NEVER MIND, THESE ARE NOT THE ~~DROIDS~~ ORDERS YOU ARE LOOKING FOR…

The only way that asset managers can evaluate the cost of trading strategies is to analyze all the orders sent to the market on their behalf, in the proper context.

Despite the obvious truth of this statement, most Transaction Cost Analysis (TCA) products do not do so, which explains why I often deride TCA. I described the reason this likely happens in my last article, where I discussed how VWAP, the most popular benchmark used for institutional trading, fails to measure both impact and opportunity costs. Due to this, and the difficulty of collecting the data from all the orders sent by brokers on their client's behalf, buy side trading desks are like the stormtroopers in Star Wars; unable to see what they really need to see…

VIABLE MKTS

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Why Opportunity Cost is Vital to Measure

Why should TCA Analyze All Orders?

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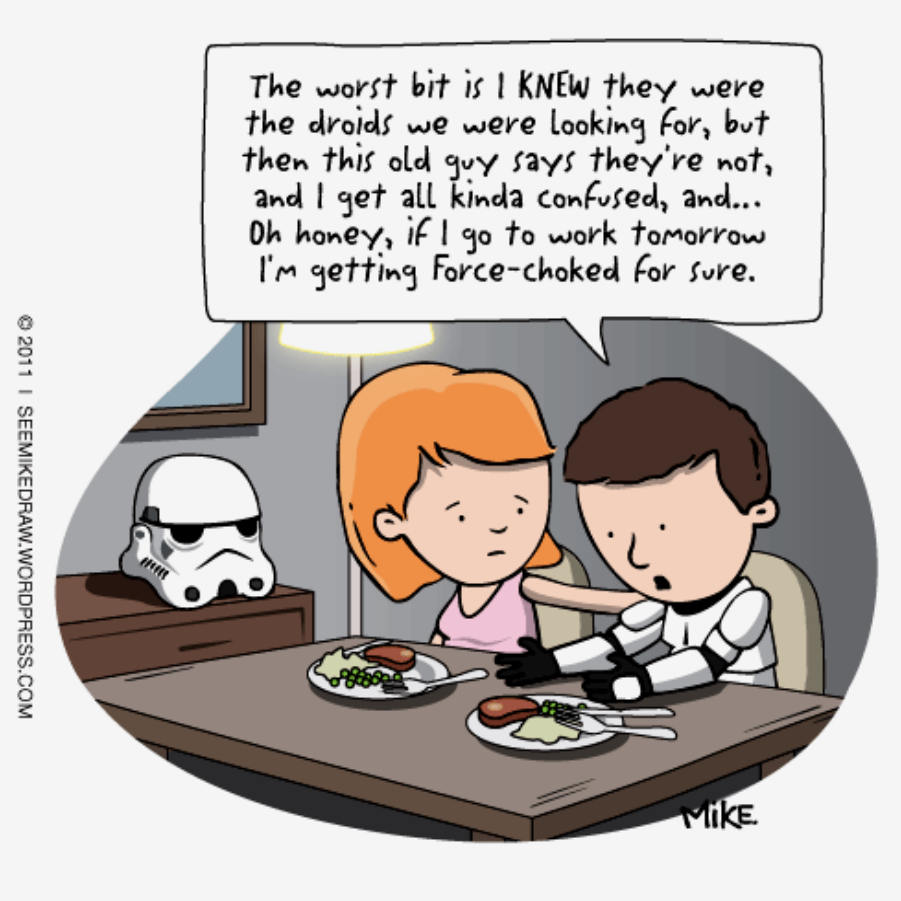
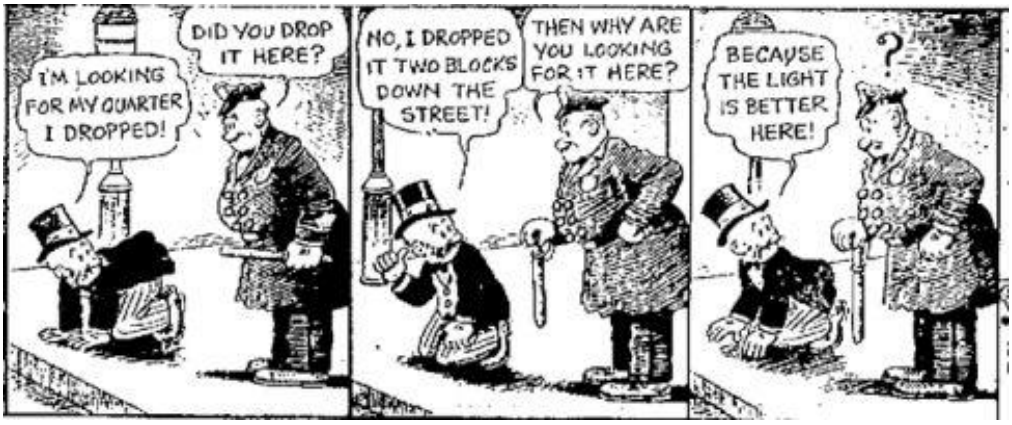
The Sad Part is that Good Traders Understand What is Happening…

Perhaps the most interesting fact about this commentary is that many buy side traders understand the problem. They know that it is hard to evaluate brokers without seeing all the orders, but have a hard time justifying the expense of either modifying their own systems, hiring analytic firms to do it for them, or requiring their brokers to do so.



The ICI-led, buy side initiative to promote better routing transparency could be a major step in the right direction. For this to be true, both the ICI and the SEC, who incorporated the ICI template in the proposed Order Disclosure Rule, must expand it to include basic statistics of routing efficacy for each type of order. Specifically, providing data that enables buy side traders to zero in on how brokers use tools such as Immediate or Cancel (IOC) orders to probe for liquidity or resting orders in dark pools or on exchange. In such cases, the key information a trader wants to know is if orders are not being filled when they could have been, and if they should be doing a deeper dive into information leakage from venues where orders don't get filled. Without adding such data, I fear that the "dance will continue" and the buy side will stay in the dark.

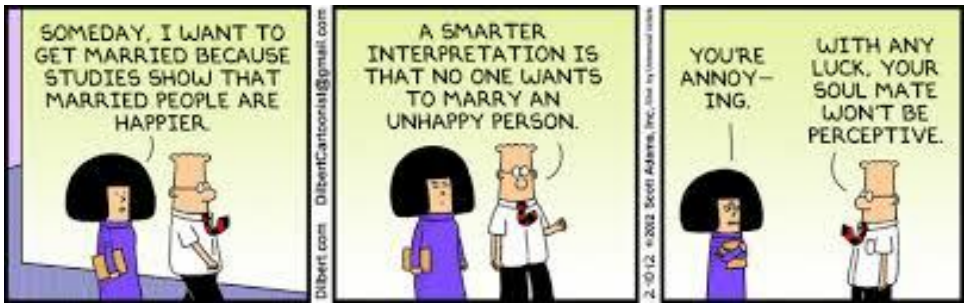
Why Analyze Unexecuted Orders? Opportunity cost!



Analyzing executions alone is much less work than implementing a "what if" analysis to determine the opportunity cost of unfilled orders. Perhaps this explains why most TCA solutions limit their analysis in this manner. It is also true that participation based benchmarks such as VWAP and PWP don't require this type of analysis. That said, like the cartoon above, looking only where it is easy to look is not the best approach. A true story from my own experience illustrates this point well.

At the time of the story, I was running a quantitative trading unit, and one of our analysts was presenting the first version of a new post trade analysis he had developed. In addition to looking over a series of metrics which measured the client order flow we interacted with, it also provided statistics on the trading we did on exchanges for our trading account. Since we had implemented a system for running controlled experiments, the data included both passive and aggressive orders. There was a lot of data in the presentation, and some good work to put each of the various order/exchange combinations in the appropriate context for comparison, but the conclusion of the presentation surprised me. The analyst concluded that we focus all our efforts at tuning the different parameters for passive trading and stop sending aggressive trades, except, maybe, for certain hedging situations.

After patiently reviewing the results, I asked a simple question: "How did your analysis account for the unfilled quantity on the passive orders?" The analyst looked at me uneasily, and I went on. "If you don't, then you introduce large selection bias, since you would miss all situations where the market moved while you unsuccessfully tried to get filled. Worse, posting displayed orders also contribute to the potential of the market moving, so, to some extent, our own passive trading is creating costs which are not being calculated in this report." He digested this and we discussed how to fix the error. We decided that, for the first pass, he could price the unexecuted quantity at the far side of the NBBO immediately subsequent to when the unfilled orders were cancelled. We realized that there might not be enough available liquidity at that price and that the more accurate method would be to adapt our trading cost model for the unexecuted quantity, but, since that was more complex, we postponed that work. Once the analysis incorporated the movement of the NBBO from order entry to cancelation time, however, the conclusion changed; factoring opportunity cost into the analysis showed that aggressive orders looked more favorable on average.



It is important to note that I was relatively certain that aggressive orders would look better on average, since we were not using low latency (HFT) technology for this trading. As a result, on the most liquid securities, we had worse than average queue position, which is why, net of fees, the aggressive orders fared better. When we looked at stocks where queue position mattered less, the results were more balanced, and there were specific signals that predicted which type of specific posting or taking strategy worked best. There are 2 important lessons for buy side traders in this story:

1. Since non-HFT passive orders underperform aggressive orders ***net of fees***, buy side traders should be suspicious of passive orders sent on their behalf by non-HFT firms and even more worried if they don't receive the benefit of rebates.
2. Only analyzing the market movement during the life of unfilled orders uncovered this result. Traditional TCA would not have helped us develop our trading strategy, so how can it help yours?

But, Isn't Avoiding Opportunity Cost the Broker's Job?

It always surprises me, considering the direct cost to fund performance of poor trading, how many buy side trading desks have effectively conceded that they can't analyze opportunity cost. After all, almost no OMS vendors collect all the order level data needed for this analysis, and very few TCA solutions, in house or vendor, do so either.

In addition to being necessary for enhancing ones trading strategy, analyzing opportunity cost by looking at the order data is also needed for attribution and to provide brokers with the appropriate incentives. Consider the following example:

> Fund A sends an order to purchase 100,000 shares of stock XYZ (10% of ADV) to their broker at 11am. At order arrival time XYZ last sale price was 50.11 & XYZ was bid at 50.10 / offered at 50.12. The Broker had a "natural" seller of XYZ at the time of order receipt of 25,000 shares, which gets crossed with this order at 50.11. In addition, the following facts are the same for each of 3 scenarios:
>
> - 1 hour, post order sending, XYZ was bid at 50.19 and offered at 50.20 with a volume weighted average price for the hour of 50.16
> - 4 hours, post order sending, XYZ was bid at 50.30 and offered at 50.31, and the volume weighted average price for the 4 hour period of 50.22 (and the 3 hour period VWAP after the first hour was 50.24)
> - At the close of the day, XYZ ended at a price of 50.20 and the VWAP for the 5 hour period was 50.22

Scenario One: The broker, since this was a VWAP order, waits for the rest of the first hour to trade in the market, since the client constrained the algorithm based on % of volume. They start trading with a mix of orders and execute at an average price for the balance of the 75,000 shares at 50.24, for an average price of 50.2075.

Scenario Two: The broker, attempting to trade exclusively passively, keeps bidding at or just below the market for an hour, without executing any shares until the first hour passes. They then become more aggressive and trade over the rest of the day, executing at an average price of 50.24 for the balance of the 75,000 shares for an average price of 50.2075.

Scenario Three: The broker executes the 75,000 remaining shares entirely using randomized, spaced out, aggressive orders using their Smart Order Router (SOR) over the day for a price of 50.225 for an average price of 50.19625.

I would make the following observations about these scenarios:

1. When comparing scenarios 1 and 2, the outcome is precisely the same, but there is a major difference in attribution. In scenario 1, the fact that the offer price for XYZ moved 8 cents higher is attributable more to client constraints than trading, while in scenario 2, the 8-cent movement is clearly opportunity cost as the broker chased the bid higher.

2. When comparing scenario 3 to both scenarios 1 and 2, the broker performed better on both arrival price and VWAP metrics. It is also likely that opportunity cost was less than in the other scenarios. Explicit costs to the broker, however, were likely higher due to the consistent paying of access fees. Unfortunately, without the ability to pass thru those costs and the lack of the client having TCA that shows the better performance, the broker would be unlikely to have the incentive to choose this approach.

What Does This Say About Buy Side Trading Desks?

It is unclear how much of this problem is attributable to the buy side trading desk. In many cases, the traders have limited budgets to do analysis, or are told to execute at benchmarks such as VWAP. Many traders have told me "off the record" that they can't get information from the portfolio managers that send them orders such as the reason for the trade. Even if they know that a trade is to capture alpha (as opposed to reducing risk) they are rarely told either the magnitude of the expected alpha or the timeframe. As a result, it is hard for the traders, operating in a vacuum, to select the appropriate benchmark for trades and difficult to do the right analysis.

It is also hard to blame sell side brokers entirely, when they are told to keep commission costs low, are unable to pass through trading costs in many cases, and are measured against benchmarks such as VWAP. That said, brokers that have invested in the ability to provide or find liquidity and the quantitative technology to build algorithms and SORs that minimize trading costs should be vocal champions of the approach suggested here. Such brokers should be leading the charge to reform routing disclosures and provide a template for buy side firms to use that includes relevant statistics. Once such a template, with appropriate, high-level categorization of orders received and routed, is agreed upon, it will help buy side firms in several ways. First, it will ensure that they can get access (either themselves or their vendor) to the needed order information, since the new template would require it. Second, it will establish baseline statistics for firms to use, in the same manner as 605 provided a baseline for retail firms to use when measuring market makers.

Bottom Line: It's All About the Process!

Clearly, both buy and sell side trading desks need to improve the way they communicate and the measurements both use to judge success. It is equally clear that asset managers need to improve the communication process between portfolio managers and their trading desks. The key to all of this is to establish better processes, and to acquire the data necessary to measure them. This will require incorporating the analysis of opportunity costs into the process, for both attribution and the improvement of trading outcomes. Lastly, once established, new processes need to be consistently applied, so that changes can be assessed and continual improvements can be made.