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# Volatility Forecasting in the Hang Seng Index using the GARCH Approach

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## Abstract

The aim of this paper is to add to the literature on volatility forecasting using data from the Hong Kong stock market to determine if forecasts from GARCH based models can outperform simple historical averaging models. Overall, unlike previous studies we find that the GARCH models with non-Normal distributions show a robust volatility forecasting performance in comparison to the historical models. The results indicate that although not all models outperform simple historical averaging, the EGARCH based models, with non-normal conditional volatility, tend to produce more accurate out-of-sample forecasts using both standard measures of forecast accuracy and financial loss functions. In addition we test for asymmetric adjustment in the Hang Seng, finding strong evidence of asymmetries due to the domination of financial and property firms in this market.

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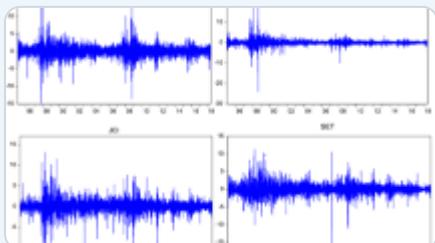
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The  $h$ -step ahead prediction for the GA-NoVaS method  
Define a grid of possible  $\alpha$  values,  $\{\alpha_k; k = 1, \dots, K\}$ , three grid  
 $\beta, \alpha_1, \alpha_2$  values. Fix  $\alpha = \alpha_k$ , then calculate the optimal con  
 $\beta, \alpha_1, \alpha_2, \alpha_k$  of the GA-NoVaS method.  
Derive the analytic form of Eq. (20) using  $\{\beta, \alpha_1, \alpha_2, \alpha_k\}$  from Ste  
Generate  $\{W_{T+1,m}, \dots, W_{T+h,m}\}_{m=1}^M$  from a trimmed standard  
distribution or empirical distribution  $P_w$ . Plug  $\{W_{T+1,m}, \dots, W_{T+h,m}\}$   
the analytic form of Eq. (20) to obtain  $M$  pseudo-values  $\{\hat{Y}_{T+h,m}\}$   
Calculate the optimal predictor  $\hat{g}(\hat{Y}_{T+h})$  by taking the sample  
under  $L_2$  risk criterion or sample median (under  $L_1$  risk criterion)  
 $\{\hat{g}(\hat{Y}_{T+h,1}), \dots, \hat{g}(\hat{Y}_{T+h,M})\}$ .  
Repeat above steps with different  $\alpha$  values from  $\{\alpha_k; k = 1, \dots, K\}$  to get  $K$  prediction results.

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