

[Download This Paper \(Delivery.cfm/SSRN\\_ID259009\\_code010212130.pdf?abstractid=259009&mirid=1\)](https://papers.ssrn.com/sol3/cf_dev/AbsByAuth.cfm?per_id=260877)[Open PDF in Browser \(Delivery.cfm/SSRN\\_ID259009\\_code010212130.pdf?abstractid=259009&mirid=1&type=2\)](https://papers.ssrn.com/sol3/cf_dev/AbsByAuth.cfm?per_id=260877)[Add Paper to My Library](#)Share:    

## Modeling Asymmetry and Excess Kurtosis in Stock Return Data

*Illinois Research & Reference Working Paper No. 00-123*

25 Pages

Posted: 12 Feb 2001

Gamini Premaratne ([https://papers.ssrn.com/sol3/cf\\_dev/AbsByAuth.cfm?per\\_id=260877](https://papers.ssrn.com/sol3/cf_dev/AbsByAuth.cfm?per_id=260877))

University of Illinois at Urbana-Champaign - Department of Economics; University of Brunei Darussalam

Anil K. Bera ([https://papers.ssrn.com/sol3/cf\\_dev/AbsByAuth.cfm?per\\_id=60248](https://papers.ssrn.com/sol3/cf_dev/AbsByAuth.cfm?per_id=60248))

University of Illinois at Urbana-Champaign - Department of Economics

Date Written: November 2000

### Abstract

This paper develops a flexible parametric approach to capture asymmetry and excess kurtosis along with conditional heteroskedasticity with a general family of distributions for analyzing stock returns data. Engle's (1982) autoregressive conditional heteroskedastic (ARCH) model and its various generalizations can account for many of the stylized facts, such as fat tails and volatility clustering. However, in many applications, it has been found that the conditional normal or Student's t ARCH process is not sufficiently heavy-tailed to account for the excess kurtosis in the data. Moreover, asymmetry in financial data is rarely modeled systematically. Therefore, there is a real need to find an asymmetric density that can be easily estimated and whose tails are heavier than the Student's t-distribution. Pearson type IV density is such a distribution, and it is much easier to handle than those that have been used in the literature, such as non-central t and Gram-Charlier distributions, to account for skewness and excess kurtosis simultaneously. Pearson type IV distribution has three parameters that can be interpreted as variance, skewness and kurtosis; and they can also be considered as different components of the risk premium. Modeling simultaneously time-varying behavior of mean, variance, skewness and kurtosis produces a better explanation of risk than mean-variance analysis only. These methodologies can also be used to analyze other financial data such as exchange rates, interest rates and spot and future prices.

**Keywords:** Pearson type IV, Excess Kurtosis, Skewness, GARCH**JEL Classification:** C5[Suggested Citation](#) >[Show Contact Information](#) >[Download This Paper \(Delivery.cfm/SSRN\\_ID259009\\_code010212130.pdf?abstractid=259009&mirid=1\)](https://papers.ssrn.com/sol3/cf_dev/AbsByAuth.cfm?per_id=260877)[Open PDF in Browser \(Delivery.cfm/SSRN\\_ID259009\\_code010212130.pdf?abstractid=259009&mirid=1&type=2\)](https://papers.ssrn.com/sol3/cf_dev/AbsByAuth.cfm?per_id=260877)

## 0 References

## 0 Citations

[Fetch Citations](#) >

Do you have a job opening that you would like to promote on SSRN?

[Place Job Opening \(https://www.ssrn.com/index.cfm/en/Announcements-Jobs/\)](https://www.ssrn.com/index.cfm/en/Announcements-Jobs/)

We use cookies that are necessary to make our site work. We may also use additional cookies to analyze, improve, and personalize our content and your digital experience. For more information, see our [Cookie Policy \(https://www.elsevier.com/legal/cookiepolicy\)](https://www.elsevier.com/legal/cookiepolicy)

Paper statistics

[Cookie Settings](#)[Accept all cookies](#)

45 Citations

PlumX Metrics



([https://plu.mx/ssrn/a/?ssrn\\_id=259009](https://plu.mx/ssrn/a/?ssrn_id=259009))

## Related Journals

Capital Markets: Asset Pricing & Valuation eJournal ([https://papers.ssrn.com/sol3/JELJOUR\\_Results.cfm?form\\_name=journalBrowse&journal\\_id=1508951](https://papers.ssrn.com/sol3/JELJOUR_Results.cfm?form_name=journalBrowse&journal_id=1508951))

Follow



## Recommended Papers

Downside Risk ([https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=641843&rec=1&srcabs=259009&pos=1](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=641843&rec=1&srcabs=259009&pos=1))

By Andrew Ang ([https://papers.ssrn.com/sol3/cf\\_dev/AbsByAuth.cfm?per\\_id=94010](https://papers.ssrn.com/sol3/cf_dev/AbsByAuth.cfm?per_id=94010)), Joseph Chen ([https://papers.ssrn.com/sol3/cf\\_dev/AbsByAuth.cfm?per\\_id=88071](https://papers.ssrn.com/sol3/cf_dev/AbsByAuth.cfm?per_id=88071)), ...

Downside Risk ([https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=875700&rec=1&srcabs=259009&pos=2](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=875700&rec=1&srcabs=259009&pos=2))

By Joseph Chen ([https://papers.ssrn.com/sol3/cf\\_dev/AbsByAuth.cfm?per\\_id=88071](https://papers.ssrn.com/sol3/cf_dev/AbsByAuth.cfm?per_id=88071)), Andrew Ang ([https://papers.ssrn.com/sol3/cf\\_dev/AbsByAuth.cfm?per\\_id=94010](https://papers.ssrn.com/sol3/cf_dev/AbsByAuth.cfm?per_id=94010)), ...

Portfolio Selection with Higher Moments ([https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=634141&rec=1&srcabs=259009&pos=3](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=634141&rec=1&srcabs=259009&pos=3))

By Campbell R. Harvey ([https://papers.ssrn.com/sol3/cf\\_dev/AbsByAuth.cfm?per\\_id=16198](https://papers.ssrn.com/sol3/cf_dev/AbsByAuth.cfm?per_id=16198)), John Liechty ([https://papers.ssrn.com/sol3/cf\\_dev/AbsByAuth.cfm?per\\_id=388621](https://papers.ssrn.com/sol3/cf_dev/AbsByAuth.cfm?per_id=388621)), ...

[View more >](#)

Feedback

[Submit a Paper > \(<https://hq.ssrn.com/submission.cfm>\)](#)

SSRN Quick Links



SSRN Rankings



About SSRN



(<https://www.facebook.com/SSRNcommunity/>)

([https://www.linkedin.com/company/493409?](https://www.linkedin.com/company/493409?trk=tyah&trkInfo=clickedVertical%3Acompany%2CentityType%3AentityHistoryName%2CclickedEntityId%3Acompany_493409%2Cidx%3A0)

[trk=tyah&trkInfo=clickedVertical%3Acompany%2CentityType%3AentityHistoryName%2CclickedEntityId%3Acompany\\_493409%2Cidx%3A0](https://www.linkedin.com/company/493409?trk=tyah&trkInfo=clickedVertical%3Acompany%2CentityType%3AentityHistoryName%2CclickedEntityId%3Acompany_493409%2Cidx%3A0)

(<https://twitter.com/SSRN>)

(<http://www.elsevier.com/>)

Copyright (<https://www.ssrn.com/index.cfm/en/dmca-notice-policy/>)

Terms and Conditions (<https://www.ssrn.com/index.cfm/en/terms-of-use/>)

Privacy Policy (<https://www.elsevier.com/legal/privacy-policy>)

All content on this site: Copyright © 2023 Elsevier Inc., its licensors, and contributors. All rights are reserved, including those for text and data mining, AI training, and similar technologies. For all open access content, the Creative Commons licensing terms apply.

We use cookies to help provide and enhance our service and tailor content.

To learn more, visit [Cookie Settings](#).



(<http://www.relx.com/>)

(<https://papers.ssrn.com/sol3/updateInformationLog.cfm?process=true>)