

YK_Final_P4

Yinan Kang

5/14/2019

```
rm(list=ls())
df.4 <- read.csv("/cloud/project/Question 4.csv")
```

Fit Model

```
require(lmtest)
```

```
## Loading required package: lmtest
## Loading required package: zoo
##
## Attaching package: 'zoo'
## The following objects are masked from 'package:base':
##
##   as.Date, as.Date.numeric
```

```
require(Hmisc)
```

```
## Loading required package: Hmisc
## Loading required package: lattice
## Loading required package: survival
## Loading required package: Formula
## Loading required package: ggplot2
## Registered S3 methods overwritten by 'ggplot2':
##   method      from
##   [.quosures   rlang
##   c.quosures   rlang
##   print.quosures rlang
##
## Attaching package: 'Hmisc'
## The following objects are masked from 'package:base':
##
##   format.pval, units
```

```
model.4 <- lm(Y~., data=df.4)
dwtest(model.4)
```

```
##
## Durbin-Watson test
##
## data: model.4
## DW = 1.9618, p-value = 0.2903
## alternative hypothesis: true autocorrelation is greater than 0
```

****Using Durbin Watson test, we find that there is no autocorrelation present* ***

Using Cochrane-Orcutt Procedure

```
# et <- model.4$residuals
# et1 <- Lag(et,shift=1)
#
# d1 <- sum(na.omit((et1)*et))
# d2 <- sum(na.omit(et1)^2)
# rho <- d1/d2
#
# Ytnew <- df.4$Y - rho*Lag(df.4$Y,shift=1)
# X1tnew <- df.4$X1 - rho*Lag(df.4$X1,shift=1)
# X2tnew <- df.4$X2 - rho*Lag(df.4$X2,shift=1)
# X3tnew <- df.4$X3 - rho*Lag(df.4$X3,shift=1)
# X4tnew <- df.4$X4 - rho*Lag(df.4$X4,shift=1)
# X5tnew <- df.4$X5 - rho*Lag(df.4$X5,shift=1)
# X6tnew <- df.4$X6 - rho*Lag(df.4$X6,shift=1)
#
# model.new <- lm(Ytnew ~ X1tnew + X2tnew + X3tnew + X4tnew + X5tnew + X6tnew)
#
# dwtest(model.new)
```