

[Home](#) > [Asia-Pacific Financial Markets](#) > [Article](#)

Volatility Forecasting in the Hang Seng Index using the GARCH Approach

Published: 10 April 2009


Volume 16, pages 51–63, (2009) [Cite this article](#)



[Asia-Pacific Financial Markets](#)

[Aims and scope](#) →

[Submit manuscript](#) →

[Wei Liu](#)¹ & [Bruce Morley](#) ¹

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.



This is a preview of subscription content, [log in via an institution](#) to check access.

Access this article

[Log in via an institution](#) →

[Buy article PDF 39,95 €](#)

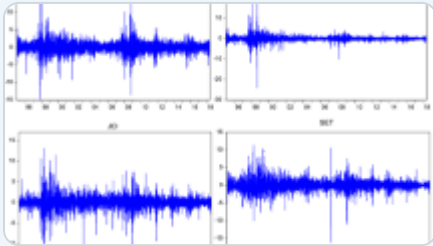
Price includes VAT (Poland)

Instant access to the full article PDF.

Rent this article via [DeepDyve](#)

[Institutional subscriptions](#) →

Similar content being viewed by others



[Forecasting volatility in Asian financial markets: evidence from recursive and rolling window methods](#)

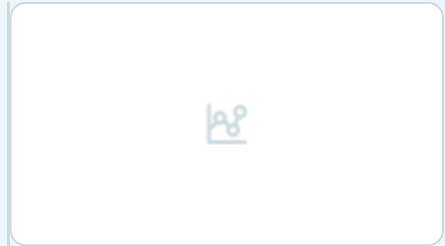
Article | Open access
29 September 2022

[A model-free approach to do long-term volatility forecasting and its variants](#)

ne h -step ahead prediction for the GA-NoVaS method
Define a grid of possible α values, $\{\alpha_k; k = 1, \dots, K\}$, three grid values β , a_1 , b_1 values. Fix $\alpha = \alpha_k$, then calculate the optimal con β , a_1 , b_1 , α_k of the GA-NoVaS method.
Derive the analytic form of Eq. (20) using $\{\beta, a_1, b_1, \alpha_k\}$ from Ste
Generate $\{W_{T+1,m}, \dots, W_{T+h,m}\}_{m=1}^M$ from a trimmed standard tribution or empirical distribution \hat{F}_D . Plug $\{W_{T+1,m}, \dots, W_{T+h,m}\}$ the analytic form of Eq. (20) to obtain M pseudo-values $\{Y_{T+h,m}\}$. Calculate the optimal predictor $\hat{g}(Y_{T+h})$ by taking the sample der L_2 risk criterion) or sample median (under L_1 risk criterion) $\{g(Y_{T+h,1}), \dots, g(Y_{T+h,M})\}$.
Repeat above steps with different α values from $\{\alpha_k; k = 1, \dots, K\}$ prediction results.

[A model-free approach to do long-term volatility forecasting and its variants](#)

Article | Open access
01 March 2023



[Realised Volatility Forecasts for Stock Index Futures Using the HAR Models with Bayesian Approaches](#) *

Article | Open access
21 March 2016

References

Aggarwal R., Inclan C., Ricardo L. (1999) Volatility in emerging stock markets. *Journal of Financial and Quantitative Analysis* 34: 33–55. doi:[10.2307/2676245](#)

Baillie R.T., Bollerslev T., Mikkelsen H.O. (1996) Fractionally integrated generalized autoregressive conditional heteroskedasticity. *Journal of Econometrics* 74: 3–30. doi:[10.1016/S0304-4076\(95\)01749-6](https://doi.org/10.1016/S0304-4076(95)01749-6)

[Article](#) [Google Scholar](#)

Chan, H., & Fung, D. (2007). Forecasting volatility of Hang Seng Index and its application on reserving for investment guarantees. *Working Paper*, The Actuarial Society of Hong Kong.

Duan J.C., Zhang H. (2001) Pricing Hang Seng index options around the Asian financial crisis—a GARCH approach. *Journal of Banking and Finance* 25: 1989–2014. doi:[10.1016/S0378-4266\(00\)00166-7](https://doi.org/10.1016/S0378-4266(00)00166-7)

[Article](#) [Google Scholar](#)

Engle R.F. (1982) Autoregressive conditional heteroskedasticity with estimates of the variance of United Kingdom inflation. *Econometrica* 50: 987–1007

[Google Scholar](#)

Engle R.F. (2004) Risk and volatility: Econometric models and financial practice. *The American Economic Review* 94: 405–420. doi:[10.1257/0002828041464597](https://doi.org/10.1257/0002828041464597)

[Article](#) [Google Scholar](#)

Engle, R. F., & Lee, G. G. J. (1993). A permanent and transitory component model of stock return volatility, UCSD, Department of Economics, Discussion Paper No: 92-44.

Engle R.F., Patton A.J. (2001) What good is a volatility model?. *Quantitative Finance* 1: 237–245. doi:[10.1088/1469-7688/1/2/305](https://doi.org/10.1088/1469-7688/1/2/305)

[Article](#) [Google Scholar](#)

Fong W.M., Koh S.K. (2002) The political economy of volatility dynamics in the Hong Kong stock market. *Asia-Pacific Financial Markets* 9: 259–282.

doi:[10.1023/A:1024133632104](https://doi.org/10.1023/A:1024133632104)

[Article](#) [Google Scholar](#)

Glosten L., Jagannathan R., Runkle D. (1993) On the relation between expected return on stocks. *The Journal of Finance* 48: 1779–1801. doi:[10.2307/2329067](https://doi.org/10.2307/2329067)

[Article](#) [Google Scholar](#)

Ho R.Y. (1998) The Hong Kong securities markets: Review and prospects. *Asia-Pacific Financial Markets* 5: 29–44. doi:[10.1023/A:1009671007349](https://doi.org/10.1023/A:1009671007349)

[Article](#) [Google Scholar](#)

Lee K.Y. (1991) Are the GARCH models best in out-of-sample performance?. *Economics Letters* 37: 305–308. doi:[10.1016/0165-1765\(91\)90227-C](https://doi.org/10.1016/0165-1765(91)90227-C)

[Article](#) [Google Scholar](#)

Li M.C. (2007) Wealth, volume and stock market volatility: Case of Hong Kong. *Applied Economics* 15: 1937–1953. doi:[10.1080/00036840600707019](https://doi.org/10.1080/00036840600707019)

[Article](#) [Google Scholar](#)

McMillan D., Speight A. (2004) Daily volatility forecasts: Reassessing the performance of GARCH models. *Journal of Forecasting* 23: 449–460

[Article](#) [Google Scholar](#)

McMillan D., Speight A., Ap Gwilym O. (2000) Forecasting UK stock market volatility. *Applied Financial Economics* 10: 435–448.

doi:[10.1080/09603100050031561](https://doi.org/10.1080/09603100050031561)

Nelson D.B. (1991) Conditional heteroscedasticity in asset returns: A new approach. *Econometrica* 59: 349–370. doi:[10.2307/2938260](https://doi.org/10.2307/2938260)

[Article](#) [Google Scholar](#)

Pagan A.R., Schwert G.W. (1990) Alternative models for conditional stock volatilities. *Journal of Econometrics* 45: 267–290. doi:[10.1016/0304-4076\(90\)90101-X](https://doi.org/10.1016/0304-4076(90)90101-X)

[Article](#) [Google Scholar](#)

Poon S.H., Granger W.J. (2003) Forecasting volatility in financial markets: A review. *Journal of Economic Literature* 41: 478–539. doi:[10.1257/002205103765762743](https://doi.org/10.1257/002205103765762743)

[Article](#) [Google Scholar](#)

So M.K.P., Li W.K., Lam K. (2002) A threshold stochastic volatility model. *Journal of Forecasting* 21: 473–500. doi:[10.1002/for.840](https://doi.org/10.1002/for.840)

[Article](#) [Google Scholar](#)

Yeung S.P., Gannon G. (2004) Regulatory change and structural effects in HSIF and HSI volatility. *Research in International Business and Finance* 3: 305–317

[Google Scholar](#)

Wong, J., & Fung, L. (2002). *Liquidity of the Hong Kong stock market since the Asian financial crisis*. Research Memorandum, Hong Kong Monetary Authority.

Authors and Affiliations

Department of Economics and International Development, University of Bath, Bath, UK

Wei Liu & Bruce Morley

Corresponding author

Correspondence to [Bruce Morley](#).

Rights and permissions

[Reprints and permissions](#)

About this article

Cite this article

Liu, W., Morley, B. Volatility Forecasting in the Hang Seng Index using the GARCH Approach. *Asia-Pac Financ Markets* **16**, 51–63 (2009). <https://doi.org/10.1007/s10690-009-9086-4>

Received

27 March 2008

Accepted

26 March 2009

Published

10 April 2009

Issue Date

March 2009

DOI

<https://doi.org/10.1007/s10690-009-9086-4>

Keywords

[GARCH](#)

[Hang Seng](#)

[Volatility](#)

[Forecast](#)

[Asymmetric](#)

[Stock price](#)

Search

Search by keyword or author



Navigation

Find a journal

Publish with us

Track your research

