



Applied Economics >

Volume 48, 2016 - [Issue 13](#)

1,474 36

Views | CrossRef citations to date | Altmetric

0

Original Articles

Does VIX or volume improve GARCH volatility forecasts?

Dimos S. Kambouroudis & David G. McMillan

Pages 1210-1228 | Published online: 02 Oct 2015

Cite this article

<https://doi.org/10.1080/00036846.2015.1096004>



Sample our
Economics, Finance,
Business & Industry Journals
>> [Sign in here](#) to start your access
to the latest two volumes for 14 days

Full Article

Figures & data

References

Citations

Metrics

Reprints & Permissions

Read this article

Share

ABSTRACT

This article considers whether the inclusion of two additional variables can improve volatility forecasts over a standard GARCH-based model. We consider three alternative ways of incorporating the volatility index (VIX) and trading volume as exogenous variables within a selection of GARCH models. We are particularly interested in whether these variables have additional incremental forecast power over and above the baseline GARCH specification. Our results suggest that both the VIX and volume do provide some additional forecast power, and this is generally improved when considering both of these series jointly in the model. However, while the results may be statistically significant the gain is marginal and the coefficient values small. Moreover, in a horse race exercise VIX does not outperform the GARCH approach. In answering the question of whether VIX produces better forecasts than the GARCH model, then the answer is no, but the informational content of VIX cannot be ignored and should be incorporated into forecast regressions.

KEYWORDS:

GARCH

volatility forecasting

VIX

volume

JEL CLASSIFICATION:

C22

G15

Notes

¹ Based on S&P 500 data.

² Because its (VIX) level indicates how much market participants are willing to pay in terms of implied volatility to hedge stock portfolios with S&P 100 index put options or to belong by buying S&P 100 index call options. In addition, extreme values of VIX are seen as trading signals, for example, with very high levels of VIX indicating that markets are pessimistic whereas a very low VIX often leads to an increase in stock prices.

³ Whaley ([2009](#)) explains that VIX should be seen the same way as a bond's yield to maturity.

⁴ Which is a better known index and because futures contracts on the S&P 500 are actively traded. Furthermore, S&P 500 option contracts are European-style, making them easier to value. Hence, the VIX is implied by the current prices of the S&P 500 index options and represents expected future market volatility over the next 30 calendar days (Whaley [2009](#)).

⁵ Volume absolute returns relationship, volume is positively correlated with absolute returns and this correlation is increased by information asymmetry.

⁶ Latane and Rendleman ([1976](#)) and Chiras and Manaster ([1978](#)).

⁷ The main constraint was finding VIX data of sufficient length for reliable statistical analysis to be performed.

⁸ The correlation coefficient matrices are also produced as part of the initial analysis. It was found that the coefficients are small, suggesting no correlation and hence multicollinearity will not be present.

⁹ This is done for VIX series only.

¹⁰ There is one exception for the UK.

¹¹ We choose to use a simple AR(1) model in order to keep the model parsimonious. However, several authors have considered including asymmetric terms (Giot, [2005](#)) or allowing for long memory effects (Konstantinidi, Skiadopoulos, and Tzagkaraki [2008](#); Dunis, Kellard, and Snaith [2013](#)). While in the context of option pricing, Kannianen, Lin, and Yang ([2014](#)) advocate the use of squared VIX.

Related research 

People also read	Recommended articles	Cited by 36
The Volatility of Realized Volatility >		
Fulvio Corsi et al. Econometric Reviews Published online: 7 Mar 2008		

Information for

[Authors](#)

[R&D professionals](#)

[Editors](#)

[Librarians](#)

[Societies](#)

Opportunities

[Reprints and e-prints](#)

[Advertising solutions](#)

[Accelerated publication](#)

[Corporate access solutions](#)

Open access

[Overview](#)

[Open journals](#)

[Open Select](#)

[Dove Medical Press](#)

[F1000Research](#)

Help and information

[Help and contact](#)

[Newsroom](#)

[All journals](#)

[Books](#)

Keep up to date

Register to receive personalised research and resources by email



Sign me up



Copyright © 2025 Informa UK Limited [Privacy policy](#) [Cookies](#) [Terms & conditions](#)

[Accessibility](#)



Taylor & Francis Group
an informa business

Registered in England & Wales No. 01072954
5 Howick Place | London | SW1P 1WG