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*2019-03-15*



# Contents

1	5
2	7
3	9
4	11
5	13
6	15
7	17
8 c	19
9 ARMA	21
10	23
11	25
12 PCA	27
13	29
14 TOBIT, HECKIT	31
15 Treatment effect	33
16 -	35
17	37



# Chapter 1



## Chapter 2





## Chapter 3

R.

```
library(tidyverse) #
library(rio) #      .dta
library(car) #
df = import(file = "us-return.dta")
```

```
head(df) #      6
df = rename(df, n = A, date = B) #      :)
# sum(is.na(df)) #      skimr::skim
df = na.omit(df) #
```

CAPM :)

MOTOR.

,

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MOTOR

```
df <- mutate(df, y = MOTOR - RKFREE, x = MARKET - RKFREE)
ols <- lm(y ~ x, data = df)
summary(ols)
```

Call:

```
lm(formula = y ~ x, data = df)
```

Residuals:

Min	1Q	Median	3Q	Max
-0.168421	-0.059381	-0.003399	0.061373	0.182991

Coefficients:

	Estimate	Std. Error	t value	Pr(> t )
(Intercept)	0.005253	0.007200	0.730	0.467
x	0.848150	0.104814	8.092	5.91e-13 ***

---

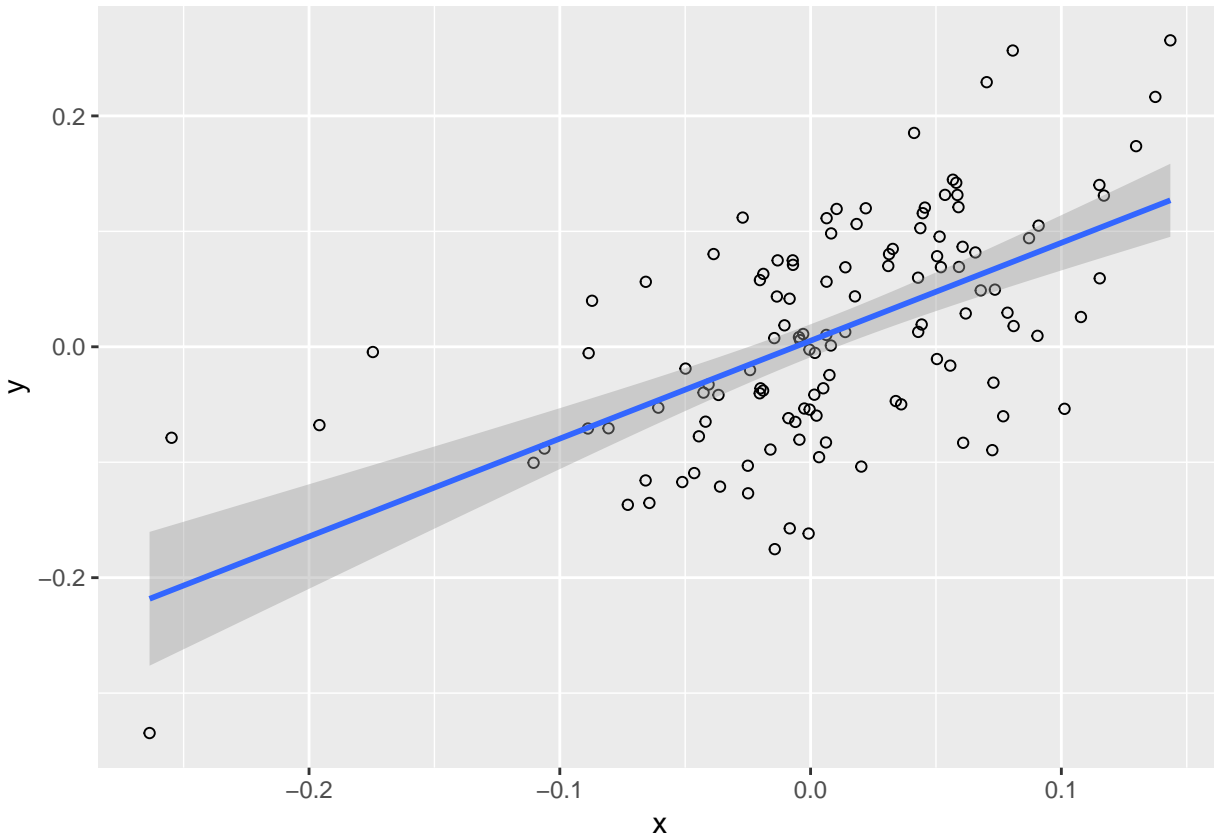
Signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1

Residual standard error: 0.07844 on 118 degrees of freedom

Multiple R-squared: 0.3569, Adjusted R-squared: 0.3514

F-statistic: 65.48 on 1 and 118 DF, p-value: 5.913e-13

```
ggplot(df, aes(x, y)) + geom_point(shape=1) +  
  geom_smooth(method=lm)
```



```
linearHypothesis(ols, c("(Intercept) = 0", "x = 1"))
```

Linear hypothesis test

Hypothesis:  
(Intercept) = 0  
x = 1

Model 1: restricted model  
Model 2: y ~ x

	Res.Df	RSS	Df	Sum of Sq	F	Pr(>F)
1	120	0.74108				
2	118	0.72608	2	0.014998	1.2187	0.2993

## Chapter 4



## Chapter 5



## Chapter 6





## Chapter 7



## Chapter 8

**c**



## Chapter 9

# ARMA



## Chapter 10





## Chapter 11



## Chapter 12

# PCA



## Chapter 13



## Chapter 14

# TOBIT, HECKIT





## Chapter 15

# Treatment effect



## Chapter 16

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## Chapter 17