CITADEL
ALGOS EXPOSED

CREATING ARBITRAGE TO STEAL FROM RETAIL AND STOP PRICE DISCOVERY

BY U/GANGGANGBET

Citadel Algos Exposed: Creating Arbitrage To Steal From Retail And Stop Price Discovery - May 21, 2022

Possible DD

TLDR: Citadel has two algorithms. SmartProvide and FastFill. They use these two algos to facilitate latency arbitrage. Effectively knowing there will be a difference between true price and the price its trading for and take advantage of the discrepancy for personal profit. The also route non-beneficial orders to off-exchange so their algos continue to work how they want. These two algorithms scalp pennies on the dollar over and over. So I ask, how can a private company that relies on latency arbitrage for personal profit NOT have any conflicts of interest for best available price throughout the entire market? How can they say the represent retail when they steal from us every minute of the day?

Those discrepancies are not just made of money out of nowhere. They are effectively STEALING our best available price so that THEY can keep it. And these slimy fucks govern the entire U.S. markets???

We need to demand open source information to see whats behind these algorithms, currently only 15 total employees know what makes up these algorithms yet Citadel can still have full rights to market-making the vast majority of all U.S. trades on and off exchange, while also stealing from said traders.

#CitadelSteals

#CitadelOpenSource

Glossary Needed to Understand Write-Up:

Arbitrage: The simultaneous purchase and sale of the same asset in different markets in order to profit from tiny differences in the asset's listed price

NBBO: Best available (lowest) ask price. Best available (highest) bid price. NBBO is essentially the best current value for your trades.

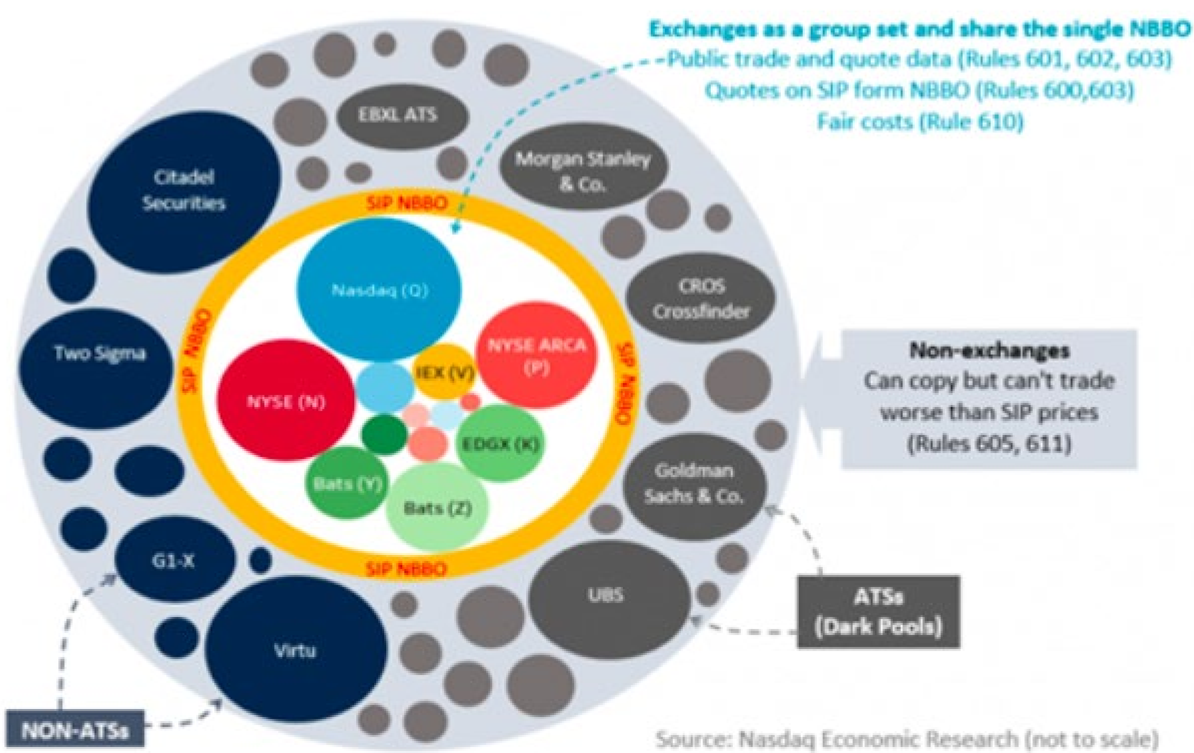
Algorithm: A procedure used for solving a problem or performing a computation. Algorithms act as a precise list of instructions that conduct specified actions step by step in either hardware- or software-based routines.

Off-Exchange: Low regulated private exchange only big players have access to where they can trade blocks of securities/contracts at a time without any effect on price discovery. Not lit exchange like NYSE / IEX etc.

IEX: The Investors Exchange. Founded in 2012 in order to mitigate the effects of high frequency trading (HFT). Every trade on IEX hits the lit exchange directly for best available price. No scalping no arbitrage.

High-Frequency Trading (HFT): High-frequency trading, also known as HFT, is a method of trading that uses powerful computer programs to transact a large number of orders in fractions of a second. It uses complex algorithms to analyze multiple markets and execute orders based on market conditions. Typically, the traders with the fastest execution speeds are more profitable than traders with slower execution speeds.

SIP: U.S. Securities Information Processor. It consolidates all 16 exchanges. It also consolidates all 30+ dark pools quote prices and market data into one off exchange data set.



SIP Explained

"The Citadel Settlement, Off-Exchange Market Makers, and Giant Brokerages - Columbia University Law"

(Source: https://clsbluesky.law.columbia.edu/2017/05/05/the-citadel-settlement-off-exchange-market-makers-and-giant-brokerages/#_ftn5)

This key settlement is the only piece on the internet that goes into detail with how these algorithms work. And they prove Citadel does not facilitate best price for traders, in fact they go out of their way to ensure they do not.

"The settlement focused on two algorithms—or, in the industry lingo, “algos”—with the monikers **FastFill** and **SmartProvide**, which were run by Citadel’s wholesale market making unit. Both algos were triggered by price discrepancies between the consolidated and private data feeds, i.e., the “official” market data distributed by a designated Security Information Processor (“SIP”) and more detailed and inherently faster market data products offered by exchanges themselves...the very existence of such trading strategies, which may be classified under the umbrella of **“latency arbitrage."**

ELIAPE: SIP=what it should trade at, they have PFOF and other data advantages so they can pull data from the other exchanges and know price movements by the millisecond. They scalp these differences which always leaves them with the gains and retail with the difference lost.

Okay time to dive into the algo structures, its nothing crazy technical, but the functions are damning for conflicts of interest in every sense.

FastFill Explained:

“[C]ontemporaneous with determining to internalize the order at the SIP NBB [National Best Bid] or NBO [National Best Offer], as applicable, FastFill sent a proprietary order to the market in an effort to execute for itself at a price better than the SIP NBB or NBO, as relevant.”

"substantial number of smaller orders fared worse because of FastFill in that there was sufficient liquidity displayed in the market to fill all or most of such orders at a price better than the SIP NBB or NBO, as applicable."

ELIAPE: They see price going up and the consolidated data (SIP) isn't reflecting it yet, so they front run buying before the gains happen. In general smaller liquidity stocks and retail buying is basically fucked by this algorithm and almost always gets scalped for a loss to retail.

The same situation happens but opposite for selling. SIP is high but their data shows low so they sell high before price is "realized" on SIP.

The delay between your buys and sells being executed is time for Citadel to steal your money.

SmartProvide Explained:

"Turning to SmartProvide, this algo had a number of interesting twists. As its pivotal feature, SmartProvide converted marketable orders into nonmarketable orders, which could have been motivated by Citadel's deliberate decision to capture liquidity rebates offered by exchanges. Moreover, this algo introduced significant time delays. More specifically, an order could end up being "displayed for up to one to five seconds, depending on the size of the order,"[9] and this timeframe is much longer than a typical delay of less than one *millisecond*, i.e., one thousandth of a second, for the consolidated data feed compared with faster private data feeds."

ELIAPE: They are purposefully filling orders off-exchange that could be speculated to be the ones that are not profitable for their FastFill structure, no one knows what is making these algorithms route things off exchange in fully liquid markets. Off-exchange was used to help facilitate trades for illiquid markets/stocks.. Soo why are fully liquid stocks/markets making up of over 60-70% dark pool routing? Oh yeah and **A DELAY OF UP TO 5 SECONDS WHEN NORMAL TRADES ARE IN THE MILLISECOND RANGE.**

"In other words, this algo went beyond a simple data feed arbitrage, and, as one might speculate, it probably involved additional predictive number-crunching and HFT-style market structure shortcuts. Ultimately, despite being advantageous to some orders, SmartProvide led to a subset of orders "receiv[ing] a price that was worse than they would have received" in the scenario of immediate execution.[11]"

ELIAPE: Citadel is likely purposefully routing certain orders off-exchange and creating their own latency arbitrage so that their HFT can take advantage of the price discrepancies while also not affecting/ruining their SmartFill algorithms that are scalping as well.

They essentially are creating arbitrage to scalp, and causing illiquid markets on purpose so that their spreads can be greater and they can take more.

When scummy Goldman employees and Virtu employees agree with you then you know how fucking fucked Citadel is:

> "Adverse selection stemming from latency arbitrage can have a negative effect on the national market system because liquidity providers may be more inclined to provide less liquidity at wider spreads. The D-Limit order provides a potential solution to this problem," wrote Philip Berlinski, the co-COO of equities and global markets at Goldman Sachs, in a letter to the SEC last year.

https://www.protocol.com/fintech/citadel-iex-sec-lawsuit

Citadel Being Sued For (not getting) Best Price On Purpose:

> The SEC's order finds that Citadel Securities, which has since discontinued the two algorithms at issue, violated Section 17(a)(2) of the Securities Act from late 2007 through January 2010. Without admitting or denying the findings, Citadel Securities agreed to be censured and pay $5.2 million in disgorgement of ill-gotten gains plus interest of more than $1.4 million and a penalty of $16 million.

Now Citadel controls the majority of lit trades, even topping the entire NASDAQ in trades. Also they control over 50% of all dark pool trades.

Other Options:

IEX. IEX has been shown to increase discovery price in retail investors much more than citadels market making abilities. Because they completely take out any HFT. If Citadel is using latency arbitrage and off-exchange routing algos to their advantage all of those "discrepancies" are quite LITERALLY our price discovery being shoved into the shadows and these lawsuits prove that.

WE NEED TO DEMAND OPEN SOURCE TO FASTFILL AND SMARTPROVIDE

THEY CANNOT KEEP STEALING OUR MONEY AND OUR PRICE DISCOVERY.

#CitadelSteals

#CitadelScandal

#CitadelOpenSource

Special thanks to u/swede_child_of_mine for letting me know about this case.

Cheers