ABSTRACT

Credit risk is one of the key factors determining the success of investments in bond instruments. This risk arises when the issuer is unable to fulfill interest or principal payments at maturity. This study aims to estimate the default probability of corporate bonds using the Multivariate KMV Merton Model, with a case study on PT Bank Negara Indonesia (Persero) Tbk. The model extends the structural Merton framework, allowing simultaneous analysis of multiple bonds within a single risk assessment model. The data used in this research include quarterly total asset data of PT Bank Negara Indonesia Tbk from July 2015 to June 2025, obtained from the Bloomberg Laboratory, Faculty of Economics and Business, Diponegoro University, as well as bond characteristics retrieved from the Indonesian Central Securities Depository (KSEI). The analysis involves a normality test using the Jarque-Bera method, estimation of asset volatility, calculation of Distance to Default (DD) and Probability of Default (PD), and numerical estimation using the Newton-Raphson method within the KMV Merton framework. The results indicate that all three bonds issued by PT Bank Negara Indonesia Tbk have a default probability of 0.00%, demonstrating the company's strong ability to meet its obligations at maturity. The multivariate approach also proves to be efficient for simultaneous credit risk assessment without sacrificing accuracy. Therefore, the Multivariate KMV Merton Model can serve as a comprehensive and practical alternative for credit risk analysis in Indonesia's corporate bond market.

Keywords: Credit Risk, Corporate Bonds, KMV Merton Model, Probability of Default, Distance to Default, Multivariate Analysis, PT Bank Negara Indonesia