

# *Modeling and Forecasting Daily Exchange Rates Volatility of the Canadian Dollar.*

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Canada, 2020.*

## **1. Abstract**

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In this paper, different types of Generalized Autoregressive Conditional Heteroskedasticity (GARCH) models were used to model volatility and to predict one step ahead of the mean exchange rate returns and conditional volatility. The Canadian Dollar has been chosen as a primary currency and daily logarithmic exchange rate returns are constructed relative to the United State Dollar and Euro.

In one step ahead forecasting of the mean - logarithmic returns, GARCH (1,1) model via Gaussian normal distribution has outperformed the rest of the models in in-sample and out-of-sample forecasting by considering both currencies. The outperformance of GARCH (1,1) via Gaussian is proved to be statistically significant for USD returns, but not for Euro ones. When the volatility is forecasted in out-of-sample, EGARCH (1,1) via Gaussian normal distribution outperformed the rest of the models in both currencies. In in-sample forecasting, APGARCH (1,1) via Generalized Error Distribution (GED) was superior in Euro returns, while EGARCH (1,1) is the best for United State Dollar (USD) returns. The forecasting accuracy-test statistics do not enable us to say that these models are superior. However, APGARCH (1,1) by Student's  $t$  distribution is the worst forecasting model for USD returns.

Further, the leverage effect parameter has been positive and statistically significant in most estimations. Thus, past values of Canadian Dollar exchange rate returns allow to state that depreciation of the Canadian Dollar triggers more volatility than appreciation.