stress of these suppliers, which might lead to higher input prices (if the supplier incurs higher costs due to regulation), or even cause defaults of some suppliers. Consequently, the company might have to reorganise its supply chainby finding alternative suppliers (e.g., from other regions) or by finding substitutes for its inputs. Any of these activities would be costly and risky for the company. In the downstream case, consider a company that produces for a product market that is largely reliant on fossil fuels. Consider, e.g., a car manufacturer producing (mainly) vehicles with conventional combustion engines. An increase in climate policy ambition, such as an introduction or increase of a CO_2 tax, would reduce the demand for combustion-engine vehicles, which would negatively affect firm revenues and potentially incur additional costs, such as R&D expenditures on alternative low-carbon technologies.

The impact of climate policy on the costs of debt

There are substantial reasons why climate policy and regulation matter for how creditors consider firm-level climate-related risks, which are supported by empirical evidence. For example, several recent studies have found that climate policy impacts the costs of debt. Specifically, Delis et al. (2021) used Dealscan data on syndicated loans given to 843 firms with headquarters in 22 countries and fossil fuel reserves in 59 countries. The authors found that exposure to climate policy increases the spreads of loans to fossil fuel firms compared to non-fossil fuel firms. The introduction of the Paris Agreement led to higher bond spreads for firms with high carbon emissions (Seltzer et al. 2022). In line with this finding, Capasso et al. (2020) found that the Paris Agreement increased the impact of firms' carbon emissions on their credit risk. Similarly, the introduction of carbon pricing policy instruments, such as emission trading schemes, can affect loan conditions. Moreover, Ivanov et al. (2023) analysed the Californian cap-and-trade system and found that private firms with higher exposure to the regulation, i.e. a higher share of GHG emissions that are regulated under the system, are charged higher interest rates on their bank loans.

Kempa et al. (2021) analyse the effect of climate policy and environmental policy on the costs of debt of energy firms in the OECD using data on syndicated loan spreads.[3] The data reveals that until the mid-2000s, loans to renewable energy firms had, on average, higher spreads than loans to fossil fuel firms. This situation wasreversed after 2010, i.e., renewable energy firms had, on average, lower financing costs. This pattern remains after controlling for other factors that can affect a firm's probability of default and its loan spreads, such as its size, indebtedness, and profitability. The authors analyse changes in environmental and climate policies as a potential driver behind these developments. The empirical findings are in line with the theoretical expectations outlined above and demonstrate that if a country's climate policy becomes more ambitious, the costs of debt of renewable energy firms decrease. This finding implies that credible policy signals make banks perceive firms in the renewable energy sector as less risky. This indicates that a more stringent climate-

[3] The loan (or bond) spread can be interpreted as a measure of a company's risk to default: the higher the risk, the higher the risk premium it has to pay.

related real economy regulation can indirectly induce a reduction of the cost of debt and potentially increase capital flows to clean energy firms.

Kempa and Moslener (2024) extend this analysis by focusing on credit risk ratings of firms and corporate bond spreads and, instead of comparing sectors, focused on firm-level CO_2 emissions. Their analysis consists of two main parts. First, the authors use credit risk ratings of EU firms from Standard & Poor's to investigate how the relationship between a firm's CO_2 emissions and its credit risk rating is affected by policy stringency. In a second step, the authors conduct a similar analysis for spreads of corporate bonds emitted by EU firms. The key findings confirm the theoretical expectations and the empirical insights from the energy sector of Kempa et al. (2021): the ambition of climate policies affects how financial market actors evaluate climate-related risks of firms. When a country's climate policies become more stringent, high CO_2 emissions are associated with a worse credit rating. In other words, carbon-intensive firms are perceived as riskier. A similar effect can be observed in the case of corporate bonds: the carbon-risk premium charged by bond investors increases.

Furthermore, low- and high-carbon firms are affected differently by changes in climate policy ambition: If climate policies become more stringent, both the credit risks of firms with high CO_2 emissions and the spreads of bonds issued by these firms increase. In contrast, clean firms, i.e. those with low CO_2 emissions, benefit from such a policy adjustment: their credit risk ratings improve and the spreads of their emitted bonds decrease. In other words, there are "winners" and "losers" of increasing climate policy stringency. This indicates that climate policy differentially affects the costs of debt of low- and high-carbon firms, which may make it easier for low-carbon firms to raise capital in an ambitious climate policy environment.

Finally, the findings of Kempa and Moslener (2024) stress the impacts of too lenient policy and regulation. The authors find that the effect of CO_2 emissions on the credit risk and bond spreads disappears or, in the case of the former, can even switch directions if regulation is very lenient. This means that high emissions are not perceived as risky or could be even valued as risk-reducing in the absence of a sufficient policy ambition, which results in cheaper debt capital for CO_2-intensive firms.

Conclusions

Overall, providers of debt, both bond investors and banks, already consider whether firms are aligned with the transition towards a sustainable low-carbon economy. The available empirical findings highlight the importance of climate policy and regulation for the valuation of climate risks of firms. More ambitious climate policies lead to higher credit risks and costs of debt for non-aligned firms, such as carbon-intensive firms or firms in the fossil fuel sector, and lower capital costs for firms with business models that are consistent with the transition, in particular those with low carbon intensities or firms in the renewable energy sector. This indicates that financial market actors look at current climate policies as an important signal also for climate policy ambition in the future.

Overall, the empirical evidence shows that climate policies and regulations are not only crucial to provide rules and incentives for firms to reduce carbon emissions, which is their prime objective but are also a key determinant of financial market actors' valuation of firm-level climate-related risks. Hence, policymakers should consider that climate policies can affect financing costs and ultimately influence capital flows. Hence, they play a key role in redirecting capital flow towards activities that are aligned with the transition towards a sustainable low-carbon economy. This indirect effect of climate policy on financial markets should be considered by policymakers and regulators. Too lenient climate policy does not only provide insufficient incentives for emission reductions but can also ultimately reduce the capital flows to firms aligned with the transition.

Finally, it is important to highlight that ambitious climate policy should be accompanied by sustainable finance instruments. One key instrument in this regard is climate-related reporting. As argued above, climate policy affects the valuation of firms' climate-related risks, however, for financial investors to be able to do so, they require the relevant information on firms. Reporting regulations, such as the Corporate Sustainability Reporting Directive in the EU, have an important role here. In particular, transition plans can be of key importance. Empirical evidence suggests that high-emission firms will have higher costs of debt if climate policies become more ambitious. The issue here is that those firms that do want to reduce emissions

might have difficulties raising capital that is not too costly. From a societal perspective, however, it would be beneficial if those firms would transform themselves. Here, transition plans might help high-emission firms to credibly communicate their ambition and strategy to financial investors. This highlights the importance of sustainable finance instruments as complements of climate policy to achieve this transition.

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About the project

The Sustainable Finance Research Platform is a joint project between five German research institutions conducting research on different aspects of Sustainable Finance, e.g. sustainable investments, sustainability risks and chances, and sustainability reporting. With their independent research, the project partners aim

to support stakeholders in politics, the financial sector, and the real economy in understanding and shaping the central role of capital markets in achieving a net-zero economy. The researchers involved answer social, political, and business-related questions, provide established and new research findings, and participate in political and public debate. They also want to establish sustainable finance as a topic in the German research landscape and secure connections with international institutes and processes.

More information can be found on the project's website https://wpsf.de/en/

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