



Rotman Interactive Trading Software: LT4 Case

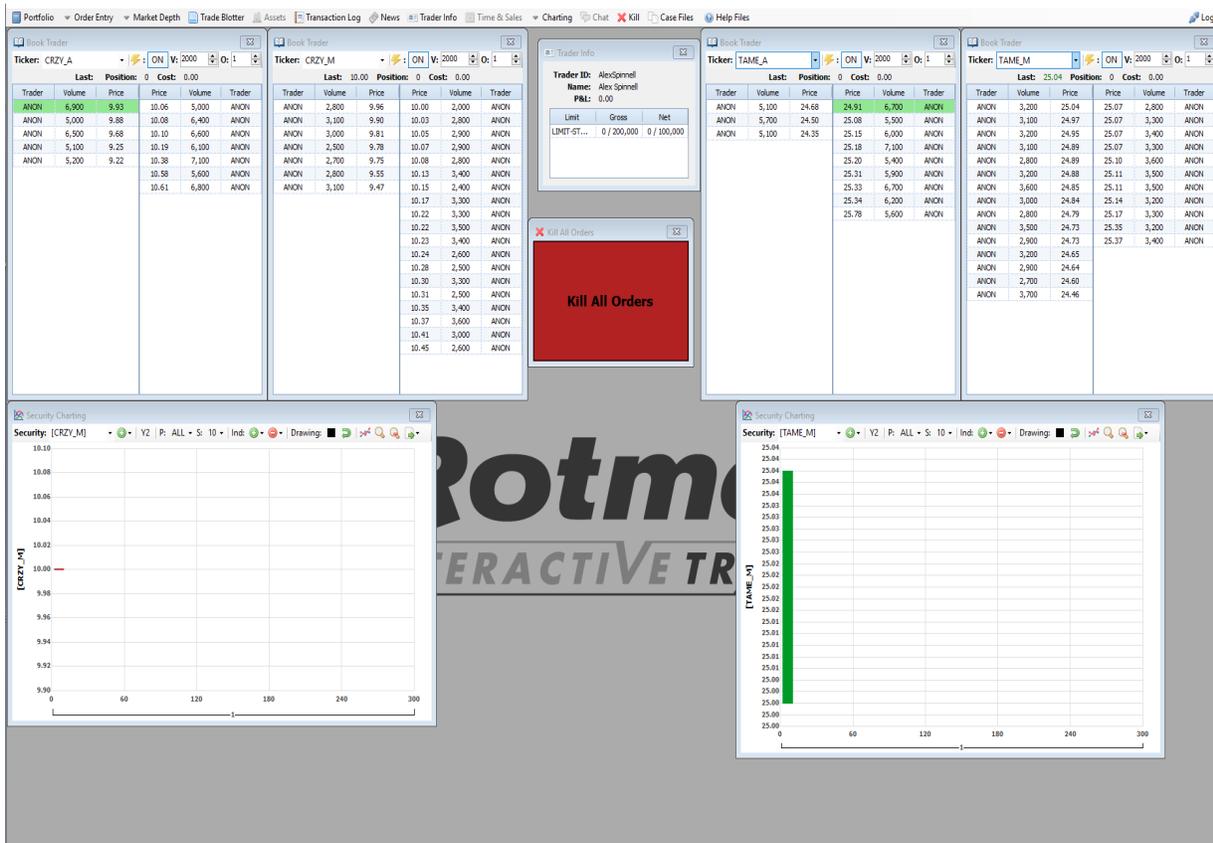
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This is a guide to help students use the Rotman Trading Software, specifically for the LT4 case. This case is used in the annual Babson Trading Competition and is the first evaluation in the Financial Trading Strategies Class. This guide is aimed to help both the beginner and advanced traders.

Background

The LT4 simulation is used to simulate the job of trader at a large bank. The simulation entails getting large institutional orders for either security and it is your job to either take or decline the order and unwind the shares into the market at a profit. The case involves two securities CRZY and TAME, both which have main and alternative markets. CRZY is priced at \$10 in the base case and is slightly more volatile than TAME. TAME is priced at \$25 for the base case and is slightly less volatile than CRZY. The ticker CRZY-M refers to the main market and the ticker CRZY-A refers to the alternative market. (The same applies to TAME). The alternative market generally has less liquidity (less shares trade and lower quantities in the order book) than the main market. The prices are usually the same, but sometimes there is a slight difference which could lead to arbitrage opportunities or unwinding shares in the more profitable market.

The screenshot below shows you how to set up the software for optimal trading results.



Getting Started

The previous screen shot entails four book traders, two charts, trader info, and the kill order function. The first step should be setting up the book traders, which could be done by clicking on market depth and clicking book trader. You should do this four times and then click on ticker and name them each CRZY-A, CRZY-M, TAME-A, and TAME-M, respectively. Next, click the lightning button to make sure the book trader says ON, this will allow you to trade on the book trader. Then you should change the volume to 2000, which is around the optimal trading volume for this case. After setting up the book traders you should take out two charts by clicking on charting and then security charting. Once both of these charts come up, click the plus sign and click on CRZY-M on one chart and TAME-M on the other. After you completed this step click on kill and trader info. Put the kill order function in between the book order tabs as shown in the screenshots above.

*If you are using the computers in the Cutler Center you should press shift when changing the size of these tabs in order to avoid it from taking up the whole screen.

How to Trade a Sell Tender

The below screenshot is an example of an institutional sell order that you should accept. Essentially you are asked if you want to take a 71,000 share short position at the price of 24.71. The last price traded for the alternative and main markets respectively are 24.33 and 24.35. This is around a 37 cent profit, which is an excellent tender offer. The next screen shot will show what happens after you accept this tender offer.

Book Trader

Ticker: TAME_A ⚡: ON V: 2000 O: 1

Last: 24.33 Position: 0 Cost: 0.00

Trader	Volume	Price	Price	Volume	Trader
ANON	5,800	24.28	24.33	3,600	ANON
ANON	4,600	24.25	24.34	6,400	ANON
ANON	600	24.15	24.35	6,700	ANON
ANON	6,700	24.14	24.39	6,300	ANON
ANON	6,800	24.09	24.39	5,700	ANON
ANON	7,100	24.08	24.41	5,000	ANON
ANON	6,400	24.07	24.43	5,200	ANON
ANON	3,600	24.05	24.44	7,300	ANON
ANON	7,200	24.05	24.47	3,900	ANON
ANON	6,800	23.86	24.50	5,600	ANON
ANON	6,900	23.80	24.54	4,100	ANON
ANON	6,100	23.76	24.73	2,900	ANON
ANON	5,300	23.72	24.91	4,900	ANON
ANON	5,300	23.65	24.92	6,700	ANON
ANON	6,500	23.32	24.95	6,500	ANON

Book Trader

Ticker: TAME_M ⚡: ON V: 2000 O: 1

Last: 24.35 Position: 0 Cost: 0.00

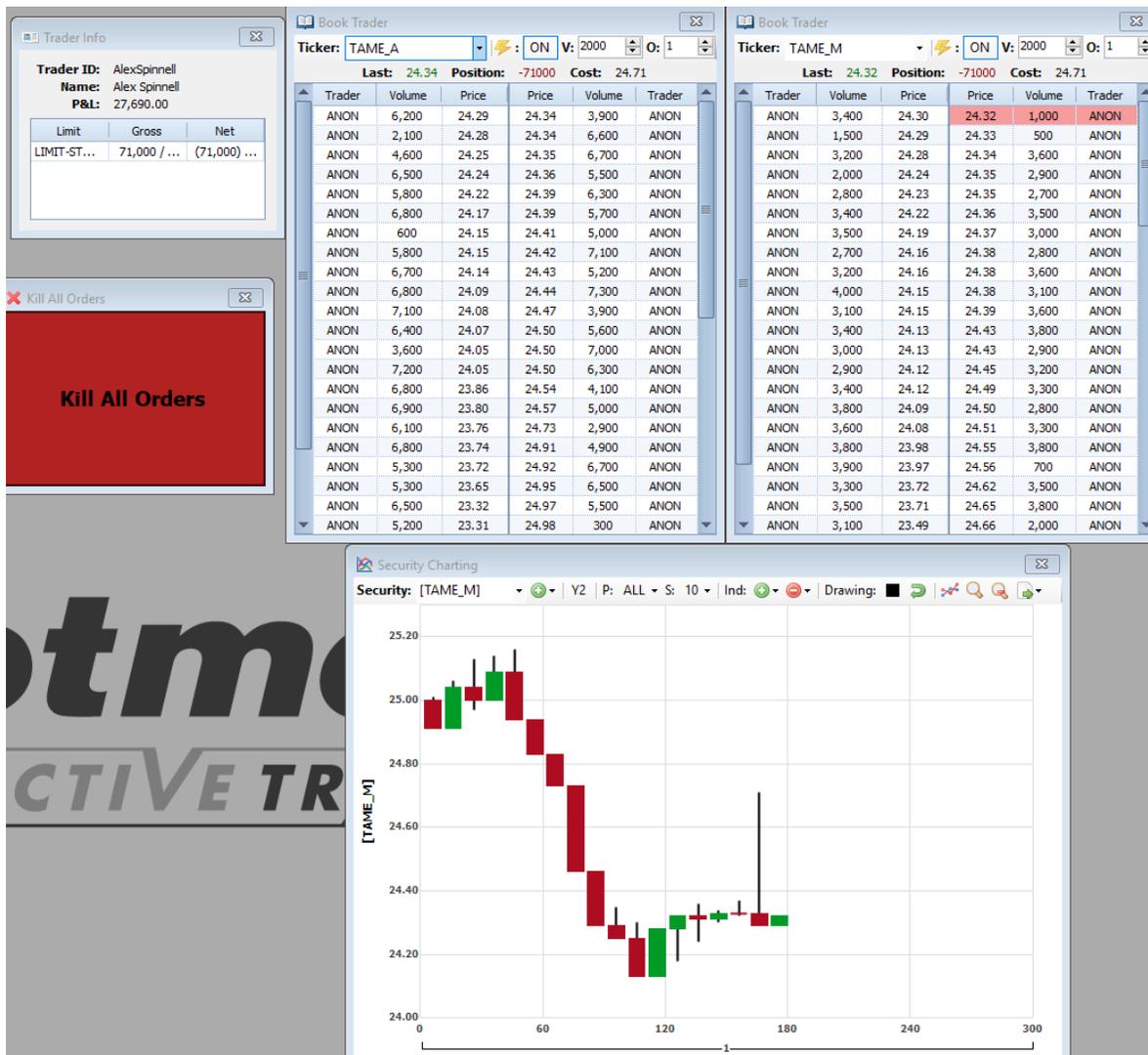
Trader	Volume	Price	Price	Volume	Trader
ANON	100	24.34	24.35	500	ANON
ANON	2,900	24.33	24.36	2,400	ANON
ANON	400	24.32	24.36	3,000	ANON
ANON	3,200	24.30	24.37	400	ANON
ANON	2,000	24.24	24.37	3,500	ANON
ANON	2,800	24.23	24.38	2,800	ANON
ANON	3,400	24.22	24.43	3,800	ANON
ANON	3,500	24.19	24.45	3,200	ANON
ANON	2,700	24.16	24.49	3,300	ANON
ANON	3,200	24.16	24.50	2,800	ANON
ANON	4,000	24.15	24.51	3,300	ANON
ANON	3,100	24.15	24.55	3,800	ANON
ANON	3,400	24.13	24.56	700	ANON
ANON	3,000	24.13	24.62	3,500	ANON
ANON	2,900	24.12	24.65	3,800	ANON
ANON	3,400	24.12	24.66	2,000	ANON
ANON	3,800	24.09	24.66	3,600	ANON
ANON	3,600	24.08	24.69	3,500	ANON
ANON	3,800	23.98	24.70	3,700	ANON
ANON	3,900	23.97	24.70	3,000	ANON
ANON	3,300	23.72	24.71	3,100	ANON
ANON	3,500	23.71	24.73	1,600	ANON

Tender Order

An institution would like to BUY 71000 shares of TAME_M from you at a price of \$24.71. Would you like to SELL the shares to them?

SELL Decline (25)





After you accept the sell tender offer this is what your screen should look like.

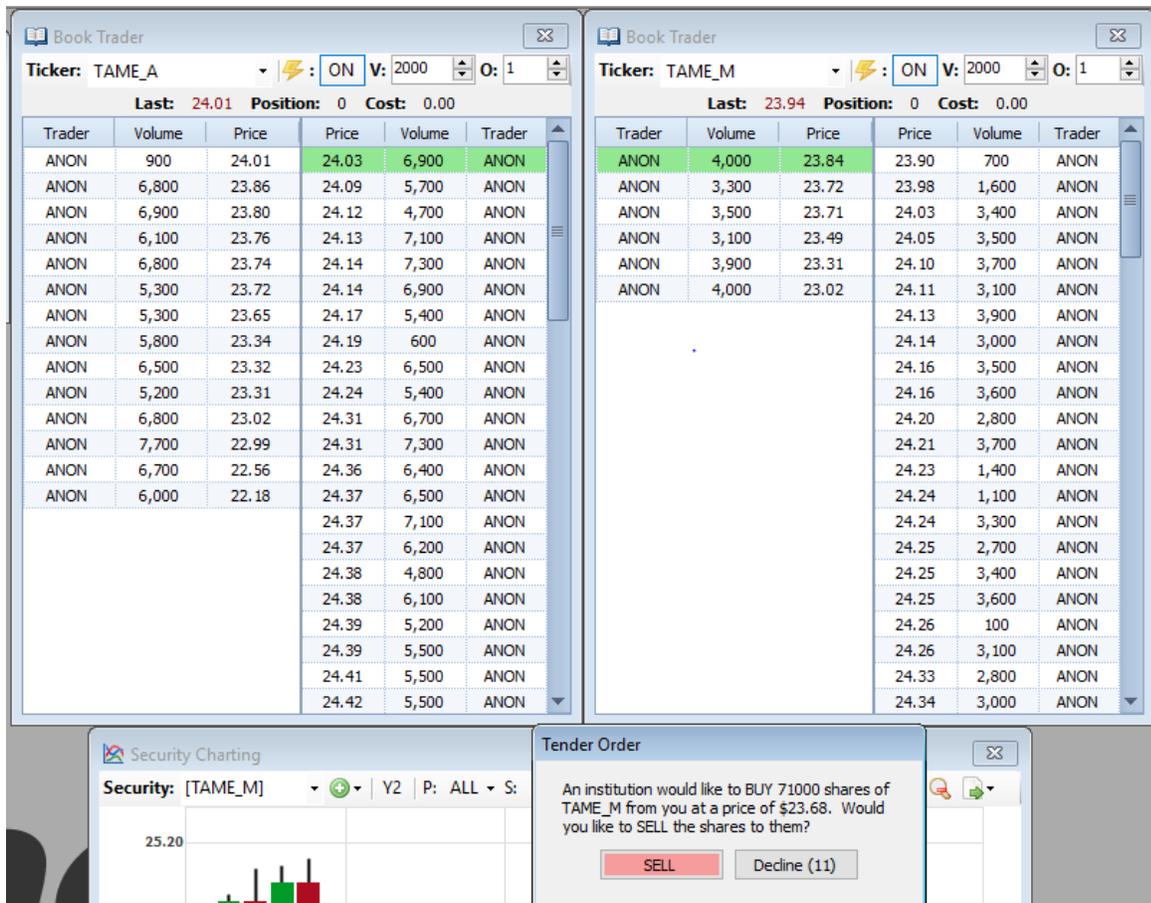
First, you will see that the position as seen on the book trader is -71,000. In addition, you could see that accepting this tender resulted in an initial \$28,000 in profit. Once you accepted this tender your job is to buy back 71,000 shares to leave you with no position. As a beginner, you should stick to only using market orders. Market orders execute immediately at the price of the lowest ask in the orderbook. The asks are displayed on the right side of both the alternative and main book traders. In order to submit market orders to buy the stock you should right click on the right column of either market. You should also place a market order for the lowest possible price (between the alternative and main market). For example in this situation, you should buy in the main market as the price is \$24.32 compared to \$24.34. You should aim to unwind all of your shares within 10-20 seconds, which means you should click pretty fast especially to start out. Since this number of shares were odd, you will need to eventually change the volume to

1000 to get to 0. After you are at 0 shares you should change the volume back to 2000. It should also be noted that after you buy 71,000 shares you will cause the price to increase, resulting in less than profit than \$28,000, hopefully around \$20,000. After practicing using only market orders you should eventually be able to make \$40,000-\$50,000 throughout the entire case consistently.

Limit Orders

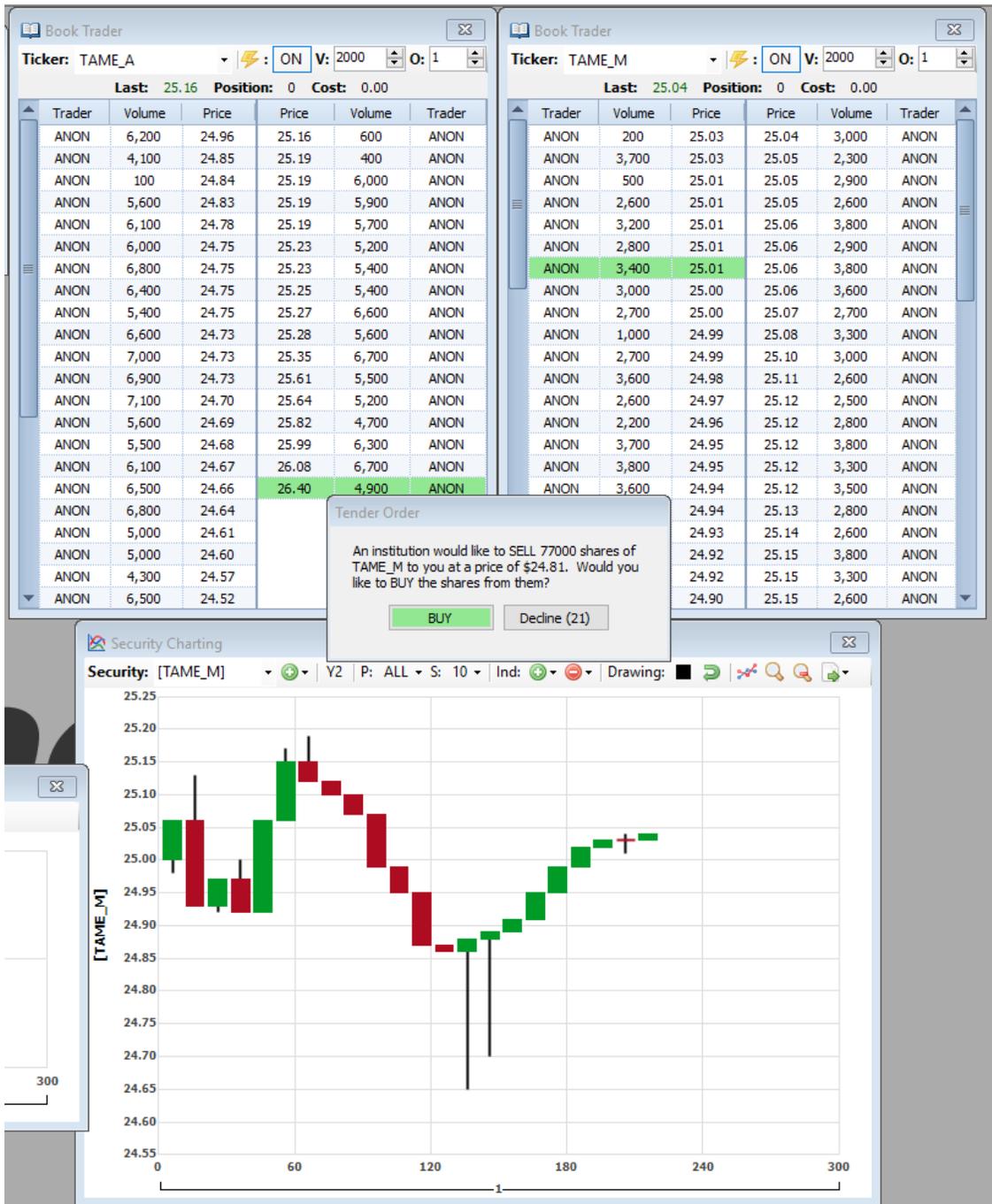
Then you should start to include limit orders, which will help you maximize profits. Limit orders should be placed immediately after accepting the offer. In order to place a limit order or a “bid” you should left click near the top of the left side of the order book. Left clicking on top of the left side will place a limit order one cent higher than the current highest bid. You should place around 5-8 limit orders before submitting market orders and still attempt to unwind your position in 10-20 seconds. Once unwinding your position make sure you press kill all orders in order to make sure that you do not accidentally pick up a position.

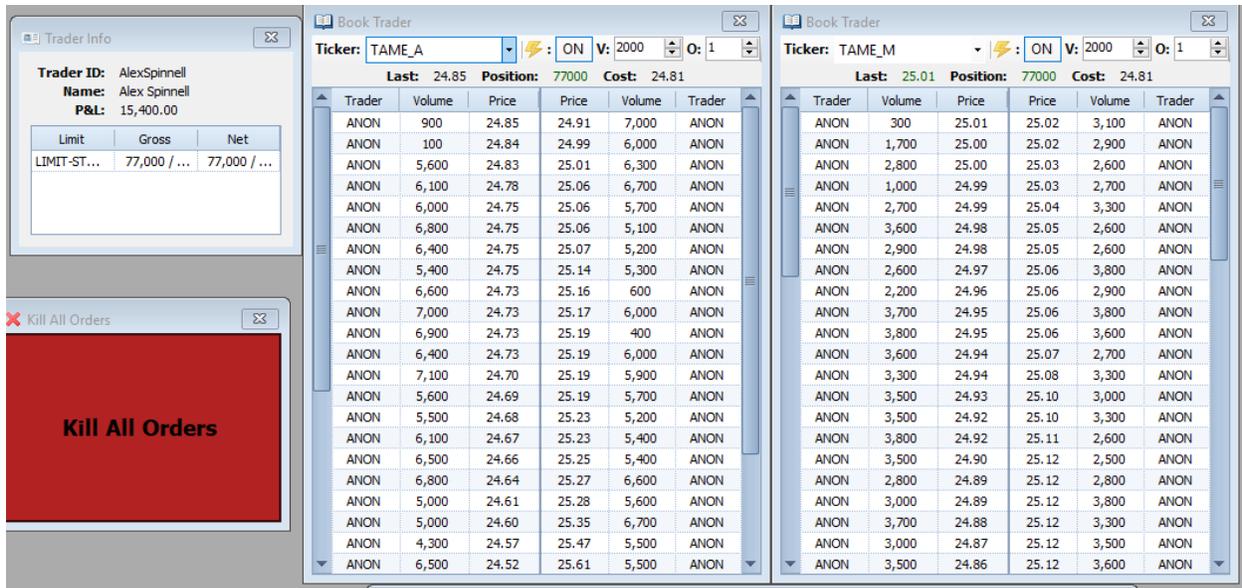
The order explained above shows an order that you should have accepted and profited from. The below screenshot shows an order that you should eventually decline. They are asking if you want to take a short position at \$23.68. Currently, TAME is trading around 23.85, 20 cents higher than the institutional order. Generally you want to only accept sell tender offers that are 20 cents or more above the last price. When a tender does not meet this requirement you should wait 30 seconds to see if this requirement is met and if it is not you should decline it. However, there is another factor you should look at when accepting a tender offer, liquidity. In the screenshot below it is clear that the main market for TAME-M has very low liquidity as there are very few bids. A 20,000 market sell order would make the price nearly \$23.00. You should always be watching out for scenarios like this as it means that the probability of TAME going down \$1 is significantly higher than going up \$1. Whenever the book gets very “thin” you should be aware of that and cautious of taking a position on that side. For example, any tender that asks you to take a long position under this scenario you would want at least 40 cents of profit instead of 20. I would not take any long position if I was not getting a price lower than \$23.40.



How to Trade a Buy Tender

Earlier it was discussed how to trade a sell tender. The following screenshot shows a buy tender, and luckily the strategy is the same, but the execution will be the opposite. Now, for a buy tender you want to make sure that the tender is around 20 cents lower than the last price. After accepting the tender you will have a positive position (77,000) at the price given in the tender, 24.81. Next you will be submitting market orders by right clicking on the left side of the book trader. To submit limit orders or “asks” you will be left clicking on the right side of the book trader.





P&L

In trading the goal is almost always to maximize P&L, and that does not change in the LT4 Rotman simulation. In order to see a chart of your P&L, go to charts and click P&L chart. This chart does not need to be out while trading and is better used to evaluate your performance when the simulation is over. It is possible to analyze nearly everything a trader did from looking at their P&L chart. In the screenshots you can see that my P&L was around \$110,000, which is excellent. My tender offers came at around 70 seconds, 130 seconds, 170 seconds, 230 seconds and around 270 seconds. The first tender I held on to and followed the trend. This should only be done under rare circumstances, but sometimes could be profitable as it made me an extra \$20,000. You should only do this when there is extremely low liquidity that is favorable for your position. In addition, you could see that I did not hold on to the full position only around half. Generally if you notice a trend in your favor you should only hold on to around 30k shares. The second tender made me around 15k-20k and was unleashed almost immediately.

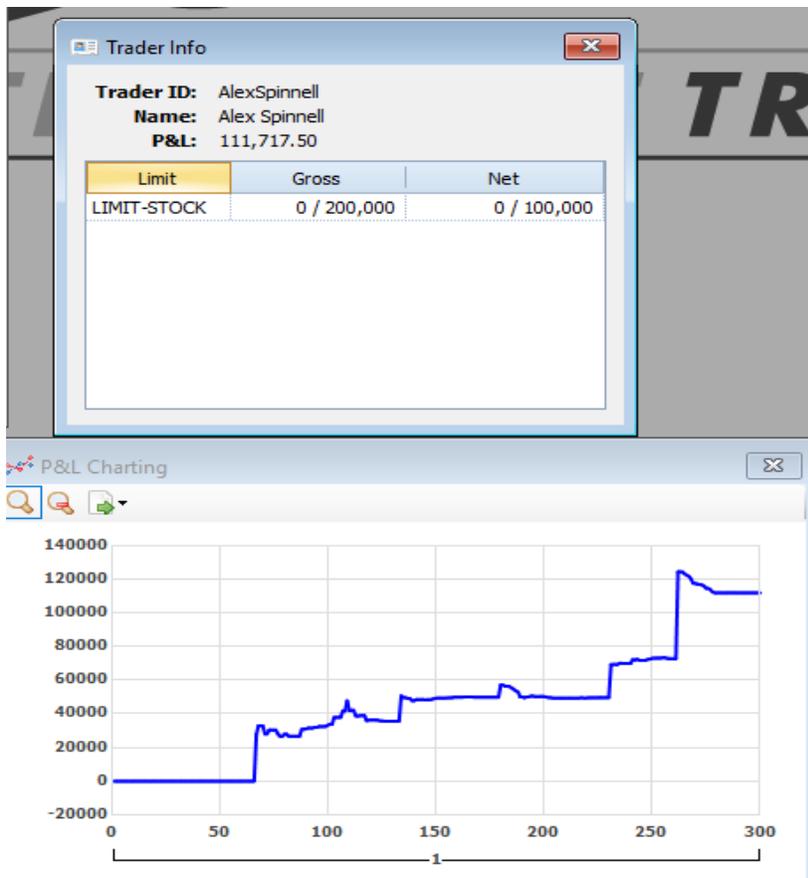
The fourth tender resulted in a very small loss. Sometimes the market moves against your position and there is nothing you could do about it. From the P&L chart I could tell that I accepted a tender around 15 cents in the money and when unwinding the shares the price moved against me and I did not make any money. Do not get too upset when seeing that you lost money from a tender. If your P&L chart shows an initial 15k+ increase it was probably a good tender to accept. On the other hand if this is generally happening more than once per iteration there may be an issue with your execution in unwinding the offer or if you should have accepted it in the first place. As you can see, around 10-20 seconds after every P&L spiked the blue line becomes flat. This means I unleashed my position quickly, and as I mentioned before, speed is very important in this case.

Other Considerations

The most common way people lose money is due to low liquidity. If you are slow to unwind your position and the market is moving against you while there is low liquidity you will lose a lot of money. In this scenario, you should have only accepted a tender 40 cents or more in the money, but that does not mean even with perfect execution that you will end up making money. After submitting multiple limit orders you will probably notice that none of them were hit because the price is moving against you. If 5 seconds go by and none of your limit orders were hit, you should unwind the position as quickly as possible, ideally 70k shares in the next 3-5 seconds. This may cause you to only breakeven or even lose potentially \$10k. However, it reduces the chance that you lose up to 50k which would have ruined your case.

The final tender made me around 40k after unwinding the shares into the market. These tenders are not common but could solely determine the success for an entire iteration. As you could see the initial profit from accepting that tender offer was nearly 60k. Whenever receiving a tender like this, it is never bad to unwind the entire position with market orders to lock in the majority of the profit. When you are doing extremely well (75k+), it is best to be cautious and lock in every additional profit as soon as possible.

If you were wondering what a good P&L is, it is dependent on the tenders you receive. If you trade the case near perfectly I would say an average P&L of 75k is possible. However, it is possible to trade a case terrible and make 100k and trade a case perfectly and make 30k. If you trade the case 10 times you should aim for 1 round to be 100k+, 2-3 rounds to be 80k-100k, 2-3 rounds to be 50k-80k, 2 rounds to be 30k-50k, and one round 25k-30k. This is for practicing the base case with minimal impact from other people trading. When trading with others I would recommend placing limit orders a couple cents away from the top of the book trader in addition to rarely ever holding a partial position to follow a trend. Other traders allow for additional opportunities as I will describe below, but will not be present for the majority of the time you are practicing.



Buy/Sell Entry	Buy/Sell Entry
Ticker: CRZY_A Volume: 10000 Price: 8.00 <input type="button" value="Submit BUY"/>	Ticker: TAME_A Volume: 10000 Price: 22.50 <input type="button" value="Submit BUY"/>
Ticker: CRZY_A Volume: 10000 Price: 7.50 <input type="button" value="Submit BUY"/>	Ticker: TAME_A Volume: 10000 Price: 21.50 <input type="button" value="Submit BUY"/>
Ticker: CRZY_A Volume: 10000 Price: 5.50 <input type="button" value="Submit BUY"/>	Ticker: TAME_A Volume: 10000 Price: 18.00 <input type="button" value="Submit BUY"/>
Ticker: CRZY_A Volume: 10000 Price: 12.00 <input type="button" value="Submit SELL"/>	Ticker: TAME_A Volume: 10000 Price: 27.50 <input type="button" value="Submit SELL"/>
Ticker: CRZY_A Volume: 10000 Price: 12.50 <input type="button" value="Submit SELL"/>	Ticker: TAME_A Volume: 10000 Price: 29.00 <input type="button" value="Submit SELL"/>
Ticker: CRZY_A Volume: 10000 Price: 14.00 <input type="button" value="Submit SELL"/>	Ticker: TAME_A Volume: 10000 Price: 32.00 <input type="button" value="Submit SELL"/>
Ticker: CRZY_M Volume: 10000 Price: 5.00 <input type="button" value="Submit BUY"/>	Ticker: TAME_M Volume: 10000 Price: 22.50 <input type="button" value="Submit BUY"/>
Ticker: CRZY_M Volume: 10000 Price: 5.00 <input type="button" value="Submit BUY"/>	Ticker: TAME_M Volume: 10000 Price: 21.50 <input type="button" value="Submit BUY"/>
Ticker: CRZY_M Volume: 10000 Price: 5.00 <input type="button" value="Submit BUY"/>	Ticker: TAME_M Volume: 10000 Price: 18.00 <input type="button" value="Submit BUY"/>
Ticker: CRZY_M Volume: 10000 Price: 12.00 <input type="button" value="Submit SELL"/>	Ticker: TAME_M Volume: 10000 Price: 27.50 <input type="button" value="Submit SELL"/>
Ticker: CRZY_M Volume: 10000 Price: 12.50 <input type="button" value="Submit SELL"/>	Ticker: TAME_M Volume: 10000 Price: 29.00 <input type="button" value="Submit SELL"/>
Ticker: CRZY_M Volume: 10000 Price: 14.00 <input type="button" value="Submit SELL"/>	Ticker: TAME_M Volume: 10000 Price: 32.00 <input type="button" value="Submit SELL"/>

Trap Orders

The above screenshot is how to place trap orders to profit off of beginner traders. Implementing this strategy is only effective when there are no trading fines for profiting from not having a position. (There is a slight error as the CRZY-M Bid prices should be the same as the CRZY-A bid prices). From experience these orders are likely to get filled in the very beginning of the case or when liquidity is low. Placing these orders should be the first thing you do every iteration. You could create the above screenshot yourself by clicking on order entry. After some iterations, other traders will likely start to put orders a cent or two above yours, and you should then change the prices to be above theirs so it gets hit first.

Documentation can be found [here](#) and requires the companion [Excel RTD Links](#) installation.

Excel Syntax:

=RTD("RTI2.RTD",,[Field1],[Field2],[Field3])

[Field1]	[Field2]	[Field3]	Description
General			
TRADERID			Trader's trader ID
PL			Overall Trader's P/L
TRADERNAME			Name
TIMEREMAINING			Time remaining in the period
PERIOD			The period # that is running
PERIODTIME			Ticks in a period
YEARTIME			Ticks in a year
TIMESPEED			Speed game is currently running
Asset Information			
ALLASSETTICKERS			Comma-delimited list of all asset tickers
ALLASSETTICKERINFO			Table of all asset tickers and detailed info
Security Information			
ALLTICKERS			Comma-delimited list of all security tickers
ALLTICKERINFO			Table of all security tickers and detailed info
TICKER	LAST		Last
TICKER	BID		Bid
TICKER	ASK		Ask
TICKER	VOLUME		Volume
TICKER	POSITION		Position
TICKER	MKTSSELL	N	The VWAP that would occur if you send an order to market sell N volume
TICKER	MKTBUY	N	The VWAP that would occur if you send an order to market buy N volume
TICKER	COST		VWAP of the current position
TICKER	PLUNR		Unrealized P/L
TICKER	PLREL		Realized P/L
TICKER	VWAP		Market VWAP
TICKER	BIDBOOK		Book view, bid side
TICKER	ASKBOOK		Book view, ask side
TICKER	OPENORDERS		Open personal orders to buy/sell
TICKER	ALLORDERS		All personal orders to buy/sell
TICKER	BID	N	The Nth bid in the book
TICKER	BSZ	N	The size of the Nth bid in the book
TICKER	ASK	N	The Nth ask in the book
TICKER	ASZ	N	The size of the Nth ask in the book
TICKER	AGBID	N	The aggregate (by price) Nth bid in the book
TICKER	AGBSZ	N	The size of the aggregate (by price) Nth bid in the book
TICKER	AGASK	N	The aggregate (by price) Nth ask in the book
TICKER	AGASZ	N	The size of the aggregate (by price) Nth ask in the book
TICKER	INTERESTRATE		The currency interest rate
TICKER	LIMITORDERS		The number of live limit orders
TICKER	INFO	FIELD	Field information
Tender Information			
TENDERINFO	N		(N>0) Tender offers awaiting response (id, ticker, quantity, price, tick received, expiry tick)
Historical Information			
TICKER	LASTHIST	N	(N>0) Historical last value (current period) at Nth tick
TICKER	LASTHIST	N	(N<=0) Historical last value (current period) N ticks ago
Risk Information			
TICKER	GROSS		Current gross risk
TICKER	NET		Current net risk
TICKER	GROSSLIMIT		Gross risk limit
TICKER	NETLIMIT		Net risk limit
TICKER	GROSSFINE		Fine for exceeding gross limit (per unit)
TICKER	NETFINE		Fine for exceeding net limit (per unit)
News Information			
NEWS	N		Nth news item, most recent last
LATESTNEWS	N		Nth news item, most recent first

Copy To Clipboard

OK

Linking Market Data

Using a specified security, RTD can link information from the portfolio or Market Depth View to your Excel file.

Market Data	Sample RTD Formula	Description (Result)
All tickers	=RTD("rit2.rtd",,"ALLTICKERS")	Comma-delimited list of all security tickers
All ticker info	=RTD("rit2.rtd",,"ALLTICKERINFO")	Table of all security tickers and detailed info.
Last	=RTD("rit2.rtd",,"ticker","LAST")	Last price of <i>ticker</i>
Bid	=RTD("rit2.rtd",,"ticker","BID")	Top of the market bid for <i>ticker</i>
Ask	=RTD("rit2.rtd",,"ticker","ASK")	Top of the market ask for <i>ticker</i>
Volume	=RTD("rit2.rtd",,"ticker","VOLUME")	Volume
Bid Size	=RTD("rit2.rtd",,"ticker","BSZ")	Size of the Highest Bid in the market

Ask Size	=RTD("rit2.rtd",,"ticker","ASZ")	Size of the Lowest Ask in the market
Position	=RTD("rit2.rtd",,"ticker","POSITION")	Current position
Cost	=RTD("rit2.rtd",,"ticker","COST")	Volume Weighted Average Cost
PLUNR	=RTD("rit2.rtd",,"ticker","PLUNR")	Unrealized P/L
PLREL	=RTD("rit2.rtd",,"ticker","PLREL")	Realized P/L
OPENORDERS	=RTD("rit2.rtd",,"ticker","OPENORDERS")	Unfilled individual orders to buy/sell
ALLORDERS	=RTD("rit2.rtd",,"ticker","ALLORDERS")	Fills all the individual orders to buy/sell. It works only for the first 200 orders.
INTERSTATE	=RTD("rit2.rtd",,"ticker","INTERSTATE")	Only available for cases that have currency

Using Excel

The above two screenshots are available on the Rotman Software and will allow you to use excel to help you trade. You should first click on RTD to see the first screenshot. Next, you should click the "here" link on the first screenshot to get to the second screenshot. There are also many more examples of potential functions that you could use that are not in the screenshots above.

The goal of creating an excel model should be to get a projected profit of every tender rule that you receive. The steps to getting a projected profit will be outlined below.

1. Use PARSERTD on VBA to be able to parse the news. The following code below should work.

```
Function PARSERTD(str As String) As Variant

    ' This function is used to parse the row & semi-colon delimited data output from RIT into a table

    Dim Rows() As String
    Dim Cols() As String
    Dim NoR As Integer
    Dim NoC As Integer
    If Len(Trim(str)) = 0 Then
        ReDim Res(0, 0) As String
        PARSERTD = Res
    Else
        Rows = Split(str, ";")
        Cols = Split(Rows(0), ",")
        NoR = UBound(Rows)
        NoC = UBound(Cols)
        ReDim Res(NoR + 1, NoC) As String
        For I = 0 To NoR
            Cols = Split(Rows(I), ",")
            For J = 0 To NoC
                Res(I, J) = Cols(J)
            Next J
        Next I
        PARSERTD = Res
    End If

End Function
```

2. Create a cell using the function “tenderinfo” and “parser” to separate the tender offer into specific parts.
3. Find immediate profit. This could be done by taking the difference in the current price and the tender price multiplied by the shares.
4. Figure out the cost of unwinding your position. This could be calculated by finding the VWAP of around 60-70% of the shares from the tender offer. You should use the MKTSELL or MKTBUY function to figure this out.
5. Subtract the cost of unwinding your position from the immediate profit to get projected profit. Generally, you should accept a tender offer if projected profit is above \$5,000.
6. If you want additional components to your model, you could make a best market function. You should use an if statement, and create the following cells, position bid-a bid-m. From there, you should be able to have excel tell you which market you should be unwinding your position in.