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Coherence Wavelet Method and Wavelet-Granger Causality Tests to Measure COVID-19 Pandemic-Induced Uncertainties
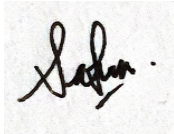
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STUDENT'S DECLARATION

I certify that this report and the research to which it refers are the product of my own work and that any ideas or quotation from the work of other people, published or otherwise are fully acknowledged in accordance with the standard referring practices of the discipline.

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ABSTRACT

Due to COVID-19 outbreak, the economic policy became uncertain. The fall of oil price has caused the stock market to respond. It has been a question on whether economic uncertainty and oil prices were affected by COVID-19, or is it the fall of oil price that contributed to the economic instability and stock market volatility. In this study, the researcher analysed the connectivity between the recent spread of COVID-19 in Malaysia, Malaysia stock market, oil prices in Malaysia and Global Economic Policy Uncertainty (GEPU) in time-frequency domain. The coherence wavelet method was used to analyse the movement of each variable and to evaluate the interactions between the selected variables for 25th January until 25th May 2020. The researcher also applied the Wavelet-based Granger Causality to test the robustness of the coherence wavelet. This study disclosed the impact of COVID-19 reported cases towards the oil price slumps. Stock market volatility was affected by the GEPU index while oil prices were influenced by stock market and GEPU index. To obtain more precise results, it is recommended that future researchers use Economic Policy Uncertainty of Malaysia instead of GEPU and add more sample data.

Keywords: COVID-19, oil prices, stock market, economy policy uncertainty, wavelet, causality.

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