

NANYANG TECHNOLOGICAL UNIVERSITY

SEMESTER 2 EXAMINATION 2018-2019

BC3402 Financial Service Processes and Analytics

April/May 2019

Time Allowed: 2 hours

INSTRUCTIONS

- 1 This paper contains **THREE (3)** questions and comprises **FIVE (5)** pages.
 - 2 Answer all **THREE (3)** questions.
 - 3 This is an **open-book** examination.
 - 4 The number of marks allocated is shown at the end of each question.
 - 5 Begin your answer to each question on a separate page of the answer book.
 - 6 Answers will be graded for content and appropriate presentation.
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Question 1

Read the following article and answer the questions below.

EU should trust UK on clearing post-Brexit, says Bank of England

EU regulators should drop ambitions for greater direct supervision of London clearing houses after Brexit, to avoid imposing potentially “conflicting requirements” on institutions that play a key role in global markets, according to a top official at the Bank of England. London’s clearing houses, which manage the risk around trades if one side defaults, have become ensnared in Brexit politics because they handle the bulk of the €660tn market for derivatives cleared in Europe. While EU authorities have a “valid interest” in monitoring the City’s clearing houses, they should defer to UK regulators, David Bailey, director of markets infrastructure at the BoE, said in an interview. “We have lots of experience co-operating with overseas regulators, making sure where they have a valid interest in a UK clearing house, they have the relevant input they need,” he said.

Since Britain voted to leave the EU in 2016, Brussels has planned more direct oversight of the thousands of euro-denominated derivatives trades that are processed in LCH, ICE Clear Europe and LME Clear, London’s trio of clearing houses. Brussels regulators are aiming to finalise tougher regulations for overseas clearing houses in the next couple of months. They will give EU authorities the power to decide whether some clearing activities should be repatriated to the eurozone if they are judged a systemic risk to the bloc. “There is a lot of ex-ante information sharing, co-operation and debate that can happen but there needs to be a clear decision-making framework and ultimately, the globally accepted standard is that that sits with the home supervisory authority,” Mr Bailey said. Dictating the daily management of clearing houses, including approval over the type of collateral they may accept, are among the powers the plans could give EU regulators. “It’s really important to get it right,” Mr Bailey said, referring to the new regime. “The last thing you want in a crisis is you’ve got potentially overlapping or conflicting requirements being placed on systemically-important institutions,” he said.

- *Financial Times* 2019

Required

- a) What do you think are the reasons behind EU imposing additional controls over the clearing houses in UK? (10 marks)
- b) Suggest some additional controls EU might impose, and explain how these controls will mitigate settlement risks. (10 marks)
- c) What do you think will be the impact on financial markets in the EU region if “some clearing activities should be repatriated to the Eurozone” as stated in the article? (15 marks)

(TOTAL: 35 marks)

Question 2

In early 2016, Barclays agreed to pay a record \$105m to settle investigations by regulators into share trading venues known as “dark pools”.

According to the SEC’s order instituting a settled administrative proceeding against Barclays:

- Barclays said that a feature called Liquidity Profiling would “continuously police” order flow in its LX dark pool and that the firm would run “surveillance reports every week” for toxic order flow.
- In fact, Barclays did not continuously police LX for predatory trading using the tools it said it would, and it also did not run weekly surveillance reports.
- Barclays did not adequately disclose that it sometimes overrode Liquidity Profiling by moving some subscribers from the most aggressive categories to the least aggressive. The result was that subscribers that elected to block trading against aggressive subscribers nonetheless continued to interact with them.

“Barclays misrepresented its efforts to police its dark pool, overrode its surveillance tool, and misled its subscribers about data feeds at the very time that data feeds were an intense topic of interest,” said Robert Cohen, co-chief of the Market Abuse Unit. “Investors deserve fair and equitable markets without this misbehavior.”

- *Financial Times and SEC 2016*

Required

- a) What are some benefits of dark pools from the perspective of market participants?
(10 marks)
- b) How should dark pools be regulated?
(10 marks)
- c) Based on SEC’s report, Barclays’ LX was investigated because it was alleged that LX allowed high frequency traders to join the dark pool while claiming that these participants were not permitted to trade in LX. Why do you think participants in LX typically do not welcome high frequency traders?
(10 marks)

(TOTAL: 30 marks)

Question 3

Below is a series of events that occurred on 8 April 2019. Read the description of these events and answer all the questions that follows.

8:00 AM, 8 April 2019

In the pre-trading hours of 8 April 2019, Tim receives indications from the equities research desk that the equity price of LK Holdings is undervalued and will trend positively to \$140 by end of 12 April 2019. Tim intends to act on this information and intends to buy 230,000 units of LK Holdings on 8 April 2019.

Tim's assistant computed the 30-day average trading volume for LK Holdings and is not too confident about the estimation. The 30-day average hourly trading volume for LK Holdings shares are as shown below.

30-day Historical Trade Volume (Hourly)

AM	Volume (in thousands)	PM	Volume (in thousands)
9am to 10am	400	12pm to 1pm	Lunch break
10am to 11am	300	1pm to 2pm	200
11am to 12pm	200	2pm to 3pm	300
		3pm to 4pm	400
		4pm to 5pm	600

- LK Holdings is traded only on Singapore Exchange (SGX).
- LK Holdings is a highly liquid stock but has volatile trading volume in recent months due to rumors of a take-over bid. Over the past year, the average daily volume of LK traded is 2.3 million.

7:00 PM, 8 April 2019

At the end of 8 April, Tim managed to successfully buy 230,000 units of LK Holding shares. The breakdown of his trades are as follows:

- Multiple market orders to buy a total of 40,000 units between 9am to 10am
- Multiple market orders to buy a total of 30,000 units between 10am to 11am
- Multiple market orders to buy a total of 20,000 units between 11am to 12pm
- Multiple market orders to buy a total of 20,000 units between 1pm to 2pm
- Multiple market orders to buy a total of 30,000 units between 2pm to 3pm
- Multiple market orders to buy a total of 40,000 units between 3pm to 4pm
- Multiple market orders to buy a total of 50,000 units between 3pm to 4pm

Surprisingly, the actual market trading volume for 8 April 2019 is equal to Tim's assistant prediction as shown in the first table.

Note: Question No. 3 continues on page 5

Question 3 (continued)

Further, at the end of 8 April 2019, Tim tabulated the results of his trade and compared that against the VWAP prices of the market (see table below).

Average VWAP Prices on 8 April 2019

AM	Market VWAP	Tim's average buying price	PM	Market VWAP	Tim's average buying price
9am to 10am	\$120	\$120	12pm to 1pm	-	Lunch break
10am to 11am	\$122	\$123	1pm to 2pm	\$126	\$127
11am to 12pm	\$123	\$124	2pm to 3pm	\$128	\$129
			3pm to 4pm	\$129	\$129
			4pm to 5pm	\$130	\$131

Required

- Briefly explain how SGX (or exchanges in general) determine the opening price of the market. (10 marks)
- What trading algorithm did Tim use for this trade? Provide specific reasons for your answer. (10 marks)
- Given the results of Tim's trade, how will you *modify* the algorithm to achieve better results? (Note: You should only suggest ways to modify the existing algorithm and not recommend an entirely different algorithm). (15 marks)

(TOTAL: 35 marks)

- END OF PAPER -

BC3402 FINANCIAL SERVICE PROCESSES & ANALYTICS

Please read the following instructions carefully:

- 1. Please do not turn over the question paper until you are told to do so. Disciplinary action may be taken against you if you do so.**
2. You are not allowed to leave the examination hall unless accompanied by an invigilator. You may raise your hand if you need to communicate with the invigilator.
3. Please write your Matriculation Number on the front of the answer book.
4. Please indicate clearly in the answer book (at the appropriate place) if you are continuing the answer to a question elsewhere in the book.