Helping You Write Academic Papers in R using Texevier

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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

```
## Q(m) of squared series(LM test):
## Test statistic:  6266.108  p-value:  0
## Rank-based Test:
## Test statistic:  1487.596  p-value:  0
## Q_k(m) of squared series:
## Test statistic:  13012.78  p-value:  0
## Robust Test(5%) :  1770.574  p-value:  0
```

The MARCH test indicates that all the MV portmanteau tests reject the null of no conditional heteroskedasticity, motivating our use of MVGARCH models. Let's set up the model

```
## Test results:
## Q(m) of et:
## Test and p-value:  67.86301 1.144478e-10
```

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Contributions:

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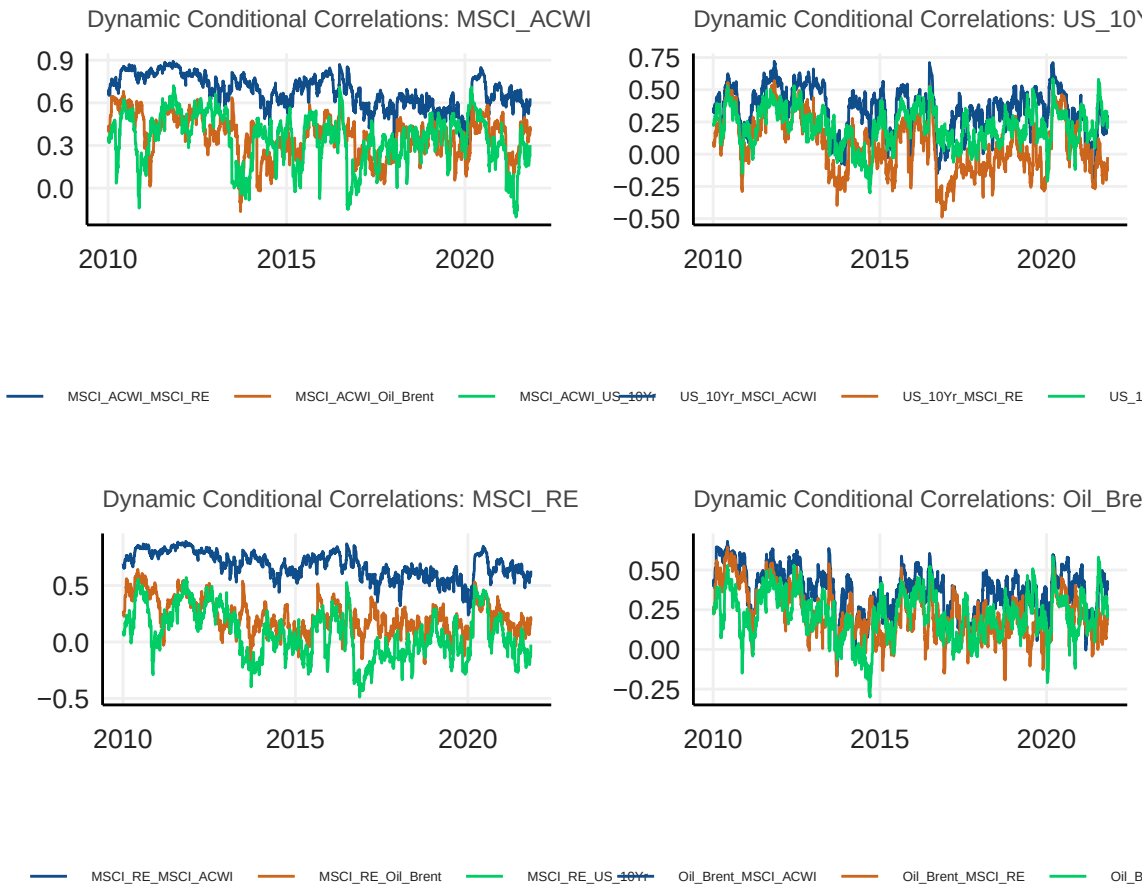
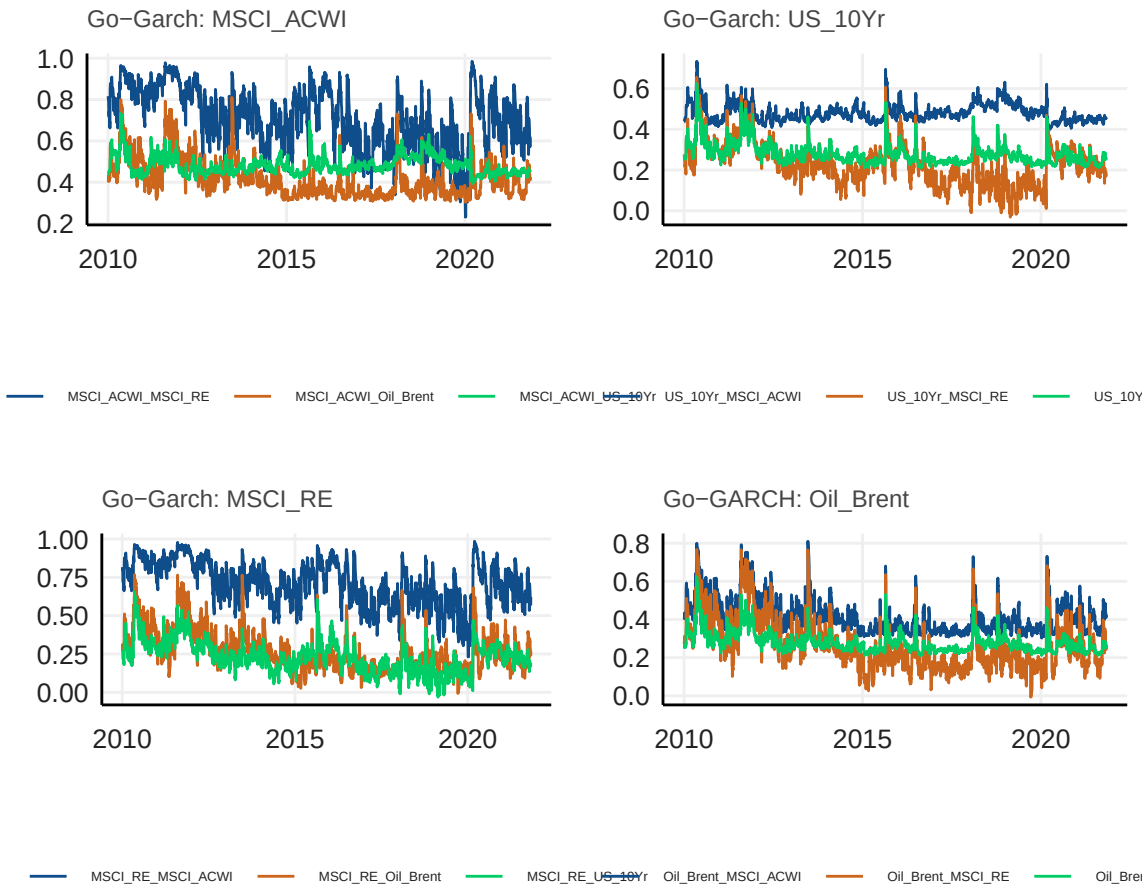
```
## Rank-based test:
## Test and p-value:  45.01247 2.163493e-06
## Qk(m) of epsilon_t:
## Test and p-value:  251.1729 5.494596e-06
## Robust Qk(m):
## Test and p-value:  149.6698 0.7098375


## , , 2010-01-01
##
##            MSCI_ACWI   US_10Yr   MSCI_RE Oil_Brent
## MSCI_ACWI 1.0000000 0.3672945 0.6989608 0.3916873
## US_10Yr   0.3672945 1.0000000 0.1060070 0.2437526
## MSCI_RE   0.6989608 0.1060070 1.0000000 0.2554721
## Oil_Brent 0.3916873 0.2437526 0.2554721 1.0000000
##
## , , 2010-01-04
##
##            MSCI_ACWI   US_10Yr   MSCI_RE Oil_Brent
## MSCI_ACWI 1.0000000 0.3669617 0.6988083 0.3913564
## US_10Yr   0.3669617 1.0000000 0.1055386 0.2433507
## MSCI_RE   0.6988083 0.1055386 1.0000000 0.2550748
## Oil_Brent 0.3913564 0.2433507 0.2550748 1.0000000
##
## , , 2010-01-05
##
##            MSCI_ACWI   US_10Yr   MSCI_RE Oil_Brent
## MSCI_ACWI 1.0000000 0.3340547 0.6777565 0.4364434
## US_10Yr   0.3340547 1.0000000 0.1027695 0.2291449
## MSCI_RE   0.6777565 0.1027695 1.0000000 0.2623880
## Oil_Brent 0.4364434 0.2291449 0.2623880 1.0000000
```



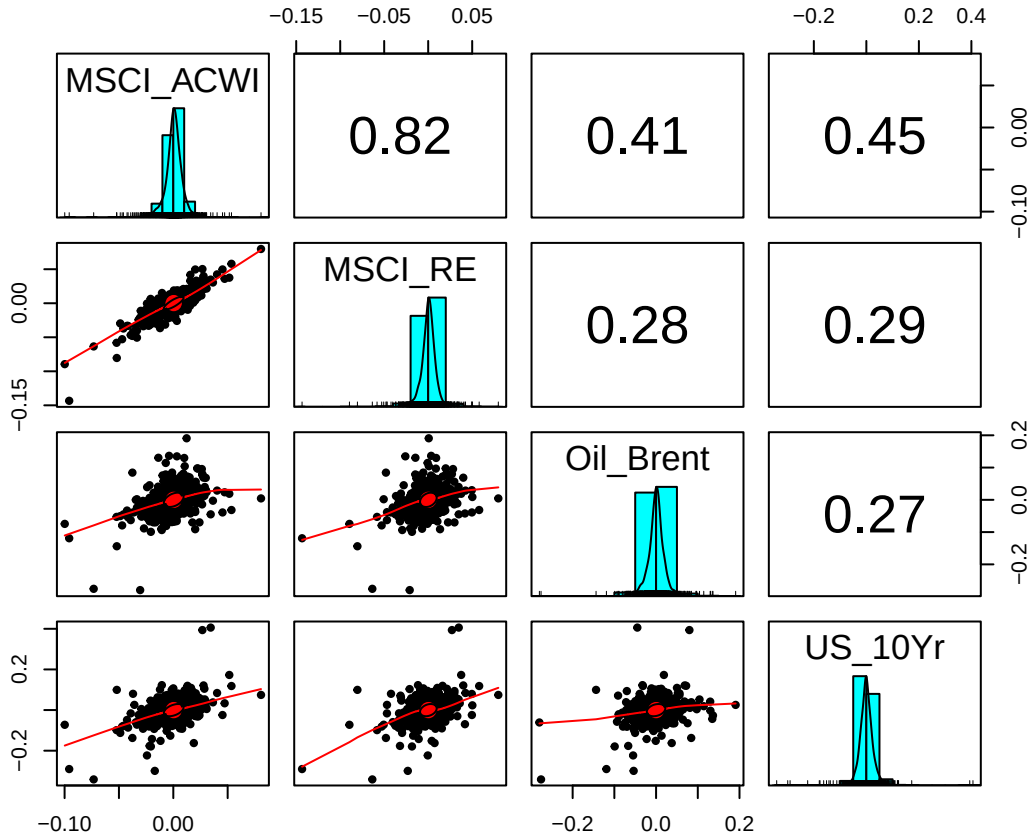
1. Go Garch

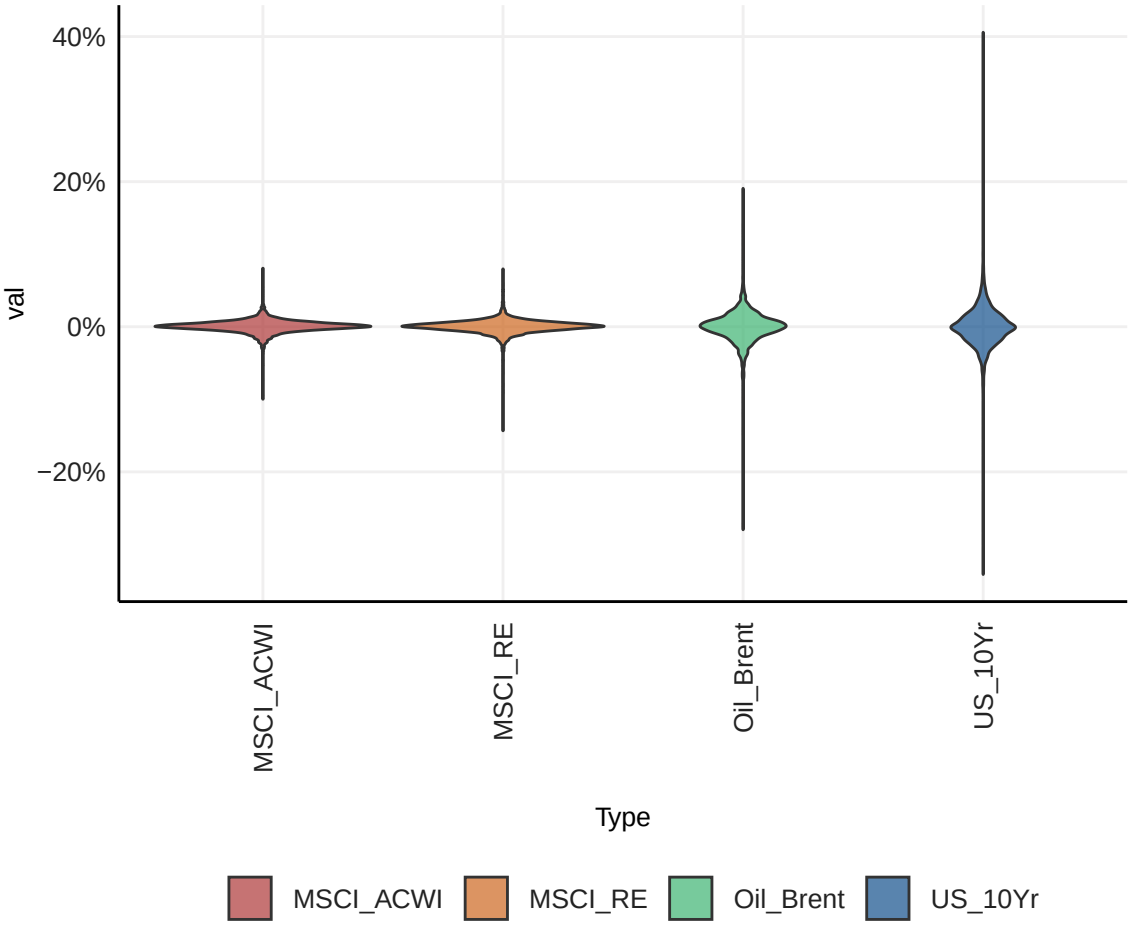
```
##
## *-------------------------------*
## *        GO-GARCH Fit           *
## *-------------------------------*
##
## Mean Model       : CONSTANT
## GARCH Model      : sGARCH
## Distribution : mvnorm
## ICA Method       : fastica
## No. Factors      : 4
## No. Periods      : 3086
## Log-Likelihood   : 38671.96
## ----------------------------------
```

```
##
## U (rotation matrix) :
##
##        [,1]   [,2]    [,3]    [,4]
## [1,]  0.859 -0.359 -0.2106 -0.2992
## [2,]  0.398  0.277 -0.0869  0.8704
## [3,] -0.187 -0.882  0.1952  0.3854
## [4,]  0.264  0.127  0.9539 -0.0656
##
## A (mixing matrix) :
##
##          [,1]    [,2]      [,3]      [,4]
## [1,] -0.00140 0.00865  0.002277  0.000678
## [2,] -0.02864 0.00726  0.006998  0.002690
## [3,] -0.00139 0.00877 -0.003286 -0.000216
## [4,] -0.00201 0.00728  0.000874  0.020820
```




```
##                    PC1        PC2          PC3         PC4
## MSCI_ACWI -0.6080549  0.2681471  0.01713371 -0.74704269
## MSCI_RE   -0.5540251  0.5226063  0.09680532  0.64075547
## Oil_Brent -0.3932987 -0.6563281  0.63617819  0.09913059
## US_10Yr   -0.4106600 -0.4735115 -0.76525321  0.14674050
```


MSCI_ACWI
MSCI_RE
Oil_Brent
US_10Yr
0.82
0.41
0.45
0.28
0.29
0.27
−0.15
−0.05
0.05
−0.2
0.2
0.4
0.00
−0.10
0.2
0.0
−0.2
−0.10
0.00



The US 10 year bond shows the highest degree of dispersion, followed by Oil, and clearly follows a different distribution process to the other two indices.

References

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Appendix

Appendix A

Some appendix information here

Appendix B