

Spring 2019

Regulating High-Frequency Trading: The Case for Individual Criminal Liability

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Orlando Cosme Jr., *Regulating High-Frequency Trading: The Case for Individual Criminal Liability*, 109 J. CRIM. L. & CRIMINOLOGY 365 (2019).

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COMMENTS

REGULATING HIGH-FREQUENCY TRADING: THE CASE FOR INDIVIDUAL CRIMINAL LIABILITY

ORLANDO COSME JR.*

The popular imagination of securities trading is a chaotic, physical stock exchange—a busy floor with hurried traders yelling, “buy, buy, buy!” While this image is a Hollywood and media favorite, it is no longer accurate. In 2019, most securities trading is conducted electronically on digital markets. One type of trading strategy, high-frequency trading, utilizes algorithms, data centers, fiber optic cables, and supercomputers to obtain an edge in the market. High-frequency trading has leveraged advancements in technology to constitute over half of all trading volume in a given day.

High-frequency trading, however, has come under scrutiny in recent years as it has increased market susceptibility to certain forms of criminal conduct. In 2017, the U.S. Court of Appeals for the Seventh Circuit upheld the first conviction of a high-frequency trader for spoofing, a type of trader misconduct that is made more susceptible by high-frequency trading. While

* B.A., University of Pennsylvania, 2014; J.D. Candidate, Northwestern University Pritzker School of Law, 2019. I want to dedicate this to my sweet and powerful mother, Julie, who has always supported me in every endeavor. I would be nowhere near where I am now were it not for her love and sacrifices. I am eternally grateful. I would also like to thank my brother, Alex, for being forever supportive. Thank you to all of the members of the *Journal of Criminal Law and Criminology* for editing my piece. Finally, a huge thank you to Professor Nadav Shoked for providing me with guidance.

I would also like to note that it is not my belief that the United States should broadly increase criminal prosecutions, and I am concerned with over-criminalization more generally. Rather, it is my position that as long as the criminal law is used as a tool for social control in other contexts, it is only fair to examine this tool in the “white collar” arena as well.

scholars have debated whether high-frequency trading should be regulated more than other types of trading and if so, what the regulations might look like, no one has analyzed criminal law as a vehicle to regulate high-frequency trading.

This Comment makes the case that individual criminal liability is an ideal tool to regulate misconduct in the high-frequency trading space. Two features of high-frequency trading make the strategy particularly challenging to regulate: 1) it is difficult to draw a line between legitimate and illegitimate behavior in high-frequency trading; and 2) it is difficult to pinpoint an exact definition of what high-frequency trading is. Criminal liability has several advantages over civil liability with respect to these challenges. First, the mens rea component and higher standard of proof required in criminal liability will ensure that high-frequency traders found criminally liable engaged in illegitimate behavior with a higher degree of certainty. Second, the threat of criminal prosecution will better serve the goal of deterring high-frequency trader misconduct. Within the context of criminal liability, individual criminal liability is preferable to corporate criminal liability because the former better furthers the goal of deterrence. The identity problem that corporate liability helps to solve—in some corporate contexts it is impossible to pinpoint culpability on any single individual—is not an issue in high-frequency trading; and individual criminal liability is socially more preferable as a matter of policy. Accordingly, the government should increase criminal enforcement of high-frequency traders to promote its goal of safeguarding market integrity.

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I. INTRODUCTION

Technology has crept into most aspects of modern society, and securities trading is no different.¹ Gone are the iconic days of traders yelling in the “pits” of stock exchanges.² Nowadays, trading occurs on computer screens in digital markets.³ Trading has moved from the New York Stock Exchange (NYSE) to data centers, fiber optic cables, and supercomputers located far from Wall Street.⁴ One trading strategy, high-frequency trading (HFT), leverages this advancement in technology by utilizing sophisticated computer programs that trade at ultrafast speeds to obtain an edge in the market.⁵ While HFT has many benefits, such as increased market efficiency,⁶ it also has “increased market susceptibility to certain forms of criminal conduct.”⁷

¹ Gregory Meyer, *Trading: What Happened when the Pit Stopped*, FIN. TIMES (July 6, 2016), <https://www.ft.com/content/4d221b22-3dfb-11e6-8716-a4a71e8140b0> (source on file with author).

² *Id.* See also Craig Pirrong, *Commodity Market Manipulation Law: A (Very) Critical Analysis and a Proposed Alternative*, 51 WASH. & LEE L. REV. 945, 948 (1994):

Futures contracts are bought and sold in centralized trading ‘pits’ in an open outcry auction. Customers submit buy and sell orders for futures contracts to brokerage firms. These firms transmit the orders to brokers located in the pit. The brokers call out their desire to buy or sell, and other traders in the pit compete to take the other side of the trade. The broker accepts the best bid or offer made in the pit to fill his order. In addition to trading for customers, some pit participants trade on their own account. *Id.*

³ *United States v. Coscia*, 866 F.3d 782, 785 (7th Cir. 2017).

⁴ Tom C.W. Lin, *The New Market Manipulation*, 66 EMORY L. J. 1253, 1255 (2017).

⁵ *Coscia*, 866 F.3d at 786.

⁶ Lazaro I. Vazquez, *High Frequency Trading: Is Regulation the Answer?*, 17 WAKE FOREST J. BUS. & INTELL. PROP. L. 151, 172 (2017).

⁷ *Coscia*, 866 F.3d at 786; see also SEC. & EXCH. COMM’N, CONCEPT RELEASE ON EQUITY MARKET STRUCTURE, 75 Fed Reg 3594, 3606 (2010) (noting four strategies that are particularly susceptible to wrongdoing by HFT).

The 2008 Financial Crisis brought the regulation of financial markets under increased scrutiny.⁸ This increased scrutiny coincided with the rise of HFT.⁹ The public, frustrated with the financial sector, demanded reforms to ensure that Wall Street did not continue with business as usual.¹⁰ Events such as the Flash Crash—during which on May 6, 2010, several markets, aided partly by HFT, quickly collapsed and rebounded—ensured that HFT did not escape these calls for more regulation.¹¹ However, Congress passed the Dodd-Frank Act, the main legislative response to the financial crisis, in 2010—a few years before HFT obtained market hegemony. Accordingly, the law has no provision that specifically regulates HFT.¹² But what should this regulation be? One tool that governments can use to regulate high-frequency trader misconduct is individual criminal liability. In August 2017, the U.S. Court of Appeals for the Seventh Circuit affirmed *United States v. Coscia*,¹³ upholding the first criminal conviction of a high-frequency trader for spoofing—increasing the relevance of individual corporate criminal liability for illegal high-frequency trading.¹⁴

Following the example in *Coscia*, prosecuting *traders* in HFT—as opposed to the entities that the traders work for or other forms of

⁸ See Anna Driggers, *Raj Rajaratnam's Historic Insider Trading Sentence*, 49 AM. CRIM. L. REV. 2021, 2034 (2012) (“In response to the 2008 financial crisis, there has been public outrage and demand for punishment of those on Wall Street.”).

⁹ See Thomas Lee Hazen, *Treatise on the Law of Securities Regulation* § 14:14 (Oct. 2017).

¹⁰ See Driggers, *supra* note 8, at 2034.

¹¹ Andrei Kirilenko, et al., *The Flash Crash: The Impact of High Frequency Trading on an Electronic Market* 1 (May 5, 2014); Peter J. Henning, *Why High-Frequency Trading is So Hard to Regulate*, DealBook, N.Y. TIMES (Oct. 20, 2014, 1:40 PM), <https://dealbook.nytimes.com/2014/10/20/why-high-frequency-trading-is-so-hard-to-regulate/> [<http://perma.cc/4RTQ-X62V>].

¹² See R. Rex Chatterjee, *Dictionaries Fail: The Volcker Rule's Reliance on Definitions Renders it Ineffective and a New Solution is Needed to Adequately Regulate Proprietary Trading*, 8 B.Y.U. INT'L L. & MGMT. REV. 33, 34 (2011); Vazquez, *supra* note 6, at 163 (discussing how “[v]ery little, if any, federal statutory law directly targets the practice of HFT[.]” including the Dodd-Frank Act). The Dodd-Frank Act mentions “high-frequency trading” only once. Dodd-Frank Wall Street Reform and Consumer Protection Act, PUB. L. NO. 111-203 124 STAT. 1976 (2010) [hereinafter “DFA”]. The provision commands the Securities and Exchange Commission to conduct a study of “the effect of high-frequency trading and other technological advances on the market and what the SEC requires to monitor the effect of such trading and advances on the market[.]” DFA § 967 (a)(1)–(2)(D).

¹³ *United States v. Coscia*, 866 F.3d 782, 785 (7th Cir. 2017).

¹⁴ Reuters Staff, *U.S. Appeals Court Upholds Trader's Spoofing Conviction*, REUTERS (Aug. 7, 2017, 7:20 PM), <https://www.reuters.com/article/us-usa-court-spoofing/u-s-appeals-court-upholds-traders-spoofing-conviction-idUSKBN1AO00F> [<http://perma.cc/FZ8A-MJGU>].

regulation—would better serve the government’s goal of promoting fair and efficient financial markets. While scholars have discussed which legal tools should be used to regulate and police high-frequency trading,¹⁵ no one has analyzed individual criminal liability as a possible solution. This Comment does so. But it leaves further discussion on the topic—like potential HFT criminal legislation or ways to increase criminal HFT enforcement—to future scholarship.

First, this Comment provides necessary background information. This includes an explanation of HFT and the issues that arise in attempting to regulate the practice, elaboration of the current HFT regulatory landscape, and a description of the laws currently impacting HFT. Next, this Comment shows how criminal law can better ensure that high-frequency traders are not penalized for legitimate trading activity, which is a major concern of HFT regulation,¹⁶ while still deterring other high-frequency traders from engaging in wrongdoing. Finally, this Comment argues that within criminal law, individual liability should be used because it better furthers the goal of deterrence. Culpable individuals are easily identifiable in HFT, and, when applied to HFT, individual criminal liability leads to preferable consequences. Therefore, criminal enforcement of wrongdoing through individual liability should be utilized to regulate HFT.

II. BACKGROUND

A. AN OVERVIEW OF HFT

Although pinning down a precise definition has confounded regulators,¹⁷ the fundamental mechanism at the core of HFT is fairly straightforward: trading firms execute large volumes of trades at lightning fast speeds with the help of computer software.¹⁸ An example of a simple HFT strategy, exchange arbitrage, is illustrative. In exchange arbitrage, high-frequency traders take advantage of the minor discrepancies in a security’s price that occur between different exchanges.¹⁹ The trader buys low on one exchange and then sells high on another.²⁰ The speed at which these trades are executed is vital because the price discrepancies between

¹⁵ See, e.g., Vazquez, *supra* note 6, at 151.

¹⁶ Peter J. Henning, *Why High-Frequency Trading is So Hard to Regulate*, N.Y. TIMES: DEALBOOK (Oct. 20, 2014, 1:40 PM), <https://dealbook.nytimes.com/2014/10/20/why-high-frequency-trading-is-so-hard-to-regulate/> [http://perma.cc/4RTQ-X62V].

¹⁷ See Vazquez, *supra* note 6, at 160.

¹⁸ *Coscia*, 866 F.3d at 786.

¹⁹ *Id.*

²⁰ *Id.*

exchanges only last for a very short period of time—often fractions of a second.²¹ Although such price discrepancies are extremely small, significant profits can be made with high volumes of trades.²²

Speed is vital to any HFT strategy. To ensure that they are trading the fastest, HFT firms lease or purchase property as close to exchange data centers and servers as possible.²³ HFT firms also purchase (from exchanges) special access to high-speed cables—allowing them to trade on the exchange more quickly.²⁴ Accordingly, HFT gains its market advantage by superior and faster trading connections.

Concerns over HFT have grown since the Flash Crash,²⁵ which I will discuss later in Part II of this Comment, and as the percentage of HFT in terms of total trading volume has increased to between “40 to 70 percent of all trading.”²⁶ As of 2016, HFT constituted a \$28 billion industry.²⁷

Although the rise of HFT has raised some concerns, there are many positive effects of the practice. First, it can be very profitable for the trader and trading firm.²⁸ Second, HFT is beneficial to capital markets because it increases liquidity.²⁹ Liquidity is one of the most, if not the most, important market characteristics that investors consider.³⁰ By acting “as a sort of shock absorber,” liquidity smooths volatile price swings.³¹ Additionally, increased liquidity from HFT increases the willingness of intermediaries that buy and sell securities on their own account (market makers) to transact trades, which in turn further increases liquidity and trading volume.³² Increased liquidity from HFT has also decreased transaction costs.³³ Finally, HFT arbitrage closes gaps between markets and allows prices to more quickly reflect new information.³⁴ Thus, HFT makes markets more efficient.³⁵

²¹ *Id.*

²² *Id.*

²³ See MICHAEL LEWIS, *FLASH BOYS: A WALL STREET REVOLT* 62–63, 73, 79 (2014).

²⁴ Lin, *supra* note 4, at 1267.

²⁵ Henning, *supra* note 16.

²⁶ Thomas Lee Hazen, *Treatise on the Law of Securities Regulation* § 14:14 (October 2017).

²⁷ Vazquez, *supra* note 6, at 163.

²⁸ *United States v. Coscia*, 866 F.3d 782, 786 (7th Cir. 2017).

²⁹ Vazquez, *supra* note 6, at 171.

³⁰ *Id.*

³¹ *Id.* (internal quotations omitted).

³² *Id.*

³³ *Id.* at 172.

³⁴ *Id.*

³⁵ *Id.*

Some of these perceived benefits, however, may actually negatively impact the market. Scholars have noted that HFT can harm traditional investors.³⁶ For example, consider the following scenario: An individual calls their broker to submit an order to buy \$60,000 worth of a certain stock. The broker can currently buy the stock for \$60 per share, requiring 1,000 shares at that price to fill the individual's order. The broker notices that 500 shares of the stock are being offered on NASDAQ, 300 shares are being offered on the NYSE, and 200 shares on the BATS Global exchange. The broker submits orders in all three exchanges to purchase the 1,000 shares. However, after clicking "submit" on his computer, the broker receives a notification that he purchased less than 1,000 shares. Surprised, he looks at his screen and sees that the cheapest offer for the stock is now above \$60.³⁷ Due to their speed and information edge, high-frequency traders were able to notice "the first portion of the broker's order on one exchange, registered that he was interested in purchasing that security, bought it themselves on the second exchange, and offered it back to the broker at a higher price when his request reached the second exchange."³⁸ Because the high-frequency traders anticipated a larger trade when the order first began to fill, the traditional investor either had to settle with less than the 1,000 shares she ordered or fill the order at a higher price.³⁹ Thus, by quickly buying and selling securities, HFT unnecessarily raises prices for non-HFT firms.⁴⁰

Furthermore, even though HFT has been noted to smooth out volatility, it can also paradoxically increase volatility.⁴¹ Situations may occur where, due to HFT being a form of algorithmic trading, "a predatory algorithm can lock in a profit for a proprietary firm from an artificial increase or decrease in price."⁴² This can cause a security's price to move substantially for no tangible reason, causing traders to lose significant amounts of money.⁴³

Additionally, the speed at which high-frequency traders can execute trades "has increased market susceptibility to certain forms of criminal

³⁶ Tara E. Levens, *Too Fast, Too Frequent? High-Frequency Trading and Securities Class Actions*, 82 U. CHI. L. REV. 1511, 1532–33 (2015) (citing LEWIS, *supra* note 23, at 171).

³⁷ For a similar example, *see id.* at 1511.

³⁸ *Id.*

³⁹ *Id.*

⁴⁰ *See Lewis, supra* note 23, at 76, 78.

⁴¹ *Id.*

⁴² *Id.* at 175.

⁴³ *Id.*

conduct.”⁴⁴ One such strategy is spoofing⁴⁵—where traders enter buy and sell orders for a security with no intention of executing the order, but rather to manipulate the price of the security in a certain direction so that they profit.⁴⁶

Moreover, another key feature of HFT is that it can blur the line between legitimate trading activity and market manipulation.⁴⁷ Market manipulation was prohibited as part of the Securities Exchange Act of 1934.⁴⁸ The relevant provision states:

It shall be unlawful for any person, directly or indirectly

(1) For the purpose of creating a false or misleading appearance of active trading in any security other than a government security, or a false or misleading appearance with respect to the market for any such security, (A) to effect any transaction in such security which involves no change in the beneficial ownership thereof, or (B) to enter an order or orders for the purchase of such security with the knowledge that an order or orders of substantially the same size, at substantially the same time, and at substantially the same price, for the sale of any such security, has been or will be entered by or for the same or different parties, or (C) to enter any order or orders for the sale of any such security with the knowledge that an order or orders of substantially the same size, at substantially the same time, and at substantially the same price, for the purchase of such security, has been or will be entered by or for the same or different parties.

(2) To effect, alone or with 1 or more other persons, a series of transactions in any security registered on a national securities exchange, any security not so registered, or in connection with any security-based swap or security-based swap agreement with respect to such security creating actual or apparent active trading in such security, or raising or depressing the price of such security, for the purpose of inducing the purchase or sale of such security by others.⁴⁹

Accordingly, a high-frequency trader may violate this provision if they enter simultaneous buy and sell orders to purposely create “a false or misleading appearance of active trading[.]” Once the market moves in one direction, the trader can use their speed to cancel their orders on the side of the market that would lead to losses, while keeping and filling their orders on the other side of the market that is favorable to the price movement—ensuring profits. Thus, high cancellation rates can be evidence of market

⁴⁴ *United States v. Coscia*, 866 F.3d 782, 786 (7th Cir. 2017).

⁴⁵ *Id.*

⁴⁶ John I. Sanders, *Spoofing: A Proposal for Normalizing Divergent Securities and Commodities Futures Regimes*, 51 WAKE FOREST L. REV. 517, 518–19 (2016).

⁴⁷ See Vazquez, *supra* note 6, at 175.

⁴⁸ 15 U.S.C. § 78a (2012).

⁴⁹ 15 U.S.C. § 78i(a)(1)–(2) (2012).

manipulation.⁵⁰ However, some legitimate HFT strategies that place multiple bids and offers may also lead to high cancellation rates.⁵¹ Therefore, certain HFT strategies must be observed carefully because high cancellation rates can indicate both a high-frequency trader engaging in market manipulation and providing market liquidity.⁵² This blurring between legitimate and illegitimate behavior will be discussed more thoroughly in the Regulating HFT section of this Comment.

B. THE FLASH CRASH

The negative impact of high-frequency trading caught the world's attention after the Flash Crash.⁵³ During a thirty-six minute period on the afternoon of May 6, 2010, American markets experienced one of the most volatile periods in their history.⁵⁴ Major stock market indices, such as the S&P 500, Dow Jones Industrial Average, Nasdaq 100, and the Russell 2000, "collapsed and rebounded with extraordinary velocity."⁵⁵ The rapid collapse and just-as-sudden rebound was not limited to the stock market. Futures, options, and exchange-traded funds (ETFs) "experienced extraordinary price volatility often accompanied by spikes in trading volume."⁵⁶ Given the rapid collapse of prices across financial markets, these events became known as the "Flash Crash."⁵⁷

HFT has been cited as a factor in the Flash Crash. Michael Lewis' book, *Flash Boys: A Wall Street Revolt*, increased scrutiny of HFT by linking them to the events of May 6, 2010.⁵⁸ Lewis specifically criticized HFT's use of complex computer programs that "whipsaw prices by flooding the market with orders in milliseconds."⁵⁹ The Commodity Future Trading Commission (CFTC) has also stated that HFT was a contributor to the Flash Crash.⁶⁰ According to the CFTC, the ability of HFT to quickly absorb trading volume creates price adjustments that are costly to

⁵⁰ *Id.*

⁵¹ Vazquez, *supra* note 6, at 157.

⁵² *Id.* at 171.

⁵³ Henning, *supra* note 16.

⁵⁴ See generally Andrei Kirilenko, et al., *The Flash Crash: The Impact of High Frequency Trading on an Electronic Market*, J. FIN. 1 (2014).

⁵⁵ *Id.*

⁵⁶ *Id.*

⁵⁷ *Id.*

⁵⁸ Henning, *supra* note 16.

⁵⁹ *Id.*

⁶⁰ Kirilenko, *supra* note 54.

traditional market makers and other slower traders.⁶¹ This incentivizes market makers to keep “their inventory holdings to levels that can be too low to offset temporary liquidity imbalances.”⁶² As a result, a gigantic sell order can “lead to a liquidity-based crash accompanied by high trading volume and large price volatility.”⁶³ This is what occurred during the Flash Crash with E-mini S&P 500 stock index futures—which then spread quickly to other markets.⁶⁴ The Flash Crash, or the potential for other similar events, along with the increased susceptibility to illegitimate trading, demonstrates the need to provide some sort of oversight to HFT.

C. REGULATING HFT

Regulating HFT raises two major challenges. First, it is difficult to discern the difference between legitimate and illegitimate behavior due to the complexities of HFT trading strategies.⁶⁵ Second, even if a bright line could be drawn, there is no settled definition as to what constitutes HFT.⁶⁶

1. *Drawing a Line Between Acceptable and Unacceptable Behavior*

The difficulty in separating legitimate and illegitimate behavior is particularly an issue when the HFT acts as a market maker—an intermediary handling client trades on the HFT’s own account.⁶⁷ Market makers often have the liberty “to select the venue of [their] choice at no or little cost to [their] client[s].”⁶⁸ What makes wrongdoing by HFT market makers so difficult to separate from legitimate behavior is that the client-facing business provides the market maker with a justification for many trades.⁶⁹ For example, a high-frequency trader involved in market making

⁶¹ *Id.*

⁶² *Id.*

⁶³ *Id.*

⁶⁴ *Id.* S&P 500, Dow Jones Industrial Average, Nasdaq 100, and the Russell 2000, as well as derivatives such as futures, options, and ETFs collapsed and rebounded.

⁶⁵ Henning, *supra* note 16.

⁶⁶ See SEC. & EXCH. COMM’N, CONCEPT RELEASE ON EQUITY MARKET STRUCTURE, *supra* note 7 (noting that it is better to focus on tools and strategies employed by HFT “than attempt any single, precise definition of HFT”).

⁶⁷ See Andrew Verstein, *Benchmark Manipulation*, 56 B.C. L. REV. 215, 264 n.267 (2015) (“These difficulties [of showing that a trader is acting manipulatively] are only greater when the trader is an intermediary handling trades for a client . . .”).

⁶⁸ *Id.*

⁶⁹ See *id.*

can state that any suspect trades were simply made to hedge a client's order.⁷⁰ As Andrew Verstein noted:

The presence of an offsetting customer order is helpful circumstantial evidence for the manipulator. Indeed, it is telling that regulators will be drawn down the rabbit hole of showing a *lack* of offsetting customer orders; historically, the CFTC has spent its time trying to show the *presence* of offsetting orders. The Commodity Exchange Act specifically prohibits wash trades, or transactions designed to offset one another and thereby eliminate any economic substance. Complex institutions with responsibilities for other people's money gain a smokescreen against regulatory scrutiny as they pursue non-fraudulent manipulations.⁷¹

Therefore, the nature of legitimate client-driven trading business blurs the line between legal and illegal HFT conduct.

A 2014 Securities and Exchange Commission (SEC) settlement against Athena Capital Research demonstrates the difficulty regulators have in drawing a line between legal and illegal conduct in HFT.⁷² The SEC called the settlement the "first high frequency trading manipulation case."⁷³ The settlement order stated that Athena utilized a sophisticated algorithm that carried out a manipulative scheme where it would enter trading orders in the last two seconds of trading in order to push stock prices in a direction that would favor their other positions.⁷⁴ The difficulty with respect to regulation, however, arose in determining whether the trader *intended* to either artificially affect prices—and therefore commit market manipulation—or simply generate profit with trades that had a genuine economic purpose.⁷⁵

⁷⁰ See *id.* For example, a client may go to a HFT market maker wishing to sell \$1,000,000 of a certain security. If the high-frequency trader decides to fulfill the order, then they would buy the security using the high-frequency trader's own account. Thus, the high-frequency trader would be "long" \$1,000,000 worth of that security. To hedge their exposure from this client-generated long position, the high-frequency trader may sell that security, sell another correlated security, or buy/sell a correlated derivative.

⁷¹ *Id.* at 264 n.267.

⁷² See Press Release, *SEC Charges New York-Based High Frequency Trading Firm With Fraudulent Trading to Manipulate Closing Prices: First High Frequency Trading Manipulation Case*, SEC. & EXCH. COMM'N (Oct. 16, 2014), available at <https://www.sec.gov/news/press-release/2014-229#.VEOZlfdV8E> [http://perma.cc/RJ9P-GE46].

⁷³ *Id.*

⁷⁴ Athena Capital Research, LLC, Securities Exchange Act of 1934 Release No. 73369, Administrative Proceeding File No. 3-16199, at 2 (SEC Oct. 16, 2014).

⁷⁵ See Henning, *supra* note 16. See also Andrew Verstein, *Benchmark Manipulation*, 56 B.C. L. REV. 215, 263 (2015) ("Courts seem to agree that a party cannot be a manipulator if she makes only real trades with sufficient genuine economic purposes. That is, an actual purchase of securities, motivated by a desire to own the securities, cannot be manipulation, even if you also wished to influence the price.").

In the Athena case, the SEC used e-mails from Athena managers, which stated that the goal of that particular algorithm was to change prices.⁷⁶ The settlement order also contained internal e-mails stating that the firm's strategy was to dominate the auction and "owning the game."⁷⁷ Yet, it appears from the SEC's order that these statements alone may not have been sufficient to prove illegal market manipulation.⁷⁸ Additionally, the order provided great detail about how Athena would enter buy or sell orders ten minutes before the 4 p.m. close, and then would "flood[] the market with orders on the opposite side of that trade in the last two seconds of trading."⁷⁹ This would push the price for that stock towards the order entered ten minutes before the close and allow a profit from the price movement.⁸⁰ However, Athena also provided a service to clients via its trading by acting as a market maker and executing orders that may not have been filled at the close.⁸¹ At least some of Athena's trades, then, assisted investors.⁸² It therefore appears that trading conduct or statements indicating a purpose to change prices are not sufficient on their own to prove illegal market manipulation.

2. *Defining HFT*

The lack of any set definition of HFT makes regulatory oversight difficult. To provide regulatory oversight, an agency would have to invent its own definition of HFT.⁸³ Defining HFT would necessarily require distinguishing HFT from other types of trading. However, the proliferation of computer-assisted tools in modern day trading has made this separation problematic.⁸⁴ Notwithstanding this challenge, an agency would then have to supervise firms that fall within this definition, and these firms would

⁷⁶ Henning, *supra* note 16.

⁷⁷ Press Release, *supra* note 72.

⁷⁸ See Henning, *supra* note 16.

⁷⁹ *Id.*

⁸⁰ See *id.*

⁸¹ *Id.*

⁸² *Id.*

⁸³ See Vazquez, *supra* note 6, at 160.

⁸⁴ See Staff of the Division of Trading and Markets, *Equity Market Structure Literature Review: Part II: High Frequency Trading* at *5 (SEC, Mar 18, 2014) ("other types of computer-assisted trading tools are common in today's markets that may generate market activity that is difficult to distinguish from HFT These tools include smart order routing systems that are designed to deal with the large number of trading venues in the fragmented U.S. equity market structure.").

have to meet certain requirements.⁸⁵ The agency would have to examine the regulated firm and “determine which specific trades warrant civil [or] criminal liability” (illegal trades).⁸⁶ While providing the benefit of policing illegitimate behavior, such oversight would also be burdensome and costly for both the agency and the firms being regulated.⁸⁷ The main issue with this regulatory regime, however, is that attempts to define the practice are either under- or over-inclusive, with problems arising from each scenario.⁸⁸

American agencies have currently adopted an over-inclusive “characteristic and attribute oriented approach” to define HFT.⁸⁹ The elements of this definition include both legal and illegal trades.⁹⁰ This approach to defining HFT overlaps with the characteristics and attributes associated with other non-HFT algorithmic and automated trading strategies (ATS).⁹¹ For example, the SEC has noted a common ATS which utilizes large order execution algorithms on behalf of institutional investors.⁹² These algorithms “take[] institutional investor orders, which typically are too large to be executed all at once without excessive price impact, and slice[] them into many small orders that are fed into the marketplace over time.”⁹³ The SEC noted that these large order execution algorithms should not be considered “HFT because they typically enable institutional investors to establish or liquidate positions with time horizons far beyond the primarily intraday horizons characteristic of HFT.”⁹⁴ These non-HFT ATS do not have the same susceptibility to illegal trades and consequently

⁸⁵ See Vazquez, *supra* note 6, at 160. The SEC, for example, utilizes several characteristics to define HFT. Staff of the Division of Trading and Markets, *supra* note 84 at *4. These include:

1. Use of extraordinarily high speed and sophisticated programs for generating, routing, and executing orders.
2. Use of co-location services and individual data feeds offered by exchanges and others to minimize network and other latencies.
3. Very short time-frames for establishing and liquidating positions.
4. Submission of numerous orders that are cancelled shortly after submission.
5. Ending the trading day in as close to a flat position as possible (that is, not carrying significant, unhedged positions overnight). *Id.*

⁸⁶ Vazquez, *supra* note 6, at 160.

⁸⁷ See *id.*

⁸⁸ See *id.* See also SEC. & EXCH. COMM’N, CONCEPT RELEASE ON EQUITY MARKET STRUCTURE, *supra* note 7 (SEC admitting that its own definition of HFT is both over and under-inclusive).

⁸⁹ Vazquez, *supra* note 6, at 160.

⁹⁰ *Id.* at 160–61.

⁹¹ *Id.*

⁹² SEC. & EXCH. COMM’N, *supra* note 7 at 3606.

⁹³ Staff of the Division of Trading and Markets, *supra* note 84 at 5.

⁹⁴ *Id.*

do not warrant the same type of oversight.⁹⁵ Thus, in an attempt to rein in illegal behavior by HFT firms, this definition would capture non-HFT firms engaged in acceptable trading activity and hold them to closer scrutiny.⁹⁶ Such an outcome would be inefficient as it would waste resources and increase costs for both the regulator and supervised firms.⁹⁷

However, an under-inclusive definition is also problematic. In an under-inclusive definition, firms that do not meet the specific thresholds for regulation would avoid oversight altogether.⁹⁸ This would allow HFT firms that do not meet the narrow definition to be able to conduct illegal trades without consequence.⁹⁹ For example, while admitting that its own definition is over-inclusive, the SEC has also stated that its definition of HFT is simultaneously under-inclusive as well because limiting HFT to the specific characteristics it had identified¹⁰⁰ would “inappropriately narrow the range of firms that are classified as HFT.”¹⁰¹ To avoid this, regulators, such as the SEC, could provide an additional set of measures to firms that do not meet these specific criteria, but still conduct similar strategies.¹⁰² Such an approach, however, “would be unnecessarily costly and expose regulators to multiple rounds of administrative oversight.”¹⁰³ Accordingly, the difficulty in discerning legitimate and illegitimate HFT behavior and in even providing an accurate definition of the practice has made HFT regulation difficult.

D. CURRENT LAWS IMPACTING HFT

Current federal statutory law has very little, if any, direct focus on HFT.¹⁰⁴ The Dodd-Frank Act’s Volcker Rule¹⁰⁵ does limit banks’ abilities

⁹⁵ See Vazquez, *supra* note 6, at 161.

⁹⁶ *Id.* See also Staff of the Division of Trading and Markets, *supra* note 84 at *5 (noting that an issue with the SEC’s definition of HFT is that “in the absence of trading account data, the use of general proxies for HFT that can be calculated with publicly available, market-wide data may capture a great deal of algorithmic and computer-assisted trading that should not be classified as HFT.”).

⁹⁷ See Vazquez, *supra* note 6, at 160.

⁹⁸ *Id.*

⁹⁹ *Id.*

¹⁰⁰ Staff of the Division of Trading and Markets, *supra* note 84, at *4 (stating the characteristics that the SEC has identified to define HFT).

¹⁰¹ *Id.*

¹⁰² See Vazquez, *supra* note 6, at 160.

¹⁰³ *Id.*

¹⁰⁴ *Id.* at 163.

¹⁰⁵ The Volcker Rule, or § 619 of the Dodd-Frank Act, restricts certain banking entities from engaging in certain financial activities, such as proprietary trading, investing in private

to engage in HFT strategies through restrictions on their ability to trade.¹⁰⁶ However, many of the entities that engage in HFT are not banks, but rather hedge funds, proprietary trading firms, or mutual funds.¹⁰⁷ In practice, the Volcker Rule has simply made HFT shift away from large banks towards these smaller HFT firms.¹⁰⁸

The Dodd-Frank Act did, however, target a practice that is made more feasible through HFT by amending the Commodities and Exchange Act (CEA) to criminalize spoofing.¹⁰⁹ As mentioned previously, The Dodd-Frank Act defines spoofing as “bidding or offering with the intent to cancel the bid or offer before execution[.]”¹¹⁰ John I. Sanders further defines spoofing as a strategy where a trader, or spoofer, places “large trades in hopes of inducing others to act in response to those trades; the ‘spoofer’ then cancels his initial trades in order to capture a profit on trading positions he holds on the opposite side of the market.”¹¹¹ Spoofing, similar to legitimate HFT, uses lightning fast trading strategies.¹¹² Whereas legitimate trading takes advantage of naturally occurring market events, spoofing involves artificially moving the price of a security.¹¹³ The Seventh Circuit has explained simply how this artificial price movement can occur:

This artificial movement is accomplished in a number of ways, although it is most simply realized by placing large and small orders on opposite sides of the market. The small order is placed at a desired price, which is either above or below the current market price, depending on whether the trader wants to buy or sell. If the trader wants to buy, the price on the small batch will be lower than the market price; if the trader wants to sell, the price on the small batch will be higher. Large orders are then placed on the opposite side of the market at prices designed to shift the market toward the price at which the small order was listed.¹¹⁴

Thus, while not mentioning HFT by name, Congress did target one illegitimate trading strategy that has been made much easier through HFT.

equity funds, and investing in private equity funds. R. Rex Chatterjee, *Dictionaries Fail: The Volcker Rule’s Reliance on Definitions Renders it Ineffective and a New Solution is Needed to Adequately Regulate Proprietary Trading*, 8 B.Y.U. INT’L L. & MGMT. REV. 33, 34 (2011).

¹⁰⁶ Vazquez, *supra* note 6, at 163.

¹⁰⁷ *Id.*

¹⁰⁸ *Id.*

¹⁰⁹ *United States v. Coscia*, 866 F.3d 782, 786 (7th Cir. 2017); *United States v. Coscia*, 100 F. Supp. 3d 653, 656 (N.D. Ill. 2015) (unpublished).

¹¹⁰ 7 U.S.C. § 6c(a)(5)(c) (2012).

¹¹¹ Sanders, *supra* note 46, at 518–19.

¹¹² *Coscia*, 866 F.3d at 787.

¹¹³ *Id.*

¹¹⁴ *Id.*

E. *UNITED STATES V. COSCIA*

In 2017, the Seventh Circuit upheld the first conviction based on this anti-spoofing provision.¹¹⁵ The case, *Coscia*, helps to illustrate an example of distinguishing illegal HFT practices from legal ones and how individual criminal liability can regulate them. In 2014, *Coscia* was indicted for commodities fraud and spoofing based on trading activity he conducted for approximately ten weeks in 2011.¹¹⁶ About a year after being charged, a jury found him guilty on all counts.¹¹⁷ Testimony at the trial showed that during these ten weeks, *Coscia* would conduct a very particular pattern of trading activity.¹¹⁸ If he wanted to buy, *Coscia* would place a small order below the current market price.¹¹⁹ He would then place large sell orders, at ten times the amount of the small buy order, above the current market price, on the other side of the market.¹²⁰ The large orders would create a perception of abundant market supply, pushing the market price down.¹²¹ At trial, the government introduced evidence that *Coscia* intended to cancel the large orders before they were executed with the help of two programs.¹²² The creators of the programs testified that *Coscia* directed them to make the program “act like a decoy” and so designed it to “get a reaction from the other algorithms.”¹²³ One creator testified that he created the algorithm to cancel the large orders “in three particular circumstances: (1) based on the passage of time (usually measured in milliseconds); (2) the partial filling of the large orders; or (3) complete filling of the small orders.”¹²⁴ The speed at which *Coscia* could place and cancel orders (milliseconds), and by extension HFT, is what allowed his illegal scheme to be successful and generate him profits.¹²⁵

Although there are benefits to HFT, situations like the Flash Crash and the illegal trades conducted by *Coscia* demonstrate the dangers of the practice. Conduct like spoofing, which creates false supply and demand so

¹¹⁵ Nate Raymond, *U.S. Appeals Court Upholds Trader’s Spoofing Conviction*, REUTERS (Aug. 7, 2017), available at <https://www.reuters.com/article/us-usa-court-spoofing/u-s-appeals-court-upholds-traders-spoofing-conviction-idUSKBN1AO00F> [<http://perma.cc/FZ8A-MJGU>].

¹¹⁶ *Coscia*, 866 F.3d at 787–88.

¹¹⁷ *Id.* at 790.

¹¹⁸ *Id.* at 788.

¹¹⁹ *Id.*

¹²⁰ *Id.*

¹²¹ *See id.*

¹²² *Id.* at 788–89.

¹²³ *Id.* at 789.

¹²⁴ *Id.*

¹²⁵ *See id.* at 788–89.

that the spoofer can profit, damages the integrity of the market and alienates investors.¹²⁶ Without entering into a thorough analysis of whether regulation of HFT is appropriate, I will assume that these dangers are sufficient to warrant regulation of the practice.

III. INDIVIDUAL CRIMINAL LIABILITY AS A TOOL TO REGULATE HFT

The rest of this Comment will argue that individual criminal liability for illegal conduct by high-frequency traders, as exemplified in *Coscia*, is an optimal enforcement paradigm for HFT regulation. First, this Comment will show that certain advantages of criminal law make it preferable for ascertaining liability to other forms of regulation, especially as it applies to HFT. It will also argue that criminal law would better further the goal of general deterrence. Next, this Comment will make the case that the individual culpable traders should be prosecuted instead of the firms that employ them. It will argue that individual criminal liability furthers the goal of deterrence more so than corporate criminal liability. Moreover, it will highlight that one of the reasons for corporate criminal liability—the difficulty in identifying the culpable party—is not present in HFT. Finally, this Comment will conclude by discussing the consequences of applying corporate criminal liability to HFT and demonstrating why individual criminal liability is more appropriate.

A. ADVANTAGES OF CRIMINAL LAW

1. *Intentionality and Standard of Proof*

Criminal liability has major advantages over other forms of regulation with respect to illegitimate behavior in the HFT space. First, criminal liability would better tackle a major concern in regulating HFT—how to differentiate between legitimate and illegitimate trades. Given the speed at which high-frequency traders place and cancel orders, the difficulty in drawing a line between illusory and real supply-and-demand is greater.¹²⁷ Thus, the problem is more pressing compared to other traditional forms of trading. Compared to civil liability, the mens rea component inherent in criminal liability, combined with criminal law's heightened burden of proof

¹²⁶ See *United States v. O'Hagan*, 521 U.S. 642, 658 (1997) (“Although informational disparity is inevitable in the securities markets, investors likely would hesitate to venture their capital in a market where trading based on misappropriated nonpublic information is unchecked by law.”); *Basic Inc. v. Levinson*, 485 U.S. 224, 247 (1988) (“Who would knowingly roll the dice in a crooked crap game?”) (quoting *Schlanger v. Four-Phase Sys. Inc.*, 555 F. Supp. 535, 538 (S.D.N.Y. 1982) (internal quotation mark omitted)).

¹²⁷ See *Coscia*, 866 F.3d at 787.

standard, better ensures that liability is only found when a high-frequency trader clearly, and beyond a reasonable doubt, had the intention to engage in illegal trading.

Criminal law functions to punish the culpable; those who do not have culpability should not be criminally sanctioned.¹²⁸ Given the complexities of HFT, there may be a fear that a trader could be held criminally liable for legitimate behavior. As the Athena Capital example showed, even though the firm was fined and given an administrative order, the possibility still existed that some of its trades served a purpose to clients via market making.¹²⁹ Thus, the line in the HFT space between legal trading activity and wrongful conduct can be blurry. However, criminal laws usually include a culpability, or mens rea, component¹³⁰ that must be proven beyond a reasonable doubt.¹³¹ The requisite mens rea and higher burden of proof in an individual criminal prosecution would better ensure that high-frequency traders actually committed illegal conduct.

Coscia exemplifies this concept. In *Coscia*, the defendant argued that the definition of spoofing in the Dodd-Frank Act, even if it provided notice, was too arbitrary.¹³² Specifically, he noted “that high-frequency traders cancel 98% of orders before execution and that there are simply no ‘tangible parameters to distinguish [Mr.] *Coscia*’s purported intent from that of the other traders.”¹³³ However, in the American criminal justice system, a defendant must prove that enforcement in his *individual* case was arbitrary to avoid being held criminally liable.¹³⁴ Therefore, arbitrary enforcement would not be an issue because, like in *Coscia*, a defendant’s

¹²⁸ J. Kelly Strader, (*Re*)*Conceptualizing Insider Trading: United States v. Newman and the Intent to Defraud*, 80 BROOK. L. REV. 1419, 1425 (2015).

¹²⁹ Henning, *supra* note 16.

¹³⁰ See *United States v. U.S. Gypsum Co.*, 438 U.S. 422, 436 (1978) (“We start with the familiar proposition that ‘[t]he existence of a *mens rea* is the rule of, rather than the exception to, the principles of Anglo-American criminal jurisprudence.’”) (alterations in original).

¹³¹ Stephen J. Morse & Morris B. Hoffman, *The Uneasy Entente Between Legal Insanity and Mens Rea: Beyond Clark v. Arizona*, 97 J. CRIM. L. & CRIMINOLOGY 1071, 1074 (2007).

¹³² *Coscia*, 866 F.3d at 793.

¹³³ *Id.*

¹³⁴ See *id.* at 794:

[T]he defendant must prove that *his* prosecution arose from arbitrary enforcement. As explained by the Second Circuit, this inquiry ‘involve[s] determining whether the conduct at issue falls so squarely in the core of what is prohibited by the law that there is no substantial concern about arbitrary enforcement because no reasonable enforcing officer could doubt the law’s application in the circumstances.

(quoting *Farrell v. Burke*, 449 F.3d 470, 494 (2d Cir. 2006)).

conduct would have to fall well within a statute's prohibited conduct to be convicted.

Furthermore, *Coscia* also demonstrates how criminal law provides a solution to the blurry line between legitimate and illegitimate trading. In the Dodd Frank anti-spoofing provision, a defendant must have had "the *intent* to cancel the bid or offer before execution."¹³⁵ As the Seventh Circuit noted, "[c]riminal prosecution is thus limited to the pool of traders who exhibit the requisite criminal intent."¹³⁶ The court further opined:

the anti-spoofing statute's intent requirement renders spoofing meaningfully different from legal trades such as 'stop-loss orders' ('an order to sell a security once it reaches a certain price') or 'fill-or-kill orders' ('an order that must be executed in full immediately, or the entire order is cancelled') because those orders are designed to be executed upon the arrival of certain subsequent events. Spoofing, on the other hand, requires, an *intent* to cancel the order at the time it was placed.¹³⁷

Thus, like the anti-spoofing provision, Congress can criminalize unwanted practices in HFT that would avoid arbitrary enforcement by requiring an intentionality element in their statutes.

2. General Deterrence

Another advantage of using criminal law to regulate wrongdoing in HFT is that it would further the goals of general deterrence more than other forms of regulation. For white collar cases in particular, general deterrence is the main focus.¹³⁸ The threat of incarceration more potently discourages behavior than a system of pricing, such as civil liability.¹³⁹ There may be some concern that convictions will lead to offenders going to jail for an unnecessarily long time. This concern is likely inflamed by the recent trend in white collar crime of increased prison sentences.¹⁴⁰ An example is the conviction of Raj Rajaratnam, who received the longest prison sentence for

¹³⁵ 7 U.S.C. § 6c(a)(5)(C) (emphasis added).

¹³⁶ *Coscia*, 866 F.3d. at 794.

¹³⁷ *Id.* at 795 (emphasis added).

¹³⁸ Todd Haugh, *Sentencing the Why of White Collar Crime*, 82 FORDHAM L. REV. 3143, 3182 (2014).

¹³⁹ Kip Schlegel et al., *Are White-Collar Crimes Overcriminalized? Some Evidence on the Use of Criminal Sanctions Against Securities Violators*, 28 W. ST. U. L. REV. 117, 134 (2000–2001) ("A logical rationale for the extension of the criminal sanction to economic activity is the perceived need for more potent deterrents than those offered through a system of pricing. Incarceration and fines serve to inhibit these actions more than other methods of social control.").

¹⁴⁰ Driggers, *supra* note 8, at 2034 ("Rajaratnam's prison sentence is likely . . . a reflection of the trend toward increased incarceration of white collar criminals generally.").

insider trading in history.¹⁴¹ However, prosecutors do not need to seek out long sentences to be effective.¹⁴² In fact, it is the threat of prosecution *period*, and not the length of prison sentences, that will deter high-frequency traders.¹⁴³ Therefore, to increase deterrence of wrongdoing by high-frequency traders, prosecutors must simply increase criminal enforcement rather than seek long prison sentences.

General deterrence dissuades society as a whole from engaging in a particular offense by legally punishing those who commit the offense.¹⁴⁴ There are two types of general deterrence—marginal general deterrence and absolute general deterrence.¹⁴⁵ Marginal deterrence is the deterrent effect obtained from increasingly harsher penalties.¹⁴⁶ However, studies suggest that increasing sentences for an already criminalized offense does not decrease the frequency of that offense.¹⁴⁷ A 2014 study by the National Research Council analyzed numerous studies and found that there was almost no connection between the crime rate and harsh criminal penalties.¹⁴⁸ Although some scholars argue that fewer white collar offenders should be imprisoned and that “[m]arginal general deterrence

¹⁴¹ *Id.* at 2021.

¹⁴² See Lucian E. Dervan, *White Collar Overcriminalization: Deterrence, Plea Bargain, and the Loss of Innocence*, 101 KY. L.J. 723, 740 (2013) (“As noted above, increasing sentences, particularly where the conduct is already criminalized, does not decrease the occurrence of the offense.”).

¹⁴³ See *id.* at 739–40 (“Interestingly, studies in the same field indicate that the likelihood of apprehension and conviction does deter criminal behavior in a way that increasing sentencing severity does not.”).

¹⁴⁴ Mirko Bagaric et al., *Halting the Senseless Civil War Against White-Collar Offenders: “The Conduct Undermined the Integrity of the Markets” and Other Fallacies*, 206 MICH. ST. L. REV. 1019, 1064 (2016).

¹⁴⁵ *E.g., id.* at 1064.

¹⁴⁶ *Id.*

¹⁴⁷ See NAT’L RESEARCH COUNCIL, *THE GROWTH OF INCARCERATION IN THE UNITED STATES, EXPLORING CAUSES AND CONSEQUENCES* 135 (Jeremy Travis et al. eds., 2014) (showing that sentencing enhancements created by “three-strike” laws had negligible or no effect on crime rates); see also Bagaric et al., *supra* note 144, at 1064 (“The evidence suggests that marginal deterrence is a flawed theory”); Dervan, *supra* note 142, at 740 (“As noted above, increasing sentences, particularly where the conduct is already criminalized, does not decrease the occurrence of the offense.”); see also Sandeep Gopalan &

Mirko Bagaric, *Progressive Alternatives to Imprisonment in an Increasingly Punitive (And Self-Defeating) Society*, 40 SEATTLE U. L. REV. 57, 93 (2016) (“The empirical data on general deterrence suggests that absolute general deterrence is a valid theory. However, marginal general deterrence seems to be flawed.”).

¹⁴⁸ Gopalan & Bagaric, *supra* note 147, at 93.

seems to be flawed in relation to all penalty types,” these scholars still concede that absolute general deterrence does have an effect.¹⁴⁹

Absolute general deterrence concerns whether there is any connection whatsoever between the occurrence of criminal conduct and criminal sanctions.¹⁵⁰ Unlike marginal general deterrence, “[a]bsolute general deterrence does not require or support the imposition of harsh sanctions.”¹⁵¹ As opposed to marginal general deterrence, studies suggest that absolute general deterrence does indeed work.¹⁵² When people conduct a cost-benefit analysis before committing crimes, they do not weigh what will happen to them if they are caught.¹⁵³ Instead, they typically weigh the risk of getting caught itself.¹⁵⁴ As Mirko Bagaric, Dan Hunter, and Gabriel Wolf have stated, “[t]he most effective means of reducing crime is not increasing criminal penalties, but rather encouraging the perception in people’s minds that, if they commit an offense, they will be detected and prosecuted.”¹⁵⁵ Therefore, what would increase deterrence of HFT

¹⁴⁹ Bagaric et al., *supra* note 144, at 1064–66 (“While there does not seem to be a link between higher penalties and less crime, it seems that people are not totally irrational when they contemplate committing crime. The evidence shows that to the extent that people make a cost-benefit decision about committing crimes, they generally only weigh up the risk of being caught, not what will happen when they are apprehended.”).

¹⁵⁰ *Id.* at 1064.

¹⁵¹ *Id.*

¹⁵² *Id.* (“The evidence suggests . . . absolute general deterrence does work. There is a large body of literature devoted to this issue.”); Dervan, *supra* note 142, at 739–40 (“Interestingly, studies in the same field indicate that the likelihood of apprehension and conviction does deter criminal behavior in a way that increasing sentencing severity does not.”); Driggers, *supra* note 8, at 2036 (“Some scholars have noted that potential criminals behave rationally in response to changes in law enforcement and crackdowns can have a general deterrent effect on individuals, at least initially.”). See also NAT’L RESEARCH COUNCIL, *supra* note 147 at 140 (“all of the evidence on the deterrent effect of certainty of punishment pertains to the deterrent effect of the certainty of apprehension, not to the certainty of postarrest outcomes (including certainty of imprisonment given conviction)”).

¹⁵³ Bagaric et al., *supra* note 144, at 1066 (“While there does not seem to be a link between higher penalties and less crime, it seems that people are not totally irrational when they contemplate committing crime. The evidence shows that to the extent that people make a cost-benefit decision about committing crimes, they generally only weigh up the risk of being caught, not what will happen when they are apprehended.”).

¹⁵⁴ *Id.*

¹⁵⁵ Mirko Bagaric et al., *Technological Incarceration and the End of the Prison Crisis*, 108 J. CRIM. L. & CRIMINOLOGY, 73, 95 (2018). See also NAT’L RESEARCH COUNCIL, *supra* note 147, at 68 (“In contemporary society, the certainty of punishment depends on the probability of arrest given a criminal offense and the probability of punishment given an arrest. For a formal sanction to be imposed, the crime must be brought to official attention, typically by victim report, and the offender must then be apprehended, usually by the police. The offender next be charged, successfully prosecuted, and finally sentenced by the courts.”).

misconduct is not increased prison sentences, but rather increased criminal enforcement.

Individual criminal liability in the HFT space would be especially potent in its absolute general deterrence effect. High-frequency traders would be more deterrable than non-white collar offenders because “they have more to lose monetarily and in community standing, [] their crimes are often calculated to bring about a specific profit[,]” and they “may be more fearful of the possibility of jail time.”¹⁵⁶ In analyzing the sentence of Raj Rajaratnam, Anna Driggers noted that his sentence would:

likely be an effective deterrent. First, Rajaratnam’s sentence will send a message to a specific population of traders, those who consider or engage in insider trading, as they see the zeal of prosecutors and their eagerness to use new investigative techniques. Second, the sentence upholds well-known securities laws and demonstrates the government is serious about enforcing such laws.¹⁵⁷

Due to the almost negligible amount of enforcement against HFT—as evidenced by the first high-frequency trading case (Athena) not arising until 2014 and only one conviction of spoofing since it was criminalized in 2010—increased criminal enforcement of wrongdoing in the HFT space would send an especially strong message to high-frequency traders.¹⁵⁸

Carl Emigholz counters the belief that general deterrence has a greater effect on white collar offenders because “certainty of apprehension, celerity and severity—the bedrock of deterrence—are lacking in the white-collar context.”¹⁵⁹ He notes:

White-collar offenders often assume that they will not be caught. Most studies conducted on white collar criminals acknowledge “the serious limitation[] in imputing any relationship between those who commit these crimes and the likelihood of actually being detected and formally adjudicated for the behavior.” These results are intuitive. White-collar criminals often operate within the framework of a complicated, legitimate organization, making detection more difficult, they have much greater resources to resist prosecution, and the defendant is often of high social standing. Additionally, there are not as many resources devoted to detection and prosecution of

¹⁵⁶ See Carl Emigholz, *Utilitarianism, Retributivism and the White Collar-Drug Crime Sentencing Disparity: Toward a Unified Theory of Enforcement*, 58 RUTGERS L. REV. 583, 609 (writing about white collar offenders in general).

¹⁵⁷ Driggers, *supra* note 8, at 2036–37.

¹⁵⁸ Similar to how Rajaratnam’s sentence will send a message to a specific population of traders, increased criminal enforcement would likewise send a message to high-frequency traders “as they see the zeal of prosecutors and their eagerness to use new investigative techniques.” *See id.*

¹⁵⁹ Emigholz, *supra* note 156, at 609.

white-collar offenses. The combination of inadequate resources and increased complexity greatly hinder effective enforcement.¹⁶⁰

Lucian E. Dervan also raises the possibility that “white collar offenders are particularly susceptible to a belief that they will not be detected because of the often sophisticated nature of their offenses.”¹⁶¹

However, both scholars’ arguments necessarily presuppose that there would be low enforcement of white collar offenses. Their arguments are exactly why more criminal enforcement is needed in the HFT space. Given the more sophisticated nature of HFT compared to traditional trading, high-frequency traders may be even more susceptible to the belief that they will not be detected. Thus, increased enforcement of criminal wrongdoing committed by HFT would demonstrate to high-frequency traders that even though their illegal trading is extremely sophisticated, they are still susceptible to detection and punishment. Therefore, the government, without having to increase or demand long prison sentences,¹⁶² should increase enforcement of criminal wrongdoing by high-frequency traders.

B. INDIVIDUAL CRIMINAL LIABILITY IS PREFERABLE TO CORPORATE CRIMINAL LIABILITY

Once it is determined that criminal law should be used to regulate wrongdoing in the HFT space, the decision then turns to whether the individual, the firm, or both should be held liable. The answer is resoundingly the individual.

1. *Individual Criminal Liability Better Furthers the Goal of Deterrence*

Corporations do not have certain capacities of natural persons, making a basic characteristic of criminal law inapplicable—corporations cannot go to jail.¹⁶³ Without this aspect, criminal corporate liability does nothing to

¹⁶⁰ *Id.* at 609–10.

¹⁶¹ Dervan, *supra* note 142, at 741.

¹⁶² See Mirko Bagaric, *A Rational Theory of Mitigation and Aggravation in Sentencing: Why Less is More When it Comes to Punishing Criminals*, 62 *BUFF. L. REV.* 1159, 1215 (2014) (“The objective of absolute deterrence is satisfied merely by ensuring that the penalty invoked is something that offenders would seek to avoid, that is, they find it unpleasant. It does not have to be particularly harsh. It is satisfied by a prison term—long or short—or, for that matter, probation or a non-trivial fine.”).

¹⁶³ Gregory M. Gilchrist, *The Expressive Cost of Corporate Immunity*, 64 *HASTINGS L.J.* 1, 4–5 (2012) (“[C]riminal law has traditionally been distinguished by resort to corporal punishment and deprivation of liberty. Since corporations cannot be beaten or jailed, this distinctive function of criminal law is unnecessary”); see also Ashley S. Kircher, *Corporate Criminal Liability Versus Corporate Securities Fraud Liability: Analyzing the Divergence in Standards of Culpability*, 46 *AM. CRIM. L. REV.* 157, 157 (“criminal law, and the concept of

advance deterrence, a major goal of criminal law.¹⁶⁴ By removing the possibility of a prison sentence, the penalties imposed by criminal liability are effectively those that would be imposed through civil liability, gutting an important mechanism for deterrence.¹⁶⁵

Individual criminal liability for corporate wrongdoing is based on the premise that individuals culpable of the wrongdoing should be the ones being punished.¹⁶⁶ Deterrence is furthered by this premise; punishing those culpable of wrongful conduct will make such conduct less likely to occur in the future.¹⁶⁷ However, the greatest deterrent effect comes from holding individual actors responsible for wrongdoing.¹⁶⁸ By extracting large criminal fines from corporations, shareholders bear the cost of wrongdoing for the cost of individual actors who actually committed the illegal conduct.¹⁶⁹ However, shareholders are not engaged in the conduct that gives rise to the criminal offense and they are not in a position to prevent such corporate wrongdoing.¹⁷⁰

“An organization[,]” Andrew Weissman and David Newman write, “cannot control the actions of its employees in the manner that an individual typically can control her own actions.”¹⁷¹ While an argument can be made that the reputational damage from a criminal conviction would generate a sufficient deterrent effect, the reputational impact “is too imprecise and sometimes too disconnected from the harm to be prevented to serve as a strong justification for imposition of criminal liability.”¹⁷² Additionally, a corporation can take all reasonable efforts to prevent

intent is dispositive in civil securities fraud cases brought against corporate defendants under Section 10(b) of the Securities and Exchange Act of 1934. A central problem in this area is the question of how a corporation, which is only a ‘person’ by an act of legal fiction, can be said to possess a ‘unitary, discrete, and demonstrable state of mind.’”)

¹⁶⁴ See Joan MacLeod Heminway, *(Not) Holding Firms Criminally Responsible for the Reckless Insider Trading of Their Employees*, 46 STETSON L. REV. 127, 140 (2016); J. Kelly Strader, *supra* note 128, at 1444 (“In retributive terms, one who acts with a purpose to cause harm is more culpable than one who caused harm by accident.”).

¹⁶⁵ See Gilchrist, *supra* note 163, at 4–5.

¹⁶⁶ Strader, *supra* note 128, at 1425.

¹⁶⁷ See Kircher, *supra* note 163, at 173–74 (2009) (noting that imposing direct liability on people is more likely to motivate them to prevent such behavior).

¹⁶⁸ James R. Elkins, *Corporations and the Criminal Law: An Uneasy Alliance*, 65 KY. L.J. 73, 82 (1976).

¹⁶⁹ *Id.*

¹⁷⁰ Kathleen F. Brickey, *Rethinking Corporate Liability Under the Model Penal Code*, 19 RUTGERS L. J. 593, 615 (1988).

¹⁷¹ Andrew Weissmann & David Newman, *Rethinking Criminal Corporate Liability*, 82 IND. L. J. 411, 432 (2007).

¹⁷² Gilchrist, *supra* note 163, at 47 n.277.

wrongdoing from an employee, and yet an employee may still partake in some criminal conduct.¹⁷³ In such a case, a corporation is lacking in volition.¹⁷⁴ Lacking volition makes deterrence more difficult.¹⁷⁵ Where a corporation has already done all that it can to deter and detect illegal behavior by its employees, then a major goal of corporate criminal liability is satisfied.¹⁷⁶ Holding HFT firms that engage in illegal behavior criminally liable, without holding those traders who actually conducted the wrongdoing liable, may accomplish very little if the firm already has institutional mechanisms in place to prevent such behavior. Thus, criminal corporate liability may not efficiently maximize deterrence of the wrongful behavior.

The United States Department of Justice (DOJ) even agreed that more individual criminal liability for corporate wrongdoing was needed to effectively deter white collar criminal behavior.¹⁷⁷ In 2015, the DOJ issued guidance in a memo entitled, “Individual Accountability for Corporate Wrongdoing” (Yates Memo), encouraging department lawyers to seek charges against individuals in cases of corporate wrongdoing.¹⁷⁸ According to the Yates Memo, such action is important because it incentivizes firms to change their behavior, deters future illegal conduct, ensures that those who committed the wrongdoing are held accountable for their actions, ensures that the proper parties are held responsible for their actions, and fosters public confidence in our legal system.¹⁷⁹ “One of the most effective ways to combat corporate misconduct,” Deputy Attorney General Sally Yates wrote, “is by seeking accountability from the individuals who perpetrated the wrongdoing.”¹⁸⁰ In the antitrust context, the former DOJ Deputy Assistant Attorney General for Criminal Enforcement stated that prison sentences for individuals convicted of antitrust crimes were “the single most effective deterrent to the ‘temptation to cheat the system and profit from collusion.’”¹⁸¹ This reasoning similarly applies to the HFT context.

¹⁷³ Weissmann & Newman, *supra* note 171, at 431.

¹⁷⁴ *Id.*

¹⁷⁵ Strader, *supra* note 128, at 1444.

¹⁷⁶ Weissmann & Newman, *supra* note 171, at 432.

¹⁷⁷ Sally Quillian Yates, Deputy Att’y Gen., *Individual Accountability for Corporate Wrongdoing*, DEP’T OF JUST. (Sept. 9, 2015), available at <http://www.justice.gov/dag/file/769036/download> [<http://perma.cc/9JPL-G6DC>].

¹⁷⁸ *Id.*

¹⁷⁹ *Id.*

¹⁸⁰ *Id.*

¹⁸¹ Brent Snyder, Remarks at the Yale School of Management Global Antitrust Enforcement Conference (Feb. 19, 2015) (transcript available at <https://www.justice.gov/opa/file/826721/download>) [<http://perma.cc/PRC9-M836>].

Individual criminal liability, accompanied with the threat of prison sentences, would help deter high-frequency traders from using their trading speeds to cheat the market.

2. *Wrongdoers in HFT are Easily Identifiable*

An argument in favor of corporate criminal liability, as opposed to individual criminal liability, is that it finds accountability when the culpable individual is not easily identifiable.¹⁸² Such situations arise when individual culpability is masked by the corporate structure and size of the company, making it difficult to investigate and prosecute corporate wrongdoing.¹⁸³ This is not the case with HFT.

Whereas other types of white collar offenses may include many different decisions that are implemented by many different employees, HFT involves one person devising a plan and that same person carrying it out—the trader. *Coscia* is illustrative of how, at least in HFT, the trader is easily identifiable as the person who planned and conducted the criminal conduct.¹⁸⁴ As mentioned previously, the creator of the program that *Coscia* utilized to carry out his scheme testified that *Coscia* had directed him to create a program that would cancel orders in certain circumstances, demonstrating that *Coscia* had devised the plan to spoof.¹⁸⁵ *Coscia* was also the one to place and cancel orders, creating the false impression of supply and demand in the market.¹⁸⁶ Thus, *Coscia* was easily identifiable as the individual who planned to spoof, ordered others to assist him in creating a computer program capable of carrying out that plan, and conducted the actual placement and canceling of trade orders. Therefore, as illustrated by *Coscia*, the identity problem that corporate criminal liability attempts to solve is not nearly as present in HFT.

3. *Individual Criminal Liability Would Lead to Better Consequences*

From a consequentialist approach, pursuing individual criminal liability as opposed to corporate criminal liability is more ideal. Holding firms criminally liable for HFT misconduct leads to two suboptimal choices

¹⁸² V.S. Khanna, *Corporate Criminal Liability: What Purpose Does it Serve?*, 109 HARV. L. REV. 1477, 1486 (1996) (“Holding individuals liable through public enforcement was, of course, one option for addressing public harms. However, when the culpable individual within the corporate hierarchy was judgment-proof or not easily identifiable, maintaining optimal deterrence necessitated imposing liability on the corporation.”).

¹⁸³ Elkins, *supra* note 168, at 87–88.

¹⁸⁴ See *United States v. Coscia*, 866 F.3d 782, 789 (7th Cir. 2017).

¹⁸⁵ *Id.*

¹⁸⁶ See *id.*

for the government: 1) issuing waivers so that the firm could still operate—effectively making the criminal conviction meaningless;¹⁸⁷ or 2) letting the firm suffer the full consequences of a criminal conviction and risk the downfall of the corporation.¹⁸⁸ The latter would cause many innocent employees to lose their jobs¹⁸⁹ and would likely be unpopular for governments.

An example of the first choice is the 2015 guilty plea of large banks for conspiring to manipulate the Foreign Exchange (FX) market.¹⁹⁰ Four banks—JPMorgan & Chase Co., Citicorp, the Royal Bank of Scotland PLC, and Barclays PLC—pleaded guilty to conspiring to manipulate the price of U.S. Dollars and Euros exchanged in the FX spot market.¹⁹¹ The banks agreed to pay \$2.5 billion in total criminal fines.¹⁹² However, aside from these fines, the consequences the banks faced for pleading guilty to a felony were merely symbolic.¹⁹³ Although regulators could have barred these banks from conducting certain activities, the banks were able to negotiate and receive exemptions from regulators.¹⁹⁴ For example, by the time the guilty pleas were announced, the SEC had already provided several waivers to the banks that allowed them “to conduct business as usual[]”—eviscerating the consequence of a criminal conviction.¹⁹⁵ A waiver provided to a HFT firm convicted of a crime would similarly strip the conviction of any teeth.

The alternative is an arguably worse outcome. If a convicted HFT firm is not granted a waiver to continue operations, then it may need to close down. Many innocent employees and shareholders would lose jobs and money as a result.¹⁹⁶ For certain statutes, prosecutors only have to prove beyond a reasonable doubt that *one* employee out of all of a company’s

¹⁸⁷ See Michael Corkery & Ben Protess, *Rigging of Foreign Exchange Market Makes Felons of Top Banks*, N.Y. TIMES: DEALBOOK (May 20, 2015), <https://dealbook.nytimes.com/2014/10/20/why-high-frequency-trading-is-so-hard-to-regulate/> [http://perma.cc/4RTQ-X62V].

¹⁸⁸ See Elizabeth K. Ainslie, *Indicting Corporations Revisited: Lessons of the Arthur Andersen Prosecution*, 43 AM. CRIM. L. REV. 107, 107 (2006).

¹⁸⁹ See *id.*

¹⁹⁰ Corkery & Protess, *supra* note 187.

¹⁹¹ *Id.*

¹⁹² *Id.*

¹⁹³ See *id.*

¹⁹⁴ *Id.*

¹⁹⁵ *Id.*

¹⁹⁶ See JAMES D. COX & THOMAS LEE HAZEN, TREATISE ON THE LAW OF CORPORATIONS § 8:21 (3d.) (Dec. 2016 update).

employees violated the law.¹⁹⁷ But instead of just that one employee being punished, all employees are punished. Rather than punishing the culpable, which is supposed to be one of the justifications for criminal law,¹⁹⁸ it would also punish the innocent. Therefore, corporate criminal liability would be too broad.

The 2001 Arthur Andersen LLP conviction is illustrative of this.¹⁹⁹ The government never suggested at trial that a part of Arthur Andersen, or even senior management, was corrupt.²⁰⁰ The government simply had to prove that *any one* Arthur Andersen employee, out of the 28,000 employed in the U.S. at the time, had, beyond a reasonable doubt, “acted knowingly and with intent to cause or induce another person or persons to (a) withhold a record or document from an official proceeding, or (b) alter, destroy, mutilate or conceal an object with intent to impair the object’s availability for use in an official proceeding.”²⁰¹ This prosecution eventually led to the demise of Arthur Andersen.²⁰² After a federal jury convicted Arthur Andersen “of obstruction of justice in connection with its destruction of documents relating to its accounting work for Enron Corporation[.]” in June 2002, the firm agreed to end its practice of auditing public companies—effectively closing its business.²⁰³ As a result, “[a]pproximately 28,000 people lost their jobs at the company in the United States alone.”²⁰⁴ Twenty-eight thousand employees were punished due to just one employee being convicted beyond a reasonable doubt.²⁰⁵ As this example shows, holding HFT firms liable for the acts of any one trader, who does not even have to be a part of senior management or have a significant impact on the firm, can have disastrous consequences for the rest of the employees who may be innocent.

IV. CONCLUSION

New technology provides new opportunities to commit crimes,²⁰⁶ and HFT is no exception.²⁰⁷ Locking up high-frequency traders who

¹⁹⁷ Ainslie, *supra* note 188, at 108.

¹⁹⁸ Strader, *supra* note 128, at 1425.

¹⁹⁹ See Ainslie, *supra* note 188, at 107–08.

²⁰⁰ *Id.*

²⁰¹ *Id.*

²⁰² *Id.*

²⁰³ *Id.*

²⁰⁴ *Id.*

²⁰⁵ See *id.*

²⁰⁶ Ric Simmons, *The New Reality of Search Analysis: Four Trends Created by New Surveillance Technologies*, 81 *Miss. L.J.* 991, 992 (2012).

intentionally violate federal regulations may seem like a harsh method of regulating HFT. However, as *Coscia* has shown, through the intentionality element in the anti-spoofing provision and a reasonable doubt standard, criminal enforcement of high-frequency traders charged with similar crimes will only lead to convictions when there is powerful evidence of their wrongdoing. This Comment does not advocate for a witch hunt of high-frequency traders, but merely increased criminal enforcement of those especially egregious offenders. Nor does this Comment advocate for long prison sentences for convicted high-frequency traders. The actual prison time served could be as short as a few months. What is important to deter high-frequency traders is simply the threat of prosecution, not what happens once they are actually caught.²⁰⁸ Due to the infrequency of convictions in HFT, increased enforcement would serve notice to other high-frequency traders that the government is serious about prosecuting criminal conduct in HFT, no matter how sophisticated their new technology is—thus, deterring future HFT wrongdoing²⁰⁹ and satisfying a major goal of criminal law.²¹⁰

²⁰⁷ *United States v. Coscia*, 866 F.3d 782, 786 (7th Cir. 2017) (HFT leads to “increased market susceptibility to certain forms of criminal conduct.”).

²⁰⁸ *See Bagaric et al.*, *supra* note 144, at 1066 (“While there does not seem to be a link between higher penalties and less crime, it seems that people are not totally irrational when they contemplate committing crime. The evidence shows that to the extent that people make a cost-benefit decision about committing crimes, they generally only weigh up the risk of being caught, not what will happen when they are apprehended.”).

²⁰⁹ *See Dervan*, *supra* note 142, at 741 (“[W]hite collar offenders are particularly susceptible to a belief that they will not be detected because of the often sophisticated nature of their offenses.”).

²¹⁰ *See supra* Part III(B)(1) (deterrence is major goal of criminal law).

