Analysis

DM sovereign bonds are not a safe haven from climate risk

- *Investors underestimate the budgetary costs of the physical effects of climate change*
- *Likewise, they underestimate the resulting erosion in sovereign credit quality*
- *Extending the horizon beyond five years will lead to sovereign downgrades*
- *Investors are moving from sovereign issuers who are slow to deliver on climate policy*
- *Investors increasingly use models and metrics that capture physical and transition risks*
- *Shifts in expectations and value adjustments may create a 'climate Minsky moment'*

Climate change exposure will be a significant factor in fiscal soundness

Government budgets reflect economy-wide climate costs

After a further spate of heat waves, wildfires, flooding, and other climate disasters over the northern hemisphere summer, investors are grappling with the effects of climate change on their portfolios.

The damage from climate change is direct and increasingly well understood for private sector issuers and related asset classes such as commercial or residential real estate.

However, the effects go beyond individual firms and households: they extend to countries and their public finances, including in the all-important sovereign bond asset class. Government budgets in essence reflect private sector climate exposures from direct exposures to climate disasters, and from a repricing of assets as the low-carbon transition accelerates. This is beginning to result in shifts and realignments in sovereign credit quality and financing terms across all bond maturities.

As governments issue ever more long-dated bonds, investors will be well-advised to think through these effects. Climate stress tests demanded by regulators from banks and asset managers will probe these linkages and effects in the coming years.

The costs from climate change are adding up

Even among DM sovereigns these are already significant …

Sovereign bond investors and rating agencies have, understandably, focused on the short-term and direct budgetary costs of recovery from climate disasters. Following such events, budgets at local and national level will be exposed to costs from emergency relief, the damage to public infrastructure and the necessary reconstruction.

Even in the developed markets in Europe, only about one-quarter of climate disaster losses are insured.[1] The resulting shortfall is regularly covered by ad hoc government expenses, and the budget is implicitly 'on the hook' for bailout risks in the banking or insurance sector.

For example, the economy-wide costs from the highly localized flash floods in Germany in the summer of 2021 are estimated to have been around EUR 40 billion, or nearly one percent of Germany's GDP. The bulk of this has been covered by public sector budgets at state and federal levels.

… but estimates of near-term disaster losses fall short

However, the implications of physical damage from climate change for national budgets are more extensive and drawn-out. Climate change is likely to undermine the core economic assets – particularly infrastructure and natural and human capital – that drive growth and productivity. The longer-term economic costs of asset destruction are therefore likely to be much higher than just the discrete damage costs.[2] This would hit tax revenues as supply chains are disrupted or demand patterns change. According to one recent study for the Germany's Economics Ministry, the annual economy-wide costs from climate change up to 2050 could be as high as in the case of the 2021 flood disaster.[3]

Adaptation investments will compound the problem

The ways in which OECD sovereign issuers are exposed to climate change, and the extent to which they are prepared through climate resilience and adaptation investment, differ greatly, and will lead to realignment in credit quality and, ultimately, private sector financing costs.

Southern European sovereign issuers stand to be the most exposed to chronic climate hazards from drought and more frequent heatwaves, resulting in damage to productivity, growth, and health (see figures 1 and 2). The exposure to storms and flooding in northern Europe is also severe, though is of course already tackled by governments that have the fiscal headroom and sound planning laws in adapting their infrastructure.

Sovereign ratings will shift once climate change is accounted for

Improving use of credit rating models will help

While the various linkages are complex, investors are beginning to implement partial solutions that model at least some effects.

One link that can be captured quite well is the impact of physical climate risk on productivity and sovereign credit quality. Rating agencies' methodologies are reasonably transparent, and past ratings can be reverse-engineered. It is relatively easy to project how sovereign credit quality, as it is widely assessed in the markets, will change once the horizon is extended.

At least as far as advanced country sovereign issuers are concerned, the rating agencies have been quite sanguine. But going beyond the usual five-year projection horizon offered by rating agencies yields some striking results: An oft-cited study that simulated how changes in temperature and rainfall, and the variability in climate patterns would affect sovereign ratings found that 63 sovereigns would experience downgrades by 2030 due to climate change under a scenario of continued emissions.[4] Conversely, limiting emissions to a path in line with the Paris Agreement would nearly eliminate the effect on ratings.

Changes in ratings can in turn be translated into credit spreads and portfolio valuations based on discounted cash flow analysis. The IMF for example adopted this approach in its climate stress test of the UK financial sector.

If nothing else, these results should give governments an extra incentive to redouble collective efforts on emission reductions, not least to shelter their private sectors from the fallout for financing costs.

Investors have begun to shun climate laggards

Transition risk is less visible, though highly significant

A second effect stems from how countries fall behind requisite structural change in the low-carbon transition and ignore the resulting exposures of their budgets.

Investors have, in fact, already begun to allocate away from such climate laggards, thereby containing their climate transition risk. This is likely to raise financing costs for sovereign issuers with a traditional dependence on coal-based power which are slow in implementing emission reduction targets.[5]

Figure 1: Baseline heat stress risk (1986-2005)

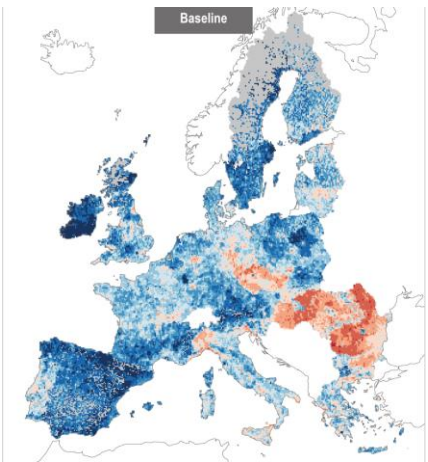
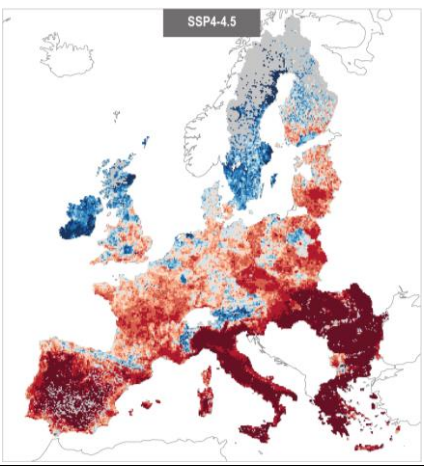


Figure 2: Projected heat stress risk (2040-60)



Source: IPPC

Note: Projection based on an SSP of 4 and an RCP of 4.5. Dark red represents areas of highest risk and dark blue represents areas of lowest risk. For more information see: https://www.ipcc.ch/report/ar6/wg2/figures/chapter-13/figure-13-022

These so-called climate transition risks will matter for sovereign issuers that are slow to implement their stated climate policies, whether agreed in global or EU contexts. Such risks could materialise when infrastructure or carbon-based public assets are revalued as 'stranded'; if economies do not benefit from emerging low-carbon technologies; or because they become less attractive trade partners for more rapidly transitioning countries.

New carbon taxes or laws that require the phase-out of fossil-based technologies could result in an abrupt revaluation of public sector balance sheets. The sovereign issuer's exposure to transition risks will be more indirect than is the case for a corporate issuer in a 'brown' industry. But the effects on sovereign credit quality will still be material, given the fallout for fiscal revenues, growth, revaluation of public assets, and possible public guarantees to the financial sector.

Fiscal costs and bond valuations will also depend on the ambition and timing of public sector 'net-zero' policies. Under an 'orderly' scenario of early climate action, fiscal costs would be brought forward, affecting shorter bond maturities. In a more chaotic scenario of divergent delivery of net-zero policies, longer-maturity bonds will be repriced. Thus early transition risks stand to trade off against later physical risks. The effects could be sizable and could set in quite soon.[6]

Net-zero portfolios will become more and more important

Such a shift is reinforced by investors who construct portfolios that are consistent with a 'net-zero' world.[7] These investors adopt an interpretation of their 'fiduciary duty' that reflects sustainability risks, and this is also spelt out in regulation, such as the EU's MiFID rules on investors' sustainability preferences. Moreover, various investor alliances target 'net zero' portfolios. Some investors offer portfolios that are aligned with the goals of the Paris Agreement, based on commercial indices.[8]

Climate transition risks can be captured in sovereign ratings and will increasingly become reflected in sovereign bond yields. Traditional models are a poor guide to contingent risks, potential asset stranding, and structural changes with uncertain timings.

Collective investor expectations may shift abruptly

At some point there could be a 'Climate Minsky moment'

The impact of climate risks will lead investors increasingly to reassess the value of businesses, and financial sector and government balance sheets. The timing of this so-called 'climate Minsky moment' is uncertain. The trigger could be an abrupt shift in public perceptions, policy change, or some other societal tipping point.

It is the case – and increasingly widely known – that given current policy commitments to contain global warming, a whole range of public and private assets are overvalued. As a key linchpin in portfolio construction and in the financial system, sovereign bonds should be monitored closely.

Watch for

- Rating downgrades motivated by climate events.
- Fiscal councils or long-term budget planning making climate related costs more explicit.
- Weak investor interest in bonds issued by a country that is lagging on its climate commitments.
- Investor support for 'climate-aligned' sovereign debt portfolios.
- A developed country issuing a sovereign bond tied to successful climate policies.

Endnotes

[1] ECB (2023): Climate change and sovereign risk, Financial Stability Review, available here: https://www.ecb.europa.eu/pub/financial-stability/fsr/special/html/ecb.fsrart202305_03~f51dd11fd7.en.html

[2] Dietz and Stern show that accounting for the endogeneity of growth increases the urgency and stringency of required climate policy. See https://onlinelibrary.wiley.com/doi/full/10.1111/ecoj.12188

[3] See https://www.bundesregierung.de/breg-de/schwerpunkte/klimaschutz/kosten-klimawandel-2170246

[4] Klusak, P. et al. (2021): "Rising temperatures, falling ratings: the effect of climate change sovereign creditworthiness", Bennet Institute Working Paper.

[5] One study found that, since the 2015 Paris Agreement, yields of long-term government bonds of advanced countries that performed on climate transition were lower than those of climate laggards. Countries that perform better on climate seem to benefit in terms of funding costs. See Bingler (2022): Expect the worst, hope for the best: the valuation of climate risks and opportunities in sovereign bonds.

[6] See MSCI (2022): 'How climate transition risk may impact sovereign bond yields'.

[7] In other words, with carbon neutrality by mid-century that limits the global temperature rise to 1.5°C above pre-industrial levels

[8] The financed emissions of sovereign bonds are quantified in the new standard global greenhouse gas accounting and reporting standard ('PCAF') here: https://carbonaccountingfinancials.com/en/standard. An investor group, jointly with the Principles for Responsible Investing, will also shortly release a sovereign issuer transition risk assessment tool: https://www.ascorproject.org.