Credit Risk

Projects

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Project 1

Archimedean versus Gaussian to price an infrastructure CLO tranches

Project 1: Archimedean versus Gaussian to price an infrastructure CLO tranches

Description of the project: You are tasked with structuring a collateralized loan obligation (CLO) comprising approximately 50 loans. To cater to varying investor risk preferences, the CLO is divided into three tranches: 0-10%, 10-30%, and 30-100%. To evaluate the risk and determine the pricing of each tranche, you decide to compare two models: one based on a Gaussian copula and the other on an Archimedean copula.

Target:

1. Perform a numerical comparison of Gaussian and Archimedean copulas.
2. Develop a pricing tool for CLO tranches using both copula approaches.
3. Apply the tool to the given infrastructure loans portfolio.
4. Analyze the strengths and weaknesses of each model, particularly in the context of infrastructure loans.

Project 2

Assessing the credit risk impact of transition risk

Project 2: Transition risk impact on credit risk

Description of the project: This project aims at (i) modeling credit rating thanks to a Kaggle Dataset and (ii) simulate the impact of the carbon tax on targeted firms ratings (and default probabilities).

Target: Derive first a credit rating, based on the financial features provided in the Kaggle Dataset. Propose stressed financial features based on the carbon tax impact on financial results and balance sheet. You will find the Scope 1+2+3 emissions published by largest firms. Infer a 1Y, 2Y, 3Y expected impact on credit risk.
Link: https://www.kaggle.com/agewerc/corporate-credit-rating/version/1