MONOCLE

Case Study

Climate Risk Modelling

Transition Risk Adjustments & Corporate Credit Risk Modelling

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Overview

Climate-related risk management is an evolving field with the banking industry currently in the process of understanding and developing novel risk capabilities. Transition risk, encompassing potential shifts in market dynamics, regulatory frameworks, and technological advancements as economies move towards sustainable alternatives, has emerged as a new dimension to credit risk modelling. This brings with it significant complexities and unknowns.

At one of our large banking clients, Monocle assisted in establishing and expanding its transition risk modelling capabilities. This included fundamental climate risk modelling research through to the development and testing of a transition risk adjustment model to be integrated into the bank's formal Probability of Default (PD) corporate credit risk model.

Initially, Monocle was tasked with researching transition risk drivers and the pathways which these factors impact financial performance amongst companies in high energy sectors and sub-sectors. Transition risk drivers include changes to market-related risk, policy-based risk and technological risk due to transitioning.

Following this, Monocle worked closely with various data stakeholders in the bank to obtain counterparty level financial data that would be adjusted for transition risk drivers within the existing transition risk framework.

Monocle conducted detailed research and analysis across long-term climate scenarios to forecast climate transition impacts using various growth rate proxies. The existing PD model was adjusted for three distinct macro-economic policy scenarios across the spectrum of transition outcomes. Monocle also delivered additional research regarding the measurement of financed emissions.

Finally, Monocle was extensively involved in developing and integrating the adjustment model to output a PD score that is adjusted for climate transition risk at a counterparty, sector, and sub-sector level across the three distinct policy scenarios. The model shows how conventional financial statement items can be affected by transition risk drivers. More specifically, these financial variables are underlying drivers of counterparty performance and affect PD scores.

The client also requested an MI dashboard that Monocle then designed and developed to report results and support the distribution of insights to senior management and various stakeholders across the business.

By adapting credit risk modelling to account for climate transition risk, Monocle aided the client to understand and respond to the emergent challenges posed by climate change risk in the banking portfolio, while underscoring the critical need to enhance the resilience of financial institutions in the face of evolving environmental pressures.

Design and Development of a climate transition risk adjustment model as part of an exisiting PD model.

Sub-sector level climate risk research including risk mechanisms and transition vulnerabilities across various scenarios.

Operational and strategic climate risk insights at counterparty and sub-sector levels.

Solution

- An integrated transition risk adjustment model for probability of default - corporate credit risk .
- Research and analysis related to transition risk mechanisms, climate scenario forecasts and the measurement of scope 3 emissions.
- Transition risk adjustment dashboard for MI purposes.

Insights

- The initial climate risk research process plays a critical role in determining and understanding transition risk drivers at a sub-sector level.
- Data challenges and gaps need to be identified early in the research and analysis process, especially when external data sources are required.
- Due to the novelty of climate risk modelling, various assumptions and proxy variables will need to be determined and utilized for transition risk drivers.
- Macro-economic policy circumstances and carbon tax play a key role in how transition risk affects counterparty risk, because of how they affect the underlying financial variables.

Key Skills Required

- Expertise in credit risk modelling and financial statement analysis.
- Understanding of climate transition risk mechanisms, scenarios.
- Expertise in programming, model development and model testing.

Skill Sets

- Python Programming
- Financial Statement Analysis
- Climate Risk modelling

Banking Area

- Economic Capital
- Credit Risk
- Corporate & Investment Banking
- Sustainability

Themes

- Climate transition risk
- Climate risk modelling
- Credit risk adjustment
- Stress-testing and scenario analysis
- Scope 3 emissions

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