Texevier practical submission: getting used to the environment for my research paper

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Abstract

The purpose of this paper is to allow myself to become accustomed to the Texevier environment, to be able to successfully write my research paper. My research paper will study the effect of Fed rate hikes on the EME currencies, specifically BRICS economies.

Keywords:

JEL classification

1. Introduction

This marks the beginning of my mini write-up, which serves as practice in working with Texevier. It consists of a couple of interesting calculations, tables and plots to get me to understand how to work in the Texevier environment. The layout of the rest of this paper is as follows: section 2 summarises the mean and variance for the stocks over two different periods. Section 3 includes a brief exercise in referencing, to prove I am able to do this when it comes to my final project. I reference Tsay (1989) and Katzke (2017) (the package in which is used to write this paper). Section 4 tabulates the unconditional, full sample correlations between the stocks. Section 5 plots the univariate GARCH ht processes for each of the series in our sample. Section 6 plots the cumulative returns of our portfolio of stocks, equally weighted and reweighted each year at the end of June. Section 7 concludes.

2. Returns calculations

Below, I summarise the first and second moments of the returns of all the stocks in the portfolio, for three different periods.[1] I do this using the *xtable* package in R, which allows one to create slick tables.

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[1]There is no data for the third period, so only two of them are summarised.

Table 2.1 shows the mean and variance (first and second moments) of the returns from 2006 to 2008 and table 2.2 does so for 2010 to 2013.

	Tickers	mean	variance
1	ABSP	-0.02%	0.01%
2	BVT	0.03%	0.05%
3	FSR	0.01%	0.06%
4	NBKP	-0.03%	0.01%
5	RMH	0.03%	0.07%
6	SBK	0.04%	0.06%
7	SLM	0.04%	0.05%

Table 2.1: Summary of the first and second moments of a portfolio of stocks: 2006-2008

	Tickers	mean	variance
1	ABSP	0.01%	0.01%
2	BVT	0.08%	0.02%
3	FSR	0.08%	0.03%
4	NBKP	0.01%	0.01%
5	RMH	0.07%	0.04%
6	SBK	0.03%	0.02%
7	SLM	0.09%	0.02%

Table 2.2: Summary of the first and second moments of a portfolio of stocks: 2010-2013

The negative mean returns in the first period (for two of the stocks) is immediately evident. It could be that the financial crisis had an adverse effect on business operations during this time, which reflected in the company returns. The variance is also higher during this period suggesting higher stock market volatility. For the second period, the returns are positive across all stocks and the variance seems lower, overall.

3. Referencing

The purpose of this section is to show that I am able to reference in R Markdown. For this reason, I added the Tsay textbook which I saved in my ref.bib file. It discusses the *Testing and modeling threshold autoregressive processes* (Tsay 1989). Or we could include a page number in the following way Tsay (1989 p 35). Let us try referencing two sources together: this paper makes use of both Tsay and Katzke's work, with Tsay's work discussing the analysis of AR processes as well as a package,

which is used in RStudio (published in CRAN) (Tsay 1989 & Katzke (2017)).

How about referencing an author and page number wrapped around in brackets? Tsay (1989) states that "AR1 processes are persistent processes that can best be explained by including an AR1 term and an error term" (Tsay 1989 p 56).

4. Unconditional (full sample) correlations between the stocks

This section aims to calculate the full sample correlations between the stocks in our portfolio. Naturally, the diagonal entries will all equal unity[2], whereas the off-diagonals give us a sense of the coveriance between the stocks in our portfolio. See table 4.1 below for the correlation matrix.

	ABSP	BVT	FSR	NBKP	RMH	SBK	SLM
ABSP	1.00	-0.42	-0.44	0.92	-0.44	-0.48	-0.48
BVT	-0.42	1.00	0.95	-0.41	0.93	0.90	0.98
FSR	-0.44	0.95	1.00	-0.43	0.98	0.93	0.97
NBKP	0.92	-0.41	-0.43	1.00	-0.43	-0.45	-0.48
RMH	-0.44	0.93	0.98	-0.43	1.00	0.94	0.94
SBK	-0.48	0.90	0.93	-0.45	0.94	1.00	0.91
SLM	-0.48	0.98	0.97	-0.48	0.94	0.91	1.00

Table 4.1: Full sample correlations between stocks

5. Univariate GARCH processes

This section plots the univariate GARCH ht processes for each of the series in our sample. Please see figure 5.1, which plots the GARCH processes.

[2]By defintion, the correlation between the stock and itsefl is one.

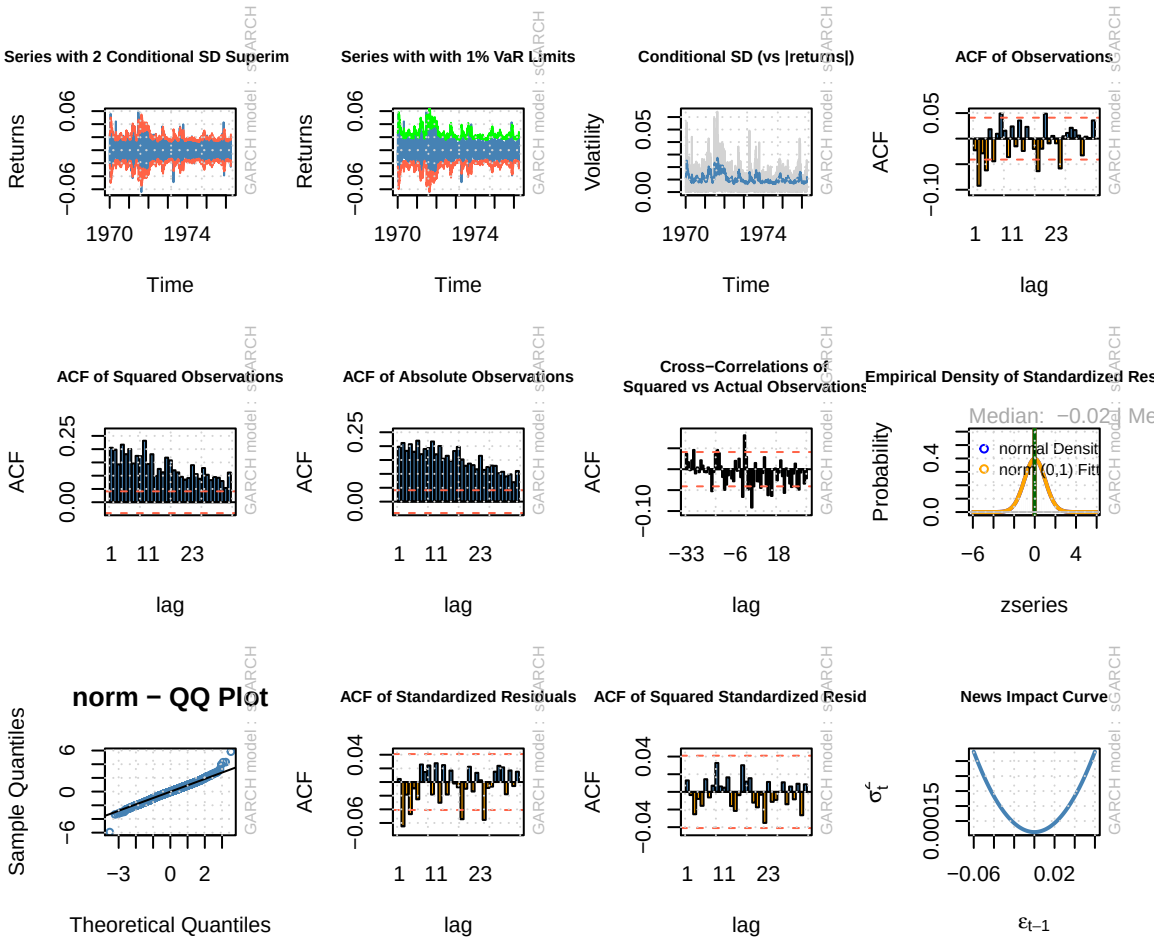

Figure 5.1: GARCH ht processes of the stocks in our sample

6. Cumulative returns

This section deals with "cumulative returns calculations". The aim is to plot the cumulative returns series of a portfolio that is equally weighted to each of the stocks.[3] Let us get straight to it. Figure 6.1 plots the cumulative returns for an equally-weighted portfolio of stocks.

[3]The portfolio is reweighted each year at the end of June.

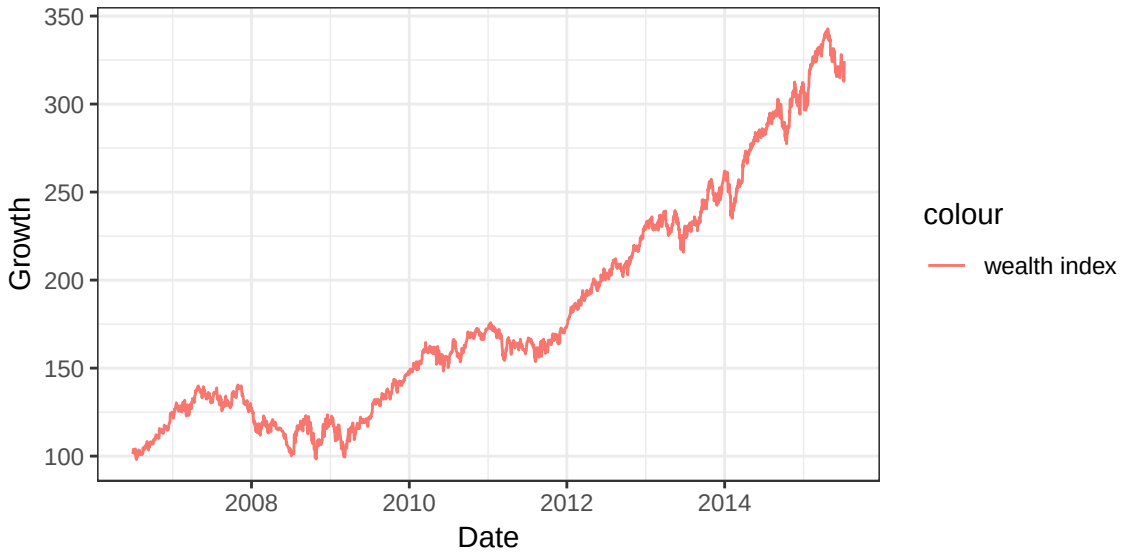

Figure 6.1: Cumulative returns of a portfolio of equally-weighted stocks

7. Conclusion

This mini write-up proves that I am able to produce an academic paper using the Texevier package, developed by Katzke (2017). The paper conducted a few calculations on financial time series of seven stocks. Returns-calculations were conducted to plot the cumulative returns, correlations were tabulated and GARCH processes were run. Essentially, the purpose was to express all findings in a professional template, which was succseefully completed.

7.1. Subtitle

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References

Katzke, N.F. 2017. *Texevier: Package to Create Elsevier Templates for Rmarkdown.* Stellenbosch, South Africa: Bureau for Economic Research.

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