Long Memory dan Implikasinya Pada Peramalan Volatilitas dan Estimasi Value-at-Risk Return Aset Keuangan Indonesia = Long Memory and Its Implication on Volatility Forecasting and Value-at-Risk Estimation of Asset Return in Indonesia

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Abstrak

Studi ini menginvestigasi keberadaan unsur long memory pada proses volatilitas indeks saham (IHSG) dan nilai tukar Indonesia (IDR/USD) dengan menggunakan model Fractionally Integrated GARCH. Studi ini mencoba menjawab signifikansi penggunaan model berproses fractionally integrated (Long Memory) tersebut dalam permodelan volatilitas pasar keuangan Indonesia, khususnya dalam hal descriptive dan predictive performance, jika dibandingkan dengan proses model GARCH (short memory) dan IGARCH (infinite memory). Dalam hal descriptive performance, model yang mengakomodasi long memory terbukti menunjukkan nilai signifikansinya dibandingkan kedua model lainnya, namun hasilnya beragam dalam hal predictive performance. Penggunaan model long memory hanya terbukti signifikansinya dalam memprediksi dinamika IDR/USD, khususnya volatilitas harian jangka pendek (satu hari), dan estimasi VaR one-step-ahead return IDR/USD. Hasil prediksi volatilitas harian IDR/USD pada horison prediksi di atas satu hari dan juga hasil prediksi volatilitas harian IHSG di semua horison prediksi diungguli oleh kedua model lainnya. Selain itu, pada studi ini, ternyata tidak terdapat perbedaan akurasi yang dramatis antara model FIGARCH dengan model GARCH dan IGARCH dalam mengestimasi VaR one-step-ahead return IHSG.
.....This study investigates the presence of long memory in the volatility process of Indonesian stock index (IHSG) and IDR/USD using FIGARCH model. Furthermore, this study addresses the significance of accounting for long memory in improving the descriptive and predictive performance of a conditional variance model by comparing its performance with two other models associated with their knife-edge distinction of memory specifications, GARCH (short memory) and IGARCH (long memory). Long memory model proves to be superior in describing the dynamics of Indonesian stock index and foreign exchange market. Its significance, however, shows mixed results in the predictive performance where long memory model only shows its superiority in forecasting volatility of one-day-ahead IDR/USD and one-step-ahead VAR of IDR/USD. Integrating fractional integration in the conditional variance model does not appear to improve volatility forecasts accuracy for the five, ten and twenty days forecasting horizons of IDR/USD. Moreover, long memory model also does not provide better volatility foresasts at all horizons for IHSG as compared to short and infinite memory model. Meanwhile, the accuracy performance of estimating one-step-ahead VaR return of IHSG among the three estimated models cannot provide conclusive results despite the confirmed existence of long memory in its volatility process.