QFin - Econometrics 2 - Homework 1

Group 2: Fojkar, Hrustsova, Kuttner, Merkinger, Sünderhauf

May 7, 2021

Part A

Estimate a simple regression of real investment (realinvs) on a constant and the nominal interest rate (90 day treasury bill rate; tbilrate).

```
fit_a <- lm(data = df, formula = realinvs ~ tbilrate)
summary(fit_a)

##
## Call:
## lm(formula = realinvs ~ tbilrate, data = df)
##
## Residuals:
##    Min     1Q Median     3Q    Max
## -427.2 -239.9 -188.1  152.9 1122.5
##
## Coefficients:
##             Estimate Std. Error t value Pr(>|t|)
## (Intercept)  397.194     53.897   7.369  4.3e-12 ***
## tbilrate      48.781      9.058   5.385  2.0e-07 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 367.2 on 202 degrees of freedom
## Multiple R-squared:  0.1255,Adjusted R-squared:  0.1212
## F-statistic:    29 on 1 and 202 DF,  p-value: 2.001e-07
```

Part B

Estimate a multiple regression of real investment (realinvs) on a constant, real GDP (realgdp), the nominal interest rate (90 day treasury bill rate; tbilrate) and the inflation rate (infl).

```
fit_b <- lm(data = df, formula = realinvs ~ realgdp + tbilrate + infl)
summary(fit_b)

##
## Call:
```

```
## lm(formula = realinvs ~ realgdp + tbilrate + infl, data = df)
##
## Residuals:
##     Min      1Q  Median      3Q     Max
## -232.38  -39.88    6.61   32.37  289.45
##
## Coefficients:
##               Estimate Std. Error t value Pr(>|t|)
## (Intercept) -1.532e+02  1.591e+01  -9.633  < 2e-16 ***
## realgdp      1.856e-01  3.192e-03  58.158  < 2e-16 ***
## tbilrate    -8.923e+00  2.912e+00  -3.064  0.00249 **
## infl         1.234e+00  2.227e+00   0.554  0.58002
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 85.32 on 199 degrees of freedom
##   (1 observation deleted due to missingness)
## Multiple R-squared:  0.9532,Adjusted R-squared:  0.9525
## F-statistic:  1350 on 3 and 199 DF,  p-value: < 2.2e-16

# 'infl' has no significant influence i.e. estimated coefficient is not
# significantly different from zero
```

Part C

Interpret the coefficient/slope of tbilrate from (a).

Part D

Consider the coefficient of tbilrate obtained from (b). Interpret that coefficient and try to 'explain' (to the extent possible) what determines the difference obtained from the coefficient in (a).

Part E

Use the results from (b) and check the implications 1-4 from section 1.1.2.