

STAT1010: EXERCISE SHEET 3

- Below are pairs of simultaneous stock returns of ordinary and preferred shares of the same company randomly sampled over 10 companies in 10 different months in percent:

Ordinary Shares	0.5	-0.2	0.9	1.1	-0.7	1.5	2.0	1.3	1.6	2.1
Preferred Shares	1.1	0.3	1.2	1.9	-0.2	1.4	1.8	1.8	2.4	2.2

Use the sign test in order to clarify whether preferred shares have higher returns than ordinary shares. Do the calculations both in Excel and by hand. Calculate also the large sample approximation for the test. Could we have applied the matched sample t-test instead?

Hint: Use the Descriptive Statistics and Normality tool to answer the last question.

- Apply Wilcoxon's signed rank test upon the data of exercise 1 both in Excel and by hand. Compare your result with those of the sign test obtained above and the matched sample t-test obtained from Excel.
- A researcher in an accounting firm wants to find out whether the current ratios for three industries are about the same. Below are random samples of current ratios for each industry:

Industry A: 1.38, 1.55, 1.90, 2.00, 1.22, 2.11, 1.98, 1.61

Industry B: 2.33, 2.50, 2.79, 3.01, 1.99, 2.45

Industry C: 1.06, 1.37, 1.09, 1.65, 1.44, 1.11

Use the Kruskal-Wallis test in order to clarify whether the current ratios of the three industries may be considered identical out of sample. Do the calculations both in Excel and by hand. Could we have applied Mood's median test instead?

- Two procedures for assembling a certain product are to be compared. Given ten product units, five are assembled using procedure A and five are assembled using procedure B. The table below shows the number of minutes it took to assemble the unit until full functionality of the product was obtained.

Procedure A	5	2	9	6	3
Procedure B	1	3	4	0	2

Setup the ANOVA table and do the ANOVA F-test in order to clarify, whether the assembly times until full functionality may be considered the same for both procedures out of sample. Do these calculations by hand and compare the result both with the ANOVA F-test and the independent sample t-test from Excel.