

Este es el analisis para una serie real Visualizacion de la serie

```
library("TSA")

## Warning: package 'TSA' was built under R version 3.2.2
## Loading required package: leaps
## Warning: package 'leaps' was built under R version 3.2.2
## Loading required package: locfit
## Warning: package 'locfit' was built under R version 3.2.2
## locfit 1.5-9.1 2013-03-22
## Loading required package: mgcv
## Loading required package: nlme
## This is mgcv 1.8-6. For overview type 'help("mgcv-package")'.
## Loading required package: tseries
## Warning: package 'tseries' was built under R version 3.2.2
##
## Attaching package: 'TSA'
##
## The following objects are masked from 'package:stats':
##
##   acf, arima
##
## The following object is masked from 'package:utils':
##
##   tar

library("leaps")
library("locfit")
library("tseries")
basemz=read.table("maiz.txt",header=TRUE)
basemz

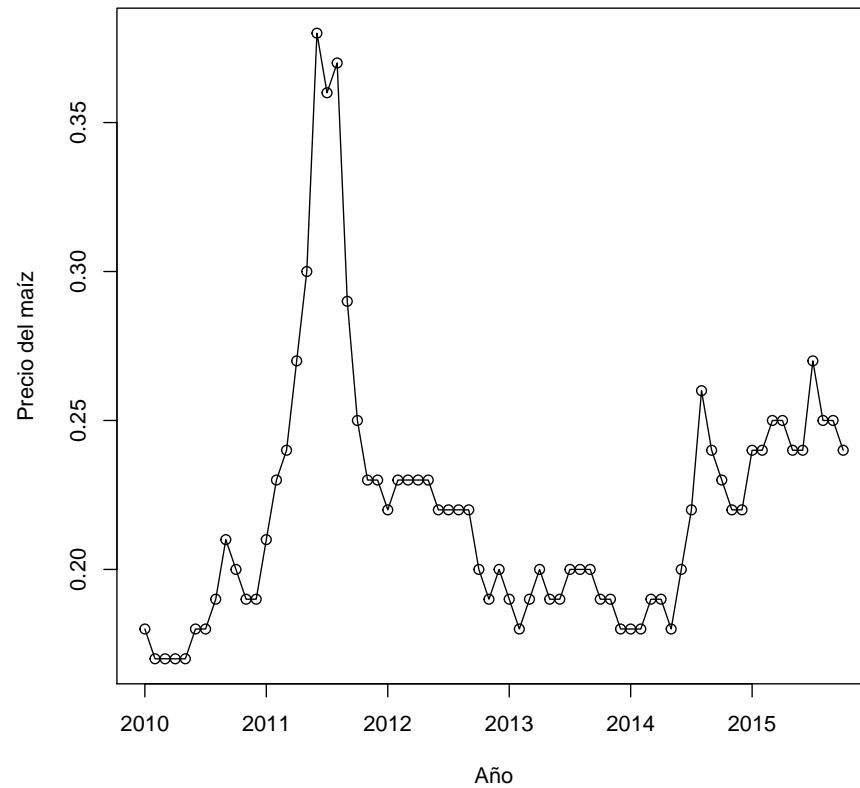
##      maiz
## 1  0.18
## 2  0.17
## 3  0.17
## 4  0.17
## 5  0.17
## 6  0.18
## 7  0.18
## 8  0.19
## 9  0.21
## 10 0.20
## 11 0.19
## 12 0.19
## 13 0.21
```

```
## 14 0.23
## 15 0.24
## 16 0.27
## 17 0.30
## 18 0.38
## 19 0.36
## 20 0.37
## 21 0.29
## 22 0.25
## 23 0.23
## 24 0.23
## 25 0.22
## 26 0.23
## 27 0.23
## 28 0.23
## 29 0.23
## 30 0.22
## 31 0.22
## 32 0.22
## 33 0.22
## 34 0.20
## 35 0.19
## 36 0.20
## 37 0.19
## 38 0.18
## 39 0.19
## 40 0.20
## 41 0.19
## 42 0.19
## 43 0.20
## 44 0.20
## 45 0.20
## 46 0.19
## 47 0.19
## 48 0.18
## 49 0.18
## 50 0.18
## 51 0.19
## 52 0.19
## 53 0.18
## 54 0.20
## 55 0.22
## 56 0.26
## 57 0.24
## 58 0.23
```

```
## 59 0.22
## 60 0.22
## 61 0.24
## 62 0.24
## 63 0.25
## 64 0.25
## 65 0.24
## 66 0.24
## 67 0.27
## 68 0.25
## 69 0.25
## 70 0.24
```

```
mz=ts(basemz$maiz,start=c(2010,1),end=c(2015,10),frequency = 12,names="Precio del maíz-  
z")  
plot(mz,type="o", xlab="Año", ylab = "Precio del maíz",main="Gráfico del precio del maíz")
```

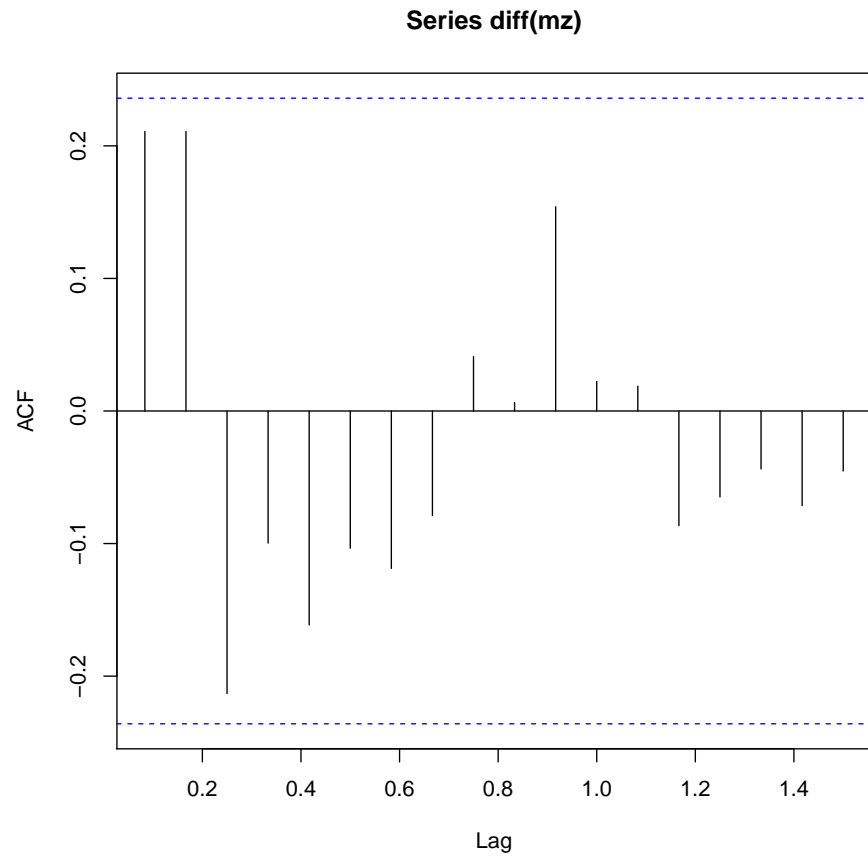
Gráfico del precio del maíz de Enero/2010–Octubre/2015



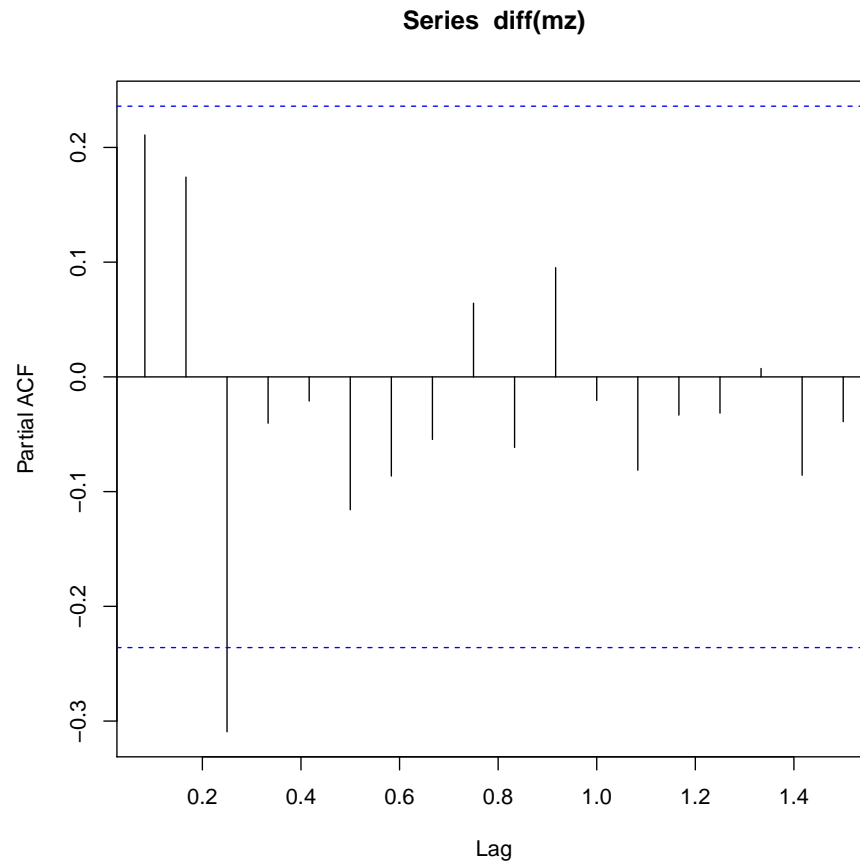
Análisis de estacionariedad

De los resultados anteriores se concluye que solamente se hará una diferencia a la serie

```
library("TSA")
library("leaps")
library("locfit")
library("tseries")
acf(diff(mz))
```



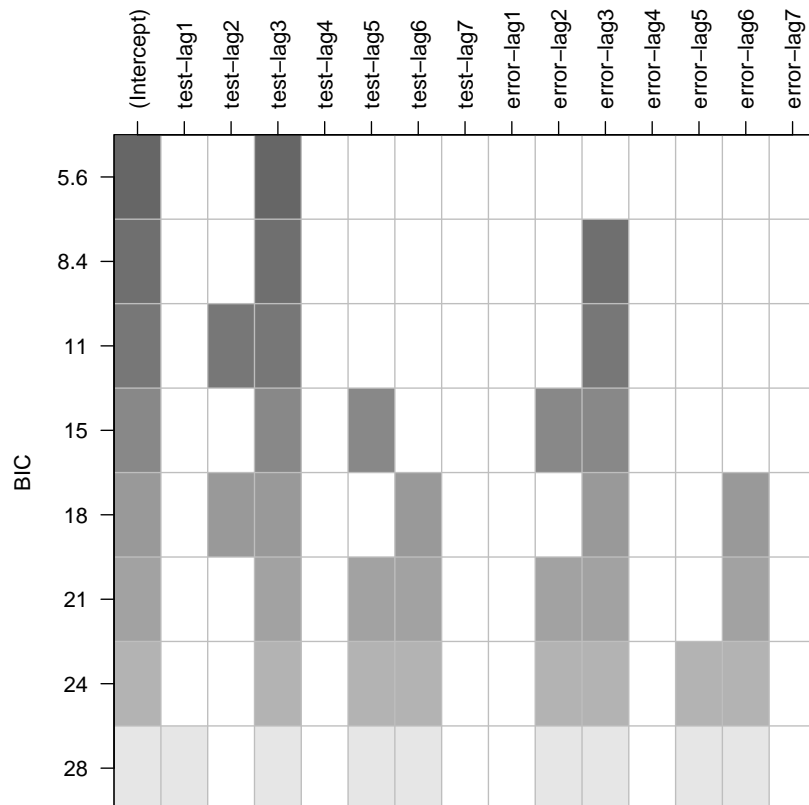
```
pacf(diff(mz))
```



```
eacf(diff(mz))

## AR/MA
##   0 1 2 3 4 5 6 7 8 9 10 11 12 13
## 0 o o o o o o o o o o o o o o
## 1 x o x o o o o o o o o o o o
## 2 x x x o o o o o o o o o o
## 3 o o o o o o o o o o o o o
## 4 x o o o o o o o o o o o o
## 5 o o o o o o o o o o o o o
## 6 x o x o o o o o o o o o o
## 7 x o o o o o o o o o o o o

cua=armasubsets(y=diff(mz),nar=7,nma=7,
               y.name='test', ar.method='ols')
plot(cua)
```



Modelos que podrian a probar: ARI(3,1)
 ARIMA(1,1,3)
 ARIMA(3,1,3)
 estimacion de parametros Se toma el ARI(3) para probarlo

```
library("TSA")
library("leaps")
library("locfit")
library("tseries")
arima(diff(mz), order=c(3,0,0),method='ML')

##
## Call:
## arima(x = diff(mz), order = c(3, 0, 0), method = "ML")
##
## Coefficients:
##          ar1          ar2          ar3  intercept
```

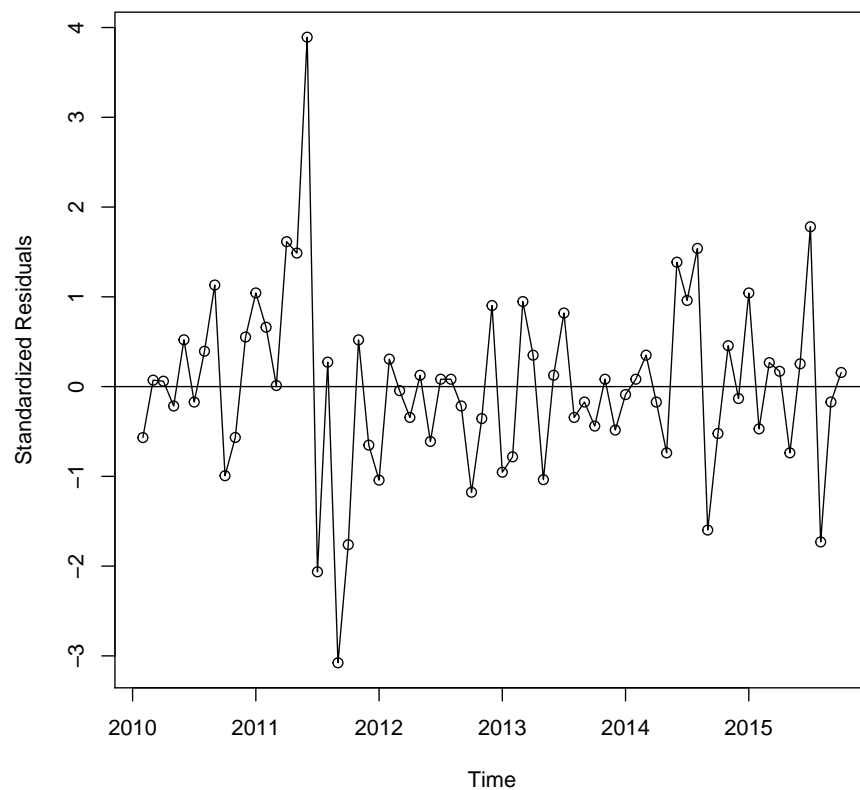
```
##      0.2249  0.2246 -0.3026    0.0009
## s.e.  0.1133  0.1128   0.1129    0.0025
##
## sigma^2 estimated as 0.000312:  log likelihood = 180.4,  aic = -352.81
```

Validacion del modelo

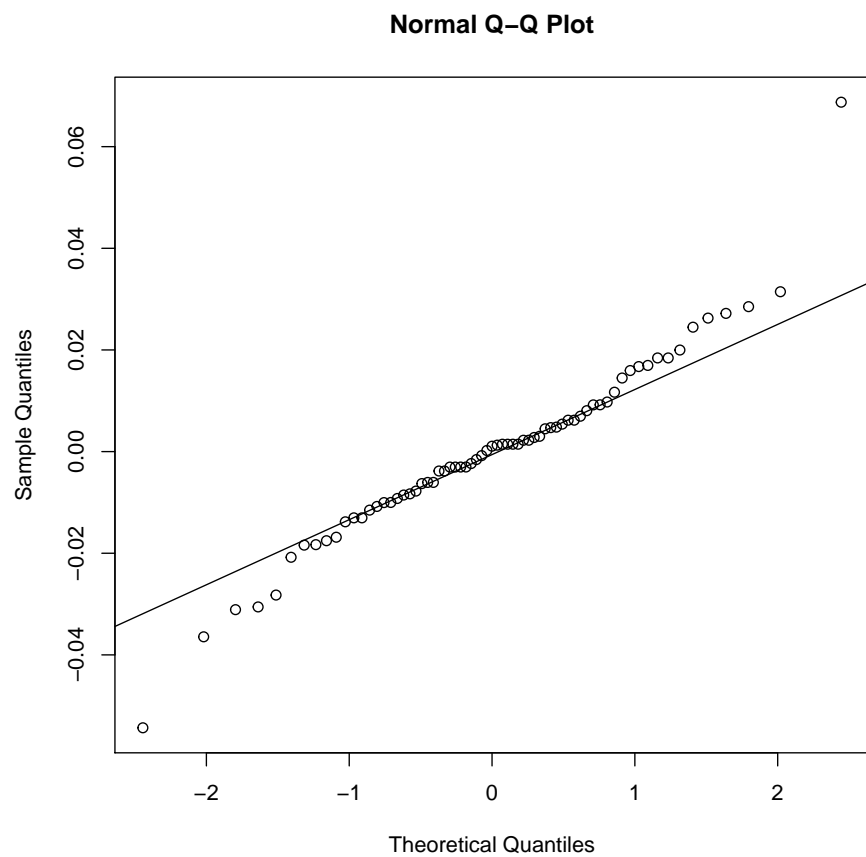
```
m1.maiz=arima(diff(mz),order=c(3,0,0), method='ML'); m1.maiz

##
## Call:
## arima(x = diff(mz), order = c(3, 0, 0), method = "ML")
##
## Coefficients:
##      ar1      ar2      ar3  intercept
##      0.2249  0.2246 -0.3026    0.0009
## s.e.  0.1133  0.1128   0.1129    0.0025
##
## sigma^2 estimated as 0.000312:  log likelihood = 180.4,  aic = -352.81

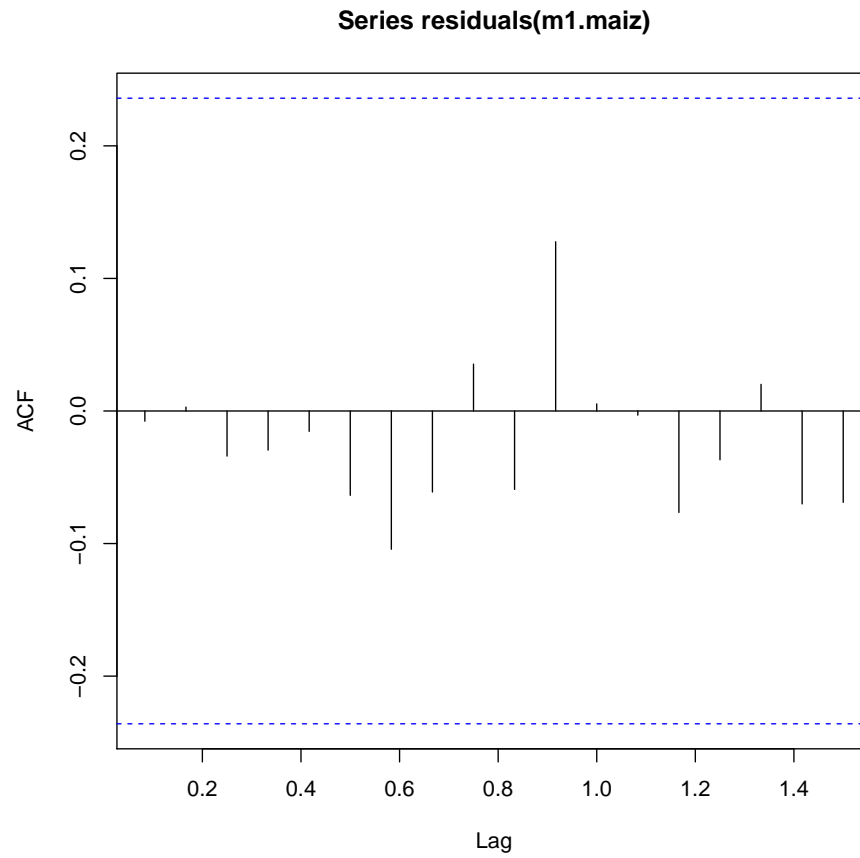
plot(rstandard(m1.maiz),ylab='Standardized Residuals',
     type='o'); abline(h=0)
```

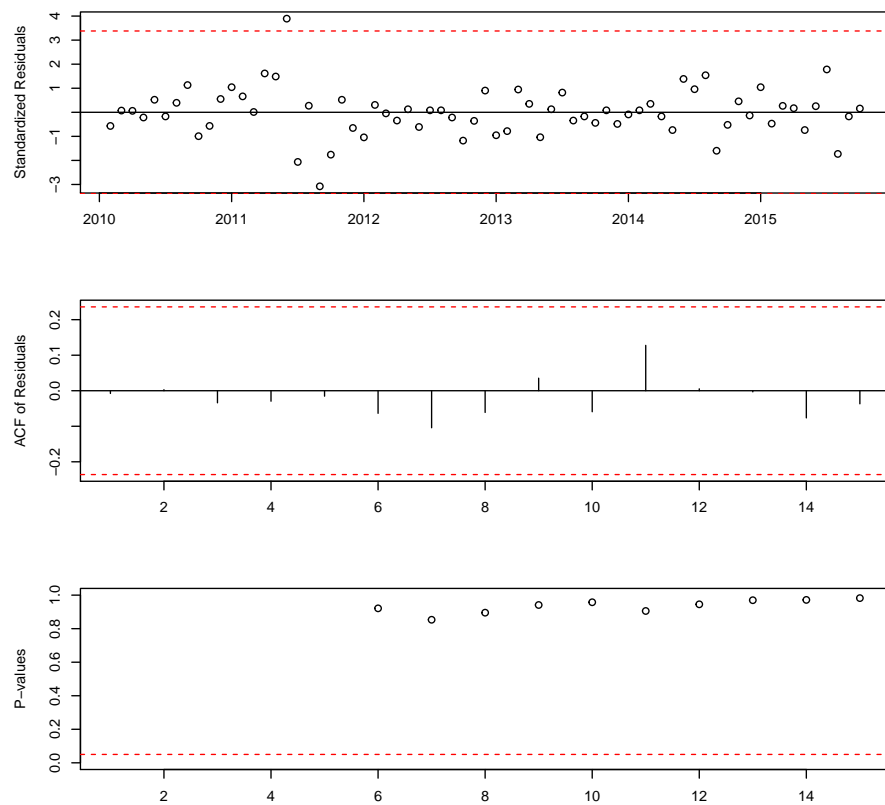
```
qqnorm(residuals(m1.maiz)); qqline(residuals(m1.maiz))
```



```
acf(residuals(m1.maiz))
```



```
tsdiag(m1.maiz,gof=15,omit.initial=F)
```



Pues sin ser tan estrictos el modelo se validara