Helping You Write Academic Papers in R using Texevier

Nico Katzke[a], John Smith[a,b], John Doe[a,b]

[a] *Prescient Securities, Cape Town, South Africa*

[b] *Some other Institution, Cape Town, South Africa*

Abstract

Abstract to be written here. The abstract should not be too long and should provide the reader with a good understanding what you are writing about. Academic papers are not like novels where you keep the reader in suspense. To be effective in getting others to read your paper, be as open and concise about your findings here as possible. Ideally, upon reading your abstract, the reader should feel he / she must read your paper in entirety.

Keywords: Multivariate GARCH, Kalman Filter, Copula

JEL classification L250, L100

1. Question 5

2. Volatility

```
##  [1] "Australia_IV"   "Brazil_IV"      "Canada_IV"      "Chile_IV"
##  [5] "China_IV"       "Columbia_IV"    "Czech_IV"       "Denmark_IV"
##  [9] "EU_IV"          "HongKong_IV"    "Hungary_IV"     "India_IV"
## [13] "Israel_IV"      "Japan_IV"       "Malaysia_IV"    "Mexico_IV"
## [17] "Norway_IV"      "NZ_IV"          "Peru_IV"        "Philipines_IV"
## [21] "Poland_IV"      "Romania_IV"     "Russia_IV"      "Saudi_IV"
## [25] "Singapore_IV"   "SouthAfrica_IV" "SouthKorea_IV"  "Sweden_IV"
## [29] "Taiwan_IV"      "Thailand_IV"    "Turkey_IV"      "UK_IV"
```

Corresponding author: Nico Katzke

Email addresses: nfkatzke@gmail.com (Nico Katzke), John@gmail.com (John Smith), Joe@gmail.com (John Doe)

Contributions:

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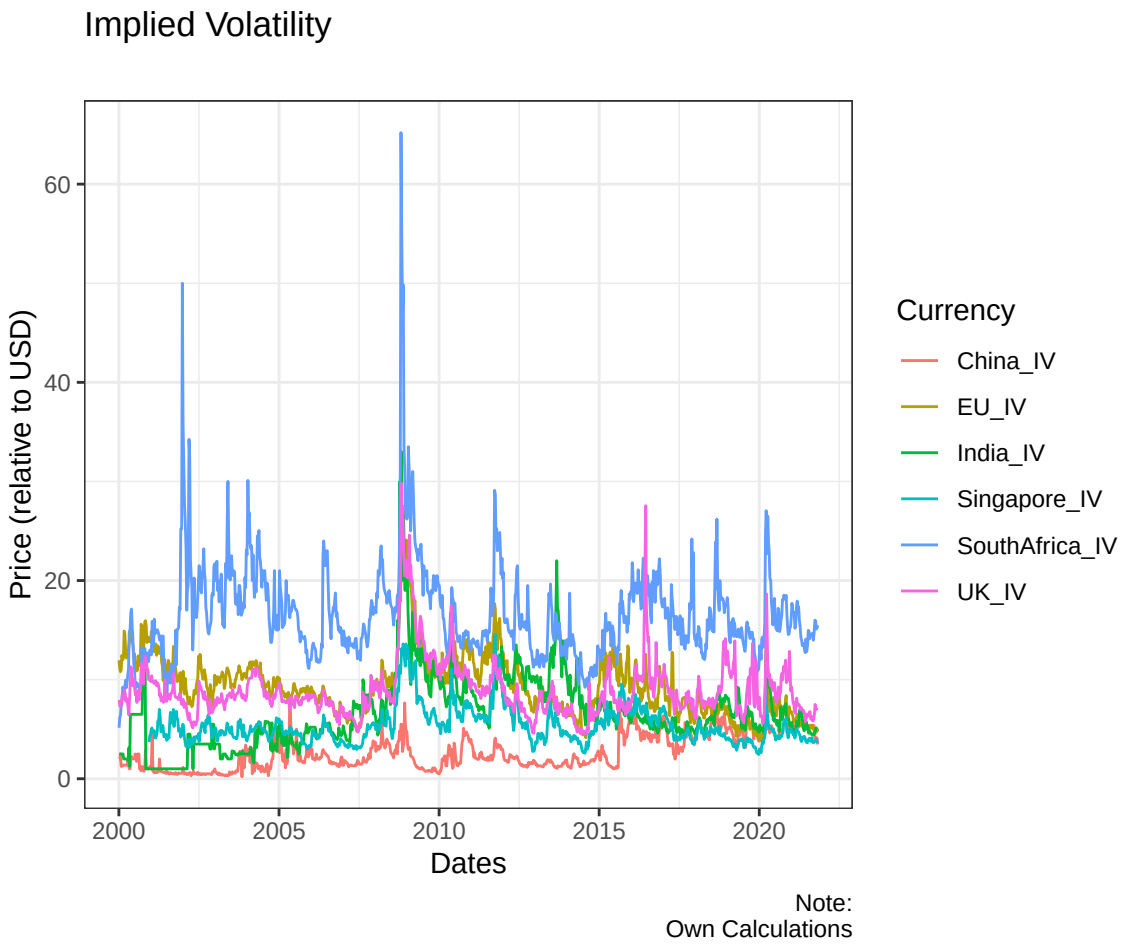
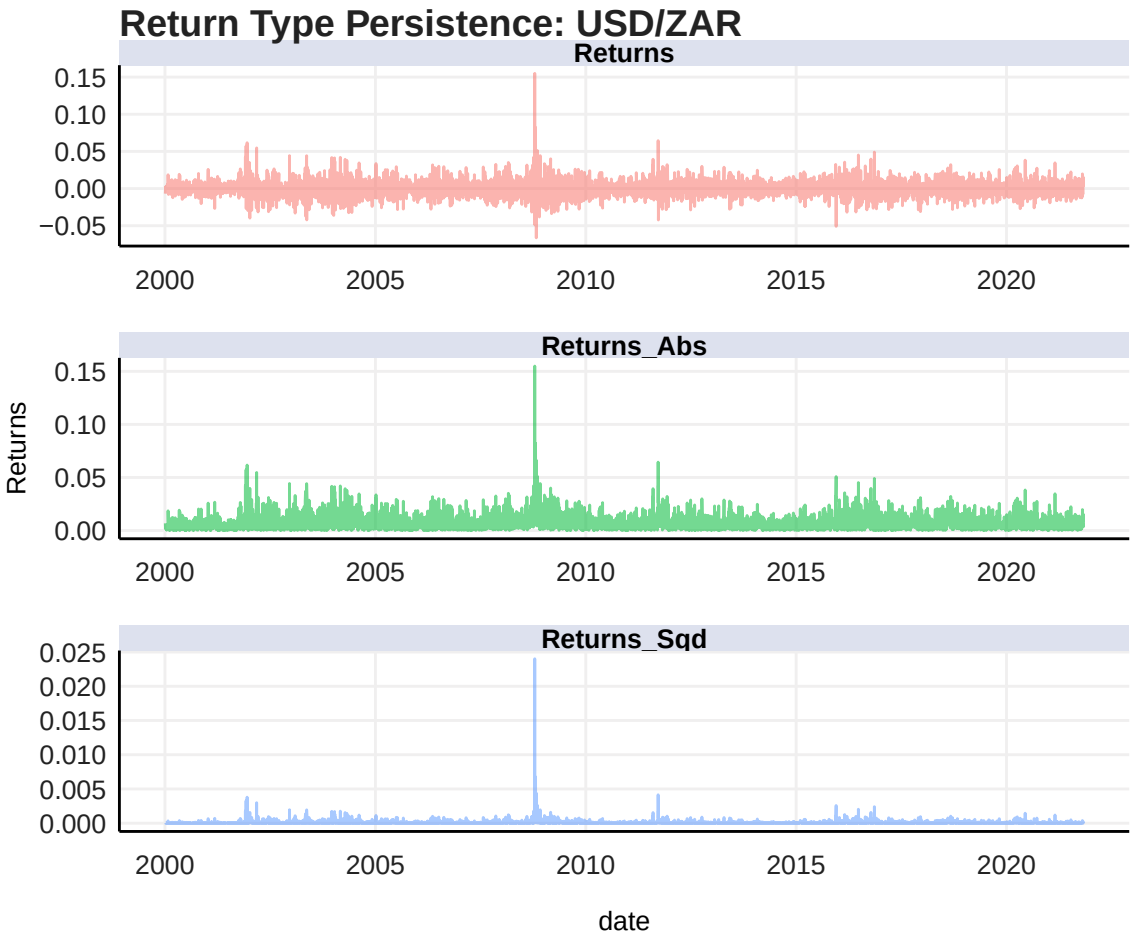
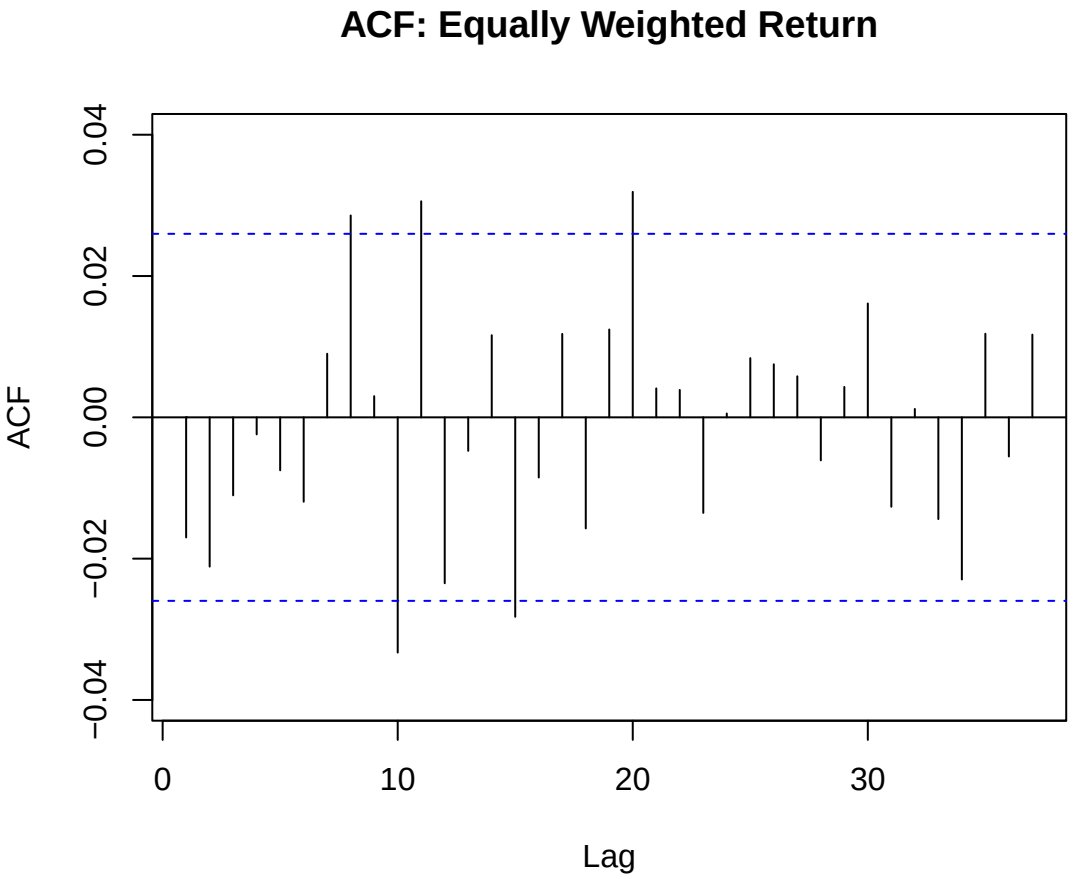
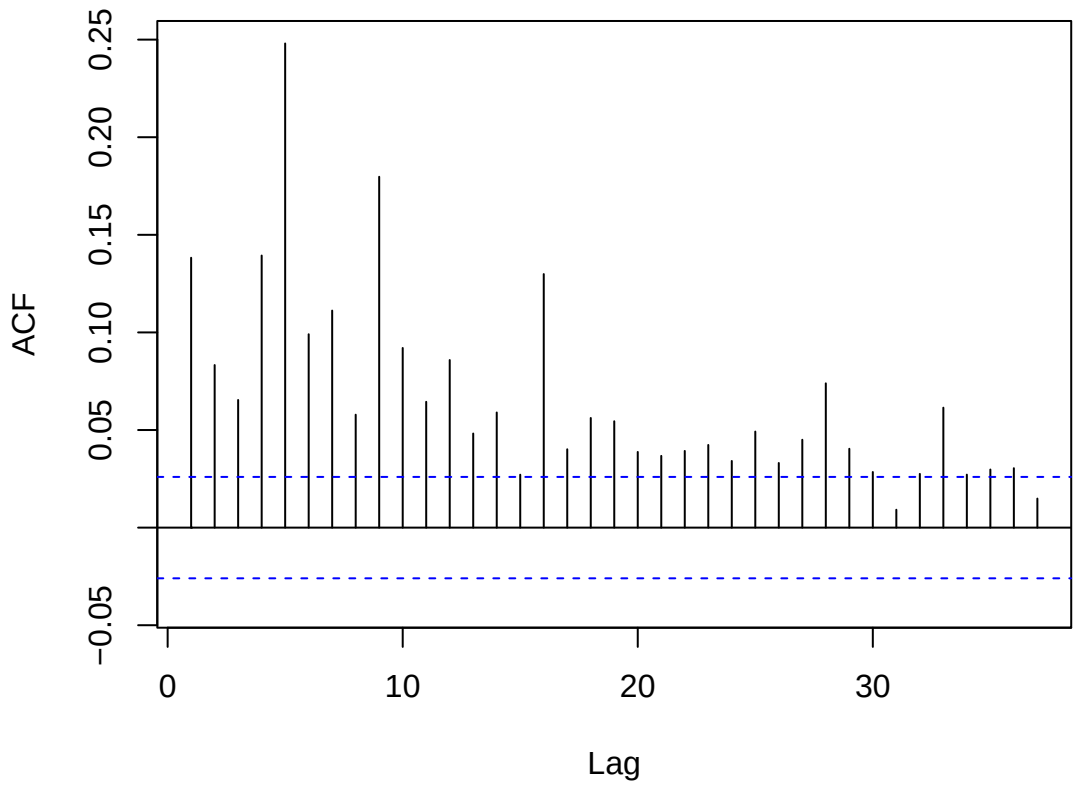


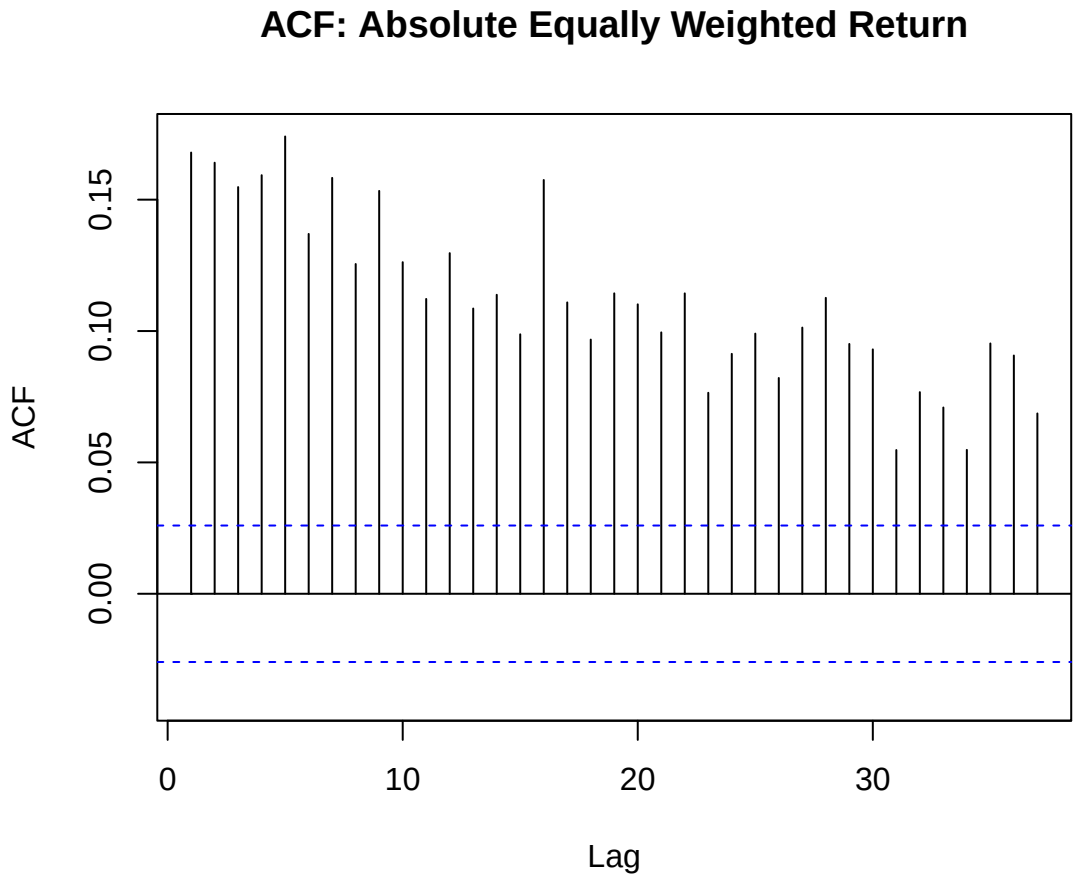
This suggests that the market foresees the highest future volatility for the Rand, for this sub-sample.

```
## Q(m) of squared series(LM test):
## Test statistic:  1016.07  p-value:  0
## Rank-based Test:
## Test statistic:  421.1523  p-value:  0
## Q_k(m) of squared series:
## Test statistic:  1012.159  p-value:  0
## Robust Test(5%) :  210.8329  p-value:  0
```


Return Type Persistence: USD/ZAR
Returns
0.15
0.10
0.05
0.00
−0.05
2000
2005
2010
2015
2020
Returns_Abs
Returns
0.15
0.10
0.05
0.00
2000
2005
2010
2015
2020
Returns_Sqd
0.025
0.020
0.015
0.010
0.005
0.000
2000
2005
2010
2015
2020
date


ACF: Equally Weighted Return
ACF
0.04
0.02
0.00
−0.02
−0.04
0
10
20
30
Lag


ACF: Squared Equally Weighted Return
ACF
0.25
0.20
0.15
0.10
0.05
−0.05
0
10
20
30
Lag




```
##
##  Box-Ljung test
##
## data:  coredata(xts_zar_rtn^2)
## X-squared = 1078.3, df = 12, p-value < 2.2e-16
```

3. Find best model

```
##                  sGARCH  gjrGARCH    eGARCH    apARCH
## Akaike       -6.397628 -6.400773 -6.399399 -6.396697
## Bayes        -6.391791 -6.393769 -6.392394 -6.388525
## Shibata      -6.397630 -6.400775 -6.399401 -6.396700
## Hannan-Quinn -6.395596 -6.398334 -6.396960 -6.393852
```

4. Fit Model

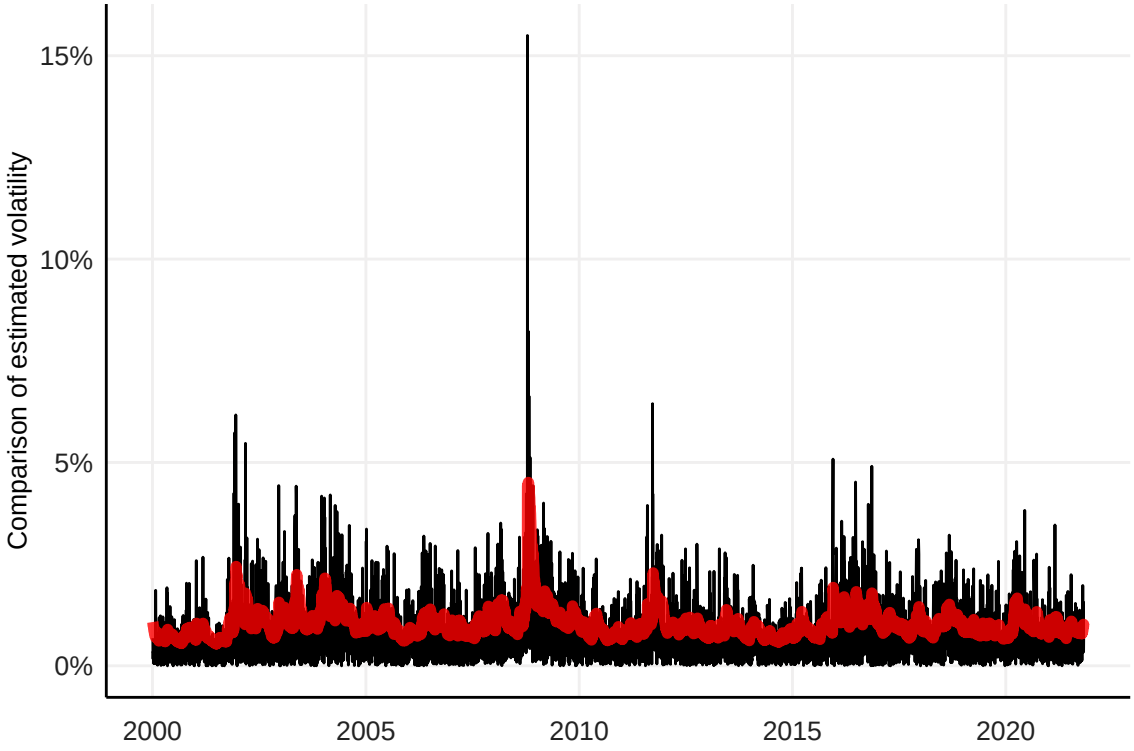
```
##                         t-value         prob sig
## Sign Bias           0.04213364 9.663936e-01
## Negative Sign Bias  3.40498413 6.662547e-04 ***
## Positive Sign Bias  0.92248723 3.563136e-01
## Joint Effect       23.82492612 2.717301e-05 ***
```

	Estimate	Std. Error	t value	Pr(>|t|)
mu	0.00	0.00	1.46	0.15
ar1	-0.00	0.01	-0.19	0.85
omega	0.00	0.00	2.03	0.04
alpha1	0.07	0.01	7.41	0.00
beta1	0.92	0.01	91.66	0.00

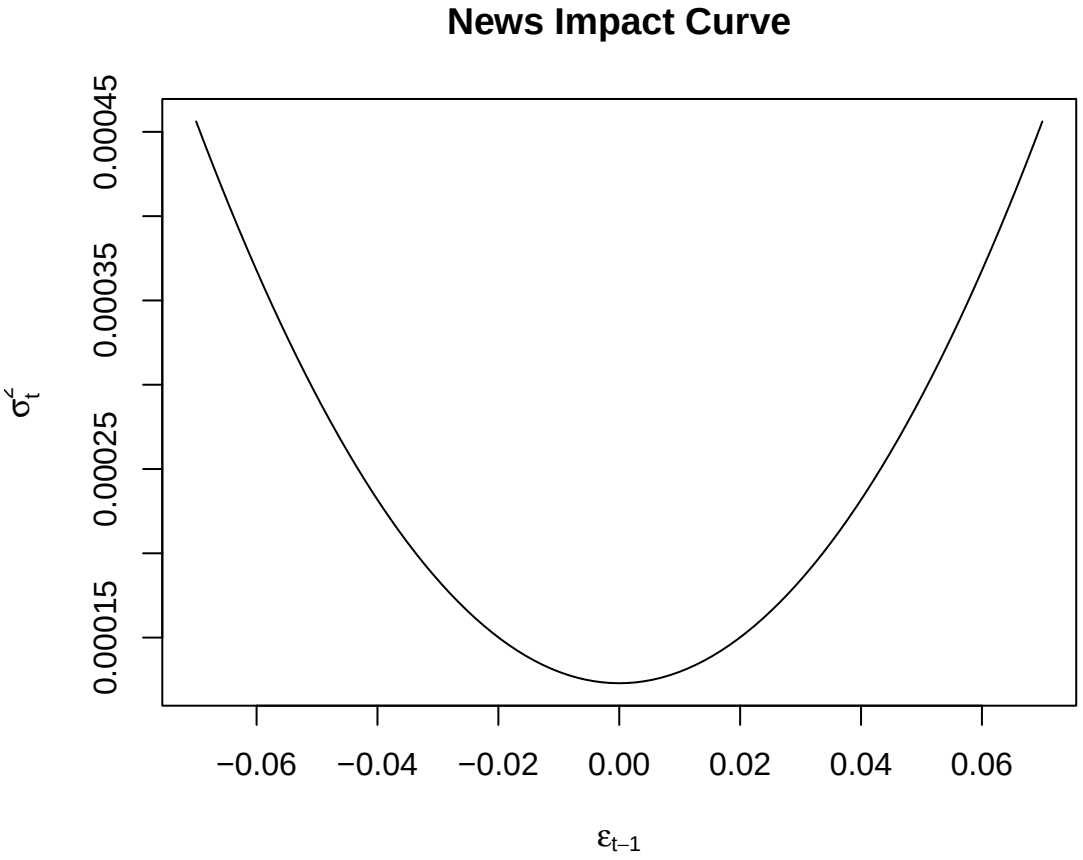
```
## [1] 0.9895234
```

Comparison: Returns Sigma vs Sigma from Garch

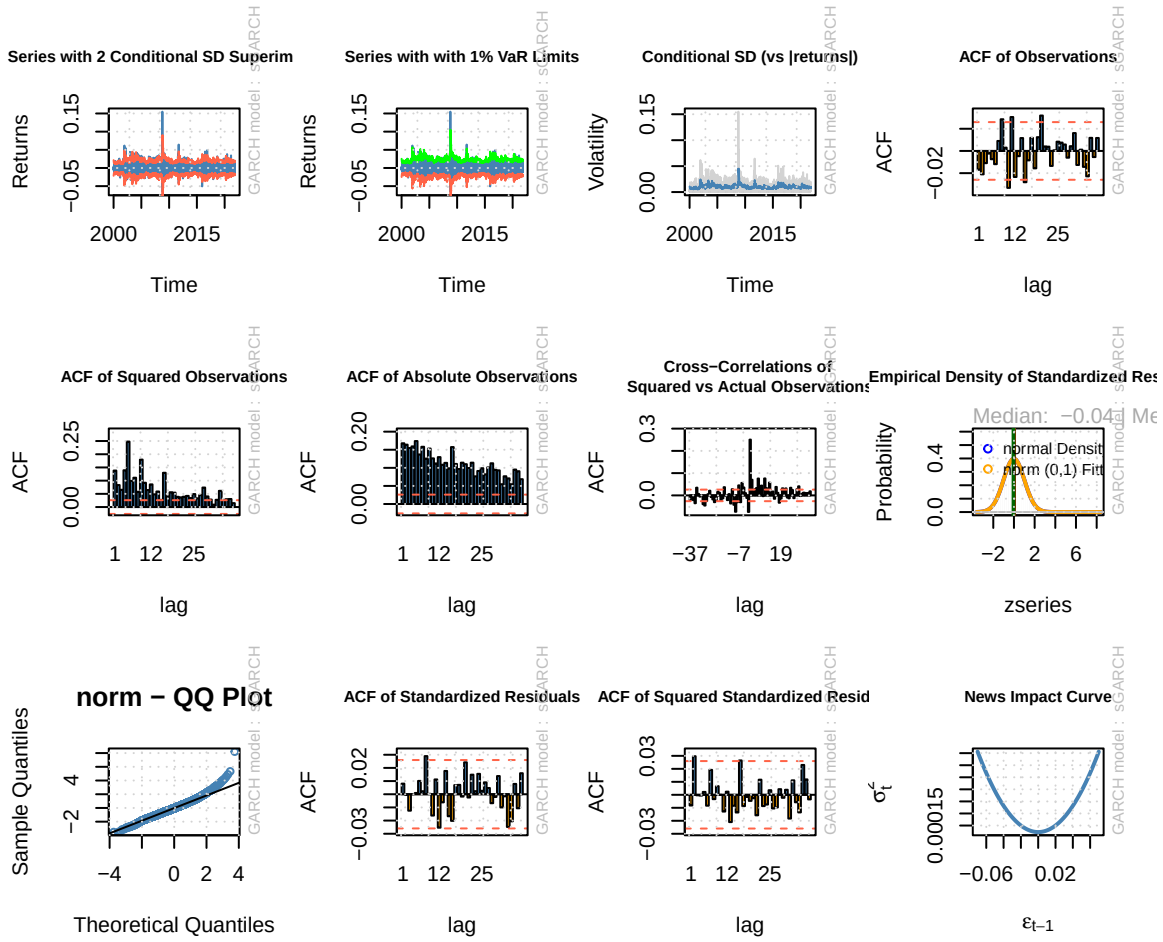
Note the smoothing effect of garch, as noise is controlled for.

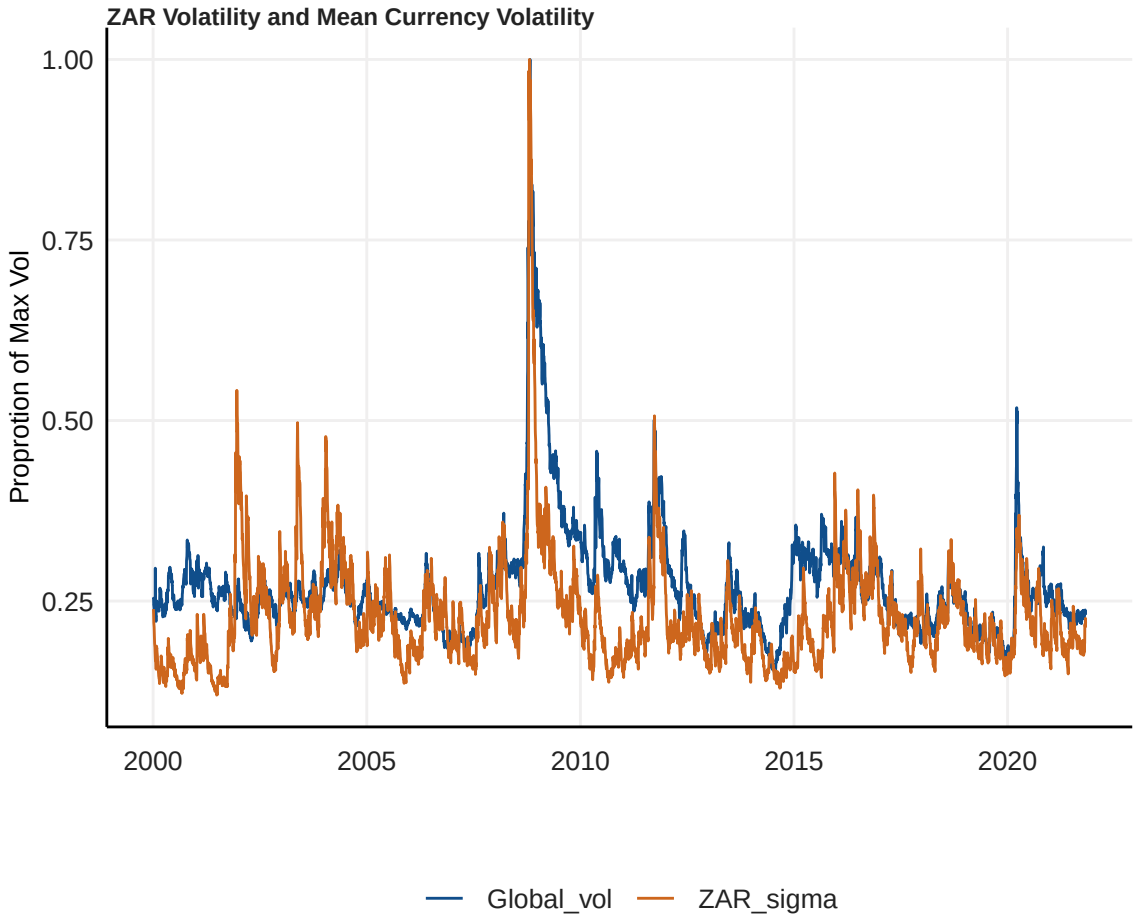


Source: Fin metrics class | Calculations: Own




```
##
## please wait...calculating quantiles...
```


Series with 2 Conditional SD Superim
Returns
Time
Series with with 1% VaR Limits
Returns
Time
Conditional SD (vs |returns|)
Volatility
Time
ACF of Observations
ACF
lag
ACF of Squared Observations
ACF
lag
ACF of Absolute Observations
ACF
lag
Cross−Correlations of
Squared vs Actual Observations
ACF
lag
Empirical Density of Standardized Res
Median: −0.04
normal Densit
norm (0,1) Fitt
Probability
zseries
norm − QQ Plot
Sample Quantiles
Theoretical Quantiles
ACF of Standardized Residuals
ACF
lag
ACF of Squared Standardized Resid
ACF
lag
News Impact Curve
σ_t^2
ε_{t-1}
GARCH model : sGARCH


ZAR Volatility and Mean Currency Volatility
1.00
0.75
0.50
0.25
Proprotion of Max Vol
2000
2005
2010
2015
2020
Global_vol
ZAR_sigma

References

00

Appendix

Appendix A

Some appendix information here

Appendix B