# ETF Case

## OVERVIEW

The ETF Case challenges participants to put their critical thinking and analytical abilities to the test in an environment that requires them to evaluate the liquidity risk associated with different tender offers. Participants will be faced with multiple tender offers throughout the case. This will require participants to make rapid judgments on the profitability of subsequent execution, or rejection, of each offer. Profits can be generated by taking advantage of price differentials between market prices and prices offered in the private tenders. Once any tender has been accepted, participants should aim to efficiently close out the position to maximize returns and minimize liquidity and market risks.

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## KEY OBJECTIVES

- Evaluate the profitability of tender offers by analyzing the market liquidity. Participants should accept tenders that are expected to generate positive profits while rejecting unattractive tender offers.
- Submit competitive, yet profitable, bids and offers for competitive auction and winner-take-all tenders to maximize potential profits while managing liquidity and market risk.
- Use a combination of limit orders, market orders, and marketable limit orders to mitigate liquidity and price risks from holding open positions. There is a chance that the market may move away from your transactions prices, so maintaining large open positions may result in losses.

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## DESCRIPTION

There will be 9 independent heats with all team members participating in each heat. Each heat will be 10 minutes long that represents one month of calendar time. Each heat will involve two tradable securities with different volatility and liquidity characteristics.

- Number of trading heats: 9
- Trading time per heat: 600 seconds (10 minutes)
- Calendar time per heat: 1 month (20 trading days)

Tender offers will be generated by computerized traders and distributed at random intervals to random participants. Participants must subsequently evaluate the profitability of these tenders when accepting or bidding on them.

- ✓ Data retrieval via RIT API will be enabled.
- ✗ Data retrieval via RTD Links will be disabled.
- ✗ Order submission using the RIT API will be disabled.

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## Support Scripts - Python

The ETF case includes three different decision support tools written in Python script. be aware that the Python scripts are basic and you need to develop them to support your trading strategy.

Click below to download the scripts in one zip compressed folder:

- One script file for RITC ETF.
- One script file for COMP ETF.
- RITC and COMP ETF's combined total script.

**Decision Support Tool python scripts**
**Click Here to Download**

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# TEAM ROLES

In this case, each team member will have Trader role:

- ABCD-1: Role of Trader #1
- ABCD-2: Role of Trader #2
- ABCD-3: Role of Trader #3
- ABCD-4: Role of Trader #4

ETF Case: All team members participate in this case, and all have the same role.

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# MARKET DYNAMICS

There are five independent heats, each with unique market dynamics and parameters. Potential parameter changes include factors such as the spread of tender orders, liquidity, and volatility. Market dynamics and parameter details regarding each heat will be distributed prior to the beginning of the heat, allowing participants to formulate trading strategies. Details for an example heat with two ETFs, RITC and COMP, are shown below.

| | RITC | COMP |
|---|---|---|
| Expected Starting Price | $45 | $90 |
| Commission/ETF | $0.01 | $0.02 |
| Max Order Size | 10,000 | 15,000 |
| Trading Limit (Gross/Net) | 250,000/150,000 | 250,000/150,000 |
| Liquidity | High | Medium |
| Volatility | High | Medium |
| Tender Frequency | Medium | Low |
| Tender Offer Window | 30 seconds | 15 seconds |

During each heat, participants will occasionally receive one of three different types of tender offers: private tenders, competitive auctions, and winner-take-all tenders. Tender offers are generated by the server and randomly distributed to random participants at different times. Each participant will get the same number of tender offers with variations in price and quantity. No trading commission will be paid on tender offers.

Private Tenders are routed to individual participants and are offered to purchase or sell a fixed volume of ETFs at a fixed price. The tender price is influenced by the current market price.

Competitive Auction offers are sent to all participants at the same time. Participants will be required to determine a competitive, yet profitable, price to submit for a given volume of ETFs from the auction. Any participant that submits an order that is better than the base-line reserve price (hidden from participants) will automatically have his/her order filled, regardless of other participants' bids or offers. If accepted, the transactions will occur at the price that the participant submitted.

Winner-Take-All Tenders request participants to submit bids or offers to buy or sell a fixed volume of ETFs. After all prices have been received, the tender is awarded to the participant with the single highest bid or single lowest offer. The winning price, however, must meet a hidden reserve price (hidden from participants). If no bid or offer meets the reserve price, the trade will not be awarded to anyone (e.g.

if all participants bid $2.00 for a $10.00 reserve price ETF, nobody will win).

# CALCULATION OF THE PROFIT OR LOSS OF TRADERS

The prices generated by the RIT for this case follow a random-walk process using a return drawn from a normal distribution with a mean close to zero. That is, at any point in the case simulation, the probability that the price will go up is equal to the probability that the price will go down. This means that participants cannot predict the future price of the ETFs without "taking a bet". Therefore, the RITC scoring committee will consider trading ETFs for reasons other than reducing the exposure associated with accepting a tender offer to be equivalent to speculating (taking a bet) on the price movement. These types of trades will be flagged as "speculative trades".

Participants will have time to think about the tender offer before they choose to accept it or decline it, and the time may be different for each security. For example, one may receive a tender offer at time *t = 0* and will have until *t = 30* to decide whether to accept or decline. Any trades made by a participant during this time without accepting or declining the tender offer will be considered as "*front-running"* [1] since the participant had the advance knowledge of a pending institutional order. The RITC scoring committee will flag these trades as "front-running trades".

This case is designed to only reward participants for identifying, accepting, and closing out [2] tender offer positions at a profit, while managing liquidity risk and execution risk. Any other strategy will not be recognized and may incur penalties. In particular, the total profit of each participant [3] will be categorized into two parts: "profits from tender offers" and "profit from speculation"; the latter category includes the profits that are a result of speculative trades and/or front-running trades.

Profits from tender offers are the profits (or losses) gained from efficiently closing out the position from accepted tenders into the market. Profits from speculation are profits (or losses) generated through trades that are not associated with tenders (speculative trades or front-running trades). An "Adjusted P&L" will be calculated based on the following formula:

***Adjusted P&L = P/L From Tenders + Min(0,P/L From Speculation)***

Participants will be ranked and scored based on their *Adjusted P&L*.

For example, consider a participant who has made $10,000 from tenders and $50,000 from speculation, the total profit is $60,000 (=$10,000 + $50,000) but the Adjusted P&L will only be $10,000 [=$10,000 + min(0,$50,000)].

In another example, consider a participant who has made $35,000 from tenders and lost $20,000 from speculation (Profit from Speculation = -$20,000); the total profit is $15,000 ($35,000 – $20,000) and it is equal to the Adjusted P&L [$15,000 = $35,000 + min (0, -$20,000)]. Any losses from speculation will be included while profits from speculation will not be included.

The adjusted P&L with the total fines paid is computed and displayed by the RIT application, visible in the "Trader Info" section. Additionally, participants can review speculation fines in their "Transaction Log" within the RIT application.

*Footnote:*

[1] *Front-running is the unethical and illegal practice of trading a security for your own account while taking advantage of the information contained in the pending orders from your institutional clients.*
[2] *"Closing out" a position means that a participant is executing a trade that is the opposite of the current position in order to eliminate the exposure.*
[3] *The total profit of each participant is the profit (or loss) that you can observe in the RIT Client at the end of a heat.*

# TRADING LIMITS AND TRANSACTION COSTS

Each participant will be subject to gross and net trading limits as specified in the case description and renewed prior to each heat. The gross trading limit reflects the sum of the absolute values of the long and short positions across all ETFs, while the net trading limit reflects the sum of long and short positions such that short positions negate any long positions. Trading limits will be strictly enforced, and participants will not be able to exceed them.

The maximum order size and commissions specified in the case description will be fixed for each heat.

# POSITION CLOSE-OUT

Any open position will be closed out at the end of each heat based on the last traded price. Additionally, a penalty of $1 per share will be imposed for neglecting to close a position, encompassing both long and short positions in any security. Computerized market makers will increase the liquidity in the market towards the end of trading to ensure the closing price cannot be manipulated.



BMO Financial Group Finance
Research and Trading Lab
Rotman School of Management
University of Toronto
105 St. George Street
Toronto, ON M5S 3E6,  Canada

Phone: +1 416 946 3296



## Location and operating hours

**Lab operating hours**
Monday to Friday, from 9:00 AM to 5:00 PM

**Lab location**
105 St. George St., 2nd floor, room 290

**Graduate Rotman students access**
24/7 access using the fob

**Undergraduate Rotman students access**
Monday to Friday, from 9:00 AM to 5:00 PM

## Latest News

Rotman Decision Case Hackathon 2024
2024-01-19

Rotman Online Trading Competition (ROTC) 2024 – Winners!
2024-01-12

Rotman Commerce Trading Group (RCTG) – Market Simulation Series – Winter Dates Announced!
2024-01-12

Python Training Dates set for Winter 2024!
2024-01-12

Rotman Portfolio Management Competition (RPMC) – Industry Information Session (VIRTUAL)
2024-01-08

Rotman Market Simulation Challenge x China [High School] – Winners!
2023-12-16