

**Written Testimony of Joseph Saluzzi, Partner and Co-Founder, Themis Trading LLC**

**Before the U. S. House of Representatives Committee on Financial Services**

**Subcommittee on Capital Markets, Securities, and Investment**

**Hearing entitled “U.S. Equity Market Structure Part I: A Review of the Evolution of Today’s Equity Market Structure and How We Got Here”**

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**Introduction**

Thank you, Chairman Huizenga, Ranking Member Maloney and members of the Subcommittee, for giving Themis Trading the opportunity to testify on this important topic. We want to applaud the Subcommittee on Capital Markets, Securities, and Investment for taking the time to examine and question the functioning of our modern equity market structure. We believe that having a fair and healthy market that works well for all investors is not a partisan issue.

We have been in a bull market for many years, and volatility is at record lows. Often in such times, when everyone is pleased when they open their brokerage statements, it becomes easy for our industry and regulators to become complacent, and not ask tough questions that should always be asked. Thank you for asking these questions, and thank you for inviting Themis Trading to testify today.

My name is Joseph Saluzzi and I am a partner and co-founder of Themis Trading, a no-conflict institutional agency broker. We do not make markets, and we do not trade proprietarily. We do not own a dark pool. Our only business is providing best execution for our institutional clients; we are agents for long term investors. Our clients are comprised of pension funds, mutual funds, money managers, and hedge funds, and together they represent well over a trillion dollars of long-term investor funds.

My partner, Sal Arnuk, and I started Themis Trading in 2002 to leverage our expertise in navigating the electronic trading landscape. In the 1990s, we navigated an environment in which regulators tried to rectify many problematic features of market structure at the time. NYSE specialists engaged in imperfect activity. Nasdaq market makers colluded in keeping bid-ask spreads artificially wide. In Themis, we hoped to grow a firm that utilized electronic tools to source liquidity for our clients in the cleanest natural ways. We hoped to navigate in ways that minimized the interaction with sub-optimal intermediaries engaging in bad behavior.

By the mid-2000s, we recognized that the “new” equity market structure, with its plethora of ECNs, dark pools, and trading platforms/exchanges, was evolving in especially troubling

ways. Complexity was rapidly increasing. A new breed/evolution of short-term traders were rising – a breed that evolved from what many of you recall as the SOES Bandits. These traders were becoming the dominant form of liquidity in our markets, with business models built around arbitraging faster and slower quotes on different venues. These firms realized that seconds, milliseconds, and now microseconds mattered, and they realized that to capitalize on their proprietary trading arbitrage they needed tools like colocation and special data feeds to engage in this arbitrage dance.

We noticed it was becoming increasingly difficult to navigate the stock exchanges and emerging dark pools in the ways we had in the past. In efforts to improve our trading for our clients, we began investigating under the hood of how the stock market really works. We expressed our concerns to our clients, to our regulators, and to our industry in general. We also began sharing our concerns publicly – with white papers, our [Themis Blog](#), and on social media.

Our first white paper, [“Toxic Equity Trading Order Flow on Wall Street”](#) was published in 2008. In 2012, we decided to summarize our findings and published our book “Broken Markets”. Sadly, many of the concerns that we highlighted in our book are still a problem today.

Today’s stock market is comprised of 13 stock exchanges, close to 40 alternative trading systems also known as dark pools and numerous off-exchange “liquidity providers” who are not regulated with the same disclosure and practices yardstick.

This fragmentation particularly escalated after the SEC passed Regulation NMS in 2005. While the SEC believed Reg NMS would create competition among stock exchanges to provide the best prices for investors, we are certain that they did not anticipate that their regulations would also pervasively result in a high-speed competition to trade against long-term investors. And we hope that the SEC did not think that fragmentation among 13 stock exchanges, 40 something dark pools, and now off-exchange liquidity platforms would be a desired result.

Our modern markets are highly complex. Stock exchanges compete against each other, against broker dark pools, and even against the high-speed traders that also seed liquidity on their venues. Our modern markets require speed - not in and of itself – but the need to be speedier than the next guy. There is a joke about a bear chasing after two men, and one of them tells the other, “why run – we can never outrun the bear.” The other replies, “I don’t need to outrun the bear; I just need to outrun you.”

Simply stated, our modern markets are built on high-speed races around a fragmented web of liquidity. While these markets can be navigated fairly well with appropriate expertise and technology in calm times, we are worried how well they can be navigated, particularly by often slower long-term investors in times of duress.

Twenty years ago, when we still worked at Instinet, the original electronic broker, we were excited in how our firm was leveraging the role of technology to bring natural buyers and sellers

together directly, with less intermediation. Today, technology is instead leveraged to insert the maximum number of intermediaries between natural buyers and sellers, in the above-mentioned web of complexity and fragmentation. There is too little disclosure. Too high a proportion of activity in our markets is from short term proprietary traders “intermediating”, and it’s often needless. We are concerned that as a result, trading costs are higher than what they should be. This perversion is effectively a tax on long-term investors.

What aids and encourages this high-speed race? And what aids the proliferation of too much unnecessary sub-second intermediation? We have a number of concerns about our current US equity market structure:

## **The Modern Stock Exchange Model**

The role of a public stock exchange has changed in the past twenty years.

- Twenty years ago, there were two main stock exchanges that had the goal of aiding in bringing corporations public, and by matching buyers and sellers in a vibrant and liquid secondary market. Those companies would grow over time, hire workers, generate profits, and wealth would be shared. Today, they list mostly derivative ETFs.
- Twenty years ago, stock exchanges made most of their money with listing fees, and matching trading revenues. Today, the exchanges have recognized that the real money is in selling off faster access to insiders, and selling data and data-related services. This represents a significant portion of their revenue today.
- Twenty years ago, the stock exchanges were less anonymous, and the exchanges and members policed each other, perhaps imperfectly, to deal with bad behavior. More recently, exchanges have helped their largest trading clients with special order types, different connectivity and access, and means to jump the queue.

Quite frankly, exchanges have lost their way. They are no longer impartial referees but instead are now players in the game with a vested interest in the outcome. This change has resulted in the major exchanges receiving fines from the SEC for various infractions over the past five years which include:

June 2012 – NYSE fined \$5 million for sending market data to some proprietary customers before sending it to the consolidated public feed.

May 2013 – NASDAQ fined \$10 million for system failures during the Facebook IPO.

May 2014 – NYSE fined \$4.5 million for various rule violations including lack of documentation for its colocation services, early release of closing auction imbalance information to its floor brokers and failure to execute to execute some order types.

January 2015 – BATS Global Markets fined \$14 million for failing to disclose details about certain price sliding order types.

Simply put, stock exchanges are now in the arms business – selling speed and unequal access to the highest bidder.

## **Stock Exchange Rebates**

In 1997, the Island ECN initiated a maker/taker pricing system to grab market share away from other market venues. This maker/taker system, which paid rebates to liquidity providers and charged access fees to liquidity takers, was then copied by most of the stock exchanges and has been embedded in our market structure ever since. Rebates have been used by stock exchanges as a way to incent certain behavior often with the consequences of information leakage. For example, to earn an enhanced rebate on the EDGX stock exchange, retail brokers could elect to add a modifier which would inform subscribers of the EDGX data feed that a retail order has been entered. Knowing that an order is retail is extremely important for professional traders because if it's retail then it must not be institutional. While the retail broker earns extra income from the enhanced rebate, they are allowing information to be leaked to a subset of sophisticated investors.

Rebates also distort routing since many broker algorithms will route first to the venue that pays them the largest rebate but not necessarily gives them the best execution. These routing conflicts could be reduced substantially if rebates were eliminated.

The maker-taker fee schedule is a relic of the past and should be discontinued. Congressman Stephen Lynch recognized the problems with these rebates and in March 2015 and introduced H.R. 1216, the [“Maker-Taker Conflict of Interest reform Act of 2015”](#). This bill would require the Securities and Exchange Commission to carry out a pilot program to assess the impact of an alternative to the maker-taker pricing model. More recently, in July 2016, the SEC’s Equity Market Structure Advisory Committee (EMSAC) recommended that the SEC undertake a pilot program to adjust the access fee cap under Rule 610. Both of these actions highlight the fact that the stock exchange maker/taker pricing schedule is outdated and in need of reform.

We do believe that exchanges provide a valuable service by helping to match buyers and sellers and deserve to be compensated for this function. However, we believe this function is more like a utility and the rates that are charged should be regulated like a utility. We recommend that exchanges charge a flat rate for both the addition and removal of liquidity from their exchange.

## **Stock Exchange Proprietary Data Feeds**

Stock exchanges have created a very lucrative business with the sale of proprietary data feeds. While this business has been very profitable for them, it has also been the source of information leakage for investors. Exchange data feeds deliver information from all individual

orders placed on that exchange at an extremely high rate of speed for those that are willing to pay for this service.

In December 2010, we published a paper titled [“Data Theft on Wall Street”](#) where we uncovered that two exchanges, BATS and NASDAQ, were leaking information on hidden orders that were placed on their exchanges. These exchange data feeds were revealing more information than just the original order, depth of book and trade executions. They were revealing information that could help detect hidden and reserve book orders. We wrote:

“Every time a trader places an order in certain market centers, whether at the market centers directly, or through a third-party DMA, those market centers are collecting data regarding the trader’s order flow. They are supplying the information to HFT’s that allows them to track when an investor changes price and how much stock has been accumulated. This information is helping HFT’s predict short term price movements. Institutional as well as retail footprints are being detected, and “modus operandi” and trading profiles are being created. Traders believe that their trading strategies are protected, when actually their strategies (personal data) -- including variables such as displayed quantity, time stamp, side, revisions, reserve orders, linked executions, order id numbers, accumulations, number of shares -- are being misappropriated for sale by the market centers.”

Individual order information should not be fair game to be made available by the exchanges to the highest bidder. However, we realize that many market participants do not want to rely on the public SIP for their pricing information. Therefore, we think a better alternative is to only allow exchanges to provide order information on an aggregated basis. This is possible and is actually being done today by one exchange (IEX).

## **The Fragile Thin Crust of Liquidity in Public Markets**

In a [July 2011 speech titled "The Race to Zero"](#), the Bank of England’s Andy Haldane said:

“HFT liquidity, evident in sharply lower peacetime bid-ask spreads, may be illusory. In wartime, it disappears. This disappearing act, and the resulting liquidity void, is widely believed to have amplified the price discontinuities evident during the Flash Crash. HFT liquidity proved fickle under stress, as flood turned to drought.”

The US equity market is a fragmented web of stock exchanges and dark pools that have speed races embedded within them. This tangled web has helped create a public non-diverse thin crust of liquidity. No longer do we primarily have two deep exchange books of liquidity, with a wide variety of different participants making up the public quote (retail investor, institutional investor, and high speed trader). Instead we have dozens of venues, and the public quote is dominated by mainly the short- term traders. We have seen how these order books act in times of stress; we all can recall the flash crash of 2010, as well as the financial crisis.

We think a healthier market place will be one where we see diverse participation on the public stock exchange order books. Until that happens, in times of market stress, we can expect our modern markets to perform in seriously concerning manners that will undermine investor confidence. We must not repeat the occurrences of 2008-2010.

## **Dark Pool Behavior**

We have been, and in many cases still are, concerned with the operation of numerous broker-operated dark pools. In just the past three years, the SEC has fined the owners of some of these dark pools close to \$150 million dollars. Below is a list of these recent actions from the SEC:

December 2016 - Deutsche Bank Securities, \$18.5 million

January 2016 - Barclays Capital, \$35 million

January 2016, Credit Suisse Securities, \$54 million

August 2015 – ITG, \$20.3 million

January 2015 - UBS Securities, \$14.4 million

July 2014 – LavaFlow, \$5 million

June 2014 – Liquidnet, \$2 million

It's important to note that this list does not include the millions of dollars in fines that the United States Justice Department also levied against some of these firms. The dark pool actions by the SEC centered around these issues:

- Not disclosing unequal treatment of participants. Creation of special technology for messages to be sent about orders to a subset of HFT firms.
- Catering to high speed traders in order to seed their dark order books with liquidity, and at the same time telling investors that they were protecting them from such predatory traders.
- Operating their own proprietary trading division, undisclosed, in their own dark pools.
- Sharing information about participants, and their trading patterns, with certain high-speed trading firms to maximize their alpha against those traders.

Dark pools were originally designed as a complement to public stock exchanges, so that large institutional investors can trade in larger trade sizes with less price impact for the investors they represent. Today, most are little more than internalizing engines for the parent broker, and tools that aid in generating short term trading alpha for high speed clients at the expense of long term investors.

## What Exactly is a Market Maker in Today's Environment?

Today, some high-speed traders do actually serve as a “market maker.” They provide two-side liquidity, mostly passively, are disclosed and capitalized well, and are an appropriate evolution of the market maker of yesteryear. In contrast, other high frequency traders have proven to be toxic. They have mastered the art of understanding modern stock market plumbing, so that they provide liquidity when they want to, and not when they are needed. Utilizing technology and stock market perverted practices to cherry pick orders to trade against may be a great trading strategy, but that is not the same thing as being a market maker. These HFT's, who are masquerading as market makers, receive perks – such as enhanced rebates and bona fide market maker short sale locate exemptions. However, they are not required to stabilize markets, and they are not all worthy of the special perks.

While some market makers have embraced their role and have argued for more obligations, many others have argued against these obligations. In a [February 2017 SEC comment letter](#), Virtu Financial, an electronic market maker, reiterated their request for more market maker obligations:

“In July 2010, we submitted a joint letter advocating for stronger obligations for market makers. We noted in the letter that market maker obligations have not kept pace with the market structure changes. In a separate letter to the Commission in December 2014, we reemphasized the need to contemplate specific obligations for market makers. The situation has not changed in the years since, and market maker obligations continue to vary significantly across market centers. We also expressed our belief that market maker incentives, such as market structure benefits or financial incentives, should be consistent with the risk inherent with truly affirmative quoting and trading obligations.”

The fact remains that today's market makers do not have the significant affirmative and negative obligations that existed when human trading dominated. In a [September 2010 speech](#), SEC Chair Schapiro commented on the lack of these obligations:

“In the old manual market structure, the market participants with the best access to the markets — the specialists on the dominant exchanges — were subject to significant trading obligations that were designed to promote fair and orderly markets and fair treatment of investors. These included affirmative obligations to provide liquidity and to promote price continuity, as well as negative obligations to forego trading in ways that would exacerbate price moves — such as aggressively taking out bids during a price decline and thereby driving prices even lower.

These traditional obligations have fallen by the wayside as the market structure evolved and the traditional specialist role became obsolete. Today, in contrast, the obligations that apply to most registered market makers are minimal. In fact, many very active liquidity providing firms are not registered as market makers, and some active firms are

not even registered as broker-dealers and thereby fall entirely outside the regime for regulated entities.”

In the past, market makers were tasked with supplying liquidity in times of stress. Unfortunately, the numerous flash crashes that we have seen since the adoption of Reg NMS has proven that this liquidity buffer often times disappears when needed most.

## **Internalizers**

In addition to trading fast and arbitraging over 50 trading venues (exchanges and dark pools), many short-term trading firms have also engaged in a business we commonly call “internalizing.” These firms purchase order flow from online brokers, and even some institutional brokers, and have a free short-term option to trade against those orders. Generally, but not always, they provide an equivalent price to what can be observed on the public markets. These firms, of course, have a faster view of the markets since most rent space in exchange colocation centers and subscribe to exchange proprietary data feeds. The “equivalent fill” they provide is typically measured against the slower public feed.

The problem with internalization was recently evidenced in a [January 2017 SEC action](#) against Citadel Securities where Citadel was fined \$22.6 million dollars. The SEC found that “two algorithms used by Citadel Securities did not internalize retail orders at the best price observed nor sought to obtain the best price in the marketplace. These algorithms were triggered when they identified differences in the best prices on market feeds, comparing the SIP feeds to the direct feeds from exchanges. One strategy, known as FastFill, immediately internalized an order at a price that was not the best price for the order that Citadel Securities observed. The other strategy, known as SmartProvide, routed an order to the market that was not priced to obtain immediately the best price that Citadel Securities observed.”

There is a lot of inside baseball in this process. How is it acceptable for any broker to sell its client order to a short-term trading firm, specifically geared to be an extra intermediary, scalping a small execution price differential for itself? Why would a short term internalizer pay for an order unless they can generally make money by trading against it? This seems to fly in the face of best execution. The existence of this activity is frankly distasteful.

Additionally, an internalizer, paying for the short-term option to match a public quote – often stale – discourages real liquidity providers – investors – from displaying real bids and offers on the public market. Why would an investor bid 50 cents for a stock, hoping to interact with a seller coming in to sell stock to them at 50 cents, only to have the reward of the execution snatched away by an internalizer? For more information on how a retail investor can protect themselves from this dangerous behavior, we recommend reading [“What Every Retail Investor Needs to Know”](#).



## **Payment for Order Flow and Order Routing**

The foundation for fragmentation, the dark pool matching with imperfect disclosures, and the internalizer model mentioned above is the permissibility – and encouragement from our regulators – of Payment For Order Flow (PFOF) which includes stock exchange rebates and payments from market makers to retail brokers.

PFOF creates a whole class of market participants (internalizers) that would not exist without it. PFOF is embedded now in the US stock market model and encourages conflicted order routing and needless complexity. Investor orders are not always routed to the destination that will, for them, maximize liquidity and minimize market price impact. PFOF distorts investor order routing away from where the investor may get the best price, and to where the intermediary can extract the most tax.

Because of PFOF, retail orders rarely make it to a public stock exchange, but rather are siphoned off in the dark by savvy short-term traders. Eliminate PFOF and retail orders will migrate to the public stock exchanges and order books. This will be healthy.

Stock exchange maker-taker pricing and, internalizers paying for first shot at investor orders in an order router matrix, distort routing decisions by brokers, and places them in a conflict between their interests and their client interests.

## **Academic Studies**

We are concerned that many academic studies that focus on US equity market structure are flawed because they do not have the proper data to analyze. Many of these studies still use data from something called the Nasdaq HFT dataset that derives its data from 2008-2009. This data is old and insufficient and should not be the basis of determining answers to questions like “does HFT provide liquidity in times of stress?”. We’re concerned that proponents of the current equity market structure are touting these academic studies to policy makers without revealing their short comings. To avoid these problems, private researchers should be given more current and granular data to study.

Back in 2013, the CFTC, under the guidance of their chief economist Andrei Kirilenko, began an independent research program which yielded some eye-opening results about the supply of liquidity by high frequency traders. This research program, which sourced trading data from original users, was abruptly shut down by the CFTC after complaints from the CME. We find it curious that a research program which was producing results that questioned the role of HFT’s was abruptly shut down at the request of an exchange.

We are also concerned that some of these academic studies are funded by industry participants. For example, in 2013, Professor Charles Jones of Columbia Business School

published a paper titled "[“What Do We Know About High Frequency Trading?”](#) which was supported by a grant from Citadel LLC.

For a comprehensive list of fact-based studies and documents regarding high frequency trading, we recommend perusing "[High Frequency Trading: A Bibliography of Evidence-Based Research](#)" which was produced by a private investor.

## **Regulators**

Regulators have not kept up with the technological gains of recent years. They will likely never be able to. After the 2010 Flash Crash, the SEC proposed and approved the Consolidated Audit Trail which would give them tools to more accurately identify potentially nefarious trading behavior. Unfortunately, more than seven years after the Flash Crash, the Consolidated Audit Trail has still not been built. The one that is being built will make it difficult to identify end-users and it will not have futures market data. It will not even be able to be used to quickly analyze in real-time the actual events that inspired its creation.

After the May 2010 Flash Crash, it took regulators from the SEC and CFTC almost six months to piece together the events of that day. This delay was unacceptable and unfortunately will likely occur again if we have another major market disruption. The problem is that there is still no surveillance system that consolidates data from the futures and securities markets. We recommend that these two agencies create a permanent task force which could quickly share data in the event of a market disruption.

Regulators are also too often leaving their roles surveilling our markets for employment at private trading firms and conflicted industry participants. This damages investor confidence. If key personnel from the SEC's Trading and Markets, as well as FINRA, have a pattern of going to work for those they are regulating, how can the public feel confident that our regulators and policy makers are protecting long term investors?

## **Summary**

In summary, we have a market built around the race for speed that has created public markets that are too thin and fragile – especially in times of stress. Payment for order flow is an incomprehensible and permissible tax on investors - a conflict of interest that needn't exist. Dark pools have been perverted from their intended purpose of facilitating large block trades, and data feeds have been created and enriched with information that serves to facilitate investor order leakage – yet another tax on investors. According to JPMorgan, only 10% of today's stock market volume is from "fundamental discretionary traders". If most of the stock market volume is coming from machines that try to anticipate when prices will move and then trade ahead of that price move, are stock prices accurate? This is concerning to us, and we hope it is concerning to you.

We have a modern equity market structure that is fragmented, conflicted, and complex, and it would be naturally and competitively less so if only our regulators would enact some common-sense reforms including eliminating payment for order flow, regulating data feeds, and improving order routing disclosure.