The Rise of Commission-Free Trading and the Challenge of Robinhood: An Analysis of Payment for Order Flow in American Financial Markets

The Rise of Commission-Free Trading and the Challenge of Robinhood: An Analysis of Payment for Order Flow in American Financial Markets

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A Thesis in the Field of Legal Studies

for the Degree of Master of Liberal Arts in Extension Studies

Harvard University

May 2022

Abstract

This study is a comprehensive analysis of the payment for order model in American financial markets. It focuses on how the payment for order flow (PFOF) model has progressed with the advancement of financial technology, specifically within the last five years. It examines the factors of how fintech PFOF platforms influence retail trader behaviors and the outcomes affecting American financial markets in relation to progressive capitalism and the rent-seeking theory. PFOF is a controversial revenue producing practice by financial entities pioneered by Bernie Madoff, who ran the largest ponzi scheme in history (Bair, 2021).

Should it still be allowed to continue and if not, what effect would banning payment for order flow have on American financial markets and the public? This study examines the background of PFOF in American markets since the late 1980's and the surge of retail traders on popular fintech platform Robinhood circa 2019. This study provides a chronological review of significant congressional hearings and regulatory agency panels over the last three decades regarding PFOF and an analysis of how platforms like Robinhood influence retail trader behavior and affect financial markets. In 2012, the United Kingdom banned PFOF and data shows retail trading increased as a result.

The author of this study concludes that PFOF fintech business models like Robinhood and Webull that depend on the primary revenue generated by this practice, use strategic tactics and design features to encourage retail investors to constantly trade in

order to create revenue, regardless of whether it is in the best interest of the user. Therefore, these types of brokers employ aggressive and controversial practices to promote high activity trading that results in high risk trading behaviors.

Although PFOF has existed for several decades, the way current PFOF fintech platforms have designed their user experience has led to an increase in popularity among new retail investors. Particularly, among millennials within the last three years. The author concludes the manner in how PFOF platforms like Robinhood and Webull operate, is a system of rent-seeking to attract and exploit retail traders by influencing their trading behavior to create revenue.

Critics of PFOF cite best execution practices as a conflict of interest between brokers and their clients. Proponents of PFOF cite that PFOF saves clients money on trading costs versus commissions and adds liquidity to the market. This study concludes lawmakers should ban PFOF immediately and in its entirety to curb the exploitation of retail traders, improve public trust in the American financial markets and increase financial equality in America.

Dedication

This thesis is dedicated to Kian and Natalie Costanzo and to the quiet professionals who served on Recon Platoon Shadow and TF 88. You all have provided me with inspiration and purpose.

Acknowledgments

This study is a culmination of several years of academic study and from my own experiences in the financial sector, both as an individual investor and as a professional. The framework of this study is not solely the work of my own, but a collaboration from years of conversations and projects with fellow students, professional colleagues, professors, investors and the works of other scholars, researchers and lawmakers who have contributed to the efforts of promoting financial education, improving financial equality and market balance.

I use the word market balance because information volume, content quality and speed of content delivery has significantly evolved with technological advances and artificial intelligence. Content is redistributed and digressed by financial markets regardless of how imperfect. This has been intensely demonstrated domestically in the 2021 capital insurrection and internationally in 2022 regarding the narratives of the Russia-Ukraine invasion.

Externalities such as imperfect information are not going away and will most likely continue to increase. In this study's analysis, retail traders' ability to analyze externalities such as imperfect information is equally weighted as any technical indicator because the technical indicator may increasingly be the result of imperfect information by bad actors. Dr. Joseph Stiglitz stated in reference to the economic concept of the invisible hand "externalities are pervasive, whenever there is imperfect information or imperfect

risk markets – that is always. The real debate today is about finding the right balance between the market and government. Both are needed. They can each complement each other. This balance will differ from time to time and place to place" (Altman, 2009).

Renowned economist Dr. Joseph Stiglitz, is one of those contributors to improving financial equality who has written, lectured, advised, and held various positions related to economic policies. In this paper, I examine Dr. Stiglitz's views of the rent seeking theory and progressive capitalism and how they relate to the PFOF model effect on the American financial markets by exploiting retail traders.

I am grateful for my research advisor, Dr. Michael Miner who has been instrumental in providing guidance, assistance and located the most influential individual of my thesis process who challenged my thinking, writing and expanded my view of economic theories. Director of the Harvard Writing Project, Dr. James Herron, thank you for agreeing to direct my thesis and introducing me to concepts that without your expertise and direction, this study would have not been possible.

To the late Harvard Professor William J. Eissen, who was one of the most influential attorneys, professors and human beings that impacted my life. On the first day of his legal reasoning class, he stated those that make it through the entirety of his course will view law and the world in different perspectives, and that he would save us the cost and time of law school. He was correct on both. I never had a desire to go to law school again and I left his class viewing the world and the meaning of words from different perspectives. His legal reasoning concepts and non-traditional instruction of repeated

assignments of writing case arguments defending a murderer where the statue of limitations recently expired, and the following week writing a case argument of why the statue of limitation law needed repealed seemed contradictory and confusing at the time.

That was Mr. Eissen's entire point, being able to comprehend multiple perspectives without emotion to reach a conclusion that would provide balance in a system and protect the majority. Many people may not comprehend or understand the logic of defending a murderer when the statue of limitations expired by one day. The point is not based on protecting the murderer, the necessity and argument is protecting the statue of limitations to protect the majority of the public and provide balance to our lives and democratic system. However, in the future as time and society evolve so does the legal reasoning and it may be in the interest of the majority to repeal the statute of limitations to protect the majority of society.

The financial market is a living system that is ever evolving with technological advances and societal changes. It requires balancing between government and markets, between externalities and principles. Mr. Eissen's legal reasoning concepts were influential in examining the multiple perspectives of PFOF in this study. At the end of his course, Mr. Eissen stated the most powerful and influential branch of government is not the Executive, Judicial or Legislative branch. It is the lawyers and legal writers on the outside because they are the ones who government members turn to for advice, studies and legal articles. Lastly, I want to thank Dr. Judith Murciano, whose business rhetoric course taught me to write with purpose, passion and persuasion.

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Chapter I.

Introduction

Diamond Hands, Paper Hands, GameStop, Reddit, Roaring Kitty, Robinhood, To The Moon, WallStreetBets and YOLO are not terms or names one would expect to hear uttered from members of Congress. As comical or unsophisticated as the names sound, they are no laughing matter. They have reshaped retail trading, brokerage operations and significantly affected the financial markets starting in 2019.

In February 2021, the House Financial Committee held hearings on market manipulation involving these referenced names as a result of GameStop shares soaring 1,000% and sending Gamestop short-holder, Melvin Capital plummeting 53% all within just a two-week period (Financial Services Committee, 2021). However, the issue is much larger than Congress examining a few recent alleged market manipulation trades, social media posts, and one fintech app. The recent market volatility, aggressive fintech practices, and high-risk trader behavior can be partially attributed to a recent surge of retail traders in a financial technology trading platform called Robinhood. A platform that relies on a revenue producing controversial model known as payment for order flow.

PFOF was pioneered by the largest in American history ponzi scheme mastermind, Bernie Madoff (Bair, 2021). The author connects the investor surge of 2020, market froth and increase of regulatory complaints to the gamification of trading by fintech PFOF models such as Robinhood and Webull. This study concludes that the market volatility and market manipulation by PFOF models such as Robinhood, is not limited to just affecting those trading in the stock market but can affect all of society. The study finds the recent surge of first time retail investors entering the market are being attracted by the gamification and social culture influences of trading versus the fundamentals of formulating an individual investment strategy. This increases the potential of continued market volatility, market manipulation and ultimately factors that can lead to a market bubble as experienced in the 2008 housing crisis market crash.

Banks and mortgage lenders aggressively pushed risk limitations and sound fiscal principles to attract home-buyers to increase their profits. After several years of this aggressive practice by mortgage lenders, the market eventually hit a wall when the volume of unqualified borrowers started to default on their loans. The domino effect impacted even non-homeowners by affecting retirement and pension funds, virtually every sector, industry and aspect of the economy was impacted and led to a recession.

Inexperienced and unqualified retail traders are being approved for margin trading. Those funds can quickly be lost by placing high risk trades promoted by aggressive PFOF platform tactics such as curated stock lists and push notifications. By acting on a push notification from Robinhood or Webull of a curated stock list, the user may place a high risk trade because of fear of missing out (FOMO). These types of retail traders, just like the unqualified home buyers that led to the housing crisis bubble, also may find they no longer have the means to pay their bills by facing steep margin calls, and depleting their savings and retirement assets while making "YOLO" trades.

More alternative investment platforms are entering the financial market offering "free trading" to cash in on the retail trader boom. There is a similarity of marketing practices of the “commission-free trading” PFOF model compared to the banking industry prior to the housing crisis. Both subprime mortgage lenders and traditional banks adopted an aggressive practice of offering “No Income and No Job Verification Loans” (NINJA Loans) to attract new customers and first time home buyers that ultimately led to the housing crisis and market collapse. American markets may again experience another financial crisis through the gamification of trading by PFOF platforms.

Primary revenue PFOF models such as Robinhood and Webull have disrupted traditional brokerage operations by attracting users with “commission-free” trading. However, that is a deceptive term as there is a cost to place a trade. Robinhood or Webull could not advertise cost-free trading because trading on virtually any platform has a cost. This cost is just not in the form of a commission. Thereby, saying “free” to hide order transaction costs is “commission-free” trading.

Recent studies have shown the way PFOF platforms like Robinhood and Webull promote commission-free trading, encourage social sharing and provide referral reward incentives with integrated game-like features and a simple UX design to remove transaction barriers influences trader behaviors.

Payment for Order Flow Process

Brokerage firms involved in PFOF receive money from third-party market makers in exchange for directing clients’ orders to the market maker for order execution. This is referred to as a “kickbacks” by some PFOF critics.

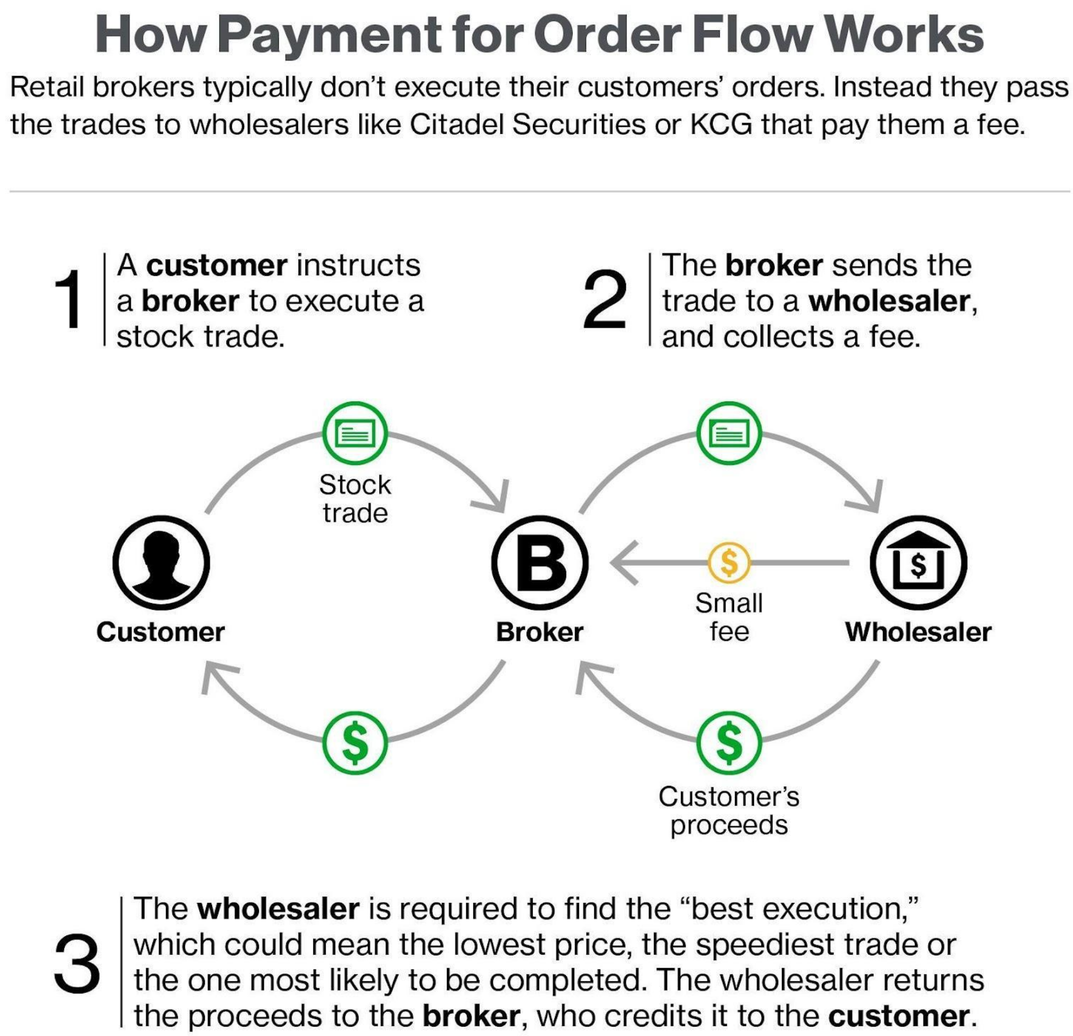

Figure 1. How Payment for Order Flow Works.

Order flow typically involves the client, broker and wholesaler. Source: Bloomberg.

The broker (Robinhood) is keeping X amount of each fee paid by the third-party vendor (Citadel) to execute the broker's customer (Robinhood App User) order. This practice is the main revenue stream for PFOF models like Robinhood and Webull that lure users by advertising commission-free trading. PFOF is not used by Bank of

America's wealth management division Merrill Lynch to route customer orders to market makers. They state that best execution is their number one priority and imply routing customer orders to market makers is not in the best interest of the client. The controversial practice has also been banned in recent years by the United Kingdom and Canadian financial markets.

Liquidity is a key component of the payment for order flow model and there are four main types of entities that may utilize this model:

1. Wholesalers - These are broker-dealers that utilize algorithms and high frequency electronic trading methods to execute orders and through speed they are able to work down spreads to a fraction of a penny capitalizing on the liquidity of order flow. They typically serve other broker-dealer versus the retail trader.
2. Market Makers - Using their own capital, assume risk on both sides of the spread and profit from the spread difference. Market makers that have access to additional liquidity may bundle large orders or take opposite sides of trade to hedge risk.
3. Exchanges - To attract institutional investors, initial public offerings or already listed companies, exchanges may offer to pay for order flow and be a source of liquidity.
4. Institutions - Pay for liquidity to execute their own trades rather than outsource them. They may accomplish this by bundling large orders and

simultaneously purchase and sell the asset in different markets to produce a profit from the price difference.

Robinhood "has 21 million customers and over $102 billion in assets and aims to be "easy, friendly, and approachable" to its customers. The average age of its users is 31, and about 50% of those are first-time investors, according to a spokesperson for Robinhood" (Lam, 2022).

When applying the concept of the demand curve theory to a PFOF model like Robinhood, one can see how easily it can attract naive retail traders. As price increases for a product more consumers leave because they do not want to pay a higher price. Likewise, if the price for a product declines, more consumers will enter the market. Therefore, a new investor looking to enter the financial markets sees an upfront cost of an options contract (product) at Merrill Lynch or TD Ameritrade for example. In 2021, the cost of an options contract was $.65 plus the premium at TD Ameritrade. However, on the Robinhood and Webull app, the user can only see the options premium cost and no contract (product) fee. Therefore, a first time trader may be more likely to trade with Robinhood because it makes it appear as if the cost of the trade is free. There is a cost to trade that is not being shown to the user on a platform like Robinhood and in some instances this cost can be higher than an upfront fee depending on how the order is routed and based on the number of shares or options contracts being traded.

Additionally, Robinhood and Webull traders are encouraged to share their trades using social media and encouraged to refer family and friends to also join the respective platform. If the user chooses to complete 'tasks' such as sharing their trades or referring new members onto the platform, then the user is rewarded with free stocks or other prizes. Users sharing their trades via social media, user testimony or referral links, are essentially sharing the demand curve theory of price decline regarding the PFOF platform. The user is sharing that the product price is free (commission-free trading) even though there is a hidden transaction cost. However, the user is rewarded for referring a new customer. This has been a significant growth driver for both Robinhood and Webull platforms. Robinhood and Webull users are only seeing the relative value as free and not being shown the actual cost to execute the trade that is derived from the bid ask spread by the market maker.

The demand curve theory lays the foundation of the hazards between the marketing practices of PFOF models like Robinhood and Webull that have attributed to the rapid surge of naive retail traders attracted to these rent-seeking brokers. In the first six months of 2020, U.S. consumer protection agencies received more than 400 complaints against Robinhood, approximately four times more than competitors such Charles Schwab or Fidelity (Schmidt & Bain, 2020).

The PFOF process is considered by many as a controversial practice as the term "best execution" can be interpreted in many forms and is not always reflective of the best trade execution price. Best execution can be interpreted as speed of execution of the transaction, cost of the trade, or using a market maker who is most likely to execute the trade. This poses several complexities for regulators and users regarding PFOF practices. Is it even reasonable for regulators to decide and successfully enforce the law of what is in the best execution for each investor? For investor A, speed of execution may be imperative for a high frequency day-trader using one minute candlesticks. Price of execution may be more important for investor B based on a low amount of capital they have to invest. Meanwhile, the brokers are deciding what is best execution based on their own interpretation of the current conditions and their own internal data.

PFOF primary revenue models such as Robinhood need retail traders to constantly be trading to create orders for the market maker to execute. If there are no trades being executed, then there is no revenue rebate for the PFOF model. This has resulted in the accusations by some users and PFOF critics that platforms like Robinhood and Webull have gamified trading to attract users. In addition to advertising zero commission trading, Robinhood implements the use of push notifications or nudges, simplistic UX design, minimal resource tools and offers user rewards. In the past Robinhood even used confetti cannons to influence trader behaviors. This has presented arguments on both sides of the PFOF model of whose interests are best served, the broker or the retail trader. These were significant factors that led the United Kingdom to ban payment for order flow which will be discussed.

Chapter II.

Payment for Order Flow Key Regulations

The current chair of the Securities and Exchange Commission Gary Gensler who is a former Goldman Sachs banker, stated he may ban the practice of PFOF but has not done so since taking office in April of 2021 (Salzman, 2021). The main argument of Gensler and many who oppose PFOF is the conflict of interest of best execution price practices and the potential of front-running retail orders. Front running is the practice of a broker or wholesaler using information not available to the public to profit on that information. Those who support the continuation of PFOF say that banning the practice would cause significant disruption to one of the most efficient markets in the world.

Harvard Law School Emeritus Professor Hal Scott who is also the Director of Committee on Capital Markets Regulation (CCMR) recently published an article "*Why US Regulators Should Allow Payment for Order Flow to Continue*" stated that "banning payment for order flow would throw a wrench in a well oiled machine" and the banning "would increase the cost of trading for millions or retail traders that benefit from the zero commission and highly efficient US equity markets" (Scott, 2021). Professor Scott, additionally states in the same article that "retail brokers are required by FINRA to send their order to wherever they can get the best price, irrespective of the payments from wholesale-dealers. And FINRA monitors the retail brokers to make sure they are doing so."

Professor Scott's argument is that the PFOF conflict of interest does not exist in this context because "retail brokers disclose that it charges the same fee to all wholesale broker-dealers, therefore wholesale brokers are not competing with each other by paying a retail broker more for order flow" (Scott, 2021). According to Professor Scott's article and argument, if PFOF were to be banned, retail traders would see an increase in costs that could amount to billions in the form of brokerage fees and financing charges. Additionally, Professor Scott states that front-running is an illegal practice and retail orders typically do not provide information to determine the future direction of a stock price. Therefore, from Professor Scott's perspective, SEC Chairman Gensler and other proponents of PFOF should not be using front-running as an argument to ban PFOF.

Professor Scott does state that there is room for improvement in the function of equity markets for retail traders and a requirement for retail traders to have access to information for comparing pricing of trades among brokers. However, what Professor Scott's argument relies upon is that investment institutions, brokerage firms and market makers always follow the law. Since the beginning of PFOF, starting with Bernie Madoff profiting off the execution of orders by manipulating wide bid and ask spread prices (Housel, 2020), to TD Ameritrade in a 2014 congressional hearing admitting to routing orders to the highest paying party for execution (Patterson, 2014), and Robinhood being charged by the SEC from 2015 to 2018 for misleading and omitting pricing practices and failing to satisfy duty of best execution (SEC 2020-321, 2020) have all shown a consistent pattern over the last three decades of PFOF brokers willing to break the laws and exploit retail traders for profits.

A key difference of regulating PFOF versus the regulation of airlines pricing, is the speed of which the financial market moves and how pricing is presented to the consumer. There is no similar financial pricing concept in the American economy where pricing is hidden from the consumer. Therefore, regulators are in a reactionary posture to market events of financial companies willing to commit fraudulent acts. However, the impact of retail trader exploitation and market manipulation is not limited just to the monetary costs. It is also damaging to the public trust in the American financial system.

It can take years of investigation and litigation by regulators as shown in a recent example involving Robinhood. It was not until 2020 that Robinhood paid a $65 million fine for misleading investors from 2015 to 2018 (SEC 2020-321, 2020). However, this was not a deterrent as in 2021, Robinhood was fined $70 million by FINRA. This fine was the result of several violations ranging from violating FINRA reporting requirements by not reporting thousands of written customer complaints, providing misleading information to users and systematic failures that left users helpless (FINRA News Release, 2021). During these long periods of investigation and litigation, many other subsequent bad acts can take place as shown in the case of Robinhood.

Bernie Madoff manipulated PFOF price execution for years and then led the largest ponzi scheme in history for decades undetected. TD Ameritrade received approximately $80 million in rebates for routing all customer orders to the highest paying bidder for execution during a period in 2013. Robinhood restricted trading in certain stocks such as AMC and Gamestop to meet their own collateral requirements in 2021. What all these incidents have in common, is they all involved PFOF.

To Professor Scott's argument that eliminating PFOF can add billions in fees and costs, as history has shown us, these costs can happen anyway in alternative forms as PFOF is a system of rent-seeking to produce profits. The public trust is degraded in the financial system when these bad acts are committed. This is evident when comparing the low number of retail traders compared to the growing size of the US population. Additionally, even as many first time traders entered the market over the last three years, concentrated wealth and stock ownership among the top 10% of households has continued to increase. The multi-million dollar fines have shown they are not enough of a deterrent of continued bad acts and typically criminal prosecution does not result.

Best Execution

When a retail trader places an order to buy or sell a stock, the broker whether it is TD Ameritrade, Robinhood, Webull, Charles Scwhab or E-trade sends the order for execution to a wholesaler or market maker such as Virtu Financial or Citadel Securities. Wholesale broker-dealers internalize approximately 70% of orders they receive, that is they execute the orders against their own inventory of stocks and send the remainder to other market centers for execution (Committee On Capital Markets Regulation, 2021). The retail broker such as E-trade or Robinhood is required by best execution regulation to seek the most favorable terms available under prevailing market conditions. This requires under FINRA rule 5310, that broker-dealers must use not only the exchanges, but alternative trading systems, or other broker-dealers that provide the most beneficial terms to their customers (FINRA Rule 5310, 2021).

Rule 605

Rule 605 requires "to make available certain order execution information, facilitating the uniform public disclosure of order execution information by all market centers (FINRA Rule 605, 2021). Virtu Financial who is one of the largest market makers annotates on their website under rule 605 and rule 606 reporting:

> The disclosures required by Rule 605 do not encompass all of the factors that may be important to clients in evaluating the order routing practices of a broker-dealer. In addition, any particular market center's statistics will encompass varying types of orders routed by different broker-dealers on behalf of customers with a wide range of objectives. Accordingly, the statistical information required by Rule 605 alone does not create a reliable basis to address whether any particular broker-dealer obtained the most favorable terms under the circumstances for customer orders. Virtu, in conjunction with the Financial Information Forum and other retail broker dealers and wholesalers, has been working on improving access to execution quality statistics for the retail community. In an effort to provide investors with more useful disclosures about order routing practices, FIF members have voluntarily agreed to provide statistics on retail execution quality (Virtu, 2021).

Virtu's website states they support the implementation of rules to produce more liquid and transparent markets regarding rules 605 and 606, however you can only view their execution statistics by accessing their web based client portal that requires a password-protected login. This seems contradictory to the meaning of public under rule 605 which is to improve public disclosure of execution and routing practices.

Rule 605 and 606 Reporting

Virtu supports the development and implementation of rules and regulatory initiatives that produce more liquid and transparent markets. On November 17, 2000, the Securities and Exchange Commission ("SEC") adopted two rules to improve public disclosure of execution and routing practices.

Overview

Rules 605 and 606 were adopted to standardize and improve public disclosure of execution and routing practices. Pursuant to the SEC's execution quality disclosure rule (Rule 605), monthly performance statistics can be obtained directly from the Virtu website. Client-specific Rule 605 Execution Statistics can be obtained by accessing our web-based client portal using a password-protected login.

Figure 2. Virtu Website Rule 605 and 606.

Virtu website disclosures regarding Rules 605 and 606. Source: Virtu

Rule 606

SEC Rule 606, to provide more transparency was amended in November 2018 to be more relevant to today's marketplace regarding "held" and "not held" orders. Specifically, Rule 606(b)(3) requires a broker-dealer, upon request of a customer that places not held orders, to provide specific disclosures, for the prior six months, regarding routing and execution of such orders. Under SEC Rule 606(a), broker-dealers that route equity and option orders on behalf of customers are required to prepare quarterly reports that disclose specific information about their order routing practices for orders that the customer has not specifically designated to be routed to a particular venue for execution in NMS stocks and option contracts in NMS securities. The following figure shows an example for E-trade (acquired by Morgan Stanley) of S&P 500 Stocks Quarterly Order Routing Report for Q4 2021.

E*TRADE Securities - Held NMS Stocks and Options Order Routing Public Report

Generated on Thu Jan 20 2022 17:12:08 GMT-0500 (Eastern Standard Time)

4th Quarter, 2021

October 2021

S&P 500 Stocks

Summary

Non-Directed Orders as % of All Orders	Market Orders as % of Non-Directed Orders	Marketable Limit Orders as % of Non-Directed Orders	Non-Marketable Limit Orders as % of Non-Directed Orders	Other Orders as % of Non-Directed Orders
99.51	51.93	5.72	31.57	10.79

Venues

Venue - Non-directed Order Flow	Non-Directed Orders (%)	Market Orders (%)	Marketable Limit Orders (%)	Non-Marketable Limit Orders (%)	Other Orders (%)	Net Payment Paid/Received for Market Orders(USD)	Net Payment Paid/ Received for Market Orders(cents per hundred shares)	Net Payment Paid/ Received for Marketable Limit Orders(USD)	Net Payment Paid/ Received for Marketable Limit Orders(cents per hundred shares)	Net Payment Paid/ Received for Non-Marketable Limit Orders(USD)	Net Payment Paid/ Received for Non-Marketable Limit Orders(cents per hundred shares)	Net Payment Paid/Received for Other Orders(USD)	Net Payment Paid/ Received for Other Orders(cents per hundred shares)
CITADEL SECURITIES LLC	30.81	38.72	37.60	15.41	34.21	307,784.00	20.0000	69,747.48	17.5517	76,166.52	26.7875	64,261.14	14.9648
Virtu Americas, LLC	19.72	23.92	21.57	11.21	23.44	198,510.92	20.0000	37,448.62	14.2941	40,258.88	22.4738	33,658.66	10.0331
G1X Execution Services, LLC	19.17	16.11	16.29	25.83	15.93	117,241.21	19.5649	27,144.66	19.6006	117,878.03	30.2015	29,766.44	21.9867
Two Sigma Securities, LLC	12.12	7.04	8.35	22.82	7.30	54,311.60	19.4375	12,726.49	17.3794	73,830.77	27.0275	14,584.45	21.6615
UBS Securities, LLC	7.80	4.14	5.88	12.30	13.29	25,159.60	19.9984	14,587.96	20.5610	38,988.10	30.5340	15,291.67	23.0737
Jane Street Capital	7.15	10.07	10.18	2.66	4.57	84,867.42	20.0042	18,575.00	20.0000	11,727.40	30.8091	12,518.98	20.4941
The Nasdaq Stock Market	1.63	0.00	0.05	5.00	0.48	0.00	0.0000	-928.38	-29.0636	20,410.12	32.4603	-302.56	-26.3771
Cboe EDGX Exchange, Inc.	1.59	0.00	0.09	4.77	0.77	0.00	0.0000	6.91	2.3938	23,287.85	31.6417	0.00	0.0000

Material Aspects:

CITADEL SECURITIES LLC:

Figure 3. Held NMS Stocks and Options Order Routing Public Report.

E-trade disclosure for order routing practices of S&P 500 stocks. Source: E-trade

E-trade's website under the rule 606 disclosure library, is available to all the public and does not require a password login unlike Virtu. However, E-trade makes a statement above their quarterly reports that states "E*TRADE may participate in payment for order flow programs that result in E*TRADE receiving remuneration, compensation, or consideration for directing orders to broker-dealers, exchanges, and market centers for execution. The source and nature of such compensation received will be furnished upon written request. E*TRADE is committed to the best execution for our clients regardless of our participation in these programs." The last sentence by E-trade implies the view that participation in PFOF does necessarily constitute best pricing or execution and is acknowledgement by E-trade of the conflict of interest that exists within the PFOF model.

E*TRADE from Morgan Stanley

Disclosure Library

SEC Rule 606

Quarterly Order Routing Report

E*TRADE is required by the Securities and Exchange Commission (SEC) to disclose its policies with respect to payment for order flow. According to the SEC, payment for order flow may include monetary payment, reciprocal agreements, services, property, or any other benefit that results in remuneration, compensation, or consideration to a broker-dealer in return for routing of customer order flow and includes exchange rebates and credits.

E*TRADE may participate in payment for order flow programs that result in E*TRADE receiving remuneration, compensation, or consideration for directing orders to broker-dealers, exchanges, and market centers for execution. The source and nature of such compensation received will be furnished upon written request.

E*TRADE is committed to the best execution for our clients regardless of our participation in these programs.

E*TRADE Q4 2021 PDF

E*TRADE Q4 2021 XML

Figure 4. Etrade Disclosure Library SEC Rule 606.

E-trade website disclaimer for Rule 606 disclosure. Source: E-trade

Even though rules 605 and 606 are intended to bring more transparency and disclosure to the public, one can see that the information is not as accessible as the common definition of "public" disclosure would imply. Just in these two examples, either you have to be a client to gain access in the case of Virtu or send a written request as stated on the site of E-trade. Additionally, the information required by firms to furnish to the public under rule 605 where the purpose is to promote visibility and order execution quality does not compose a complete picture of how most favorable terms are obtained. This does not help the public make the most informed decision or increase transparency of PFOF practices.

This is also evident on Virtu's website, who is one of the top global market makers and executes orders for multiple brokers. Virtu states under rule 605 that "Rule 605 alone does not create a reliable basis to address whether any particular broker-dealer obtained the most favorable terms under the circumstances for customer order." This provides another example of the complexity for regulators to enforce disclosure laws and how inept regulatory measures are of protecting retail traders regarding PFOF models.

The fact that Virtu, who has been at the center of some of the recent controversy related to the congressional meme stock hearings, has stated that information required to disclose is unreliable under rule 605 shows the ineffectiveness of the disclosure laws aimed at increasing transparency. Each financial entity has also shown a different process to access the information, with some making it more difficult than others even though it is to be publicly and readily available. Even if one were to access information from an entity under rule 605, the report does not provide quality statistics of retail quality execution. They merely provide statistics of what took place in that reporting timeframe. In this study's assessment, a first time or inexperienced retail investor would probably have difficulty understanding the meaning of that information and statistics.

Chapter III.

Regulatory Panels and Congressional Hearings

Over the last several decades there have been a number of formal inquiries regarding PFOF by regulators and congressional committees. However, no significant action has taken place regarding PFOF with the exception of amending some disclosure rules. The following chapter highlights a chronological timeline and analysis of key panel hearings and findings. The practice of PFOF gained popularity in the 1980's and questions started to arise about the model. This led to the first formal report in July, 1991 titled "Inducements for Order Flow." Prior to this report there is limited information available on disclosures required regarding PFOF or accountability actions taken by the SEC.

In December 2008 after the Bernie Madoff ponzi scheme was exposed, Financial Times reporter Greg Farrell conducted interviews with regulators and competitors of Bernie Madoff. Farrell asked about PFOF in the previous years leading up to the Bernie Madoff scandal being exposed. Robert Ferguson, the former CEO of the Van Der Moolen specialist firm that was a competitor of Bernie Madoff stated "Mr. Madoff was the cleverest and most successful competitor the specialist business ever had. When he created the third market his firm was absolutely profitable" (Farrell, 2008). According to Farrell the SEC "had a longstanding rule regarding disclosure of any remuneration received in connection with stock transactions. But as the practice of brokers paying for order flow became popular in the 1980's concerns were raised about whether the brokers doing the paying were buying the stocks at the best prices for investors."

It should be noted that Bernie Madoff was part of the group of experts that was commissioned for the 1991 Inducement for Order Flow report. During the time of this study, he was executing orders as a third market firm and was manipulating wide bid and ask prices. Later on, Bernie Madoff also testified in 2002 supporting PFOF at an SEC panel. The fact that Bernie Madoff went undetected for years while manipulating order pricing and was even involved as an expert in regulatory studies, shows how easily it is for PFOF bad actors to take advantage of the public and fool regulators. This allowed Bernie Madoff Investment Securities to thrive as a broker-dealer operating just several floors above his private fund. Bernie Madoff Investment Securities experienced growth throughout the 1990's by paying brokers for business and profiting off wide bid-offer spreads. By paying for this order flow, Bernie Madoff Investment Securities handled approximately 10% of the volume on NYSE and away from other specialist firms such as Van Der Moolen. This created what was known as the "third market" (Farrell, 2008).

The SEC would have been able to see the volume of execution by Bernie Madoff Investments but did not take any action and there was no evidence found of disclosure enforcement by the SEC during this period. The SEC Chairman at the time, Mr. Levitt in the same financial times article after the Bernie Madoff fraud was exposed, says "he often asked his counsel for market regulation to figure out a way to ban the practice, but those requests often went nowhere" (Farell, 2008). Also notable to this timeline is Bernie Madoff served as the Chairman of Nasdaq from 1990 to 1993.

The following timeline shows a continued pattern over three decades of discussions of whether PFOF should be banned and evidence of increasing volume of conflict of interest cases:

July, 1991: Inducements for Order Flow Report - In 1990 the National Association of Securities Dealers (NASD is the predecessor of FINRA) formed a group of experts to examine PFOF. The committee was led by former SEC Chairman David Ruder and included Bernie Madoff. The committee findings summarized no legal recourse for banning or restricting PFOF but recommended that disclosures be required regarding factors that influence routing and order execution. Peter Madoff who was also convicted in the Madoff ponzi scheme became the NASD Vice Chairman in 1993.

The SEC cited no direct link from Bernie Madoff's previous activities or positions such as him being involved in the Ruder report, having anything to do with his massive ponzi scheme. However, it would be difficult for the SEC to make this determination that no link existed between his involvement as a financial expert on regulatory panels and his ponzi scheme, as that would involve knowing Bernie Madoff's state of mind at that time. The argument can be made that Mr. Madoff's involvement in commissioned studies and regulatory panels where he was considered a financial expert, allowed him to taint those procedures and protect his fraudulent acts as he voiced support for PFOF, at a time when he was taking advantage of the public and manipulating PFOF pricing. The argument can be made that Bernie Madoff was no longer able to manipulate wide bid and ask prices due to a regulatory action taken against PFOF in 1994, and this could have been a contributing factor that led to his ponzi scheme because he lost the revenue from the fraudulent PFOF order pricing manipulation operation.

May, 1994: National newspapers publish Vanderbilt University Professor William Christie's paper on spread manipulation and collusion - "On May 26 and 27, 1994 several national newspapers reported the findings of Christie and Schultz who cannot reject the hypothesis that market makers of active NASDAQ stocks implicitly colluded to maintain spreads of at least $0.25 by avoiding odd-eighth quotes. On May 27, dealers in Amgen, Cisco Systems, and Microsoft sharply increased their use of odd-eighth quotes, and mean inside and effective spreads fell nearly 50 percent" (Christie, Harris, Schultz, 1994). Shortly after the publication, the spread manipulation collapsed along with the Justice Department taking legal actions.

December, 2000: SEC Special Study: Payment for Order Flow and Internalization in Options Markets - As competition increased in the options markets, option market participants began offering economic incentives to brokers for them to route their orders to the option market participants for execution. SEC Chairman Levitt directs the Office of Economic Analysis and Office of Compliance Inspections and Examinations (OCIE) "to prepare a report describing current PFOF and internalization practices, and outlining how the practices of PFOF and internalization have affected order routing decisions and the execution quality of customer options orders" (SEC Special Study, 2000). The following figure shows how rapidly payment for order flow grew within a one year period, where specialist firms paid order routing firms for over 75% of the retail options orders sent to them for execution.

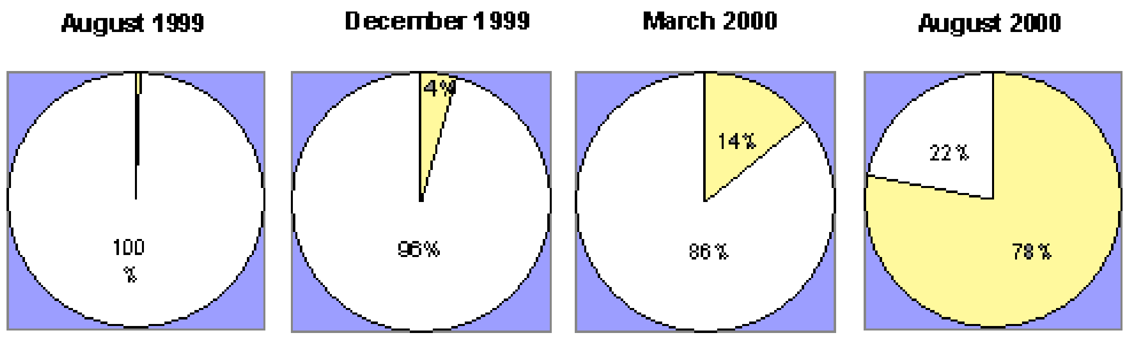

Figure 5. Percentage of Retail Customers' Orders Routed Pursuant to Payment Arrangements (53 Options Classes).

SEC Special Study for order routing and internalization practices in options markets. Source: Securities and Exchange Commission

In the section of the report regarding market quality, OCIE found that out of 24 firms reviewed, 19 of 24 firms accepted payment for order flow. Seven of those firms did pass on benefits of compensation received to traders. In the report regarding future developments of the options market the report annotated "Competition from multiple-listing is now reshaping the options markets" and "Payment for order flow and internalization are early products of this competition and present familiar tensions inherent in the National Market System framework (SEC Special Study, 2000). The study also concluded that influence of PFOF and internalization on order routing warrants ongoing attention.

October, 2002: SEC Roundtable Market Structure Hearing - In 2002, the SEC held a roundtable discussion relating to the structure of US markets, and how the public interest and protection of investors can be served. The attendees included the SEC leadership, financial academia experts and financial industry leaders from Charles Scwhab, NYSE, NASDAQ, Vanguard and also included Bernie Madoff of Madoff Investments.

A core topic of the panel was the conflict of interest regarding PFOF. Sal Sodano, from AMEX called for an immediate termination of the practice in lines 19 through 23 of his testimony citing "an obvious conflict of interest that has led to nothing but regulatory abuse, reduced liquidity, and therefore investor harm. Market-sponsored payment for order flow must and should be eliminated immediately" (SEC Roundtable, 2002). John Markese of the American Association of Individual Investors in his testimony, lines 13 to 19 stated "I see payment for order flow, and I can't think of a good thing that it does for investors. I know some will argue it's liquidity, it creates pools of liquidity. I see rebates, I see regulatory arbitrage. And frankly I don't see the Commission having in the past addressed those issues sufficiently from the individual investor viewpoint. And, again, I'm taking the simple viewpoint" (SEC Roundtable, 2002).

Throughout the hearing financial industry and academic experts shared views on both sides to educate the SEC on the implications and benefits of PFOF. Bernie Madoff, campaigned for the continued practice with a key statement from his testimony in lines 14 to 24. "There is absolutely no reason why payment for order flow, all its various forms -- and we won't bore everybody here with the various forms because everybody's familiar with them. There's no reason why payment for order flow, itself, in and of itself, has to come at the expense of best execution. And I would venture to say that certainly in the equities markets today I could prove to you that the -- the venues that are paying for order flow, for the most part, are giving better executions than those that are not paying for order flow" (SEC Roundtable, 2002).

In this roundtable discussion several academic financial experts, financial market leaders such as Mr. Sodano of AMEX and the leadership of the American Association of Individual Investors called for the ban of PFOF in the early 2000's. They shared the view of ongoing conflict of interest issues and corruption that has been experienced and voiced concern that these will worsen over time. Bernie Madoff, who was considered an expert at this hearing, was running one of the largest third market operations in the previous decade involving spread price manipulation and then during this panel hearing was operating the largest ponzi scheme in history undetected by the SEC.

There is no bolder example of inept regulatory oversight and accountability regarding PFOF. Especially, when you have Madoff invited to the SEC roundtable as a financial expert. He was one of the first PFOF price manipulators and was operating the largest in American history ponzi scheme during this panel, while campaigning for the continued practice of PFOF.

June 2014: Permanent Subcommittee on Investigations: Conflicts of Interest, Investor Loss of Confidence and High Speed Trading in U.S Stock Markets - Senator Levin led the Permanent Subcommittee hearing regarding the topics of high-speed trading, lack of confidence of Americans in financial markets and ongoing conflicts of interest “dark pools”, PFOF and artificial credit ratings. What was most substantial about this hearing was the research and testimony of Professor Robert Battalio of the University of Notre Dame:

> “Indicating that when given a choice, four leading retail brokers send their orders to the markets offering the biggest rebates at every opportunity. The research further suggests that exchanges offering the highest rebates do not, in fact, offer the best execution for clients. Even if firms disclose these payments, disclosure does not excuse them from their legal and ethical obligations to clients. Their legal obligation is to provide clients with what is known as ``best execution." Whether they are meeting that obligation is a subjective judgment. The outcome of this subjective judgment affects the way tens of millions of trades are executed. Now, some who profit from these payments argue that seeking this revenue does not interfere with their obligation to seek best execution” (Senate Hearing 113-413, 2014).

The research of Mr. Battalio was supported by the exchange of testimony between Senator Levin and TD Ameritrade Senior Vice President, Trader Group Mr. Steven Quirk. During the exchange Senator Levin questioned Mr. Quirk about the amount of $80 million TD Ameritrade received in rebates the year prior for routing orders to a market maker who paid them the most:

> **Senator Levin:** So, anyway, for virtually every trade, your customers you say were better off by routing their orders to the exchange that paid you a rebate rather than a venue that TD Ameritrade would have had to have paid a fee. Is that true?
>
> **Mr. Quirk.** I would say in the subsequent 24 months, you will note in our 606s that we have routed to a number of exchanges in one quarter, and some of those exchanges would not be the exchanges which were paying the highest rate.
>
> **Senator Levin**. Well, let me go into that. In your 606 disclosures, for the first quarter of 2014, TD Ameritrade routed all disclosed nonmarketable orders to either Direct Edge or Lavaflow, the exchanges that appear from our review of your disclosures to have offered the highest rebates available in the market. Is that true?

Mr. Quirk. That would be true.

Senator Levin. And so, again, your subjective judgment as to which market provided best execution for tens of millions of customer orders virtually always led you to route orders to the markets that paid you the most.

Mr. Quirk. No, it would not have always led us----

Senator Levin. I said ``virtually always.'

Mr. Quirk. Virtually, yes (Senate Hearing 113-413, 2014).

This testimony is yet another example of another broker firm routing PFOF orders to the highest paying party for execution, not serving the best interest of the client or following best execution practices. This also goes against Professor Scott's argument that pricing is irrelevant because brokers are not competing for fees: "retail brokers disclose that it charges the same fee to all wholesale broker-dealers, therefore wholesale brokers are not competing with each other by paying a retail broker more for order flow" (Scott, 2021). TD Ameritrade routed virtually every single order during that period to one party for execution because it paid them the most according to TD Ameritrade Senior Vice President Mr.Quirk. TD Ameritrade did not act in any manner of the clients best interest or follow best execution practices and instead routed orders to the party that paid the highest amount for their order flow.

Additionally it should be noted, that Mr. Steven Quirk, who was the Senior Vice President of the TD Ameritrade Trade Group during this period and provided this testimony, was hired by Robinhood on January 10th, 2022 as their first ever Chief Brokerage Officer according to an update on Robinhood's blog on January 6th, 2022.

February 2021: US House of Representatives Committee on Financial Services: Full Committee Hearing entitled, "Game Stopped? Who Wins and Loses When Short Sellers, Social Media, and Retail Investors Collide"? - In January 2021, retail investors utilizing social media sites such as Reddit's "WallStreetBets" subchannel formulated a movement in an attempt to short squeeze "meme stocks." These included GameStop, AMC and other assets that were being heavily shorted by hedge funds. Utilizing social media, some traders that already owned the underlying equities, would try to influence the stock prices movement by encouraging other people to buy the underlying equities to drive the stock price higher. This type of activity is also referred to as a "pump and dump" scheme which is a forbidden market practice. This obligated short sellers to purchase shares at an increased price to cover their bets. Keith Gill was one of those influencers and discussed GameStop stock on Reddit under the username "DeepF*ckingValue." This practice resulted in heavy losses for some short sellers and retail investors.

Robinhood, and other brokers, placed restrictions on transactions in these stocks, which was met with public outcry and calls for regulatory action. As stock prices started to go down, many retail traders who bought at the peak of the movement experienced significant losses. Robinhood restricted trades on "meme stocks" to meet its own collateral obligations with its market maker versus allowing retail traders to execute trades that may have been in their best interest. Restricting trades is another example of market manipulation by PFOF brokers. This ultimately led to this congressional hearing of the CEO of Robinhood - Vled Tenev, CEO of Citadel - Kenneth Griffin, CEO of

Melvin Capital - Gabriel Plotkin, CEO of Reddit - Steve Huffman, Meme stock influencer - Keith Gill and Director of Financial Regulation Studies at Cato Institute - Jennifer Schulp (U.S. House Committee on Financial Services, 2021).

Hearing and Reviews Analysis

From the beginning of the PFOF model, pioneered by Bernie Madoff, in hindsight an assessment can be made that Madoff did not have the best interest of the public, financial institutions or markets in mind. This is evident in the early days of his market manipulation fraud by profiting from wide bid and ask spreads. Then later, the uncovering of his massive ponzi scheme.

Throughout the last three decades, different Chairman of the SEC and congressional committees have all held studies and hearings related to conflicts of interests involving PFOF. Every decade has experienced the same repeated issues regarding the PFOF model. Some rule changes have been enacted over time but mostly focused on disclosure practices. The rules are only beneficial and protective of the public as much as they are able to be enforced. In multiple government hearings and panels there have been calls from the financial academia community, financial institution leadership and leaders of markets like AMEX, that called for the ban of PFOF to stop growing corruption and abuse. This is similar to bank regulators that had multiple warning signs prior to the housing market crash but failed to take action against NINJA loans and aggressive bank lending practices that pushed financial risk boundaries.

Financial markets are experiencing similar aggressive practices and warning signs. Aggressive marketing practices, unqualified retail traders being provided margin accounts, the gamification of trading and boundaries being pushed in the financial market system by brokerage firms deciding to govern the public by restricting trading when they see fit. It all stems from PFOF models, beginning with Bernie Madoff in the late 1980s and rapidly growing in volume with retail trader exploitation and market manipulation in the present by firms like Robinhood and Webull.

Chapter IV.

Rise of Commission-Free Trading

Robinhood, a key player in the meme stock story and credited with disrupting the traditional brokerage commission fee model, has experienced exponential growth in the past 24 month period. Robinhood was Founded by two Stanford University roommates, Baiju Bhatt and Vlad Tenev who had a background in selling trading software to hedge funds. They disrupted the traditional retail brokerage model by offering commission-free trading to all on a self-serve platform. According to the Robinhood website, their goal is to provide "everyone with access to the markets, not just the wealthy." By offering commission-free trading, no account minimus and a simplistic sign-up process, it has been one of the biggest growth stories during the pandemic. Likewise, it has been one of the most controversial stories based on how the platform operates and influences user behavior.

Robinhood initially started out with just around a half million users in its first year of 2014 but fueled growth and nearly doubled in size from 2020 to 2021 and reported over 22 million users. Retail traders make up the primary market of PFOF business models and financial markets witnessed a significant surge of retail traders in 2020, particularly among millennials. According to Citadel Securities, retail investors made up just 10% of the market in 2019, and that number surged to 25% in 2020 (Winck, 2020).

This study concludes the surge of retail traders can been attributed to three main factors from 2019 to 2021:

1. The stay-at-home and unemployment effects of the Covid-19 pandemic.
2. Aggressive marketing practices of commission-free trading and reward incentives for referring new users.
3. Gamification of trading through core UX design features and limited research tools to remove barriers from the transaction process.

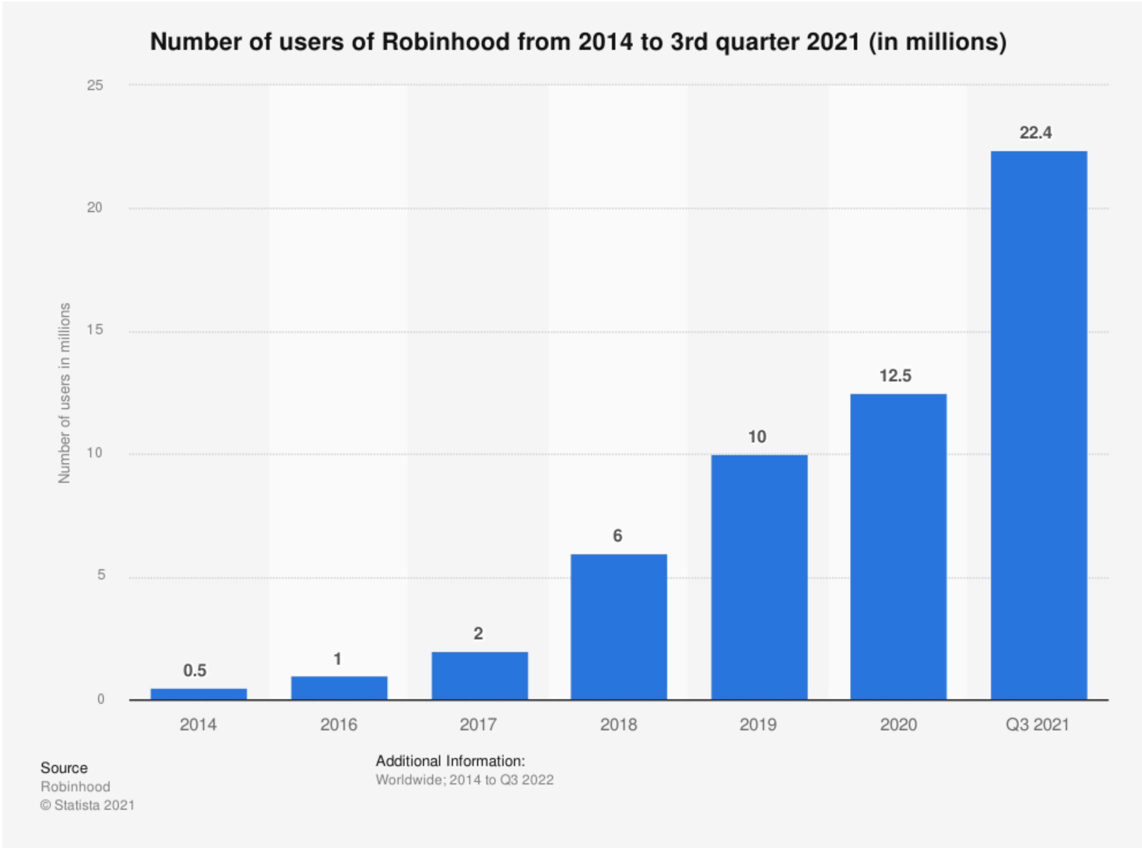

Figure 6. Number of Robinhood users from 2014 to 3Q 2021.

Growth of Robinhood users from 2014 to 2021. Source: Statista, Robinhood

In just a few minutes and from the convenience of a smartphone, an individual can download an app, link a bank account and open a margin trading account, options trading account, and start trading equities the same day without hardly any restrictions or human interaction. Online and mobile trading is nothing new, and households having access to financial markets can be part of having a sound and diversified long-term investment and legacy plan. Traditional powerhouse brokerage firms such as Charles Schwab, Fidelity, and Merrill Lynch, all offer their own individual versions of retail online trading platforms and apps. However, what is more recent and has been attributed to the popularity of platforms like Robinhood and Webull, is the marketing of commission free trading, simple UX core design, game-like features along with social sharing and referral reward incentives.

Brokerage firms have typically charged a fee or commission per stock trade or options contract based upon a set fee or fee per amount of shares or contracts traded. However, Robinhood disrupted the broker business model by offering commission-free trading and has outpaced new user growth of some of the larger traditional firms combined. This has led many of the larger brokerage firms to follow Robinhood's practice of offering commission free-trading in order for them to remain competitive. Robinhood has outperformed competitors every month, based on monthly app downloads since January 2017, with their biggest growth period in 2021 where app downloads crossed over 3 million each month for January, February, April and May according to Statista data. This time period also coincided with the "meme stock" and social media Reddit "Wallstreetbets" subchannel related to stock price activity on GameStop, AMC among other names.

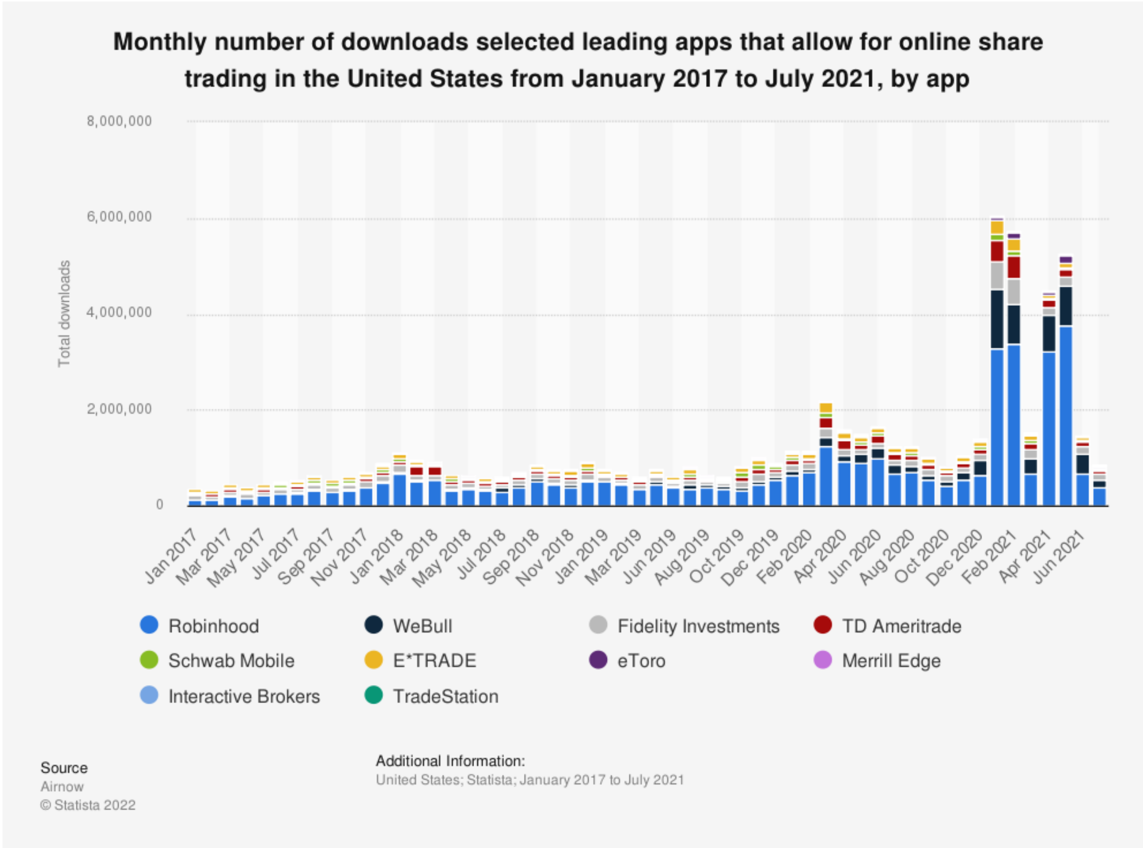

Figure 7. Monthly Number of Downloads Selected Leading Apps in the US.

Monthly monthly number of downloads of selected leading apps that allow online share trading in the United States from January 2017 to July 2021. Source: Statista, Airnow

Since Robinhood's inception its primary revenue model has been PFOF, where it makes small amounts of money on each trade. By offering commission free-trading, Robinhood relies on the volume of both large numbers of users and transactions to create revenue. To achieve these metrics, Robinhood provides ease of access to markets for even first-time inexperienced traders by lowering the barriers to entry. Before Robinhood, brokerage services were typically offered by full service and discount brokers. Full service brokers usually charge higher commission fees but offer a wide range of services, such as research tools and investment advice. Typically, full service brokers offer physical locations for customers and online services. Discount brokers typically charge lower commission fees but lack the investment advice and full suite of services offered by the full service brokers and have mostly served clients online without physical locations. Both of these types of brokers usually had some form of account minimum requirements, detailed sign-up process along with a commission per trade fee.

Robinhood disrupted the traditional broker model and fueled user growth by offering no account minimums, advertising commission-free trading, and allowing users to buy fractional shares that they typically may have not been able to afford of certain companies. One of the core growth structures is their user interface that appeals to novice traders. By offering streamlined data and simple information versus data offered by full service or professional trading tools, the interface looks and operates much more like a bank account with everything presented on a single screen.

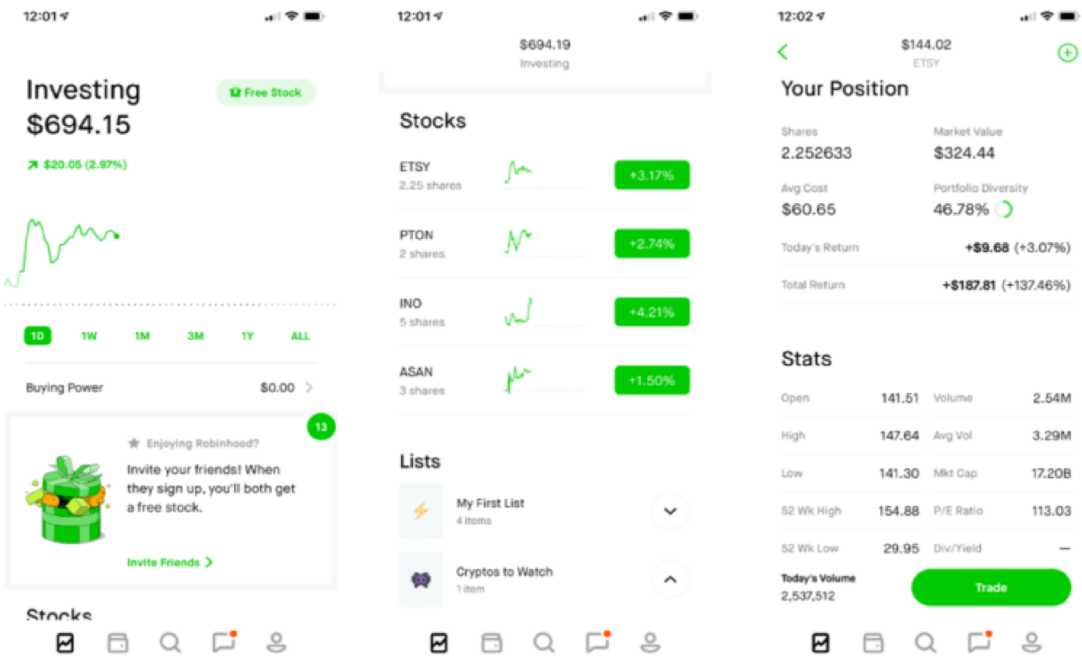

Figure 8. Robinhood Mobile App Interface.

Robinhood App user interface that is designed to be simple to keep the user moving through the transaction process and remove complexities compared to traditional brokers. Source: CB Insights

Robinhood and Webull both took additional actions to continue market growth that most traditional brokers have refused to enact. These actions have been referred to as gamification and social influence of trading. Robinhood and Webull both offer free stock shares or rewards to users who successfully refer friends, family, or anyone that opens an account on that platform.

Gamification

What seems to be a great model of attracting new users into the world of investing and at lower costs of the full service and discount brokers, is only half of the picture. Gamification defined by Merriam-Webster is the process of adding games or gamelike features to encourage participation. Robinhood and Webull both added positive reinforcement features to encourage buying behavior and promote social sharing “tasks” utilizing rewards and game-like features. As mentioned previously, the PFOF model relies on volume to create revenue and to achieve this Robinhood devised reward and behavioral trigger elements not found with legacy retail brokerage firms. This has created a new way of using technology to attract users to the PFOF model not experienced in trading history. Critics have accused the platform of playing more like a video game and operating like a casino. Webull has replicated the same strategy on its app.

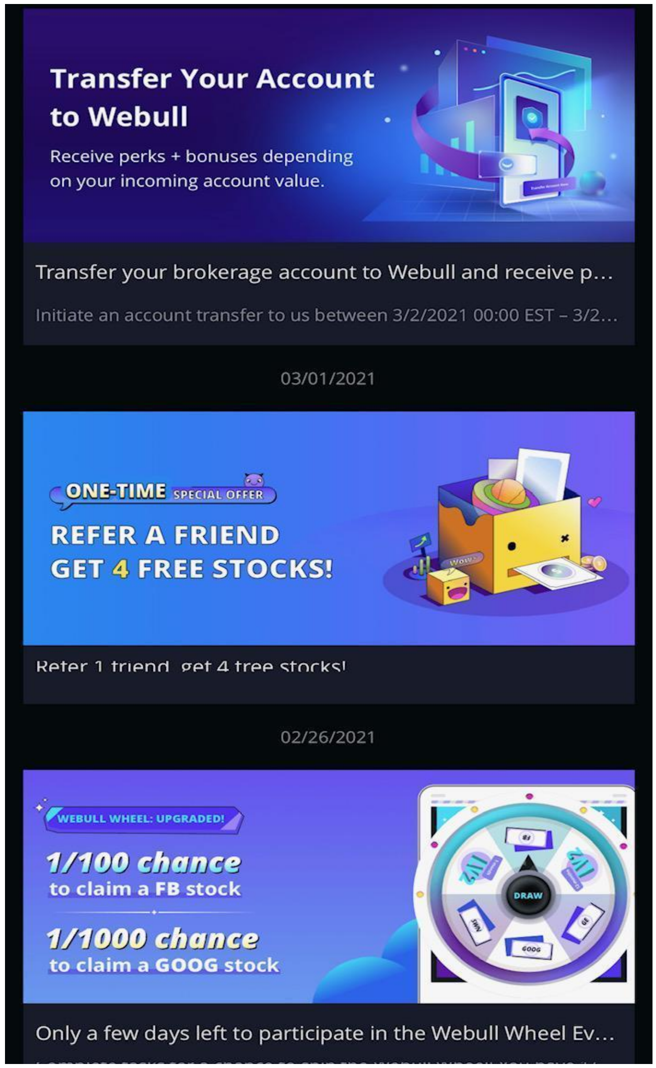

Figure 9. Webull Task Promotions.

Webull user interface of rewards for completing tasks such as referring friends and social sharing contests. Source: Webull

Retail investors do not make up a majority of the stock market and many Americans do not actively participate directly in the market. The intimidation of entering the markets, public distrust and financial inaccessibility have all been a barrier and contributing factors to the financial inequalities in America. However, by providing easy access to the economy — that is removing the intimidation factors that the average person may experience when interacting with financial institutions, Robinhood designed a simple user-friendly experience that is strategically designed to look and feel like you are viewing your bank account. It is a simple interface without the technical tools that professional traders utilize. Robinhood in 2021 removed a confetti animation feature after public scrutiny. The feature "In the past, we used the same confetti design to celebrate firsts with customers. Those included customers' first trades, their first steps with cash management, and successful referrals of friends and family. Now, we're introducing new, dynamic visual experiences that cheer on customers through the milestones in their financial journeys"(Fitzgerald, 2021).

CB Insights, a market intelligence and business analytics platform conducted research on the Robinhood platform and game-like features. One tactic that both Robinhood and Webull use to entice user sign-up after account opening is to award the user a chance at winning a free stock in a company like Apple or Tesla, which is valued in the several hundred dollar range. However, according to CB Insights study Robinhood acknowledged this is unlikely a user will receive a stock like Apple or Tesla and 98% of the time a stock is awarded between $2-10 range (CB Insights, 2021). This practice is not just limited to Robinhood, similar PFOF platform Webull implements the same strategy and even goes so far that the image represents a slot machine as seen in the following figure.

Figure 10. Webull App Reward Interface.

Webull app user interface pop-up screen, promoting the chance of the user winning Apple stock for completing a task or opening a new account. Source: Webull

The free stock incentive serves as a user growth driver for Robinhood and Webull encouraging users to refer new members. Both Robinhood and Webull also use push notifications to the user's device about price activity, portfolio activity, curated stock lists or similar information designed to bring the user back to their respective apps. Another recent academic study that examined attention-induced behaviors of traders on Robinhood found "Using data from Robinhood, we find that Robinhood investors engage in more attention induced trading than other retail investors. For example, Robinhood outages disproportionately reduce trading in high-attention stocks. While this evidence is consistent with Robinhood attracting relatively inexperienced investors, we show that it also is partially driven by the app's unique features. Consistent with models of attention-induced trading, intense buying by Robinhood users forecast negative returns. Average 20-day abnormal returns are -4.7% for the top stocks purchased each day" (Barber, Huang, Odeon & Schwarz, 2021).

This also led to the state of Massachusetts filing a lawsuit against Robinhood in 2020 for aggressive tactics to entice inexperienced users and aggressive tactics to entice repetitive use of the platform and seeks to revoke Robinhood Financial LLC licenses from being able to operate in the state of Massachusetts (Commonwealth of MA vs. Robinhood Financial, Docket No. E- 2020-0047). Robinhood's simple interface by design "displays lists of stocks in an environment relatively free of complex information. For example, besides basic market information, Robinhood only provides five charting indicators, while TD Ameritrade provides 489" (Barber, Huang, Odeon & Schwarz, 2021). Financially educated and professional traders examine multiple tools and resources before making a decision which may include various types of reports, candlestick patterns, Bollinger Bands, Relative Strength Indicator, Moving Averages, option greeks and many others depending on their individual trading strategy.

Robinhood and Webull users have a very basic selection of indicators or tools to utilize. This basic approach keeps the transaction simple and guides the user to keep moving to place a transaction. Robinhood positions the user to rely on personal intuition or social influence versus technical data. Both Robinhood and Webull promote a community style culture and provide social media sharing features versus many of the technical analysis tools that found with traditional broker platforms like Interactive Broker, TD Ameritrade or Merrill Lynch.

Commission free-trading in this study's analysis was not the primary catalyst of the retail trader surge of 2020, but was a secondary contributing factor of Robinhood's rapid growth rate. Robinhood existed since 2013 and offered commission free trading for years prior. The changes to their core user-experience (UX) interface, implementation of game-like features and rewards incentives are the attributing factors to Robinhood's rapid growth rate. This was also at a time when many first-time retail traders were receiving government financial assistance as a result of covid-19 and and sports betting was ceased. The UX design is the key component of Robinhood's growth and this has nothing to do with order routing. The stock rewards incentive for existing members referring new members on both Webull and Robinhood is a key driver to their user growth. It's very difficult to argue that people are joining these platforms for advanced research tools because they have very few compared to traditional broker platforms that also now offer commission-free trading.

Webull did not let users trade in multi-leg options until 2021 even though they had existed since 2018. Robinhood also has limited certain types of complex trading strategies and it was not until 2018 that Robinhood allowed extended hours trading. Although it is only a 30 minute window beginning at 9AM EST, prior to the regular market opening trading hours at 9:30AM EST. Most of the legacy and professional trading platforms allow standard extended trading hours starting at 4AM EST. Robinhood announced on their January 28th, 2022 earnings call, that after already existing for nine years, they would provide ‘hyper extended hours’ to allow trading at 4AM EST. The wording makes it appear as if it is a special feature of Robinhood to provide a larger trading window. However, extended trading hours have existed since 1999 with the introduction of the Electronic Communication Networks (ECN).

The limiting of extended trading hours and rebranding of extended trading hours to appear as a unique feature of Robinhood and limiting of complex trading strategies shows the influence Robinhood and Webull placed over retail traders. This also is a display of their own recognition by these platforms of how financially unsophisticated a majority of their users are, while they exploit these users to constantly trade. This further provides evidence that these types of retail traders are not being attracted under the fundamentals of sophisticated trading software and research tools, but instead enticed through UX design features, misrepresentation of commission-free trading and shows the effectiveness of an incentive based user growth referral system.

Social Influence and Marketing Practices

The PFOF model relies on high user and transaction volume to create revenue. To achieve this volume, PFOF platforms like Robinhood and Webull implement strategic design tactics and notification tactics to encourage user actions. These nudges keep the user engaged and returning to the platform to make trades which is the revenue lifeline of these PFOF models. One tactic is push notifications to the user based on different criteria such as most active stocks, portfolio performance or trending stock names. The intent and function is to create urgency and get the user to return the app to trade.

Audet & Partners LLP at the time of this was conducting an investigation on behalf of some Robinhood users that lost money on trades after they received push notifications and were directed to Robinhood curated stock lists due to inactivity on their accounts. The inactivity time frame was a month or more of not trading or no activity after opening a new account on Robinhood according to Audet & Partners LLP. Compare this push notification method to a traditional broker or wealth management firm, and it can be identified as aggressive. Traditional brokerage firms or financial professionals typically do not contact clients throughout the day of incremental value changes to their portfolio or about curated stock lists. Research has shown that people who trade frequently are likely to get lower returns over a longer period of time. “Overconfidence can explain high trading levels and the resulting poor performance of individual investors" (Barber, Huang, Odeon & Schwarz, 2021).

That is part of the design in Robinhood and Webull's user experience interface. To give users confidence with minimal barriers to execute trades. The second consideration in the broker fee disruption caused by Robinhood, is the marketing of commission-free trading. This is a misleading statement in this study's analysis. The trade is not free, it's just not in the form of a commission. The user is paying a cost to trade from the bid ask spread executed by the third party market maker.

In December 2020, Robinhood paid a $65 million fine with SEC for "repeated misstatements that failed to disclose the firm's receipt of payments from trading firms for routing customer orders to them, and with failing to satisfy its duty to seek the best reasonably available terms to execute customer orders (SEC 2020-321, 2020).

> Between 2015 and late 2018, Robinhood made misleading statements and omissions in customer communications, including in FAQ pages on its website, about its largest revenue source when describing how it made money – namely, payments from trading firms in exchange for Robinhood sending its customer orders to those firms for execution, also known as "payment for order flow." As the SEC's order finds, one of Robinhood's selling points to customers was that trading was "commission free," but due in large part to its unusually high payment for order flow rates, Robinhood customers' orders were executed at prices that were inferior to other brokers' prices.
>
> Despite this, according to the SEC's order, Robinhood falsely claimed in a website FAQ between October 2018 and June 2019 that its execution quality matched or beat that of its competitors. The order finds that Robinhood provided inferior trade prices that in aggregate deprived customers of $34.1 million even after taking into account the savings from not paying a commission. Robinhood made these false and misleading statements during the time in which it was growing rapidly.
>
> "Robinhood provided misleading information to customers about the true costs of choosing to trade with the firm," said Stephanie Avakian, Director of the SEC's Enforcement Division. "Brokerage firms cannot mislead customers about order execution quality" (SEC 2020-321, 2020).

A significant point of Robinhood settling this fine, is first it shows the blatant actions that firms like Robinhood are willing to take for profits under the PFOF model. Second, the amount of profits accumulated relative to the size of the fines have shown not to be enough of a deterrent for continued bad acts. The fact that Robinhood was able to get away with this for years before being charged has a significant impact on retail traders and jeopardizes the public faith in the markets. Additionally, another statement by the SEC Regional Director of San Francisco recognizes this can become more of a prevalent issue by new actors entering the PFOF space. “There are many new companies seeking to harness the power of technology to provide alternative ways for people to invest their money,” added Erin E. Schneider, Director of the SEC’s San Francisco Regional Office. “But innovation does not negate responsibility under the federal securities laws” (SEC, 2020). It is not just Robinhood, as previously discussed TD Ameritrade admitted in 2014 Congressional hearings of routing orders to the highest paying party for order execution.

The PFOF model over 30 years has shown a consistent pattern throughout this study of bad actors and marketing practices to increase profit at the expense of retail traders. The amount of damage it causes to the public trust in the markets and the ease of manipulation by even just one firm with a user growth rate like Robinhood has shown significant. From the time of Robinhood’s existence in 2013 until they were caught and fined in 2020, equates to 45% of their operating time has been spent misleading investors about PFOF pricing. Not only has the SEC shown that Robinhood and PFOF did not save users money as PFOF supporters state it does. Robinhood actually cost users an additional $34 million in trading costs during that period compared to even traditional broker fees. This does not take into consideration Robinhood's $70 million fine by FINRA in 2021 for other violations. Examining Robinhood, who disrupted the commission model goes against Director of the Committee on Capital Markets and Professor Scott's argument that PFOF is saving users money and brokers route orders for the best price because the law states they are required to do so.

User Data and Comparison

Robinhood users are more active compared to other retail models such as Charles Schwab or E-Trade clients in certain trading activities. In Q1 of 2021, Robinhood users "traded nine times as many shares as E-Trade customers, and 40 times as many shares as Charles Schwab customers, per dollar in the average customer account in the most recent quarter (Barber, Huang, Odeon & Schwarz, 2021). Subsequently, the size of account values are quite different between the users of the Robinhood and traditional brokerage firms. The average user account value of Robinhood is $3,500 compared to the average Charles Shwab client of $240,000 (Dillian, 2022).

Technology data company Stilt conducted a research of credit scores of Robinhood users compared to other traditional brokers. The transaction-related data used in their report was collected from 1.5 million unique transactions made by 4,978 Stilt users between February 1, 2020 and Jan 28, 2021. The methodology was based on "all credit score-related data was collected from the same Stilt users during the same period. The findings of this report are based on an analysis of that data. Credit score statistics were determined by averaging all investment amounts in specific credit score ranges (less than 650, 650 to 750, and greater than 750) during the dates noted above" (Gogol, 2021). The data found 43% of Robinhood users have a FICO score less than 650, and high score FICO Robinhood users have a multiple of four times greater average account balance than low-FICO users as of Jan 2021 ($14641.50 vs. $3,655.10) (Gogol, 2021). The following figure shows a comparison of user credit scores among the trading platforms gathered from the Stilt data. Robinhood users account for the lowest demographic in the highest credit score range.

Platform	<650	650–750	>750
E-Trade	34.30%	46.60%	19.09%
Schwab	33.33%	45.50%	21.17%
TD Ameritrade	41.04%	41.91%	17.05%
Robinhood	42.65%	41.74%	15.61%

Figure 11. Comparison of Trading Platforms by User Credit Score.

Stilt study of users credit scores by broker platform. Source: Stilt

Pandemic Era Case Examples of Increased Retail Trader Exploitation

As more retail investors enter the market attracted to game-like design and reward incentives offered by PFOF platforms like Robinhood and Webull, can have a significant effect on financial markets as witnessed in both 2020 and 2021. In the past 24 months there have been incidents regarding PFOF platforms that have resulted in hundreds of formal user complaints and multiple regulatory inquiries and congressional hearings. These following examples further demonstrate the increased volume and pace that PFOF models are influencing trader behavior, market manipulation and placing an increased demand on consumer protection and regulatory resources.

Example 1: On March 3rd, 2020, Robinhood experienced a systemwide outage leaving users unable to access or trade during a market rally. Robinhood blamed the issue on a code failure. Customers stated they were unable to speak with any type of customer support after missing the entire market day of trading (Winck, 2020).

Example 2: In June 2020 Hertz, the rental car operator filed bankruptcy and shares were trading under $1. Due to a surge of retail investors piling into the cheap stock, Hertz attempted to sell an additional 500 million shares that they knew were potentially valueless and shares were expected to be halted from trading in the near future due to bankruptcy proceedings. The SEC stepped in and informed Hertz they had regulatory issues with the filing and Hertz suspended issuing the 500 million shares. A majority of the potential investors were alleged to have been using the Robinhood platform (Smith, 2020).

Example 3: GameStop, Sundial, AMC, Rocket Companies and Silver ETF, otherwise referred to as meme stocks, experience unusual price and volume action based on their actual valuation and historic performance. Multiple firms, but most notably Robinhood, placed temporary restrictions on trading of certain stocks, along with increasing user margin requirements. This limited user transactions and resulted in some shareholders being forced to sell positions. FINRA and the House Financial Committee opened inquiries into Robinhood and Citadel Securities practices of limiting trading and market manipulation (U.S. House Committee on Financial Services, 2021).

Example 4: Keith Gill, a.k.a. Reddit moniker 'DeepFucking Value'and YouTube influencer 'Roaring Kitty' was a FINRA licensed advisor under a subsidiary of MassMutual. Gill gained notoriety due to his posting on subreddit WallStreetBets and YouTube videos, and has been alleged of forming the retail investor movement against the short positions of GameStop. Gill was called before the House Financial Committee and is also a defendant in Massachusetts federal court, for not acting as an amateur investor, but is actually a financial analyst that influenced others so he may profit himself. Gill resigned from MassMutual and also testified in front of Congress he was only providing educational content on social media sites (Ponciano, 2021).

January 28th, 2022 Robinhood Earnings Call

This earnings call is significant as it captured the user metrics and trajectory of Robinhood during its largest growth period and performance of stock price since going public. Additionally, it provided forward looking statements to future operations of the platform since the surge of Robinhood users during the covid-19 pandemic. Since going public in the past year, Robinhood shares have steadily decreased since their IPO price and hovered around $14 on February 1st, 2022.

Figure 12. Robinhood Stock Price since IPO to February 1st, 2022.

Stock price performance of Robinhood since inception to February 1st, 2022. Source: TD Ameritrade

Robinhood went public in July 2021, with an initial price of $38 a share on its first day of trading and reached an all time high of $85 in August 2021. It then sunk to an all time low in late January of 2022 just below $10 a share. On the January 28th, 2022 earnings call, Robinhood reported mixed results for the fourth quarter year end with a loss of 49 cents per share on sales of $362.7 million and issued lower estimates than analysts expected for the first quarter. Robinhood reported a net loss of $423 million or $0.49 per share in the three months ended December, and a year prior when Robinhood was still a private company it posted a net income of $7 million or $.01 per share. There also was a slowdown in user growth and trading volume, with monthly active users decreasing by 8% to 17.3 million from 18.9 million the previous quarter and equity trading declined 35% to $52 million. However, cryptocurrencies increased 304% to $48 million in the fourth quarter. 72% of Robinhood's revenue was derived from PFOF and transaction rebates in the Q4 of 2021. Robinhood's legal costs increased from $1.4 million in 2019 to over $136 million by Q3 of 2021 (Prentice & Price, 2021).

The slowdown in user growth and decreased equity trading from the peak of the pandemic provides support to the hypothesis that these types of traders were attracted to Robinhood under different pretexts than sound investment principles and sophisticated trading tools. Users were enticed by aggressive marketing of commission-free trading, social media influence, game-like features, and volatile high-risk trades at a time when sports betting ceased. Many Americans were receiving government financial assistance due to covid-19. Now that many restrictions from covid-19 have ended along with government financial assistance, these types of traders are declining and becoming inactive. FINRA has a similar analysis in a 2021 report and stated in a CNN interview. FINRA is evaluating "app-based platforms with interactive or 'game-like' features that are intended to influence customers, their related forms of marketing and the appropriateness of the activity that they are approving clients to undertake." FINRA said it is particularly interested in how those apps "address and disclose the associated potential risks to your customers" (Egan, 2021).

Robinhood has employed aggressive tactics to grow user volume and promote constant trading, but that is not a sustainable model. Brokers that rely on PFOF as a primary source of revenue have shown multiple examples throughout this study of committing bad acts to increase profits. The focus of Robinhood and Webull, whose primary revenue is PFOF, is not on client and investor relationship, financial education or trading strategies because those functions add barriers and time to the transaction process.

Now that Robinhood is a publicly traded company and has seen a decline in users coming out of the pandemic, they have started to shift their model and strategy as evident on the January 28th, 2022 earnings call. Robinhood announced that it is going to now have 24/7 live phone customer support, promote financial education, introduce retirement accounts, and expand cryptocurrency trading to international clients. The indication of promoting financial education and retirement accounts is a strategy of long term investment and wealth growth versus an aggressive strategy of constantly pushing users to trade. Robinood, the very company that disrupted the commission model of traditional brokerages, is now shifting to promoting a long-term investment strategy for users that is more in line with the traditional brokerage and wealth management firms it disrupted. Moving to a long term investor strategy will also provide other revenue opportunities for a company like Robinhood besides PFOF.

However, these multiple shifts in strategy announced in Robinhood's earning call and strong movement into the cryptocurrency space points to the case that Robinhood is looking for other revenue opportunities as it sees a decline in user growth coming out of the pandemic. This also provides support to this study's analysis that PFOF is not a primary revenue sustainable model and is a rent-seeking system. Both Robinhood and Webull targeted first time and naive investors but not on behalf of acting in their best interest. Robinhood and Webull implemented strategies of minimal research tools, game-like features and rewards to refer new members all while encouraging them to constantly trade to create PFOF revenue.

Pricing and Market Competition

The National Best Bid and Offer Rule (NBBO) that brokers are required to follow, only applies for trades of 100 or more shares. Trades under 100 shares are called odd lots and these types of trades are not typically reported on public data reports or as part of the NBBO. Many retail traders make trades under 100 shares, but there is no requirement for them to receive the best price with PFOF since trades under 100 shares are not covered by the NBBO rule. When you examine the average Robinhood account value is $3,500 means the average trader on Robinhood can only afford to buy a stock priced at $35 or below to meet the NBBO requirements of 100 shares to be covered by this rule. Additionally, buying a stock priced in the $30 range also means the user's portfolio is undiversified and at high risk because that requires the average Robinhood user to put a majority of their capital in one or two different equities at most.

Public.com, launched in 2017 as a social investing app that aims to give people the ability to invest in companies using any amount of money and also followed the trend of offering commission-free trading. Public.com was a PFOF model but in February of 2021, abandoned the PFOF practice. Public.com has over 1 million users and published its pricing data after it stopped using PFOF. According to Public's published data they are now executing at better prices than when they were using PFOF. Public now routes orders using smart data software that scans exchanges and trading systems for the best prices and then sends the order to the best located price.

In one data metric of Public compared to Robinhood, using the effective spread over quoted spread or EFQ, Public.com published their EFQ is 33% while Robinhood's is 45% (Dailey, 2021). The lower the percentage of EFQ correlates to better execution. Robinhood performed better on net price improvement, that is filling an order at NBBO or better by saving users an average $1.72 per trade, while Public.com saved users an average of $1.18 per trade. However, Public.com performed better than Robinhood at "like at-or-better, which shows the percent of shares executed at or better than the National Best Bid and Offer (NBBO) at the time of order" (Dailey, 2021).

Proponents of PFOF have made the argument that PFOF provides liquidity and best pricing for clients. That Robinhood's disruption has made more firms offer better pricing to customers. However, this study's analysis concludes the opposite effect when you look at the market landscape of brokers and pricing practices after 2019 when Robinhood disrupted the commission model and entered its peak growing phase.

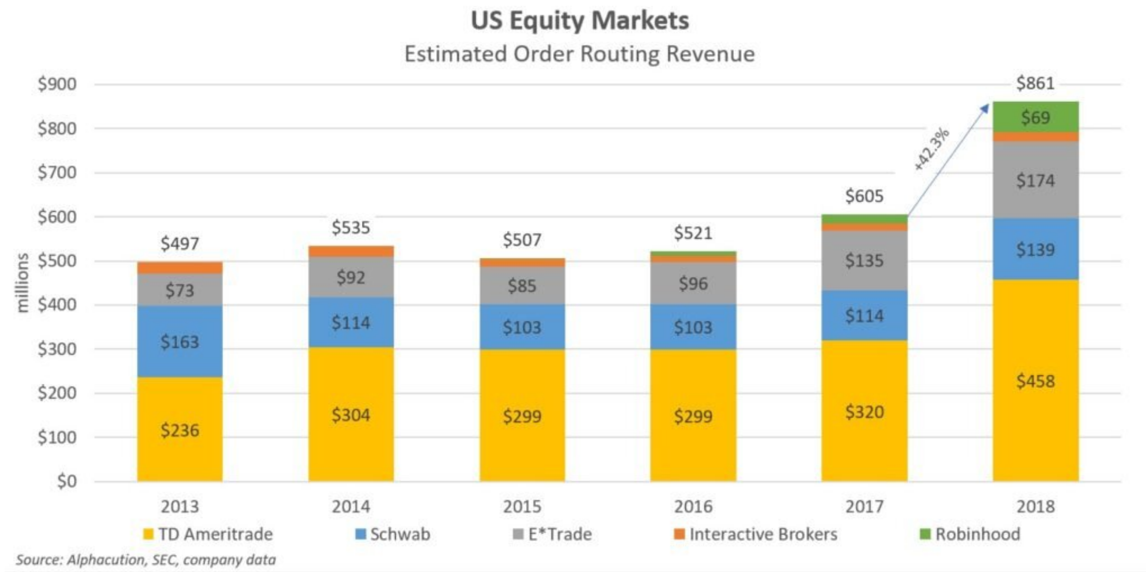

Figure 13. US Equity Markets Estimated Order Routing Revenue 2013-2018.

Revenue from order routing of brokers participating in PFOF. Source: Blockworks, Alphacution, SEC, Company Data

In 2019, when Robinhood was entering peak growth and disrupted the commission fee model, many traditional brokers also adapted to commission-free trading. In 2019, Charles Schwab announced that it was ending commissions and shortly after acquired TD Ameritrade for $26 billion. All TD Ameritrade accounts will be transitioned to Charles Schwab and conversion is estimated to be complete by the end of 2023 (Kelly, 2021). Charles Schwab also acquired USAA Investment Management Company for $1.6 billion in 2020. Also in 2019, E-trade announced the end of commissions and less than a year later was acquired by Morgan Stanley for $13 billion (Fitzgerald, 2020). As companies strive to remain competitive with commission-free trading, we now see less competition from the major brokers as a result of these mergers and acquisitions. Webull came to the market in 2018, along with some smaller alternative investing firms.

However, this study concludes they also will most likely have to merge or be acquired to remain sustainable. The commission-free model is creating a new barrier for startups to enter the market because it is a model based on razor-thin profit margins. Existing firms have merged which has concentrated market share and power versus bringing in new competition.

Not every traditional broker has given into the PFOF disruption. Merril Lynch does not accept PFOF routed to third party market makers. As they state on their website, the best execution is their number on priority and they make market makers compete for their business.

> Merrill does not receive payment for order flow from liquidity providers to which we route our customer orders in equity securities. Merrill receives rebates from, and pays fees to, certain registered securities exchanges for providing or taking liquidity on those exchanges, according to those exchanges' published fee schedules approved by the SEC. In some cases, the rebates received by Merrill from an exchange may, over a period of time, exceed the fees paid to the exchange. Merrill may also participate in the options order flow programs sponsored by the NYSE American Options, the NYSE Arca Options, the Cboe options exchanges, and the Nasdaq options exchanges (MerrillEdge, 2022).

Fidelity, which charged $4.95 per equity trade, also dropped its commission fee in 2019, but did not adopt PFOF for equities and ETFs. Fidelity does use PFOF for options trades. According to Fidelity's 605 disclosure and website. They are saving customers an average of $18.99 per 1,000 shares of equity shares traded versus an industry average of $4.59 while not engaging in PFOF for equity trades. Fidelity is calculating this metric using the following data according to their website disclosure:

> Based on data from IHS Markit for SEC Rule 605 eligible orders executed at Fidelity between October 1, 2020 and September 30, 2021. The comparison is based on an analysis of price statistics that include all SEC Rule 605 eligible

> market and marketable limit orders of 100–1,999 shares. For both the Fidelity and Industry savings per order figures used in the example, the figures are calculated by taking the average savings per share for the eligible trades within the respective order size range and multiplying each by 1000, for consistency purposes. Fidelity's average retail order size for SEC Rule 605 eligible orders (100–9,999 shares) during this time period was 716 shares. The average retail order size for the Industry for the same shares range and time period was 378 shares. Price improvement examples are based on averages and any price improvement amounts related to your trades will depend on the particulars of your specific trade (Fidelity, 2022).

The CFA Institute, is a global not-for-profit professional organization that provides investment professionals with finance education. It aims to promote the standards in ethics, education, and professional excellence in the global investment industry and is the organization that issues the Chartered Financial Analyst designation among several others. The United Kingdom banned PFOF in 2012. The CFA conducted a study of the 2012 PFOF ban and published their findings in 2016. There are two notable differences between the U.S. financial markets and the U.K. financial market system. First, there is less retail trading in the U.K. compared to the U.S. markets. Second, the U.K. uses a retail service provider model which is an internal market of market makers that each broker engages with for processing retail orders. The CFA found:

> We observed an increase in the proportion of retail-sized trades executing at best quoted prices from 65% to more than 90% between 2010 and 2014, which is consistent with our hypothesis. In addition to the prohibition of PFOF arrangements, the coincident growth of lower-cost internet execution-only accounts and the limited profitability for brokers of servicing retail clients may have caused the UK retail equity market to become a more competitive, utility-like service (CFA Institute, 2016).

The conclusion of the CFA study was only three paragraphs but referenced the U.S. system is comparatively not any better by having PFOF and that the U.S. financial markets could experience similar improved market integrity and pricing results as the U.K. by banning PFOF.

> Our findings suggest that the loss of a potential source of revenue from retail PFOF arrangements across asset classes, combined with the low profitability of servicing retail clients—particularly given the continued popularity of internet execution–only services—has resulted in retail-sized equity order execution becoming a competitive, utility-like service. The implication is that the current best execution regime appears to be working well, despite the lack of a US-style trade-through rule that would explicitly protect quotes at the top of the order book. It is possible that markets that do have trade-through protection, such as the US market, may not need this explicit quote protection to maintain best execution as long as PFOF is banned as well. This suggestion is interesting given that some market participants in the US argue that trade-through protection may ultimately harm investors by increasing the technical complexity of the market ecosystem and possibly damaging market quality by incentivising the use of predatory high-frequency trading strategies. Our findings suggest that a simpler market structure can also achieve good best execution outcomes as long as a holistic approach is taken (CFA Institute, 2016).

After seeing the results in the U.K. market of improved competition and pricing from the banning of PFOF, the American financial markets have experienced the opposite effect with the expansion of PFOF. Multiple major brokerage firms have merged and acquired competitors.

Robinhood showed signs in the January 28th, 2022 earnings call of shifting its strategy as it experiences a decline in users as markets emerge from the pandemic. The implementation of retirement products, financial education and live customer support while expanding other revenue opportunities indicated by the mixed year end results shows the vulnerability of PFOF as a primary revenue model.

Conflict of Interest between PFOF Brokers and Clients & Conflict of Interest between Publicly Traded PFOF Brokers and Shareholders

Interactive Brokers (Ticker: IKBER), Charles Schwab (Ticker: (SCHW), E-trade (acquired by Morgan Stanley, Ticker: MS) and TD Ameritrade (merged with Charles Scwhab) all around 2019 eliminated commissions to compete with Robinhood and Webull. Robinhood (Ticker: HOOD) itself became a publicly traded company in 2021. Before 2019, Fidelity, Interactive Brokers, E-trade and several other brokers with the exception of Robinhood, charged commissions for trading as their primary revenue sources. Some of the traditional brokers such as Charles Schwab and TD Ameritrade received PFOF but was not the primary source of their revenue.

In commission based models clients could see the fee structure or cost before executing the trade. It was typically a flat fee or commission based on the amount of shares traded. However, when these brokers all eliminated the commission fee and adopted PFOF to compete with Robinhood's growth, it presented a new dynamic to the conflict of interest argument especially within the last two years. This is due to the fact these companies including Robinhood are publicly traded.

The first dynamic is the board of directors of publicly traded companies have fiduciary duties and duties of care to the shareholders. That is in general terms, that the board is responsible to ensure that the company is making decisions in an ordinary manner (good faith) and compliant with laws and regulations. From a fiduciary duty, that the company is operating in a sustainable manner, not committing fraud and the board has oversight on operations of the company and CEO. In a publicly traded company, the CEO is the highest ranking person and typically elected by the board of directors. The CEO's typical role is overseeing the entirety of company operations, driving profitability and communicating with the board of directors.

In the case of Robinhood Markets Inc, it operates under a series of subsidiaries Robinhood Financial LLC, Robinhood Securities LLC and Robinhood Crypto LLC, according to the Robinhood website and FINRA firm broker check. Robinhood Financial LLC and Robinhood Securities LLC are licensed with FINRA. Robinhood Markets Inc and the CEO of Robinhood Markets Inc, Vlad Tenev are not financially licensed when conducting a FINRA broker check. Robinhood Markets Inc. presides over the subsidiaries and Mr. Tenev presents himself as the CEO of Robinhood. He was the most active on the January 28th, 2022 earnings calls, has conducted interviews as the CEO of Robinhood and presents himself as the decision maker and face of Robinhood operations. According to FINRA requirements"both firms and individuals" need to be registered for broker-dealer operations unless granted an exception.

The purpose of the FINRA licensing process is to ensure individuals have the training and competence required to carry out their respective duties and roles. By passing the appropriate exams and background checks, the individual demonstrates having the character and knowledge of market concepts, regulations and should be able to avoid missteps. Additionally, this provides a tool for the public to check an individual or firm's history of violations, known as the Broker Check Tool.

Matt Egan of CNN Business conducted an investigative story in February 2021 and asked Robinhood about the licensing and role of Mr. Tenev. “Robinhood told CNN Business that Tenev does not directly manage the FINRA-registered leaders of the broker-dealer or clearing broker — but declined to say who does. None of Tenev's direct reports appear to be registered with FINRA” (Egan, 2021). According to this study’s analysis, Mr. Tenev is directly involved in the broker dealer operations and is the decision maker regarding investing products. This is evident in the Q4 2021 Robinhood earnings call transcript. Robinhood Markets Inc, merely appears to operate as a shell or holding company umbrella for the subsidiaries that conduct the operations and has allowed Mr. Tenev to skirt the FINRA requirements up to this point.

The analysis of past media interviews and the most recent earnings call shows evidence that Mr. Tenev is directly involved in the daily operations of Robinhood Financial LLC and Robinhood Securities LLC which would require him and Robinhood Markets Inc. to be FINRA licensed. No other feasible argument can be made that Robinhood Markets Inc, or the CEO is engaging in any other business activity other than broker-dealer services based on the January 2022 earnings call. Mr. Tenev spoke specifically about every facet of Robinhood Financial LLC, Robinhood Securities LLC and Robinhood Crypto LLC.

Robinhood Markets Inc. is not remotely similar to a legitimate parent company operation such as Berkshire Hathaway, which owns multiple companies in different industries and each subsidiary has their own respective CEO that reports to the Berkshire Hathaway CEO. The parent company Berkshire Hathaway CEO Warren Buffet, is not holding earnings calls or annual meetings about his direct involvement in Dairy Queen and how he has improved ice cream quality to increase sales, then proceeding on to how he has implemented new procedures for Geico to process insurance claims more efficiently and ending the an the earnings call on how he improved Long and Foster website user experience to attract more sellers for home listings.

On the Q4 2021 Robinhood earnings there were only three corporate participants from Robinhood, Irvin Sha – Head of Investor, Relations and Capital Markets, Vlad Tenev – Chief Executive Officer and Co-Founder and Jason Warnick – Chief Financial Officer. Nobody was presented or spoke as the CEO of Robinhood Financial LLC or Robinhood Securities LLC. Mr. Tenev consistently used the word “we” inclusive of him throughout the conference call when discussing financials, investing products and the company roadmap. At no point throughout the earnings call was any differentiation made between Robinhood Markets Inc. and its subsidiaries. Nor at any point were any of the subsidiaries corporate leaders named or referenced.

Mr. Tenev was the majority speaker of the earnings call and at the end of the conference call, Mr. Tenev answered questions regarding cryptocurrency, retirement investing products, stock price and platform features. For someone to have that much insight and not let the respective leaders of Robinhood Financial LLC or Robinhood

Securities LLC speak at all on the earnings call about those respective functions, are the characteristics of someone directly leading and involved in the broker-dealer operations of a firm and that requires the individual (Vlad Tenev) and firm (Robinhood Markets Inc.) to be FINRA licensed.

This is where the second dynamic to the conflict of interest argument comes into existence with PFOF models such as Robinhood now being a publicly traded company. The board of directors has a duty of care to shareholders, that is ensuring interests are being placed above their own and the company is following all laws and regulations. From this study's analysis based on the previously mentioned circumstances, Mr. Tenev is directly involved in the daily operations of Robinhood Securities LLC and Robinhood Financial LLC which would require him and Robinhood Markets Inc. to be FINRA licensed.

The board of directors, continuing to allow Robinhood Markets Inc. and Mr. Tenev to direct operations without holding the proper license and background checks, puts the company in jeopardy and at risk for all resulting damages from future missteps. This is not protecting the interest of shareholders. Hypothetically, if Mr. Tenev is not directly involved in the subsidiary operations then he would not be required to get FINRA licensed. However, this still presents a conflict of interest for the board of directors.

Robinhood Markets Inc. under Mr. Tenev's leadership, from 2015-2018 misrepresented and omitted information regarding PFOF pricing and operations and was fined $65 million by the SEC. In June 2021, Robinhood was fined another $70 million, this time by FINRA for misleading customers and the outage that left traders helpless. In 2021, Robinhood restricted trading of certain companies and needed to raise $1 billion in emergency funding to meet its capital requirements to avoid restricting more user trades. Additionally, Robinhood had over 400 complaints filed with consumer and regulatory agencies. That is more than three times the other top firms combined. This shows a pattern over the course of years that under Mr. Tenev's leadership, the lack to follow or understand financial laws and regulations and disregard for clients' best interest.

Based on Mr. Tenev and Robinhood Markets Inc. past history, the board of directors who oversees the CEO, is allowing Mr. Tenev who is unlicensed and has not demonstrated the financial knowledge and understanding of laws by passing the appropriate exams, to oversee the operations of two licensed firms whose only purpose is broker-dealer operations. The board of director is allowing the individual who disregarded the laws and best execution practices from 2015-2018 as a private company and cost clients an additional $34 million in trading costs, and was fined in 2021 by FINRA for again misleading investors, now to be the responsible individual to ensure as a publicly traded company that those subsidiaries follow the laws. The shareholders have no idea if Mr. Tenev has an understanding of the laws or of the character because he has not completed the FINRA requirements. Based on Robinhood's past performance of infractions, it would imply that he does not have understanding of market regulations or regard for the client's best interest.

The board of directors, allowing this to continue as if Mr. Tenev and act as if Robinhood Markets Inc, is some conglomerate parent company like Berkshire Hathaway and that Mr. Tenev is not involved in broker-dealer operations; one can see how significant financial damages to shareholders and class action lawsuits may result from any future missteps of Robinhood going forward. There are now two conflict of interest arguments. The conflict of interest between Robinhood and client best execution practices. The second conflict of interest between Robinhood's board of directors and shareholders regarding care of duty. Jonathan Macey, a corporate finance and securities law professor at Yale University, said the situation at Robinhood underscores "how inept regulators are at protecting individual investors" (Egan, 2021).

This conflict of interest dynamic also exists in Robin Hood's rival Webull, but in a much different perspective. Webull operates in a similar organizational structure as Robinhood and its primary source of revenue is also PFOF. Webull has a holding company and two subsidiaries according to the FINRA broker check. The difference in the analysis of Webull when compared to Robinhood, is that Webull Financial LLC is operated by an independent CEO of the Webull parent company Fumi Technology. The Webull Financial LLC CEO, Anthony Denier is financially licensed by FINRA. As such, this demonstrates the effectiveness of the FINRA requirements and standards of licensing, as Webull has not committed the amount or type of missteps as Robinhood, although did restrict some trading of the meme stocks in 2021.

Webull is a privately held company. However, there is a much different conflict of interest that exists in this PFOF model and the best interests of clients and American financial markets. Webull Financial LLC is licensed by FINRA and Webull Advisors LLC is monitored by the SEC. However, the parent company and owner of Webull is Fumi Technology, a financial analysis firm and Webull's technology team that is located in Hunan, China. Webull's brokerage operations and customer service operations are based in New York City.

According to Webull, data is stored locally but they don't go far as to state it is not accessed by parent owner Fumi Technology. This study's analysis is that under Chinese law, companies are obliged to support and work with the Chinese government's intelligence agencies and it is highly unlikely that this does not happen on a regular basis based on U.S. and China relations. Webull has used the PFOF model of commission-free trading and similar gamification experience like Robinhood to attract users.

Webull Financial LLC collects user data, social security number, bank account numbers and any other data that can be collected through the app on the user's mobile device or desktop. Senator Tom Cotton, in September of 2021, addressed this issue with the Director of National Intelligence providing some of the following information:

> Webull does not earn commissions on trades but rather makes money via order flow payments, short selling fees, subscriptions, interest paid on margin, as well as investments of cash on balance. A 2018 profile of Webull described their Wall Street office as "a Chinese force in the 'nerve center' of the international financial community." Webull had over eleven million users as of last year and is planning an initial public offering that could raise between $300-$400 million. From April to June of 2020, Webull's trading volume exploded by 500% and trading accounts grew by 450,000.
>
> As a broker-dealer, Webull collects sensitive, personal information from its clients. That includes Social Security numbers, home addresses, bank accounts,

> and more. While Webull claims to store user data locally, Webull is still required to adhere to the laws of China.
>
> China's deliberately vague patchwork of intelligence, national security, and cybersecurity laws compel companies to support and cooperate with the government's intelligence work. With no independent judiciary to review government demands to provide user data or take other actions on the government's behalf, there is no legal alternative for Chinese companies if they don't want to comply. There is no independent press to make the situation public. And penalties for non-compliance can include destruction of the firm and long prison sentences.
>
> Given these concerns, we believe that Webull is a potential counterintelligence threat and we ask that the Intelligence Community conduct an assessment of the potential national security risks posed by Webull and other China-based broker-dealers operating in the United States. Further, we request that the Intelligence Community brief Congress on these findings (Cotton, 2021).

In this study's analysis, Webull implemented the PFOF model to attract unsophisticated retail traders and expand growth through the enticement of commission-free trading. Through the implementation of game-like features and reward incentives that was witnessed by Robinhood's success, has allowed Webull to target the same demographic of users and people most likely to download the Webull app onto their mobile device. Webull users are being rewarded for referring other users onto its PFOF platform, and in essence they are voluntarily submitting their sensitive information to a parent company in China. This provides Fumi Technology and China unprecedented access to over 11 million Americans user sensitive information, trading patterns, and provides a gateway to their mobile device or computer activity all while Webull profits from PFOF.

On Webull's website there is no mention or any disclosure of Fumi Technology or operations in Hunan, China. It also this author's analysis from experience conducting human intelligence (HUMINT) and signal intelligence (SIGINT) operations in foreign environments, that the New York based Webull Financial LLC, employees and CEO, can not accurately say or have oversight of any interactions between Fumi Technology and Chinese government operations. Additionally, backdoor access could easily be implemented in the coding by Fumi Technology that was developed for the U.S. customer facing side of Webull. This provides the possibility in Hunan, China of Fumi Technology front-running, selling client data, supporting China intelligence operations, running software tests on specific Webull users and controlling what news or information users see completely undetected by the New York based brokerage element.

The fact that Webull states the information is stored locally in the US is irrelevant, as the information can be accessed by the parent company regardless of location. The effect on American financial markets is not favorable in this circumstance nor in the best interest of American retail clients. Fumi Technology using Webull as a gateway to over 11 American millions involved in the financial markets now has the capability to influence their trading behaviors, control information content or conduct other bad acts if they so choose completely outside of U.S. oversight. China is not a democracy and the U.S. and China relationship remains fraught. To say Webull is serving the best interest of its clients, even if it routes orders for the best price execution is subjective based on Fumi Technology as the parent owner and is subject to complying with Chinese government directives.

Chapter V.

Progressive Capitalism & Rent-Seeking

Even with the rapid growth of Robinhood and first-time investors entering the market and the expansion of commission-free trading, financial inequality continues to increase and public trust in the markets remains stagnant. In a 2021 Gallup poll, only 26% of Americans said that stocks and mutual funds are the best place for long-term investing. In 2007, before the housing crisis bubble only 31% of Americans felt that stocks and mutual funds are the best place for long-term investing (Gallup, 2022).

New York University Economist Edward Wolff released a study in 2013 that found 81% of the stock market worth was held by the top 10% of households by wealth. In 2017, CNBC conducted an interview with Edward Wolff and he updated those numbers and found the number had increased to 84% of stock market worth was held by the top 10% of households by net wealth. 93% of the stock market worth was held by the top 20% of households by wealth. Only 7% of the stock was held by the bottom 80% (Pisani, 2017). In 2021, a staggering 89% of stocks worth was held by the top 10% of households (Frank, 2021). This shows a drastic increase in concentrated stock ownership despite the boom of PFOF and first-time traders entering the market that was attributed to Robinhood's rapid growth. The top 10% added $6.5 trillion in returns from market investments while the 90% added only $1.2 trillion in returns during the pandemic, compiled from Federal Reserve data (Frank, 2021).

This points to two significant factors in between the top 10% and bottom 90% of households. First, is the type of investing strategy and trading activity between the two groups. Particularly, among the Robinhood type of investors who are buying and selling stocks in high frequency. These types of traders are attempting quick profits with little capital versus the buy and hold strategy which contributed to the top 10% of households owning almost 90% of the stocks. Higher trading activity does not necessarily equate to increased returns. The second sentiment is that after the housing crisis the American public trust in the financial markets continues to remain a significant issue and contributing factor to growing financial inequality. This is evident by the increased concentration of the top 10% of households accumulating more stock ownership over the past decade.

Economist Joseph Stiglitz wrote an article a few months before the pandemic titled, *Progressive Capitalism Is Not an Oxymoron.* "We can save our broken economic system from itself" (Stigletz, 2019). The timing of his writing and subject of financial and technology exploitation was almost a prediction of what was about to take place in the American financial markets over the next two years fueled by the covid-19 pandemic.

Stiglitz made a distinction in his article that if we continue on a path of allowing exploitation by the financial sector and advancement of technology without regulation adapting to these changes and innovation, then the markets become more concentrated and less competitive. "One can get rich either by adding to the nation's economic pie or by grabbing a larger share of the pie by exploiting others — abusing, for instance, market power or informational advantages. We confused the hard work of wealth creation with wealth-grabbing (or, as economists call it, rent-seeking), and too many of our talented young people followed the siren call of getting rich quickly (Stiglitz, 2019). The high trading activity that platforms like Webull and Robinhood have encouraged users to engage in, is not an investment strategy that creates user wealth. It is a system of rent-seeking creating wealth for the PFOF platforms fueled by high trading activity of the user.

Robinhood and Webull have targeted first time and naive retail traders by gamifying trading and creating a community style culture approach to investing through chat rooms, social sharing incentives and curated stocks lists. Both Robinhood and Webull restricted certain types of trading strategies and research tools that sophisticated traders utilize. This creates a simple flow in the transaction process and benefits the PFOF model by creating revenue regardless of the outcome to the user. Robinhood disrupted the brokerage industry pricing model and grew rapidly by exploiting retail traders in this fashion.

Robinhood, from 2015 to 2018 misrepresented pricing practices. In 2020, Robinhood misled customers and left millions of traders helpless during outages and approved thousands of options trading accounts for users not qualified by FINRA standards. In 2021, Robinhood restricted trading during the meme stock craze that it helped fuel. All these actions led to fines for Robinhood by the SEC and FINRA but that is not the regulatory actions Stiglitz speaks of. The fines Robinhood incurred are reactionary measures and punitive consequences to what has already taken place. The exploitation of retail traders and these incidents from 2015 to present are the result of regulatory inaction not adapting with market power and technology advancement over the last 30 years.

These platforms promote the user to constantly make transactions regardless of what investment strategy may be best suited for their individual circumstances. The American financial markets now have fewer major brokers that now have more market share due to mergers from the expansion of the PFOF model. Unlike the U.K. that banned PFOF in 2012, where the CFA study found that after the banning of PFOF led to an increase of retail trading and more competitive pricing. The increase in retail trading in the U.K. after banning PFOF signals an increase of public trust in the U.K. financial market system despite the implementation of commissions and fees. In the American markets, we are now experiencing less broker competition but increased concentrated market share and power which can lead to further public distrust and retail trader exploitation.

Despite millions of younger traders entering the market during the last three years, financial inequality and concentrated stock ownership has continued to increase. Examining the pretenses of how these traders were attracted to the market, again points to rent-seeking and exploitation by PFOF platforms like Robinhood and Webull. Users were attracted by a system of social influence, aggressive marketing and misrepresentation of pricing. Investing is based on individual circumstances and skills. Income, debt, age, savings, health, amount of dependents, cost of living, among many other factors contribute to formulating an individual investing strategy. Investor A may be good at reading charts and technical analysis while Investor B may be more skilled at processing news and fundamental analysis. All factors that contribute to one's investment style and rely on different market resource tools.

The community style and social culture atmosphere encouraged by some PFOF models is a way to create more user growth and induce FOMO urgency for the user to execute transactions. In the meme stock movement, a few people like Keith Gill who is a financial professional, and accredited with leading the GameStop squeeze profited immensely by taking advantage of many naive investors and encouraging them to buy certain stocks to participate in his own investment strategy.

Stiglitz states "if we curbed exploitation in all of its forms and encouraged wealth creation, we would have a more dynamic economy with less inequality (Stiglitz, 2019). Stiglitz's view is that if banks were held accountable and regulators had acted when presented warning signs of their aggressive actions, such as when banks gave home loans to unqualified buyers or credit rating agencies assigned strong ratings to junk portfolios, the curbing that exploitation may have prevented the 2008 housing crisis. He also references Volkswagen and the emissions scandal, Sackler family and opioids, and if this article were written today, may include Robinhood and the gamification of trading.

Financial regulators are staring at some of the same warning signs and aggressive practices by PFOF brokers that banks used leading up to the housing crisis. There is no other similar financial pricing product in the American market or economy that operates like PFOF. It is the only system where the cost is hidden from the customer and the factors of determining order routing are subjective. If airlines were allowed to charge customers after the flight landed based on actual flight time, actual fuel usage, impact of weather and gas prices at time of landing, all subjective factors would probably lead to immediate chaos inside of airports and result in public outcry.

The difference is the average American can comprehend how airline pricing and regulation has adopted over time with the advance of flight technology and operations. If the customer can not understand the pricing system such as PFOF and see how the price is factored, then how can they be expected to trust it and use it? Therefore, it is the assessment of these factors that the public trust in the financial markets will most likely continue to decrease as PFOF expands. From 2008 to 2021 public trust in stocks as the best long term investment dropped 5% according to the latest Gallup poll. Now that more brokers are transitioning to a model that functions on hidden costs, will most likely not improve the public trust but continue to experience a decrease in public trust. In this context, it becomes easier to understand how and why Bernie Madoff would have pioneered a system like PFOF and while at same time was included in regulatory panels as a financial expert. It is complex for the public to understand, difficult for regulators to enforce, and easy to manipulate and exploit the market.

Joseph Stiglitz ends his article *Progressive Capitalism Is Not an Oxymoron* with "This is what is to be expected in a society that lauds the pursuit of profits as leading, to quote Adam Smith, "as if by an invisible hand," to the well-being of society, with no regard to whether those profits derive from exploitation or wealth creation" (Stigletz, 2019).

Chapter VI.

Conclusion

This study and conclusion has been framed and presented in a format so that someone with minimal financial knowledge or market experience can have an understanding of PFOF and its history. The PFOF model in the American markets has been a subject of contention by investors, regulators, lawmakers, scholars, and financial professionals since its inception. Critics of the PFOF model cite conflict of interest, market manipulation and how retail traders are easily exploited. Proponents of PFOF cite that the growth of commission-free trading has attracted an influx of new investors into the market and without PFOF, liquidity decreases which means spreads increase resulting in higher costs of trades.

Multiple SEC Chairman since the 1990's and multiple congressional committees have held hearings regarding PFOF practices. PFOF is backed by billions of dollars in revenue and lobbying efforts by financial institutions and market makers. It is in this study's assessment that lobbying efforts have been a significant contributing factor of why PFOF has not been banned up to this point. It is a David versus Goliath narrative of financial companies with significant financial power exploiting retail traders.

PFOF has been an ongoing debate for over 30 years. It will continue to be an ongoing debate for years to come as a result of how government studies, congressional hearings and regulatory panels examine PFOF. It has in the past and continues to be discussed and examined with focus on order routing, which is a singular component of PFOF. However, PFOF is much more complex and comprehensive of multiple factors than just focusing on order routing. The way trading was conducted 20 years ago is not relevant today. Even, the way trading was conducted five years ago has already changed. The speed of trading algorithms, financial product availability such as cryptocurrencies and mobile device trading apps have all developed rapidly just in the last two years.

Any meaningful change to improve public trust in the markets, promote pricing transparency and protect individual investors needs to examine the entire scope of how PFOF models operate. Marketing practices, organizational structure, factors that brokers use to determine best execution, rewards incentives and sign-up processes have all shaped the PFOF model in the modern era of trading. Order routing is the end result of all these other components.

If one were to be driving an automobile and the check engine warning light came on, one would go to a mechanic. You arrive at the shop, the mechanic looks things over and notices the oil is very low. He adds oil, the check engine light goes off and you proceed on your way. After some time passes, you are driving and the check engine light comes on again. You go to the nearest mechanic who this time runs a full diagnostic test and she identifies a blown head gasket. This is a rather small but important component in the engine that is causing the oil to leak. You again decide just to add more oil instead of making the repair. However, as you drive more miles, the rate of oil loss increases and more damage to the engine results. Eventually, all the oil leaks out while you're driving and the engine blows up.

In a sense, this is what has taken place with PFOF over the last 30 years. Order routing is only one component in the modern day PFOF engine. We know there is an oil leak, a conflict of interest with order routing. We keep adding oil, by regulators increasing disclosure requirements with rules 605 and 606. However, the issue persists and the rate of the oil leak increases. In the first half of 2020 alone, regulators received 400 complaints against Robinhood. That is more complaints than Charles Scwhab, E-trade and Fidelity combined. Minimal regulatory actions were taken after the “meme stock” congressional hearings in 2021. Where again the focus was on order routing and conflict of interest regarding best practices.

You can turn off the check engine light by adding more oil. However, you can’t stop the oil leak and prevent the engine from blowing up without examining all the components that require oil to operate in order to find out what actually needs to be repaired. Disclosure rules such 605 and 606 are only beneficial if they are actively enforced. The time of investigations and litigation is not a simple or fast moving process. This study has concluded that firms are willing to take those risks and pay the fines as the profits are significantly higher relative to the fine. Criminal charges usually have not resulted and fines settled by a firm with the SEC or FINRA and do not necessarily have a requirement of admitting guilt or wrongdoing.

Wealth creation for individuals leads to improved financial equality. This relies upon financial education, a financial system where the people trust to trade and rules and regulations that are actively enforced and adapt with changes. PFOF has shown difficulty to enforce and people's trust in the market system is still below a level prior to the 2008 housing crisis. This is leading to further concentration of wealth by the top 10% of households and contributing to further financial inequality within America. Banning PFOF in its entirety, will curb exploitation of retail traders and is the first major step to rebuilding public trust in the American financial markets.

This will also provide the opportunity for competition among brokers and market balance to be reestablished, versus the current path of fewer companies now existing with more market share. Commissions or cost per trade systems will come back to the market but without being able to rely on any revenue from PFOF, brokers will be competing for customers based on software and research tools, investment products and customer service they provide to clients. This will also level the playing field for startups and promote innovation to enter the market and by allowing new firms to differentiate themselves from a conglomerate like Charles Schwab. Under the current market conditions, almost every broker is now offering commission free trading. This is promoting a race for market share through mergers and acquisitions of existing firms and creating a barrier for new companies to penetrate the market.

Many will argue that banning PFOF will cost billions in new trading costs. As of 2022 there are over 332 million Americans according to U.S. Commerce data. However, only 56% of the population is shown to invest money in the stock market in 2021.

Robinhood in its 2022 earnings call is already seeing users decline. If five percent of more Americans invested in the market could potentially add billions in stock ownership and bring millions of new investors into the markets creating increased competitive pricing among firms as found in the CFA study when the U.K. banned PFOF in 2012.

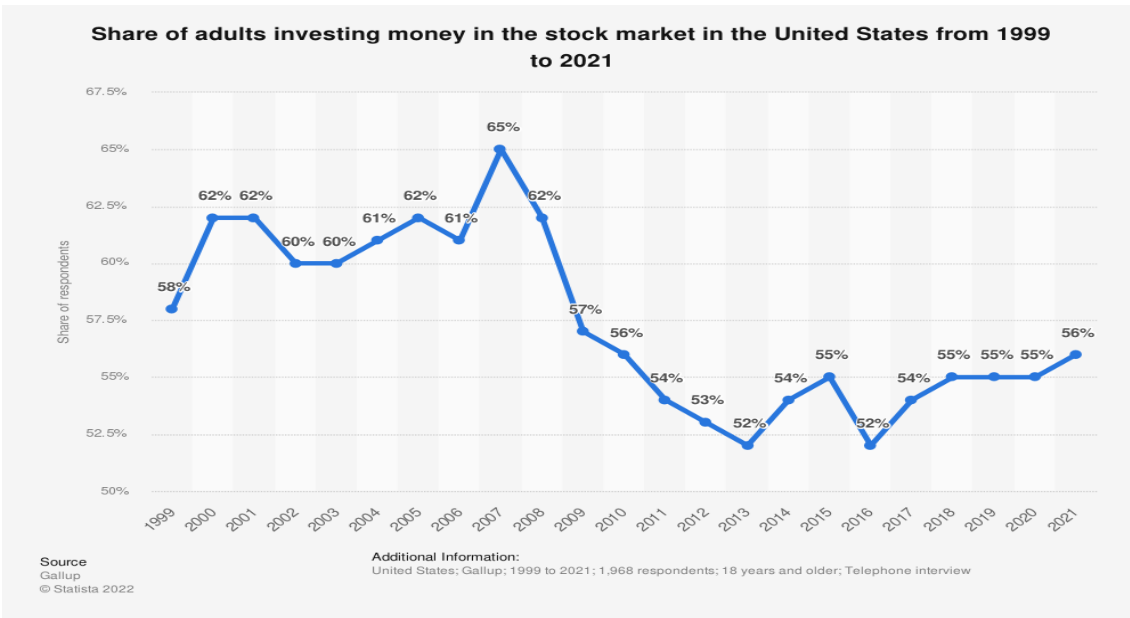

Figure 14. Shares of Adults Investing Money in the Stock Market in the U.S. from 1999 to 2021.

Percentage of Americans involved that have invested in stocks by year. Source: Statista and Gallup data.

We need to examine the trillions of dollars being lost by almost half the U.S. population not investing in the markets versus the possibility of adding a few billion in costs. The concept of billions of dollars in trading costs resulting from banning PFOF has not been proven to be absolute and did not result when the U.K. banned PFOF. Retail traders received better pricing according to the CFA study after the banning of PFOF.

In 2021, Senator Pat Toomey introduced a bill, the Investor Freedom Act of 2021 that prohibits the SEC and FINRA from issuing any rules that prohibit the practice of PFOF. The SEC and FINRA main duties are to regulate markets and protect investors. This bill would prevent them from carrying out their duties as they see fit regarding PFOF. Senator Toomey from in 2020 received over $215,000 in donations from financial entities involved in PFOF before introducing this bill. These donations included:

- $18,500 from SIFMA, the trade association for financial markets that includes Robinhood.
- $21,000 from Morgan Stanley, which acquired E-trade that year and earned over $189 million in PFOF revenue for the first half of the year.
- $16,000 from Charles Scwhab which made over $620 million in PFOF revenue in 2020 and $1.5 billion from PFOF revenue from TD Ameritrade in the first three quarters of 2021.
- $16,000 from the Ricketts family that founded TD Ameritrade
- $17,800 from Citadel CEO Ken Griffin which executes PFOF orders for firms such as Robinhood (Accountable, 2021).

The conclusion of this study is for lawmakers to ban payment for order flow immediately and in its entirety to curb retail trader exploitation and restore public trust in the financial market system. That lawmakers introduce a bill, the Alex Kearns Act of 2022, that prohibits the practice of payment for order flow. An act named after the 20-year old unemployed Robinhood trader who committed suicide after seeing a $730,615 negative balance that didn't actually exist. He was unable to reach a live Robinhood customer support person for help because it didn't exist at the time. He left a suicide note asking "How was a 20-year old with no income able to get assigned almost a million dollars worth of leverage?" (Klebnikov & Gara, 2020). Robinhood settled the wrongful death lawsuit but terms of the agreement were not disclosed.

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