

The Impact of Climate Transition Risk on Assets

Exploring possible climate-related market risk capital requirements

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Introduction

Climate risk poses a significant challenge for insurance companies, as both the frequency and severity of natural disasters are increasing due to climate change. Not only does an insurer face risks on the liability side from higher and more frequent claims, but the asset side is also affected. The focus for investment risk tends to be on the transition to a lower carbon economy, rather than physical climate change risks. Consider companies whose business is detrimental to the climate - their products could face competition from ecological, innovative companies or might even be outlawed by climate-related policy actions in the future. In these scenarios, the assets that they issue could see significant deterioration in value or may even become stranded. Insurers investing in such companies may be exposed to increased market risk as a result of the transition to a lower carbon economy.

In November 2022, the European Insurance and Occupational Pensions Authority (EIOPA) published a discussion paper seeking feedback on the intended scope, methodologies, data sources presented, aiming to understand the financial risk of investments with different levels of transition risk exposure. The paper discusses various approaches to classifying assets into climate-friendly or harmful groups, and how to properly stress them.

The objective of the analysis is to examine the extent to which a dedicated prudential treatment of climate-related objectives under Solvency II would be justified. If assets with different exposures displayed a very different risk behaviour, it may be appropriate to introduce different capital requirements for companies that meet certain conditions. No changes to capital requirements are proposed by EIOPA at this stage, however, as the proposals are exploratory only. Following the feedback cut-off in March 2023, EIOPA plans to develop further the proposed methodologies and

we can expect to see a further publication on the topic in due course.

The following sections outline the methodologies and data sets proposed in the November 2022 discussion paper.

Creating Data Sets for the Assessment

EIOPA is proposing a two-fold approach for analysing climate-related risk. First, it will look at the past performance of climate-polluting industries through a backward-looking assessment, as it did for calculating SII market risk charges. Second, it considers any evidence indicating whether the issuer will reduce its impact on climate change, employing a forward-looking assessment to assess how it will be affected by the different climate scenarios.

Backward-looking approach:

- Group companies in sets depending on their transitional risk
- Study the past financial performances of bonds and stocks for each group

Forward-looking approach:

- Create a set of future scenarios as functions of government and corporate actions
- Attribute probabilities to each scenarios
- Make assumption on bond and stock price behaviour in each scenario

The outcome of these assessments might lead to climate-related capital charges. However, the discussion on this topic will raise plenty of challenging questions that need to be addressed before arriving at a climate-related capital framework.

Backward-Looking Assessment

Analysing environmentally friendly stock and debt indices serves as a good starting point for assessing market risk, as this aligns with the approach used to calibrate Solvency II market risks. However, unlike for Solvency II, selecting the appropriate index is challenging.

The environmentally friendly indices are a relatively recent development, so there is not sufficient data for calibration. Many indices are ESG (environmental, social, and governance) indices which also include companies with beneficial impacts on society and governance which may not be relevant for our analysis on climate risk. The weighting of these indices might seem arbitrary and introduce biases on factors such as size and geographical region. Such indices usually focus on environmentally responsible companies, but there is an absence of indices that include environmentally harmful companies.

Classification of Companies

In our quest for a representative portfolio of climate-polluting assets we can consider two possible approaches to constructing it:

Industry-specific approach:

- Use an industry classification (i.e., NACE)
- Assign transitional risk based on the industry

Individual company approach:

- Determine company-specific metrics (i.e., carbon intensity, ESG rating, share of "green" revenues)
- Assign transitional risk based on these metrics

The industry-specific approach suggests dividing companies according to an industry classification, such as NACE codes which are already used in Solvency II. It remains debatable if the industry codes allow for a fair classification of good and bad companies. For example, while mining and car manufacturing are generally regarded as polluting

industries and lithium mining and manufacturing of electric vehicles are not, they might share the same industry code. Also, a company can be active in various industries or evolve over time, further complicating the classification process.

The company-specific approach relies on external ecological ratings and metrics such as carbon emissions or the EU taxonomy (i.e. the percentage of revenue from green activities according to the taxonomy). The aim is to penalise companies from high-emission industries that fail to make enough efforts to reduce emissions and to reward companies from high carbon-intensity industries that outperform their peers in terms of emissions. However, assumptions must be made about ratings and metrics, if available at all, and arbitrary thresholds must be established to differentiate good companies from bad industries and vice versa.

For real estate assets, the transition risk can be determined by evaluating the energy efficiency classes. Initial local studies show that energy-efficient properties decline less in value when energy prices soar than less efficient ones. However, further studies are necessary to determine the capital charges for real estate transitional risk.

It is worth noting that financial companies like insurers will probably be excluded from this exercise. One could calculate their transitional risk on a look-through basis on the assets, but a financial company have the ability to change its portfolio, unlike a mining company that will remain a mining company. Financial companies are generally considered to be less affected by transition risk.

Constructing Portfolio

Once the approach is chosen, the equity and bond portfolios are constructed based on their climate sensitivity. One approach is to divide assets into two or three sub-portfolios (e.g. low/high or low/medium/high transition risk) and calculate climate stresses on them. Prior to doing this, the investment universe has to be selected (e.g. global or European assets, large or small companies), which can introduce bias into our analysis.

Another important consideration is whether the portfolio should be static or dynamic. It appears more sensible to dynamically change the composition of the portfolio because companies and their climate impacts evolve over time. The downside of a dynamic approach is that it will increase the data requirements.

To assess the capital charges on climate risk, we need to separate it from the market risk already captured under Solvency II. The challenge lies in distinguishing whether stock or bond price fluctuations result from new climate change regulations or from other reasons.

The selection of the time period for the analysis is also complex. The concept of climate change is relatively new, and climate-polluting companies were once considered normal businesses and were not subject to any transition risk. Therefore, determining the optimal time period for analysis is an important consideration.

Forward-Looking Assessment

Relying solely on past data is inadequate due to the recent increase in the prominence of climate change. In the past, there were no ESG definitions, limited government action and a reliance on fossil fuels. EIOPA proposes the use of a forward-looking approach to assess the impact of climate change on asset prices.

A forward-looking model will depend heavily on assumptions regarding policy actions, technological change and financial market dynamics. Therefore, it is advisable to work with a range of different scenarios. EIOPA considers three scenarios for the analysis:

Orderly transition

- policy actions are implemented in an orderly manner, to meet climate goals with little impact on the real economy

Disorderly transition

- big shocks on the economy due to unexpected, sudden and delayed policy actions

Hot House World

- no policy actions at all, and consequently a large increase in temperature

One approach is to use Transition Vulnerability Factors (TVFs). These are factors similar to beta in the Capital Asset Pricing Model (CAPM), which measure the vulnerability of a company to transition risk and assigns a stress to financial assets. Currently, the prevailing approach links TVFs to the industries.

Once the scenarios are set up, probability distributions of scenarios need to be created and the Value at Risk (VaR) at a confidence level of 0.5% needs to be calculated. Since the disorderly transition poses the biggest transition risk, it is reasonable to assume that it will drive the VaR, regardless of the statistical model used.

Conclusion

At the moment it is not clear how carbon-intensive businesses will be shocked for Solvency II capital requirement purposes. No changes to capital requirements are proposed by EIOPA at this stage. The uncertainty in the historical data and the assumption-dependent nature of the forward-looking approach can yield a wide range of potential capital charges. It is even possible that, after extensive research, EIOPA may conclude that no additional capital charges are necessary, as the transition risk may already be factored into current prices and therefore part of the existing Solvency II market risk.

Given the potential for different capital treatment, alongside the climate change risk analysis requirements in the ORSA that came into force this year, insurance companies have started collecting climate-related information about their assets, such as the carbon intensity and ESG ratings. This information will likely become part of an insurer's data dictionary, in the way that credit ratings are incorporated today. We look forward to further publications from EIOPA on this topic to provide additional insights on their proposed capital charges. In the meantime, insurers will be focused on integrating climate change risk into their risk management framework.

How Can Finalyse Help You?

Finalyse has extensive experience and expertise in risk management for insurers. We can assist you in the development and implementation of a climate change risk management framework. Our team of talented insurance professionals can support you in various areas:

- **Risk Management integration** for climate change risks, including performing a gap analysis, developing a roadmap for integration and updating relevant policies and procedures.
- **Climate risk identification and materiality assessment** on your asset and liability portfolios, defining data requirements, performing the materiality assessment and hosting workshops to facilitate the process.
- **Climate change scenario definition** in line with regulatory requirements, including setting the high-level narratives and climate pathways, and defining more granular demographic and macroeconomic assumptions.
- **Modelling and impact quantification** to translate climate projections into financial and underwriting impacts, including the mapping of climate risks to traditional prudential risks and deciding on the modelling approach for the short and long term.
- **Strategy and business planning** to incorporate climate change considerations, including possible management actions, business model changes, and identifying future opportunities and product innovation.
- **Benchmarking** on topics such as the use of qualitative vs. quantitative assessments, simplified projection options and publicly available tools, and providing insight from our dealings with EIOPA and local regulators.

Contacts

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