

ABSTRACT

Investment in the capital market is becoming increasingly popular among Indonesians as an effort to manage finances and achieve financial goals. One of the financial instruments attracting attention is bonds, as they offer the benefit of fixed income. However, bonds also carry investment risks, such as credit risk. Credit risk occurs when bond issuers default and fail to meet their obligations within the specified timeframe. The application of the KMV Merton model is one of the methods to measure bond credit risk. The KMV Merton model utilizes the Expected Default Frequency (EDF) value as the probability of default, which is derived from the distance to default (DD). The KMV Merton model integrates the company's total asset value, equity, and liabilities, enabling predictions for these values. Furthermore, predictions of total asset value in the KMV Merton model can be enhanced using the Monte Carlo simulation approach, which allows for more accurate predictions across various scenarios of total asset value movements. By predicting the development of total asset value, the progression of credit risk can also be forecasted. This study examines the Sustainable Bonds IV Bank Panin Phase II of 2024 with a face value of 3,91 trillion IDR and a five-year term. The total asset prediction calculations resulted in 900.000 simulations to achieve convergence in the average simulated total asset value with a Mean Absolute Percentage Error (MAPE) of 1,99000456%. The Expected Default Frequency (EDF) value without prediction was 2,84799919E-133 for 2024. Additionally, the EDF value with predictions yielded results of 6,33200783E-191 for 2025, 4,45799925E-254 for 2026, and 0,00 for 2027 and 2028. The findings indicate that the company has almost no default risk at all predicted time points.

Keywords: Bonds, Credit Risk, KMV Merton, Expected Default Frequency (EDF), Asset Prediction, MAPE, Monte Carlo Simulation, Probability of Default