

## Bus 273: Statistical Analysis for Business

Fall 2014

### PROBLEM SHEET # 5

**Problem 1:** The result of an elementary analysis of monthly returns (end of month closing quotations) in percent on the Chinese stock index SSEC (Shanghai Securities Exchange Center) in the period from January 2000 through October 2008 (105 observations) is:

arithmetic mean, $\bar{r}$	0.83	minimum	-20.31
variance, $s^2$	67.96	lower quartile	-4.68
standard deviation, $s$	8.24	median	0.81
skewness, $\gamma_1$	0.03	upper quartile	5.57
kurtosis, $\gamma_2$	0.76	maximum	27.45

- What does the three-sigma-rule say in this case?
- Give a rough sketch of the distribution of monthly returns, which reflects the parameters given in the table.

**Problem 2:** Researcher Tolga plans to assess overall student satisfaction with the SO campus cafeteria. He designed a questionnaire for interviews with selected students.

- What would be the target population for this research?
- A sample of 50 students is selected arbitrarily among those students Tolga finds sitting in the cafeteria one Tuesday. Will this sample be representative of the population in (a)? Do you have a better idea to select 50 students?
- One of the questions in the questionnaire is about the pricing. Tolga aims to understand whether students find the prices expensive or not. For that purpose Tolga asks them to rate their opinion about prices in SO on a Likert scale as follows:

I consider prices. . .

(1) too expensive / (2) expensive / (3) moderate / (4) cheap / (5) very cheap

What is the scaling of the variable that Tolga is analyzing here?

- For the variable in (c), what type of display would be adequate to obtain a first insight into the distribution of answers?
- Later Tolga decides to compare prices of SO with another student restaurant on a different campus. For this purpose, Tolga calculates the price differences for the same food items in these restaurants. For example, if rice is priced at 3 TL in SO and at 2 TL in the other restaurant, the difference is 1 TL. Tolga calculates price differences for 30 food items. The following is a histogram of the price differences. What can you conclude from the histogram in terms of prices of these two restaurants?

