

Applied Economics Letters >

Volume 28, 2021 - [Issue 9](#)

400 | 2 | 0
Views | CrossRef citations to date | Altmetric

Research Article

Corona, crisis and conditional heteroscedasticity

Tamás Kiss & Pär Österholm 

Pages 755-759 | Published online: 09 Jun 2020

 Cite this article  <https://doi.org/10.1080/13504851.2020.1776829>

 Check for updates

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

In this paper, we illustrate the macroeconomic risk associated with the early stage of the corona-virus outbreak. Using monthly data ranging from July 1991 to March 2020 on a recently developed coincidence indicator of global output growth, we estimate an autoregressive model with GARCH effects and non-Gaussian disturbances. Our results indicate that i) accounting for conditional heteroscedasticity is important and ii) risk, measured as the volatility of the shocks to the process, is at a very high level – largely on par with that experienced around the financial crisis of 2008–2009.

KEYWORDS:

GARCH non-Gaussianity fan charts global output growth

JEL CLASSIFICATION:

Acknowledgments

We are grateful to an anonymous referee for valuable comments. The authors gratefully acknowledge financial support from Jan Wallanders och Tom Hedelius stiftelse (grants number P18-0201 and W19-0021).

Disclosure statement

No potential conflict of interest was reported by the authors.

Notes

¹ The Bank of England and the IMF instead employ methods that explicitly aim to account for time-variation in uncertainty; see Britton, Fisher, and Whitley ([1998](#)) and IMF ([2009](#)) for details.

² Abberger et al. ([2020](#)) also provide a leading composite indicator for global output growth. Unreported analysis (available on request) based on the leading indicator yields very similar results.

³ For a fairly long time, the issue of time-varying volatility of the shocks hitting the economy has received a somewhat stepmotherly treatment in macroeconomics. While important contributions have been made by for example Stock and Watson ([2002](#)), Cogley and Sargent ([2005](#)) and Hamilton ([2010](#)), the vast majority of models being used assume that shocks are homoscedastic.

⁴ Lag length was determined by applying the Schwarz ([1978](#)) information criterion to AR models assumed to be homoscedastic.

⁵ The choice of a GARCH(1,1) specification was based on its robust usefulness in empirical work; see, for example, Hansen and Lunde ([2005](#)). The GARCH(1,1)

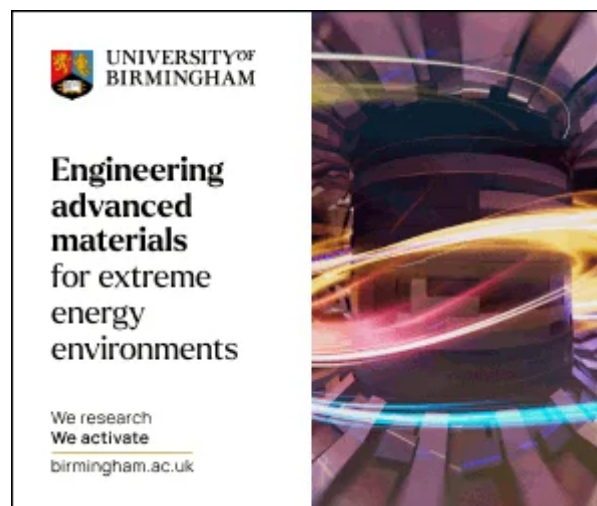
specification also seems to be appropriate when looking at the estimation results and tests shown in [Table 1](#).

⁶ An estimate of the half-life can be calculated as $\ln 0.5 / \ln \alpha^{1+\alpha^2}$.

Additional information

Funding

This work was supported by the Jan Wallanders och Tom Hedelius Stiftelse samt Tore Browaldhs Stiftelse [P18-0201,W19-0021].

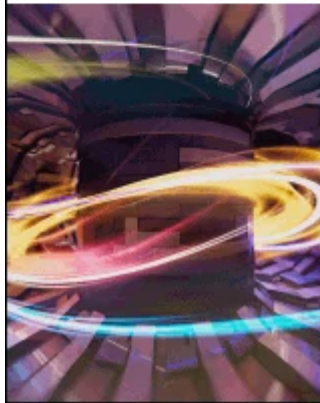




UNIVERSITY OF
BIRMINGHAM

**Engineering
advanced
materials**
for extreme
energy
environments

We research
We activate
birmingham.ac.uk



Related research 

People also read

Recommended articles

Cited by
2

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 © 2026 Informa UK Limited [Privacy policy](#)

[Cookies](#) [Terms & conditions](#) [Accessibility](#)

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



Taylor & Francis
by **informa** •••