

Financial firms and climate risk assessment

2021 has been characterised by, among other things, headline-grabbing heat waves, wildfires, and flooding, as well as the UN Climate Change Conference due to take place in Glasgow this October and November. As physical risks are increasingly realised each year and talk from governments on addressing climate change takes a more dire tone, the financial sector is being encouraged to adopt measures to mitigate against these risks. This article briefly discusses the issues faced by the financial sector and central banks with regard to the risks associated with climate change.

Climate change can pose a threat to both financial stability and monetary stability through (i) physical risks related to acute weather and chronic climate changes, (ii) transition risks associated with the transition to a low-carbon (and ultimately net zero or even net negative) economy, and (iii) liability risks arising from affected parties seeking compensation for climate damages incurred.¹ Of these risks, transition risk appears to be the most significant risk in the short- to medium-term (the first half of this century). This is likely due to the great deal of uncertainty surrounding the trajectory of emissions and governments' will to mitigate them, which creates an environment which is not especially conducive to low-carbon investment.² If such investment is not undertaken and action is instead delayed, then a scenario which the Network for Greening the Financial System (NGFS) has labelled as a "delayed transition" may occur, causing a disorderly and abrupt transition towards net zero and potentially risking stranded assets and shocks to asset prices (alongside more extreme weather as a result of the additional greenhouse-gas emissions).³ Therefore, such a scenario represents a threat to financial stability if such risks are not already priced into the market and highly leveraged firms default on their debt, which could result in large fiscal costs being incurred by governments to support insolvent firms.⁴

¹ Bank of England (2015). *The Impact of Climate Change on the UK Insurance Sector*. URL: <https://www.bankofengland.co.uk/prudential-regulation/publication/2015/the-impact-of-climate-change-on-the-uk-insurance-sector>

² Ameli et al. (2020). Climate finance and disclosure for institutional investors: Why transparency is not enough. *Climatic Change*, 160(4), 565-589. DOI: 10.1007/s10584-019-02542-2

³ NGFS (2021). *Climate Scenarios Database: Technical Documentation V2.1*. URL: <https://www.ngfs.net/ngfs-scenarios-portal/data-resources/>

⁴ Lamperti et al. (2019). The public costs of climate-induced financial instability. *Nature Climate Change*, 9(11), 829-833. DOI: 10.1038/s41558-019-0607-5

Likewise, physical risks associated with changing weather patterns and temperatures can also pose a risk for firms' direct operations, supply chains, and investments. In particular, the Bank of England⁵ identifies property insurance as being at material risk to severe storms and coastal and fluvial flooding (especially in the UK and Europe). Other risks include gradual sea level rise (SLR), heat waves, and droughts, with these potentially affecting the liabilities or asset sides of firms' balance sheets. Based on the most recent output from Working Group I of the IPCC,⁶ there is medium confidence in an increase in the frequency and intensity of heavy precipitation and flooding in Europe at global warming of 1.5°C, with the confidence in and the magnitude of these changes increasing at higher levels of warming. Furthermore, it is noted that there is high confidence in projected increases in the probability of compound events (such as compound flooding events) with higher warming levels in many world regions. At a more granular resolution, the Met Office⁷ projects increases in the frequency of hot spells for the UK, as well as increases in the intensity of heavy summer precipitation and increases in extreme coastal water levels driven predominantly by SLR. The above are medium-to-high confidence projections, and the particular worry for insurance firms and other financial institutions is the potential for unexpected high-impact events that could, if not prudently planned for, significantly affect firms' profitability. Further, there is evidence of extreme weather events negatively affecting economic growth, with better prepared economies being less affected in the long-run from such events. This constitutes further reason for assessing physical risk exposure and putting in place adaptation measures, such as appropriately priced insurance.⁸

Since climate change represents a material risk to the financial system, as well as the macroeconomy and social welfare more broadly, there is an argument to be made that climate change poses a risk to central banks' primary objectives and that they should use their policy levers to address the problem insofar as is effective. Perhaps least controversial of these policy levers is the use of prudential regulation to mandate that financial firms undertake and disclose climate risk assessments, as well as the carrying out of exploratory climate stress tests. The aim

⁵ Bank of England (2015). See Footnote 1.

⁶ IPCC (2021). Summary for policymakers. In V. Masson-Delmotte, P. Zhai, A. Pirani, et al. (Eds.), *Climate Change 2021: The Physical Science Basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change*. Cambridge University Press.

⁷ Met Office (2019). *UK Climate Projections: Headline Findings*. URL: <https://www.metoffice.gov.uk/research/approach/collaboration/ukcp/index>

⁸ Botzen, W. J., Deschenes, O., & Sanders, M. (2019). The economic impacts of natural disasters: A review of models and empirical studies. *Review of Environmental Economics and Policy*, 13(2), 167-188. DOI: 10.1093/reep/rez004

of these policies would be to provide decision-useful information upon which firms and their investors can act - for example, through investment in adaptation strategies for firms and better pricing of risky assets for investors - thus enabling the market to operate more efficiently and avoid unexpected adverse outcomes. These policies are becoming mainstream tools in addressing climate risk, with the Taskforce on Climate-related Financial Disclosures (TCFD) providing a framework for disclosures⁹ and the NGFS supporting central banks with the development of scenarios for stress testing purposes.¹⁰ In addition, mandating that firms undertake these assessments will hopefully increase contact and communication between the financial sector and climate experts, so while data and practices may be lacking now, it is hoped that they will improve over time with more collaboration.¹¹ Given that these disclosures and the risk assessments that act as their input can enable the private sector to identify shortcomings and improve their resilience to transition risks, it has also been suggested that these disclosures could make it more politically palatable for governments to implement more ambitious decarbonisation policies.¹²

Also available to central banks are more controversial policy levers, one of these being the adjustment of central banks' bond-purchasing schemes to reduce the cost of borrowing for firms that have credible decarbonisation roadmaps or that are of significant importance in reaching net zero emissions. Some have argued that the current market-neutral stance taken by the European Central Bank (ECB) in its corporate bond holdings fails to be truly market-neutral in that its holdings overweigh emissions-intensive industries such as manufacturing, transport, and utilities when the market is measured by capital income or total-assets-to-revenues.¹³ According to a survey of 36 European macroeconomists, just over half of those surveyed supported the use of the ECB's bond-purchasing policies to support the European Union's net zero climate ambitions, rather than the balance sheet taking a market-neutral stance.¹⁴ Of the

⁹ TCFD (2017). *Final Report: Recommendations of the Task Force on Climate-related Financial Disclosures*. URL: <https://www.fsb-tcf.org/recommendations/>

¹⁰ NGFS (2021). See Footnote 3.

¹¹ Bank of England (2021). *The Bank of England's climate-related financial disclosure 2021*. URL: <https://www.bankofengland.co.uk/prudential-regulation/publication/2021/june/climate-related-financial-disclosure-2020-21>

¹² Brunnermeier, M. K. & Landau, J.P. (2020). *Central banks and climate change*. VoxEU. URL: <https://voxeu.org/article/central-banks-and-climate-change>

¹³ Papoutsi, M., Piazzesi, M., & Schneider, M. (2021). *How unconventional is green monetary policy?* (Working Paper). URL: https://web.stanford.edu/~piazzesi/How_unconventional_is_green_monetary_policy.pdf

¹⁴ Ilzetzki, E. & Jia, J. (2021). *The ECB's green agenda*. VoxEU. URL: <https://voxeu.org/article/ecb-s-green-agenda>

reasons given by those who opposed a skewing of the balance sheet away from a market-neutral stance, the most common included the questioning of whether it was within the ECB's remit to distort relative borrowing costs across sectors, whether such a policy would affect the reputation of the ECB as being independent, and whether it would risk overburdening the central bank to the detriment of its primary objectives (monetary and financial stability).

Despite the disagreement on whether the ECB should reform its bond-purchasing scheme, the Bank of England has set course to reform its Corporate Bond Purchasing Scheme (CBPS) following the expansion of its Monetary Policy Committee's remit to include "maintaining a resilient, effectively regulated and competitive financial system that supports [...] the transition to a net zero economy" (p.5)¹⁵ as part of its secondary objective (supporting the UK Government's economic strategy). As laid out in a recent discussion paper,¹⁶ potential instruments under consideration to achieve such an objective include targets to reduce the carbon-intensity of the portfolio, eligibility restrictions (e.g., requiring firms to publish TCFD-aligned disclosures or credible decarbonisation strategies), and tilting of the bond-purchases towards green or 'greening' firms. However, underpinning these approaches will be engagement with firms to push them towards implementing green decarbonisation plans. This reform of the CBPS lies on the reasoning that a late and disorderly transition could pose significant financial stability risks, so early action now to support the transition acts as a risk management approach that avoids such an outcome. If successful, this scheme could pave the way for other central banks in high-income jurisdictions to expand their approach to supporting the transition, as is happening now with the gradual widespread adoption of TCFD-aligned disclosures following its adoption and promotion by influential central banks.

As regards the current state of climate-related financial disclosures, the latest TCFD status report¹⁷ found that only around 7% of the 1,701 public companies reviewed (spanning 69 countries and 8 industries) disclosed the resilience of their business strategies under different climate scenarios (including a 2°C or lower warming scenario). This highlights a potential neglect of transition risk assessment and mitigation on the part of firms, which could leave them

¹⁵ HM Treasury (2021). *Monetary Policy Remit: Budget 2021*. URL:

<https://www.gov.uk/government/publications/monetary-policy-remit-budget-2021>

¹⁶ Bank of England (2021). *Options for greening the Bank of England's Corporate Bond Purchase Scheme*.

URL: <https://www.bankofengland.co.uk/paper/2021/options-for-greening-the-bank-of-englands-corporate-bond-purchase-scheme>

¹⁷ TCFD (2020). *2020 Status Report*. URL: <https://www.fsb-tcfd.org/publications/>

unprepared for ambitious policies being implemented by governments in pursuit of emission reductions. Furthermore, among those firms that have published disclosures that include forward-looking assessments of climate risk under different warming scenarios, there are concerns that the communication of the assumptions and limitations associated with such analyses are inadequate and non-transparent, potentially compromising their credibility. In particular, financial firms often rely on contracted climate service providers (CSPs) to provide assistance and modelling expertise in assessing climate risk. These assessments, especially the quantitative assessments of risk, involve the use of sophisticated models to project future warming, carbon prices, energy mixes, and natural catastrophe impacts, and these models are underpinned by many assumptions that could affect the outcome of the risk assessment. As disclosures stand now, documentation on and peer-review of the methods used to assess climate risks under different scenarios is lacking and in some cases non-existent.^{18, 19} If firms and their CSPs are unwilling to reveal and document their methods more transparently, financial regulators such as the Prudential Regulation Authority will have to review and ensure that the methods used by firms are robust, credible, and trustworthy. Without transparent discussion on the assumptions and limitations of the models used, there remains the potential for greenwashing or overconfidence among firms and their investors in the results of such climate risk assessments, thus leaving open the door to potential financial instability in the future.

¹⁸ Bingle, J. A. & Colesanti Senni, C. (2020). *Taming the green swan: How to improve climate-related financial risk assessments* (Working Paper 20/340). Center of Economic Research at ETH Zurich. URL: <https://dx.doi.org/10.2139/ssrn.3795360>

¹⁹ UNEP FI (2021). *The Climate Risk Landscape: Mapping Climate-related Financial Risk Assessment Methodologies*. URL: <https://www.unepfi.org/publications/banking-publications/the-climate-risk-landscape/>