Title: **What the CFTC really needs is a Ferrari[1]: The Regulation of High Frequency and**

Algorithmic Trading in the Dodd-Frank Era.

Introduction

For many Americans, the derivatives trading industry is like a big bad wolf masquerading in sheep's clothing—it is an unknown world of dark pools,[2] futures, swaps, options and acronyms that evoke fear because of their inherent complexity and nature as mechanisms dealing with risk. A result of the secret shroud and (often) opacity is that they are easily blamed when problems arise in the economy.[3] One sarcastic observer aptly quipped, "After all, shadowy computer geeks have built systems whose split-second trades account for *more than half the turnover* on U.S. equity markets. Here, surely, is a devil's cocktail of cut-throat finance and black-box technology—an unholy fusion of Gordon Gekko and *2001: A Space Odyssey*."[4] Not all the blame is unfounded however. Both the Commodity Futures Trading Commission (CFTC) and the Securities and Exchange Commission (SEC) have found that these "dark" markets and high frequency trading (HFT) practices were among the major contributing factors behind the May 2010 flash crash.[5]

On May 6, 2010, the financial industry had a fifteen minute heart attack when the Dow Jones Industrial Average experienced "its fastest decline *ever*."[6] Though they recovered a short time later, many major stock indexes and stock index futures prices fell more than five percent in mere minutes. Days after the crash no one new what actually caused it, though algorithms and high frequency traders took much of the blame.[7] Five months after the flash crash, a joint SEC and CFTC report confirmed suspicions by concluding that one massive trade sent the already skittish markets into shock.[8] The responsible firm[9] had utilized a specialized trading program to execute a sale of 75,000 futures contracts worth more than $4 billion.[10] Other high frequency traders rapidly accelerated the shock—they quickly dumped already purchased contracts back into the market and were aggressively selling while the Dow was in a tailspin.[11]

Despite being called a culprit of the May 6, 2010 flash crash[12] and blamed for playing a part in taking down the economy in the fall of 2008,[13] high frequency trading has established a prominent place in the U.S. economy.[14] Notwithstanding its need for a public relations makeover, HFT is likely here to stay. Thus, how the CFTC[15] regulates this trading methodology needs to be seriously addressed.

The challenge for government regulators like the CFTC is monitoring trading practices such as high frequency trading (HFT) where transmission speeds are nearing the speed of light.[16] Additionally, subsequent years of rapid innovation of new types of financial products meant that prior to July 2010 regulators were trying to referee a new game with new players but using the same old rules.[17] In the last decade the U.S. futures exchange[18] markets have undergone a complete metamorphosis.[19] This point cannot be overstated. The exchanges have moved from the open outcry pit environment where a federal market observer could physically walk among the traders watching for suspicious activity, to primarily electronic trading platforms.[20]

On July 15, 2010, Congress responded to the economic crisis and passed the Dodd-Frank Act—what has been called "the most ambitious overhaul of financial regulation in generations."[21] Among other goals,[22] the Dodd-Frank Wall Street Reform and Consumer Protection Act (hereinafter, Act or Dodd-Frank Act) seeks to address some of the macro-level futures trading industry weaknesses, increase transparency and generally provide better oversight and regulation of risk.[23] Though the Act provides a new regulatory skeleton established on solid rationale, it leaves much of the actual rulemaking work—putting "meat on the bones"[24]—to the relevant agencies. In this next year, the CFTC will, after a public comment process, create new rules for thirty areas addressed in the Dodd-Frank Act, including rules regarding disruptive trading practices and market manipulation.[25]

As Senator Edward Kaufman prophetically declared two months prior to the flash crash, we have yet to see the full magnitude of the devastation HFT can create.[26] The accelerated potential for future flash crashes, along with the increased ease of market manipulation using HFT technology highlight two areas of the CFTC's regulatory regime that remain in dire need of improvement. First, the CFTC needs to create rules establishing a threshold messaging volume ratio of total bids submitted to bids executed. This would create a rebuttable presumption of reckless intent to manipulate market prices by spoofing. Secondly, the CFTC needs a Ferrari. It needs a real-time monitoring system in the form of a High Frequency Observer that can accelerate from zero to near light speed right alongside the high frequency traders to catch market manipulation immediately. Finally, the CFTC needs to promulgate rules conferring responsibility on exchanges, FCMs and commodity pool operators (CPOs) for the creation, implementation and maintenance of risk management functionalities such as firewalls, circuit breakers and algorithmic backtesting.

This paper will focus on the effects of high frequency and algorithmic trading on the U.S. financial markets as well as the role of the CFTC in regulating the abuse and misuse of HFT, which can lead to market manipulation and future flash crashes. Part I will provide a background for the futures trading industry and the CFTC's regulatory role. Part II will discuss how CFTC regulation currently functions. Part III discusses three areas where CFTC regulation is currently lacking. Part IV proposes a new way forward, calling for clarification of disruptive trading strategies such as spoofing,[27] mandatory risk management functionalities and a real-time market surveillance vehicle. This Comment concludes that though the Dodd-Frank Act will help to light the way forward for economic reform it may have missed the mark by failing to provide

the CFTC with what it really needs to effectively regulate this technology driven futures industry—a Ferrari.[28]

I. Background for the futures trading industry and the CFTC's regulatory role

A. What are Derivatives and Futures Contracts?

As its name suggests, the Commodity Futures Trading Commission has jurisdiction to regulate derivative instruments known as futures.[29] Derivatives are a means to isolate and manage risk by shifting risk from the party who has little or no tolerance for it to another party who is willing to assume the risk either to manage its own exposure or to make money.[30] Though derivatives are contracts or payments exchange agreements with value in and of themselves, they initially *derive* their value (hence the name) from an underlying asset, reference rate or index.[31] Derivates come in varying shapes and sizes and are typically highly leveraged— meaning each party to the transaction (counterparty) is required to put down very little money to secure the transaction.[32] Though the different types of derivatives are all used to manage risk, the way they manage the risk as well as the costs associated with the transaction differ.[33]

Futures are one of four types of derivatives.[34] A definition of futures begins with a definition of forwards, as the two derivative types are closely related. Forwards are cash transactions between two (often commercial) counterparties who come together for the purpose of exchanging an agreed upon amount of a product, for a negotiated price at a designated future date or dates.[35] Thus, the forward contract fulfills the counterparties' fundamental need of product ownership and delivery. A futures contract on the other hand is like a forward contract: an agreement to purchase or sell a commodity in the future, but with standardized terms and traded on an exchange.[36] Indeed the hallmark of futures trading regulation is the requirement for futures transactions to occur on registered boards of trade or to be executed on a contract

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market.[37] Since a futures contract's primary purpose is to transfer price risk, parties will generally set terms of delivery according to the date of contract maturity but will avoid actual delivery through an offsetting transaction.[38]

Why is it important to distinguish a future from a forward? This single issue will determine whether the CFTC has authority to regulate the derivative product.[39] Though the CEA delineates the distinction in seemingly unambiguous terms—a futures contract as a contract "*for future delivery*"—it stops short of ever providing a definition.[40] Thus, courts have wrestled with how to draw a line between a contract that contemplates "*actual* future delivery" and one that is purely a means of speculation.[41]

So if the whole point of a futures contract is to *mitigate* risk, why are they so scary? Futures trading began in the United States as early as 1848.[42] When the futures markets made their debut, people referred to futures trading as "fictitious" trading or "wind dealing."[43] Set in the context of the pre-assembly line, craftsman era of the 1800s, these terms demonstrated the understandably "derogatory view" that futures markets "'enable[d] people to sell what they did not possess.'"[44] Negative public sentiment toward the futures markets has remained relatively unchanged into the 2000s despite the view shared by many economists that they have a positive overall economic impact.[45] Now, more than ever, the challenge is getting the public to believe this is truly the case.

B. High Frequency Trading

1. Definition of HFT

High frequency trading is a trading methodology, thus it refers to *the way* trades occur rather than the underlying instrument being traded. A simple definition of algorithmic trading is automating a trading strategy by using a computer.[46] Another definition of high frequency

trading is the "use of special software that works in milliseconds to make trades based on market changes."[47] Still another working definition describes HFT as "trading . . . that employs extremely fast automated programs for generating, routing, canceling, and executing orders in electronic markets."[48] The rapid innovation in HFT is exemplified by the average lifespan of an algorithm (as compared to a human trader)—a mere three months.[49]

Though this Comment uses the terms algorithmic and high frequency trading[50] synonymously, they can be referred to with slightly different implications depending on the individual referencing the term and the context in the industry.[51] Execution algorithms work to minimize the market impact[52] of a large order by slicing it into pieces in order to ensure a fair price.[53] HFT algorithms however, are solely concerned with profit.[54] HFT algorithms accomplish this by figuring out what to trade at the best possible time.

2. Capabilities of HFT and typical strategies employed

Even the fastest human trader cannot keep up with a high frequency algorithm because, "trades execute in 2 milliseconds" which is "150X faster than the blink of an eye."[55] In the time it takes a trader's eyes to read the necessary information and the brain to process that data and move the fingers to trade accordingly an "algorithm can have made and executed thousands of trading decisions."[56]

Algorithms are attractive to traders because they can be programmed to perform an unlimited number of trading strategies.[57] Algorithms can analyze across venues for "smart order routing" to aggregate liquidity.[58] They can execute highly complex, sophisticated trades using techniques like statistical arbitrage[59] and various types of spread trading.[60] Understandably, a critical element of successful multi-instrument strategies is achieving low latency.[61] The concept

is simple—the first to see the pattern that indicates a trading opportunity and to execute the trade gets the profit.[62]

A relatively new strategy is trading on the news. Firms create algorithms that can intake and analyze tagged news data and trade based on typical price movements following a news release before a human trader even has time to react.[63] Another example of HFT innovation is genetic tuning, where thousands of algorithms with minor variations are run parallel to the market (i.e. not actually trading live) and given real market data. Then, with some human expert control and guidance, "this . . . *Darwinian trading* allows [these] self-evolving systems to discover profitable opportunities through evolutionary processes."[64]

3. Positive and negative market impacts of HFT

Obviously HFT activity has increased substantially in the last decade.[65] What is less obvious is what impact this increase has had on the markets.[66] HFT does create some positive externalities because it: 1) creates more efficient markets, 2) increases trader productivity, 3) increases access to and therefore competition within markets, and 4) continues to expand the United States' role as a global economic leader.[67] Nevertheless, HFT also 1) accelerates and accentuates market movements, 2) increases risk exposure, 3) is more easily used to manipulate and thus more challenging to regulate and 4) can place a heavy burden on trading venues.[68]

Many industry professionals and academics report the U.S. markets have likely become more efficient with rising HFT activity.[69] One group[70] used efficiency indicators such as decreasing bid-ask spreads[71] and greater liquidity[72] in its study to answer that question. Liquidity is obviously a key aspect of functional markets, defined as "the ability of participants to trade the amount that they wish at the time they wish."[73] The study concluded there is in fact a positive correlation between the increasing percentage of involvement by HFT and healthy

markets.[74] Additionally, the bid-ask spread in the U.S. stock markets has continued to fall for the last thirty years, with a drop of a third in the last four years.[75] This is primarily due to the ability of algorithms to precisely track the order flow—meaning marketmakers can make quotes that are mere pennies of the clearing price, resulting in billions of dollars in savings.[76] Algorithms also minimize the market impact of large trades,[77] which results in lower execution cost.

Another positive contribution of algorithms in the marketplace is their ability to increase human trader productivity. With the help of algorithms, one trader can manage hundreds or thousands of times more orders than she would have been able to alone.[78] By virtue of this increased capability, (and contrary to popular opinion) firms do not have to be large conglomerates to be successful. One author suggested that approximately $200,000 would be enough for two people to run a small-scale profitable trading firm.[79]

Despite the well-deserved praise HFT has received, algorithms have proven more challenging to regulate than humans alone and their rise to prominence has not been entirely smooth. While algorithms increase a trader's productivity they also concurrently multiply that trader's risk exposure.[80] As a result, many firms and exchanges have built-in pre-trade risk strategies to mitigate the increased exposure, but these are far from foolproof.[81]

Even in a perfect world, things will not always go according to plan. Because pre-trade risk precautions are not mandatory, firms have different standards and protocol in place to ensure an algorithm is ready to go live in the market.[82] This means that sometimes algorithms go live with key pieces missing, or they in fact meet a scenario they are not programmed to deal with.[83] When this happens an algorithm "goes wild," which means it may place incorrect orders or submit a large stream of continuous orders—all of which will likely result in a significant loss.[84]

C. **History of the federal regulation of futures**

1. The early years and the Grain Futures Act

After many attempts to regulate or ban futures trading, Congress succeeded in passing the Futures Trading Act in 1921.[85] When it was declared unconstitutional by the Supreme Court a year later, Congress swiftly responded and in a mere two weeks introduced new legislation that mirrored the old.[86] The new legislation, the Grain Futures Act (GFA), cited congressional authority to regulate interstate commerce—and thus passed constitutional scrutiny.[87]

In February of 1934, the nation had entered the Great Depression and grain prices had utterly collapsed.[88] President Franklin D. Roosevelt called on Congress for more comprehensive regulation of the commodities markets.[89] Congress found the GFA had been "'almost a complete failure'" because it lacked any enforcement power and the grain exchanges were not upholding their self-regulatory end of the arrangement.[90] Therefore, Congress enacted the Commodity Exchange Act (CEA) in June 1936 effectively replacing the GFA and authorizing Federal regulation of a specific list of commodities "that includes cotton, rice, mill feeds, butter, eggs, and Irish potatoes, as well as the grains."[91] The CEA authorized the newly formed Commodity Exchange Commission[92] to set Federal position limits for speculative trading, but stopped short of giving the Commission the ability to mandate that exchanges set similar limits of their own.[93] Lastly, the CEA prohibited fraudulent transactions, required that futures commission merchants (FCMs) segregate customers' margin funds and banned trading in commodity options.[94] Though the CEA replaced the GFA, the core regulatory principle behind both Acts remains the requirement that futures trades be conducted on registered exchanges.[95]

Though the futures regulatory environment had come a long way, during the mid twentieth century the Commission was still struggling to manage its power sharing arrangement with the exchanges. The Commission reported that it was often considered "a tool of the

industry" because it had no enforcement power to punish CEA violators, even for small infractions, and instead it relied entirely on the exchanges to do so.[96]

2. Creation of the CFTC in 1974 to Present

In October of 1974 Congress passed the Commodity Futures Trading Commission Act that overhauled the CEA and gave the CFTC "exclusive jurisdiction over futures trading in all commodities."[97] Since its inception in 1974 the stated mission of the CFTC has been to "protect market users and the public from fraud, manipulation, and abusive trading practices related to the sale of physical and financial futures and options, and to foster open, competitive, and financially sound markets."[98] The CFTC has worked to achieve this through the years by, among other things, passing a litany of rules in accord with CEA authority.[99]

One of the most significant changes that occurred in the regulatory landscape prior to Dodd-Frank occurred in 1998; however, when Congress passed the Commodity Futures Modernization Act (CFMA) of 2000.[100] The CFMA comprehensively overhauled the CEA and purports to enhance the self-regulatory system, to prevent price manipulation and to generally thwart practices that would threaten market integrity.[101] The CFMA thus established a three-tiered regulatory scheme stratified by intensity of regulatory oversight.[102] It consists of regulated exchanges, organized markets subject to less regulation and unregulated markets.[103] Then, on June 18, 2008, the CFTC was reauthorized through 2013 pursuant to The CFTC Reauthorization Act of 2008.[104] This amendment increased the penalty for market manipulation and highlighted the severe consequences that can result from market manipulation.[105]

II. How CFTC Regulation Currently Functions

    A. The CFTC's Regulatory Mandate

The CFTC's primary responsibility includes "ensur[ing] that U.S. futures markets accurately reflect the underlying forces of supply and demand for all products traded, and that futures markets are free from fraud and abuse."[106] The CFTC is also responsible to ensure that all trading on regulated markets is "equitable, fair and transparent" because any activities anomalous to those goals could disrupt market integrity.[107] Prevention and detection of such negative practices that disrupt market integrity is purposefully mandated by the CEA.[108]

The CFTC acts as an umbrella overseeing the entire futures industry and it delegates substantial authority of self-regulation to the various exchanges and other self-regulatory organizations such as the National Futures Association (NFA).[109] The NFA and exchanges have specific bodies of rules that market participants must adhere to in addition to the CEA.[110]

One of four divisions at the CFTC,[111] the Division of Market Oversight is tasked with ensuring that natural market forces determine prices of underlying commodities through accurate measures of supply and demand.[112] Additionally, Market Oversight is responsible to oversee the futures and options markets and their respective execution facilities to "detect and prevent price manipulation, abusive trading practices and customer harm."[113]

In its monitoring role Market Oversight uses two systems, the Integrated Surveillance System (ISS) and the Trade Surveillance System (TSS).[114] ISS is utilized in market surveillance and it facilitates the storage, analysis, and mining of large trader data.[115] TSS is used for trade practice surveillance and while it also stores, analyzes and mines trade data it contains additional tools for automated surveillance, pattern detection and in-depth investigation of data.[116] Because

of its role ensuring exchange and FCM compliance,[117] Market Oversight is the division

concerned with prevention rules, such as this Comment's suggested rule regarding risk

management functionalities. Also, because of its monitoring and surveillance functions,[118] it

would also be interested in the detection rule requiring exchanges to develop real-time

surveillance capabilities in the form of a high frequency observer.

With an equally vital role, the Division of Enforcement is the investigative and

prosecutorial arm of the CFTC tasked with initiating charges against alleged violators of the

CEA and other CFTC regulations.[119] When the Division of Enforcement suspects any person of

"manipulating or attempting to manipulate . . . the market price of any commodity" it can initiate

civil proceedings against that individual.[120] The Division of Enforcement is thus the primary

vehicle for creating a rule establishing a rebuttable presumption of reckless intent to manipulate

market prices by setting a threshold messaging volume ratio of bids submitted to bids executed.

As the CFTC receives evidence of alleged violations, the remedies available allow it to 1)

prohibit the individual from trading on a registered entity for a specified period of time, 2)

suspend or revoke the individual's registration, 3) assess civil penalties of up to $1 million

dollars or treble any monetary gain that the individual received, and 4) require the alleged market

manipulator to make restitution to customers of all damages proximately caused by the conduct

in violation of the CEA.[121] The CFTC has sufficient remedies at its disposal and the penalties it

can impose are proportionate to discourage participation in manipulative activity.

B. Effect of the Dodd-Frank Wall Street Reform & Consumer Protection Act

2010 marked a significant year in the history of the CFTC and the futures industry. On

May 6, 2010, the aforementioned flash crash occurred.[122] A month later the CFTC was again in

the headlines when it, for the first time, approved a motion picture performance based on futures

contracts.[123] And merely a month after that, in July 2010, President Obama signed the Dodd-Frank Wall Street Reform and Consumer Protection Act, which states in relevant part,

> Title VII of the Dodd-Frank Act amends the Commodity Exchange Act to establish a comprehensive new regulatory framework for swaps and security-based swaps. The legislation is enacted to reduce risk, increase transparency, and promote market integrity within the financial system by, among other things: 1) providing for the registration and comprehensive regulation of swap dealers and major swap participants; 2) imposing clearing and trade execution requirements on standardized derivative products; 3) creating robust recordkeeping and real-time reporting regimes; and 4) enhancing the Commission's rulemaking and enforcement authorities with respect to, among others, all registered entities and intermediaries subject to the Commission's oversight.[124]

Dodd-Frank's main stated goal is to mitigate systemic risk—for the CFTC, this means increasing fairness for all futures and options market participants (as well as some swaps and OTCs) and harmonizing regulatory schemas and strategies among responsible agencies and various international regulators.[125] The accomplishment of these over-arching goals will inevitably help to create a better regulatory framework for all futures trading professionals, including HFT.

Specifically, the Act delegates to the CFTC rulemaking authority in many areas,[126] including new authority to promulgate rules regarding disruptive trading practices[127] and adds to existing CEA authority to prohibit market manipulation.[128] The Act also outlines the creation of another layer of oversight, the Board of Directors, which has authority to review and make determinations regarding the sufficiency of the rules set forth by the CFTC.[129]

C. CFTC's Authority to Fulfill its Mandate

Dodd-Frank gives the CFTC authority to, "make and promulgate such rules and regulations as, in the judgment of the Commission, are reasonably necessary to prohibit the trading practices described in paragraph (5) and any other trading practice that is disruptive of fair and equitable trading."[130] Paragraph (5) makes it illegal for any person to engage in any

> "*trading, practice, or conduct . . .* that (A) violates bids or offers; (B) demonstrates intentional or reckless disregard for the orderly execution of transactions during the closing period; or (C) is, is of the character of, or is commonly known to the trade as, 'spoofing' (bidding or offering with the intent to cancel the bid or offer before execution)."[131]

Because the statute permits the CFTC to make rules that *prohibit* and not just deter disruptive conduct, it follows that a high threshold for compliance and equally strict penalties would be "reasonably necessary" to prevent disruptive conduct. Along with the authority to prohibit disruptive trading practices, Dodd-Frank amends the CEA to include two new sections prohibiting manipulation[132] that will be discussed further in the section analyzing the Proposed Prohibition of Market Manipulation rule.

D. Current Prevention and Detection Actions

The CFTC has recently proposed or finalized four rules regarding HFT. These rules include: Co-Location/Proximity Hosting Services,[133] Account Ownership and Control Report,[134] an advanced notice of proposed rulemaking (ANPR) on the Antidisruptive Practices Authority Contained in the Dodd-Frank Wall Street Reform and Consumer Protection Act[135] and a notice of proposed rulemaking on the Prohibition of Market Manipulation.[136]

1. Co-Location Final Rule

Co-location or proximity hosting services are essential to high frequency traders because they are engaged in a latency race where speed equals profits.[137] Identifying a trading opportunity a microsecond ahead of another competitor can mean the difference between profit and loss. Since the laws of physics have proven that closer equals faster many firms are "co-locating" their trading operations in close proximity to the exchange where the trades occur.[138]

The Co-Location Rule has an "equal access" requirement that requires these services be available to all participants who are willing to pay for them, thus preventing any discrimination in accord with the CEA and Commission Regulations.[139] Additionally, any fees charged could

not be set so high that some individuals are unable to participate, thus becoming an "artificial barrier" to access.[140] These principles of equity and uniformity are two of the CFTC's stated goals and therefore should also govern the implementation of the two suggested rules regarding risk management functionalities and real-time surveillance capabilities in the form of a high frequency observer.[141]

2. Account Ownership and Control Report

The Account Ownership and Control Report (OCR) rule would give the Commission the ability to use its existing surveillance systems more effectively, increase market transparency and enhance the interconnected efforts of various programs in the Commission dedicated to surveillance, enforcement, and research.[142] Traditionally the Commission has received its information from larger trader reports and exchange trade registers,[143] and in this rule it seeks to expand that database to include "ownership and control information for all trading accounts."[144] The rule seeks to address the specific regulatory challenges presented by increasing economic integration of contracts that are linked to multiple platforms.[145] Because these contracts are linked, it is possible to trade on one market in a way that distorts activity on another or to engage in cross-market abusive practices.[146] In addition to the challenge of monitoring complicated linked contracts, today's surveillance is achieved via data analysis rather than having an on-site observer.[147] While technological innovations have greatly improved the variety of data components available for analysis by the Commission, the coexistent increase in volume of trade information has created a daunting Everest of data to mine.[148] This rule therefore serves the Commission by helping it to leverage and utilize the information it receives in new ways.[149]

3. Antidisruptive Practices Authority

The Advanced Notice of Proposed Rulemaking (ANPR) regarding Antidisruptive Practices outlines the CFTC's authority delegated in Dodd-Frank to prohibit the enumerated disruptive trading practices specifically, and then to promulgate rules prohibiting "any other trading practice that is disruptive of fair and equitable trading" in general.[150] In the ANPR the Commission's primary purpose is to invite comments on Section 747 of the Dodd-Frank Act. To that end it asks nineteen multipart questions seeking public comments responding generally as well as very specifically to the issues therein.[151] It mentions definitions of orderly execution, liability of executing brokers for disruptive customer trades, definition of spoofing and regulating the use of algorithmic and automated trading systems, among other things.[152] Because these practices are relatively new means of disrupting trading they can easily be confused for legitimate practices. Therefore, the Commission demonstrates how keenly it needs input from the industry in promulgating an appropriate rule.[153]

The Antidisruptive Practices ANPR states the CFTC has authority to promulgate "'rules and regulations as, in the judgment of the Commission, are *reasonably necessary* to prohibit the trading practices' enumerated in Section 747" of the Act.[154] The terms "reasonably necessary" used by the Legislature suggest a wide spectrum of actions giving the CFTC a lot of discretion and flexibility in fashioning the appropriate rules.[155] This phrase, "reasonably necessary," combined with the authority to prohibit "any other trading practice that is disruptive of fair and equitable trading," strongly suggests the CFTC has an unprecedented power to pass rules regarding any number of disruptive practices.[156] It is on this platform that this Comment proposes the CFTC create rules regarding a rebuttable presumption of reckless intent to manipulate prices by establishing a volume ratio threshold of bids submitted to bids executed.

4. Prohibition of Market Manipulation

The Prohibition of Market Manipulation rule closely tracks the statutory language Dodd-Frank language and includes two sections of concern here: CEA § 6(c)(1) and CEA § 6(c)(3).[157]

Section 6(c)(1) is a broad prohibition on fraud-based manipulative schemes.[158] The Commission notes that Congress modeled section 6(c)(1) after section 10b of the Securities Exchange Act (SEA) of 1934.[159] Courts have interpreted section 10b of the SEA as a "catch-all" provision to "cover intentional or reckless conduct that deceives or defrauds market participants."[160] Following the legislature's lead, the CFTC has proposed its implementation rules modeled after the rules promulgated by the SEC to implement SEA § 10b.[161]

New section 6(c)(1) is distinct in its enlarged scope, as it "prohibits the use or employment of 'any manipulative or deceptive device or contrivance' in trading swaps, forwards, futures or options.[162] Under the SEC Rule 10b-5, courts have interpreted this same language to prohibit "*all practices* 'that are intended to mislead investors by *artificially affecting* market activity.'"[163] In accord with judicial precedent, the CFTC has proposed that this section be interpreted broadly.[164] 6(c)(1) also follows SEA precedent by proposing that a person must act with "scienter"—either intention to manipulate or defraud or recklessness—to be charged with violating the statutory provision or the implementing rule.[165]

Section 6(c)(3), "Other Manipulation," adds an additional blanket prohibition on price manipulation in all forms.[166] In this proposed rule, the CFTC proposes that the prohibition on attempted and actual price manipulation be interpreted to cover any efforts to illegally affect the price of "swaps, commodities or a commodities futures contract" with the intention to "interfere with the legitimate forces of supply and demand in the marketplace."[167] The Commission then reaffirms the traditional four-part test to prove manipulation: "'(1) That the accused had the ability to influence market prices; (2) that they specifically intended to do so; (3) that artificial

prices existed; and (4) that the accused caused the artificial prices.'"[168] The third element has

historically been a challenge to prove, requiring extensive and often inconclusive economic

analysis. Thus, the Commission adds "an illegal effect on price can often be conclusively

presumed from the nature of the conduct in question and other factual circumstances not

requiring expert economic analysis."[169] That is, if the CFTC can prove the actions of the alleged

manipulator, then it will be presumed that prices were "affected by a factor not consistent with

normal forces of supply and demand."[170]

III. Where CFTC Regulation is Lacking

A. No clear guidelines delineating spoofing

One effect of the presence of high frequency trading in the futures industry is a more

technologically complex environment.[171] In this environment, manipulative techniques happen

as quickly as the trades themselves, and therefore are difficult to identify, prevent or terminate.[172]

Algorithmic traders are able to almost instantaneously submit bids and offers and then modify

them concurrently with market changes—the original orders are cancelled and replaced with

orders based on the up-to-the-millisecond information.[173] A very similar practice, called layering

or spoofing, occurs when algorithms submit orders or a series of orders with no intention to win

the trade, but merely to cause the price to jump upward due to the falsely induced rise in

demand.[174] The orders that caused the price movement are then canceled or modified before

execution so the trader can buy when the price has reached a more profitable level.[175] Though

spoofing was declared illegal by Congress in Dodd-Frank,[176] what behavior rises to this

manipulative level and thus is not part of normal trade practice has yet to be articulated.[177]

As mentioned above, the proposed Prohibition on Market Manipulation rule gives the

CFTC more latitude to find manipulation, what was previously a nearly impossible cause of

action to maintain.[178] Nonetheless it falls short of providing clarity and guidance for market participants because it does not specify what conduct is "artificial" and what is legitimate.[179] Industry professionals have bemoaned this lack of clarity and have asked the CFTC to clearly distinguish between disruptive trading practices and what is inherent in the technological trading environment.[180] Because abusive practices such as spoofing and wash trades can and do sometimes occur where intent to manipulate is not present, the CFTC needs to pass a rule establishing a threshold messaging volume ratio creating a rebuttable presumption of reckless intent to manipulate the market by spoofing.[181]

B. No mandated pre-trade risk checks

One of CFTC's questions for the public is "[w]hat pre-trade risk checks should executing brokers have in place to ensure customers using their automated trading systems, execution systems or access to their trading platforms do not engage in disruptive trade practices?"[182] As the SEC articulated in its Proposed Risk Management Controls, because today's markets are automated and moving much faster than human traders ever could, effective pre-trade risk controls are important and necessary to preventing catastrophic losses.[183] Though some exchanges, such as the CME Group,[184] currently have pre-trade risk controls in place, without a uniform standard across all platforms traders could engage in regulatory arbitrage.[185] This Comment proposes three pre-trade risk controls that market participants and exchanges should bear the responsibility to impose: firewalls, algorithm backtesting and circuit breakers.

C. Rules do not Establish Real-Time Monitoring

Though the Proposed OCR does delineate where it will get information from and what that information will contain, it still does not mandate real-time automated surveillance.[186] Despite the laudable step in the right direction, it simply is not enough.[187]

Why is real time monitoring so important when the CFTC already gets all the trade data it needs prepackaged at the end of each day?[188] Well the CFTC, like everyone else on May 6th (including the SEC), had no way of detecting or preventing the flash crash.[189] It could not ascertain who was trading in such large volume so quickly or see that the aggressive selling by HFTs was contributing to the speed of the price freefall.[190] Though many instruments quickly recovered after the crash, only the most extreme trades during the highly volatile period were broken—thus many individuals and institutions still lost significant amounts of money.[191]

IV. The Way Forward

The two prongs of this Comment's proposal follow the CEA's demarcation in arguing that the CFTC needs better prevention rules and detection rules.[192] The first prevention rule would create a threshold volume ratio of total order messages (including cancellations and modifications) to orders fulfilled. This would establish a rebuttable presumption of the intent to manipulate the market by spoofing. The second prevention rule would mandate exchanges and FCMs establish three pre-trade risk precautions: firewalls, circuit breakers and backtesting. The detection rule would require exchanges to establish real-time automated surveillance capabilities for monitoring market and trade conditions.

A. Clarification of Spoofing

The first prevention rule would create a threshold messaging volume ratio of total order cancellations to fulfillments that establishes a rebuttable presumption of the intent to manipulate the market by spoofing.[193] The Dodd-Frank Act defines spoofing in paragraph (C) as, "bidding or offering with the intent to cancel the bid or offer before execution."[194] The CFTC asked in its ANPR Antidisruptive Practices, "Should the Commission separately specify and prohibit the following practices as distinct from 'spoofing' as articulated in paragraph (C)? Or should these

practices be considered a form of 'spoofing' that is prohibited by paragraph (C)?"[195] The

following practices referenced are: "a. Submitting or cancelling bids or offers *to overload* the

quotation system of a registered entity, *or delay another person's execution* of trades; b.

Submitting or cancelling multiple bids or offers *to cause* a material price movement; c.

Submitting or cancelling multiple bids or offers *to create an appearance* of market depth that is

false."[196]

The definition of spoofing in the statute specifies a knowing or purposeful *mens rea*, "to

cancel the bid or offer before execution." Since the definition of spoofing is located in the

disruptive practices section, it follows that cancelling these bids or orders can become a form of

manipulation.[197] Practices "b" and "c" outlined by the CFTC fall into the manipulation or

attempted manipulation[198] category because the practices seek to "cause a material price

movement" or "create a [false] appearance of market depth."[199] Thus they should be classified

as manipulative spoofing.

However, because practice "a"—"Submitting or cancelling bids or offers *to overload* the

quotation system of a registered entity, *or delay another person's execution* of trades"—does not

specifically indicate a desire to modify prices or market depth (which can be used as a price

indicator), it has a distinct quality. This type of spoofing attempts to hinder trading by other

participants in some way, and therefore affects the integrity of the market and equitable

participation among members.[200] The practice obviously falls under the definition of spoofing

and is within the Commission's authority, thus it should be included in the category of spoofing,

however without the price manipulation *mens rea*.

The CFTC is also seeking comments whether there are ways to distinguish spoofing from

"the submission, modification, and cancelation of orders that may occur in the normal course of

business."[201] This Comment suggests the CFTC create a rule that establishes a threshold of

excessive messaging activity that creates a rebuttable presumption of spoofing. For example if a

trader cancels or modifies more than X% of bids or orders during X number of days in a given

month, the burden is on the trader to prove he is not spoofing either recklessly or with the intent

to manipulate prices. Setting a clear threshold line would eliminate confusion and establish

security for traders operating via HFT. It follows that once a trader exceeds this threshold of

excessive messaging, the CFTC would merely have to prove this trader's actions did in fact

occur and then the conclusive presumption that the resulting price is artificial would follow.[202]

The volume of order messages, transactions and market data messaging has grown

dramatically since the advent of HFT.[203] Yet in addition to processing the billions of legitimate

order messages, exchanges must also manage inefficient or excessive messaging that is harmful

to orderly and fair markets.[204] Excessive messaging burdens venues, causing increased latency

and slows down trading for all participants.[205] This could motivate traders to migrate to other

faster venues and withdraw liquidity from the over-burdened venue, further harming trading

activity.[206] Additionally, excessive messaging may be symptomatic of an attempt to spoof the

market and disrupt the natural price discovery process.[207]

The CME Group has systems at its Globex Control Center that serve as a real-time

monitor of messaging and order flow.[208] The monitor is programmed to alert when the order

flow rises above a certain threshold.[209] CME Group has begun to not only monitor the volume of

participants' new order, order cancel and order replace messaging, but it also has started

charging a fee for excessively high messaging volume in order to discourage abuse.[210] Each

market has product-specific messaging benchmarks that are set to correspond with valid trading

strategies.[211] Thus clearing members are subject to the surcharge if they exceed the

benchmark.[212] These volume benchmarks are a ratio of the number of messages submitted for each fulfilled or executed contract in a particular product.[213] Not only do members incur the surcharge if they exceed the volume benchmark, but their messaging abilities are briefly suspended until the ratio returns to acceptable levels.[214]

Dodd-Frank makes it illegal for any person to engage in any "*trading, practice, or conduct . . . [that] is, is of the character of,* or is commonly known to the trade as, 'spoofing' (bidding or offering with the intent to cancel the bid or offer before execution)."[215] Excessive messaging is a *practice* or *conduct* that *is of the character of* bidding or offering with the intent to cancel before execution because if someone is submitting *excessive* bids or offers it follows that there will be many more bid or offer messages than trades executed.[216] Thus even if a trader does not have an intentional *mens rea* to spoof the market or create an artificial price, she would be reckless in messaging so excessively because she would be consciously disregarding a substantial or unjustifiable risk that the circumstances to spoof exist, or that the prohibited result (price manipulation) will follow.[217] Excessive messaging in the HFT context therefore constitutes recklessness, a gross deviation from the standard of care a reasonable person would exercise in the situation.[218]

B. Mandatory Pre-trade Risk Precautions

The SEC's Risk Management Controls for Brokers or Dealers with Market Access requires brokers or dealers who have direct market access or who offer sponsored access to their customers to have controls and procedures in place to supervise and manage that risk.[219] The CFTC should model its risk management functionality rules for FCMs and commodity pool operators (CPOs) after the Risk Management Control Rule.

The Risk Management Control Rule sets forth broker liability for all trades occurring under her market participant identifier (MPID).[220] Some broker-dealers do not have any procedures in place to manage trade risk before the trades go live or they may rely on customer assurances of pre-trade risk management controls.[221] The Proposed Risk Management Controls rule addresses this concern by requiring broker-dealers to have systems in place to manage risk that are "*reasonably designed* to detect malfunctions and prevent orders from erroneously being entered as a result," and that are able to identify and block such orders individually or for a given period.[222] The Risk Management Control Rule also places primary responsibility for establishing the risk management functionalities not on the regulatory commission involved, but on those with the requisite equipment and market presence—broker-dealers in the industry.[223]

Though the rule makes broker-dealers responsible to set up, maintain and continuously monitor the risk management controls, it nonetheless allows broker-dealers the flexibility to establish the controls and procedures in a way that suits his or her customer base and the specific type of trading engaged in.[224] However the broker-dealer patterns the controls, they must be *reasonably designed* to achieve the goals set forth in the rule.[225] This standard of reasonable design is sufficient to establish liability for intentional and reckless conduct in failing to enact appropriate risk management controls, however it protects broker-dealers from liability for extreme events and situations that even reasonably designed systems would not be able to prevent.

The Risk Management Control Rule applies in the equities markets and establishes a mandatory minimum threshold of precaution for all broker-dealers with market access, creating uniformity and clarity for participants.[226] Because the securities and derivatives markets are increasingly intertwined, the CFTC needs to establish a correlating comprehensive rule for

FCMs and CPOs operating under its jurisdiction.[227] Both markets use HFT and both are vulnerable to the issues and costly mistakes these trading practices inherently invite.[228]

1. Firewalls

Current technology is able to determine before the fact what impact a trade would have on the market according to pre-defined risk thresholds.[229] If a trade would exceed the pre-determined threshold, a firewall would block it from going to market.[230] Similarly, firewalls could prevent erroneous trades and ensure algorithms that have gone wild do not continue sending out trading signals.[231] Firewalls are beneficial for all market participants in preventing losses and increasing regulatory efficiency.[232] Thus, the CFTC should propose a rule requiring FCMs and CPOs to establish firewalls as part of their risk management controls.

2. Circuit breakers

Circuit breakers are a means to stop trading in the event of an extreme price drop for a short period of time in order for the markets to "catch their breath" and respond appropriately.[233] Currently the CME Group has a stop logic function that pauses order matching (but still allows entry of new orders and order modification or cancellation) for a brief period of time, typically between 5 - 20 seconds, to allow market participants to supply liquidity while the markets stabilize.[234] Similarly, a German exchange has implemented a circuit breaker mechanism which would prevent a flash crash scenario from occurring by interrupting continuous trading if a bid falls too far outside predetermined price parameters.[235]

Yet circuit breakers will not be helpful unless there are consistent standards across venues and platforms for when to invoke the breakers.[236] In its proposed Co-Location rule the CFTC established an equitable standard to ensure that industry members seeking proximity

hosting will have equal access.[237] In the same way, the CFTC should establish uniform requirements across platforms to prevent any unfairness to market participants.

3. Backtesting

Backtesting or simulation is a means of testing an algorithm before it goes live to determine how it will perform in specific market conditions or scenarios.[238] Similarly, simulation strategies involve creating a virtual market that an algorithm can put its orders into.[239] Though backtesting and simulation will never be able to predict perfectly what will happen in the future, they can be very useful tools to mitigate risk of destructive algorithm performance.[240]

In setting these mandatory minimum requirements the CFTC should maintain a priority of establishing consistency across platforms and venues. This consistency is the key to preventing inequality and the occurrence of flash crash type scenarios in some venues but not others.

C. Mandatory real-time automated surveillance capabilities for monitoring market and trade conditions

1. A new detection vehicle—a Ferrari

What the CFTC really needs to effectively regulate HFT is a vehicle that can stay in the game and keep up with ever-advancing technology: a Ferrari.[241] As previously noted, the United Kingdom economic regulator first drew the analogy that high frequency traders "are driving Ferraris and regulators are trying to catch them on bicycles."[242] The model of "Ferrari" this Comment proposes, is in the form of a High Frequency Observer.[243] Though the term High Frequency Observer is the author's, the idea stems from an early practice by the Grain Futures Administration. Throughout the Chicago Board of Trade trading sessions, the GFA maintained a human observer on the floor of the pit.[244] Though "members complained when the observer

entered the pits, the Administration found this necessary in order to obtain *a true picture of the trading operations*, particularly on days when price fluctuations were unreasonably wide."[245]

Placing it in current context, a High Frequency Observer would offer the CFTC a "true picture of trading operations" by being "in the pit" of today's futures marketplace.[246] As discussed above, because the speed inherent in the HFT industry makes it particularly challenging to regulate, a High Frequency Observer would give the CFTC real-time visibility, monitoring and surveillance capabilities.[247] The Proposed Risk Management Controls put forth by the SEC illustrate the need for rapid detection and response mechanisms by regulators in its hypothetical example of an erroneous algorithmic trade: "If, for example, an algorithm [capable of placing more than 1,000 orders per second] malfunctioned and placed repetitive orders with an average size of 300 shares and an average price of $20, a *two-minute delay* in the detection of the problem could result in the entry of, for example, 120,000 orders valued at $720 million."[248] How can the CFTC effectively regulate this type of playing field, where a two minute delay can result in billons lost when it does not have real-time market surveillance capabilities? Although errors of this scale may be infrequent[249] algorithmic trading errors do occur on fairly regularly.[250]

The CME Group has developed a model of near real time surveillance that should be used as a template for High Frequency Observer development. CME Group currently has the ability to capture all trading data and aggregate it for regulatory analysis, including profiling participants, reviewing their positions and creating live alerts linked to position and volume which are triggered when abnormal activity is detected.[251] It maintains two surveillance systems, SMART and RAPID.[252] SMART is focused on pattern detection capabilities within large quantities of data.[253] It contains applications used by analysts to rearrange the data based on specific types of patterns or abusive behaviors they are looking for.[254] RAPID however contains

detailed information on orders, transactions and activity that gives analysts the ability to view market activity and reconstruct order books.[255] Most importantly, it allows for "near real-time reconstruction of participants' view of the displayed markets," the goal of the HFO.[256]

The goal of this Comment is not that the CFTC eclipse the self-regulatory function of the exchanges, it is that the CFTC would be better equipped with the best technology and access to market and trader information so as to ride in tandem with exchanges. This Comment proposes that the CFTC enact a rule requiring all exchanges to develop the type of surveillance capabilities established by the CME Group (their own High Frequency Observer), and create a means of sharing that access to information with the CFTC.[257] Not only would the High Frequency Observer be equipped to see trades as they occur, but it would also be able to record all the relevant data for offline pattern analysis and investigative purposes.[258]

2. Financing the Ferrari

Dodd-Frank dramatically increased the CFTC's responsibility to regulate billions more contracts in new areas such as swaps and OTC derivatives, placing demands on the CFTC's already limited resources without making any deposits in the bank.[259] Since the CFTC needs a High Frequency Observer to keep up with the frenetic pace of HFT, either the CFTC needs more taxpayer funds to develop its own HFO, or as this Comment suggests, the exchanges and their customers are best situated to bear the cost.[260] The industry should bear the costs of initiation because they are best situated to create a system tailored to their specific operations.[261] The issue is simple—Ferrari's aren't cheap. If the CFTC wants to keep up, it needs to get in the race.

Conclusion

The futures trading industry has grown up. No longer conducted in pits with traders wearing brightly colored jackets, the industry is sophisticated, unbelievably complex and trading

by the millisecond. No longer are advanced trading methodologies such as high frequency trading for experimental labs accessed only by the elite. The rapid changes in trading methodology and the overwhelming presence of HFT mean that the CFTC must find a way to evolve alongside the market or risk falling into the role of spectator. The challenges for the CFTC in regulating HFT are many, including the lack of clarity in the current rules regarding disruptive trading practices such as spoofing, the absence of mandated pre-trade risk controls and the ex post regulation done without real-time surveillance.

With the advent of new trading mechanisms such as HFT the lines separating pure competition from manipulation have been blurred. Consequently the CFTC first needs to clarify what conduct rises to the level of spoofing. It should do this by setting a threshold messaging volume ratio of cancellations and modifications to fulfilled orders, creating a rebuttable presumption of intent to manipulate prices via spoofing. Secondly, the CFTC needs to mandate effective pre-trade risk management functionalities, such as firewalls, circuit breakers and algorithmic backtesting. Without a uniform requirement exchanges may opt out of all risk controls in order to increase latency. Lastly, the CFTC needs a means to keep up. After the single fastest decline occurred in the history of the Dow Jones Industrial Index, the CFTC was no more able than others in the industry to decipher what caused the flash crash. The CFTC needs a heightened ability to detect, market manipulation—a real-time monitoring system in the form of a High Frequency Observer that can accelerate from zero to near light speed right alongside the high frequency traders to catch market manipulation immediately. The Dodd-Frank Act will likely prove helpful in reducing systemic risk, in part by requiring more of the CFTC in its regulatory capacity. Yet more is needed. What the CFTC really needs is a means to stay in the race—a shiny new Ferrari.

[1] John Bates, *Algorithmic Trading and High Frequency Trading: Experiences from the Market and Thoughts on Regulatory Requirements*, *in* TECH. ADVISORY COMM., U.S. COMMODITY FUTURES TRADING COMM'N, TECH. TRADING IN THE MKT.S (July 14, 2010) (crediting the Financial Services Authority, the United Kingdom economic regulator, as the first to say that regulators need "Ferraris as police cars" when it commented, "'[HFT] traders are driving Ferraris and regulators are trying to catch them on bicycles.'")

[2] B. Boultwood, *HFT and Algorithmic Trading Issues and Regulatory Considerations*, *in* TECH. ADVISORY COMM., U.S. COMMODITY FUTURES TRADING COMM'N, TECH. TRADING IN THE MKT.'S, 1 (July 14, 2010) (explaining that dark pools are often set up by broker-dealers to facilitate over the counter transactions of large blocks of equity for institutional investors in order to ensure fair pricing and discounted fees. The name "dark" comes from the practice of keeping prices invisible.)

[3] *See* David S. Jacks, *Populists versus theorists: Futures markets and the volatility of prices*, 44 EXPLORATIONS IN ECON. HIST. 342, 342-362 (2007) (discussing the general antagonistic sentiment toward the futures trading industry and its professionals because of lack of understanding of market functions).

[4] Sebastian Mallaby, *We Should Clone Robo-traders Rather than Revile Them*, FIN. TIMES (Sept. 21, 2010), http://www.ft.com/cms/s/0/a6342210-c5b5-11df-ab48-00144feab49a,s01=1.html (emphasis added).

[5][5] U.S. COMMODITY FUTURES TRADING COMM'N, U.S. SEC. & EXCH. COMM'N, FINDINGS REGARDING THE MARKET EVENTS OF MAY 6, 2010 (Sep. 30, 2010) (hereinafter, Joint Report).

[6]Kara Scannell & Tom Lauricella, *Flash Crash Pinned on One Trade*, 79 WALL STREET JOURNAL A1, October 2-3, 2010 (emphasis added).

[7] Giles Nelson, *Keeping a Watchful Eye on the Markets*, PROGRESS SOFTWARE, http://web.progress.com/en/capital-markets/giles-nelson-watchful-eye-markets.html, (last visited Sept. 22, 2010).

[8] *Id.*; Joint Report, *supra* note 5, at 6.

[9] Scannell & Lauricella, *supra* note 6, at A1 (Though the name of the firm is not mentioned in the official joint report, Scannel & Lauricella and others believe the responsible firm to be Waddell & Reed Financial Inc. based in Overland Park, Kansas.)

[10]*Id.*

[11]*Id.*

[12] Joint Report, *supra* note 5, at 6.

[13] Bart Chilton, Comm'r, U.S. Commodity Futures Trading Comm'n, Resources: Statement Regarding CFTC Funding, (Sep. 28, 2010), http://www.cftc.gov/PressRoom/SpeechesTestimony/CommissionerBartChilton/chiltonstatement 092810.html.

[14] Bates, *supra* note 1. *See also US Equity High Frequency Trading: Strategies, sizing and market structure*, The TABB Group, www.tabbgroup.com (suggesting that the majority of U.S. trade volume is HFT and explaining that though the media has "portrayed [algorithms] and [high frequency trading] as some dark, mysterious, unfair and elite practice. . . . In fact capital markets are a major part of the U.S. economy and a key part of its economic leadership in the world.").

[15] Obviously the SEC also regulates some instruments that are traded using HFT, but the role of the CFTC is the scope of this Comment.

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[16] Bates, *supra* note 1.

[17] *Financial Regulatory Reform A New Foundation*, U.S. TREASURY REP., 2 (June 17, 2009), http://www.financialstability.gov/docs/regs/FinalReport_web.pdf) ("[R]isk management systems did not keep pace with the complexity of new financial products.").

[18] This comment uses the term "exchange" broadly, referring to Designated Contract Markets (DCMs), Derivatives Transaction Execution Facilities (DTEFs), and what will be known in the future as Swap Execution Facilities (SEFs).

[19] Account Ownership and Control Report, 75 Fed. Reg. 41775, 41777 (U.S. COMMODITY FUTURES TRADING COMM'N, proposed July 19, 2010) (to be codified at 17 C.F.R. pt. 16) (hereinafter Proposed OCR) ("DCMs, (Designated Contract Markets) in particular, have undergone a decade long transition from geographically-defined trading pits to electronic platforms with global reach."); Gary Gensler, Chairman, U.S. Commodity Futures Trading Comm'n, Opening Statement before the Technology Advisory Committee (July 14, 2010), http://www.cftc.gov/PressRoom/SpeechesTestimony/ChairmanGaryGensler/genslerstatement071410.html (hereinafter Gensler, Statement before the Technology Advisory Committee); Scott D. O'Malia, Comm'r, U.S. Commodity Futures Trading Comm'n, Statement at the Meeting of the Commodity Futures Trading Commission to Discuss: Futures and Binary Options Based on Box Office Receipts, (May 19, 2010), http://www.cftc.gov/PressRoom/SpeechesTestimony/CommissionerScottDOMalia/omaliastatement051910.html (hereinafter, O'Malia, Futures and Binary Options Based on Box Office Receipts) (addressing the fundamental changes in the way trading happens because technology now drives market information, clearing and settlement, trade strategies, trade executions. He

declares "we have seen an unprecedented shift from trading in a physical pit to trading in a virtual pit that spans the globe.")

[20] Proposed OCR, *supra* note 19, at 41777.

[21] Brady Dennis, *Congress Passes Financial Reform Bill*, WASH. POST (July 16, 2010), http://www.washingtonpost.com/wp-yn/content/article/2010/07/15/AR2010071500464.html?sid=ST2010071504699, *see also* Jill E. Sommers, Comm'r, U.S. Commodity Futures Trading Comm'n, Clearinghouses as Mitigators of Systemic Risk, Remarks Before the Capital Markets Consortium (Sept. 30, 2010), http://www.cftc.gov/PressRoom/SpeechesTestimony/CommissionerJillESommers/opasommers-10.html (hereinafter Sommers) ("Not since the [CEA] and the securities laws were passed in the 1930s has there been such a dramatic reshaping of financial markets to better serve the public by strengthening regulation . . . and eliminating inefficiencies.")

[22] *See also Remarks On Financial Regulatory Reform*, 2009 DAILY COMP. PRES. DOC. 474, pg (June 17, 2009) (hereinafter Remarks on Regulatory Reform) (speaking on the goal of financial regulatory reform, President Obama articulated the goals of encouraging innovation and competition but thwarting the efforts of those who game the system)

[23] *See* Dodd-Frank Wall St. Reform and Consumer Prot. Act of 2010, 7 U.S.C. § 1 et seq. (2010) (hereinafter Dodd-Frank Act). *See also* Remarks on Regulatory Reform, *supra* note 22, at 1, 3 (positing that innovators in the market knew that they were taking risks but may not have understood the full extent of those risks. President Obama also argues that many market participants had grown complacent because the economy was in a time of growth and presumably fine, and therefore were not vigilantly searching out flaws in the system.)

[24] Sommers, *supra* note 21 ("Now that Congress has done its part over the last year and given us Dodd-Frank, regulators are tasked with putting meat on the bones by crafting the many regulations required to give effect to the statute.")

[25] CFTC, *Dodd-Frank Act*, http://www.cftc.gov/LawRegulation/DoddFrankAct/index.htm.

[26] 156 CONG. REC. S921-22 (daily ed. Mar. 2, 2010) (statement of Sen. Edward E. Kaufman) (hereinafter Kaufman) ("Although algorithmic trading errors have occurred, we likely have not yet seen the full breadth, magnitude, and speed with which they can be generated.")

[27] Kaufman, *supra* note 26, at S922 (explaining the UK's FSA recently announced its opinion that layering and spoofing are illegal, and, dispelling general industry confusion, are in fact manipulation).

[28] This Comment posits the CFTC needs a "Ferrari" in the form of a "High Frequency *Observer*." This latter term is my own; to my knowledge it has not yet been used in other published materials.

[29] ALAN N. RECHTSCHAFFEN, CAPITAL MARKETS, DERIVATIVES AND THE LAW 159 (Oxford Univ. Press 2009).

[30] *Id.*

[31] *Id.* (emphasis added) (*citing Proctor & Gamble Co. v. Bankers Trust Co.*, 925 F. Supp. 1270 at 1275, citing GLOBAL DERIVATIVES STUDY GROUP OF THE GROUP OF THIRTY, DERIVATIVES: PRACTICES AND PRINCIPLES 28 (1993) (delineating that derivates transactions can be based on the value of foreign currency, U.S. Treasury bonds, stock indexes, or interest rates, and are valued by market movements.)

[32] *Id.* at 160 (reporting that because of the deteriorating credit quality of various counterparties and the increased skittishness in the markets, many institutions are requiring a minimum margin requirement for counterparties.)

[33] *Id.* at 165-66 (emphasizing that parties seeking to mitigate risk need to make informed choices about which derivative will best suit their risk management needs, because depending on the type of derivative used the regulatory implications will differ as well.)

[34] *Id.* at 159 (observing that other types of derivatives are swaps, options and forwards.).

[35] *Id.* at 166. *See* CFTC, *Glossary*,

http://www.cftc.gov/ConsumerProtection/EducationCenter/CFTCGlossary/glossary_f.html

(identifying that the counterparties could also agree that the price will be determined at delivery).

[36] RECHTSCHAFFEN, *supra* note 31, at 167; CFTC, *Glossary*, *supra* note 37 ("Futures Contract: An agreement to purchase or sell a commodity for delivery in the future: (1) at a price that is determined at initiation of the contract; (2) that obligates each party to the contract to fulfill the contract at the specified price; (3) that is used to assume or shift price risk; and (4) that may be satisfied by delivery or offset."); P.H. COLLIN, DICTIONARY OF BANKING & FINANCE 153 (Bloomsbury Publ'g 2003) (1991) (defining a futures exchange as "a commodity market which only deals in futures"); *see also* SEC, *Commodity Futures Trading Commission*,

http://www.sec.gov/answers/cftc.htm (refuting the commonly held misconception that the SEC regulates futures trading and explaining federal registration requirements for firms or individuals trading in futures.).

[37] 7 U.S.C. §§ 7a-3, 8, 11 (outlining requirements and exemptions to this provision, such as the CFTC's largely discretionary power to exempt for public interest reasons); *see also* 7 U.S.C. 13a-2 (showing that notwithstanding applicable exemptions, the CFTC still has the authority to

conduct ongoing investigations of the compliance with such exemptions and take enforcement action for failure to comply when necessary.)

[38] RECHTSCHAFFEN, *supra* note 31, at 167 (delineating that though the futures contract will have specific terms based on a maturation date, actual delivery of the commodity is very rare. An identifying component of futures trading is the ability to avoid delivery "by cash settlement or entering into an offsetting transaction."), *see also* Jacks, *supra* note 3, at 346 ("'the perfect futures market [is] defined as one in which the market price would constitute at all times the best estimate that could be made, from currently available information, of what the price would be at the delivery date of the futures contracts.'")

[39] *Id.* at 200.

[40] *Id*. (emphasis in original)

[41] *Id.* (emphasis in original) (identifying the typical "totality of the circumstances" test that is most often used to determine whether a given contract is a futures contract. The Seventh Circuit elaborated on this test in *Nagel v. ADM Investor Services, Inc.*, 373 F.3d 861 (7th Cir.), by introducing three sub-factors for consideration: 1) whether the contract is individually specific in its terms and thus not fungible, 2) contract parties are industry members actually contracting for the underlying commodity, and 3) parties cannot defer delivery ad infinitum.)

[42] *See also* CFTC, *US Futures Trading and Regulation Before the Creation of the CFTC*, http://www.cftc.gov/About/HistoryoftheCFTC/history_precftc.html (Futures trading began almost immediately after the inception of the Chicago Board of Trade, a cash market for grain, in April of 1848.)

[43] Jacks, *supra* note 3, at 344 (decrying the belief that futures contracts, so called "fictitious dealings" increase price volatility as "naïve." Jacks writes that "the inviolable law of the futures

market [is] that offers to sell short must be counterbalanced by offers to go long, i.e., the value of contracts agreed to by sellers of futures expecting prices to fall must equal the value of contracts agreed to by buyers of futures expecting prices to rise.")

[44] Jacks, *supra* note 3, at 343-45 ("Even before the rise of organized commodity exchanges, popular sentiment has, at best, been openly suspicious, but generally, openly hostile to the person of the speculator [in futures transactions]."), *see also* JERRY W. MARKHAM, THE HISTORY OF COMMODITY FUTURES TRADING AND ITS REGULATION, 10 (Praeger Publishers 1987) (acknowledging the public outcry against futures trading in the 1890s, when many bills were introduced into Congress attempting to make trading in futures illegal.)

[45] *See* Roger W. Gray, *Onions Revisited*, 45.2 J. OF FARM ECON., 273 (1963) (As Gray, an economist writing in the 1960s expressed, "the defense of futures markets is not merely that they do no harm, but that they do positive good.")

[46] Bates, *supra* note 1 (noting there is no accepted industry-wide definition).

[47] Boultwood, *supra* note 2, at 1.

[48] Jaksa Cvitanic & Andrei Kirilenko, *High Frequency Traders and Asset Prices*, (Mar. 11, 2010) *in* TECH. ADVISORY COMM., U.S. COMMODITY FUTURES TRADING COMM'N, TECH. TRADING IN THE MKT.'S, 2 (July 14, 2010) ("High frequency traders submit and cancel a massive number of orders and execute a large number of trades, trade in and out of positions very quickly, and finish each trading day without a significant open position.")

[49] Bates, *supra* note 1 (In highly volatile markets, such as those of 2008, many firms will even replace their algorithms daily.)

[50] *Id.* (The term "'high frequency' refers to being able to keep up with the high frequency streams of data, make decisions based on patterns in that data indicating possible trading opportunities, and automatically place and manage orders in the market to capitalize.")

[51] Bates, *supra* note 1 (distinguishing algorithms designed for the execution of very large trades from general trading algorithms).

[52] *See* Andrew N. Kleit, *Index Manipulation, the CFTC, and the Inanity of* DiPlacido, pg (Reg-Mkts. Ctr., Working Paper No. 09-06, Feb. 2009), http://www.reg-markets.org/publications/index.php?tab=author&authorid=249 (explaining the concept of price slipping).

[53] Gensler, Statement before the Technology Advisory Committee, *supra* note 19.

[54] *Id.*

[55] O'Malia, Futures and Binary Options Based on Box Office Receipts, *supra* note 19 (calculating that in the not to distant future the markets could see trades executed in nanoseconds (one billionth of a second 10^{-9}) rather than mere milliseconds (one thousandth of a second 10^{-3}).

[56] Bates, *supra* note 1.

[57] Thus, algorithms are prized for their flexibility in the same way that over-the-counter transactions are valued—they can be programmed to meet the exact specifications of a particular transaction.

[58] Bates, *supra* note 1 (explaining "liquidity aggregation" and "smart order routing" as the ability of an algorithm to send an order to the venue with the best price and liquidity for the transaction).

[59] *Id.* (detailing statistical arbitrage (or 'startarb') as "monitoring instruments that are known to be statistically correlated, with the goal of detecting breaks in the correlation - indicating trading opportunities.")

[60] *Id.* (defining spread trading as "taking positions, usually one long and one short, on instruments with profitability being determined by the spread (difference) between the two." He offers several examples of types of spreads, including intra-market, inter-market, inter-exchange spreads, inter-exchange multi-legged spreads (which include crack spreads, spark spreads and crush spreads).

[61] *Id.* (drawing attention to the "The Latency War," which is primarily concerned with "end-to-end latency – the total delay from the market data being generated at the trading venue(s), being delivered to an algo, a decision being taken by an algo and the necessary orders being placed and filled in the venue(s)."

[62] *Id.* (finding many in the industry are dramatically reducing latency through "co-location, in which algorithms are actually installed next to or in the facilities of a trading venue.")

[63] *Id.* ("News providers . . . are including tags in the [structured high frequency news] feeds that enable algos to quickly extract key information, such as data associated with an economic release.")

[64] *Id.*

[65] Jeff Castura, Robert Litzenberger & Richard Gorelick, *Market Efficiency and Microstructure Evolution in U.S. Equity Markets: A High-Frequency Perspective*, *in* TECH. ADVISORY COMM., U.S. COMMODITY FUTURES TRADING COMM'N, TECH. TRADING IN THE MKT.'S, 1 (July 14, 2010) (*citing US Equity High Frequency Trading: Strategies, sizing and market structure*, THE TABB

GROUP, www.tabbgroup.com.) ("It has been suggested that HFT now accounts for over half of U.S. equity share volume.")

[66] *See id.* (arguing the impact has been very positive—"[T]he U.S. equity markets appear to have become more efficient with tighter spreads and greater liquidity over the past several years; a period that has seen a sizable increase in the prevalence of HFT, and a period during which there has been coincident growth in automation and speed on many exchanges.");

[67] *See* Bryan Durkin, *The Impact of Algorithmic and High Frequency Trading on CME Group Inc. Markets*, *in* TECH. ADVISORY COMM., U.S. COMMODITY FUTURES TRADING COMM'N, TECH. TRADING IN THE MKT.S, 1-4 (July 14, 2010).

[68] *Id.*

[69] This Comment is focused on the U.S. markets, however, for more information on foreign exchange markets, *see* Alain Chaboud, Benjamin Chiquoine, Erik Hjalmarsson & Clara Vega, *Rise of the Machines: Algorithmic Trading in the Foreign Exchange Market*, International Finance Discussion Paper, Board of Governers of the Federal Reserve, 26 (Oct. 2009).

[70] Castura, Litzenberger & Gorelick, *supra* note 67, at 15 (demonstrating that U.S. markets have become more liquid and efficient in the last four years, notwithstanding the major economic crises that have occurred).

[71] *Id*. (explaining that as more investors enter the market the spreads will decrease due to competition—regardless of whether the market actors are humans or computers).

[72] *Id.* (defining liquidity as "the ability of investors to obtain their desired inventories with minimal price impact." Additionally, liquidity is an inferred result of more participants in the market. Both of these result in decreased transaction costs for investors.). *But see* Joint Report,

supra note 5, at 6 ("As the events of May 6 demonstrate, especially in times of significant volatility, high trading volume is not necessarily a reliable indicator of market liquidity.")

[73] Castura, Litzenberger & Gorelick, *supra* note 67, at 5 (identifying one way to measure liquidity as "the amount of size offered for sale or for purchase by market makers and other liquidity providers at a given point in time.").

[74] *Id.* at 15.

[75] Mallaby, *supra* note 4, at 1.

[76] *Id.*

[77] Bates, *supra* note 1 (stating that execution algorithms use metrics such as Volume Weighted Average Price (VWAP) to proportion a large order distribution throughout a given time period, in order to achieve a benchmarked price).

[78] *Id.* at 13

[79] *Id.* at 11 (explaining that HFT is analogous to car racing—the competition happens in tiers. Not everyone can afford to race at the Formula One level, but that does not mean one cannot make a profit racing successfully at a lower tier. In some ways, HFT will continue to increase access because the technology is readily available and will become more cost effective over time.).

[80] *Id.* at 14 (citing the exacerbated need for adequate pre-trade risk precautions with the increased volume of trading).

[81] *Id.* at 9 (however, in the "latency war" some firms would switch the pre-trade risk mitigation mechanisms off from time to time because it "'slowed them down' and any potential downside (of the enhanced risk) was over balanced by the potential upside of trading first.")

[82] Bates, *supra* note 1 (historically, "trader competency" would fall under what is considered to be a self-regulated area for brokers).

[83] Bates, *supra* note 1 (explaining the phenomenon of *black swan*, where an algorithm meets a scenario it is not prepared for and it "behaves against [its] intended specification.")

[84] *Id.* (because of their speed it can be very difficult to spot these errors quickly enough to mitigate the potential losses. Bates explains that one way to achieve this is by having a human trader monitor algorithms with a real-time dashboard and equip her with a "big red button" to pull one or more wild algorithms from the market if she spots erratic behavior.)

[85] MARKHAM, *supra* note 46, at 12.

[86] *Id.* (citing *Hill v. Wallace*, 259 U.S. 44 (1922)).

[87] *Id.* (establishing Congressional authority to regulate in the Commerce Clause)

[88] *Id.* at 24.

[89] *Id.*

[90] *Id*. at 25-26. *See also* CFTC, *CFTC History in the 1980s*, http://www.cftc.gov/About/HistoryoftheCFTC/history_1980s.html (adding that in 1981 it granted self-regulatory status to the National Futures Association (NFA) fulfilling its twofold regulatory approach of broad market oversight by the CFTC and self-regulation by exchanges and other organizations.)

[91] CFTC, *US Futures Trading and Regulation Before the Creation of the CFTC*, *supra* note 28 ("All references to 'grains' in the Grain Futures Act are changed to 'commodities.'"); MARKHAM, *supra* note 46, at 27, 33-34 (noting that initially under the CEA, only specifically enumerated agricultural commodities were subject to regulation; amendments to the statute were required to

add new commodities traded as futures. E.g., in 1939 there were 15 regularly traded commodities not under regulation by the CEA).

[92] MARKHAM, *supra* note 46, at 33-34 (noting the CEA remained in existence until 1974 when the CFTC was created).

[93] *Id*.

[94] *Id*. (the ban on options trading was repealed in 1981).

[95] *Id.* at 15.

[96] *Id.* at 46 (*citing* COMMODITY EXCHANGE AUTHORITY, U.S. DEPT. OF AGRIC., *Futures Trading Under the Commodity Exchange Act, 1946-1954* (Dec. 1954) (recounting that for many years it could not even subpoena its own witnesses: "In the mid 1950s, the CEA finally had authority to subpoena witnesses when portions of the Interstate Commerce Act were incorporated into the Commodity Exchange Act.").

[97] CFTC, *CFTC History in the 1970s*, http://www.cftc.gov/About/HistoryoftheCFTC/history_1970s.html; *see also* MARKHAM, *supra* note , at 25.

[98] Sommers, *supra* note 21.

[99] CFTC, *CFTC History in the 1970s*, *supra* note 99 (For example, in January of 1979 the CFTC began governing the practices of commodity pool operators (CPOs) and commodity trading advisors (CTA)).

[100] *Id.* (creating legal certainty for OTC derivatives the CFMA was signed into law by President Clinton in December of 2000).

[101] RECHTSCHAFFEN, *supra* note 31, at 194.

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[102] *Id*. at 199 (noting also that in contrast to the previous regulatory segregation under the Shad-Johnson Accord, CFTC and SEC have joint jurisdiction over security futures after CFMA.). *See also* CFTC, *CFTC History in the 2010s*,

http://www.cftc.gov/About/HistoryoftheCFTC/history_2010s.html (highlighting the CFTC's ongoing attempt to coordinate its regulatory efforts with the SEC by issuing a joint report in October of 2009. The report recommended twenty ways "to enhance enforcement powers, strengthen market and intermediary oversight and improve operational coordination.")

[103] RECHTSCHAFFEN, *supra* note 31, at 195-96 (clarifying the practical implications of this structure by explaining that parties still have the option to operate outside this tiered system by privately conducting their transactions bilaterally off-exchange.)

[104] *Id.* at 207 (as Title XIII of the Food, Conservation, and Energy Act of 2008).

[105] *Id.*

[106] Proposed OCR, *supra* note 19, at 41778.

[107] Co-Location/Proximity Hosting Services, 75 Fed. Reg. 33198, 33199 (U.S. COMMODITY FUTURES TRADING COMM'N, proposed June 11, 2010) (to be codified at 17 C.F.R. pts. 36, 37 & 38) (hereinafter Proposed Co-Location).

[108] *Id*. *See* 7 U.S.C. § 5(c) (outlining such negative practices as price manipulation, fraud, or disruptive trading techniques such as front running or spoofing).

[109] RECHTSCHAFFEN, *supra* note 31, at 208.

[110] *Id.* at 209-12; 7 U.S.C. § 12(c)(a)(1)-(2) (authorizing the exchange, or the CFTC if the exchange does not do so, to "suspend, expel, or otherwise discipline any person who is a member of that exchange, or deny any person access to that exchange.")

[111] CFTC, *CFTC Organization*, http://www.cftc.gov/About/CFTCOrganization/index.htm (listing the four divisions: Clearing & Intermediary Oversight, Market Oversight, Enforcement and Chief Economist).

[112] *Id.*

[113] *Id.*

[114] Proposed OCR, *supra* note 19, at 41778.

[115] *Id.*

[116] *Id.*

[117] *Id.*

[118] *Id.*

[119] RECHTSCHAFFEN, *supra* note 31, at 208-09.

[120] *Id.* (explaining that not only does the CFTC have the power to initiate suits pursuant to the CEA, but the Supreme Court has read an implied right of action for private parties into the statute as well).

[121] 7 U.S.C. § 13. *But see* U.S.C. § 9a(1) ("In determining the amount of the money penalty assessed . . . the Commission shall consider the appropriateness of such penalty to the gravity of the violation.").

[122] CFTC, *CFTC History in the 2010s*, *supra* note 104.

[123] *Id. See* Michael Cieply, *Feds Approve Trading of Box-Office Futures*, N.Y. TIMES, June 14, 2010, at http://mediadecoder.blogs.nytimes.com/2010/06/14/feds-approve-trading-of-box-office-futures/; (reporting that the CFTC's approval came despite "vehement" opposition of the Motion Picture Association of American and 40 members of the House of Representatives.); Michael White, *Film Studios Ask Regulators to Reject Movie-Futures Trading*, 4.14-17 BLOOMBERG LAW

REPORTS 28 (Mar. 26, 2010) ("Approving movie futures contracts would be the 'economic equivalent of legalized gambling,'" said Movie Picture Association of America interim CEO Bob Pisano.)

[124] *Id.*

[125] CFTC, *Dodd-Frank Act*, *supra* note 25; Scott D. O'Malia, Comm'r, U.S. Commodity Futures Trading Comm'n, Opening Statement on Public Meeting Governance, Financial Resources, Interim Final Rule: Pre-Enactment Swaps (Oct. 1, 2010), http://www.cftc.gov/PressRoom/SpeechesTestimony/CommissionerScottDOMalia/omaliastatem ent100110.html (hereinafter O'Malia, Pre-Enactment Swaps) (identifying two means to accomplish this goal are: creating a mandatory clearing requirement for swaps and providing "fair, open and non-discriminatory access to DCOs."). *See generally* Dodd-Frank Act, *supra* note 10, at §§ 711, 721(b), 803 (defining or modifying (from the Commodity Exchange Act, 7 U.S.C. 1a) the terms related to the regulation of swaps markets, including over the counter (OTC) swaps and the supervision of payment, clearing and settlement procedures.)

[126] *See* Dodd-Frank Act, *supra* note 10, at §§ 711, 721(b), 803; CFTC, *Rulemakings*, http://www.cftc.gov/LawRegulation/DoddFrankAct/Rulemakings/index.htm (listing thirty areas in the swaps marketplace the CFTC will write rules for pursuant to the regulatory authority granted it in the Dodd-Frank Act, including: "regulation of swap dealers and major swap participants, clearing, trading, data, particular products, enforcement and position limits."). *See also* Sommers, *supra* note 21 (identifying another area of granted authority in the CFTC's ability to reduce conflicts of interest in designated contract markets (DCMs), derivatives clearing organizations (DCOs) and swap execution facility (SEF) governance.

[127] 7 U.S.C. 4(c); U.S. COMMODITY FUTURES TRADING COMM'N TECH. ADVISORY COMM., Technology: Achieving the Statutory Goals and Regulatory Objectives of the Dodd-Frank Act (Oct. 12, 2010), http://www.cftc.gov/PressRoom/Events/opaevent_tac101210.html (statement of Counsel to the Director of Enforcement Robert Pease (hereinafter Pease) (enunciating the CFTC's mandated authority under Dodd-Frank to enact rules prohibiting three enumerated disruptive practices and the optional authority to promulgate "any other trading practice that is disruptive of fair and equitable trading." This added discretionary authority has no time limit and permits the CFTC to use this clause to promulgate more than one rule.)

[128] 7 U.S.C. 6(c)(1) (prohibiting fraud based market manipulation as prescribed by Dodd-Frank Section 753). *See also* Pease *supra*, note 131 ("Congress also created a new CEA section 6(c)(3), entitled 'other manipulation' which mirrors existing Commission authority to prohibit manipulation of prices.")

[129] 7 U.S.C. 6(c)(1).

[130] *Id*. at § 6c(a)(6).

[131] *Id*. at § 6c(a)(5) (emphasis added).

[132] Prohibition of Market Manipulation, 75 Fed. Reg. 67657, 67657-58 (U.S. COMMODITY FUTURES TRADING COMM'N, proposed Nov. 3, 2010) (to be codified at 17 C.F.R. pt 180) (hereinafter Prohibition of Market Manipulation) (articulating the sections concerning both a broad prohibition on fraud-based manipulation (CEA § 6(c)(1)) and a general prohibition on "other manipulation" in CEA § 6(c)(3). The Act provides other new sections titled, "Special Provision for Manipulation by False Reporting" (CEA § (c)(1)(A)), "Good Faith Mistakes" (CEA § 6(c)(1)(C)), and "Effect on Other Law" (CEA § (c)(1)(B)) that are self-actuating and thus do not require rulemakings.)

[133] Proposed Co-Location, *supra* note 109, at 33199 (U.S. COMMODITY FUTURES TRADING COMM'N, proposed June 11, 2010) (to be codified at 17 C.F.R. pts. 36, 37 & 38) (hereinafter Proposed Co-Location).

[134] Proposed OCR, *supra* note 19, at 41775.

[135] Antidisruptive Practices Authority Contained in the Dodd-Frank Wall Street Reform and Consumer Protection Act, 75 Fed. Reg. 67301 (proposed Nov. 2, 2010) (to be codified at 17 C.F.R. Chapter 1) (hereinafter Antidisruptive Practices).

[136] Prohibition of Market Manipulation, *supra* note 136, at 67657.

[137] *But see*, David Zax, *Why High Speed Traders Should Set Up Shop in Siberia*, FAST CO. (Nov. 5, 2010), http://www.fastcompany.com/node/1700534/print (reporting on a recent study postulating that some automated trading servers will benefit from being positioned in-between exchanges rather than next to them).

[138] *Futures Industry Association Comments on CFTC's Proposed Rule Regarding Equal Access to Co-Location and Proximity Hosting Services*, BLOOMBERG LAW REPORTS: COMMODITIES & DERIVATIVES, Aug. 2010, at 6. *See also* Sommers, *supra* note 21 (observing that in the 1970s "[c]ontracts on products such as wheat, corn and cattle were traded in open outcry pits where traders wearing colorful jackets flashed hand signals and jostled each other for position. Back then, co-location meant that a firm's desk was closer to the pit than another firm's desk, or a firm's trader was taller than other traders and was more easily seen in the pit.")

[139] Proposed Co-Location, *supra* note 109, at 33200.

[140] *Id.*

[141] *Id. See also* Proposed OCR, *supra* note 19, at 41778.

[142] Proposed OCR, *supra* note 19, at 41776.

[143] *Id*. at 41778 (defining "trade register" as a complete daily record of every trade on an exchange).

[144] *Id*. at 41778 (advancing support for data collection from small and medium sized traders who can still have a negative impact on the markets during certain times of the day, particularly during the closing period).

[145] *Id*. at 41777.

[146] *Id.*

[147] *Id*. at 41777 ("Whereas the Commission once monitored trading via on-site surveillance of open-outcry pits, today surveillance is primarily electronic and data-driven.")

[148] *Id*. (calculating approximately 2.9 million trades per day in December of 2009, and explaining that in the last decade "total DCM futures and options trading volume rose from approximately 594.5 million contracts in 2000 to approximately 2.78 billion in 2009, an increase of 368%.").

[149] *Id*. at 41777 (recognizing one of these ways includes the integration of CFTC's two primary surveillance systems, allowing the Commission to connect "individual transactions reported on exchange trade registers ([Trade Surveillance System]) with aggregate positions reported in large trader data ([Integrated Surveillance System]).").

[150] Proposed Antidisruptive Practices, *supra* note 135, at 67302; Pease, *supra* note 131 (restating Dodd-Frank's explicit language finding illegal such trading practices that: "Violate bids or offers; Demonstrates intentional or reckless disregard for the orderly execution of transactions during the closing period; or Spoofing. Spoofing is defined as bidding or offering with the intent to cancel the bid or offer before execution.")

[151] *Id.*

[152] *Id*.

[153] Proposed Antidisruptive Practices, *supra* note 135, at 67303 (statement of Chairman Gary Gensler) (embracing public comments on the rule and participation in a public roundtable discussion while adding, "I am particularly interested in hearing from the public on algorithmic trading.")

[154] Antidisruptive Practices, *supra* note 135, at 67302 (emphasis added).

[155] *Id*.

[156] *Id*. (Though this Comment is not suggesting abuse of that power through onerous rules, the point is that the Legislature gave the CFTC a much greater latitude to promulgate rules as it sees fit.)

[157] 7 U.S.C. § 9.

[158] Proposed Prohibition of Market Manipulation, *supra* note 136, at 67657

> ("It shall be unlawful for any person, directly or indirectly, to use or employ, or attempt to use or employ, in connection with any swap, or a contract of sale of any commodity in interstate commerce, or for future delivery on or subject to the rules of any registered entity, any manipulative or deceptive device or contrivance.")

[159] *Id*. at 67658 (noting the "SEC promulgated Rule 10b-5 to implement section 10(b)" of the SEA). *See also* Pease, *supra* note 131 (explaining that both the Federal Energy Regulatory Commission (FERC) and the Federal Trade Commission (FTC) have similarly enacted anti-manipulation rules based on the SEC Rules 10b and 10b-5 however they have adapted the rules to fit their unique regulatory needs).

[160] Prohibition of Market Manipulation, *supra* note 136, at 67658 (*citing Chiarella v. United States*, 445 U.S. 222, 226 (1980)).

[161] *Id.*

[162] *Id*. at 67659.

[163] *Id*. (*citing Santa Fe Indus. Inc. v. Green,* 430 U.S. 462, 494 (1977)) (emphasis added).

[164] *Id*. ("[T]he Commission proposes that subsection (c)(1) be given a broad, remedial reading, embracing the use or employment, or attempted use or employment, of any manipulative or deceptive contrivance for the purpose of impairing, obstructing, or defeating the integrity of the markets subject to the jurisdiction of the Commission.")

[165] *Id*. (*citing Ernst & Ernst v. Hochfelder*, 425 U.S. 185, 192-93 ("scienter is required for private actions for damages under Section 10(b) and SEC Rule 10b-5").

[166] *Id*. at 67658 (elucidating that although this is also a new section, the conduct it addresses was already illegal under CEA § 9(a)(2)) ("[I]t shall be unlawful for any person, directly or indirectly, to manipulate or attempt to manipulate the price of any swap, or of any commodity in interstate commerce, or for future delivery on or subject to the rules of any registered entity.")

[167] *Id*. (*citing Cargill, Inc. v. Hardin, Sec. of Agric.*, 452 F.2d 1154, 1163 (8th Cir. 1971) ("The methods and techniques of manipulation are limited only by the ingenuity of man. The aim must be therefore to discover whether conduct has been intentionally engaged in which has resulted in a price that does not reflect basic forces of supply and demand.")

[168] *Id*. at 67660 (citation omitted).

[169] *Id*. (*citing In re DiPlacido,* 2008 WL 4831204 (CFTC 2008) ("DiPlacido placed proportionately large orders, in an illiquid market, while ignoring more favorable bids and offers, so that closing prices for electricity futures would be inflated. These actions convinced the Commission and the Second Circuit Court of Appeals that the resulting closing prices were *de facto* illegitimate.")

[170] *Id.* ("*[W]hen a price is affected by a factor which is not legitimate, the resulting prices is necessarily artificial. Thus, the focus should not be as much on the ultimate price, as on the nature of the factors causing it.*") (emphasis in original).

[171] Bates, *supra* note 1 ("Millions of high frequency algorithms combined with market fragmentation, cross-asset trading, dark liquidity and the challenges identifying which clients of member firms are doing what . . . make the job of regulator very challenging.")

[172] *Id.* (suggesting that terrorists could use algorithms that are intentionally programmed to go wild in order to create panic in the markets by mimicking the types of trades that caused the flash crash to occur).

[173] *Id.* (expressing concern that too many cancellations put an additional burden on trading venues that process the orders and could begin to slow down the market. With this in mind some trading venues may begin levying a fee for excessive cancellations. In the same way, other negative phenomenon result from venue overload by algorithms—what is known as "denial-of-service-style attacks." This occurs when a wild algorithm rapidly sends multiple orders in the market one after another and network firewalls become so preoccupied with denying fraudulent orders that real orders will not be accepted. These attacks also threaten to considerably increase latency.)

[174] Kaufman, *supra* note 26, at S922.

[175] *Id.*

[176] Dodd-Frank Wall St. Reform and Consumer Prot. Act of 2010, 7 U.S.C. §§ (2010).

[177] Antidisruptive Practices, *supra* note 135, at 67302 (seeking comments on four multi-part questions in order to clarify the nature of the practice).

[178] Prohibition of Market Manipulation, *supra* note 136, at 67661.

[179] *Id*. (adding that the actions or conduct of the alleged manipulator need not be inherently illegal to give rise to a manipulation charge).

[180] U.S. COMMODITY FUTURES TRADING COMM'N TECH. ADVISORY COMM., Technological Trading in the Markets, High Frequency Trading and Managing the Risk of Direct Access Trading 58 (July 14, 2010), http://www.cftc.gov/About/CFTCCommittees/TechnologyAdvisory/tac_meetings.html (statement of President and Chief Operating Officer, Intercontinental Exchange Charles Vice) (commenting on the need for clear guidelines regarding disruptive practices such as wash trading: "what type of behavior are we looking to discourage, and I think that would be helpful to do, to get clarity for everybody . . . and whatever it is that the regulators or the industry has decided they don't want to occur, we'll prevent it from occurring.").

[181] Kaufman, *supra* note 26, at S922

> ("In order to deter such trading practices, the Financial Services Authority, FSA [United Kingdom], announced that it would fine or suspend participants who engage in market manipulation. Noting that some market participants may not be sure that spoofing or layering is wrong, the FSA spokesman said: 'This is to clarify that it is.' In Australia, market participants are also requesting clearer definitions of market manipulation, particularly with regard to momentum strategies such as spoofing.")

[182] Antidisruptive Practices, *supra* note 135, at 67302 (The beginning of the three part question seven reads: "7. Should executing brokers have an obligation to ensure that customer trades are not disruptive trade practices? If so, in what circumstances?")

[183] *See* Risk Management Controls for Brokers or Dealers With Market Access, 75 Fed. Reg. 4007, 4013 (U.S. SEC. & EXCH. COMM'N. proposed Jan. 26, 2010) (to be codified at 17 C.F.R. pt. 240) (hereinafter Proposed Risk Management Controls).

[184] RECHTSCHAFFEN, *supra* note 31, at 195-96; CAITLIN ZALOOM, OUT OF THE PITS: TRADERS AND TECHNOLOGY FROM CHICAGO TO LONDON 25 (2006) (stating that in 2007 the Chicago Mercantile Exchange merged with the Chicago Board of Trade to become the CME Group, what is now the world's largest futures exchange.)

[185] O'Malia, Pre-Enactment Swaps, *supra* note 125 (arguing that without international regulatory continuity traders may begin to engage in "regulatory arbitrage," that is seeking to profit from shopping for the venue in the jurisdiction with lowest transaction costs).

[186] *See* Proposed OCR, *supra* note 19, at 41778-79.

[187] Scott D. O'Malia, Comm'r, U.S. Commodity Futures Trading Comm'n, Concurring Statement Regarding the Proposal for the Account Ownership and Control Report, 75 Fed. Reg. 41787 (July 19, 2010) (quoting the CFTC's preliminary report on the flash crash: "'obtaining account ownership and control information in the exchange trade registers . . . would increase the timeliness and efficiency of account identification, an essential step in data analysis.'").

[188] Proposed OCR, *supra* note 19, at 41777.

[189] Proposed Risk Management Controls, *supra* note 183, at 4007-08.

[190] Joint Report, *supra* note 5, at 6.

[191] Proposed Risk Management Controls, *supra* note 183, at 4007-08.

[192] *See* 7 USC § 2(a)(12) (establishing the CFTC's general authority to "promulgate such rules and regulations as it deems necessary to govern the operating procedures and conduct of business of the Commission.")

[193] *See* Prohibition of Market Manipulation, *supra* note 136, at 67661 (For the majority of HFT traders who have no desire or intent to manipulate the markets, the threshold messaging volume ratio would inform them that excessive messaging above the threshold is artificial.)

[194] Dodd-Frank Wall St. Reform and Consumer Prot. Act of 2010, 7 U.S.C. § 2(h)(5)(C) (2010).

[195] Proposed Antidisruptive Practices, *supra* note 135, at 67302.

[196] *Id*. (emphasis added)

[197] *See Kohen v. Pacific Manag. Co.*, (N.D. Ill. 2007) (*citing In re Soybean Futures Litig.*, 892 F.Supp. 1025, 1045 (N.D. Ill. 1995) (stating the four elements needed to make out a claim for price manipulation).

[198] *See CFTC v. Atha*, 420 F. Supp. 2d 1373 (N.D. Georgia, March 17, 2006) (*citing In re Hohenberg Bros.*, 1977 CFTC LEXIS 123, [1975-1977 Trans. Binder] Comm. Fut. L. Rep. (CCH), P 20,271 (CFTC Feb. 18, 1977)) ("To prove attempted manipulation, Plaintiff must prove (1) a specific intent to affect the market price, and (2) overt acts in furtherance of that specific intent. . . . Intent may be inferred from the totality of the circumstances.")

[199] Proposed Antidisruptive Practices, *supra* note 135, at 67302.

[200] *See* 7 U.S.C. 5(c).

[201] Proposed Antidisruptive Practices, *supra* note 135, at 67302.

[202] Prohibition of Market Manipulation, *supra* note 136, at 67661.

[203] Durkin, *supra* note 69, at 4 (noting over 5 billion messages sent per month on CME Globex).

[204] *Id*. at 4.

[205] *Id*. at 6 (calculating that this excessive messaging also adds another transaction cost besides delayed trade time because it requires venues to take costly measures to increase their technological infrastructure and capacity).

[206] *See* Bates, *supra* note 1 (explaining the use of "smart order routing" and "liquidity aggregation" by algorithms where the algorithm constantly updates and compiles a comprehensive list of the venues with the highest liquidity for individual instruments, allowing it to instantaneously decide which venue it should submit a bid to in order to get the best price. Thus, if the venue has decreased liquidity due to excessive messaging, the algorithms employing these strategies will submit their bids, and take their liquidity, elsewhere.)

[207] Alexis Madrigal, *Market Data Firm Spots the Tracks of Bizarre Robot Traders*, THE ATLANTIC, Aug. 4, 2010, http://www.theatlantic.com/science/archive/2010/08/market-data-firm-spots-the-tracks-of-bizarre-robot-traders/60829/ (reporting on the actions of possibly nefarious algorithms that submit thousands of orders per section in bizarre patterns without explanation, unlike typical algorithms employed by high frequency traders where the goal is to win trades).

[208] Durkin, *supra* note 69, at 5.

[209] *Id*. at 5 (explaining that the system monitors database latencies and repeated rejected orders as well as excessive order flow).

[210] *Id*. at 6-7; Bates, *supra* note 1. *Accord* Kaufman, *supra* note 26, at S922 (suggesting a similar fee should be implemented by government regulators, however this is essentially a tax power that agencies and commissions do not possess).

[211] Durkin, *supra* note 69, at 6-7.

[212] *Id*. at 6-7.

[213] *Id*. at 6-7.

²¹⁴ *Id.*

²¹⁵ Dodd-Frank Wall St. Reform and Consumer Prot. Act of 2010, 7 U.S.C. § 6c(a)(5) (2010) (emphasis added).

²¹⁶ The definition of "excessive" here should be set high initially, and adjusted downward as necessary to capture only the most abusive order messaging practices.

²¹⁷ MODEL PENAL CODE § 2.03(3)(a)-(b) (2007).

²¹⁸ *Id.*

²¹⁹ Proposed Risk Management Controls, *supra* note 183, at 4007-08.

²²⁰ *Id*. at 4008 (*citing* NYSE IM-89-6 (Jan. 25, 1989); Sec. Exch. Act Release No. 40354 (Aug. 24, 1998); 63 Fed. Reg. 46264 (Aug. 31, 1998) (NASD NTM-98-66).

²²¹ *Id*.

²²² *Id*. at 4010 (emphasis added) (requiring the risk management controls to be systematized, automated and work pre-trade).

²²³ *Id*. at 4009-10 (clarifying that Nasdaq's rules and others "have been a step in the right direction" but that "more should be done to assure that comprehensive and effective risk management controls on market access are imposed" no matter the platform being traded on. It also states that the "risk management controls and supervisory procedures required by Proposed Rule 15c3-5 must be under the direct and exclusive control of the broker or dealer with market access.")

²²⁴ *Id*. at 4013.

²²⁵ *Id*. (emphasis added).

²²⁶ *Id*. at 4009 (rationalizing the need for a single set of comprehensive rules in order to prevent regulatory arbitrage, a type of venue-shopping for the best price based on fewest regulations and

restrictions). *See also* U.S. COMMODITY FUTURES TRADING COMM'N TECH. ADVISORY COMM.,

Technology: Achieving the Statutory Goals and Regulatory Objectives of the Dodd-Frank Act 33

(Oct. 12, 2010), http://www.cftc.gov/PressRoom/Events/opaevent_tac101210.html (statement of

Exec. Vice Pres. of Futures Indus. Assoc. (FIA) Mary Ann Burns) ("And it would be preferable

for the industry to establish strong standardized risk controls rather than each regulatory

authority or exchange developing a unique approach to the managing of risk of direct access.")

[227] *See* Joint Report, *supra* note 5; Consolidated Audit Trail, 75 Fed. Reg. 32556 (U.S. SEC. &

EXCH. COMM'N. proposed June 8, 2010) (to be codified at 17 C.F.R. pt. 242) (hereinafter

Consolidated Audit Trail).

[228] Joint Report, *supra* note 5, at 6 (clarifyng that this vulnerability was clearly demonstrated by

the flash crash).

[229] Bates, *supra* note 1.

[230] *Id.*

[231] *Id.* (such as getting stuck in an infinite loop).

[232] *Id.*

[233] Boultwood, *supra* note 2, at 4 (illustrating a potential standard for circuit breaker enactment

when "a particular stock or contract has dropped more than 10% in five minutes"); Gary Gensler,

Chairman, U.S. Commodity Futures Trading Comm'n, Opening Statement before the Second

Meeting of the Joint CFTC-SEC Advisory Committee on Emerging Regulatory Issues (June 22,

2010),

http://www.cftc.gov/PressRoom/SpeechesTestimony/ChairmanGaryGensler/genslerstatement062

210.html (discussing market events of May 6, 2010 flash crash); *see also CME Group's CEO*

Speaks on Circuit Breaker Rules before Joint CFTC-SEC Advisory Committee, BLOOMBERG LAW REPORTS: SECURITIES LAW, July 2010, at 23.

[234] Durkin, *supra* note 69, at 7.

[235] Ben Johnson, *Putting the "E" Into ETF*, MORNINGSTAR, Jan. 7, 2010, http://www.morningstar.fr/fr/etfs/article.aspx?lang=fr-FR&articleid=90332&categoryid=656 (reporting that in Deutsche Börse's electronic trading system Xetra, the nomenclature for circuit breaker is a "volatility interruption.")

[236] Boultwood, *supra* note 2, at 4 (arguing that liquidity could just transfer from the markets with the breakers invoked to those that have not yet stopped trading, thus rendering the circuit breakers ineffective).

[237] Proposed Co-Location, *supra* note 109, at 3199.

[238] Bates, *supra* note 1.

[239] *Id.*

[240] *Id.* (noting that many groups feel that though backtesting and simulation are helpful tools, real usage of an algorithm is necessary—either iterative or with early-adopter traders—because reality is unpredictable).

[241] Bates, *supra* note 1.

[242] *Id.*

[243] As noted above, this term was originally coined by this Comment's author.

[244] MARKHAM, *supra* note 46, at 16.

[245] *Id.* (emphasis added).

[246] Proposed OCR, *supra* note 19, at 41777 (declaring that although this is a goal of the CFTC's, the sheer quantity of data is one of the challenges. With the latest technological advances,

"effective surveillance of millions of daily records—for example, an average of approximately 2.9 million trades per day in December 2009—requires automated systems capable of intelligently searching for patterns and anomalies buried deep within the data."

[247] Bates, *supra* note 1.

[248] Proposed Risk Management Controls, *supra* note 183, at 4009.

[249] *Id.* (*citing* Ben Rooney, *Google Price Corrected After Trading Snafu,* CNN, Sept. 30, 2009, http://money.cnn.com/2008/09/30/news/companies/google_nasdaq/?postversion=2008093019) (reporting on the dramatic 93% drop in value of Google's stock at the end of the day after an erroneous trade).

[250] *Id.* (detailing information received from Nasdaq, that in 1998 and 1999 Nasdaq granted 5,600 requests to break erroneous trades.

[251] Durkin, *supra* note 69, at 5; Consolidated Audit Trail *supra* note 226, at 32568 (delineating similar audit trail capabilities of related national securities exchanges, however urging a consolidated audit trail with greater scope and effectiveness).

[252] Durkin, *supra* note 69, at 5.

[253] *Id.*

[254] *Id.*

[255] *Id.*

[256] *Id.*

[257] Consolidated Audit Trail *supra* note 226, at 32568.

[258] Bates, *supra* note 1.

[259259] Chilton, *supra* note 13. *See also* MARKHAM, *supra* note 46, at 16 (recounting the GFA's complaints that it only had one auditor to review reports); O'Malia, Pre-Enactment Swaps, *supra*

note 125 (stating that given the Act's comprehensive demands, it is hardly surprising the work necessary to achieve those goals is "overwhelming.").

[260] *See* Bates, *supra* note 1 (asserting that, as members of a competitive industry HFT users do not have privileged access to markets but they choose to pay premiums for faster access).

[261] *See* Bates, *supra* note 1.