UNIVERSITI TEKNOLOGI MARA

KMV-MERTON MODEL-IMPLIED CDS SPREADS: ESTIMATION, DYNAMIC ANALYSIS AND THEIR PREDICTIVE POWER IN CREDIT RISK ASSESSMENT

NUR ANEERA BINTI SHAMSUL JOHARI
NUR AQILAH BINTI YAHAYA

Bachelor of Science (Hons.) Management Mathematics

July 2025

ABSTRACT

A credit default swap (CDS) spread is the annual premium rate paid for protection against a borrower's default. The KMV-Merton model is a structural credit risk assessment framework used in this study to estimate implied CDS spreads for publicly traded companies. This indicator provides a practical, market-based measurement of credit risk, especially during market uncertainty or with incomplete data. This study aims to analyse the dynamic behaviour and interrelationship of the implied CDS spreads and assess their predictive capability in assessing companies credit risk. The Python programming language was employed for the KMV-Merton iterative process and the computation of the Distance to Default (DD), Probability of Default (PD), and implied CDS spreads, thereby revealing their dynamics and interrelationship. The findings on the elevated PD and implied CDS spreads in 2020 reflected the financial crisis scenarios that relate to the economic lockdown of the COVID-19 pandemic. Besides, the Spearman's correlation and Receiver Operating Characteristics (ROC) and Precision-Recall (PR) curve analysis show that the implied CDS spreads demonstrated strong predictive power, validating the KMV-Merton model as a suitable estimation tool. This model strengthens the financial system by providing reliable implied CDS spreads and PD, which serve as valuable indicators for companies' credit risk management. In future works, the analysis between the market-observed and implied CDS spreads should be explored, as the reliability and practical applicability of KMV-Merton may be enhanced.

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