Dummy Variable: Bai tap 4.6 & 4.7

Nguyen Quang Dong

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library(lmtest)

## Loading required package: zoo

##   
## Attaching package: 'zoo'

## The following objects are masked from 'package:base':  
##   
## as.Date, as.Date.numeric

library(ggplot2)  
setwd("D:/dataR/ch123")

## TIEN CONG PHU THUOC VAO KINH NGHIEM, THAM GIA UNION

# BAI TAP 4.6  
ch4bt6\_m=read.table("ch4bt6\_m.txt",header=TRUE)  
summary(ch4bt6\_m)

## LWAGE GRADE UNION   
## Min. :-3.579 Min. : 3.00 Min. :0.000   
## 1st Qu.: 1.351 1st Qu.:11.00 1st Qu.:0.000   
## Median : 1.671 Median :12.00 Median :0.000   
## Mean : 1.649 Mean :11.77 Mean :0.244   
## 3rd Qu.: 1.991 3rd Qu.:12.00 3rd Qu.:0.000   
## Max. : 4.052 Max. :16.00 Max. :1.000

# wage= thu nhap; grade= so nam di hoc; trade = 1 neu tham ga cong doan,=0 neu khong tham gia   
lwage=ch4bt6\_m$LWAGE  
grade=ch4bt6\_m$GRADE  
union=ch4bt6\_m$UNION  
reg=lm(lwage ~ grade+union)  
summary(reg)

##   
## Call:  
## lm(formula = lwage ~ grade + union)  
##   
## Residuals:  
## Min 1Q Median 3Q Max   
## -5.2792 -0.2615 0.0254 0.3188 2.5061   
##   
## Coefficients:  
## Estimate Std. Error t value Pr(>|t|)   
## (Intercept) 0.69679 0.05279 13.20 <2e-16 \*\*\*  
## grade 0.07718 0.00442 17.46 <2e-16 \*\*\*  
## union 0.18119 0.01797 10.08 <2e-16 \*\*\*  
## ---  
## Signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1  
##   
## Residual standard error: 0.5096 on 4357 degrees of freedom  
## Multiple R-squared: 0.08492, Adjusted R-squared: 0.0845   
## F-statistic: 202.2 on 2 and 4357 DF, p-value: < 2.2e-16

## “ANH HUONG TUONG TAC CỦA grade & union”

reg1=lm(lwage~ grade+union+grade\*union)  
summary(reg1)

##   
## Call:  
## lm(formula = lwage ~ grade + union + grade \* union)  
##   
## Residuals:  
## Min 1Q Median 3Q Max   
## -5.2782 -0.2621 0.0254 0.3178 2.5055   
##   
## Coefficients:  
## Estimate Std. Error t value Pr(>|t|)   
## (Intercept) 0.706175 0.056594 12.478 <2e-16 \*\*\*  
## grade 0.076380 0.004748 16.088 <2e-16 \*\*\*  
## union 0.110690 0.154082 0.718 0.473   
## grade:union 0.005999 0.013022 0.461 0.645   
## ---  
## Signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1  
##   
## Residual standard error: 0.5097 on 4356 degrees of freedom  
## Multiple R-squared: 0.08497, Adjusted R-squared: 0.08434   
## F-statistic: 134.8 on 3 and 4356 DF, p-value: < 2.2e-16