A Comparative Analysis of Black-Scholes Option Model and Garch Option Model on Kompas100 Index with Long Straddle Strategy during 2008-2021 Periods

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ABSTRACT

The Indonesian economy was hit by at least two crises in 2007-2021. The first one was the subprime mortgage economic crisis of 2008. A subprime mortgage is a home loan (mortgage) offered to debtors who have a bad credit history or have no credit history at all, making them high-risk loans. The second one was the crisis triggered by the COVID-19 pandemic, which resulted in economic and health crises in Indonesia. In the past 15 years, based on the data in Figure 1., the Kompas100 Index experienced the lowest daily return on October 8th, 2008, with a decrease of -11.84%and the highest daily return on March 26th, 2020, with an increase of 13.08%. The economic crisis in 2008 had a significant impact on the Kompas100 Index. At the beginning of 2008, the Kompas100 Index was at 697 points, but until October 8th, 2008, it fell to 349 points or a 49.88%correction from the beginning of the year. Furthermore, based on the daily return on the Kompas100 Index from January to December 2008, as presented in Figure 2, it can be inferred that the weakening and strengthening of the Kompas100 Index in 2008 ranged from -11.84%to 8.74%per day. The Kompas100 index continued to fluctuate and was at the level of 330.86 at the end of 2008, or down 52.54%from the position at the beginning of the year.

Keywords: Option, Black Scholes, GARCH, AMSE, Long Straddle