

Econometrics_Problem_Set_8.R

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```
library(readstata13)

## Warning: package 'readstata13' was built under R version 3.4.4
library(sandwich)

## Warning: package 'sandwich' was built under R version 3.4.4
library(lmtest)

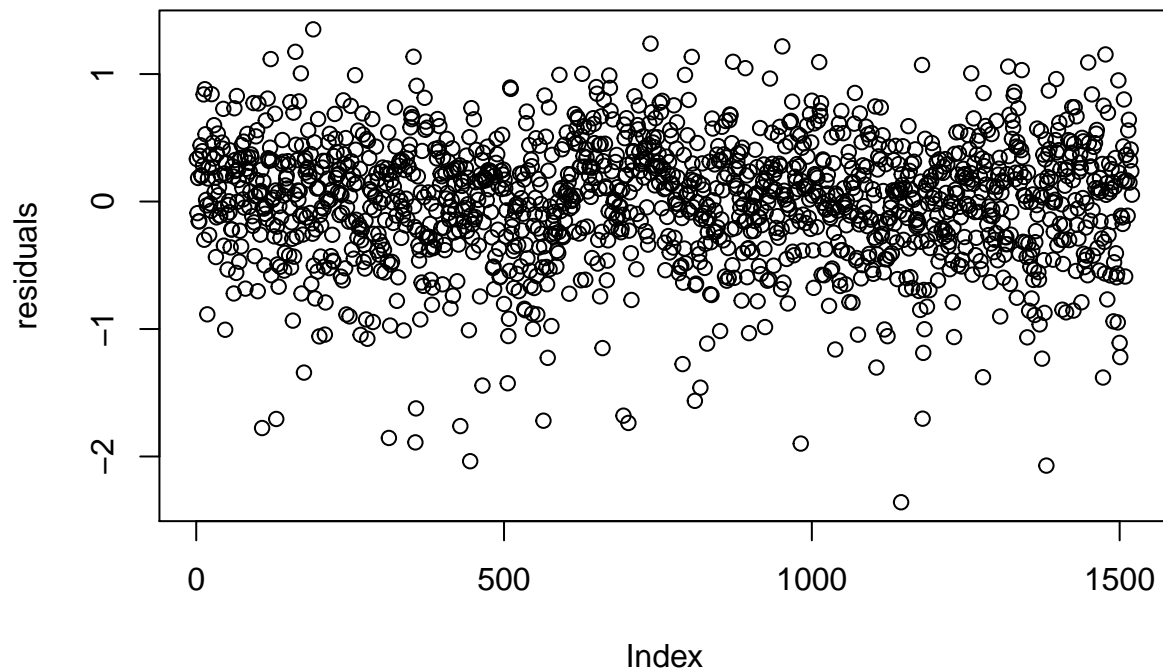
## Warning: package 'lmtest' was built under R version 3.4.4
## Loading required package: zoo
## Warning: package 'zoo' was built under R version 3.4.4
##
## Attaching package: 'zoo'
## The following objects are masked from 'package:base':
##
##      as.Date, as.Date.numeric
kt <- read.dta13("kt_data.dta")
year10 <- subset(kt, year == 10)

regression <- lm(data = year10, wage ~ educ + abil + I(exper^2) + Fath_ed)

residuals <- resid(regression)
summary(residuals)

##      Min.   1st Qu.   Median     Mean  3rd Qu.    Max.
## -2.35884 -0.27775  0.04841  0.00000  0.31240  1.35068

plot(residuals)
```



```
## Non-robust Errors
summary(regression)

##
## Call:
## lm(formula = wage ~ educ + abil + I(exper^2) + Fath_ed, data = year10)
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -2.35884 -0.27775  0.04841  0.31240  1.35068
##
## Coefficients:
##              Estimate Std. Error t value Pr(>|t|)
## (Intercept)  1.1304059  0.1271802   8.888  < 2e-16 ***
## educ         0.0743388  0.0083968   8.853  < 2e-16 ***
## abil         0.0907044  0.0169678   5.346 1.04e-07 ***
## I(exper^2)   0.0018780  0.0002808   6.689 3.15e-11 ***
## Fath_ed      0.0082859  0.0036598   2.264  0.0237 *
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 0.4815 on 1515 degrees of freedom
## Multiple R-squared:  0.1323, Adjusted R-squared:  0.13
## F-statistic: 57.73 on 4 and 1515 DF, p-value: < 2.2e-16

## Robust HC1 Errors
coeftest(regression, vcov. = vcovHC(regression, type = "HC1"))
```

```
##
## t test of coefficients:
##
##           Estimate Std. Error t value Pr(>|t|)
## (Intercept) 1.13040589 0.13409134  8.4301 < 2.2e-16 ***
## educ        0.07433879 0.00946234  7.8563 7.444e-15 ***
## abil        0.09070444 0.01694254  5.3536 9.946e-08 ***
## I(exper^2)  0.00187805 0.00028551  6.5778 6.556e-11 ***
## Fath_ed     0.00828590 0.00366331  2.2619  0.02385 *
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

## Robust HC3 Errors
coeftest(regression, vcov. = vcovHC(regression, type = "HC3"))

##
## t test of coefficients:
##
##           Estimate Std. Error t value Pr(>|t|)
## (Intercept) 1.13040589 0.13455699  8.4009 < 2.2e-16 ***
## educ        0.07433879 0.00950231  7.8232 9.586e-15 ***
## abil        0.09070444 0.01699787  5.3362 1.093e-07 ***
## I(exper^2)  0.00187805 0.00028625  6.5608 7.327e-11 ***
## Fath_ed     0.00828590 0.00367958  2.2519  0.02447 *
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```