

**NANYANG TECHNOLOGICAL UNIVERSITY**

**FINAL QUIZ AY2020/21**

**BC3402: Financial Service Processes and Analytics**

April 2021

Time Allowed: 1.5 hours

**INSTRUCTIONS**

- 1 Answer all **TWO (2)** questions.
- 2 This is an **open-book** online quiz.
- 3 The number of marks allocated is shown at the end of each question.
- 4 Type your answers in MS Word
- 5 Answers will be graded for content and appropriate presentation.
- 6 You MUST submit the answer by **20 April 2021, 11:30am (Singapore Time)**
- 7 Submit your quiz via NTUlearn Turnitin under the main course site using the following path:

BC3402-FIN SERVICE PRO & ANALYTICS (SEM) 2020/2021 Semester 2 Main →  
Assignments → Final Quiz Submission (20 April 2021)

---

**Question 1**

On 4 April 2021 (Sunday), you received indications from the equities research desk that the equity price of LK Holdings is undervalued and will trend negatively to \$130 by end of 9 April 2021 (Friday). You intend to act on this information and rebalance the portfolio of your clients, hence informing your sell-side broker to start selling 600,000 units of LK Holdings starting from the following trading day 5 April 2021 (Monday).

Your broker intend to execute the trades using the following schedule:

- Multiple market orders to sell a total of 200,000 units between 9am to 10am
- Multiple market orders to sell a total of 200,000 units between 10am to 11am
- Multiple market orders to sell a total of 200,000 units between 11am to 12pm

The 30-day average hourly trading volume for LK Holdings shares are as shown below:

**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	450
		4pm to 5pm	550

**Answer the following questions:**

- a) What are some short-comings of your broker's strategy? Explain the reasons. [20 marks]
- b) Suggest two algorithms that can execute the trades in place of your broker and argue why your proposed algorithms are better. [30 marks]

## Question 2

Read the following article from The Financial Times

The clearing house at the centre of the GameStop trading frenzy has proposed cutting the time it takes to settle share deals, following complaints from broker Robinhood that the two-day process was a critical factor in its decision to restrict some share trading.

The Depository Trust & Clearing Corporation, which runs the biggest US securities clearing house, on Wednesday set out a potential plan to halve the time it takes to settle millions of equities trades to one day by 2023.

The move comes three weeks after Vlad Tenev, chief executive of Robinhood, claimed that the long-established two-day period to reconcile deals and legally transfer assets from seller to buyer, had affected its customers and the US financial system.

The current system “exposes investors and the industry to unnecessary risk and is ripe for change”, Tenev told [lawmakers in Washington last week](#), and called for deals to be settled instantly.

In volatile periods the [clearing house](#), which stands between a buyer and seller and oversees the transfer, may demand more margin, or insurance, to cover any deal failures.

That can put a strain on brokers at a time when they are already under pressure. “The most logical way to reduce the risks . . . is to shorten the settlement cycle,” the DTCC said in its white paper.

Tenev’s suggestion has been supported by some of the US’s biggest market makers, including Ken Griffin, principal shareholder of Citadel Securities, and Virtu Financial.

Charles Cascarilla, chief executive of financial technology company Paxos, argues that the current system is antiquated and that the daily margin calculations for the industry are opaque. “It’s a total black box for market participants,” he said. “It’s the clearing and settlement technology that’s holding back our markets.”

Paxos settles some equity trades for Credit Suisse, Société Générale and Instinet on blockchain technology, and is preparing to ask US regulators for permanent approval.

DTCC, which last year settled \$2,150tn of US securities deals, said its proposal followed discussions with more than 100 institutions and could be done on existing technology. It has been exploring the topic since the market gyrations last March, which meant customers had to post more margin.

“It’s not in direct response to the ‘meme stocks’ issue,” said Murray Pozmanter, head of clearing at the DTCC. “Our position is one we arrived at after ongoing conversations with the industry.”

The fevered trading centred around GameStop broke records at the National Securities Clearing Corporation, DTCC’s equities clearing house. January 28 was one of the highest transaction volumes days in its history and the 474m deals the NSCC processed exceeded the peak last March by more than 100m.

The clearing house’s demands for margin rose from \$26bn to \$33.5bn. Robinhood’s own requirements increased 10-fold. It needed to find \$3bn within hours — a figure it negotiated down to \$700m.

The part of the margin call calculation that caught out Robinhood, known as the volatility component, could be reduced by up to 41 per cent by moving to single day settlement, DTCC estimated.

But shortening that timeframe is a long road. Previous white papers on the issue have had little traction. “In order for us to come up with a formalised timeline, we need close to 100 per cent industry alignment,” said Pozmanter.

Some remain suspicious of Robinhood. Its efforts to blame the settlement cycle or the clearing house are “a smokescreen”, said the American Securities Association, which represents small and regional US financial services companies.

“The system was designed to identify inadequately capitalised members. It’s due to the mismanagement we saw that the clearing house had to take action,” said Chris Iacovella, chief executive.

While he welcomed a move to reduce risk, he noted that other broker-dealers faced the same call from DTCC and asked customers to post more margin. “That puts the choice back on the customer,” he said.

DTCC also pushed back on Tenev’s suggestion to move to instant settlement. It would mean that banks and market makers could not net down their positions at the clearinghouse, a process that compresses the amount of cash required to fund daily transactions at NSCC by more than 98 per cent.

Real-time settlement would mean funding all trades in advance. Shares would not be as easily available for lending, or borrowing for shorting, DTCC added.

“Real-time settlement could have significant ramifications to overall market liquidity,” said Charley Cooper, managing director of R3, a blockchain software company and former chief of staff at the Commodity Futures Trading Commission. “Calls from Robinhood and others to introduce real-time settlement feel like a knee-jerk reaction to a far more nuanced challenge,” he added.

Ultimately, the cost of upgrading the back-office systems to process these deals would fall on brokers and asset managers, not the brokers and market makers leading the calls, said Virginie O’Shea, founder of Firebrand Research, a capital markets consultancy.

Many institutions send spreadsheets to counterparts, and people have several days to resolve issues. “It’s not as easy for them to settle deals in one day,” she said. “People think of it as a highly electronic market but that’s only for trading.”

**Answer the following questions:**

- a) How will the shortening of the settlement cycle prevent a similar “GameStop” saga from occurring in the future?

[25 marks]

- b) Suggest some ways of which to make the shortening of the settlement cycle to T+1 a possibility by 2023.

[25 marks]