Tarea 4

Modelos ARCH y GARCH

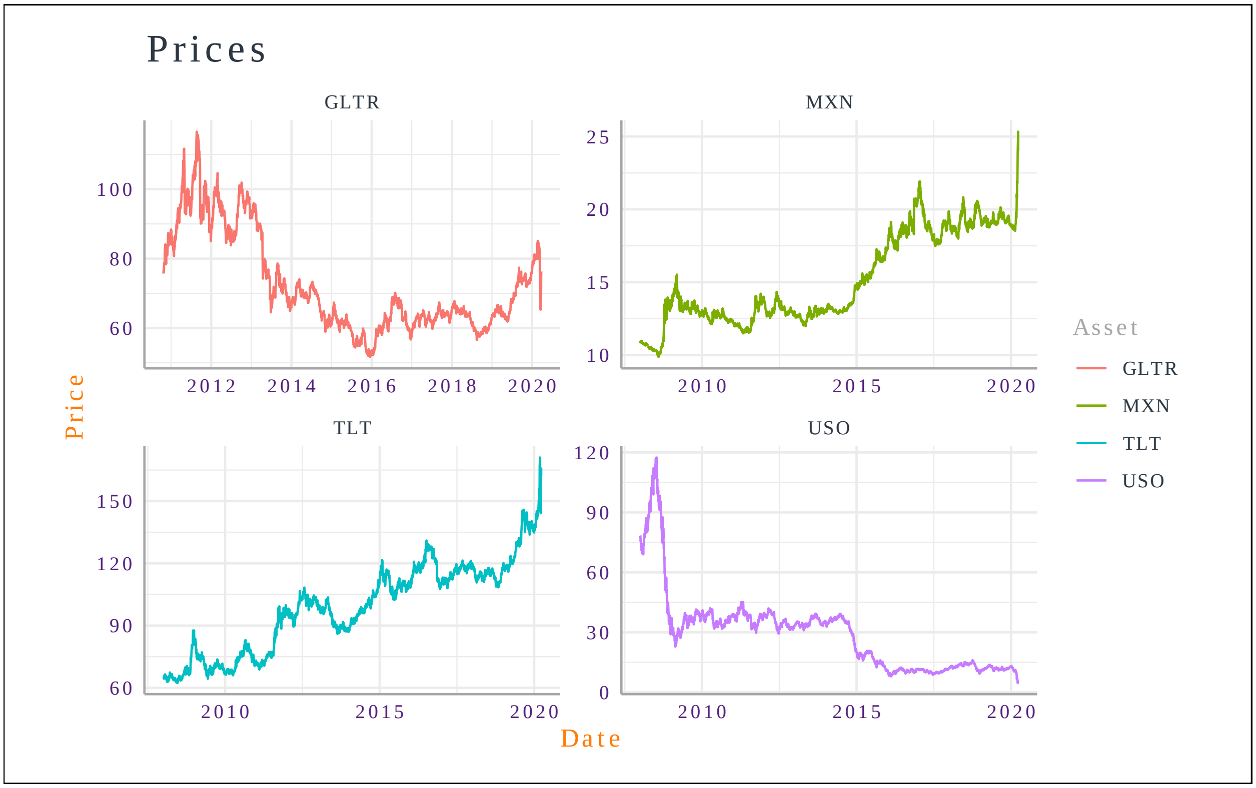
Gibrán Peniche

2020-04-01

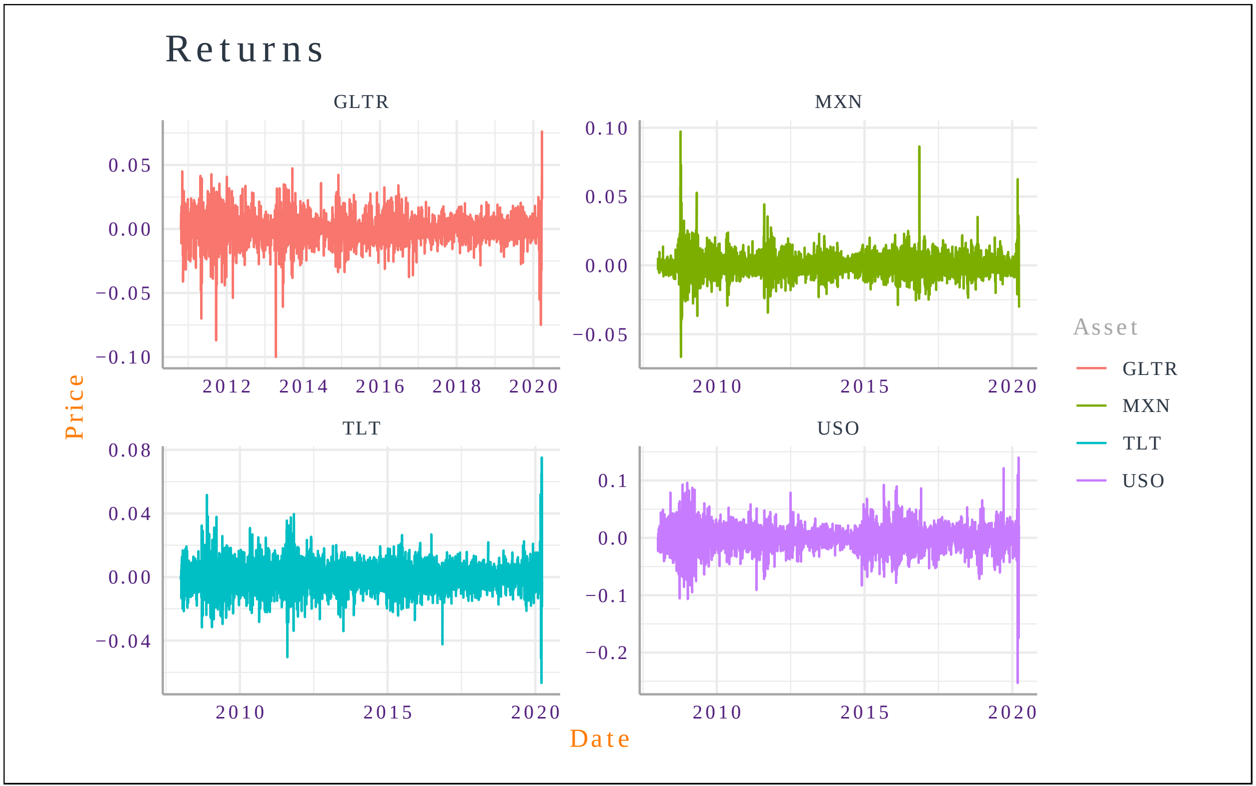
Contents

```r
library(tidyverse)
library(tidyquant)
library(rugarch)
library(pander)
```

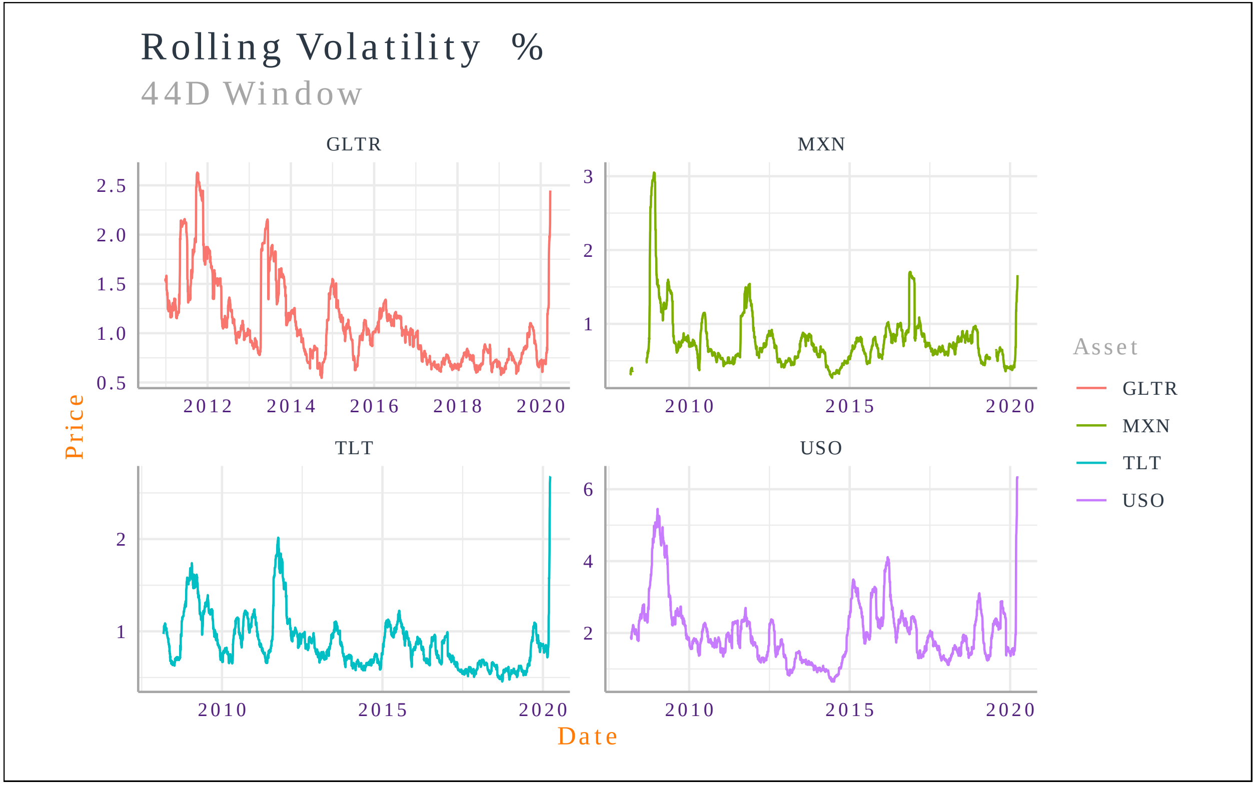
1 Graficar series



2 Retornos


Returns
GLTR
MXN
TLT
USO
Price
Date
Asset
GLTR
MXN
TLT
USO
0.05
0.00
−0.05
−0.10
2012
2014
2016
2018
2020
0.10
0.05
0.00
−0.05
2010
2015
2020
0.08
0.04
0.00
−0.04
2010
2015
2020
0.1
0.0
−0.1
−0.2
2010
2015
2020

3 Volatilidad Ventana 44 dias



4 Volatilidad Anual

Table 1: Daily & Annual Volatilities

symbol	Volatily %	Anualized Volatility %
GLTR	1.195	18.97
TLT	0.9617	15.27
USO	2.294	36.42
MXN	0.854	13.56

5 Modelo GARCH(1,1)

mu	ar1	ma1	omega	alpha1	beta1
3.426e-05	0.7488	-0.7323	1.353e-06	0.05823	0.9343

mu	ar1	ma1	omega	alpha1	beta1
7.013e-05	0.0006526	-0.0627	1.985e-06	0.1377	0.8365

mu	ar1	ma1	omega	alpha1	beta1
0.0002664	0.7634	-0.7983	1.178e-06	0.06557	0.9206

mu	ar1	ma1	omega	alpha1	beta1
0.0001419	-0.7787	0.7534	4.006e-06	0.0902	0.9071

6 Varianza Incondicional

Table 6: GARCH Unconditional Variance %

symbol	Unconditional Variance
GLTR	0.01817
MXN	0.007708
TLT	0.008486
USO	0.1495