BROKEN MARKETS

How High Frequency Trading and Predatory Practices on Wall Street are Destroying Investor Confidence and Your Portfolio

SAL L. ARNUK & JOSEPH C. SALUZZI

Foreword by FORMER U.S. SENATOR TED KAUFMAN
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Sal Arnuk
Joseph Saluzzi
We dedicate this book to the executives at the major U.S. stock exchanges, to high frequency trading firms, to lobbyists, and to numerous other conflicted parties in Washington, D.C., and Wall Street. Without your actions, we would never have become outraged enough to write this book.
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I didn’t know a great deal about high frequency trading and the negative effect it was having on the financial markets and the economy when I became a United States Senator early in 2009, taking the seat vacated by Vice President-elect Joe Biden. But thanks to Sal Arnuk and Joseph Saluzzi of Themis Trading, I learned quickly.

During the Bush II administration, I became concerned about changes in the rules on short selling. Along with Republican Senator Johnny Isaakson, I wrote to SEC Chair Mary Schapiro, asking her to follow up on her confirmation hearing pledge to look into reinstating the “uptick rule,” which had been removed in what former SEC Chair Chris Cox admitted had been a mistake. Short sellers play an important role in maintaining an orderly market. But there also are predatory bears. If not policed, they could have a devastating effect by creating a never-ending, negative feedback loop. The uptick rule helped to prevent that by prohibiting the shorting of a security unless the most recent trade was an increase in price.

As it turned out, I lost the battle to reinstate the rule. The main force pushing back was a new group on Wall Street called high frequency traders (HFT). Intrigued, I began to look into what HFT was all about.

One of the great things about being a United States Senator is the access you to have to experts willing to educate you on issues. While my staff and I met with a number of people who claimed to know a lot about HFT, I quickly learned that the ones who made the most sense and had the best take on what was happening were Sal and Joe. They founded Themis Trading and are experts in equity trading on behalf of institutional customers, such as mutual and pension funds. They quickly gave me and my staff an education on HFT that was the best I had heard.
After we talked to Sal and Joe and others and deeply studied the issue, I wrote to SEC Chair Schapiro in August 2009, outlining my concerns about the present market structure and HFT. I spoke many times in the next year on the Senate floor about the dramatic changes taking place in our equity markets, explaining obscure practices like colocation, naked access, flash orders, and the proliferation of dark pools. But mostly I spoke about the explosion in HFT, which had come to dominate the equity markets and account for well more than half of all daily trading volume.

My message was straightforward: The technological advances and mathematical algorithms that have allowed computers to trade stocks in millionths of a second in and of themselves are neither good nor bad. Indeed, as an engineer, I have a deep appreciation for technological progress. But technology cannot operate in a vacuum, and it should not dictate how our markets function. Simply put, technology must operate within a framework that ensures integrity and fairness.

That is why our regulatory agencies are so critically important. While technology often produces benefits, it also can introduce conflicts that pit long-term retail and institutional investors against professional traders who are in and out of the market many times a day. As Chair Schapiro has consistently asserted, including in a letter to me more than two years ago, “If...the interests of long-term investors and professional traders conflict...the Commission’s focus must be on the protection of long-term investors.”

Many people have asked me why I focused so intently on the arcane details of how stocks are traded. There are several reasons.

• First, we must not just look backward and analyze the factors that brought about the last financial crisis. We must also be proactive and identify brewing problems before they create a new crisis.

• Second, we have to protect the credibility of our markets. The two great pillars upon which America rests are democracy and
our capital markets. But there is more at stake than a structural risk that could bring our markets once again to their knees, as occurred on May 6, 2010, during the Flash Crash. There is a real perceptual risk that retail investors will no longer believe that the markets are operating fairly, that there is simply not a level playing field. If investors don’t believe the markets are fair, they won’t invest in them. And if that happens, we can all agree our economy will be in serious trouble.

- Third, we should have learned the lesson from derivatives trading. When we have opaque markets, disaster is often not far behind. It is hardly surprising that high frequency trading deserves a watchful, and possibly critical, government eye. It is simply a truism that whenever there is a lot of money surging into a risky area, where change in the market is dramatic, where there is no transparency and therefore no effective regulation, we have a prescription for disaster. We had a disaster in the fall of 2008, when the credit markets suddenly dried up and our markets collapsed. The Flash Crash was a near-disaster.

The SEC continues to study the causes for the Flash Crash. I hope the agency has moved much closer to truly understanding the dramatic changes in market structure that have taken place in the past few years, the potential ramifications of HFT, and its impact on retail and institutional investors.

But this is about more than investor confidence. The primary function of our capital markets is to permit companies to raise capital, innovate, grow, and create jobs. Publicly traded companies employ millions of Americans and are at the heart of our economy. Their stock symbols should not be used simply as the raw material for HFTs and exchanges and other market centers more concerned with churning out trade volume than with serving long-term investors and supporting fundamental company value.
Perhaps it is not surprising that our initial public offering markets have deteriorated dramatically and seem to work only for the largest offerings worth several hundred million dollars. Indeed, the IPO situation today is so dire that had it been the case two decades ago, many of our most famous U.S. corporations, including Apple, Intel, and Oracle, might never have been nurtured—or perhaps even born. A leader in documenting this has been David Weild, Capital Markets Advisor at Grant Thornton, founder and chairman of Capital Markets Advisory Partners, and former vice chairman of NASDAQ. He links this phenomenon directly to the rise of high frequency trading under a one-size-fits-all set of market rules that favors efficiency of trading above all else. David has written a guest chapter in the latter part of this book that details his eloquent arguments.

I believe the Securities and Exchange Commission is undergoing an extraordinary turnaround. After years of deregulation fervor, which sapped morale and led to an egregious case of regulatory capture, we now have an emboldened agency, with a beefed up enforcement division, a serious chair, and an invigorated staff.

The Commission must still reform the way it gathers the facts it needs to study market issues and particularly high frequency trading. Evidence-based rule-making should not be a one-way street in which all the “facts” are provided by those whom the SEC is charged with regulating. We need the SEC to quickly implement a consolidated audit trail so that objective and independent analysts—by academia, private analytic firms, the media, and elsewhere—are given the opportunity to study and discern what effects high-frequency trading strategies have on long-term investors. It is important that we find whether there are strategies that are manipulative.

We cannot afford regulatory capture or consensus regulation, in any government agency, but especially at the SEC, which oversees such a systemic and fundamental aspect of our entire economy. Colocation, flash orders, and naked access are just a few practices that were fairly widespread before ever being subjected to regulatory
scrutiny. For our markets to remain credible—and it is essential that they do so—it is vital that regulators be proactive, rather than reactive, when future developments arise.

Since leaving the Senate, I have continued to speak out on market structure issues and HFT. Because if we fail, if we do not act boldly, if the status quo prevails, I genuinely fear we will be passing on to my grandchildren a substantially diminished America—one where saving and investing for retirement is no longer widely practiced by a generation of Americans and where companies no longer spring forth from the well of capital flows that our markets used to provide.

Wall Street is a business, like any other business in America. But it is also different in an important way. It is Wall Street that gathers up the hard-earned cash of millions of Americans and allows them to invest in capital markets that have been the envy of the world.

These markets, like all markets, will ebb and flow. But they should never be brought down by inherent structural problems, by trading inequities, or by opaque operations that shun transparency.

Wall Street holds a piece of American capital, our collective capital, and it has a real and profound responsibility to handle it fairly. But that entails another obligation as well: to come to the table and play a constructive role with Congress and the SEC in resolving its current issues—especially the possibility of HFT manipulation and systemic risk. For too long, many on Wall Street have urged Washington to look the other way, to accept the view that all is fine. If Wall Street does not engage honestly and constructively, then these issues must be resolved without their input.

And resolve them we will. The credibility of our capital markets is too precious a resource to squander; it is a fundamental pillar of our nation. And if it is now threatened, Congress and the regulatory agencies surely must act. We can fashion a better solution with industry
input. Not a biased solution, but a better solution—one that should benefit Wall Street in the long term, one that must benefit all Americans now.

This book will open your eyes, as Sal and Joe did mine. There have been many dramatic changes in our markets in recent years, and even sophisticated investors may know little or nothing about them. With Sal and Joe as your guides, you will come to understand these changes and what they have meant to individual investors and our capital markets. Sal and Joe believe the system is broken, and they are right. They explain how it happened and what must be done to fix it.

I hope this book reaches a wide audience and that its readers urge their representatives in Congress to do what must be done to restore credibility and fairness to our markets.
Acknowledgments

Never in our imaginations did we ever think we would write a book, let alone one that featured market structure and high frequency trading! Well, we did, but not alone. This book was based on decades of experience trading for our institutional clients. So, ultimately, it was our clients who made this book possible, and we owe them the heartiest of thanks. We also want to thank our families for putting up with our missing weekends as well as our being cranky when we fell behind schedule. Likewise, we need to tip our hats to our Themis team—Paul, Victor, Scott, Caroline, Anna, and Aviva—for picking up the slack when we needed you. Thank you to our publisher, Jim Boyd, and his team for their patient guidance. Finally, we owe a great deal of appreciation to our many friends behind the scenes who unfortunately cannot be named. They have been incredible sources of information, ideas, and inspiration. Thank you all.
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His opinions are sought by leaders, regulators, market participants, and the media and are presented via white papers and Themis’ widely read blog. He is a frequent speaker at industry conferences, such as Trader Forum, Waters, National Organization of Investment Professionals (NOIP), and Fusion IQ’s Big Picture, on issues involving market access, algorithmic trading, and other sell- and buy-side concerns.


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Saluzzi has provided analysis to regulators, including the Securities and Exchange Commission and as a member of the Commodity
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He earned an MBA in finance from the University of North Carolina at Chapel Hill and a Bachelor’s degree in finance from New York University.
Introduction

The stock market has devolved. Make no mistake, it is broken.

Its primary purpose had always been to facilitate capital formation. Companies that needed funds have always looked to the equity markets to issue stock. The funds they raise via an initial public offering, or IPO, are put to work to generate earnings. The increased earnings drive the share price of their stocks higher, and investors and savers accumulate wealth. That increased wealth, in addition to their wages, drives consumers to spend and buy. And that spending and buying in turn drives demand for corporate goods and services, which in turn drives additional corporate profits, and the cycle continues.

The stock market is the mechanism where IPOs trade among secondary investors and traders. If the secondary market is liquid with lots of transactions and trading, then investors feel confident that they can take a risk and buy shares in a company because they could easily exit their investments, should they want.

This linkage has always been crucial to our nation’s greatness and is why America has always been held up as the beacon of capitalism worldwide.

Sadly, today, the primary purpose of the stock market is not capital formation. Investors are an afterthought. The primary purpose of the stock exchanges has devolved to catering to a class of highly profitable market participants called high frequency traders, or HFTs, who are interested only in hyper-short term trading, investors be damned. The stock exchanges give these HFTs perks and advantages to help them
be as profitable as possible, even if doing so adversely affects you, the investors, because HFT firms are the exchanges’ biggest customers.

These HFTs use high-powered computers to automatically and algorithmically trade in and out of securities in speeds measured in microseconds (millionths of a second). Although there are few HFTs relative to the number of investors in the marketplace, the following is generally estimated in the industry:

- HFTs account for 50–75% of the volume traded on the exchanges each day and a substantial portion of the stock exchanges’ profits.
- While smaller HFTs churn hundreds of millions of shares per day, a few of the larger HFTs each account for more than 10% of any given day’s trading volume.
- HFTs earn anywhere from $8 billion to as much as $21 billion a year that comes at the expense of long-term investors—you and the institutional investors that manage money on behalf of you.

These HFTs are always hungry for situations for their algorithms to arbitrage. They are hungry, just like Seymour, the man-eating plant from Little Shop of Horrors. And stock exchanges, brokerage firms, technology providers, and consultants spend every waking moment figuring out how they can help their largest customers make more money—new ways to feed Seymour.

When you think about the stocks in your 401k plans, how do you imagine that they trade today? What images come to your mind? Do you think of bustling trading floors in a metropolitan city money center, with humans hustling about screaming, signaling, gesturing, hustling, and interacting? Do you think of Eddie Murphy and Dan Akroid in the climactic final exchange scene in the film, Trading Places? Do you think of the movie Wall Street? Do you think of Maria Bartiromo reporting from the floor of the NYSE amid a sea of mostly male blue coats, trading on behalf of mutual funds, traders, and investors?
Or, do you realize that today the floor of the NYSE is really a prop for television, and that all the majority of trading is done and housed in a suburban warehouse in New Jersey, housing billions of dollars worth of technology and servers owned or leased to HFT firms?

Our point is obviously that the markets have changed drastically in the past decade, and not all the stakeholders have realized this or the implications of those changes.

Our brokerage firm, Themis Trading, has spent the past decade navigating the equity trading landscaping on behalf of our clients, who are long-term institutional investors. We have accumulated in-the-trenches expertise trading stocks in dozens of exchanges and alternative trading systems. We have experience trading with multitudes of technologies. Prior to our careers at Themis, we spent the better part of a decade as sales-traders at the world’s first premier electronic brokerage firm, Instinet, and we spent years before that working at Morgan Stanley in the late 1980s. We have learned to adapt to the ever-changing equity trading landscape. Our front row seats and participation in the markets, throughout the many structural and technological changes that they have undergone, have given us our most important asset: perspective. We have seen the good and bad parts of our market structure in the 1990s and the 2000s, as well as today. We know what works, what doesn’t, and what is problematic—and why.

While trading equities for clients, we have uncovered many unfair practices and outright shenanigans. We have spent a significant amount of energy and time raising these issues to our industry. We have participated in conference panels, appeared on CNBC, Bloomberg TV, and even 60 Minutes. We have given testimony to our regulators—the Securities and Exchange Commission and Commodity Futures Trading Commission. And we have actively blogged our opinions and findings on our firm’s website. Initially, our voice was a small and lonely one. Over the past several years, however, we believe we have made great strides in broadening the discussion about our
market structure’s conflicts of interests, and about high frequency trading.

We question the roles of stock exchanges and HFT firms, the value they are adding, and the damage they are doing. It is common to hear in the media how HFT has reduced costs for investors by lowering commissions and narrowing the spread between the prices investors can buy and sell stocks. We see it differently. Although spreads may be narrower in perhaps 5% of the most actively traded names, they are wider in the other 95% of the market. So while our current markets have solved the “problem” of how investors can trade the top 100 companies for a spread measured in pennies, with little or no commission, they have created many other problems, such as extreme volatility and lack of support for small and midcap emerging companies.

Why did we write this book? The discussion and debate around the workings of our capital raising superhighway needs to be had by the much larger and more mainstream stakeholders: investors. For too long, the HFT and market structure debates have been monopolized by a small group of industry insiders, regulators, and group-thinkers. In the process, our markets have morphed into an insanely complex web of conflicted stock exchanges, dark pools, alternative trading systems (ATSs), and liquidity providers. We want to call attention to these conflicts and issues more broadly. We want you to understand how our markets actually work and why they morphed the way they have. It was no accident.

Perhaps you are reading this book because you have heard about high frequency trading on the evening news or from our appearance on 60 Minutes and are curious about all the buzz.

Perhaps you are reading it because you have noticed high frequency trading as a term associated with volatility, and the way the stock market has moved the last few years has made you concerned about the safety of your investments.
Perhaps you are reading *Broken Markets* because you wonder why correlation in the stock market, or the degree to which individual stock prices tend to move together, has never been greater. That’s because asset pricing in the stock market is largely the result of high frequency algorithmic automated traders, who make up most of the volume. They know nothing about the underlying companies whose shares they churn. They don’t even know the names or lines of business of the companies they trade. They don’t care, and there is a downside and a danger to that.

Perhaps you are reading this book because you want an answer to why the market can drop a thousand points within minutes, only to rebound just as fast, as the markets did in aggregate during the Flash Crash of May 6, 2010. Did that day frighten you? Make you lose enough confidence that you withdrew your money from the market? If you did, you were not alone. Some $232 billion has been withdrawn from domestic equity mutual funds between May 2010 and January 2012.\(^1\) However, if you did understand what caused the markets to drop that day and stayed in the market, you would have caught a major bullish move up.

Perhaps you are reading this book because you are “in the industry” and agree with our viewpoints—or you flat out disagree with us.

Whatever reason you picked up this book, we are hopeful you will come away from *Broken Markets* with an understanding of how and why our stock markets have changed in the past 15 years. We hope you will see the danger created for retail and institutional investors, as well as the United States and perhaps the world economy. We hope you will be outraged, as we are. We hope that you will be so outraged that you will make it known to your political representatives. Our short-sighted myopic tinkering with our market’s foundation has been done for the benefit of few, at the expense of many.

We wrote *Broken Markets* quite simply to try to explain the markets’ complexity to an audience that does not only include the most sophisticated industry insiders. Although we wish our markets
operated in a manner simple enough that the majority of us could understand it, unfortunately, today’s markets do not operate in simple and intuitive ways. Hopefully, we can illuminate the murkiness to help you understand the highway upon which your investments are traveling.

If you are a buy-and-hold investor or a retail trader, we want you to come away understanding new dangers in our market structure that never existed before. We want you to understand that your costs are not just a commission or a bid-ask spread. Your every investment move, order, and trade is recorded and sold/provided to hyper-efficient, short-term HFT firms by the exchanges, similar to how your Internet-browsing is recorded by your search engine provider. However, while your browsing habits are sold to advertisers who make money attempting to sell you goods, your trading data is sold to HFT firms who trade around you and against you, and at your expense.

If you are a chief financial officer or investor relations officer at a publicly traded company, we hope this book helps explains some of the gyrations that your stock may be taking during the day. You probably have lost a lot of “color” on your stock since the specialist model disappeared and may be struggling to understand why your stock is suddenly going up—or down. This book will fill in the blanks for you. We also hope that you will add your voice to the market structure debate.

Ultimately, we hope you enjoy the read!

—Sal and Joe

Endnote

1

Broken Markets

Are you an investor? Are you a stock market aficionado who loves to learn about companies, industries, and the variables that tie them to a stock price? Do you have an online brokerage account at Fidelity or TD Ameritrade, for example?

Do you watch Bloomberg TV or CNBC? Do you read *The Wall Street Journal* or the *USA Today* “Money” section? Did you once fall in love with Maria Bartiromo on TV?

Do you enjoy the feeling that each day in the market is a new puzzle to figure out? Do you like seeing your well-chosen investments appreciate over time so that you can retire and live out your dreams? Have you ever felt excited talking about a stock, good or bad, at a party?

Did the market scare you during the financial crisis in fall 2008? How about spring 2009? Does your brow furrow trying to understand how the market could move so drastically and with such speed?

Do 500-point Dow moves intraday concern you? How about 1,000-point moves? If you trade with *stops*, have you always been mortified and angry about how “they” seem to take your stock to that price level, trigger your stop loss, and then take the stock back from that limit?

Do you understand how—or where—stocks trade today? Do you think that you should?

Because the title of this book is *Broken Markets*, it is fair to assume that we believe that there’s something wrong with the stock market. It
has changed so drastically, and so quickly, from the model that it was based on for more than a century. The stock market used to be a system—and a place—where investors traded capital. Now it is a loosely connected mess of more than 50 different exchanges, dark pools, and alternative trading venues focused on short-term trading. What was an imperfect, yet elegant, oligopoly of a few stock exchanges has become horribly fragmented, operating at insane speeds, in a crazy dance of arbitrage.

The market is like a shattered vase that is now held together with glue called high frequency trading (HFT), and that glue is weak—very weak. In addition to fragmentation, under the cover of the digital revolution, conflicted stakeholders—stock exchanges, brokers, and owners of ATSs (alternative trading systems)—have

- Enlisted their own regulators to help them create a mechanism that places high-speed trading interests above the interests of all other market participants, particularly investors.
- Converted member-owned nonprofit legal structures into ones that are for-profit, which have enabled them to embark upon new business models centered around the creation and distribution of data feeds.
- Perverted the true purpose and usage of tools like dark pools from mechanisms to effect large block trades for large mutual and pension funds to a means to feed internalization and proprietary HFT.
- Introduced new systemic risks resulting in markets that can violently careen out of control as they did on the May 6, 2010 Flash Crash.
- Extracted the economics away from brokerage activities that nurture young companies and their IPOs.
Why Has Our Stock Market Structure Changed So Drastically?

The market has been hijacked. An evolved class of leveraged short-term, high-speed traders, sometimes called high frequency traders, who trade massive amounts of shares based on proprietary algorithms, has eclipsed other types of traders.

In the not-so-distant past, as little as ten years ago, most stocks were listed on the New York Stock Exchange (NYSE) or on the NASDAQ. When you, your mutual fund manager, or other fund managers wanted to buy or sell, a broker who was a member of the exchanges would execute the trade on your behalf in fairly centralized locations. You paid a commission or incurred a spread cost.

If the stock was listed on the NYSE, your order would be executed there, via your broker, with your instructions (that is, limit, market, stop loss, or good-till-cancel). Your order would make it to a specialist on the floor of the exchange who would execute it according to specific rules. The specialist’s role was to match buyers and sellers, in a fluid way, whether they were on his limit book or against an order “in the crowd.” In exchange for doing this, the specialist was allowed to trade alongside orders, taking advantage of his being privy to all the order flow.

If your stock was listed on NASDAQ, your order was represented and executed against an electronic dealer market. Those dealers would compete for your orders by adjusting their “market.” If a NASDAQ market maker was a better buyer of the stock, he would post a competitive bid that was equal to or higher than the other prevailing bids. If he was a better seller, he would post an offer price equal to or lower than the prevailing offers by other dealers. These market makers not only facilitated customer order flow, but similar to the specialists on the NYSE, they also traded for their own accounts.

The history of the NYSE dates back to a 1792 pact, called the Buttonwood Agreement, named for the tree under which the agreement
was signed. Twenty-four brokers signed the document, which established rules for the buying and selling of equity ownership in American corporations. These rules of conduct and fair play served as the foundation for all securities trading globally for a century, and volume on the exchange steadily grew.

The significance of integrity and fair play was so important to the Board of the NYSE that when it expanded into a new building on Broad Street, the building featured an incredible sculpture by John Quincy Adams Ward titled “Integrity Protecting the Works of Man.” This sculpture features a 22-foot figure of Integrity in its center, with Agriculture and Mining to her left, and Science, Industry, and Invention to her right. How wise that NYSE Board was to recognize that economic growth and the stock market are intertwined. How wise for that NYSE Board to recognize that integrity forms the basis for trust and confidence. How wise for that NYSE Board to recognize the link between the stock exchange and capital formation!

Of course, over time, technologies evolved. Computers have made the markets faster and more efficient. Technological advances have empowered retail and institutional investors who can deal more directly in the marketplace, with fewer intermediaries, more control, and lower costs. The benefits have been substantial, to be sure. However, one class of market participants, HFT firms, has leveraged technology as well with automated programs that generate massive volumes for the stock exchanges. As they have grown, HFT firms have used their economic clout to extract an increasing number of perks and advantages from the exchanges, tilting the zero-sum game that is the stock market in the favor of HFTs versus investors.

**When Did HFT Start?**

We initially spotted HFT at work early in our careers, when we were sales traders at Institutional Network, otherwise known as
Instinet, the world’s first electronic brokerage firm. Like the NYSE, Instinet was an order-driven market, but it was anonymous, with no specialists to facilitate order flow. In the 1990s, Instinet captured a huge market share in the block trading of NASDAQ stocks. Institutions and fund managers loved the ability to trade in between NASDAQ market maker spreads, which, at the time, were averaging more than 32 cents. Instinet filled a real need. Institutional fund managers wanted to trade their orders with more control and freedom. They wanted to trade their orders themselves rather than through a broker, and they wanted to do so at reduced costs. Each day, they routinely negotiated and traded blocks ranging from 25,000 to 1,000,000 shares. Each year, their number of trades increased.

Then Instinet began courting a new type of trader. These traders promised large volume, albeit in small size trades of a few hundred shares at a clip. In exchange, these traders wanted insanely low commission rates and access to Instinet’s top-of-book and depth-of-book data. These traders wanted to feed their computer models all Instinet’s order flow information, including best bids and offers, their sizes, as well as information about the other orders in each stock’s limit book. It was a win for Instinet in terms of increased volume. Instinet could pitch that volume as an attribute in attracting new buy-side institutions that would pay higher commission rates.

Some might say it was wise for Instinet to court these automated trading firms. However, the flow these firms pumped into Instinet was predatory. We had never seen anything like it before. The institutional clients complained immediately. If an institutional client placed a bid to buy 5,000 shares at 24 1/8, the automated trading firms instantly placed a bid for a few hundred shares at 1/64 higher (the minimal allowable increment). They did this with every stock. If the institutional clients canceled their bids, the automated traders instantly canceled their higher bids as well.

Allowing these automated traders into the network ran counter to the philosophy Instinet had pioneered since its inception, which
was helping institutions trade blocks electronically. It also felt plain wrong. These automated trading firms were nothing more than high-speed scalpers and the first high frequency traders. Instinet enabled them for fear that its order flow would go to the newer upstart electronic crossing networks (ECNs). Eventually, this type of order flow spread to all the other electronic venues in addition to Instinet.

The SEC became concerned, not about the scalping, but that the retail public was seeing one set of prices, while other market players saw better prices on the ECNs. In response, the SEC proposed Regulation ATS (Alternative Trading System), which mandated all orders go to a public quote. Instinet fiercely lobbied against it. Management had employees calling clients and urging them to write comment letters to the SEC. Instinet claimed that such a rule would create a commoditized limit order book, which would “crush innovation.” In reality, Instinet was afraid of losing the special selling appeal of its own private stock market, with meaty institutional orders that the SEC, if they had their way, would forcibly make available to all traders through all systems. No doubt, management was also worried that the automated traders might not pay for the privilege of jumping 1/64 ahead of investor orders if the automated traders could do it to the entire market.

The SEC had its way. Reg ATS passed. Spreads between bids and offers tightened due to the competition. Instinet had to compete by having the fastest platform, and it did well. So, too, did the automated traders. They had a much larger body of water to swim in—and hunt. HFT exploded in volume as more firms entered the space. It would eventually peak in late 2009 with an estimated 70% of all volume in the market.

As HFT grew, so did the structure risks. The market is like an ocean. To the extent that there are many different trading styles and participants interacting with each other, the market is healthy, like a body of water teeming with many species. One player may have a subsecond time horizon, another a minute, another ten years. They
might be value investors, chart readers, or earnings momentum players. However, when one participant accounts for so much volume and has eclipsed so many other participants, and its trading styles and horizons prevail, the ecosystem is in disequilibrium. One of its more predatory species, such as a shark, has become overwhelmingly dominant. And it is unsustainable.

### How Did HFT Become So Big?

After the SEC implemented Reg ATS and decimals, spreads narrowed drastically: from quarters, to eighths, to sixteenths, to 3 cents and lower. The average amount of money a short-term trader could make per trade dwindled sharply, and automated trading firms in Darwinian fashion made up for that with sheer volume of trades. *Their growing volumes were on all of Wall Street’s radar.* Brokerage firms, new electronic venues, and the major stock exchanges all took notice.

In the new millennium, when the SEC again set about to modernize its rules about stock trading, the agency sought a massive amount of input from all the players. The result was the Regulation National Market System, otherwise known as Reg NMS, which was authored by many industry participants in collaboration with the SEC. Proposed in late 2004, Reg NMS was supposed to serve as the framework for the evolving stock markets for the coming century. Due to delays, lobbying, industry comment letters, and reworking, it wasn’t implemented until late 2007.

Reg NMS created the concept of a National Best Bid and Offer (NBBO). The NBBO was an aggregation of the best priced orders on all exchanges and ECNs, and it was *protected.* This meant that if one market center, say the NYSE, had a participant with an order to buy stock at $10.00 and did not have a matching sell order at $10.00, while another exchange, say NASDAQ, did, then the NYSE would have
to route out that buy order to NASDAQ, which would then match the buy and sell order. As a result, Reg NMS commoditized trading destinations. Speed of execution became paramount. The slower, specialist-oriented NYSE was forced to become a fast, electronic market.

By the time Reg NMS was implemented, the stock exchanges had beefed up their systems, changed from member-owned, nonprofit corporations, to for-profit exchanges, and many of them became publicly traded companies. Although some say the exchanges did this to respond to Reg NMS while at the same time to protect themselves, they did it with an “eye on the prize,” lobbying for the regulations to turn out exactly as they wanted, when they wanted it. You can’t help but wonder whether the changed market structure is less the result of “unintended consequences” and more of a well-executed plan.

The changes brought about by Reg NMS have turned the market from an investor-focused mechanism, which welcomes traders and investors of all types and speeds, to a subsecond, trader-focused mechanism, where the concerns and confidence of investors are an afterthought. These changes are hurting you by making the market more dangerous and prone to another severe crash. This crash may start with a news event—a default on debt in Europe, an economic crisis in Asia, or a major bank bankruptcy in the United States. But make no mistake, the real reason will be that the stock market is based on business models that are rife with conflicts of interest that cater to hyper-short-term traders. The real reason for the crash will be structural.

Why Have We Allowed This to Happen?

Part of it is that intense lobbying by Wall Street, including the exchange operators, pushing for this to happen with regulators and politicians in DC. A larger part of the answer is we have all been told
a nice story about cheap $8 or lower commission trades, ample liquidity, and inexpensive trading costs. We all bought into the notion that our markets are so tight and efficient that there is no downside, only upside due to the new efficient ways the markets work.

There are reasons why brokerage firms offer $8 trades to retail investors, when so often that fee doesn’t cover costs. Today, these brokerage firms make money off retail orders in different ways. Money that used to be made mostly through commissions is now made through trading around that order flow. For example, your online broker likely sells your order to a “market maker,” rather than routing it to an exchange. That market maker is an HFT expert and gets first crack at deciding whether to be on the other side of your order or route it to an exchange. It makes this decision based on its internal short-term price prediction models. Armed with up-to-date information on all the retail order flow that they buy, its algorithm decides whether your retail order is “dumb” or “informed” and acts accordingly.

At times, HFT has a parasite/host relationship with investors. HFT works well only when there are sufficient hosts in the pool upon which to feed. When the hosts dwindle, due to lack of confidence in the system, and funds flow out of equities, HFT firms suffer. They begin to trade with and against themselves. The more the equity markets become unbalanced, the more HFT predatory effects become visible. Picture a watering hole in the wild teeming with crocodiles. Other animals aren’t afraid to drink at the hole because they don’t see the crocs beneath the surface. If there is a drought, however, the water line drops. The crocs become visible, and the other animals stay away.

There also is a big structural risk in the way retail orders are handled today. Take the May 6, 2010 Flash Crash, for example. Most Americans are aware of the market’s jaw-dropping 700 point decline and frenetic rise again that day. Billions of dollars of asset value were erased and almost restored in a period of minutes. Had the decline
happened near the closing bell, you could not even begin to guess the damage that might have been inflicted on world markets in a domino effect. A big part of why the market unraveled that day is a direct result of HFT market makers who had purchased retail order flow from investors. At blazing speeds, they picked orders to which they wanted to be the contra-side and routed all others in such a way as to sell major well-known, well-capitalized stocks down to a penny.

Since 2008, we have been warning in our writings and TV appearances that HFT market makers would shut down and run for the hills at the first sign of stress. Under duress, HFTs would not be liquidity providers. They would be demanders and consumers of liquidity the likes of which the public has never seen. Their speed and information advantage on May 6, 2010 ensured that scared retail investors never had a chance. The story of the Flash Crash is that the market failed that day. It was exposed as a conflicted and rigged game in which only the connected insiders stood a chance. Every investor and market participant in the United States had been sold a lie: HFT liquidity was a blessing that lowered costs and helped investors, and it would be there in stressful markets like the market makers and specialists that it replaced.

Will There Be Another Market Crash?

No doubt. With each passing month, order, transaction, and data speeds increase. Trading is done on increasing numbers of exchanges, linked together by HFT pricing and rebate-induced arbitrage. The markets have become even more fragmented.

The leverage employed by HFT firms remains at extremely high levels, similar to the 40-1 debt to equity ratio used by MF Global, which amplified the disastrous effects of its poorly chosen bets. Because HFT firms’ strategy is to start and end each day owning nothing, they have little tolerance for adverse “bets.” When they are
“wrong,” their technology and speed enables them to dump their inventory in such a ferocious manner that limit order books quickly thin out in terms of price and depth. Because their algorithmic models price securities with such an emphasis on nearby prices and robust uninterrupted pricing data flow, when that data displays discrepancies, they withdraw their “liquidity provision” and shut down.

The Joint CFTC-SEC Advisory Committee, set up to study and report findings on the events of May 6, 2010, summed it nicely: “In the present environment, where high frequency and algorithmic trading predominate and where exchange competition has essentially eliminated rule-based market maker obligations...even in the absence of extraordinary market events, limit order books can quickly empty and prices can crash.”

Another concern is the market’s instrument makeup. In 2010, Exchange Traded Products (ETP), including its biggest category, exchange traded funds, or ETFs, reached an asset under management (AUM) level of $1.3 trillion. Only ten years prior, ETP AUM totaled a mere $66 billion. This represents nearly a 19-fold increase. Each year stock exchanges, which are struggling to list shares of promising companies in the form of IPOs, manage to set new records in the number of ETPs and ETFs they list for trading. NYSE-Arca listed a record 300 new ETPs in 2011 versus 220 in 2010. The result: More and more volume on exchanges is in the form of derivative products, of which an increasing number are leveraged and a large percentage of the trading is done by HFTs.

On calmer, benign days in the market, you can argue that HFT firms may do a good job of arriving at a fair price for large capitalization, highly liquid stocks such as Bank of America. However, in thinner issues that trade less often, HFT may not do such a good job. Although HFT is agnostic to the merits, fundamentals, and prices of the stocks it is flipping, it prefers liquid, lower-priced stocks because it can trade more shares of those for the same amount of capital deployed.
On volatile days, however, HFT exacerbates and amplifies price moves in short amounts of time. It’s like lemmings. Lemmings behave normally when their population is in check, but their population is wildly erratic. They migrate in a massive group when population density swells. The group moves together in lockstep and walks off cliffs or jumps into large bodies of water in mass with horrific results. HFT has been around for nearly 15 years, its “population” swelling only fairly recently, corresponding with the implementation of Reg NMS. Their strategies are similar, frequently depending on speed to differentiate their success. HFT decides how, where, and when to buy and sell stock by examining relationships of data points immediately near each other. This modus operandi can cause them to chase stock prices up and down a ladder wildly. On May 6, 2010, HFT algorithms sold Accenture Corp. (ACN) down to pennies and Phillip Morris (MO) from $48 down to $17 and right back up to $46.

Where’s the SEC in All This?

In the 1990s, information superhighway was the popular term used to describe the Internet. You can think of the stock markets as the capital superhighway. Movement of capital on this highway from savers and investors to businesses of all sizes must be safe, orderly, and reliable for all market participants, regardless of their “speed.” If not, then the connection between Wall Street and Main Street is broken.

The Securities and Exchange Commission was created by the 1934 Exchange Act to bring confidence back to the markets in the midst of the Great Depression after the 1929 Crash. There was great fear that confidence had evaporated. If that confidence were to be reinstated, folks would buy and sell stocks again and make markets liquid. That would inspire investing, which would fuel the economy and the need for funds to grow businesses.
According to the SEC’s website, its mission is to “protect investors, maintain fair, orderly, and efficient markets, and facilitate capital formation.” This means that in policing the markets, and in crafting rules to keep up with technological innovation, the SEC should make sure that capital formation, and the catering to investors (as opposed to traders), is always front and center. This means that the SEC must always remember to keep that linkage between Wall Street and Main Street healthy and thriving. If Main Street is left out of the thought process, if it loses faith in the stock market as an investment vehicle, investors will “take their marbles and go home.”

News flash: It’s already happening. More than a quarter of a trillion dollars have been withdrawn from domestic equity mutual funds since May 2010. This is horrible for two reasons. One, new and existing businesses need funds to grow, innovate, and hire. If American businesses don’t get these funds, our economy stagnates, we fall behind other nations, and our standard of living drops. Two, these longer term investors are, and have always been, a source of real stability to the market. Their bids and offers provide liquidity that, unlike that of HFT, is deep and unfleeting.

The mission statement also claims that the SEC is focused on protecting investors and maintaining a fair, orderly, and efficient market. Insider trading cases, including the recent, high-profile prosecution of Raj Rajaratnam from Galleon Group, certainly protect us from those gaining unfair advantages at the expense of long-term investors. However, the Rajaratnam case—the largest insider trading scandal in our nation’s history—centers around only $53 million in ill-gained profits. Compare that to the SEC’s failure to stop the $68 billion Bernie Madoff Ponzi scheme, despite being tipped multiple times.

Although we praise the SEC for going after Rajaratnam, we can’t help but be disappointed in the agency’s seeming lack of action around HFT and the conflicts of interests in our market structure. HFT firms generate between $8 billion and $21 billion a year in profits. Tradebot, an HFT firm based in Kansas City, Missouri, in 2008 said it had
not had a losing day in four years. The last few years have shown quarterly earnings from big banks engaged in HFT. Several, including Goldman Sachs, have had quarters without one day of incurring a net trading loss. You might think, especially after the Madoff scandal, that these recurring, out-sized profits at the expense of investors would make the SEC call out the troops.

To appease the public, agency executives certainly appear to say the right things. In a December 3, 2009 letter to U.S. Senator Ted Kaufman, SEC Chair Mary Schapiro wrote the following:

Next month we hope to seek public comment, through a concept release or similar document, on a range of issues relating to dark liquidity in all of its forms, as well as the impact of high frequency trading in our markets. Among other things, we are likely to seek input on the various strategies used by high frequency traders and any special trading advantages they may enjoy, including through colocation arrangements. I am committed to pursuing the goal of improved intermarket surveillance as a means to strengthen our markets, deter and ferret out wrongdoing, and augment public confidence.

Although the SEC and CFTC have had their hands full with the post-financial crisis Dodd-Frank regulation to control risk at large banks, there is another element at play. You see, the SEC created all the regulations to “modernize” the markets over the past 15 years. It has written and revised the rules with the input of the stock exchanges and large brokerage firms—input that in many cases came from industry personnel who once worked at the SEC.

In other words, the SEC is the creator of our Franken-Market. And, as actor Colin Clive cried in the famous 1931 film about Mary Shelley’s monster, “It’s alive!”
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