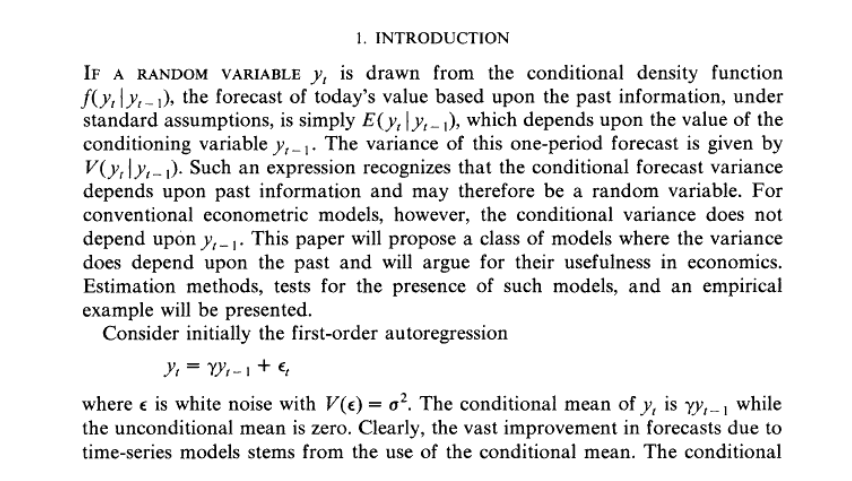
Autoregressive Conditional Heteroskedasticity

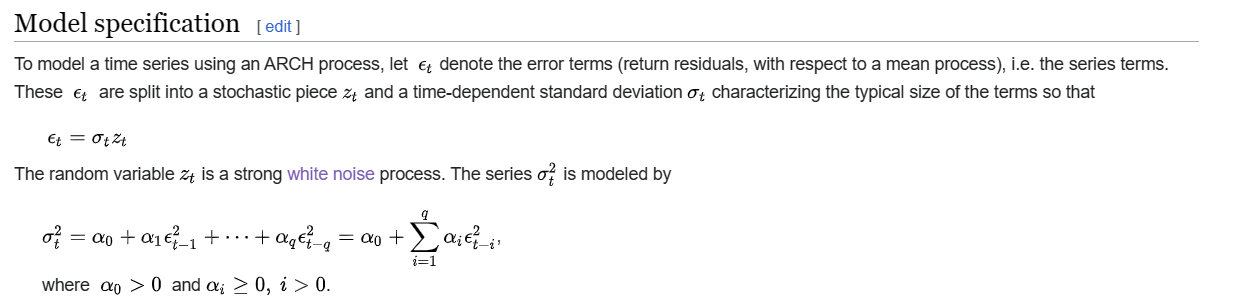
Abbr

ARCH

Intro



Model Specification



Given random variable which is a strong white noise process. The series

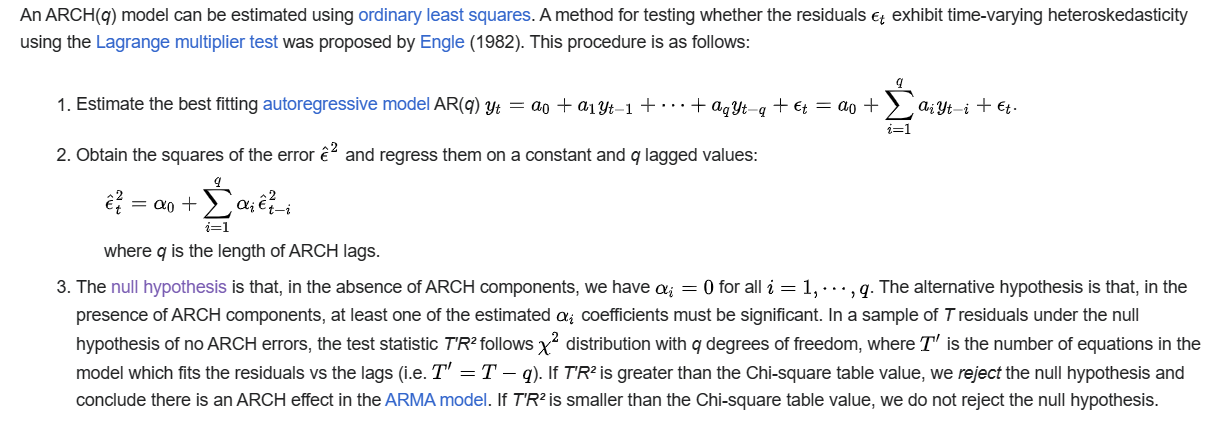
is modeled by

= + +... +

= +

where

and for .



To use a ARCH(q) model.

1. Estimate the best fitting AR.
2. Obtain the square of the error and regress them on a constant and q lagged value.
3. Perform null hypothesis. Then get value for null hypothesis. Here, the null hypothesis in absence of ARCH components, one has for all
4. Compare the result with corresponding value in CHI-squared table.
5. Determine it falls in accept area or reject area.

Case 1:

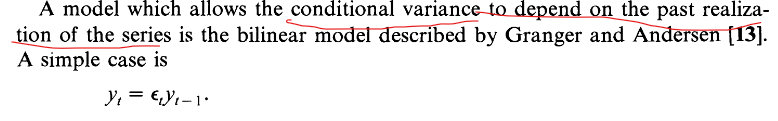
> critical point => reject area

Case 2:

Otherwise => accept area

where

refers the conditional variance at time . The reason why it is called conditional variance is that it depends on conditional variance at according to the following figure.



Ref

A website with simpler , boarder but less detailed intro -- Wiki.

[Autoregressive conditional heteroskedasticity - Wikipedia](https://en.wikipedia.org/wiki/Autoregressive_conditional_heteroskedasticity)

A website with harder but detailed intro -- A preview PDF in JSTOR

[Autoregressive Conditional Heteroscedasticity with Estimates of the Variance of United Kingdom Inflation on JSTOR](https://www.jstor.org/stable/1912773?origin=crossref)