Long- and Short-Term Impacts of COVID-19 and Gold Price on Price Volatility: A Comparative Study of MIDAS and GARCH-MIDAS Models for USA Crude Oil

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Abstract : The purpose of this study was to compare the performance of two types of models, namely MIDAS and MIDAS-GARCH, in predicting the volatility of crude oil returns based on gold price returns and the COVID-19 pandemic. The study aimed to identify which model would provide more accurate short-term and long-term predictions and which model would perform better in handling the increased volatility caused by the pandemic. The findings of the study revealed that the MIDAS model performed better in predicting short-term and long-term volatility before the pandemic, while the MIDAS-GARCH model performed significantly better in handling the increased volatility caused by the pandemic. The study highlights the importance of selecting appropriate models to handle the complexities of real-world data and shows that the choice of model can significantly impact the accuracy of predictions. The practical implications of model selection and exploring potential methodological adjustments for future research will be highlighted and discussed.

Keywords : GARCH-MIDAS, MIDAS, crude oil, gold, COVID-19, volatility
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