

# Homework #1 - Due 30 Sep 2022

FE-570

September 17, 2022

## Problem 1.1

Assume that the limit order book is as shown in the table below.

- 1) What is the bid-ask spread in cents?
- 2) If you buy 100 shares with a market order, and immediately sell them also with a market order, what is your P&L (profit/loss)?
- 3) A limit order to buy 250 shares at \$34.51 arrives in the market. What transactions occur, and what is the resulting bid-ask spread in cents?
- 4) A limit order buy order for 1900 shares at \$34.54 arrives. List all transactions, and determine the bid-ask spread after the order is executed.

Orders	Shares	Price
offer	1900	34.56
offer	1700	34.55
offer	1200	34.54
offer	400	34.53
offer	300	34.52
bid	1000	34.50
bid	1100	34.49
bid	1400	34.48
bid	1500	34.47
bid	2200	34.46

**Problem 1.2**

Using the R code *SylizedFacts.R* from Canvas download 2 years' daily prices for a stock of your choice, and investigate the validity of the following stylized facts of the financial markets:

- i) Absence of autocorrelation of the log-returns.
- ii) The heavy tails in the log-returns distribution. Hint: compute the excess kurtosis of the daily log-returns.
- iii) Volatility clustering.