

**A Simple Pairs
Trading Strategy
Application
AT&T & Verizon**



start



Qingmin Shi

qs66@scarletmail.rutgers.edu

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01

Introduction

Basic idea of pairs trading

If there exists equilibrium between two assets and an anomaly is observed in the relationship, one can seek to profit from the comparative mispricing by selling the relative overvalued asset and simultaneously buying the undervalued asset.

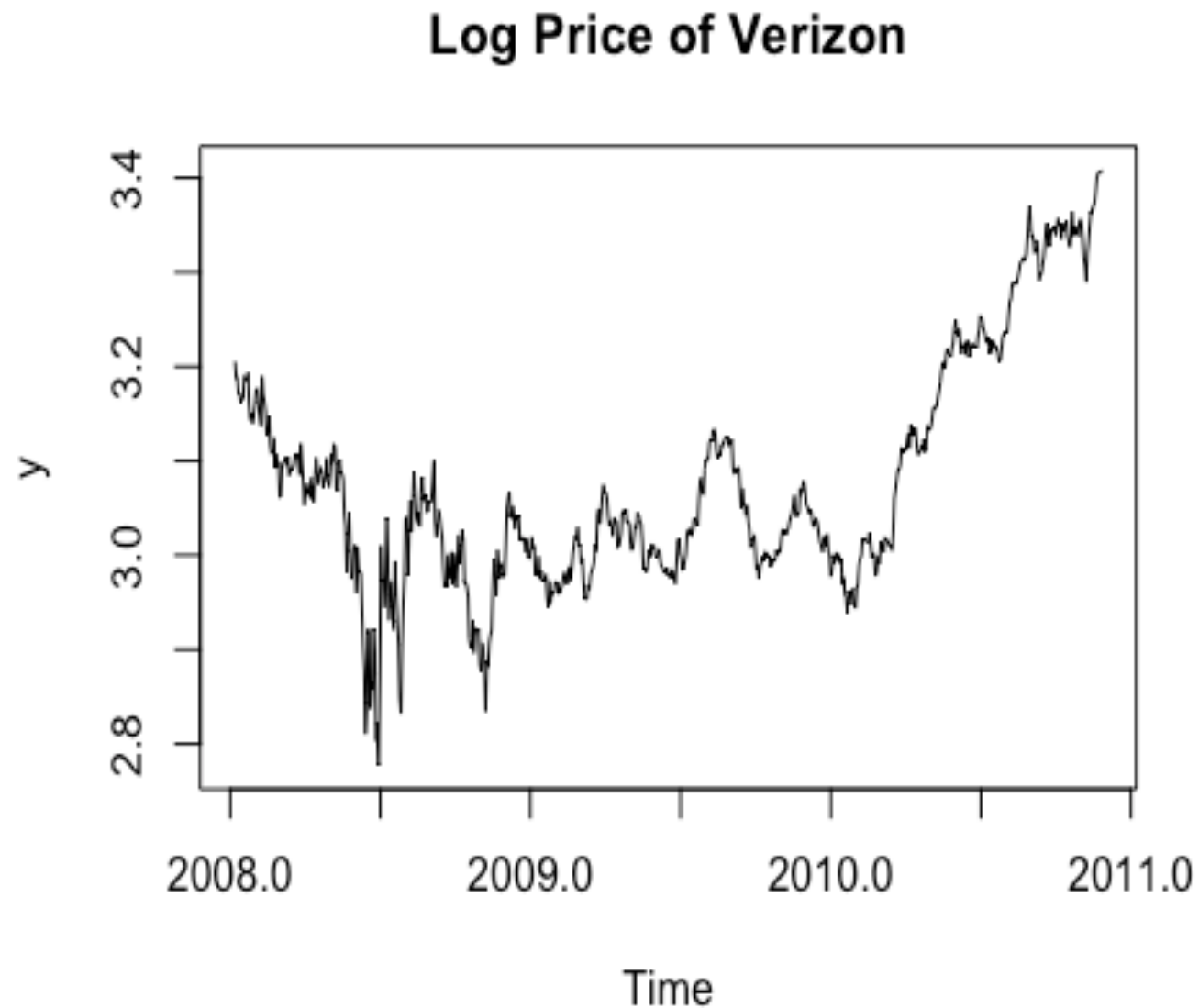
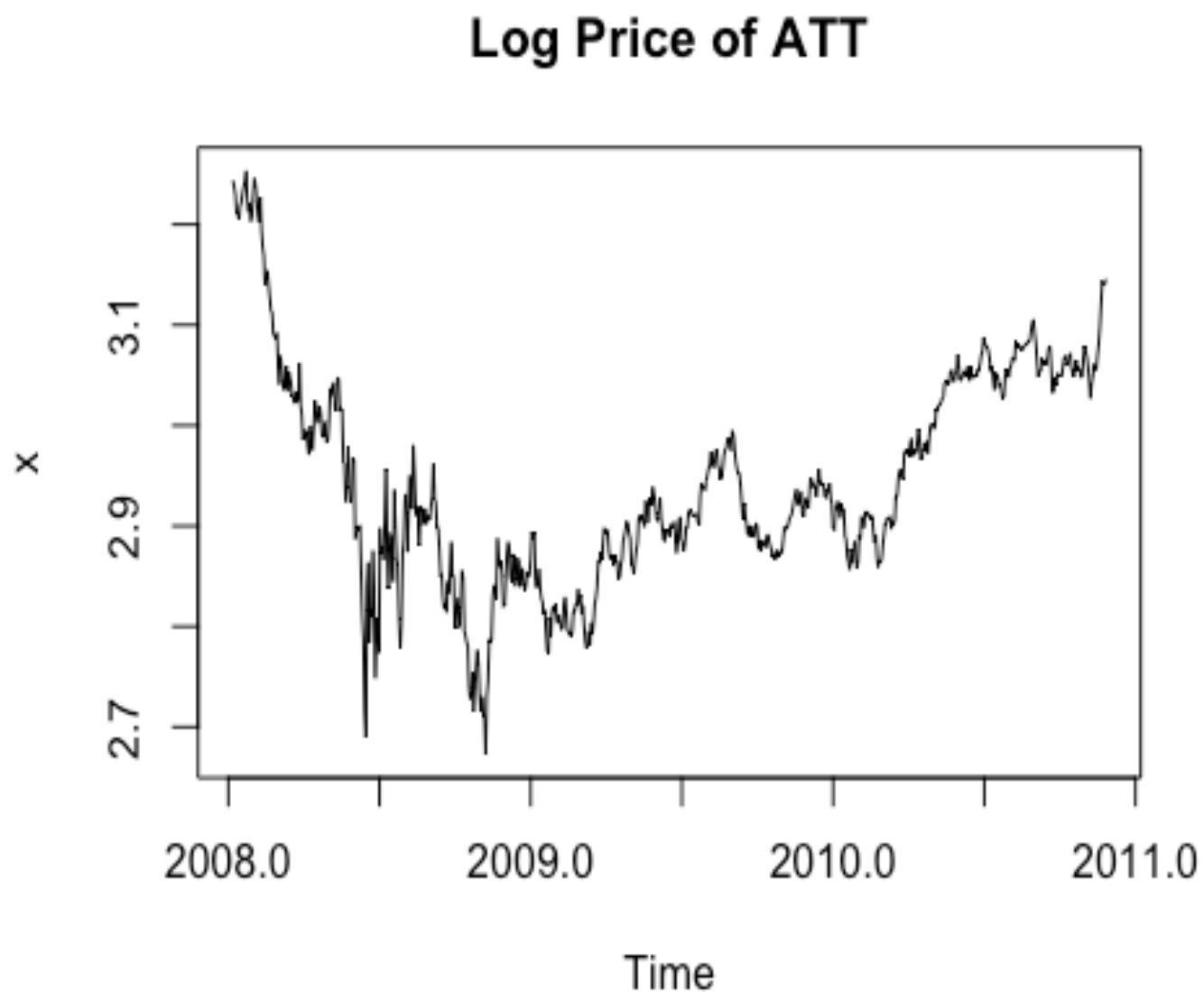
02

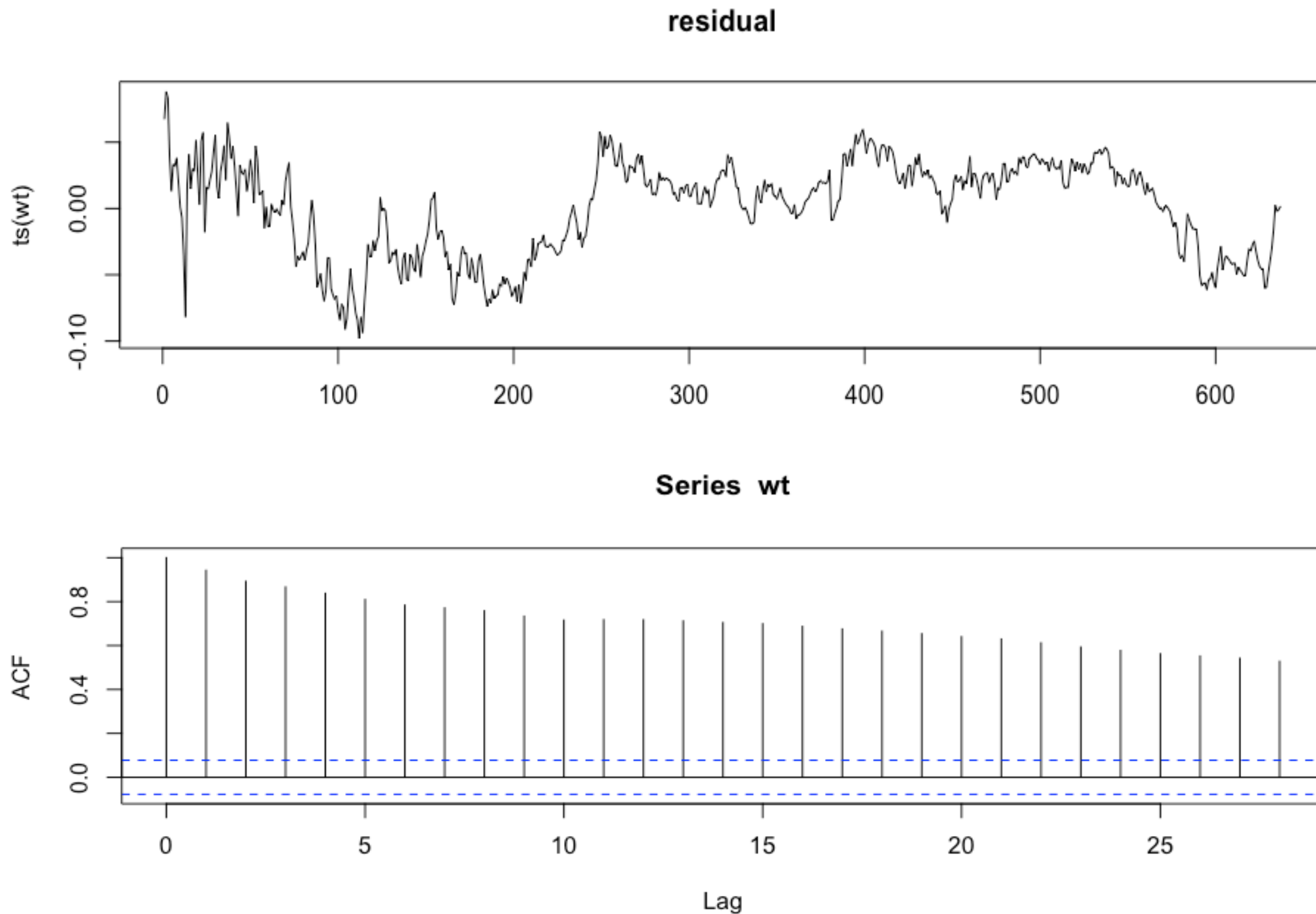
The Selection of data

The principle of data selection is that the price difference of the pair is relatively stable. So the pair of stocks must share some characteristics.

I am interested in the communication industry and I download several companies' stock prices from Yahoo Finance and test if they are highly correlated.

My pair is AT&T and Verizon, starting from May 1st in 2008 to April 1st in 2011, the correlation coefficient of the pair is 0.82.





First, I consider the simple linear regression and the ARIMA model, however, the result is not satisfying.

```
m3=arima(wt,order=c(3,0,0),include.mean = F)
```

The p-value of the ADF test is 0.01.

03 Cointegration

```
#####  
# Johansen-Procedure #  
#####
```

```
Test type: trace statistic , with  
linear trend
```

```
Eigenvalues (lambda):  
[1] 0.4902120 0.1794881
```

```
Values of teststatistic and  
critical values of test:
```

	test	10pct	5pct	1pct
r <= 1	5.54	6.50	8.18	11.65
r = 0	24.40	15.66	17.95	23.52

Eigenvectors, normalised to first
column:

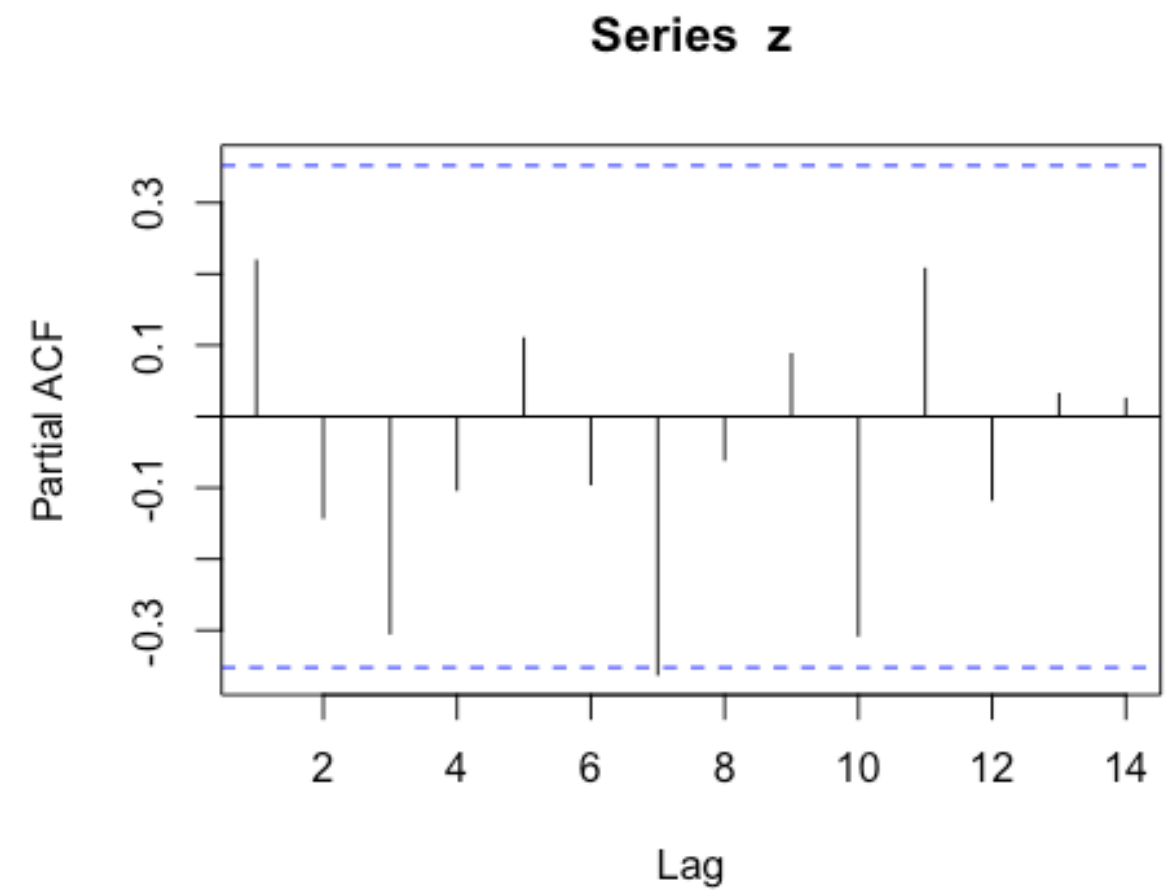
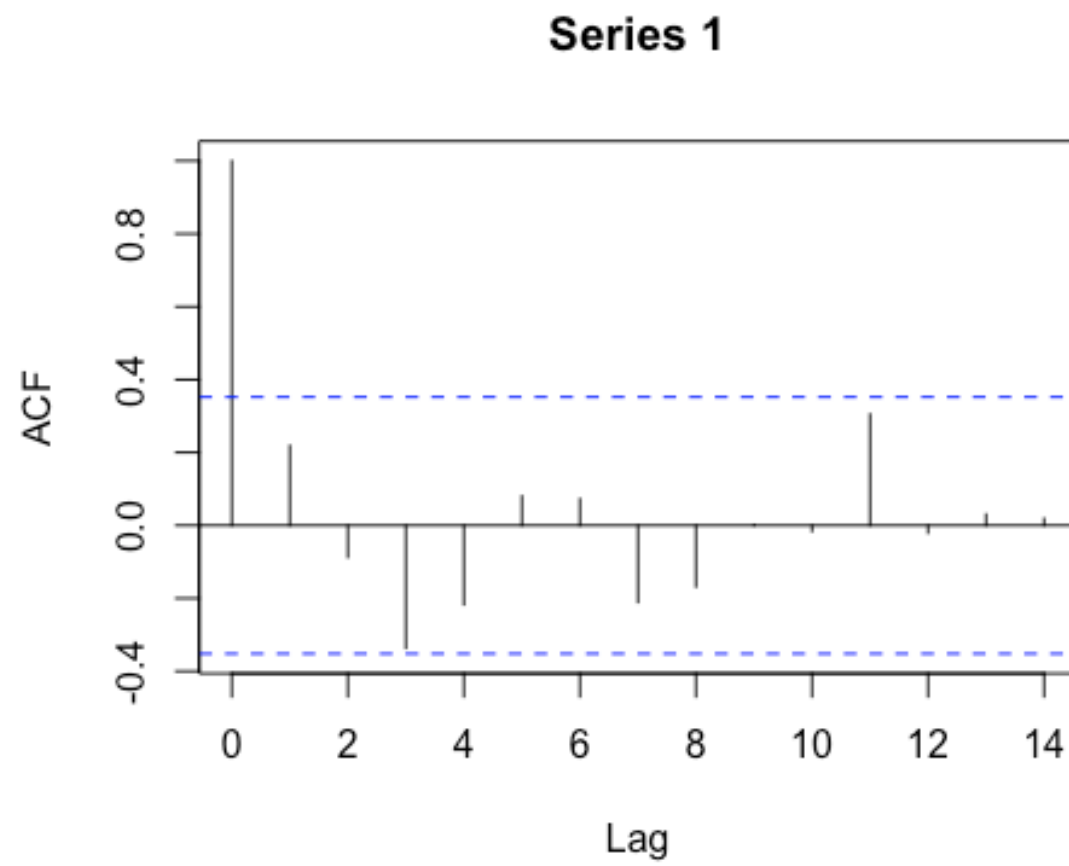
(These are the cointegration
relations)

	ATTad.l3	Verad.l3
ATTad.l3	1.0000000	1.00000
Verad.l3	-0.3394999	12.10922

Weights W:

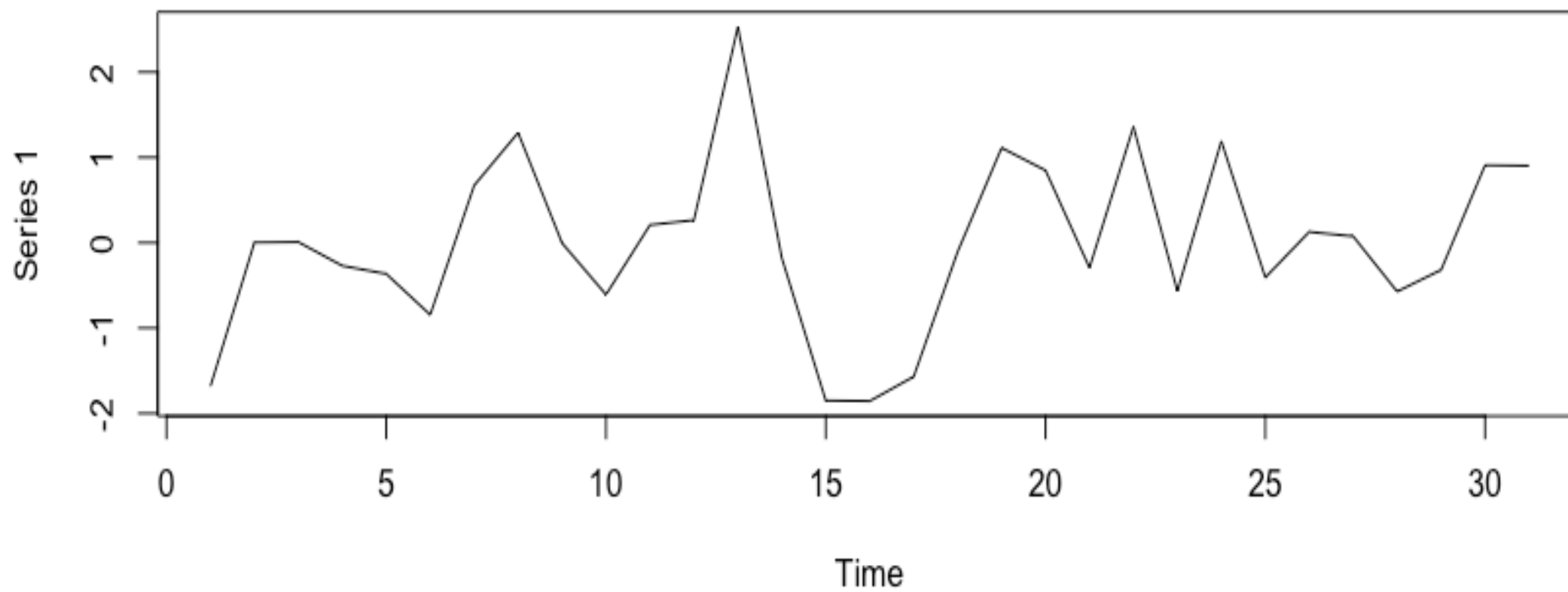
(This is the loading matrix)

	ATTad.l3	Verad.l3
ATTad.d	-0.9852927	-0.01696224
Verad.d	0.4193060	-0.02548269



Strategy Application

04



Apply the Strategy to the next 30 Days
Using Fixed Gamma

	31-60 Days
Gamma	-0.3394999
Gain	0.06663566

Apply the Strategy to the next 30 Days
Using Floating Gamma
(Changing Every 10 Days)

	31-40 days	41-50 days	51-60 days
Gamma	-0.3394999	-1.420094	-1.558607
Gain	0.3372988	-0.3185177	0.401776
Total Gain	0.4205571		

Apply the Strategy to the next 30 Days
Using Floating Gamma
(Changing Every 5 Days)

	31-35 days	36-40 days	41-45 days	46-50 days	51-55 days	56-60 days
Gamma	-0.339 4999	-0.697 5359	-1.420 094	-1.328 731	-1.558 607	-1.820 831
Gain	0.3727 691	-0.036 69649	-0.044 53365	-0.057 898483	0.4986 71	0.5359 19
Total Gain	1.268230477					

Thank You

Presenter: Qingmin Shi

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