

Chapter 7

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Exercise 7.5

Upload packages

```
library(wooldridge)
library(lmreg)
```

Upload database

```
data<-wooldridge::ceosal1
attach(data)
```

In Problem 2 in Chapter 4, we added the return on the firm's stock, *ros*, to a model explaining CEO salary; *ros* turned out to be insignificant. Now, define a dummy variable, *rosneg*, which is equal to one if $ros < 0$ and equal to zero if $ros \geq 0$. Use CEOSAL1.RAW to estimate the model

$$\log(salary) = \beta_0 + \beta_1 \log(sales) + \beta_2 roe + \beta_3 rosneg + u$$

Discuss the interpretation and statistical significance of $\hat{\beta}_3$

Creating dummy variable

```
data$rosneg<-ifelse(data$ros >= 0, 0, 1)
data$rosneg
```

```
## [1] 0 0 0 1 0 0 0 0 0 0 0 0 1 0 0 0 0 0 1 0 0 0 0 1 0 0 0 0 1 0 0 0 0 1 0 0 0 0 1 0 0 0 0 0 0 0
## [38] 0 0 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 1 0 0 0 1 0 0 0 0 0 0 1 1 1 0 1 1 0 1 0 0 1 0
## [75] 0 0 0 0 1 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0
## [112] 0 0 1 0 0 0 0 0 1 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
## [149] 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0
## [186] 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
```

Model estimation

```
lm1<-lm(data$lsalary~data$lsales+data$roe+data$rosneg)
```

The estimated equation is expressed as follows

$$\widehat{\log(salary)} = 4.29 + 0.28 \log(sales) + 0.01 roe - 0.22 rosneg$$

If the stock return of the firm declines, the salary of CEO tends to be negatively affected. The coefficient $\hat{\beta}_3$.