

Task p. 16-2 / Anwendung S. 16-2

FK

automatic

Working directory

```
> setwd("D:/kronthafranz/Documents/01Lehre/06Quantitative Forschungsmethoden  
dt en")
```

Load data

```
> load("D:/kronthafranz/Documents/01Lehre/06Quantitative Forschungsmethoden  
dt en/04Parametric and nonparametric testing/growth.RData")
```

Define factor

```
> growth <- within(growth, {  
+   f_sector <- as.factor(sector)  
+ })
```

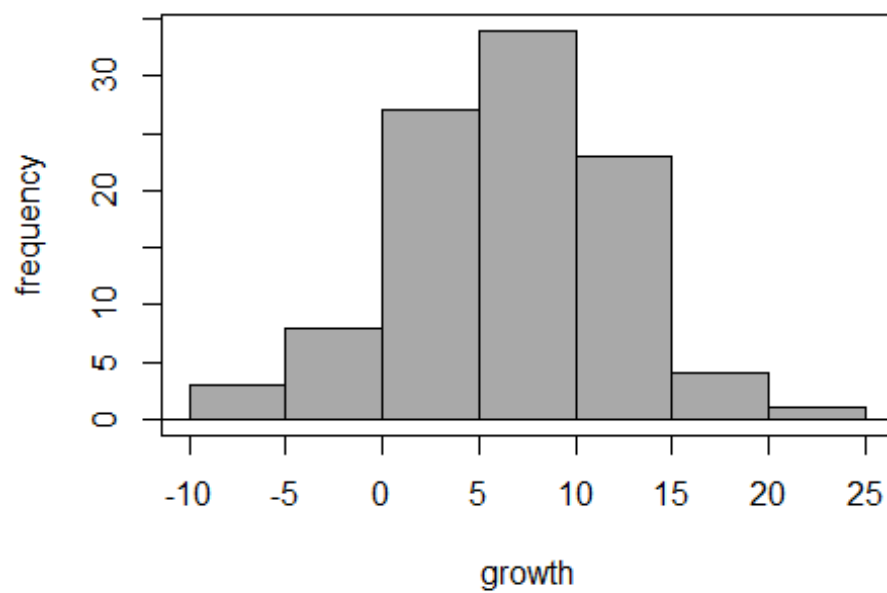
Descriptive statistics

```
> library(abind, pos=16)  
> library(e1071, pos=17)  
  
> numSummary(growth[, "growth", drop=FALSE], groups=growth$f_sector,  
statistics=c("mean",  
+   "sd", "IQR", "quantiles", "skewness", "kurtosis"),  
quantiles=c(0,.25,.5,.75,1), type="2")
```

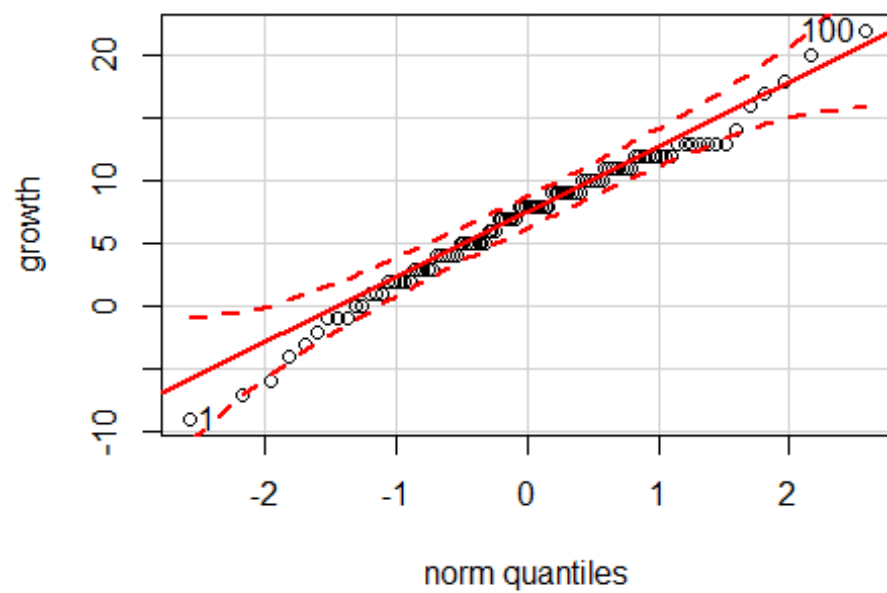
	mean	sd	IQR	skewness	kurtosis	0%	25%	50%	75%	100%	growth:n
0	6.352941	5.02649	7	0.1515307	-0.5541078	-3	3	5.5	10	18	34
1	7.484848	5.76526	6	-0.5035510	1.1188908	-9	5	8.0	11	22	66

Normal distribution

```
> with(growth, hist(growth, scale="frequency", breaks="Sturges",  
col="darkgray"))
```



```
> with(growth, qqPlot(growth, dist="norm", id.method="y", id.n=2,
labels=rownames(growth)))
```



```
1 100
1 100
```

```
> normalityTest(~growth, test="shapiro.test", data=growth)
```

Shapiro-Wilk normality test

data: growth

W = 0.98209, p-value = 0.1927

Same variance

```
> with(growth, tapply(growth, f_sector, var, na.rm=TRUE))
```

```
      0      1  
25.26560 33.23823
```

```
> leveneTest(growth ~ f_sector, data=growth, center="mean")
```

Levene's Test for Homogeneity of Variance (center = "mean")

```
      Df F value Pr(>F)  
group  1  0.0113 0.9155  
      98
```

t-Test independent samples

```
> t.test(growth~f_sector, alternative='two.sided', conf.level=.95,  
var.equal=TRUE,  
+ data=growth)
```

Two Sample t-test

data: growth by f_sector

t = -0.97004, df = 98, p-value = 0.3344

alternative hypothesis: true difference in means is not equal to 0

95 percent confidence interval:

-3.447507 1.183693

sample estimates:

mean in group 0 mean in group 1

6.352941 7.484848

Interpretation:

Do not reject H0, there is no difference in growth rates between service sector firms and industrial sector firms