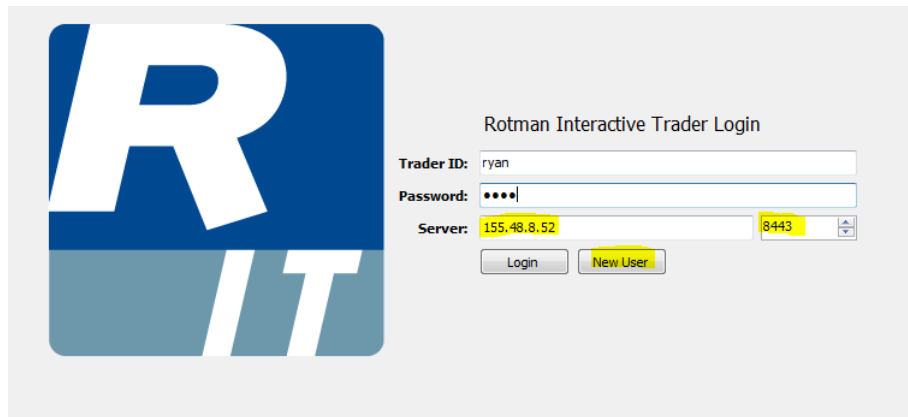


# 14<sup>th</sup> Annual Babson Trading Competition

## October 30, 2024

The Babson Trading Competition is based on eight different iterations of the LT3/LT4 cases on the Rotman Interactive Trader. Beginning on October 25<sup>th</sup>, the eight iterations will run sequentially in a continuous loop on the 155.48.8.52 / 8443 practice server, which can be accessed as shown below. You can use any Trader ID and Password that does not contain any spaces or special characters. You may need to create a new user profile each time you login to the server. The server is accessible off-campus.



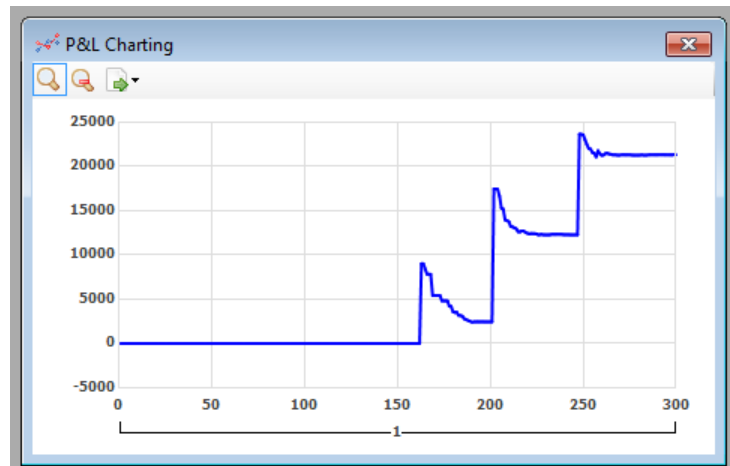
In the competition, you will be playing the role of a principal / liability trader (e.g., a broker-dealer such as Morgan Stanley) that uses its own capital to be a counterparty for institutions (e.g., a buy-side firm such as Fidelity) executing a large order in a single off-exchange transaction. In this role, you will receive a series of institutional tender offers to buy or sell a quantity of shares at a specified price. You must decide whether to accept each tender offer, based on current market conditions. The tender price to buy (sell) should be sufficiently low (high) to compensate you for the risk of taking on a large inventory position.

>90,000 shares in buy limit orders priced higher than \$10.11

Tender price of \$10.11 is a significant discount to last trade price of \$10.37

Trader	Volume	Price	Price	Volume	Trader
ANON	300	10.37	10.39	3,400	ANON
ANON	4,600	10.37	10.39	4,300	ANON
ANON	500	10.36	10.40	1,700	ANON
ANON	4,000	10.32	10.41	1,000	ANON
ANON	5,300	10.29	10.42	4,400	ANON
ANON	4,600	10.28	10.43	5,600	ANON
ANON	5,600	10.28	10.43	5,700	ANON
ANON	4,900	10.27	10.46	3,100	ANON
ANON	4,000	10.26	10.47	4,400	ANON
ANON	4,100	10.25	10.47	4,200	ANON
ANON	4,200	10.25	10.49	5,500	ANON
ANON	4,000	10.23	10.50	4,500	ANON
ANON	5,400	10.23	10.54	5,600	ANON
ANON	4,700	10.21	10.56	4,700	ANON
ANON	1,600	10.20	10.58	5,100	ANON
ANON	4,500	10.20	10.58	4,300	ANON
ANON	900	10.18	10.75	4,800	ANON
ANON	5,200	10.17	10.90	4,800	ANON
ANON	5,700	10.16	11.02	5,000	ANON
ANON	4,100	10.14	11.07	5,400	ANON
ANON	4,400	10.14			
ANON	5,000	10.11			

You have no information about the security. As such, if you accept the tender order, you should unwind your position in the market **quickly** (e.g., 10-20 seconds), while minimizing the price impact of your trades. The difference between the tender price and the average price obtained unwinding your position is your profit/loss. Ideally, your profit and loss (P&L) chart should look something like a step function, with a jump when you accept the tender and then a slight decrease as you unwind your position and impact prices. Once you unwind your position, the P&L graph will be level as you wait for the next tender offer.



Some tips:

- **Be very careful about submitting market orders.** In active markets, market orders can receive unpredictable and often very unfavorable prices. Instead, think about placing aggressive limit orders at the top of the book or place marketable limit orders that cross the spread.
- The **lighting function** is strongly recommended. Select an order size that is appropriate to your trading style (e.g., 1000 shares, 2500 shares) and reflects the size of the tender offers.
- **You do not need to accept every tender offer.** Some tenders do not provide sufficient compensation, particularly in the later iterations of the competition.
- **Watch for price differences between the main and alternative markets.** In general, distribute your trades between the two markets and seek the best price available.

In iterations 1-4, you will be fined for any trades that are not intended to unwind a tender offer position. As such, you will be fined for any speculative trading and for any trades that occur before accepting the tender (front-running). The fines can be represented by four parameters: (A, B, C, D)

- $\$A$  / share for front-running and speculative trading up to **B** shares (the limit is based on aggregate amount over case)
- $\$C$  / share for amount exceeding **B** shares (aggregate over case)
- $\$D$  / share for any shares not covered by end of iteration.

In iterations 5-8, there will be no fines and API trading (automated trading via Excel VBA or Python) will be enabled. API trading is optional and is not required.

In iterations 6 and 8, there will be two special tender offers:

### Competitive Auction Tenders:

- Sent to every participant at the same time.
- Traders are required to determine a competitive, yet profitable price to submit for a given volume of stock from the auction.
- Any trader that submits an order that is better than the base-line reserve price (hidden from traders) will automatically have their order filled, regardless of other traders' bids or offers.
- If accepted, the fills will occur at the price that the trader submitted.
- "Submit bid" indicates you are buying the stock. "Submit offer" indicates you are selling the stock.

The screenshot shows a 'Portfolio' window with a table of stock positions and a 'Tender Order' dialog box. The table has columns for Ticker, Type, Contra..., Position, Cost, Last, Bid, Ask, NLV, Realize..., Unreal..., VWAP, and Volume. The dialog box prompts the user to provide a bid for 93000 shares of TAME\_M, with a price field set to 24.13 and buttons for 'Submit Bid' and 'Decline (24)'.

Ticker	Type	Contra...	Position	Cost	Last	Bid	Ask	NLV	Realize...	Unreal...	VWAP	Volume
CRZY_A	STOCK	1 Shares	0	0.00	10.21	10.17	10.21	0.00	0.00	0.00	10.11	127,600
CRZY_M	STOCK	1 Shares	0	0.00	10.03	10.13	10.16	0.00	0.00	0.00	10.09	146,800
TAME_A	STOCK	1 Shares	0	0.00	24.34	24.38	24.41	0.00	0.00	0.00	24.50	144,700
TAME_M	STOCK	1 Shares	0	0.00	24.21	24.19	24.21	0.00	0.00	0.00	24.55	124,100

Tender Order

Please provide a bid for 93000 shares of TAME\_M. Anyone who bids higher than the reserve will get filled.

Price: 24.13

Submit Bid Decline (24)

### Winner Take-All Tenders:

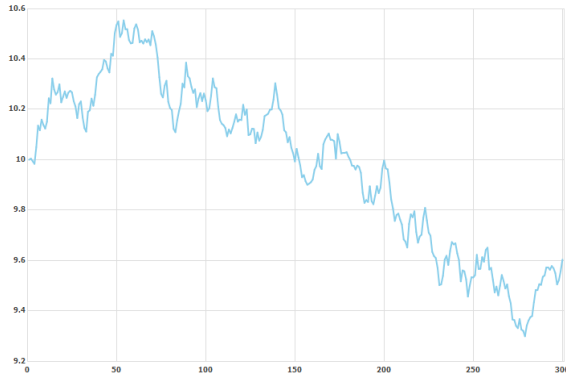
- Request traders to submit bids or offers to buy or sell a fixed volume of stock.
- After all prices have been received, the tender is awarded to the single highest bid or lowest offer.
- The winning price must meet a base-line reserve price (hidden from traders).
- If no bid or offer meets the reserve price, then the trade may not be awarded to anyone (i.e., if all traders bid \$2.00 for a \$10 stock, nobody will win).

### Base Case Parameters:

CRZY: Start price = \$10; Volatility = 7%; Medium Liquidity

TAME: Start price = \$25; Volatility = 5%; Medium Liquidity

Liquidity is determined by the arrival rate, aggressiveness, and trade size of the anonymous traders (ANON). The anonymous traders place orders that tend to move the market towards a pre-determined underlying price path, such as:



The path is determined by a data generating process, such that:

- Let  $\tilde{\alpha}$  denote a random variable that is uniformly distributed between 0 and 1.
- Then the price at tick  $t+1$ ,  $P_{t+1}$ , is determined as:  $P_{t+1} = P_t \times (1 + \sigma \Phi^{-1}(\tilde{\alpha}))$  where  $\sigma$  is the volatility (standard deviation) and  $\Phi^{-1}$  is the inverse of the cumulative normal distribution function.
- There is no drift (expected return is zero).

Note that the observed price path will differ from the underlying price path due to frictions caused by limit orders and due to the trades of all participants.

Main Market:

Net trading fee for all orders: 2 cents / share

Alternative Market (maker-taker fee model):

Net trading fee for orders that remove liquidity: 1 cent / share

Net rebate for orders that provide liquidity: 0.5 cents / share

In some iterations, these parameters are modified as described in the table below.

Iteration	Description
1	LT3 Base Case (70% speed) Fines: 0.2, 5000, 0.4, 1.0 Main market only No API Trading
2	LT4 Base Case (80% speed) Fines: 0.2, 5000, 0.4, 1.0 Main and alternative market No API Trading
3	LT4 Base Case (100% speed) Fines: 0.2, 5000, 0.4, 1.0 Main and alternative market No API Trading

<b>4</b>	<p>CRZY: Start price: \$16; Volatility: 9%; Medium liquidity  TAME: Start price: \$35; Volatility: 3%; High liquidity  Fines: 0.01, 10000, 0.02, 1.0  Main and alternative market  No API Trading</p>
<b>5</b>	<p>LT4 Base Case Parameters  No Fines  Main and alternative market  API Trading Allowed  15 second tender offer window  Different Trading Fees (main: 0.03; alternative: 0.02 / -0.015)</p>
<b>6</b>	<p>LT4 Base Case Parameters  No Fines  Main and alternative market  API Trading Allowed  15 second tender offer window, less favorable tenders  Winner-take-all and competitive auctions (30 second decision window)</p>
<b>7</b>	<p>CRZY: Start price: \$10; Volatility 12%; High liquidity  TAME: Start price: \$25; Volatility 3%; Low liquidity  BBSN: Start price: \$50; Volatility 6%; Medium liquidity  No Fines  Main market only  API Trading Allowed  All orders shown as ANON</p>
<b>8</b>	<p>CRZY: Start price: \$12; Volatility 8%; High liquidity  TAME: Start price: \$18; Volatility 11%; High liquidity  BBSN: Start price: \$80; Volatility 7%; Medium liquidity  No Fines  Main market only  API Trading Allowed  Time and Sales Information Available  Winner-take-all and competitive auctions (30 second decision window)</p>

Interested in learning more? Consider enrolling in one of these courses:

FIN4505 Financial Trading Strategies and Risk Management (Advanced Undergraduate Elective)

FIN7545 Financial Trading Strategies (Graduate STEM Elective)