

Climate RiskGauge — Sovereigns

A global capability for evaluating the credit risk and valuation impact of climate-related transition and physical risk scenarios using a structural approach for sovereign bond exposures.

Overview

In recent years, the activity of central banks and regulators around the world has intensified with respect to climate change, with their goal being to estimate and/or manage future economic losses of organizations. For sovereigns, it is important to estimate the value of sovereign debt to inform a view of creditworthiness under adverse climate shocks.

Climate RiskGauge — Sovereigns (CRG SOV) evaluates the impact of climate risk on sovereign issuers and issues. The model estimates credit risk and valuation impacts by leveraging S&P Global Sustainable1 data sets on physical risks, which project acute and chronic climate hazards per sovereign based on distinct impact functions. It also incorporates macroeconomic variables and carbon tax projections from the Network for Greening the Financial System (NGFS) scenarios over a 50-year horizon.

Sovereign-level Data

Physical risks encompass diverse hazards, both chronic and acute, including such as droughts, tornadoes, wildfires, and floods that affect each sovereign to a different extent. Sovereign-specific data information regarding on the propensity likelihood and severity of these hazards help to experience a climate hazard helps quantify their financial implications.

Transition risks are captured by incorporating emissions data per region, reflecting risks arising from carbon emissions for each sovereign.

Tailored Approach

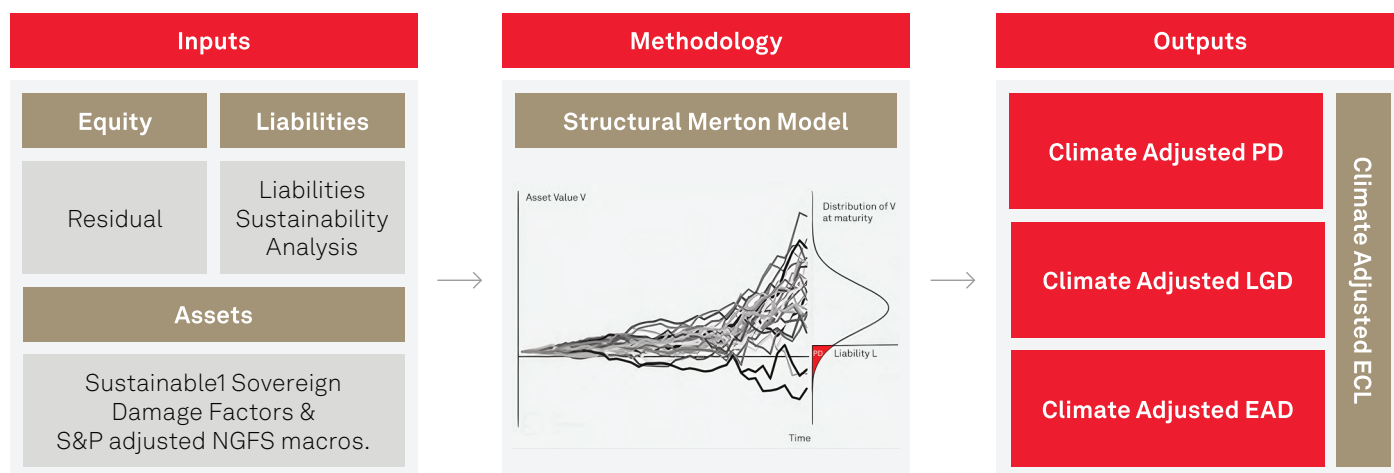
Primary inputs capture sovereign debt data with fields such as exposure, currency, bond price, yield, maturity, duration, convexity, coupon frequency, coupon rate, and S&P mapped Probability of Default (PD) and Loss Given Default (LGD).

The model provides projected climate-adjusted total assets, total liabilities, debt to GDP, primary balance, yield, bond price, transition risk and physical risk, S&P Global Ratings mapped rating, PD, LGD, Exposure at Default (EAD), Expected Credit Loss (ECL), and the cumulative notch difference across years. Additionally, it offers insights into the Climate Valuation Impact on sovereign bonds.

Comprehensive Assessment

A Merton model approach is used that assumes default occurs when an asset value falls below the debt value.

Figure 1: CRG SOV Model Structure



Source: S&P Global Market Intelligence. For illustrative purposes only.

Multiple Scenarios

CRG RE enables users to select from a substantial library of Network for Greening the Financial System (NGFS) scenarios — including Phase III, Phase IV, and Phase V — or define a custom scenario by adjusting an NGFS pathway. The solution supports both stress testing and reporting requirements across multiple jurisdictions, globally, and has the flexibility to align with the scenario values from the International Energy Agency (IEA).

Efficient Delivery

CRG RE is delivered via S&P Capital IQ/Market Intelligence Excel® templates, designed to automate financial spreading, simplify integration into existing workflows, and avoid dependency on additional software or technology.

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