

```
price<-readxl::read_xlsx(file.choose())
```

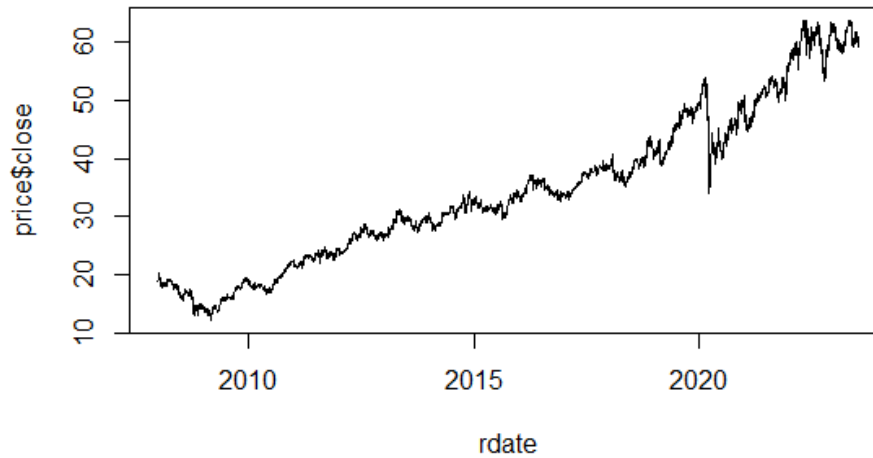
```
attach(price)
```

```
rdate<-as.Date(price$date, "%d/%m/%y")
```

```
fix(rdate)
```

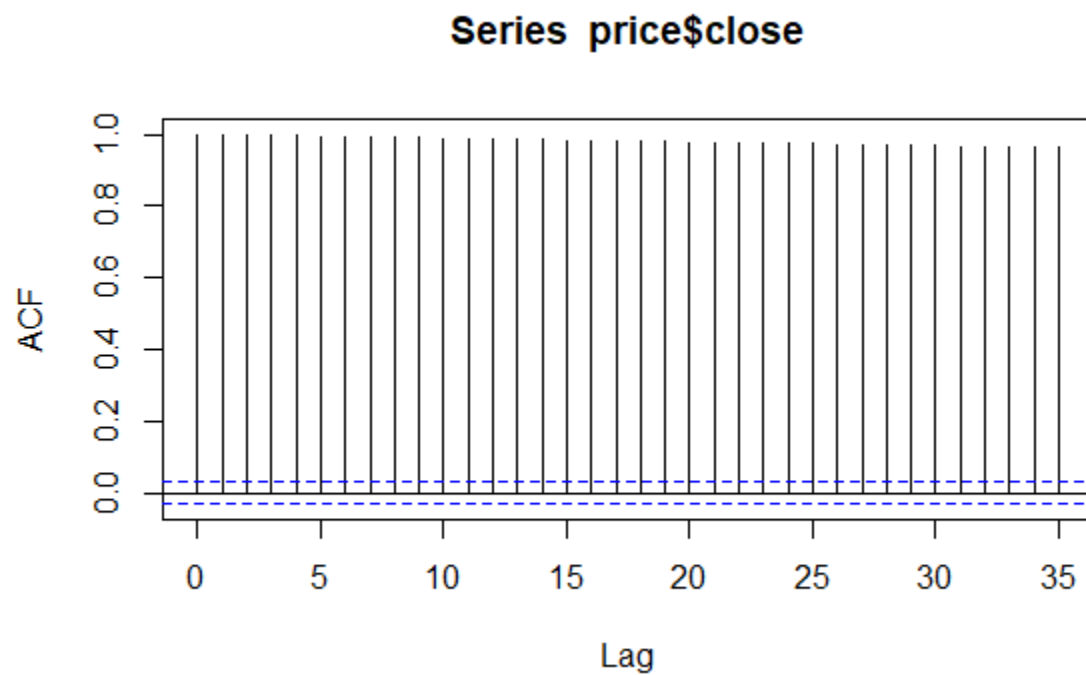
Plot of the Data

```
plot(price$close~rdate, type = "l")
```



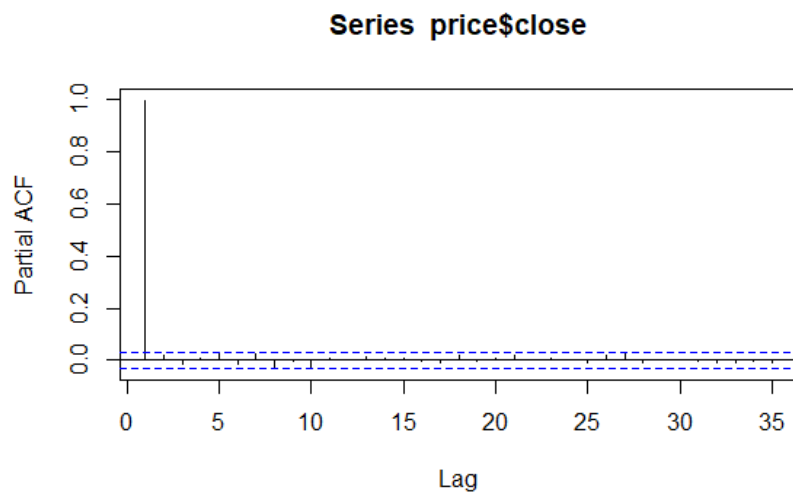
We can see a upward sloping with a drift.

```
acf(price$close)
```



There is high autocorrelation, as these spikes are going above the blue dotted line.

```
pacf(price$close)
```



Partial auto correlation has no issues as these spikes are not going above the blue line.

```
adf.test(price$close)
```

Augmented Dickey-Fuller Test

data: price\$close

Dickey-Fuller = -4.0554, Lag order = 15, p-value = 0.01

alternative hypothesis: stationary

Warning message:

In adf.test(price\$close) : p-value smaller than printed p-value

From the Augmented Dicky Fuller test, we can say that the given data is stationary.

```
pricemodel = auto.arima(price$close, ic="aic", trace = TRUE)
```

Fitting models using approximations to speed things up...

ARIMA(2,1,2) with drift	: 4465.736
ARIMA(0,1,0) with drift	: 4474.364
ARIMA(1,1,0) with drift	: 4473.301
ARIMA(0,1,1) with drift	: 4472.616
ARIMA(0,1,0)	: 4474.659
ARIMA(1,1,2) with drift	: 4475.476
ARIMA(2,1,1) with drift	: 4476.697
ARIMA(3,1,2) with drift	: 4458.578
ARIMA(3,1,1) with drift	: 4467.409
ARIMA(4,1,2) with drift	: 4419.632
ARIMA(4,1,1) with drift	: 4417.761
ARIMA(4,1,0) with drift	: 4452.879
ARIMA(5,1,1) with drift	: 4424.271
ARIMA(3,1,0) with drift	: 4471.985
ARIMA(5,1,0) with drift	: 4441.818

ARIMA(5,1,2) with drift : 4423.475

ARIMA(4,1,1) : 4418.467

Now re-fitting the best model(s) without approximations...

ARIMA(4,1,1) with drift : 4413.29

Best model: ARIMA(4,1,1) with drift

Pricemodel

Series: price\$close

ARIMA(4,1,1) with drift

Coefficients:

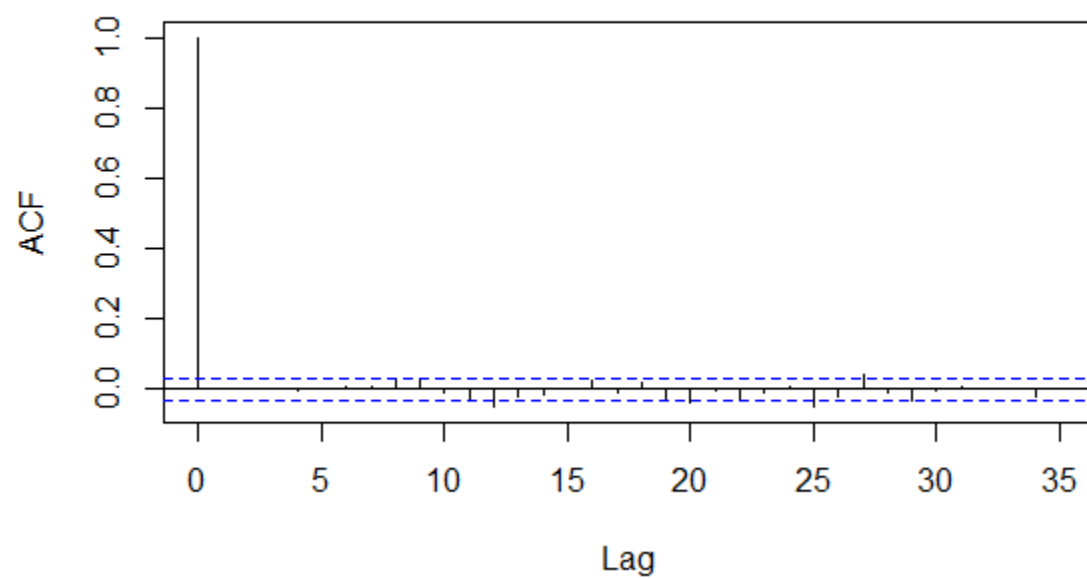
	ar1	ar2	ar3	ar4	ma1	drift
	-0.8326	-0.0072	-0.0258	-0.1017	0.8120	0.0103
s.e.	0.0454	0.0208	0.0208	0.0169	0.0435	0.0063

$\sigma^2 = 0.1809$: log likelihood = -2199.65

AIC=4413.29 AICc=4413.32 BIC=4457.18

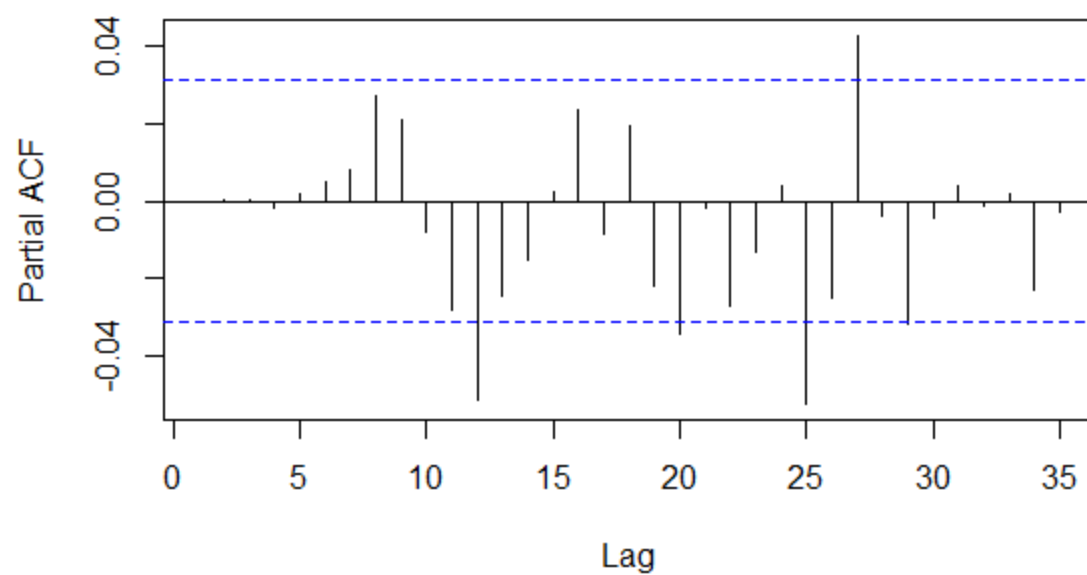
acf(ts(pricemodel\$residuals))

Series ts(pricemodel\$residuals)



`pacf(ts(pricemodel$residuals))`

Series ts(pricemodel\$residuals)



```
priceforecast = forecast(pricemodel, level = c(95), h = 2*253)
```

```
priceforecast
```

```
plot(priceforecast)
```

