Prepared remarks of
James Fallows Tierney
before the meeting of the SEC Investor Advisory Committee
"**Ensuring Digital Engagement Practices Responsibly Expand Investment Opportunities**"
June 22, 2023

I appreciate the opportunity to share these remarks on the regulation of digital engagement practices (DEPs) with the SEC's Investor Advisory Committee. I am a legal scholar of capital markets regulation.[1] My research focuses on retail markets for financial advice, trade execution, and related services.

Competition and psychology affect how ordinary people choose between and consume services that money managers offer—and raise questions about how we should regulate advisory practices given agency costs and other conflicts of interest. Indeed, in a capitalist economy, households' ability to achieve long-term financial goals is largely contingent on effectively deploying savings in capital markets. This raises the stakes for effective regulation of how financial intermediaries shape investor behavior.

Broker-dealers and investment advisers can use technology in ways that appeal to human psychology and thereby influence how people deploy their savings this way. The use of push notifications or other DEPs to attract our attention, for instance, might be harnessed for prosocial or for private interests. In a 2021 request for information on possible rulemaking, the Commission raised regulatory issues surrounding DEPs in securities markets.[2] In today's session, the Investor Advisory Committee will hear from industry participants and scholars about the role DEPs play in shaping investor behavior for better and for worse—and how securities regulation might address it.

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[1] I will join the faculty of Chicago-Kent College of Law, Illinois Institute of Technology, as an assistant professor in July 2023. I held the same role at the University of Nebraska College of Law from August 2020 to May 2023. Affiliations for identification purposes only. I write only on my own behalf, and also thank John Debbie (Chicago-Kent '25) for exceptional research assistance.

[2] *See Request for Information and Comments on Broker-Dealer and Investment Adviser Digital Engagement Practices, Related Tools and Methods, and Regulatory Considerations and Potential Approaches; Information and Comments on Investment Adviser Use of Technology To Develop and Provide Investment Advice*, Exchange Act Release 92766, 86 Fed. Reg. 49,067, 49,068 (Sept. 1, 2021) ("DEP RFI").

These remarks highlight my recent scholarship, which bears directly on the SEC's consideration of rulemaking on DEPs.[3] I draw mainly on *Investment Games*, an article published last year in DUKE LAW JOURNAL.[4] I also draw on an essay, which I will call *Confetti Regulation*, published last year in YALE LAW JOURNAL FORUM and coauthored with Professor Kyle Langvardt.[5] I previously submitted earlier versions of the papers along with a comment letter, and have appended the updated, as-published versions along with these remarks. I will keep these written remarks brief, summarizing this scholarship, offering some bottom-line recommendations, and highlighting some other proposals and recent developments. I begin with brokers, the main subject of my scholarship, and end with reflections on the adviser space.

I. How we got here

Although other scholars (and my fellow panelists) have described DEPs, conflicts in trading and manipulation, and how we got here,[6] it is still worth briefly revisiting how DEPs are the nearly inevitable consequence of several convergent trends in market structure and regulatory practice.

First, the rise and salience of "retail investor" trading between 2019 and 2021 reflected a marked divergence from long-term trends. Securities regulators and scholars had previously observed the decline of dispersed retail ownership of corporate equities, a main feature of the Berle-Means corporation. For years retail investors had been substituting away from direct holding of corporate equities into indirect holding through institutional intermediaries like mutual funds and ETFs (which held the equities instead), which former SEC general counsel Brian Cartwright dubbed "deretailization."[7] But empirical evidence about the volume of retail

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[3] I also submitted a comment letter in connection with the DEP RFI. ; James Fallows Tierney, Comment Letter on Digital Engagement Practices (Oct. 1, 2021), https://www.sec.gov/comments/s7-10-21/s71021-9316496-260091.pdf [https://perma.cc/AS 7G-TXKX].

[4] James Fallows Tierney, *Investment Games*, 72 DUKE L.J. 353 (2022).

[5] *See* Kyle Langvardt & James Fallows Tierney, *On "Confetti Regulation": How not to regulate gamified investing*, 131 YALE L.J. FORUM 717 (2022).

[6] *See*, *e.g.*, Nizan Geslevich Packin, *Financial Inclusion Gone Wrong: Securities Trading For Children*, 74 HASTINGS LAW JOURNAL 349 (2023); Abraham J.B. Cable, *Regulating Democratized Investing*, 83 OHIO ST. L.J. 671 (2022); *see also*, *e.g.*, Jill E. Fisch, *GameStop and the Reemergence of the Retail Investor*, 102 B.U. L. REV. 1799 (2022); Sergio Alberto Gramitto Ricci & Christina M. Sautter, *Corporate Governance Gaming: The Collective Power of Retail Investors*, 22 NEV. L. REV. 51 (2021); Kobi Kastiel & Yaron Nili, *In Search of the "Absent" Shareholders: A New Solution to Retail Investors' Apathy*, 41 DEL. J. CORP. L. 55 (2016).

[7] Tierney, *supra* note 4 at 373 n.74.

equity order flow, in addition to highly publicized trading apps like Robinhood, suggested a a counterpoint to this trend.[8] Digital engagement practices are thus a feature of a market in which ordinary people are trading more than in the recent past, for a variety of reasons—only some of which may be traceable to DEPs.[9]

A second, related convergent trend is price competition on highly salient brokerage commissions.[10] Many discount brokers offer "commission-free trading," having competed the price of equity trading commissions to zero. That reduced the most significant transaction costs that historically acted as frictions against retail investors engaging in excessive trading.[11] Brokers do not provide their services as a charity, of course, and so have looked for substitute sources of revenue.[12]

The third convergent trend reflects an increasingly important source of this substitute revenue for certain broker-dealers.[13] At the risk of oversimplifying increasingly complex market structure issues,[14] the national market system's focus on a single national best bid or offer in a continuous time market, despite geographically dispersed trade execution venues, gives rise to a race for arbitrage profits.[15] Distance limits how quickly price quotations can be updated to reflect events on distant markets, so there is an incentive to try to pick off quotes that have been slow to update.[16] Many dealers, operating as market makers or wholesalers, have made significant investments in speed to update stale prices, earning fractions of pennies as compensation for this intermediation service.[17]

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[8] *Id.* at 373–77. Meme stocks have generally fallen out of the news but retail trading has remained strong and hit new all-time highs in January of this year. *See, e.g.*, Lu Wang & Elena Popina, *Day Trading Army's Grip on Stock Market is Tighter Than in Meme Stock Era*, BLOOMBERG, Feb. 2, 2023.

[9] Tierney, *supra* note 4 at 375–77, 385–93.

[10] *Id.* at 377–80.

[11] *Id.* at 377–79.

[12] *Id.* at 379–80.

[13] *Id.* at 380.

[14] *See, e.g.*, Paul G. Mahoney, *Equity Market Structure Regulation: Time to Start Over*, 10 MICH. BUS. & ENTREPRENEURIAL L. REV. 1 (2020). I intend to submit a draft paper as part of the equity market structure NPRMs, even though the submission would be out of time. Watch the rulemaking files for James Fallows Tierney, *Execution for Retail Investors* (manuscript).

[15] Tierney, *supra* note 4 at 380–82.

[16] *Id.* at 383.

[17] *Id.*

More broadly, dealers are worried that their counterparties have more information about the fundamental value of the security or the direction of a price move (because of, for example, the counterparty's own intended trading behavior). A seller might continue to push the price down in volume, etc. Adverse selection is thus a risk of dealer business models.

One way of reducing that risk is by ensuring that the order flow you are trading against is noisy, in that it does not have better information about future price. Trading against retail order flow may enable dealers to reduce adverse selection risk.[18] It doesn't follow, however, that markets or sales practices rules should be designed around facilitating the reduction of adverse selection risk to dealers.

Other comment letters undoubtedly will focus on payment for order flow and related issues, and I will not belabor these topics here.[19] It should suffice to say that some kinds of DEPs are designed to encourage informationally noisy retail order flow to service the broker-dealer's need for a substitute revenue source.[20] As I have argued, regulators should pay close attention to how broker-dealers use DEPs in connection with conflict-of-interest transactions, such as those that give rise to an incentive to encourage noisy order flow in service of PFOF arrangements.[21]

II. Digital engagement practices as a subject of concern for securities law

The Commission's 2021 RFI revealed wide ranging concerns about the role of digital engagement practices in retail securities markets. In these remarks, I focus on a handful of particularly important implications of these practices for securities law.

First, retail investors trade for different reasons.[22] For decades, scholars have been concerned about excessive trading by retail investors. Empirical studies from financial economics have long shown that ordinary people typically lack an informational edge when they trade—and they do worse the more they trade.[23] But this does not itself support a

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[18] *Id.* at 383–84.

[19] I will just say here that equity market structure reform proposals offer modest improvements to existing PFOF-related conflicts, and so perhaps do not go far enough in this respect.

[20] Tierney, *supra* note 4 at 384, 389–93.

[21] *Id.* at 382–84, 421–23; *see also* Tierney, *supra* note 3.

[22] *Id.* at 375–76, 386–93.

[23] *Id.* at 356 nn.5, 389–92.

conclusion that retail traders are all being "gamified" into trading more.[24] Scholars have identified a number of rational and imperfectly rational reasons why people actively trade despite lacking skill or superior information, such as their risk preferences, aspiration for riches, or desire to consume entertainment.[25]

DEPs appear to be relevant to two why people trade.[26] One is that it makes trading fun and exciting, a form of risk consumption that people enjoy akin to other risky activities like speeding or gambling.[27] Unless securities regulators have an appetite to crack down on retail speculative trading, then there isn't much that can be done with respect to "rational" noise trading for consumption value.

More pressing is a second reason people trade: because they have been induced into doing so when they would not have. Financial economists examining trade data from Robinhood users have found evidence that some retail traders decide to trade based on what is salient in their decision set, like the presence of a stock on a leaderboard of stocks most held by other brokerage users.[28] Other research has likewise focused on the role of salience-based DEPs in inducing noisy order flow. This set of reasons for trading—what might be called "attention-induced noise trading"—should be of particular interest and concern to regulators, because it is the evidence most closely linked to the kinds of harms that (at least under existing statutory authority) justify regulatory intervention in the first place.[29]

There is a social welfare justification for regulating DEPs to reduce conflicts of interest and promote good behavior in markets.[30] But as is so often the case in securities law, the nature of the social welfare justification depends on the particular facts and circumstances of the practice at issue. We might loosely think of three major categories of first-party and third-party harms from DEPs on the brokerage side: waste or loss, conflicts of interest, and the broader consequences of promoting speculative noisy retail order flow.

First is the possibility of waste or loss. If retail investors do worse the more they trade, then on net practices that promote trading may result in aggregate in a loss of retail traders' wealth

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[24] *Id.* at 393.

[25] *Id.* at 385–93.

[26] *Id.* at 387–93.

[27] *Id.* at 387–89.

[28] *Id.* at 392.

[29] *Id.* at 392–98.

[30] *Id.* at 418–20, 441–45.

(and possibly other sorts of measurable welfare), even after taking into account welfare gains from zero-commission trading.[31] This is not a slam dunk argument against digital engagement practices, because people engage in all sorts of nonproblematic transactions that result in a wealth transfer in exchange for some other good or service. But an objection that conflicts are driving the excessive trading may complicate matters.[32]

Some observers have suggested that this welfare loss is particularly objectionable if it results in a distributional transfer from retail traders to broker-dealers or other sophisticated financial firms.[33] Securities law could do a better job in general of responding to concerns about the "distributional" effects of legal rules—who wins and who loses.[34] But the SEC should examine carefully the nature of these distributional claims.[35]

Second, digital engagement practices potentially implicate implicates broker-dealer regulation's traditional concern for reducing conflicts of interest in the broker-dealer relationship.[36] The classic conflict of interest is that the broker-dealer will put its own interest in remuneration ahead of the client's. To that end, securities law has traditionally prohibited brokers from churning discretionary customer accounts to produce commissions, and from making recommendations for high-commission transactions that are unsuitable for the client's particular circumstances.[37] More recently, Regulation Best Interest prescribed duties of care, including as to quantitative suitability, with respect to recommendations for retail customers.[38] Likewise, and made even more timely by the Commission's recent equity market structure reform proposals, the broker owes a duty to route a customer's order so as to provide best execution.[39] Because PFOF gives a broker an incentive to send order flow to the best-paying wholesaler, it can exacerbate conflicts of interest with the broker's best-execution duties. That's one reason why PFOF is so controversial.

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[31] *Id.* at 418–20.

[32] *See infra* notes 36-39.

[33] Tierney, *supra* note 4 at 410 nn.227, 415, 420–23.

[34] *Id.* at 439–45.

[35] For instance, if the claim is that inferior execution quality is a distributional harm, what should we think of the possibility that zero-commission pricing make some investors better off than inferior execution quality makes them offsettingly worse off? Perhaps that should not matter if there are other first-party harms (like waste), or broader third-party harms to market quality. *Id.* at 416–20.

[36] *Id.* at 394–98.

[37] *Id.* at 430–35.

[38] *Id.* at 431–35.

[39] *Id.* at 381, 421–22.

The third major basis for concern is the broader market effects of brokerage DEPs on investor behavior. The heightened participation of retail investors, many of whom might lack financial expertise, could contribute to increased market volatility, as their investment decisions might be driven more by sentiment or herd behavior than by a rational analysis of fundamentals. Furthermore, the noisiness of this retail order flow could confound price discovery processes, as the correlation between market prices and underlying economic fundamentals might become less predictable. On another level, the rise of gamified investing could lead to an over-allocation of resources from the real economy into speculative trading. As more people are attracted to the thrills of trading, resources that might otherwise be invested in productive economic activities could be diverted into financial speculation, potentially inflating asset price bubbles and contributing to financial instability. To be sure, the presence of informationally noisy investors may be necessary for markets to succeed.[40] But that does not mean we should be sacrificing ordinary retail investors at the altar of promoting price discovery and liquidity.[41]

The bottom line is that flashy app design is highly salient to us, and useful as an object for regulatory and social anxiety about the risk that DEPs will induce uninformed, speculative trading by ordinary people. But it is unclear that flashy app design, standing alone, will have a meaningful effect in changing people's propensity to trade. There may be difficult line drawing problems between this kind of inducement to consume brokerage—and the more typical and possibly more benign inducements like free coffee that brick and mortar broker-dealers might offer retail clients as a courtesy.[42]

Much more worrisome, in my view, is an entirely different category of DEP. These include behavioral prompts or personalized recommendation algorithms—combined with machine learning and data analytics practices that hone these practices' ability to influence client behavior.[43] An app that rains confetti down the screen is not nearly as worrying as one that learns what kinds of prompts are more likely to be effective at encouraging me to place a trade—and then responds by serving more of these prompts to get me to trade more.[44] Existing

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[40] *Id.* at 390 n.143.

[41] *Id.* at 416–18, 439–45.

[42] *Id.* at 396–98.

[43] *Id.* at 366.

[44] *Id.* at 432–33.

rules may not be sufficient to respond to this kind of practice, especially if they cannot easily be fit into legal categories like "recommendations," as we will see next.

III. Regulatory interventions with respect to brokerage DEPs

The attached papers offer a detailed description of various regulatory interventions that the SEC might consider in responding to digital engagement practices. I briefly summarize here.

a. Using technology to drive conflicting interest transactions?

Conceptually, we can draw from legacy doctrines as a framework for thinking about digital engagement practices.[45] To the extent that these practices encourage a kind of noisy retail order flow, they should be understood to encourage retail clients to "churn" their own accounts. Where client accounts are nominally self-directed, churning doctrines would not traditionally apply.[46]

The modern version of these legacy doctrines, I suggest in both papers, might be quantitative suitability component of brokers' duty of care under Regulation Best Interest.[47] This component of the care obligation would prohibit this sort of behavioral churning—encouraging a pattern of transactions that serve the broker's interest in remuneration without a reasonable basis for believing *ex ante* that the pattern is in the retail client's best interest.[48]

The crux is whether digital engagement practices are understood as a recommendation. As detailed in *Investment Games*, longstanding pre-Reg BI interpretations of what constitutes a "recommendation" suggest that they can be. But the risk, as mentioned at the end of the last section, is with respect to DEPs that do not fall within Regulation Best Interest because they are not recommendations.[49] In other words, tinkering with the machinery of Regulation Best

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[45] *Id.* at 423–39. To the extent that digital engagement practices are those that encourage trading for its own sake, regulators might analogize to these r doctrines. There is an important reason for recognizing these practices as familiar problems, or "old wine in new bottles," beyond reducing the regulatory burdens associated with coming up with new legal rules. As Langvardt and I note in our *Confetti Regulation* essay, framing these practices in terms of legacy doctrines may help insulate them from deregulatory legal challenges. Langvardt and Tierney, *supra* note 5 at 729–35, 739–41.

[46] Tierney, *supra* note 4 at 429–30, 434–35.

[47] *Id.* at 430–35; Langvardt and Tierney, *supra* note 5 at 740–41.

[48] Tierney, *supra* note 4 at 433–35.

[49] *Id.* at 430–35.

Interest might involve extending certain duties to the non-recommendation uses of technology, linking duties to certain conflicting interest transactions, or both.

A related, complicated matter is what to do with DEPs where customer accounts are self-directed and the broker-dealer is not making recommendations. Securities regulation has not typically been concerned with retail investors who engage in self-directed excessive trading.[50] To be sure, financial economists have found that retail traders perform worse the more actively they trade.[51] But with limited exceptions—like FINRA's rules about "pattern day traders"—securities law generally does not prohibit or even limit retail investors' ability to trade excessively for speculative reasons.[52] And while there is state-level variation in laws restricting gambling in its own right, securities law generally permits a similar kind of retail-trader activity through trading strategies like in-and-out momentum trading.[53] If securities law does not already have a deep-seated normative policy prohibiting retail investor trading—at least not one anything like the policies against churning and favoring suitability— regulators would be venturing out into uncharted waters in prohibiting or limiting retail investor speculation.[54] This does not mean regulators should not consider those solutions; my own view is to the contrary. I mention this, however, because tamping down on feverish speculation might be seen as inconsistent with capital formation and thus not among securities law's canonical policies in an era of neoliberal capitalism.[55]

An additional form of regulatory intervention might involve a compliance-based practices-and-procedures framework. Individual violations are hard to monitor and enforce for, and there are positive externalities to encouraging cultures of compliance at registrant firms. As a result, the securities laws often try to shape firm behavior through books-and-records, written supervisory procedures, supervision, and similar mechanisms of promoting self-monitoring and trust-building by registrants. This is the main framing of the recent proposed Regulation Best Execution.[56] And in other areas, broker-dealers are required to establish and implement

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[50] *Id.* at 361.

[51] *Id.* at 346 n.5.

[52] *Id.* at 402–03.

[53] *Id.* at 386–87, 400.

[54] *Id.* at 400–01, 423–26.

[55] To say nothing of the eyebrows it would raise before the federal judiciary today. *Cf.* Langvardt and Tierney, *supra* note 5 at 735-36 (noting that the SEC "has had a poor track record in rulemaking and enforcement before the Supreme Court and the D.C. Circuit in recent years").

[56] *See Proposed Rule, Regulation Best Execution*, Exchange Act Release No. 96496, 88 Fed. Reg. 5,440, 5,455–58 (2023) (describing proposed rule 1101(a)(1)).

policies and procedures to promote certain broader policy ends, like compliance with the law or effective implementation of Know-Your-Customer duties under the anti-money-laundering laws.[57]

In this respect, proposed regulations in this space might require firms to adopt, establish, implement, monitor, and update their policies and procedures to promote compliance with other regulatory obligations being adopted about DEPs. Regulators and registrant firms alike may find that this allows them to flexibly adapt to changing market environments while focusing compliance and examination efforts toward firms saying what they do, and doing what they say they're going to do.[58]

b. Other options

Several remaining regulatory responses are non-starters, in my view. These relate to mandatory disclosure and user experience design regulation.

One obvious response is mandatory disclosure, a favored and common intervention in securities law. There are already disclosures about the underlying business practices that create incentives for broker-dealers to implement DEPs. It is unlikely that retail customers will consume more disclosures about DEPs, or that they will be protected indirectly through other market participants who do consume them.[59]

A second response, which Langvardt and I examine in *Confetti Regulation*, involves banning objectionable design features. Although this might appear attractively simple, it would raise significant First Amendment litigation risk. It might also bring unwanted scrutiny to other aspects of the securities laws, which are at their core content-based restrictions on speech.[60]

c. Other areas of regulation

There is also a more ambitious solution. Whatever the merits of other arguments for regulating behavioral design, a bold and modern securities law would step in to address the market structure problem that creates an incentive for broker-dealers to promote digital

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[57] *See*, *e.g.*, *Merrimac Corp. Secs.*, Exchange Act Release No. 86404, 2019 WL 3216542 (SEC July 17, 2019) (opinion of the Commission).

[58] *See infra* note 67.

[59] Tierney, *supra* note 4 at 426–27.

[60] Langvardt and Tierney, *supra* note 5 at 12–18.

engagement practices.[61] For instance, if these practices are a consequence of market structure design that makes it profitable to trade against noisy retail order flow, then the SEC should look seriously at ways of reforming Regulation NMS to address that root issue. It might, for instance, move from continuous time pricing to periodic batch auctions to reduce the incentive to create a pool of noisy retail order flow.[62] This would, of course, "waste" existing investments in speed to cater to the existing market.[63] But that should be no obstacle if this kind of reform can eliminate the demand for inducing noisy retail order flow that drives digital engagement practices in the first place.

d. Reflections on DEPs for advisers

Although my scholarship does not dwell on the problem of DEPs in investment advice, it is worth sharing some reflections on these regulatory themes in this context.[64] The use of DEPs by advisers may differ in kind and in degree of regulatory concerns raised compared with broker-dealers.

One potential use for the judicious use of DEPs in roboadvice may be to promote compliance with traditional normative finance's prescriptions for rational financial behavior. In contrast to broker-dealers, roboadvisers have the potential to use DEPs in a more prosocial manner, by providing educational content and nudging investors towards sound investment practices. For instance, roboadvisers may use DEPs to motivate users to save more by showing them how their savings stack up against similar users, or by rewarding them for reaching investment milestones. Roboadvisers may employ DEPs to visualize the power of compounding a user-entered amount of money, thus encouraging regular and consistent investment.

To extend the discussion, households may well intend to make rational financial decisions but are constrained by cognitive biases and the like. Boundedly rational households thus may find that roboadvice helps them to overcome some of these biases.[65] They may likewise find that some advisory-related DEPs—like push notifications, or earning rewards for financial

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[61] Tierney, *supra* note 4 at 441–45.

[62] *Id.* at 443 n.364.

[63] *Id.* at 382–83.

[64] For other legal scholarship on issues in this area, see Hilary J. Allen, *Driverless Finance*, 10 Harv. Bus. L. Rev. 157 (2020); Eric Chaffee, *The Role of Technology in Professional Advice,* 50 U. Tol. L. Rev. ix (2019); Nizan Geslevich Packin, *RegTech, Compliance and Technology Judgment Rule*, 93 Chi.-Kent L. Rev. 193 (2018).

[65] *See*, *e.g.*, Francesco D'Acunto & Alberto G. Rossi, *Robo-Advice: Transforming Households into Rational Economic Agents*, ANN. REV. FIN. ECON (forthcoming 2023), https://ssrn.com/abstract=4430277.

education and literacy—help to simplify complex financial concepts and encourage behaviors consistent with their long-term financial goals.

As always, there are tradeoffs with respect to DEPs in the advisory space. The use of DEPs in this space is no less subject to concerns about information overload, treating people like means, or promoting greater financialization for its own sake.

Regulators might consider interventions that promote the prosocial use of DEPs in the advisory channel. At least one state regulator has considered state-law fiduciary theories, and the SEC could develop some law in this space through enforcement actions.[66] As with broker-dealers, there is an important role for enhanced oversight through compliance, books-and-records, and other interventions that will permit regulators to ensure that advisers are thinking about the regulatory implications of their DEP algorithms and implementations—and that they are doing what they are saying.[67]

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The SEC should be applauded for closely examining digital engagement practices, a quickly evolving and important area of concern to industry and regulators alike. Digital engagement practices—and especially subsets of particular concern, like personalized recommendation algorithms—present challenges that lie at the heart of securities regulation. Thank you for the opportunity to discuss DEP regulation with you today.

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[66] *See* Tierney, *supra* note 4 at 372, 437–38.

[67] *See* supra note 58.

THE YALE LAW JOURNAL FORUM

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On "Confetti Regulation": The Wrong Way to Regulate Gamified Investing

Kyle Langvardt and James Fallows Tierney

ABSTRACT. "Gamified" investment apps like Robinhood use behavioral psychology to encourage frequent and often maladaptive trading activity. To address that problem, securities regulators may be tempted to regulate app design. Such an approach might involve bans on casino imagery, push notifications, confetti, or other aspects of the user experience. But that approach could draw the entire field of securities law into a techno-libertarian First Amendment thicket. This Essay describes the First Amendment litigation that regulators risk provoking, as well as the damage that they might do to the broader project of securities law. The Essay also proposes a strategy for regulators to avoid unnecessary litigation risk while still protecting consumers from the risks of gamified investing.

INTRODUCTION

Technology has made it easy to trade stocks and other speculative assets on mobile phones. Broker-dealers, market participants regulated under the securities laws, sponsor these apps. One popular app, Robinhood, offers attractive user-interface and user-experience design and salient contract terms—like no commissions for trading stocks—that are highly competitive in the market for "retail" or ordinary investor brokerage.[1] Flashy graphics and frictionless trading

1. *See, e.g.*, James Cutts, *Not All Brokerages Should 'Gamify' a la Robinhood—But Others Can/Will Go Further*, TRADERS MAG. (Sept. 14, 2021), https://www.tradersmagazine.com/departments/brokerage/not-all-brokerages-should-gamify-a-la-robinhood-but-others-can-will-go-further [https://perma.cc/F3F7-BFUD] (explaining that in the "competitive" retail brokerage market, Robinhood has "carve[d] out a distinctive niche with lower-net-worth, younger" clients through "zero-commission" trading and its "accessible and 'consumer-friendly' [user

have made it easier—and perhaps more fun—than ever before for ordinary people to trade stocks.

Robinhood's zero-commission business model leads it to encourage substitute revenue sources, like encouraging clients to trade prolifically to maximize third-party compensation to the broker. To that end, these apps incorporate design features that are sometimes called "gamification": behavioral prompts and flashy casino-like design elements that encourage unreflective or unconsidered decision making based on cognitive bias, imperfect rationality, and impulse.[2] These "gamified" design elements include randomized "surprise stocks" that reward users for linking bank accounts and referring new users, push notifications hyping short-term volatility in "biggest mover" stocks, and (until recently) splashes of animated confetti to celebrate a trade.[3] App developers point out that these features make investing more fun and approachable to nonprofessional individual investors—"retail investors," as they are called within the industry.[4] But by appealing to impulse rather than deliberation, the features promote patterns of risky trading that may not be in most retail investors' best interests.[5]

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interface] design, which won an Apple Design Award within six months of the app's launch"); *see also, e.g.*, Letter from Robinhood Markets, Inc., to Vanessa A. Countryman, Sec'y, Sec. & Exch. Comm'n 2 (Oct. 1, 2021), https://www.sec.gov/comments/s7-10-21/s71021-9316498-260092.pdf [https://perma.cc/4R2S-7LCH] (claiming that Robinhood has helped close the investment and wealth gap in the United States through "its 'every customer' [stock-brokerage] product offering that has no account minimums, no trading commissions, a uniform margin interest rate, fractional trading, and a user-friendly interface that is easily accessible").

2. *See, e.g.*, *Game Stopped? Who Wins and Loses When Short Sellers, Social Media, and Retail Investors Collide—Part II: Virtual Hearing Before the H. Comm. on Fin. Servs.*, 117th Cong. 3-6 (2021) (statement of Vicki L. Bogan, Associate Professor, Cornell University) (linking gamification to manipulations that induce indeliberate decision making); Hannah Levintova, *Robinhood Promises Free Trades. Did Alex Kearns Pay with His Life?*, MOTHER JONES (Apr. 29, 2021), https://www.motherjones.com/politics/2021/04/robinhood-gamestop-free-trades-alex-kearns [https://perma.cc/CGZ9-VNUT].

3. *See, e.g.*, Michael Wursthorn & Euirim Choi, *Does Robinhood Make It Too Easy to Trade? From Free Stocks to Confetti*, WALL ST. J. (Aug. 20, 2020, 2:53 PM ET), https://www.wsj.com/articles/confetti-free-stocks-does-robinhoods-design-make-trading-too-easy-11597915801 [https://perma.cc/X26Z-XU7Q]; Jason Zweig, *When the Stock Market Is Too Much Fun*, WALL ST. J. (Dec. 11, 2020, 4:52 PM ET), https://www.wsj.com/articles/when-the-stock-market-is-too-much-fun-11607705516 [https://perma.cc/B3JB-LUBN]. For more information on the problems with confetti, see Caitlin McCabe, *Robinhood to Remove Controversial Digital Confetti from Trading App*, WALL ST. J. (Mar. 31, 2021, 7:11 PM), https://www.wsj.com/articles/robinhood-to-remove-controversial-digital-confetti-from-trading-app-11617195612 [https://perma.cc/E3SA-JMZE].

4. *See, e.g.*, Robert Schmidt & Ben Bain, *Robinhood's Dark Side: Irate Traders, U.S. Probe*, THINKADVISOR (Aug. 31, 2020, 10:22 AM), https://www.thinkadvisor.com/2020/08/31/robinhoods-dark-side-irate-traders-u-s-probe [https://perma.cc/7JXF-YRXY].

5. Scott Galloway, *iAddiction*, NO MERCY/NO MALICE (June 19, 2020), https://www.profgalloway.com/iaddiction [https://perma.cc/3MXC-YDD6].

Securities law subjects the financial intermediaries behind these apps to broker-dealer rules governing their communications with retail-investor clients. Now, regulators are asking how those rules might apply to gamified app design.[6] A majority of the Securities and Exchange Commission (SEC) has expressed interest in regulating gamified app design, and the agency has requested information from the public on what it calls "digital engagement practices" in broker-dealer regulation.[7] Massachusetts securities regulators have meanwhile sought to revoke Robinhood's broker-dealer registration, alleging that "gamification" violates state-law fiduciary duties owed to clients.[8] And the Financial Industry Regulatory Authority (FINRA), the self-regulatory organization for broker-dealers, signaled that its examination and risk-monitoring program is "increasingly focused" on "risks associated with app-based platforms with interactive or 'game-like' features."[9]

For regulators, the concern is that gamification and other digital-engagement practices in zero-commission stock-trading apps may subtly influence

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6. *See infra* notes 7-10 and accompanying text; *see also, e.g.*, Jennifer J. Schulp, *The Trading Game*, REGUL. REV. (May 3, 2021), https://www.theregreview.org/2021/05/03/schulp-trading-game [https://perma.cc/7S3F-7X2U] (explaining that "regulators are increasing their scrutiny of digital trading platforms," and assessing the extent to which gamified app design may or may not be "covered by existing regulations").

7. *See* Request for Information and Comments on Broker-Dealer and Investment Adviser Digital Engagement Practices, Exchange Act Release No. 92766, 86 Fed. Reg. 49067 (Sept. 1, 2021) [hereinafter DEP Request]; *see also, e.g.*, Letter from James Fallows Tierney to Vanessa A. Countryman, Sec'y, Sec. & Exchange Comm'n (Oct. 1, 2021), https://www.sec.gov/comments/s7-10-21/s71021-9316496-260091.pdf [https://perma.cc/59N6-TNYY] (describing the negative implications of digital-engagement practices in retail-securities markets and recommending regulatory interventions to curb the issues). On individual Commissioners' interest in regulating digital-engagement practices, see *Game Stopped? Who Wins and Loses When Short Sellers, Social Media, and Retail Investors Collide, Part III: Virtual Hearing Before the H. Comm. on Fin. Servs.*, 117th Cong. (2021) (testimony of Gary Gensler, Chair, Securities & Exchange Commission), https://www.sec.gov/news/testimony/gensler-testimony-20210505 [https://perma.cc/BG94-87G3]; Chris Ekimoff & Kurt Wolfe, *Enforcing the Regulations—A Conversation with Commissioner Crenshaw*, PLI INSECURITIES, at 19:00-22:00 (June 17, 2021), https://insecurities.podbean.com/e/enforcing-the-regulations-%e2%80%93-a-conversation-with-commissioner-crenshaw [https://perma.cc/FA6S-DBJP]; and Allison Herren Lee, Comm'r, Sec. & Exchange Comm'n, Leveraging Regulatory Cooperation to Protect America's Investors, Remarks at the 2021 Section 19(d) Conference (May 21, 2021), https://www.sec.gov/news/speech/lee-2021-section-19d-conference [https://perma.cc/D73J-F6FW].

8. *See* Motion for Leave to File Amended Administrative Complaint, Robinhood Financial, LLC, No. E-2020-0047 (Mass. Sec. Div. Apr. 15, 2021), https://static.reuters.com/resources/media/editorial/20210415/04142021robinhood_amend.pdf [https://perma.cc/XM47-PHBB].

9. *2021 Report on FINRA's Examination and Risk Monitoring Program*, FINRA 2 (Feb. 2021), https://www.finra.org/sites/default/files/2021-02/2021-report-finras-examination-risk-monitoring-program.pdf [https://perma.cc/GZQ4-H687].

investors' behavior and preferences.[10] This influence may not be transparent to users of these stock-trading apps, causing them to make decisions that are inconsistent with their preferences about how to achieve their financial goals—such as by encouraging maladaptive overconsumption of trades.[11]

In principle, there are many ways for regulators to both define the problem and address it through policy. For instance, the SEC's concept of "digital engagement practices" includes not only "gamification," but also backend practices like AB testing, machine learning, and other ways of finetuning algorithmic design.[12] In other work, we address a fuller range of ways to frame and respond to behavioral design in retail brokerage apps.[13]

In this Essay, we focus on just one approach to the problem. Regulators might find it tempting to ban design features that they find objectionable, such as bursts of confetti after the successful execution of a trade, because of their plausible effect on the trading behavior of investors. We use "confetti regulation" to describe this kind of approach to the problem of behavioral design: command-and-control or prohibitory regulation of behavioral design features in brokerage apps. Such regulations might cover confetti splashes, push notifications, leaderboards, behavioral prompts, and the like.

Our Essay warns securities regulators *away* from confetti regulation, either through new rulemaking or through enforcement of existing law, for two reasons. The less important of the two is that confetti regulation could be hard to implement and justify, and risks devolving into a game of whack-a-mole: reacting to regulatory concerns as they pop up without planning for future concerns. The more significant problem is that confetti regulation would likely spur deregulatory efforts from technology attorneys who cast informational molehills as free-speech mountains.

Securities regulation is largely about controlling the terms that dictate how companies communicate with and provide information to the capital markets—

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10. *See, e.g.*, Dean Seal, *SEC Chair Wary of Conflicts, Bias in Predictive Data Tools*, LAW360 (Oct. 12, 2021, 9:02 PM EDT), https://www.law360.com/articles/1430151/sec-chair-wary-of-conflicts-bias-in-predictive-data-tools [https://perma.cc/LX9E-B7SA] (reporting SEC Chair Gary Gensler's remarks expressing concern that digital-engagement practices "encourage[] customers to trade more often, if increased trading translates to higher revenue").

11. *See, e.g.*, DEP Request, *supra* note 7, at 49069-70; *see also, e.g.*, *infra* notes 32-33 (describing how gamification can manipulate investors and lead to choice distortion).

12. *See* DEP Request, *supra* note 7, at 49072 (describing the "analytical and technological tools and methods" that brokers can use "to develop, test, and implement [digital engagement] practices," like "predictive data analytics and AI/ML models").

13. *See, e.g.*, James Fallows Tierney, Gamification in Securities Regulation (Dec. 15, 2021) (unpublished manuscript), https://www.ssrn.com/abstract=3916407 [https://perma.cc/RBX2-WDKC]; Kyle Langvardt, *Regulating Habit-Forming Technology*, 88 FORDHAM L. REV. 129 (2019).

yet it has somehow avoided serious First Amendment scrutiny for decades.[14] But in recent years, the SEC "has lost a string of important appeals before the high court" concerning its enforcement program.[15] In our view, it would be unwise for the agency to pursue regulatory strategies that would precipitate further deregulatory constitutional challenges. We are particularly concerned that Silicon Valley technology lawyers might set out to establish a First Amendment landmark decision on the "right to code," and that along the way they might lay the groundwork to invalidate securities regulation itself at a more fundamental level.

The safer approach is to avoid making regulations *about the software*—by which we mean two things. First, regulators should avoid asserting direct control over "bad" software design, and instead focus on the business model that drives it. Second, regulators should justify regulatory action in terms of settled policies that are technology neutral. Predatory gamification might, for example, violate longstanding policies prohibiting brokers from putting their own interests in remuneration ahead of the retail customer's interests, such as by "churning" customer accounts or recommending unsuitably large numbers of trades.[16]

In Part I, we begin by introducing gamification as the product of the modern stock-brokerage business model and discussing the potential social harms that it might generate. In Part II, we focus on one salient and superficially easy regulatory intervention: "confetti regulation," or command-and-control style regulation of the aesthetic design of brokerage apps. We argue that policing brokerage app design in this way would raise hard line-drawing problems and, in any case, would plausibly be subject to heightened First Amendment scrutiny. In Part III, we highlight two implications of our argument. In an era when courts are engaged in constitutional deregulation, securities regulators might avoid confetti regulation to stave off unwelcome scrutiny of the securities laws' information-control provisions. Instead, we suggest, regulators should consider framing gamification and other digital-engagement practices as old wine in new bottles: technologically mediated efforts to appeal to cognitive and behavioral tendencies that encourage self-directed clients to behaviorally churn their own accounts, maximizing revenue to the broker. We conclude by teeing up for future work

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14. *See infra* Section III.A.

15. Dave Michaels, *Supreme Court Justices Indicate They May Further Narrow SEC's Enforcement Authority*, WALL ST. J. (Mar. 3, 2020, 5:22 PM ET), https://www.wsj.com/articles/supreme-court-justices-indicate-they-may-further-narrow-secs-enforcement-authority-11583265540 [https://perma.cc/BNY4-XGBS]; *see also* Alexander I. Platt, *Unstacking the Deck: Administrative Summary Judgement and Political Control*, 34 YALE J. ON REGUL. 439, 462 & n.101 (2017) (collecting cases that together represent a "wave of broad constitutional challenges" to SEC adjudications).

16. *See infra* Section III.B (describing these policies and doctrinal tools).

components of a framework for assessing behavioral design against the securities laws' goals.

I. GAMIFICATION AND RETAIL INVESTING

The business model of stock brokerage has changed significantly in recent years. Stockbrokers charge transaction-based compensation for providing financial-advisory services and market access to clients, including commissions for effecting their trades. These commissions were historically high, making *active* trading the domain of the wealthy and inaccessible to many ordinary investors.[17] Several trends have disrupted this obstacle to active trading by ordinary investors: deregulation of fixed commissions and intermarket price transparency in the 1970s and 1980s,[18] technological innovation in the 1990s,[19] and the adoption of decimalized rather than fractional pricing with one-penny minimum tick size in the 2000s.[20] The ensuing price wars among online discount brokers led many online discount brokers, including those with the biggest market share, to offer zero-commission trading by late 2019.[21] Ordinary investors can therefore trade stocks without paying commissions to a broker.

But firms offering "free" services—particularly online services—typically do so by collecting revenues in ways that are less salient to the consumer.[22] They may collect and analyze consumer data (e.g., social-media usage) for third-party

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17. *See, e.g.*, Janice M. Traflet & Michael P. Coyne, *Ending a NYSE Tradition: The 1975 Unraveling of Brokers' Fixed Commissions and Its Long Term Impact on Financial Advertising*, 25 ESSAYS ECON. & BUS. HIST. 131, 138 (2007) (noting that price competition and advertising had led some discount brokerages, by the mid-2000s, to "offer trades as low as $9.95—an amount hard to imagine in 1975"); *Analyzing the Analysts: Hearing Before the Subcomm. on Capital Mkts., Ins. & Gov't Sponsored Enters. of the H. Comm. on Fin. Servs.*, 107th Cong. 102 (2001) (statement of Benjamin M. Cole, financial journalist) (observing that before deregulation, stockbrokers charged fixed commissions and catered to wealthy traders).

18. *See, e.g.*, Arthur B. Laby, *Selling Advice and Creating Expectations: Why Brokers Should Be Fiduciaries*, 87 WASH. L. REV. 707, 726-29 (2012).

19. *See, e.g.*, Matthew J. Benson, *Online Investing and the Suitability Obligations of Brokers and Broker-Dealers*, 34 SUFFOLK U. L. REV. 395, 395 (2001).

20. *See, e.g.*, Thanos Verousis, Pietro Perotti & Georgios Sermpinis, *One Size Fits All? High Frequency Trading, Tick Size Changes and the Implications for Exchanges: Market Quality and Market Structure Considerations*, 50 REV. QUANTITATIVE FIN. & ACCT. 353, 354 (2018).

21. *See, e.g.*, Richard Henderson, *America's e-Brokerages Scramble to Protect Margins amid Fee War*, FIN. TIMES (Oct. 24, 2019), https://www.ft.com/content/06379154-f641-11e9-9ef3-eca8fc8f2d65 [https://perma.cc/KN7U-SV9R]; Lisa Beilfuss & Alexander Osipovich, *The Race to Zero Commissions*, WALL ST. J. (Oct. 5, 2019, 5:30 AM), https://www.wsj.com/articles/the-race-to-zero-commissions-11570267802 [https://perma.cc/4T5G-4Y23].

22. *See, e.g.*, James Fallows Tierney, *Contract Design in the Shadow of Regulation*, 98 NEB. L. REV. 874, 889 (2020).

consumption, or tease users into long series of microtransactions (e.g., unlocking new levels in Candy Crush).[23] The story at zero-commission brokerages is much the same: these brokerages often sell clients financial advice, margin lending, net-interest income, and "payment for order flow" (PFOF).[24] PFOF, in particular, appears to drive much of the gamification trend. It is something like a bounty system. Third parties want information about or access to retail investors' trades.[25] These third parties then pay a broker (like Robinhood) to route the execution of those trades to them rather than elsewhere in the stock market.[26]

The PFOF/zero-commission business model gives investment-app developers every incentive to maximize user engagement with the product. In this respect, they are in the same boat as ad-financed social media or "free" phone games with in-app purchases—or slot machines, for that matter. This common incentive structure has led video slot machines, Facebook, Candy Crush, and Robinhood alike to use behavioral design to encourage habit formation and maximize time spent using a device.[27] Robinhood famously splashed confetti across users' screens upon execution of a trade or offered a virtual scratch-off ticket to those who had won some reward.[28] In its request for information about digital-engagement practices, the SEC noted other examples of these kinds of design features, including "[s]ocial networking tools; games, streaks, and other contests with prizes; points, badges, and leaderboards; notifications; celebrations for trading; visual cues; ideas presented at order placement and other curated lists or features; subscriptions and membership tiers; and chatbots."[29]

Lots of time spent "playing" a brokerage app is an undesirable outcome for most retail traders. Decades of research shows that in aggregate, retail investors

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23. *See* Langvardt, *supra* note 13, at 134-41.

24. *See, e.g.*, Jerry W. Markham, *Regulating Broker-Dealer Investment Recommendations—Laying the Groundwork for the Next Financial Crisis*, 13 DREXEL L. REV. 377, 441-45 (2021).

25. *See, e.g.*, David Easley, Nicholas M. Kiefer & Maureen O'Hara, *Cream-Skimming or Profit-Sharing? The Curious Role of Purchased Order Flow*, 51 J. FIN. 811 (1996).

26. *See generally* Hitesh Mittal & Kathryn Berkow, *The Good, The Bad & The Ugly of Payment for Order Flow*, BESTEX RSCH. (May 3, 2021), https://f.hubspotusercontent10.net/hubfs/4982966/BestEx%20Research%20PFOF%2020210503.pdf [https://perma.cc/V8ED-VEC2] (describing the controversy around "payment for order flow" (PFOF)). We save for future work a full discussion of PFOF and its implications for the gamification debate.

27. *See, e.g.*, NIR EYAL & RYAN HOOVER, HOOKED: HOW TO BUILD HABIT-FORMING PRODUCTS 39-60 (2014).

28. *See* Wursthorn & Choi, *supra* note 3.

29. DEP Request, *supra* note 7, at 49068.

perform worse the more actively they trade.[30] Empirical models of retail-investor behavior attribute the persistence of underperforming active trading to different causes, including sensation seeking, overconfidence, and limited attention.[31] Being distracted is not all that different from being duped if app-design features like push notifications, curated lists of securities, and leaderboards lead investors to trade more, or in different securities, than they would in the absence of these influences.[32] Some recent studies have documented that Robinhood users engage in attention-induced trading in sets of securities that were more salient because they appeared on leaderboards within the app.[33] These results indicate that "gamified" app design and other digital-engagement practices appeal to behavioral tendencies—and can even encourage trading in particular securities.

Studies like these raise troubling questions about the consumer-welfare implications of apps designed to stimulate frequent trading in stocks, exchange-traded funds, and cryptocurrencies by appealing to behavioral psychology. It seems likely that this kind of design offends a broader policy in securities law against brokers who put their own interest in transaction-based compensation ahead of the client's by effecting or encouraging more trading than is in the customer's best interest. We therefore agree with regulators who think gamified investing deserves regulatory attention.[34] But we also think that the most intuitive approach—a simple ban on dangerous features[35]—would produce unintended consequences.

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30. *See, e.g.*, Brad M. Barber & Terrance Odean, *Trading Is Hazardous to Your Wealth: The Common Stock Investment Performance of Individual Investors*, 55 J. FIN. 773, 795 (2000) ("[T]hose investors who trade most actively realize, on average, the lowest net returns . . . .").

31. *See, e.g.*, Brad M. Barber & Terrance Odean, *The Behavior of Individual Investors*, *in* 2B HANDBOOK OF THE ECONOMICS OF FINANCE 1533, 1547-51 (George M. Constantinides, Milton Harris & René M. Stulz eds., 2013).

32. *See, e.g.*, Bogan, *supra* note 2, at 6 (referring to "investor manipulation through the gamification of investing"); Tierney, *supra* note 13, at 26-29 (describing how "noisy" behavioral design can lead to "choice distortion").

33. *See, e.g.*, Gregory W. Eaton, T. Clifton Green, Brian S. Roseman & Yanbin Wu, Retail Trader Sophistication and Stock Market Quality: Evidence from Brokerage Outages (Oct. 15, 2021) (unpublished manuscript), https://ssrn.com/abstract=3776874 [https://perma.cc/Y3EM-T8JV]; Brad M. Barber, Xing Huang, Terrance Odean & Christopher Schwarz, *Attention Induced Trading and Returns: Evidence from Robinhood Users*, J. FIN. (forthcoming 2022), https://ssrn.com/abstract=3715077 [https://perma.cc/KCJ6-YF2V].

34. *See, e.g.*, Tierney, *supra* note 13, at 36-41; Tierney, *supra* note 7.

35. *See, e.g.*, Chris Matthews, *As Robinhood IPO Nears, Critics Say App Design Includes 'Subliminal Messages' to Make Users Trade More*, MARKETWATCH (Mar. 25, 2021, 1:19 PM), https://www.marketwatch.com/story/as-robinhood-ipo-nears-critics-say-app-design-includes-subliminal-messages-to-make-users-trade-more-11616692781 [https://perma.cc/L5AM-D5HX] (describing Dennis Kelleher, CEO of a nonprofit advocating for stricter financial-services

II. THE EASY CASE AGAINST CONFETTI REGULATION

We see two reasons to avoid a regulatory strategy that focuses directly on app design. The first is that concepts like "gamification" and "behavioral design" are slippery and do not lend themselves well to line drawing. The likelihood that these features may occasionally be helpful or at least innocuous only complicates the line-drawing problem. Second, we expect that any law regulating software design directly will draw First Amendment challenges.

A. The Elusive Problem of Objectionable Confetti

Line-drawing issues will complicate any effort to regulate behavioral design. There are a few reasons for this. The first is that games in general are not identified by the presence of particular features or elements, but by a Wittgensteinian "family resemblance" to other games.[36] One federal judge, characterizing "[t]he term 'game' [as] exceedingly vexed and difficult," struck down a city ordinance that prohibited playing games in public spaces.[37] The ordinance, she wrote, was "hopelessly vague and substantially overbroad, because there is no attempt to explain what is meant by 'game,' and because it prohibits a tremendous number of innocent and even desirable activities."[38] Any broad ban on "gamification"—a concept defined by a *second* layer of "family resemblance" to games themselves—would suffer the same difficulties.

Narrower definitions of gamification are perhaps possible, but these quickly run into problems of underinclusiveness that gambling regulators know well. "[N]o sooner is a lottery defined," the North Carolina Supreme Court wrote in 1915, "and the definition applied to a given state of facts, than ingenuity is at work to evolve some scheme of evasion which is within the mischief, but not quite within the letter, of the definition."[39] So if one state's definition of gambling revolves around a "game of chance," for example, then gambling promoters will

oversight, as arguing for the investigation of "everything from the user-experience design to the colorful nature of the app to its lists of most popular stocks"); Bogan, *supra* note 2, at 6 (testifying in favor of "[p]rohibit[ing] user interface mechanisms (e.g., push notifications) that have been designed to increase more trading volume without regard to consumer priorities or risks").

36. *See* LUDWIG WITTGENSTEIN, PHILOSOPHICAL INVESTIGATIONS §§ 65-71 (G.E.M. Anscombe trans., 1953).

37. Weigand v. Vill. of Tinley Park, 114 F. Supp. 2d 734, 738 (N.D. Ill. 2000) (issuing a preliminary injunction); *see also* Weigand v. Vill. of Tinley Park, 129 F. Supp. 2d 1170, 1171 (N.D. Ill. 2001) (granting a permanent injunction).

38. *Weigand*, 129 F. Supp. 2d at 1171.

39. State v. Lipkin, 84 S.E. 340, 343 (N.C. 1915).

look for ways to introduce some trivial element of skill to the game. One recent hustle involves video-arcade machines that allow players to catch fish and other treasures in an unusually fast-paced and casino-styled koi pond. These "fish game tables" accept large-denomination bills and pay out occasional cash winnings.[40] Chance (and AI) largely determines who wins and how much, but skill seems to play some small role—just enough, perhaps, to buy the business model a bit of time while the gambling regulators catch up to it.[41]

We suspect that securities regulators taking on the mantle of "gamification regulators" could easily find themselves in the same "whack-a-mole" situation: reacting to regulatory concerns as they pop up, but making little progress toward addressing future concerns.[42] And when the mole can be reconfigured and adjusted—as when Robinhood replaced the "confetti" feature overnight with "new, dynamic visual experiences that cheer on customers through the milestones in their financial journeys"[43]—regulators will struggle all the more to update and define any ex ante regulations.

A second difficulty is that the kinds of gamification features that might be swept under a "confetti regulation" label are not always particularly objectionable. Confetti itself, for instance, might look crass compared to the financial industry's staid aesthetic standards. But is it really the sight of confetti that leads

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40. *See* Robert Rath, *Why Cops Are Raiding Arcades over a Fishing Game*, VICE (Nov. 23, 2016, 1:40 PM) https://www.vice.com/en/article/znm8zx/why-cops-are-raiding-arcade-over-a-fishing-game [https://perma.cc/4CCR-4CVN].

41. *See* Christine Hurt, *Regulating Public Morals and Private Markets: Online Securities Trading, Internet Gambling, and the Speculation Paradox*, 86 B.U. L. REV. 371, 378 (2006) (situating speculative activities like gambling and investing along a "spectrum of activity based on the element of chance involved"). Gambling is conventionally defined as "the payment of consideration for the chance to win a prize or reward." John A. Gebauer, *Gambling*, *in* 38 AMERICAN JURISPRUDENCE § (I)(A)(2) (2d ed. 2021).

42. Securities and gaming law have long shared the concern that rules-based regimes can provide a roadmap for evasion. *Compare* Elaine A. Welle, *Freedom of Contract and the Securities Laws: Opting Out of Securities Regulation by Private Agreement*, 56 WASH. & LEE L. REV. 519, 561-62 (1999) (warning that bright-line rules in the securities context tempt the unscrupulous to exploit technicalities and evade the law), *with Lipkin*, 84 S.E. at 343 (declaring that the law will "strip [any rule-skirting gambling scheme] of all its thin and false apparel and consider it in its very nakedness" because courts "will look to the substance and not to the form of it, in order to disclose its real elements and the pernicious tendencies which the law is seeking to prevent").

43. *A New Way to Celebrate with Robinhood*, ROBINHOOD (Mar. 31, 2021), https://blog.robinhood.com/news/2021/3/31/a-new-way-to-celebrate-with-robinhood [https://perma.cc/49BW-B6XN]; *see also* McCabe, *supra* note 3 (reporting Robinhood replaced the confetti with new designs).

users to trade in highly volatile stocks, assets, and cryptocurrencies, or is it the simple unadorned thrill of making big money off of a risky trade?[44]

Another example: consider confetti regulations that have attempted to control aesthetic design choices such as the colors in which information is presented. These design choices could plausibly change the salience of certain investing options, as evidence suggests that presenting financial data in red may subtly color investors' perception of future risk and trading decisions.[45] But if American traders have come to associate the color red with negative financial performance, should regulation try to sever that link because the presentation of information alters investor behavior?

Or consider further still push notifications, which present information in particular ways to increase its salience. Some push notifications might serve as calls to action by notifying a user that a particular stock is down more than five percent or that they have not yet traded in their new account (so won't they check out a list of popular stocks?).[46] But other push notifications seem more helpful or benign, such as those indicating that a good-til-canceled limit-order trade was executed or that a user has been logged out of their account after being idle for a certain period of time. There are other gray areas: many notifications are defaults subject to opting out, while others might require opting in.

Defining the scope of regulation is a well-understood problem, and these line-drawing issues complicate the ex ante rulemaking approach substantially.[47] Ex post adjudication of principles-based rules, meanwhile, will remain subject to loud and influential, if not entirely persuasive, criticisms that the SEC is engaging in "regulation by enforcement."[48] And when regulators draw lines that

44. Matt Levine, Opinion, *Melvin Capital Had a Better Month*, BLOOMBERG (Mar. 4, 2021, 12:27 PM), https://www.bloomberg.com/opinion/articles/2021-03-04/melvin-capital-improves-from-gamestop-reddit-struggle [https://perma.cc/Z5RT-JQQ2] (arguing that seeing profits, not confetti, is "the main dopamine payoff").

45. *See* William J. Bazley, Henrik Cronqvist & Milica Mormann, *Visual Finance: The Pervasive Effects of Red on Investor Behavior*, 67 MGMT. SCI. 5616, 5637 (2021).

46. *See, e.g.*, Nicole Casperson, *Robinhood Under Pressure for Bringing "Gamification" to Investing*, INVESTMENTNEWS (Dec. 18, 2020), https://www.investmentnews.com/robinhood-under-pressure-for-bringing-gamification-to-investing-200607 [https://perma.cc/7VR3-FSPB].

47. Commentators and the securities defense bar have also expressed concerns about line drawing. *See, e.g.*, Michael Gross, *Gamification: Regulators Should Try the Investor Education Game*, BROKER-DEALER L. CORNER (June 1, 2021), https://www.bdlawcorner.com/2021/06/gamification-regulators-should-try-the-investor-education-game [https://perma.cc/P8DX-7K2T]; Levine, *supra* note 44.

48. *See, e.g.*, James J. Park, *The Competing Paradigms of Securities Regulation*, 57 DUKE L.J. 625, 634-41 (2007) (describing the criticism that the SEC elaborates on the requirements of securities law through ex post enforcement actions rather than through ex ante rulemaking); *cf.* Mark Schoeff, Jr., *SEC Member Robert Jackson Calls out Critics of Agency "Rulemaking by Enforcement*," are either fuzzy, misplaced, or informed by controversial science, they are likely to face challenges under the Administrative Procedure Act[49] or the First Amendment. In our view, these are reasons to avoid regulatory techniques that are directly responsive to specific app design choices.

B. Unwanted First Amendment Attention

We are particularly concerned about the First Amendment challenges. Securities law is heavily concerned with regulating the flow of information—so much so that First Amendment scholar Fred Schauer once joked that it "would not be wholly inaccurate" to call the SEC the "Content Regulation Commission."[50] However, although it is full of "restrictions and requirements that in other contexts would set off a host of First Amendment alarm bells,"[51] securities law has remained mostly sheltered from the searching First Amendment scrutiny that courts have applied in other contexts.[52]

The reasons for that shelter are unclear. What *is* clear is that the shelter looks ever more anomalous amid the broader trend in favor of corporate speakers who brandish a "weaponized" First Amendment against profit-reducing

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INVESTMENTNEWS (Dec. 9, 2019), https://www.investmentnews.com/sec-member-robert-jackson-calls-out-critics-of-agency-rulemaking-by-enforcement-170856 [https://perma.cc/W5A8-VK7K] (quoting Commissioner Robert Jackson describing as "bullshit" these critiques that reflect a preference for "fundamentally less protection in the marketplace for American investors," and Commissioner Allison Herren Lee as observing that "the folks who complain about regulation by enforcement are the same ones who push hard for these principles-based rules, and it makes you wonder whether they would ever support an enforcement of those rules").

49. *See* Motor Vehicle Mfrs. Ass'n v. State Farm Mut. Auto. Ins. Co., 463 U.S. 29, 43 (1983).

50. Frederick Schauer, *The Boundaries of the First Amendment: A Preliminary Exploration of Constitutional Salience*, 117 HARV. L. REV. 1765, 1778 (2004).

51. *Id.* at 1779.

52. *See* Ohralik v. Ohio State Bar Ass'n, 436 U.S. 447, 456 (1978) (observing that "[n]umerous examples could be cited of communications that are regulated without offending the First Amendment, such as the exchange of information about securities"); *see, e.g.*, Schauer, *supra* note 50, at 1780 (writing in 2004 that "[t]oday, a quarter of a century after the first warnings were sounded and twenty years after those warnings were loudest, securities regulation goes on as before, remaining a domain largely outside the coverage of the First Amendment"). The historically light scrutiny of securities law under the First Amendment has long been a subject of debate among scholars. *See, e.g.*, Jerry W. Markham, *Securities and Exchange Commission vs. Elon Musk and the First Amendment*, 70 CASE W. L. REV. 339 (2019); Susan B. Heyman, *The Quiet Period in a Noisy World: Rethinking Securities Regulation and Corporate Free Speech*, 74 OHIO ST. L.J. 189 (2013); Antony Page, *Taking Stock of the First Amendment's Application to Securities Regulation*, 58 S.C. L. REV. 789 (2007); Aleta G. Estreicher, *Securities Regulation and the First Amendment*, 24 GA. L. REV. 223 (1990).

regulations.[53] And though we seriously doubt that a confetti ban would impair the freedom of expression in any normatively significant way, we think the same could be said for many more of the marketing regulations that courts have struck down as unconstitutional in recent decades.

Marketing at one time was not treated as First Amendment speech at all.[54] The Supreme Court began to extend First Amendment protections to commercial advertising in the 1970s, and ultimately settled on an approach that required the government to satisfy intermediate scrutiny when regulating truthful, nonmisleading advertising for products and services that were not themselves illegal.[55] In the past decade, however, the Court has appeared to inch toward treating advertising as fully protected. The Court's 2011 opinion in *Sorrell v. IMS Health* drew significant attention for describing a limitation on the use of personal data for marketing purposes as a viewpoint-discriminatory law that targeted "speakers and their messages for disfavored treatment."[56]

Labeling and disclosure requirements have recently come under particularly close scrutiny. In 2018, in *NIFLA v. Becerra*, the Supreme Court held that the First Amendment applies with full force to representations by professionals in highly regulated industries, and that even purely factual disclosure requirements can trigger strict scrutiny if they relate to "controversial" public policies.[57] Here,

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53. *See, e.g.*, Amy Kapczynski, *The Lochnerized First Amendment and the FDA: Toward a More Democratic Political Economy*, 118 COLUM. L. REV. ONLINE 179 (2018) (noting that a "weaponized" First Amendment threatens core functions of the Food and Drug Administration); Janus v. Am. Fed'n of State, Cnty. & Mun. Emps., Council 31, 138 S. Ct. 2448, 2501 (2018) (Kagan, J., dissenting) (explaining that the majority opinion in *Janus* "weaponiz[es] the First Amendment, in a way that unleashes judges, now and in the future, to intervene in economic regulatory policy"); *cf.* Nat'l Ass'n of Mfrs. v. SEC (*NAM*), 800 F.3d 518, 524 (D.C. Cir. 2015) (noting "the flux and uncertainty of the First Amendment doctrine of commercial speech").

54. In *Valentine v. Chrestensen*, the Court held that the government may ban the distribution of "purely commercial advertising" in public fora without incurring First Amendment scrutiny, and that attaching noncommercial messaging to the advertisement in order to evade regulation does not change the result: "If that evasion were successful, every merchant who desires to broadcast advertising leaflets in the streets need only append a civic appeal, or a moral platitude, to achieve immunity from the law's command." 316 U.S. 52, 54-55 (1942).

55. This is an abbreviated account of the four-factor *Central Hudson* test. *See* Cent. Hudson Gas & Elec. Corp. v. Pub. Serv. Comm'n, 447 U.S. 557, 566 (1980) ("At the outset, we must determine whether the expression is protected by the First Amendment. For commercial speech to come within that provision, it at least must concern lawful activity and not be misleading. Next, we ask whether the asserted governmental interest is substantial. If both inquiries yield positive answers, we must determine whether the regulation directly advances the governmental interest asserted, and whether it is not more extensive than is necessary to serve that interest.").

56. 564 U.S. 552, 565 (2011).

57. 138 S. Ct. 2361, 2371-73 (2018).

the Court struck down a California law that required "crisis pregnancy centers" to provide patients with factual information regarding the availability of contraception and abortion services.[58] Justice Thomas, writing for the majority, reasoned that

> when the government polices the content of professional speech, it can fail to "preserve an uninhibited marketplace of ideas in which truth will ultimately prevail." Professionals might have a host of good-faith disagreements, both with each other and with the government, on many topics in their respective fields. Doctors and nurses might disagree about the ethics of assisted suicide or the benefits of medical marijuana; lawyers and marriage counselors might disagree about the prudence of prenuptial agreements or the wisdom of divorce; bankers and accountants might disagree about the amount of money that should be devoted to savings or the benefits of tax reform.[59]

The Court's hostility toward mandatory disclosures, together with its announcement that bankers' "disagree[ments] about the amount of money that should be devoted to savings" are as sacred for First Amendment purposes as political debate, suggest that brokers and retail investors are well positioned to challenge the laws that govern their business.[60] Justice Breyer underscored the implications of this turn, noting that the framework for professional speech set out in *NIFLA*, "if taken literally, could radically change prior law, perhaps placing much securities law or consumer protection law at constitutional risk."[61]

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58. *Id.* The required notice stated that "California has public programs that provide immediate free or low-cost access to comprehensive family planning services (including all FDA-approved methods of contraception), prenatal care, and abortion for eligible women. To determine whether you qualify, contact the county social services office at [insert the telephone number]." CAL. HEALTH & SAFETY CODE § 123472(a)(1) (Deering 2021).

59. *Id.* at 2374-75 (quoting McCullen v. Coakley, 573 U.S. 464, 576 (2014)).

60. *Compare* Bulldog Invs. Gen. P'ship v. Sec'y of the Commonwealth, 953 N.E.2d 691, 700-01, 717 (Mass. 2011) (noting that a hedge fund's advertising about "its financial products, management, and investment philosophy are speech protected by the First Amendment," but concluding that a state securities regulator's enforcement proceeding against the fund for violating rules governing advertising in private offerings did not violate the fund's First Amendment rights), *with* Brief Amici Curiae of Cato Institute, Competitive Enterprise Institute, John Berlau, Deirdre Brennan, James McRitchie, Antony Page, and Andrew Weinman in Support of Petitioners, Bulldog Invs. Gen. P'ship v. Galvin, 132 S. Ct. 2377 (2012) (No. 11-954) (encouraging the Court to reverse *Bulldog Investors* and strike down the state-law restrictions on "truthful, non-misleading speech" in securities offerings, in part to protect potential audiences' interests in learning about privately offered securities that they are prohibited from buying "for journalistic, research or other non-investment reasons").

61. *NIFLA*, 138 S. Ct. at 2380 (Breyer, J., dissenting).

For the SEC, the risk of constitutional deregulation extends beyond the Supreme Court to the D.C. Circuit. That court's decisions are important and salient to the SEC, especially because of the agency's programmatic interests in broker-dealer regulation.[62] And the D.C. Circuit has been foreshadowing the possibility of closer scrutiny of securities law under the First Amendment since striking down the SEC's "conflict mineral" disclosure rule in 2015.[63] That case illustrated the stakes of First Amendment litigation risk in designing regulatory programs.[64]

In this environment, it seems unlikely that courts would extend to confetti regulation the kind of automatic deference securities regulations have received in the past. Any opinion invalidating such a regulation would mark the continuing erosion of securities law's historically exceptional treatment under the First Amendment. Even an opinion that focused entirely on the speech status of *software* rather than the speech status of securities communications as such would demonstrate that the securities laws are vulnerable to First Amendment attacks.

It is easy to see what such a decision would look like. Suppose, for example, that the SEC adopted a rule prohibiting gamified design features—such as confetti, push notifications, and other "behavioral stimuli" that encourage trading—

62. Challengers to SEC rules and orders under the Securities Exchange Act of 1934—the Act under which confetti-regulation rules or enforcement proceedings would be implemented—have the option of petitioning for review to the D.C. Circuit, in addition to the circuit in which they reside or have their principal place of business. *See, e.g.*, 15 U.S.C. § 78y(a)(1), (b)(1) (2018). This produces a more developed case law on SEC programs about broker-dealer regulation in the D.C. Circuit than in other courts—and, when the D.C. Circuit's decisions are adverse, it potentially constrains the agency's choice set in ways other courts' decisions do not. *Cf.* Larry C. Grossman, Securities Act Release No. 10244, Exchange Act Release No. 79217, Investment Company Act Release No. 32352, 115 SEC Docket 2540, 2016 WL 6441565, at *2-3 (Nov. 1, 2016) (order granting partial stay) (noting that the agency will not always be in a position to assume that a challenger will seek to take advantage of adverse law in the D.C. Circuit, such as when the other possibly reviewing court of appeals has adverse law on an equally important issue). On agency attention to adverse court of appeals decisions, see Samuel Estreicher & Richard L. Revesz, *Nonacquiescence by Federal Administrative Agencies*, 98 YALE L.J. 679 (1989).

63. *See* Nat'l Ass'n of Mfrs. v. SEC (*NAM*), 800 F.3d 518, 521 (D.C. Cir. 2015). The rule implemented a statutory policy targeting sources of financing for violent conflict in the Democratic Republic of the Congo and mandated disclosure and reporting by securities issuers about their supply chains. *See* Conflict Minerals, 77 Fed. Reg. 56274 (Sept. 12, 2012).

64. The dissent opened with the observation that "[i]ssuers of securities must make all sorts of disclosures," and "[n]o one thinks that garden-variety disclosure obligations . . . raise a significant First Amendment problem." *NAM*, 800 F.3d at 531 (Srinivasan, J., dissenting). Not so, the majority responded: the fact that securities law "is thick" with disclosure mandates does not make those mandates immune from First Amendment scrutiny. *Id.* at 521 (majority opinion).

on the grounds that the prohibition was part of the broker's duty of care, that it was in the public interest, and that it was for the protection of investors.[65] Audiovisual content usually counts as speech, even if the message conveyed is ambiguous or thin.[66] So, too, do videogames and software.[67] Stimuli that are part of the user-interface design might therefore be characterized as being within the scope of First Amendment protection as well.

From here, once gamification is framed as falling within the First Amendment's protection, it seems all too easy to challenge a ban on that speech as one that discriminated on the basis of content or even viewpoint. Confetti in an investing app might be read to endorse trading, or perhaps day trading, as a good thing—and a regulation banning confetti in trading apps but not in other apps might be said to single out the pro-trading "message" for suppression. Or, even more simply, a ban on displays of confetti might be read as a ban on *depictions of confetti*, which are a kind of content in their own right.[68] If a court were to hold that confetti regulation is content or viewpoint discrimination, it would presumably apply strict scrutiny.[69]

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65. The SEC would have statutory authority under the same sources it relied upon to undertake the Regulation Best Interest (Reg BI) rulemaking. *See* Regulation Best Interest: The Broker-Dealer Standard of Conduct, 84 Fed. Reg. 33318, 33330 n.122 (July 12, 2019) (to be codified at 17 C.F.R. pt. 240) (citing Dodd-Frank Act Section 913(f) and Exchange Act Sections 15(c)(6) and 17).

66. *See* Hurley v. Irish-Am. Gay, Lesbian & Bisexual Grp. of Bos., 515 U.S. 557, 569 (1995); *see also* Candy Lab Inc. v. Milwaukee Cnty., 266 F. Supp. 3d 1139, 1146 (E.D. Wis. 2017) (finding protectable content in a videogame that lacked "plot, characters, or dialogue").

67. *See* Brown v. Ent. Merchs. Ass'n, 564 U.S. 786 (2011) (videogames); Universal City Studios, Inc. v. Corley, 273 F.3d 429 (2d Cir. 2001) (software).

68. *Cf.* Candy Lab Inc. v. Milwaukee Cnty., 266 F. Supp. 3d 1139, 1143 (E.D. Wis. 2017), in which the publisher of a Pokémon Go-like augmented reality game challenged an ordinance that would have required permits for "[v]irtual and location-based augmented reality games." While ultimately judging the ordinance to be content-neutral, the court also held that the game "Texas Rope 'Em" had "sufficient expressive content" to call on the First Amendment for protection: "The game immerses a player in a Western-themed virtual environment," the court noted,

> complete with a Texas-themed game title, color scheme, and graphics, allowing the player to corral favorable playing cards using an animated lasso. . . . Moreover, what Candy Lab's game lacks in compelling literary tropes, it makes up for by employing features [such as] displaying card locations on a map on the user's phone, which the user must then physically navigate to and "grab" using the phone's camera.

Id. (citation omitted).

69. If the SEC instead required investment apps to *add* design features, it could wind up in essentially the same place. Such prescriptive design requirements might be cast as a kind of "compelled speech" triggering strict scrutiny as well. *See, e.g.*, CDK Global LLC v. Brnovich, No. CV-19-04849, 2020 WL 6290386, at *2 (D. Ariz. Oct. 27, 2020). *But see* Neil Richards, *Apple's*

Securities lawyers who are acoustically separated from the technology bar—and the techno-libertarian "Californian ideology" that surrounds it[70]—underestimate these admittedly formalistic and silly-sounding arguments at their peril. Whether under the First Amendment or Section 230 of the Communications Decency Act,[71] it is routine in technology litigation to characterize controversies involving technology as implicating speech—often in abstract and unintuitive ways.[72] This kind of litigation has produced holdings that computer source code is speech,[73] that search results are akin to media editorial choice,[74] and that an online marketplace is immunized as a "publisher" for purposes of third-party tort liability.[75]

It may have been reasonable at one time to expect these concerns to largely drop away if *securities regulators* were the ones dictating elements of software design.[76] The SEC's customary jurisdiction over securities-related information may have shaped courts' and litigants' views of the salience of the First Amendment and afforded the Commission a wider constitutional berth than, say, the Consumer Product Safety Commission would have if it tried to regulate videogame design. But we think it would be unwise for the SEC to expect that kind of solicitude today.

"Code = Speech" Mistake, MIT TECH. REV. (Mar. 1, 2016), https://www.technologyreview.com/2016/03/01/161811/apples-code-speech-mistake [https://perma.cc/XC79-2BK5] (observing that the Supreme Court has not blessed the notion that computer code is speech, and criticizing the "Code = Speech" argument for its superficiality, its miscomprehension of the First Amendment, and its lack of engagement with any substantive theory of free expression).

70. *See, e.g.*, MARY ANNE FRANKS, THE CULT OF THE CONSTITUTION 165 (2019) ("Techno-libertarianism is if anything even more staunchly antiregulatory than traditional civil libertarianism."); Richard Barbrook & Andy Cameron, *The Californian Ideology*, MUTE (1995), https://www.metamute.org/editorial/articles/californian-ideology [https://perma.cc/CXT6-MNKZ] (describing the "California Ideology" as "a mix of cybernetics, free market economics, and counter-culture libertarianism").

71. 47 U.S.C. § 230 (2018).

72. *See* Alan Z. Rozenshtein, *Silicon Valley's Speech: Technology Giants and the Deregulatory First Amendment*, 1 J. FREE SPEECH L. 337, 341, 344 (2021) (noting the tendency of technology companies to "ground their constitutional arguments in free speech" and contending that "we should expect such arguments to increasingly come from technology companies").

73. *See* Bernstein v. U.S. Dep't of State, 922 F. Supp. 1426, 1434-36 (N.D. Cal. 1996).

74. *See* Langvardt, *supra* note 13, at 176 n.317 (collecting authority).

75. *See* Gartner v. Amazon.com, Inc., 433 F. Supp. 3d 1034, 1045 (S.D. Tex. 2020), *rev'd on other grounds sub nom*. McMillan v. Amazon.com, Inc., 2 F.4th 525 (5th Cir. 2021); La Park La Brea A LLC v. Airbnb, Inc., 285 F. Supp. 3d 1097, 1105-07 (C.D. Cal. 2017).

76. *See* Schauer, *supra* note 50, at 1780 ("Until the assimilation of commercial speech into the First Amendment, it would scarcely have occurred to anyone that the First Amendment could be relevant to securities regulation.").

Confetti regulations' novelty, combined with the definitional difficulties discussed above, will invite First Amendment challenges. Those challenges, in turn, may tee up opportunities for courts to confine the scope and strength of the SEC's policy mission through constitutional deregulation. A court's willingness to apply heightened scrutiny against a confetti regulation could invite more daring raids against the securities laws' core information controls, such as the Quiet Period in initial public offerings.[77] At worst, a court may condemn large swaths of securities law as paternalistic and incompatible with the First Amendment's presumed market-fundamentalist commitments.[78]

III. IMPLICATIONS

In this Part, we discuss the implications of our argument for regulatory interventions against gamification in stock-trading apps. Securities law should avoid attracting unwelcome attention by courts engaged in a project of constitutional deregulation. We therefore urge regulators to think of gamification—and other digital-engagement practices more broadly—in terms of well-grounded legacy doctrines like churning and the duty of quantitative suitability that go to reducing the conflicts of interest inherent in brokerage.

A. The Securities Laws and the First Amendment

In light of the First Amendment's increasingly antiregulatory orientation where business interests are concerned, securities law's historically light First Amendment coverage looks increasingly exceptional. "Securities regulation," Roberta Karmel observed over thirty years ago, "is essentially the regulation of speech."[79] The days are gone when the D.C. Circuit might uphold disclosure requirements on the basis of "the federal government's broad powers to regulate the securities industry."[80]

What could happen if confetti regulation (or some other trigger) led courts to start treating the securities laws like other burdens on speech? In our view,

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77. *See, e.g.*, Heyman, *supra* note 52, at 195 (arguing that "if Quiet Period Rules are ultimately subject to strict scrutiny review," they "would have virtually no chance of surviving"); *see also infra* notes 81-83.

78. *See Cf.* Citizens United v. Fed. Election Comm'n, 558 U.S. 310, 356 (2010) (rejecting the power of the government to restrict political speech in the context of campaign finance).

79. Roberta S. Karmel, *The First Amendment and Government Regulation of Economic Markets*, 55 BROOK. L. REV. 1, 1 (1989).

80. SEC v. Wall St. Publ'g Inst., Inc., 851 F.2d 365, 372 (D.C. Cir. 1988) (applying rational-basis review to a Commission enforcement action for injunctive relief requiring a magazine to disclose the receipt of different forms of consideration for recommending securities).

robust expansion of the antiregulatory First Amendment to other traditional areas of economic regulation—like the securities laws—would be destabilizing and undesirable for its substantive effects on markets and its erosion of democratic control over the economy.

The securities laws use a number of prototypical regulatory tools like mandatory disclosure and restraints on fraudulent communications. But perhaps the most at-risk targets of constitutional raids are the securities laws' restrictions on expressive and truthful commercial speech in the areas of professional advice and securities offerings. Regulation Best Interest (Reg BI), for example, codifies care and conflict-of-interest obligations of broker-dealers in making recommendations to retail customers.[81] Meanwhile, the Securities Act of 1933 and its implementing regulations prohibit most truthful communications to prospective investors until the agency takes a triggering action on a registration statement.[82] The general exception is when issuers comply with narrow content-based exemptions that purport to allow particular kinds of speech (as in the safe harbors during the Quiet Period before the effective date of a registration statement) or speech to a restricted audience (as in a private offering for which general solicitation is not allowed).[83]

In short, confetti regulation, as we have described it, would draw a potentially broad range of First Amendment attacks. Of course, the SEC could promulgate confetti regulations and seek to defend these in court. While it is risky business to predict what courts will do, the agency has had a poor track record in rulemaking and enforcement before the Supreme Court and the D.C. Circuit

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81. *See* Regulation Best Interest: The Broker-Dealer Standard of Conduct, 84 Fed. Reg. 33318, 33320 (July 12, 2019) (to be codified at 17 C.F.R. pt. 240).

82. *See* 15 U.S.C. § 77e(a), (c) (2018) (prohibiting sales of securities until the registration statement is effective and offers to sell or buy securities until the registration statement is filed); *id.* § 77e(b)(1) (prohibiting the transmission of certain noncompliant prospectuses after the registration statement has been filed); *see also, e.g.*, HENRY N. BUTLER & LARRY E. RIBSTEIN, THE CORPORATION AND THE CONSTITUTION 102-03 (1995) (noting that the Securities Act of 1933's provisions "reduc[e] the flow of information from established issuers" during the registration process and "compel[] . . . firms to deliver . . . disclosures" in the form of prospectuses).

83. The SEC has promulgated rules creating these exceptions under the Securities Act of 1933. *See, e.g.*, 17 C.F.R. § 230.163B (2020) (establishing the testing-the-waters safe harbor for communications during the prefiling period with qualified institutional buyers and institutional accredited investors); *id.* § 230.433 (establishing the free-writing-prospectus safe harbor); *id.* §§ 230.502(c), 506(b) (2021) (prohibiting general solicitation in Regulation D private offerings under § 506(b) where not all purchasers are accredited investors); *see also* Heyman, *supra* note 52, at 193-206 (describing the Quiet Period Rules and some of these exemptions); sources cited *supra* note 52.

in recent years.[84] With these courts attuned to perceived agency overreach, challenges to confetti regulation on First Amendment grounds might receive a welcome audience.

In one scenario, decisions vacating confetti-regulation rulemaking or enforcement proceedings on First Amendment grounds could erode courts' historical recognition of the public interest in regulating speech in capital markets. That erosion would lead to sharper constitutional constraints on securities regulation's disclosure and information-control provisions more generally.[85] In another scenario, courts might reason about the First Amendment status of confetti in ways that would implicitly, perhaps inadvertently, elevate the First Amendment status of securities information. Suppose, for example, that an SEC-sympathetic court decided to uphold confetti regulation as something akin to a time-place-manner law—the kind of law that does not discriminate against the content of any message, but merely regulates the mode in which the message is presented.[86] That argument would nevertheless imply that there *was* a message in the underlying securities communications—and more to the point, that garden-variety securities communications lie within the realm of First Amendment protection.

First Amendment litigation may ultimately move the law in this direction no matter what. But securities regulators do have some control over the pace of change. Provocative incursions into the law of software will intensify the deregulatory barrage and accelerate the damage. We therefore suggest that regulators design policy with a goal of constitutional avoidance in mind—at least for now, while the First Amendment's doctrinal trendlines look relatively threatening to economic policy.[87]

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84. *See supra* note 15.

85. *But see* Schauer, *supra* note 50, at 1780 (noting that, despite previous warnings by academics and practicing lawyers, a "collision never happened" between securities regulation and the First Amendment).

86. *See, e.g.*, *Ward v. Rock Against Racism*, 491 U.S. 781 (1989) (upholding as a time-place-manner regulation New York City's requirement that musical performers in a Central Park bandshell use sound equipment and technical support furnished by the city).

87. On the merits of constitutional avoidance at the agency level, compare Gillian E. Metzger, *Ordinary Administrative Law as Constitutional Common Law*, 110 COLUM. L. REV. 479, 527-30 (2010), which suggests that "encouraging agencies to take constitutional concerns into account is likely to prove a valuable mechanism for ensuring effective constitutional enforcement in administrative contexts," with Christopher J. Walker, *Avoiding Normative Canons in the Review of Administrative Interpretations of Law: A* Brand X *Doctrine of Constitutional Avoidance*, 64 ADMIN. L. REV. 139, 142, 161, 178 (2012), which suggests that while agencies may have "comparative institutional strengths" to promulgate *Chevron*-deference-eligible rules that "avoid constitutional questions in the first place," the possibility that courts might apply the "classical constitutional avoidance [canon] at *Chevron* step two should be sufficient to ensure

We are suggesting, in other words, that regulators kick the First Amendment can down the road. Regulators should address applicable harms from gamification through the familiar methods and techniques of securities law without creating a target-rich environment for these kinds of challenges and outcomes.

B. Behavioral Design and Regulatory Choice

What is left after confetti regulation is taken off the table? Securities law already offers rich doctrinal frameworks and normative principles for addressing potentially objectionable behavioral design in retail-investing apps. In our view, a pair of traditional doctrines—the prohibition against churning, and the "quantitative suitability" component of the broker's duty of care—illustrate securities law's normative concern that eliciting overtrading in a retail investor's account is undesirable where it leads to capital losses or principal depletion. These doctrines are not specific to behavioral design, but they do capture a large share of what is troubling about it.

Churning occurs when a broker-dealer "seeks to maximize . . . remuneration in disregard of the interests of the customer," such as where a broker with discretionary control over an account trades excessively to generate commission revenue.[88] Zero-commission investment apps with gamification features promote the same kind of overtrading that was the core harm at issue in churning, but in a self-directed account. Even without commissions, the revenue model generates the same result: the broker maximizes PFOF revenue from other market intermediaries who want to trade against retail investors.[89]

Gamification can thus be understood as a means for the broker-dealer to maximize revenue by driving unsophisticated retail investors to overtrade. This strategy, which we call *behavioral churning*, exploits behavioral psychology to drive engagement with the platform, increasing consumption of high-volatility speculative trading in ways that produce a discreet but often sizable stream of revenue for the broker.. In this view, behavioral churning provides a framework not only for scholarly work in this area, but also for potential regulatory responses.[90]

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that the Executive fulfills its constitutional duty to interpret statutes within actual constitutional limits" without imposing a duty of constitutional avoidance at the agency level.

88. 8 LOUIS LOSS, JOEL SELIGMAN & TROY PAREDES, SECURITIES REGULATION 471, 475 (2020); *see, e.g.*, Mihara v. Dean Witter & Co., 619 F.2d 814, 820-21 (9th Cir. 1980) (describing the elements of a churning claim).

89. *See supra* notes 24-26 and accompanying text.

90. *See, e.g.*, Alessio M. Pacces, *Financial Intermediation in the Securities Markets Law and Economics of Conduct of Business Regulation*, 20 INT'L REV. L. & ECON. 479, 490-99 (2000) (offering

Churning doctrine itself historically applied where brokers had discretionary control over trading in the client's account. So to address the harm from behavioral churning in client-directed accounts, regulators might look to quantitative-suitability doctrine. The SEC codified this doctrine as a component of the broker's duty of care under Reg BI.[91] Under that duty, broker-dealers must have a reasonable basis to believe that a series of recommended transactions—considered together—is not excessive in light of the retail customer's investment goals, and does not put the broker's financial interests ahead of the customer's.[92] To the extent that gamification features fall within the definition of "recommendations" to retail customers, then the Reg BI duty of care would prohibit a business model that encourages behavioral overtrading to generate PFOF revenue without regard to whether that level of trading activity is in the customer's interest.

Regulators and scholars would have to grapple with a number of objections to the quantitative suitability approach to behavioral churning. For instance, the Reg BI duty applies not to self-directed trades, but only to the broker's recommendations.[93] When can gamification objectively be understood as a kind of "recommendation"—a malleable concept roughly meaning a call to action that influences a trade decision—based on tailored and individualized advice?[94] Some design features by their terms express a call to action, like a push notification sent to new users who had not yet traded in their account: "Choosing stocks is hard. 💪 Get started by checking which stock prices are changing the most."[95]

Regulators have warned the brokerage industry about digitally mediated recommendations for decades. In 2001, FINRA's predecessor issued a notice,

economic model of churning doctrine relative to noise trading and broker-compensation incentives); *see also* Tierney, *supra* note 13, at 49-55 (examining "normative polic[ies]" and doctrinal "legacy devices" in securities law that may permit regulators to discourage brokerage sales practices that elicit high-volume order flow "by those who do not know better and are discouraged from learning better").

91. Regulation Best Interest: The Broker-Dealer Standard of Conduct, 84 Fed. Reg. 33318, 33384-85 (July 12, 2019) (to be codified at 17 C.F.R. pt. 240).

92. *See id*. In importing quantitative suitability into Reg BI, the SEC abandoned the control element that had been a traditional requirement of churning doctrine and of FINRA's suitability rule. *See id.*

93. *See id*. at 33334-35, 33384 (explaining that Reg BI is focused on "a particular recommendation" but does not "apply to self-directed or otherwise unsolicited transactions by a retail customer, whether or not he or she also receives separate recommendations from the broker-dealer").

94. *See id.* at 33335 (stating that whether a communication is a "recommendation" involves a facts-and-circumstances inquiry into whether it "reasonably could be viewed as a call to action and reasonably would influence an investor to trade a particular security or group of securities" (internal quotations omitted)).

95. Felix Salmon, *Robinhood Accused of Securities Law Violations*, AXIOS (Dec. 17, 2020), https://www.axios.com/robinhood-sec-lawsuit-massachusetts-violations-trading-6d349c57-c138-441d-a263-d5a225823dfa.html [https://perma.cc/ESD8-WC6U].

approved by the SEC and having force of law, about online communications that would generally be "recommendations."[96] Two of the examples were "customer-specific . . . pop-up screen[s]," and lists of securities for which the broker makes a market.[97] In this way, securities law has previously concerned itself with the antecedents of behavioral churning—and currently frames it as a recommendation in violation of the quantitative suitability component of the Reg BI duty of care.

But even this kind of theory implicates the First Amendment concerns we have articulated. Professional-advice speech like this is not obviously less "expressive" than a flurry of confetti, so constitutional risk remains a factor. A strategy of avoiding constitutional deregulation would counsel toward adopting or enforcing existing securities laws in ways that do not turn factually on the "speech" embodied in behavioral-design features.

CONCLUSION: TOWARD A THEORY OF BEHAVIORAL DESIGN AND THE SECURITIES LAWS

We have offered a preliminary sketch of the problem of gamification as behavioral churning. But it raises a number of theoretical, empirical, and regulatory-design implications. Given the scope of this Essay, we only briefly address them here.

We have assumed, as a normative matter, that it is appropriate to regulate behavioral design in zero-commission investing apps. There are other plausible theoretical justifications for doing so besides the "problem use" harm—such as their tendency to promote imprudent investing practices and their macroscale effects on asset allocation and market quality.[98] But if behavioral churning is an adequate and settled basis for regulation, do these additional theories add, at the margin, any justificatory value or new objects for regulatory choice?

Gamification raises other important questions for securities-regulation theory. Consider two of the securities laws' core aims: promoting competition and

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96. *See NASD Notice to Members 01-23*, FINRA (Apr. 2001), https://www.finra.org/sites/default/files/NoticeDocument/p003887.pdf [https://perma.cc/86GS-4YHE]; Self-Regulatory Organizations; Notice of Filing and Immediate Effectiveness of Proposed Rule Change by National Association of Securities Dealers, Inc. Relating to the Suitability Rule and Online Communications, 66 Fed. Reg. 20697, 20697 (Apr. 24, 2001).

97. *NASD Notice to Members 01-23*, *supra* note 96, at 3.

98. *See, e.g.*, Tierney, *supra* note 13, at 24-28.

protecting investors.[99] These aims are somewhat in tension. Competitive pressure may channel innovation toward attractive user-experience design that extracts a long stream of small payments on nonsalient product attributes.[100] How should securities law weigh its normative goals with respect to that outcome?

In addition, some investors engage in maladaptively excessive trading as consumption of sensation or risk. But it does not necessarily follow that securities law should be designed to support (or hinder) that kind of trading. Rather, the desirability of regulatory interventions specifically targeted at retail trading behavior will depend on our view of the normative end goals of securities law's "investor protection" regulatory mission.[101] If those goals include encouraging responsible investing, regulators might even grow to appreciate prosocial or "white hat" gamification—akin to nudges that attempt to intervene in behavior with carefully designed defaults.[102] SEC Commissioner Hester Peirce, for instance, has expressed optimism about that prosocial use of financial-regulatory technology.[103]

As a matter of regulatory design, we have focused only on one harm and one regulatory solution. The question of regulatory technique is more complex. Other factors besides the problem use harm may bear on the desirability of regulating gamification, given the trade-offs and constraints we have identified in this Essay. Might other harms be better addressed through other regulatory techniques?

In our preliminary view, the most politically salable and administratively simple approaches will tend to involve the greatest litigation risk from deregulatory constitutional challenges. At one extreme, banning PFOF would require

99. *See, e.g.*, Robert J. Jackson, Jr., *Competition: The Forgotten Fourth Pillar of the SEC's Mission*, SEC. & EXCH. COMM'N (Oct. 11, 2018), https://www.sec.gov/news/speech/speech-jackson-101118 [https://perma.cc/T4D5-8NYZ].

100. *See* Langvardt, *supra* note 13, at 134-41.

101. For examples of the debate as applied to retail-investor speculative trading, compare Lynn A. Stout, *Are Stock Markets Costly Casinos? Disagreement, Market Failure, and Securities Regulation*, 81 VA. L. REV. 611, 702 (1995), which argues that "deter[ring] speculation by taxing or prohibiting stock trading will produce net welfare gains," with Paul G. Mahoney, *Is There a Cure for "Excessive" Trading?*, 81 VA. L. REV. 713, 716 (1995), which argues that a better approach would be to remove market subsidies for excessive trading before "attempting to raise the costs of trading through taxes or other means."

102. *See, e.g.*, Cynthia Weiyi Cai, *Nudging the Financial Market? A Review of the Nudge Theory*, 60 ACCT. & FIN. 3341, 3357-63 (2019); Nick Maynard & Mariele McGlazer, *The Gamification Effect: Using Fun to Build Financial Security*, FED. RSRV. BANK BOS. 6 (Spring 2017), https://www.bostonfed.org/-/media/Documents/cb/2017/spring/the-gamification-effect-using-fun-to-build-financial-security.pdf [https://perma.cc/XFZ7-FACL].

103. *See, e.g.*, Hester M. Peirce, 🚀*Atomic Trading*🚀, SEC. & EXCH. COMM'N (Feb. 22, 2021), https://www.sec.gov/news/speech/peirce-atomic-trading-2021-02-22 [https://perma.cc/748H-YDFW].

rulemaking and probably inspire a consumer backlash by making the zero-commission model infeasible. But it would not provoke any conceivable First Amendment challenge. At the opposite end of the spectrum, regulators might bring enforcement actions under existing rules against firms that throw confetti following a trade. This technique could launch a whole quiver of not-quite-frivolous First Amendment arguments, some of which may well hit their mark.

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INVESTMENT GAMES

JAMES FALLOWS TIERNEY†

ABSTRACT

Popular zero-commission stock trading apps like Robinhood innovate in user-experience design, featuring "gamification" practices—flashy graphics, leaderboards, and the like—that make it attractive, easy, and fun to trade stocks. Regulators are increasingly scrutinizing gamification and other digital engagement practices, with efforts underway at the SEC to adopt rules in broker-dealer and investment-advisor regulation. This attention reflects considerable skepticism about gamification in securities markets. At best, these practices encourage motivation and engagement, and democratize access to financial markets. But at worst, these practices encourage people to trade habitually and unreflectively, and more than they might want. This can lead to undesirable market-wide effects, like distorting the process by which markets allocate investment capital to firms and projects that will grow the real economy, as well as socially wasteful (and individually harmful) excessive trading. And given that interventions in retail investor choice have significant implications for market quality and wealth inequality, regulatory responses here are a high stakes matter for society broadly.

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Calls to regulate gamification highlight a tension at the core of securities markets. Securities law has largely ceded the field of market structure to the interests of sophisticated financial intermediaries in producing liquidity and price discovery. By permitting gamification practices that encourage active trading for the primary benefit of financial intermediaries, securities law subordinates its investor protection function to encourage wasteful investment in achieving ever-smaller improvements in liquidity and price discovery. Regulatory intervention would be socially desirable, I argue, not just given what we know about retail trader behavior and its effects on personal finance and markets—but because it is an opportunity for securities law to recalibrate away from an all-out arms race in arbitrage.

This Article takes up the problem of gamification and related digital engagement practices. It considers how gamification is the nearly inevitable consequence of the rise of retail investors who trade without superior information about a stock's fundamental value, competition on brokerage commissions, and a fragmented market structure. Yet calls for regulatory interventions often elide important distinctions between how securities law should treat active traders who prefer risk, and those with preferences distorted by gamification. This Article explains how we got here; examines the social-welfare case for regulating gamification and related digital engagement practices; offers a typology of techniques that securities regulators can adopt in response; and assesses these interventions against existing securities law doctrine and policy. This Article also considers how the securities laws' tenuous relationship with innovative stock-market technology shapes how retail investors engage with financial markets.

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INTRODUCTION

2021 might've been "the year of the retail investor."[1] Retail investors piled into meme stocks like GameStop and other risky assets

1. *See* VAL SRINIVAS & JILL GREGORIE, THE RISE OF NEWLY EMPOWERED RETAIL INVESTORS: HOW THEY'RE CHANGING CUSTOMER EXPECTATIONS AND INVESTING DYNAMICS 1 (2021), https://www2.deloitte.com/content/dam/Deloitte/us/Documents/financial-services/us-

like crypto and options, launching asset prices like rockets "to the moon."[2] Popular stock brokerage apps like Robinhood not only made active trading cheap, easy, and fun; they encouraged it.[3] Legal scholars have observed the reemergence of retail investors as a force in stock markets, at odds with long-term trends.[4]

This airy story, resonant with overtones of the democratization of finance, obscures two somber truths about today's stock market. First, many retail investors don't heed the advice of traditional finance: invest patiently in a diversified, risk-adjusted portfolio. Many try to beat the market by trading stocks. Yet decades of research reveals that active "trading is hazardous to your wealth."[5] The second somber reality is that brokers have strong incentives to encourage customers to engage in self-directed trades that are either excessive or in

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the-rise-of-newly-empowered-retail-investors-2021.pdf [https://perma.cc/6CEF-6WT6]. "Retail investors" are individuals across all walks of life, perhaps including you or your friends or family, who save and invest directly in retirement and nonretirement accounts to achieve financial goals like education or retirement. *See* Leo E. Strine, Jr., *One Fundamental Corporate Governance Question We Face: Can Corporations Be Managed for the Long Term Unless Their Powerful Electorates Also Act and Think Long Term?*, 66 BUS. LAW. 1, 12 (2010) (describing investment by people saving for education and retirement). "Retail" distinguishes nonprofessional investors from those sufficiently wealthy or sophisticated to meet requirements for accessing private and institutional capital markets. *See* Brian G. Cartwright, Gen. Couns., U.S. Sec. & Exch. Comm'n, Speech at the University of Pennsylvania Law School Institute for Law and Economics: The Future of Securities Regulation (Oct. 24, 2007), https://www.sec.gov/news/speech/2007/spch102407bgc.htm [https://perma.cc/WR2A-9AEV] (contrasting retail investment with institutional investment).

2. *See* Katherine Doherty & Brandon Kochkodin, *AMC Became the People's Stock by Not Being a GameStop Remake*, BLOOMBERG BUSINESSWEEK (June 4, 2021, 7:14 AM), https://www.bloomberg.com/news/articles/2021-06-04/amc-to-the-moon-how-meme-stock-embraced-reddit-boom-unlike-gamestop-gme [https://perma.cc/UFJ4-3LCS]; Avi Salzman, *Watch Out, Coinbase: Robinhood Just Revealed Big Crypto Growth*, BARRON'S (Feb. 25, 2021), https://www.barrons.com/articles/watch-out-coinbase-robinhood-just-revealed-big-crypto-growth-51614293289 [https://perma.cc/STC3-JUCH]; Madison Darbyshire, Eric Platt & Miles Kruppa, *Robinhood IPO: Why Believers Failed To Deliver the 'Moonshot,'* FIN. TIMES (July 30, 2021), https://www.ft.com/content/81e9871b-5d12-480b-87a8-454b69e11958 [https://perma.cc/RKW4-ZTB7]. For discussion of this article's limited focus on equity trading rather than options and crypto, *see infra* note 39.

3. *See* Sergio Alberto Gramitto Ricci & Christina M. Sautter, *Corporate Governance Gaming: The Collective Power of Retail Investors*, 22 NEV. L.J. 51, 52–53, 62 (2021).

4. *See id.* at 52–53; Jill E. Fisch, *GameStop and the Reemergence of the Retail Investor*, 102 B.U. L. REV. (forthcoming Oct. 2022) (manuscript at 2–3) [hereinafter Fisch, *GameStop*]; *infra* Part I.C.1.

5. *See, e.g.*, Brad M. Barber & Terrance Odean, *Trading Is Hazardous to Your Wealth: The Common Stock Investment Performance of Individual Investors*, 55 J. FIN. 773, 773 (2000) [hereinafter Barber & Odean, *Trading Is Hazardous to Your Health*] (finding that active traders underperformed in a study from 1991 to 1996); *see also infra* notes 264–266 and accompanying text (explaining that retail investors rarely, if ever, beat average market portfolio returns).

securities that are unsuitable for them.[6] Between market innovations like zero-commission trading, fractional share investing, and game-like user-interface design, it is cheaper and easier than ever before for ordinary people to trade securities and financial products.

Yet regulators now worry trading is *too* easy. What to do about it is a concern for broker-dealer regulation, a subfield of securities law.[7] Much of the worry has focused on Robinhood, an investing app.[8] In the market for zero-commission brokerage, mobile app developers have innovated in user-interface design to compete with incumbent brokers.[9] Robinhood, for instance, used to shower digital confetti down a smartphone screen upon successful execution of a trade.[10] Other innovations have included intuitive and appealing design, as well as digital engagement practices that encourage interaction with the app and that shape the information users consider in investing. Examples include leaderboards of volatile or popular stocks, push notifications prompting users to trade, and lottery-like rewards.[11]

These practices are called "gamification" in investing apps.[12] The concept reflects an increasingly familiar feature of our online world: app design that channels and shapes our behavior—presenting

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6. *See infra* Parts I, II.B.1.

7. Brokers are those "engaged in the business of effecting transactions in securities for the account of others." Securities Exchange Act of 1934 § 3(a)(4)–(5), 15 U.S.C. § 78c(a)(4)–(5). On the regulation of broker-dealers, see, for example, Peter H. Huang, *Trust, Guilt, and Securities Regulation*, 151 U. PA. L. REV. 1059, 1067–68 (2003).

8. *See, e.g.*, Misyrlena Egkolfopoulou, Annie Massa & Anders Melin, *How Robinhood Made Trading Easy—and Maybe Even Too Hard To Resist*, BLOOMBERG (Apr. 21, 2021, 3:01 PM), https://www.bloomberg.com/features/2021-robinhood-stock-trading-design [https://perma.cc/6Z2N-8ZSD]; Hannah Levintova, *Robinhood Promises Free Trades. Did Alex Kearns Pay with His Life?*, MOTHER JONES (Apr. 29, 2021), https://www.motherjones.com/politics/2021/04/robinhood-gamestop-free-trades-alex-kearns [https://perma.cc/E3JC-7G5Q]; Michael Wursthorn & Euirim Choi, *Does Robinhood Make It Too Easy To Trade? From Free Stocks to Confetti*, WALL ST. J. (Aug. 20, 2020, 2:53 PM), https://www.wsj.com/articles/confetti-free-stocks-does-robinhoods-design-make-trading-too-easy-11597915801 [https://perma.cc/V2ZP-6Y6P]. This Article is not a brief against Robinhood but uses it as an example because it is a publicly traded broker-dealer with large market share that has been subjected to media and regulatory scrutiny.

9. *See* Jennifer J. Schulp, *The Trading Game*, REGUL. REV. (May 3, 2021), https://www.theregreview.org/2021/05/03/schulp-trading-game [https://perma.cc/933Q-8YHL]; Nicole Casperson, *Robinhood Drops the Confetti, but Advisers Aren't Convinced*, INV. NEWS (Apr. 6, 2021), https://www.investmentnews.com/robinhood-drops-the-confetti-but-advisers-arent-convinced-204828 [https://perma.cc/GP7G-9L98] (noting Robinhood's competition with the "duller-than-dishwater experience of most financial platforms").

10. *See infra* note 52 and accompanying text.

11. *See infra* Part I.A.

12. *See infra* notes 30–32 and accompanying text.

information in ways that alter attractiveness of options; or engaging, motivating, and rewarding us to encourage us to make transactions we otherwise would not.

Gamified investing can encourage trading that is excessive or maladaptive. It can draw our attention to stocks or opportunities to transact in other assets when we would not otherwise choose them. And behind-the-scenes technological features can potentially learn what kinds of prompts get us to trade, so we can be offered individual prompts that encourage us to trade even more.[13] When effective, it elicits a higher volume of noisy retail order flow in securities that generate brokerage profits and cross-subsidize further trading.[14] Empirical research has shown how design can shape trading behavior in ways that are profitable for the broker—but may not be in retail traders' interests.[15] It also has downstream negative consequences on market quality like higher volatility and lower-quality price discovery.[16] Gamification, moreover, disrupts markets' traditional capital allocation function, as it tends to conflate "trading" with "investment"

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13. Gamification is used colloquially in market commentary in ways that largely, if not fully, overlap with "digital engagement practices" as a category of regulatory concern. The SEC has issued a request for information on digital engagement practices. *See* Request for Information and Comments on Broker-Dealer and Investment Adviser Digital Engagement Practices, Related Tools and Methods, and Regulatory Considerations and Potential Approaches; Information and Comments on Investment Adviser Use of Technology To Develop and Provide Investment Advice, Exchange Act Release 92766, 86 Fed. Reg. 49,067, 49,068 (Sept. 1, 2021) [hereinafter DEP RFI]. "Digital engagement practices" or "DEPs" are a broader concept than gamification, ranging from electronic communications to roboadvice, and from securities screening tools to retirement contribution planners. The concept also includes second-order practices like data analytics, personalized recommendation algorithms, and A/B testing that allow monitoring, testing, and fine-tuning the efficacy of these design practices. Full treatment of DEPs would require a book. The concept covers any kind of sales or advisory practice that brokers, dealers, registered investment advisers, and their associated people use through electronic means, directly or indirectly. What's more, regulatory concerns associated with "excessive trading"-oriented gamification differ from those associated with using digital engagement to encourage responsible financial behavior (such as roboadvice) or financial literacy. *Cf.* Part II.C.1 (describing how the market likely would not produce the kind of thoughtful DEPs necessary for gamified investing to actually encourage beneficial financial behavior). This Article focuses on broker-dealer rather than investment-adviser implications of DEPs. *See infra* note 64 and accompanying text.

14. *See, e.g.*, Kyle Langvardt & James Fallows Tierney, *On "Confetti Regulation": The Wrong Way To Regulate Gamified Investing*, 131 YALE L.J. F. 717, 717–18 (2022); *Game Stopped? Who Wins and Loses When Short Sellers, Social Media, and Retail Investors Collide, Part III: Virtual Hearing Before the H. Comm. on Fin. Servs.*, 117th Cong. 5–6 (2021) [hereinafter *House Gamification Hearing III*] (statement of Gary Gensler, Chairman, Sec. & Exch. Comm'n).

15. *See infra* notes 35–38 and accompanying text.

16. *See infra* Parts II.A, III.A.

as the way to grow wealth in a capitalist economy. It risks idiosyncratic loss and waste and generates greater wealth inequality by inhibiting retail investors' ability to grow wealth reliably by participating in capital markets.[17]

For that reason, gamified investing has come under increased regulatory scrutiny. Congress held a series of hearings in early 2021 to discuss the role of retail traders in stock markets, directly scrutinizing gamification.[18] Federal and state regulators have announced responses across the range of rulemaking, enforcement, and examination.[19] The SEC has requested information from the public about possible regulatory interventions, and work is underway.[20] This regulatory attention reflects considerable skepticism about the consequences of gamification in securities markets—for how retail investors engage with these markets, how capital is allocated, how people achieve their financial goals, and how financial intermediaries make money.

Yet securities law does not have a readymade theory for weighing these concerns against other regulatory commitments to investor autonomy and democratized access to financial markets.[21] That underscores the urgent need for legal scholarship situating these practices in theory and doctrine.[22] Despite a rich literature on

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17. *See, e.g.*, *infra* Parts II.C, III.C (discussing alternative visions of investment games and securities law's role in picking investment games' winners); *see also, e.g.*, Emily Winston, *Unequal Investment: A Regulatory Case Study*, 107 CORNELL L. REV. 781, 831–44 (2022) (arguing that securities regulation exacerbates wealth inequality by gatekeeping access to higher return-on-investment opportunities).

18. For written testimony and transcripts of the hearings, see *Game Stopped? Who Wins and Loses When Short Sellers, Social Media, and Retail Investors Collide: Virtual Hearing Before the H. Comm. on Fin. Servs.*, 117th Cong. (2021); *Game Stopped? Who Wins and Loses When Short Sellers, Social Media, and Retail Investors Collide, Part II: Virtual Hearing Before the H. Comm. on Fin. Servs.*, 117th Cong. (2021); *House Gamification Hearing III*, *supra* note 14.

19. *See infra* Part I.B.

20. *See infra* notes 57–65 and accompanying text.

21. "Securities law" is meaningful here in one sense but not another. On cryptocurrency trading and regulation, see *infra* note 39.

22. In a forthcoming article, Jill Fisch defends retail investor participation in stock markets by examining trading in "meme stocks," and argues that regulatory interventions should be designed to encourage rather than discourage participation by retail investors in capital markets. *See* Fisch, *GameStop*, *supra* note 4, at 1, 4; *see also, e.g.*, Ricci & Sautter, *supra* note 3, at 83–88. For the literature on this populist vision of retail corporate governance, see *infra* notes 218–236 and accompanying text. Fisch briefly addresses gamified investing apps in acknowledging concerns that these features may influence behavior through "manipulation" that may raise different concerns than retail investor participation in markets in general. Fisch, *GameStop*, *supra* note 4, at 37–39. For another forthcoming article, addressing how securities regulation should deal

regulation of retail investment markets, legal scholars have largely overlooked the regulation of innovative technologies that direct and channel retail traders' attention and shape their decisions.[23] This Article fills that gap, articulating from the ground up a theory of gamification in securities regulation.[24]

Securities law has traditionally been concerned with deception but has had a more uneasy stance toward speculation.[25] Some people

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with gamification as a problem of appealing to minor children's financial activities, see generally Nizan Geslevich Packin, *Financial Inclusion Gone Wrong: Securities and Crypto Assets Trading for Children*, 74 HASTINGS L.J. (forthcoming 2022). For one arguing for a safe harbor for trading in small-balance accounts, see generally Abraham J.B. Cable, *Regulating Democratized Investing*, 83 OHIO ST. L.J. (forthcoming 2022). Jerry Markham mentions in passing the Massachusetts securities regulators' lawsuit against Robinhood in an article otherwise focusing on criticizing Regulation Best Interest. Jerry W. Markham, *Regulating Broker-Dealer Investment Recommendations - Laying the Groundwork for the Next Financial Crisis*, 13 DREXEL L. REV. 377, 443 n.396 (2021). Practitioners and students have also addressed legal issues surrounding gamification and broker-dealer regulation. *See, e.g.*, Dennis M. Kelleher, Jason Grimes & Andres Chovil, *Securities—Democratizing Equity Markets with and Without Exploitation: Robinhood, Gamestop, Hedge Funds, Gamification, High Frequency Trading, and More*, 44 W. NEW ENG. L. REV. 51, 77–107 (2022); Nick Waters, Note, *Remedying the Negative Effects of Equity Market Order Flow Decentralization on Retail Investors*, 16 OHIO ST. BUS. L.J. 368, 387–400 (2022); Travis C. Studdard, *Riling Up as Recommendation: How Commission-Free Brokerages Recommend Active Investing to the Public*, 29 NO. 1 PIABA BAR J. 67, 67–69 (2022); John R. Fallon, Note, *Equal Access to Investments: At Whose Expense?*, 21 WAKE FOREST J. BUS. & INTEL. PROP. L. 431, 467 (2021); Chris Mao, Note, *Stealing from the Poor: Regulating Robinhood's Exchange-Traded Options for Retail Investors*, 107 CORNELL L. REV. 323, 344–55 (2021); Christal McCamy, Note, *Retail Investors: Why Online Investing Platforms Need More Regulation and Oversight*, 16 BROOK. J. CORP. FIN. & COM. L. 255, 276–77 (2021).

23. Legal scholars have examined how behavioral economics principles like choice architecture bear on retail investor behavior. Jacob Hale Russell has surveyed the literature on excessive trading and distinguished the normative basis for regulatory intervention based on taste-based or circumstance-based reasons for trading. *See generally* Jacob Hale Russell, *Misbehavioral Law and Economics*, 51 U. MICH. J.L. REFORM 549 (2018). Russell does not, however, address the phenomenon, regulation, or theory of gamification in broker-dealer regulation. And because he wrote before the emergence of zero-commission trading in late 2019, some prescriptions are based on assumptions that no longer hold. *Cf.* Matt Levine, Opinion, *The Trades Will Be Free Now*, BLOOMBERG (Oct. 2, 2019, 12:05 PM) [hereinafter Levine, *The Trades Will Be Free Now*], https://www.bloomberg.com/opinion/articles/2019-10-02/the-trades-will-be-free-now [https://perma.cc/CH97-LK5V] (describing how Robinhood "charges zero commissions, and it has rapidly gained millions of customers and achieved a multibillion-dollar valuation because zero is just self-evidently the right price to charge for stock trades").

24. In a January 2022 essay in *Yale Law Journal Forum*, Kyle Langvardt and I examined "confetti regulation," or command-and-control regulation of mobile app design, as a highly salient potential regulatory response to problem-use harms from gamification. *See* Langvardt & Tierney, *supra* note 14, at 720. We wrote to highlight the administrability problems and litigation risk associated with such a ban, but explicitly left open the higher-order theoretical, doctrinal, and normative questions for this Article to address. *See id.* at 720 n.13.

25. On speculation, see *infra* Part II.B.2.

speculate by actively trading stocks with eyes wide open, but others are duped into believing they are trading based on information when they are not. Gamification features are potentially objectionable in that they induce trading in securities not because of information relevant to economic payoff, but because of information's salience or prominence in investors' attention. Brokers have an incentive to increase salience of, and thereby induce trading in, the securities that will provide the highest compensation to them. Securities law traditionally handled this by regulating "recommendations" as a mechanism for increasing a security's salience to brokerage clients.[26] But the legacy doctrinal concern with recommendations fits imperfectly with the modern trend of retail investors trading in self-directed accounts.[27] Meanwhile, securities law is ambivalent about the role of self-directed retail investors, neither allowing them to engage without restriction in markets nor paternalistically excluding them from trading. This raises hard questions about whether securities law should have a role in promoting prudent investing as compared to speculative trading.

Gamification encourages people to trade excessively and noisily in self-directed accounts, underperforming the market on average—all for the broker-dealer's financial benefit. This is a diversion of investment and capital from productive uses in the real economy to the financial economy, and it should be discouraged. Doing so is easier said than done, because the modern stock market generates strong incentives for intermediaries like brokers to promote this kind of informationally noisy order flow from retail customers.[28] The microstructure of these markets involves an all-out battle over intermediation rents. Investment games fuel this battle; by generating noisy order flow, investing app features that encourage retail stock trading for reasons other than the "value" of the stock make this kind of intermediation more profitable.

The Article proceeds as follows. Part I introduces gamification in stock trading apps, identifies regulatory responses to it, and situates it as the product of several convergent trends in law and market structure. Part II articulates a theory of gamified investing as a means of promoting retail investors to engage in a pattern of informationally noisy and potentially excessive trades. It begins by describing different empirical and theoretical models of how and why retail investors

26. *See infra* notes 315–320 and accompanying text.

27. *See infra* notes 326–328 and accompanying text.

28. On noise, see *infra* notes 140–149 and accompanying text.

trade—for entertainment or based on the mistaken reasoning that trading is the path to wealth. It also situates gamification as a reason for trading within two strands of securities law theory, focusing on conflicts of interest and paternalism toward speculative trading as a kind of gambling. Part II concludes by identifying and responding to three alternative visions that reflect optimism, populism, and pessimism about gamified retail investment in capital markets.

Part III turns to normative and doctrinal implications of the two strands of securities law theory raised in Part II. There is a social welfare case for regulating gamification features in retail investing, arising from market failures like externalities and principal-agent problems. Part III examines some prototypical and some relatively unorthodox responses in securities law, including disclosure, antifraud rules, broker sales practices rules, fiduciary-duty theories, and market structure interventions. The SEC has many of the tools it needs to address gamification, though there are plausible doctrinal fixes around the edges. The SEC should not—as the brokerage industry suggests[29]—leave existing law alone. Part III concludes by observing that gamification is the product of underlying market failures that encourage people to engage in patterns of excessive trades that underperform the market on average, all to increase the profits of market intermediaries. A bold and modern securities law, it concludes, would step in to fix the market structure problems that create incentives to make investing a "game" in the first place.

I. GAMIFICATION IN SECURITIES MARKETS

Retail investors choose brokers, then choose transactions. To attract digitally savvy clients, many brokers offer attractively designed mobile apps and zero-commission trading. Some also use design in ways that influence the transactions clients make. Part I introduces the problem of "investment games," identifying brokers' incentives to shape investor behavior this way. After describing recent regulatory scrutiny of these practices, this Part identifies three convergent historical trends that together create an incentive to promote a pattern

29. *See, e.g.*, Kevin M. Carroll, Managing Dir. & Assoc. Gen. Couns., Sec. Indus. & Fin. Mkts. Ass'n, Comment Letter on Broker-Dealer and Investment Adviser Digital Engagement Practices, Related Tools and Methods (Oct. 1, 2021) [hereinafter SIFMA Comment Letter], https://www.sec.gov/comments/s7-10-21/s71021-9315816-260052.pdf [https://perma.cc/UK45-RWRW] (arguing that "new rules, guidance, or interpretations are not necessary or appropriate to address [digital engagement practices] use in our industry today").

of retail investor orders that is unrelated to information about a security: price competition, increased retail investor participation in markets, and the way modern markets operate.

A. What is Gamification?

In our increasingly online world, businesses, educators, and platforms adopt practices that reward, motivate, or encourage us to do things we otherwise might not.[30] This lets businesses appeal to the predictably imperfect rationality of users in service of some goal, typically including private profit.[31]

Features like these are sometimes called "gamification," especially in the popular imagination about stock trading apps.[32] Across scholarly discourses examining gamification in behavioral-economic terms, a common thread focuses on how presentation of information bears on decisionmaking.[33] This reflects a concern common to gamification and related practices like "dark patterns" and

30. *See* Tae Wan Kim & Kevin Werbach, *More Than Just a Game: Ethical Issues in Gamification*, 18 ETHICS INFO. TECH. 157, 157–58 (2016).

31. *See* Rimantas Gatautis, J rat Banyt , Rita Kuvykait , Regina Virvilait , Aist Dovalien , Žaneta Piligrimien , Agn Gadeikien , Elena Vitkauskait & Asta Tarut , *The Conceptual Model of Gamification-Based Consumer Engagement in Value Creation*, *in* GAMIFICATION AND CONSUMER ENGAGEMENT 99, 103–07 (Rimantas Gatautis, J rat Banyt & Elena Vitkauskait eds., 2021) (drawing on marketing theory to model gamification practices that build consumer engagement, promote behavioral change, and create economic profitability for firms); *see also* James "Pigeon" Fielder, *Robinhood Makes Wall Street Feel like a Game To Win—Not a Place Where You Can Lose Your Savings*, FAST CO. (Mar. 27, 2021), https://www.fastcompany.com/90619112/robinhood-gamification-dark-side [https://perma.cc/89GF-25UT] (describing how Robinhood turns investors into players and encourages them to spend money).

32. *See, e.g.*, Levintova, *supra* note 8. In the game studies literature, gamification is "the use of game design elements in non-game contexts." Sebastian Deterding, Dan Dixon, Rilla Khaled & Lennart Nacke, *From Game Design Elements to Gamefulness: Defining "Gamification," in* PROCEEDINGS OF THE 15TH INTERNATIONAL ACADEMIC MINDTREK CONFERENCE: ENVISIONING FUTURE MEDIA ENVIRONMENTS 9, 11 (2011), http://www.rolandhubscher.org/courses/hf765/readings/Deterding_2011.pdf [https://perma.cc/M8FF-ENLQ]. Games are "characterized by explicit rule systems and the competition or strife of actors in those systems toward discrete goals or outcomes." *Id.* at 11; *see also, e.g.*, Katie Seaborn & Deborah I. Fels, *Gamification in Theory and Action: A Survey*, 74 INT'L J. HUM.-COMPUT. STUD. 14, 14 (2015) (defining gamification as "the selective incorporation of game elements into an interactive system without a fully-fledged game as the end product").

33. *See, e.g.*, Sebastian Deterding, *The Ambiguity of Games: Histories and Discourses of a Gameful World*, *in* THE GAMEFUL WORLD: APPROACHES, ISSUES, APPLICATIONS 23, 40 (Steffen P. Walz & Sebastian Deterding eds., 2015) (describing the idea that "behavioral economics [is] a foundation for gamification," often used to frame investment in game design as a way to "help[] . . . marketers to drive . . . sales with choice architectures whose design patterns directly use cognitive biases and heuristics, social influence, emotional appeals, and the power of habit").

habit-forming technologies: that designers will present information and choices about goods, services, transactions, and markets that appeal to imperfectly rational cognitive processes to elicit behavior that benefits the designer.[34] Design can distort user behavior in ways that give rise to traditional market failures like principal-agent problems and externalities. It can also redistribute economic surplus from users to designers in ways that are nonsalient or only barely perceptible.

This article uses "gamification" (and occasionally the variation "investment games") to mean the use of "game design" elements, including behaviorally oriented user-interface and user-experience design practices, that influence and may exploit retail investor behavior.[35] Interface and experience design can encourage intuitive, habitual, and uncritical responses rather than deliberation over preferences and choices.[36] Designers can intervene in decisionmaking processes to encourage outcomes that the person otherwise would not have chosen. The choices users make in investing apps thus may not

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34. *See, e.g.*, Jamie Luguri & Lior Jacob Strahilevitz, *Shining a Light on Dark Patterns*, 13 J. LEGAL ANALYSIS 43, 57 (2021) (describing "dark patterns" that "nudge consumers toward a selection that is likely to be unpopular with them but profitable for the company"); Justin (Gus) Hurwitz, *Designing a Pattern, Darkly*, 22 N.C. J.L. & TECH. 57, 61–64 (2020) (explaining how designers can exploit "patterns in how users interact with information" to "present information in ways that influence" user behavior); *cf.* James Ash, Ben Anderson, Rachel Gordon & Paul Langley, *Digital Interface Design and Power: Friction, Threshold, Transition*, 36 ENV'T & PLAN. D: SOC'Y & SPACE 1136, 1138 (2018) (analyzing the "interface design" of digital apps providing high-cost short-term credit as an "experimental process of managing friction," meaning "a series of bodily and technical obstacles or hesitancies that interrupt, slow or stop a user from completing a task within a digital interface, such as choosing a service or buying a product").

35. Scholars of economic transactions by individuals in consumer law, contract law, securities law, and the like have focused on behavioral exploitation. *See* Michael D. Guttentag, *Law and Surplus: Opportunities Missed*, 2019 UTAH L. REV. 607, 658–60 (reviewing literature); *see also, e.g.*, James Fallows Tierney, *Contract Design in the Shadow of Regulation*, 98 NEB. L. REV. 874, 878 (2020) [hereinafter Tierney, *Contract Design in the Shadow of Regulation*]; Martin Brenncke, *The Legal Framework for Financial Advertising: Curbing Behavioural Exploitation*, 3 EUR. BUS. ORG. L. REV. 853, 855 (2018); OREN BAR-GILL, SEDUCTION BY CONTRACT: LAW, ECONOMICS, AND PSYCHOLOGY IN CONSUMER MARKETS 2 (2012). By "investment games," this Article does not mean to include apps that allow people to engage in "paper trading" without putting real money at stake and without participating in the capital markets.

36. *See, e.g.*, Luguri & Strahilevitz, *supra* note 34, at 52; Juho Hamari, Kai Huotari & Juha Tolvanen, *Gamification and Economics*, *in* THE GAMEFUL WORLD: APPROACHES, ISSUES, APPLICATIONS, *supra* note 33, at 139, 140. To one industry observer, a goal of "gamification" in financial services is to "rewire our brains and the way we engage emotionally by promoting new experiences that help to change investment habits and feelings." PAOLO SIRONI, FINTECH INNOVATION: FROM ROBO-ADVISORS TO GOAL BASED INVESTING AND GAMIFICATION 142–43 (2016). On whether people would rationally choose the transactions that gamification encourages them to make, see *infra* Part II.A.1.

reflect the actual benefits users will experience receiving, giving rise to an opportunity for firms to manipulate users' choices—all with plausible harms to users and society.[37]

Scholars have shown the role of user-interface design in encouraging repeat engagement with stock trading apps.[38] One example that has attracted significant attention is Robinhood, an investing app through which clients can trade stocks, ETFs, options, and cryptocurrencies.[39] Like many other online brokers, Robinhood's user experience incorporates gamification practices. In 2019, when most discount brokers began to offer zero-commission trading, market observers noted that gamification was driving growth.[40] The rest of this

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37. *See infra* Part III.A.

38. *See* Sayan Chaudhry & Chinmay Kulkarni, *Design Patterns of Investing Apps and Their Effects on Investing Behaviors*, *in* PROCEEDINGS OF THE DESIGNING INTERACTIVE SYSTEMS CONFERENCE 777, 782 (2021), https://dl.acm.org/doi/pdf/10.1145/3461778.3462008 [https://perma.cc/EP9U-RZJ3] ("While latency in interfaces is generally detrimental, immediate payback of risky bets encourages more frequent plays and the tendency to regamble any winnings with little rational financial consideration." (footnotes omitted)). For studies of economic consequences of this engagement, see *infra* Part II.A.2.

39. *See* Robinhood Markets, Inc., Registration Statement (Form S-1) (July 1, 2021). Brokerage apps sometimes let customers "buy, hold and sell a limited number of cryptocurrencies, such as Bitcoin, Ethereum, and Dogecoin," as Robinhood does. *Id.* at 73. The elephant in the room is the regulatory status of these and other cryptocurrencies. *See id.* (identifying the uncertain and contingent status of cryptocurrency regulation, and stating that "[c]hanges" in those laws or "failure to comply with them" is a material risk that "may significantly and adversely affect our business"). The markets are similar, dealers earn similar sorts of intermediation rents, and as a practical matter many of the apps of regulatory concern have a great bulk of revenue coming from crypto transaction volume. In the registration statement filed in connection with its IPO, Robinhood also warned prospective investors that cryptocurrency demand is a material risk given the "substantial portion of the recent growth in our net revenues earned from cryptocurrency transactions . . . attributable to transactions in Dogecoin." *Id.* Robinhood, like many other brokerage firms, also allows customers trade options. *Id.* at 2.

Regulatory interventions with respect to both options and crypto are both relevant to this Article's subject, as is the role of leverage. *Cf. generally* Liran Eliner, Essays on the Behavior and Performance of Retail Investors (May 9, 2022) (Ph.D. dissertation, Harvard University), https://dash.harvard.edu/bitstream/handle/1/37372292/Dissertation_Final.pdf [https://perma.cc/DT9D-H2JB] (finding evidence that leverage is an important factor in retail investor underperformance). But given that your time is precious, reader, this Article focuses on equity trading to simplify the discussion.

40. David Ingram, *Designed To Distract: Stock App Robinhood Nudges Users To Take Risks*, NBCNEWS.COM (Sept. 12, 2019, 2:59 PM), https://www.nbcnews.com/tech/tech-news/confetti-push-notifications-stock-app-robinhood-nudges-investors-toward-risk-n1053071 [https://perma.cc/JGH7-6KNU].

subpart illustrates practices that may bear on promoting engagement and directing user attention to particular information.[41]

1. *Recommendation algorithms*. Some brokers give clients lists of stocks to consider. The stocks on these lists might be selected by humans or instead be generated algorithmically, as Robinhood has disclosed.[42] These lists can increase salience of certain stocks, like "top movers" with the greatest percentile changes that day, stocks with high trading volume across the broker's customer order flow or across the broader market, or most concentrated holdings among clients.[43] Some securities may be more salient for reasons that are not apparent to an investor, or that may be unrelated to reasons why the investor wants to trade. This increased salience can induce demand, a phenomenon of attention-induced trading.[44]

2. *Push notifications*. Some apps present users with brief messages on the screen upon the occurrence of some event, known as a push notification.[45] Some push notifications are designed to encourage

41. *See infra* note 65 and accompanying text. There is a more general sense in which "gamification" may refer to the rise of retail traders coordinating on social media over "meme stocks," which is thought to make a "game" of trading. That usage falls outside this Article's focus on behaviorally oriented design practices that influence retail investor behavior. This Article returns to the broader criticism that gamification treats finance unseriously in Part II.C.3 below.

42. *See* ROBINHOOD, ROBINHOOD WEB DISCLOSURES 1–2, 4 (2020) https://cdn.robinhood.com/disclosures/WebDisclosures.pdf [https://perma.cc/72CG-TU6P] (representing that Robinhood "pre-populate[s] list[s] . . . based on [stocks'] popularity on Robinhood's platform," that the "[t]op [m]overs" list is generated by a "proprietary algorithm," and that neither of these purportedly is a "recommendation"). On that last disclaimer, see *infra* note 322.

43. Dan Clarendon, *Robinhood Restricted Its Popularity Data, You Can Still See Top Movers*, MKT. REALIST (Jan. 21, 2021, 2:22 PM), https://marketrealist.com/p/robinhood-top-movers [https://perma.cc/5A6Y-UDKH]. Robinhood in August 2020 "turned off a feature . . . that allowed anyone to see which companies' shares were surging in popularity." Jeff John Roberts, *Robinhood Will No Longer Share Stock 'Popularity Data' with Sites like Robintrack*, FORTUNE (Aug. 10, 2020, 3:04 PM), https://fortune.com/2020/08/10/robinhood-popularity-data-robintrack-stock-market-trading-tracker [https://perma.cc/RV5C-6EUE]. The public API for that feature had for some time provided a rich source of retail trader data to financial economists. For discussion of some of those financial economists' findings, see *infra* notes 151–153.

44. *See infra* Part II.A.2.

45. *See* Langvardt & Tierney, *supra* note 14, at 727 (citing Nicole Casperson, *Robinhood Under Pressure for Bringing "Gamification" to Investing*, INVESTMENTNEWS (Dec. 18, 2020), https://www.investmentnews.com/robinhood-underpressure-for-bringing-gamification-to-investing-200607 [https://perma.cc/7VR3-FSPB]).

monitoring and trading.[46] Others are informational and more benign, as in the case of design features meant to inform or educate clients.[47]

3. *Eye candy*. People sometimes use gamification to refer to "eye candy," or aesthetically pleasing design.[48] Robinhood's signature piece of eye candy was digital confetti: upon completion of a first trade, confetti would rain down the screen, as seen in Figure 1 below.[49] The

Figure 1: User flow during selection of variable reward, circa 2018

firm's early ads showed a young man, sitting at dinner looking at a

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46. *See id.* (noting how "push notifications might serve as calls to action," encouraging trading).

47. *See id.* (discussing benign push notifications); *see also, e.g.*, Hurwitz, *supra* note 34, at 71–77 (noting that "[d]esign is difficult" but "necessary," and suggesting that regulators distinguish between design that has bad, ambiguous, or good effects).

48. *E.g.*, Luke Hickey, *Four Ways To Think About Using Gamification – Without Turning Your eLearning into Games*, DOMINKNOW (Mar. 17, 2020), https://www.dominknow.com/blog/four-ways-to-think-about-using-gamification-without-turning-your-elearning-into-games [https://perma.cc/7L26-BPM9]; Max Steenbergen, *Eye Candy vs. Bare-Bones in UI Design*, UX MAG. (Mar. 26, 2010), https://uxmag.com/articles/eye-candy-vs-bare-bones-in-ui-design [https://perma.cc/KE7Z-3G27] (describing "eye candy").

49. Wursthorn & Choi, *supra* note 8; Tory Hobson, *Gamification in the Most Delightful Way*, MEDIUM: PINCH PULL PRESS (Jan. 25, 2018), https://link.medium.com/uxXrSIPuCdb [https://perma.cc/QBH2-QBXS]. The confetti has since been deprecated; Robinhood announced in late March 2021 that it would "eliminat[e] digital confetti" to neutralize criticism ahead of its initial public offering. Caitlin McCabe, *Robinhood To Remove Controversial Digital Confetti from Trading*, WALL ST. J. (Mar. 31, 2021, 7:11 PM), https://www.wsj.com/articles/robinhood-to-remove-controversial-digital-confetti-from-trading-app-11617195612 [https://perma.cc/DK37-8V22].

phone, and reacting in surprise when the phone showers physical confetti over him.[50]

4. *Surprise stock awards.* Robinhood has offered users lotteries for surprise stocks as rewards for linking bank accounts or referring new users.[51] In addition to showing confetti, Figure 1 also shows the flow of screens that a user would experience—three card monte, scratch ticket for the selected card, and a flurry of confetti—during winter 2018.[52]

5. *Engagement devices.* Traditional "gamification" features reward engagement for its own sake. Many free-to-play gaming apps offer players opportunities to make incremental purchases within the app to proceed to higher levels or unlock features, and reward frequent engagers with preferential access to new features.[53] Robinhood has implemented the kinds of design features seen in these apps and in casino gaming machines to encourage repeated and habitual engagement for customers to keep their place on, or move up, the waitlist for a new product or feature.[54] In addition, brokerage apps are

50. *See* Wursthorn & Choi, *supra* note 8 (discussing the digital-confetti animation featured in Robinhood's advertising).

51. *See id.* (describing a new Robinhood user who "received a free share" of stock for being referred to the app, "choosing among three stocks displayed on what looks like a virtual lottery scratch card").

52. Hobson, *supra* note 49.

53. *See, e.g.*, Kyle Langvardt, *Regulating Habit-Forming Technology*, 88 FORDHAM L. REV. 129, 138–41 (2019) (discussing free-to-play games that offer "small in-game advantages" for in-app "micropayments").

54. *See, e.g.*, Scott Galloway, *Robinhood Has Gamified Online Trading into an Addiction*, MEDIUM: MARKER (July 23, 2020), https://marker.medium.com/robinhood-has-gamified-online-trading-into-an-addiction-cc1d7d989b0c [https://perma.cc/HMX2-MP77] (discussing addiction, and finding similarities between online trading platforms and casinos); Matthew Knipfer, *Optimally Climbing the Robinhood Cash Management Waitlist*, MEDIUM (Nov. 5, 2019), https://matthewknipfer.medium.com/optimally-climbing-the-robinhood-cash-management-waitlist-f94218764ea7 [https://perma.cc/G3TR-FZFF] (describing how Robinhood encouraged engagement as a strategy for climbing the waitlist for a new cash-management product); George Vasiliadis, *How Robinhood Got Nearly 1 Million Users Before the Company Even Existed*, MEDIUM: INSIDE VIRAL LOOPS (Nov. 23, 2017), https://medium.com/inside-viral-loops/how-robinhood-got-nearly-1-million-users-before-the-company-even-existed-dfb1a57231f8 [https://perma.cc/9R5G-Z8BP] (explaining how when Robinhood first launched, prospective users engaged with a "referral-based viral loop" allowing them to move up the waitlist by referring other prospective users to sign up for the waitlist); Josh Constine, *Robinhood App Will Offer Zero-Commission Stock Trades Thanks to $3M Seed from Index and A16Z*, TECHCRUNCH (Dec. 18, 2013, 9:00 AM), https://techcrunch.com/2013/12/18/zero-commission-stock-trading-robinhood

similar to these free-to-play games in that investors deposit funds and make incremental purchases but don't pay extra for the privilege of doing so because trades are zero-commission.[55] For these reasons, Bloomberg columnist and market commentator Matt Levine has compared trading to "in-app purchases" for which "you can end up spending a lot of money": Candy Crush but with more at stake.[56]

B. Regulatory Scrutiny of Gamification

Gamification has increasingly become an object of legislative and regulatory scrutiny. The Biden administration's SEC has made gamification a priority.[57] Testifying before Congress in May 2021, SEC Chairman Gary Gensler objected to brokerage apps that use psychological "features [to] encourage investors to trade more," even though active trading likely "results in lower returns."[58] The Democratic members of the Commission at that time expressed support for regulating gamification.[59] The SEC's then Republican commissioners urged a more cautious approach.[60]

[https://perma.cc/W9LX-PPK5] (explaining that "tweeting about Robinhood will bump up your place" on the waitlist to access "free stock trading").

55. *See infra* notes 93–95 and accompanying text.

56. Matt Levine, Opinion, *Playing the Game of Infinite Leverage*, BLOOMBERG (Nov. 5, 2019, 12:11 PM) [hereinafter Levine, *Playing the Game*], https://www.bloomberg.com/opinion/articles/2019-11-05/playing-the-game-of-infinite-leverage [https://perma.cc/Z9ED-999J].

57. Benjamin Bain & Robert Schmidt, *Gensler Targets Broker "Gamification" After Trading Tumult*, BLOOMBERG (Mar. 2, 2021, 11:05 AM), https://www.bloomberg.com/news/articles/2021-03-02/gensler-says-scrutinizing-trading-apps-would-be-focus-at-sec#xj4y7vzkg [https://perma.cc/G6FQ-JJQC].

58. *House Gamification Hearing III*, *supra* note 14, at 5, 90 (statement of Gary Gensler, Chairman, Sec. & Exch. Comm'n).

59. *See id.*; Allison Herren Lee, Comm'r, U.S. Sec. & Exch. Comm'n, Leveraging Regulatory Cooperation To Protect America's Investors: Remarks at the 2021 Section 19(d) Conference (May 21, 2021), https://www.sec.gov/news/speech/lee-2021-section-19d-conference [https://perma.cc/CM95-4SAS] (discussing Regulation Best Interest and the gamification of trading); Chris Ekimoff & Kurt Wolfe, *Enforcing the Regulations – A Conversation with Commissioner Crenshaw*, PRACTISING L. INST., at 18:00–22:00 (June 17, 2021), https://insecurities.podbean.com/e/enforcing-the-regulations-–-a-conversation-with-commissioner-crenshaw [https://perma.cc/5473-JEY7] (discussing the existing regulatory framework for investment apps).

60. *See, e.g.*, Hester M. Peirce, Comm'r, U.S. Sec. & Exch. Comm'n, Speech at George Washington University Law School Regulating the Digital Economy Conference: Atomic Trading (Feb. 22, 2021), https://www.sec.gov/news/speech/peirce-atomic-trading-2021-02-22 [https://perma.cc/T79L-APPH] (defending gamification in capital markets and encouraging the Commission to gamify its own communications with investors); Dean Seal, *SEC's Roisman Wary of Playing into "Gamification" Fears*, LAW360 (Nov. 16, 2021, 8:21 PM), https://www.law360.com/articles/1441062/sec-s-roisman-wary-of-playing-into-gamification-fears [https://perma.cc/GK3S-

The SEC's response remains open-ended. The staff is considering whether existing securities laws are adequate, or whether "fresh" rules are needed to address gamification.[61] In August 2021, the SEC published a request for information focusing on broker-dealer and investment adviser use of "digital engagement practices" ("DEPs").[62] Brokers are sales-based advisers who mainly make money when customers trade, while investment advisers are fiduciaries who typically charge flat or percentage fees for their advice.[63] These business models are subject to different regulations under current law. As regulatory interventions may depend on weighing different costs and benefits of engagement practices in each case, the SEC has signaled that it may pursue separate DEP rulemakings for brokers (who sponsor trading apps) and registered investment advisers ("RIAs") (who sponsor roboadvisor and other digital advisory apps).[64] And it defined DEPs to "broadly include behavioral prompts,

XETP] (urging an approach that emphasizes "consensus" in making "regulatory enhancements" to avoid getting the agency "mired in litigation").

61. *House Gamification Hearing III*, *supra* note 14, at 90 (statement of Gary Gensler, Chairman, Sec. & Exch. Comm'n).

62. *See* DEP RFI, *supra* note 13, at 49,067. Hundreds of public comments have been filed with the agency. *See* Comments on Request for Information and Comments on Broker-Dealer and Investment Adviser Digital Engagement Practices, Release No. 34-92766, https://www.sec.gov/comments/s7-10-21/s71021.htm [https://perma.cc/2TWT-SFJX] (collecting and releasing comments); James Fallows Tierney, Comment Letter on Digital Engagement Practices (Oct. 1, 2021), https://www.sec.gov/comments/s7-10-21/s71021-9316496-260091.pdf [https://perma.cc/AS7G-TXKX].

63. *See infra* Part III.B.5.

64. *See, e.g.*, *Agency Rule List - Spring 2022: Securities and Exchange Commission*, OFF. OF INFO. & REGUL. AFFS. (2022), https://www.reginfo.gov/public/do/eAgendaMain?operation=OPERATION_GET_AGENCY_RULE_LIST&currentPub=true&agencyCode=&showStage=active&agencyCd=3235 [https://perma.cc/4D6K-2H2W] (identifying two separate proposed rulemakings about digital engagement practices for broker-dealers and investment advisers); Gary Gensler, Chair, Sec. & Exch. Comm'n, Prepared Remarks at SEC Speaks (Oct. 12, 2021), https://www.sec.gov/news/speech/gensler-sec-speaks-2021-10-12 [https://perma.cc/PGC6-K9JG] (noting that he had asked the staff to consider "existing rule sets, or updates to those rules, . . . both related to brokers and to investment advisers"). Roboadvisors are automated online platforms, including mobile apps, that take information about client attributes (risk preferences, existing assets, time to retirement) and use computer algorithms to generate investment advice about portfolio diversification, asset allocation, and security selection at low cost. Jill E. Fisch, Marion Labouré & John A. Turner, *The Emergence of the Robo-Advisor*, *in* THE DISRUPTIVE IMPACT OF FINTECH ON RETIREMENT SYSTEMS 13, 13 (Julie Agnew & Olivia S. Mitchell eds., 2019). Roboadvisors are typically regulated by the SEC under the Investment Advisers Act of 1940 and may or may not be also regulated as broker-dealers. *Id.* at 15–16.

differential marketing, gamelike features, and other design elements or features designed to engage retail investors."[65]

Gamification has also attracted the attention of the Financial Industry Regulatory Authority ("FINRA"), the self-regulatory organization for broker-dealers.[66] FINRA makes and enforces rules for brokers, and it implements these by examining and monitoring brokerage firms for compliance and risk.[67] FINRA notified members in early 2021 that it was scrutinizing firms for compliance about communications with clients in app-based investing platforms.[68] FINRA noted the tradeoff between the increased access to trading markets that digital platforms provide, and the possibility of "increased risks to customers if not designed with the appropriate compliance considerations in mind."[69] FINRA has continued to discuss responses to gamification and the business model.[70]

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65. DEP RFI, *supra* note 13, at 49,068 (providing a list of examples: "[s]ocial networking tools; games, streaks and other contests with prizes; points, badges, and leaderboards; notifications; celebrations for trading; visual cues; ideas presented at order placement and other curated lists or features; subscriptions and membership tiers; and chatbots").

66. FINRA is a registered national securities association under Exchange Act Section 15A, 15 U.S.C. § 78o-3.

67. Kenneth B. Orenbach, *A New Twist to an On-Going Debate About Securities Self-Regulation: It's Time To End FINRA's Federal Income Tax Exemption*, 31 VA. TAX REV. 135, 149–50 (2011).

68. *See* FIN. INDUS. REGUL. AUTH., 2021 REPORT ON FINRA'S EXAMINATION AND RISK MONITORING PROGRAM 2 (2021) [hereinafter FINRA 2021 REPORT], https://www.finra.org/sites/default/files/2021-02/2021-report-finras-examination-risk-monitoring-program.pdf [https://perma.cc/5HPG-4Q8Q] (explaining that FINRA was "increasingly focused" on "risks associated with app-based platforms with interactive or 'game-like' features that are intended to influence customers"); FINRA MANUAL § 2210 (FIN. INDUS. REGUL. AUTH., amended 2019) [hereinafter FINRA MANUAL], https://www.finra.org/rules-guidance/rulebooks/finra-rules/2210 [https://perma.cc/3WYB-PHMN] (providing FINRA's rules for communications with the public). FINRA has also settled enforcement actions related to receipt of payment of order flow and other issues arising from the business model underlying zero-commission brokerage. *See, e.g.*, Robinhood Fin., LLC, Financial Industry Regulatory Authority Letter of Acceptance, Waiver and Consent No. 2017056224001, at 2 (Dec. 12, 2019), https://www.finra.org/sites/default/files/2019-12/robinhood-awc-121919.pdf [https://perma.cc/2ZVP-2JJP] (settling such a suit with Robinhood).

69. FINRA 2021 REPORT, *supra* note 68, at 22.

70. *See, e.g.*, Al Barbarino, *FINRA To Seek Public Input on "Gamification" of Stock Market*, LAW360 (May 19, 2021, 8:07 PM), https://www.law360.com/securities/articles/1386379/finra-to-seek-public-input-on-gamification-of-stock-market [https://perma.cc/2FRF-7LAU] (discussing FINRA's efforts to outline additional guidance and rules to address the gamification of stock market trading platforms).

State securities regulators also play a role in enforcing broker-dealers' obligations under the securities laws.[71] Massachusetts regulators have been boldest in pursuing gamification claims under state law. In administrative proceedings, Massachusetts has alleged that gamification violates state fiduciary-duty rules, unethical practices rules, and supervision rules.[72]

C. Convergent Trends Creating an Incentive for Gamified Investing

Why did gamification emerge in securities trading apps? This subpart identifies three trends that created incentives for brokers to adopt design practices that encouraged informationally noisy trading. First, technology enabled greater participation by retail investors in stock markets, raising the stakes of that participation. Second, brokers experienced fierce, decades-long price competition for commissions, resulting in a zero-commission trading model that required brokers to look elsewhere for revenue. Finally, a nationally fragmented stock market created an opportunity for proprietary trading firms to profit by trading against retail orders, and to pay zero-commission brokers for the privilege of doing so. Taken together, these trends have plausibly given rise to an incentive to design free-to-play mobile apps

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71. Broker-dealers are licensed by regulators in states where they operate. *See generally* Andrew K. Jennings, *State Securities Enforcement*, 47 BYU L. REV. 67 (2021) (discussing state enforcement actions involving broker-dealers). This can give rise to different standards of conduct at federal and state levels. Massachusetts's enforcement action, discussed *infra* at notes 72 and 345–346, is predicated on the theory that broker-dealers owe state law fiduciary duties to clients even though federal law imposes no such duties. On federalism and state-law fiduciary rule developments, see generally Benjamin P. Edwards, *The Fate of State Investor Protection*, 21 TRANSACTIONS: TENN. J. BUS. L. 213 (2020).

72. *See generally* Administrative Complaint, *In re* Robinhood Fin., LLC, 2020 WL 7711667 (Mass. Sec. Div. Dec. 16, 2020) (No. E-2020-0047) (alleging violations of state broker-dealer regulations). The regulator sought to file an amended complaint seeking to revoke Robinhood's registration as a broker-dealer in the state, alleging that Robinhood targeted unsophisticated investors, luring them in with gamification features and strategies. Motion for Leave to File Amended Administrative Complaint at 2, *In re Robinhood*, 2020 WL 7711667; *see also* MASS. GEN. LAWS ch. 110A, § 204(a)(2)(G) (providing that action may be taken against a broker-dealer or investment adviser that "has engaged in any unethical or dishonest conduct or practices in the securities, commodities or insurance business"); 950 MASS. CODE REGS. 12.207(1)(a) (providing that "unethical or dishonest conduct or practices" include "[f]ailing to act in accordance with a fiduciary duty to a customer when providing investment advice or recommending an investment strategy, the opening of or transferring of assets to any type of account, or the purchase, sale, or exchange of any security"). For more on this litigation, see *infra* notes 341–347 and accompanying text.

that encourage excessive trading for reasons other than the value of a stock.

1. *Re-retailization*. One trend that has encouraged gamification—and vice versa—has been the reemergence of retail investors in securities markets. Ten years ago, this seemed an unlikely outcome. Retail interest in stocks was moribund. Between the 1970s and 2012, retail traders had in significant numbers exited the market for individual equities and shifted instead into diversified funds.[73] This was the "deretailization" era.[74]

Are markets still deretailized in an era of zero-commission trading apps in retail traders' pockets? In 2021, it looked as if the deretailization trend was slowing or even reversing; as this subpart will explain, retail traders had started participating more deeply and broadly in the stock market than in recent years. Consider some ways retail participation can be measured. Retail's share of total trading volume in a period reflects how much retail traders are buying and selling relative to institutional traders. In addition, retail's share of stock ownership reflects how much people own—buying and holding, not selling.

Trading volume is of particular interest for those concerned that gamification may generate too much trading. Retail investors have made up a larger share of trading volume, which rose significantly between 2019 and 2021, before waning again at the end of that year as the bull market in equities and other risky assets came to a close.[75] Figure 2 reports data from Bloomberg Intelligence for individual

73. *See, e.g.*, Sarah C. Haan, *Corporate Governance and the Feminization of Capital*, 74 STAN. L. REV. 515, 569–72 (2022) (describing deretailization and the shift to holding corporate equity through institutional investors, and focusing on implications for how the gendered nature of shareholder power has changed across time); *see also, e.g.*, Paul G. Mahoney, *Is There a Cure for "Excessive" Trading?*, 81 VA. L. REV. 713, 733 n.65 (1995) (finding that the trading volume by individuals in 1993 was 53.8 percent of total trading volume). The former SEC official who coined "deretailization" has noted that retail investors "have not vanished" as beneficial owners of securities but "simply shifted to investing primarily through financial intermediaries such as mutual funds." Brian G. Cartwright, *Whither the SEC Now?*, 95 VA. L. REV. 1085, 1092 (2009). But that would mean they're no longer "retail" as this article has defined the term. *See supra* note 1.

74. *See* Cartwright, *supra* note 1 (coining the term).

75. Katie Martin & Robin Wigglesworth, *Rise of the Retail Army: The Amateur Traders Transforming Markets*, FIN. TIMES (Mar. 8, 2021), https://www.ft.com/content/7a91e3ea-b9ec-4611-9a03-a8dd3b8bddb5 [https://perma.cc/F5AJ-7A8B]. On waning trading volume, see *infra* note 86 and accompanying text.

investors' share of U.S. equities trading volume between 2011 and the first quarter of 2021.[76] Retail investors' trading volume is also disproportionately high relative to their ownership share of total market value.[77] Retail investors are not just becoming more active; as a group they are growing in size and becoming more diverse.[78] Given wealth and income inequality, equity market participation remains out of reach for perhaps most people.[79] And the wealthiest households' share of ownership has only grown over time.[80]

76. The data for 2021 is from first quarter, not annual. For replication data, see James F. Tierney, *Replication-Investment-Games*, GITHUB (Apr. 1, 2022) [hereinafter Tierney, *Replication-Investment-Games*], https://github.com/jamesftierney/Replication-Investment-Games [https://perma.cc/F4DC-W4ZP]; Caitlin McCabe, *It Isn't Just AMC. Retail Traders Increase Pull on the Stock Market*, WALL ST. J. (June 18, 2021, 5:30 AM), https://www.wsj.com/articles/it-isnt-just-amc-retail-traders-increase-pull-on-the-stock-market-11624008602 [https://perma.cc/XJB2-DEEG] (sourcing the data and providing other insights). For more recent data, see *infra* note 85 and accompanying text.

77. *See, e.g.*, Richard Stanley, *Retail Investors Comprise 10 Percent of U.S. Daily Trading*, PRECISE INVS. (July 1, 2021), https://preciseinvestors.com/retail-investors-comprise-10-percent-of-u-s-daily-trading [https://perma.cc/2AP5-N3WY] (explaining that in 2021, retail investors comprised 10 percent of daily trading).

78. Mark Lush, Angela Fontes, Meimeizi Zhu, Olivia Valdes & Gary Mottola, Fin. Indus. Regul. Auth. Found. & NORC at the Univ. of Chi., *Investing 2020: New Accounts and the People Who Opened Them*, CONSUMER INSIGHTS: MONEY & INVESTING, Feb. 2021, at 1–2, https://www.finrafoundation.org/sites/finrafoundation/files/investing-2020-new-accounts-and-the-people-who-opened-them_1_0.pdf [https://perma.cc/KF7U-WZTR].

79. *See generally, e.g.*, Winston, *supra* note 17 (discussing growing economic inequality in the U.S. and the role of exclusive investment opportunities in fueling the wealth divide).

80. *See id.* at 781, 789.

Figure 2

The size of the retail market has also grown as record numbers of ordinary people have been participating in the stock market.[81] Greater liquidity in household finance, from lower pandemic-era entertainment

81. *See, e.g.*, Madison Darbyshire, *'The Stimulus Has Landed': US Retail Traders Set To Hit Stock Market*, FIN. TIMES (Mar. 17, 2021), https://www.ft.com/content/e67f5076-c517-4bd5-9688-c70cde011452 [https://perma.cc/LRD2-NXXH] (explaining how Americans are investing billions of dollars from stimulus checks into the stock market).

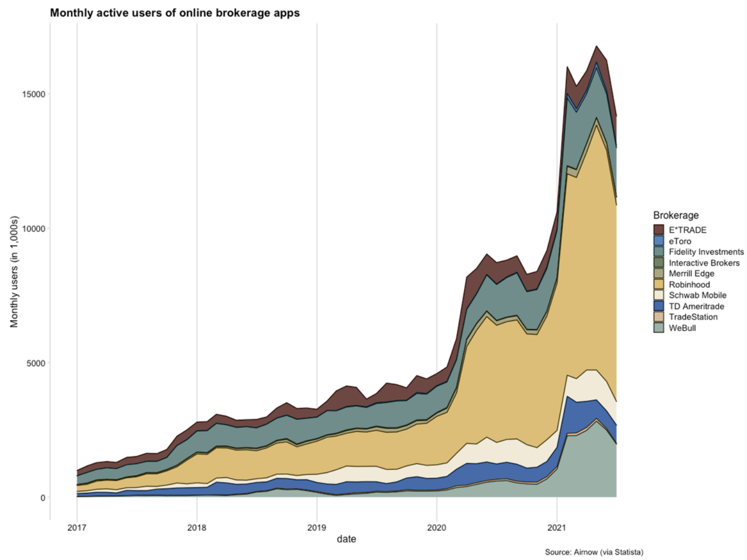

Figure 3

budgets and exogenous positive wealth shocks from social welfare programs, has enabled more investment.[82]

82. *See, e.g.*, Matt Phillips, *Recast as 'Stimmies,' Federal Relief Checks Drive a Stock Buying Spree*, N.Y. TIMES (Mar. 21, 2021), https://www.nytimes.com/2021/03/21/business/stimulus-check-stock-market.html [https://perma.cc/6MN4-ST5S] (explaining how stimulus payments led to a surge in investing); Annie Massa & Sarah Ponczek, *How Robinhood's Addictive App Made Trading a Pandemic Pastime*, BLOOMBERG (Oct. 22, 2020, 4:12 PM), https://www.bloomberg.com/news/features/2020-10-22/how-robinhood-s-addictive-app-made-trading-a-covid-pandemic-pastime [https://perma.cc/2RDU-AAP5] (discussing the "frenzy of often speculative retail investing in the pandemic lockdowns"). On entertainment reasons for trading, see *infra* Part II.A.1. The re-retailization trend in 2020 and 2021 lends credence to market commentator Matt Levine's "boredom markets" hypothesis: with other entertainment shut down during the pandemic, markets for risky assets offered a substitute form of entertainment. Matt Levine, Opinion, *If You're Bored You Can Trade Stocks*, BLOOMBERG (Apr. 30, 2020, 12:01 PM), https://www.bloomberg.com/opinion/articles/2020-04-30/if-you-re-bored-you-can-trade-stocks#xj4y7vzkg [https://perma.cc/J7HF-T34Q]; Matt Levine, Opinion, *The GameStop Game Never Stops*, BLOOMBERG (Jan. 25, 2021, 12:34 PM), https://www.bloomberg.com/opinion/articles/2021-01-25/the-game-never-stops [https://perma.cc/R42J-5RZ8]; *see also* Mardy Chiah, Xiao Tian & Angel Zhong, *Lockdown and Retail Trading in the Equity Market*, 33 J. BEHAV. & EXPERIMENTAL FIN., 1, 7 (2022) (finding evidence of pandemic-related gambling-like substitution into stock trading); Eliner, *supra* note 39, at iii (finding evidence that pandemic-related work-from-home retail investors monitored portfolios more closely and performed better).

That it is easier to trade stocks than ever before is also a function of technology enabling access to asset markets at low transaction costs on a nearly 24-7 basis on mobile devices. Indeed, retail investors are also increasingly using online brokerage apps to access trading markets.[83] Industry reports also suggest more investors are trading exclusively online.[84]

What's more, the number of monthly active users of an app is one metric for the popularity of app-based methods of accessing the market. This metric shows explosive growth over the last few years. Figure 3 reports data on monthly active users of ten popular online brokerage apps between January 2017 and August 2021.[85] As the far-right side of Figure 3 suggests, however, retail investor engagement with brokerage apps started to subside in mid-2021. Retail traders remain in the market, but their engagement has subsided as the equity market has cooled.[86]

2. *Competition and innovation*. Price competition has also helped encourage gamified investing. Trading involves transaction costs, and historically a significant one was the commission brokers charge for effecting a buy or sell order.[87] Commissions were once fixed, providing

83. *See* Lush et al., *supra* note 78, at 19 (describing a surge of investors trading via online brokers during 2020).

84. David Forman, Chief Legal Off., Fidelity Invs., Comment Letter on Digital Engagement Practices, at 2 (Oct. 21, 2021), https://www.sec.gov/comments/s7-10-21/s71021-9315880-260065.pdf [https://perma.cc/FY54-HKA3].

85. This figure was produced by retrieving from Statista the monthly active user data of ten mobile brokerage apps reported by mobile-app market-trend repository Airnow. *See* Tierney, *Replication-Investment-Games*, *supra* note 76 (reporting data collected from F. Norrestad, *Monthly Number of Active Users of Selected Leading Apps that Allow for Online Share Trading in the United States from January 2017 to July 2021, by App*, STATISTA (Jan. 27, 2022), https://www.statista.com/statistics/1259920/etrading-app-monthly-active-users-usa [https://perma.cc/DQZ6-HYQU]). The figure plots the time series of monthly active users for each app and stacks these series to show each app's active user base's contribution to the size of the combined mobile phone brokerage app market over time. July 2021 is the last period in the time series for which data is available.

86. The rise in retail trader interest might therefore be a fluke, all things considered; it remains to be seen whether this is evidence of sustained re-emergence of retail traders as a significant bloc of active market participant. *See generally* Charles M. Jones, Xiaoyan Zhang & Xinran Zhang, Retail Investors in the Pandemic (June 4, 2022) (unpublished manuscript), https://ssrn.com/abstract=4151106 [https://perma.cc/3V5L-TSBT] (examining unusual retail investor behavior during the pandemic).

87. *See, e.g.*, Charles M. Jones, A Century of Stock Market Liquidity and Trading Costs 7 (May 22, 2022) (unpublished manuscript), https://www0.gsb.columbia.edu/mygsb/faculty/research/pubfiles/4048/A%20century%20of%20Market%20Liquidity%20and%20Trading%20Cost

exchange-member brokers with monopoly profits but dragging returns and dampening trading volume.[88] But procompetition reforms in the 1970s deregulated commissions, altering Wall Street's culture and encouraging cutthroat price competition.[89] Discount brokerage firms emerged, offering cheap order execution without the other high-touch services that full-service brokers offered like financial planning, security selection, and research and information.[90] This was attractive to self-directed retail investors.[91] Together with technological innovation, competition let retail investors select how much handholding they wanted.[92]

Over time, retail-oriented discount brokers competed aggressively on commission pricing. Early leaders included Robinhood, which launched in 2013 and from the beginning offered commission-free trading in an app with slick user-interface design.[93] Most of the industry responded by offering commission-free trading in 2019.[94] Now perhaps

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s.pdf [https://perma.cc/JZY2-9WBR] (explaining how in 1962 "[t]rading 100 shares" of an average-priced NYSE stock "would result in a one-way commission of $39, or 0.975% of the money involved," and that before reforms starting in the late 1960s the historical "NYSE commission schedule" always increased linearly with number of shares traded). For examples of other costs that retail investors may bear in trading stocks, see Stanislav Dolgopolov, *Insider Trading and the Bid-Ask Spread: A Critical Evaluation of Adverse Selection in Market Making*, 33 CAP. U. L. REV. 83, 88–89 (2004) (discussing bid-ask spread); Yu-Chuan Huang, *Determinants of Trading Costs*, *in* MARKET MICROSTRUCTURE IN EMERGING AND DEVELOPED MARKETS 233, 235 (H. Kent Baker, Halil Kiymaz, Nazli Sila Alan, Recep Bildik & Robert A. Schwartz eds., 2013) (discussing implicit trading costs).

88. *See, e.g.*, 6 LOUIS LOSS, JOEL SELIGMAN & TROY PAREDES, SECURITIES REGULATION 277 (5th ed. 2016); Jones, *supra* note 87, at 7–9 (explaining that "bid-ask spreads and commissions represent an important and variable friction in trading US equities over the 20th century," and "together represented at least 1.00% of the dollar value of trade for the entire period from 1953 to 1975").

89. *See* 6 LOSS ET AL., *supra* note 88, at 289–93.

90. *See, e.g.*, Frederick Mark Gedicks, *Suitability Claims and Purchases of Unrecommended Securities Purchases: An Agency Theory of Broker-Dealer Liability*, 37 ARIZ. ST. L.J. 535, 537 n.3 (2005) (explaining that discount firms "generally provide only general financial information and order-execution services," unlike full service firms).

91. *See* Janice M. Traflet & Michael P. Coyne, *Ending a NYSE Tradition: The 1975 Unraveling of Broker's Fixed Commissions and Its Long Term Impact on Financial Advertising*, 25 ESSAYS ECON. & BUS. HIST. 131, 133 (2007).

92. *See* Caroline Bradley, *Disorderly Conduct: Day Traders and the Ideology of "Fair and Orderly Markets*,*"* 26 J. CORP. L. 63, 67 (2000).

93. *See* Patrick McKenzie, *How Discount Brokerages Make Money*, KALZUMEUS (June 26, 2019), https://www.kalzumeus.com/2019/6/26/how-brokerages-make-money [https://perma.cc/RXS5-4ZQZ]; Constine, *supra* note 54.

94. *See* Levine, *The Trades Will Be Free Now*, *supra* note 23.

most retail investors can trade without paying commissions for publicly traded equity securities.[95]

Commission pricing is important to retail investors, in part because it is highly salient. "Salience" models of choice focus on how people decide between options based on attributes that are at the forefront of their attention. As in other markets, we are imperfectly or boundedly rational in making informationally complex decisions. In deciding between competing goods and services, we are subject to cognitive processing constraints, and can't consider all attributes of a good or service. No one person has cognitive processing power to comparison shop across all attributes of a good or service, and across all consequences of our choices. So even well-informed consumers consider and decide based on fewer than all attributes and consequences. We tend to focus on a subset of highly salient attributes that are at the front of our attention—price, quality, and so on.[96] When ignored, nonsalient attributes do not bear on our decision to transact, so they don't bear on competition either.[97] The implication is a business model seen across markets and industries: "Firms exploit these propensities by designing products and contracts that make appealing attributes salient while shrouding fees and quality problems."[98]

"Free" pricing is highly salient, at least relative to substitutes.[99] But when for-profit firms offer "free" salient pricing, they typically cross-subsidize with revenue from less salient or even nonsalient sources.[100]

95. *See* Lyle Daly, *The Largest Brokerage Firms in 2022*, ASCENT (Dec. 29, 2021), https://www.fool.com/the-ascent/research/largest-stock-brokerage-firms [https://perma.cc/7CDW-KQH9] (listing popular retail brokers, including several that do not require commission for investors).

96. *See* John Beshears, James J. Choi, David Laibson & Brigitte C. Madrian, *Behavioral Household Finance*, *in* 1 HANDBOOK OF BEHAVIORAL ECONOMICS: APPLICATIONS AND FOUNDATIONS 177, 225 (B. Douglas Bernheim, Stefano DellaVigna & David Laibson eds., 2018) (collecting literature on "situations in which households have been shown to overweight salient attributes and underweight shrouded attributes"); Pedro Bordalo, Niccola Gennaioli & Andrei Shleifer, *Salience and Consumer Choice*, 121 J. POL. ECON. 803, 803 (2013); Russell Korobkin, *Bounded Rationality, Standard Form Contracts, and Unconscionability*, 70 U. CHI. L. REV. 1203, 1206 (2003).

97. Tierney, *Contract Design in the Shadow of Regulation*, *supra* note 35, at 882.

98. Beshears et al., *supra* note 96, at 225.

99. A similar dynamic has occurred in the mutual-fund market, as investors have become more sensitive to highly front-end-load fees and commissions, relative to less salient operating expenses. *See* Brad M. Barber, Terrance Odean & Lu Zheng, *Out of Sight, Out of Mind: The Effects of Expenses on Mutual Fund Flows*, 78 J. BUS. 2095, 2098 (2005).

100. *See* Tierney, *Contract Design in the Shadow of Regulation*, *supra* note 35, at 889 (noting that firms recoup "with nonsalient cost dimensions like the sale of user data"); Levine, *The Trades*

A customer that downloads a mobile phone game app for free like Candy Crush might end up paying a lot over time with hidden subscription renewals or in-app micropayments.[101] Or third parties might pay for information about the user.[102] Zero-commission brokers use a combination of similar revenue sources, such as selling clients financial advice, margin lending, net interest income, and payment for order flow ("PFOF").[103] The last of these, PFOF, has encouraged gamification in stock trading apps. Let's take a step back and consider why.

3. *Market fragmentation and intermediation*. Gamification is perhaps most directly a consequence of a business model that gives brokers strong incentives to encourage uninformed trades by retail investors. In a zero-commission world, that business model depends in large part on revenue sources like payment for order flow from third-party firms that want to buy from retail traders who want to sell (and vice versa). It is unlikely that we would see gamification absent a fragmented market structure that generated incentives to trade against uninformed retail order flow.

The modern stock market looks remarkably different from the popular imagination. Changes in technology, competition, and deregulation have dramatically changed how retail investors and more sophisticated market participants alike buy and sell stocks.[104] What happens when a retail investor tells their broker to trade?

Suppose retail investor Biff has a brokerage account and wants to buy one share of Tesla common stock. One option is for the broker to execute the order internally, selling the share of Tesla to Biff from its

Will Be Free Now, *supra* note 23 (noting that the business model is to "give people a good deal on the salient . . . thing, and . . . make your profits where they aren't looking").

101. *See* Langvardt, *supra* note 53, at 138–41, 139 n.54.

102. *See* Adam B. Thimmesch, *Transacting in Data: Tax, Privacy, and the New Economy*, 94 DENV. L. REV. 145, 154 (2016) (discussing markets in which "access to 'free' digital products . . . is not free at all, [as] . . . consumers pay for that access by relinquishing their data").

103. Markham, *supra* note 22, at 443; *see also* Shane Swanson, *The Impact of Zero Commissions on Retail Trading and Execution*, GREENWICH ASSOCS. (Feb. 25, 2020), https://www.greenwich.com/equities/impact-zero-commissions-retail-trading-and-execution [https://perma.cc/2VBW-VDRL] (discussing how zero-commission brokerages are part of the trading landscape, including explanation of revenue models like acceptance of PFOF).

104. *See* Merritt B. Fox, Lawrence R. Glosten & Gabriel V. Rauterberg, *The New Stock Market: Sense and Nonsense*, 65 DUKE L.J. 191, 191 (2015) (observing that "the way stocks are traded in the United States . . . has been totally transformed over the last twenty years"); WALTER MATTLI, DARKNESS BY DESIGN: THE HIDDEN POWER IN GLOBAL CAPITAL MARKETS 2 (2019).

own inventory like a stock market store, or matching it with the order of another of its customers who wants to sell a share of Tesla.[105] Another option is for the broker to "route" the order to stock exchanges or alternative trading systems, where the order may be matched with an order of another anonymous trader who has put in an order to sell a share of Tesla stock at a compatible price.

But many retail investors' orders don't go to exchanges, because of a compensation model driven by market fragmentation that has enabled zero-commission trading. Suppose again that Biff places an order to buy a share of Tesla stock. Biff's broker may send the order to one of many sophisticated financial firms in the business of "making" markets and providing liquidity: standing ready to buy from traders who want to sell (and vice versa). As discussed below, some of these firms are eager to take the other side of retail orders in this way and will pay brokers for the privilege of buying from retail investors who want to sell (and vice versa).

One way these firms, known in the industry as wholesalers, do so is by paying the broker for that order flow using the kickback-like PFOF arrangement.[106] This PFOF arrangement is legal if the payments are disclosed.[107]

105. *See* Fox et al., *supra* note 104, at 199. In the former case, the firm would be operating as a dealer. *See* 15 U.S.C. § 78c(a)(5)(A) (defining dealer as one "engaged in the business of buying and selling securities . . . for such person's own account"); *see also* Huang, *supra* note 7, at 1067 ("Many securities firms are brokers and dealers as those terms are defined in the Securities Exchange Act.").

106. *See* Swanson, *supra* note 103. *See generally* U.S. SEC. & EXCH. COMM'N, OFF. OF ECON. ANALYSIS, SPECIAL STUDY: PAYMENT FOR ORDER FLOW AND INTERNALIZATION IN THE OPTIONS MARKETS (2000), https://www.sec.gov/news/studies/ordpay.htm [https://perma.cc/PDD4-5J5Z] (describing PFOF arrangements); Exchange Act Rule 10b-10(d)(8), 17 C.F.R. § 240.10b-10(d)(8) (2021) (defining PFOF in connection with a disclosure requirement); HITESH MITTAL & KATHRYN BERKOW, THE GOOD, THE BAD & THE UGLY OF PAYMENT FOR ORDER FLOW (2021), https://f.hubspotusercontent10.net/hubfs/4982966/BestEx%20Research%20PFOF%2020210503.pdf [https://perma.cc/3D62-DSG2] (explaining PFOF's market structure and analyzing its impact on investors).

107. *See* Exchange Act Rule 10b-10(a)(2), 17 C.F.R. § 240.10b-10(a)(2)(i)(C) (2021) (requiring broker-dealers to disclose "whether [PFOF] is received . . . for transactions in such securities and the fact that the source and nature of the compensation received in connection with the particular transaction will be furnished upon written request of the customer"); Memorandum from the Staff of the Div. of Trading and Mkts., Sec. & Exch. Comm'n, to the Equity Mkt. Structure Advisory Comm. 7–8 (Jan. 26, 2016) [hereinafter TM Staff Mem.], https://www.sec.gov/spotlight/equity-market-structure/issues-affecting-customers-emsac-012616.pdf [https://perma.cc/JM3J-H6Y5]; *In re* Robinhood Fin., LLC, Securities Act Release No. 10906, 2020 WL 7482170, at *7–9 (Dec. 17, 2020) (enforcement action against Robinhood about misleading omissions from these disclosures over its business model).

The broker must also comply with its duty to route the customer's order to the market that will provide "best execution."[108] But because PFOF gives a broker an incentive to send order flow to that wholesaler, it can conflict with the broker's duty. That's one reason why PFOF is controversial.[109]

Wholesalers' preference for trading against retail orders gives rise to an incentive for brokers to encourage more retail orders. But why would they want to do this? The same deregulatory reforms in the 1970s that promoted price competition among brokers also created a "national market system" for stock prices.[110] There are many physical locations around the country where stocks trade. At the risk of simplifying, at any given time securities law tries to identify a single best nationwide set of prices—the lowest a seller will accept (ask) and the highest a buyer will pay (bid)—that certain orders are eligible to receive, no matter where traded.[111] These prevailing best prices update as orders come in and are executed and as market participants rush to update their own "bid" or "ask" quotes in response to new

108. As the SEC has described it, "Best execution requires that a broker-dealer endeavor to execute customer orders on the most favorable terms reasonably available in the market under the circumstances," including "price, order size, trading characteristics of the security, as well as the potential for price improvement and other factors." *In re* Robinhood Fin., LLC, Securities Act Release No. 10906, 2020 WL 7482170, at *4 (Dec. 17, 2020); *see also, e.g.*, FINRA MANUAL, *supra* note 68, § 5310(a)(1) (requiring broker-dealers to "use reasonable diligence to ascertain the best market for the subject security and buy or sell in such market so that the resultant price to the customer is as favorable as possible under prevailing market conditions"); Newton v. Merrill, Lynch, Pierce, Fenner & Smith, Inc., 135 F.3d 266, 270–72 (3d Cir. 1998) (describing the duty of best execution). *See generally* Allen Ferrell, *A Proposal for Solving the "Payment for Order Flow" Problem*, 74 S. CAL. L. REV. 1027 (2001) (suggesting that the conflicts of interest created by PFOF could be resolved if brokers could choose to provide retail investors with the national best bid or offer price at time of sale).

109. TM Staff Mem., *supra* note 107, at 7–8; *see also Who Wins on Wall Street? GameStop, Robinhood, and the State of Retail Investing: Hearing Before the S. Comm. on Banking, Hous. & Urb. Affs.*, 117th Cong. 13 (2021) [hereinafter Fletcher Statement] (statement of Gina-Gail Fletcher, Professor of L., Duke Univ.) (urging Congress to consider measures to protect retail investors from self-interested broker-dealers).

110. *See* Market Data Infrastructure, Exchange Act Release No. 90,610, 2020 WL 7413527, at *570–77 (Dec. 9, 2020). For a Hayekian criticism of the national market system that builds on those '70s reforms, see Hester Peirce, *Rethinking the National Market System*, 43 J. CORP. L. 649, 653–55, 660–61 (2018).

111. *See* 17 C.F.R. § 242.600(43) (2021) (describing the "national best bid and national best offer" or NBBO); *cf.* Onnig H. Dombalagian, *Best Execution: An Impossible Dream?*, *in* CAMBRIDGE HANDBOOK OF INVESTOR PROTECTION 7–8 (Arthur B. Laby ed., 2022) (discussing the relationship between the NBBO, best execution, and the emergence of order routing practices).

information.[112] Updates to the national best bid and offer prices occur continuously, reflecting conditions prevailing in trading venues around the country that may be physically very far apart. But those prices don't update right away, especially across wide distances. Signals can be sent between the west and east coasts quickly but not immediately. Delay can be potentially economically valuable: prices on one trading venue may become "stale" if new information has changed prices on another, faraway venue but hasn't yet arrived locally.[113] As detailed in the popular book FLASH BOYS, this has created incentives for certain firms to make investments in speed to earn fractions of pennies by identifying and trading against stale quotes faster than they can be updated.[114]

Trading against retail order flow helps wholesalers avoid a problem with this situation that economists call "adverse selection."[115] The business model is predicated on capturing the bid-ask spread. Firms in this business update prices continuously, hoping to earn a small profit from buying at an average bid that is lower than the average ask at which they sell. The business model suffers if there is adverse selection—if unknown traders on the other side have better information about (1) their own intent or (2) asset pricing. Suppose the wholesaler buys low from a trader who is selling, hoping to resell at a higher price. But suppose first that the other trader keeps selling (own intent), or the seller knew some other information about the world that continues to push the price down (asset pricing). The price keeps going down, inhibiting the wholesaler from a profitable exit from the trade.

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112. Eric Budish, Peter Crampton & John Shim, *The High-Frequency Trading Arms Race: Frequent Batch Auctions as a Market Design Response*, 130 Q.J. ECON. 1547, 1553 (2015).

113. Donald MacKenzie, *Material Signals: A Historical Sociology of High-Frequency Trading*, 123 AM. J. SOC. 1635, 1645 (2018).

114. Tom C.W. Lin, *Reasonable Investor(s)*, 95 B.U. L. REV. 461, 489–91 (2015). *See generally* MICHAEL LEWIS, FLASH BOYS (2014) (detailing how delay times have incentivized firms to make investments in speed); DONALD MACKENZIE, TRADING AT THE SPEED OF LIGHT: HOW ULTRAFAST ALGORITHMS ARE TRANSFORMING FINANCIAL MARKETS (2021) (describing the mechanics of ultrafast trading algorithms); MATTLI, *supra* note 104 (outlining markets' transformation to automation and their increasing complexity and fragmentation).

115. *See* Robert H. Battalio & Tim Loughran, *Does Payment for Order Flow to Your Broker Help or Hurt You?*, 80 J. BUS. ETHICS 37, 38, 40 (2007) (explaining that PFOF addresses the "real world . . . adverse selection risk" to market makers who "trad[e] with people who know more than they do," and illustrating with an example); MAUREEN O'HARA, MARKET MICROSTRUCTURE THEORY 190 (1995) (discussing efforts to "attract uninformed order flow," such as by "paying retail brokers for their order flow," as solutions to the adverse selection problem).

For a wholesaler, the solution is to buy from retail traders. In placing trades with their brokers, retail traders typically buy and sell in small enough quantities—a few shares, maybe a few more—that they won't have this kind of price impact. In addition, retail trades tend to be informationally noisy. To extend the example above, suppose retail investor Biff buys a share of Tesla because he thinks its CEO is super cool,[116] not because of any information about whether the price is below Biff's private valuation for Tesla stock so as to make a good purchase. A wholesaler might prefer to sell to Biff rather than against other kinds of more sophisticated traders, like a mutual fund. Mutual funds that place a buy order for a share might be buying many *other* shares, raising the price and reducing the likelihood of a profitable exit for a wholesaler selling Tesla shares. And Biff is unlikely to know better information than the wholesaler about the company's fundamentals, at least not information that insider trading law allows him to lawfully trade on.[117] The wholesaler steps in to take the other side of Biff's trade (i.e., selling when he is buying).

Wholesalers have an incentive this way to buy from retail investors, because their order flow is informationally "noisy": small enough not to impact the price and uncorrelated with information that is relevant to the future price or payoff of the stock.[118] By paying brokers for informationally noisy retail order flow, wholesalers reduce the risk of adverse selection. That's why "nearly all market orders in listed securities are routed to wholesale dealers rather than an exchange."[119] Recent research in financial economics finds that upon offering zero-commission trading and switching to a PFOF-based revenue model, brokers gain market share and send more customer trades to wholesalers; it's unclear whether customers realize narrower bid-ask spreads, but in general the evidence confirms that wholesalers pay for order flow because it is relatively uninformed.[120]

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116. *Cf.* Esha Dey, *Tesla's Loyal Retail Fan Club Set To Rev Up Stock's Recovery*, BLOOMBERG (May 31, 2022, 4:08 PM), https://www.bloomberg.com/news/articles/2022-05-31/tesla-s-loyal-retail-fan-club-set-to-rev-up-stock-s-recovery [https://perma.cc/DPG4-2FZP] (describing Tesla's "loyal following" among a retail-investor "army of [CEO Elon] Musk-fans" whose buying has been "steadfast even as the company's troubles have mounted").

117. *See infra* notes 140–141 and accompanying text.

118. TM Staff Mem., *supra* note 106, at 6. On why retail order flow is noisy or uncorrelated, see *infra* notes 140–148 and accompanying text.

119. Dombalagian, *supra* note 111, at 7.

120. *See generally* Pankaj K. Jain, Suchismita Mishra, Shawn O'Donoghue & Le Zhao, Trading Volume Shares and Market Quality: Pre- and Post-Zero Commissions (Apr. 2022)

Fragmentation may well promote liquidity and price discovery, but market quality is not the only measure in securities law. Informationally noisy order flow is so profitable to wholesalers that it can subsidize zero-commission trading and create a stream of nonsalient broker revenue. This plausibly reduces the costs of *trading*. Why does securities law allow retail investors to be confused into thinking that noisy trading is the same as investing?

II. DILEMMAS OF GAMIFICATION IN RETAIL INVESTMENT

Drawing on financial economics, Part II examines theoretical and empirical models of retail investor decisionmaking. It then situates those models within securities law theory.

A. Theoretical and Empirical Models of Retail Trader Decisionmaking

Concerns about "gamification" reflect a longstanding puzzle about retail investors. Because retail investors on average won't beat the market net of trading costs, financial theory (and perhaps most investment advisers) would encourage nonprofessional investors to allocate assets to a risk-adjusted portfolio that minimizes transaction costs associated with trading.[121] Yet many people pick stocks and trade

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(unpublished manuscript), https://ssrn.com/abstract=3741470 [https://perma.cc/3U9L-PXSJ] (describing effects of zero-commission trading on retail orders); Samuel Adams, Connor Kasten & Eric K. Kelley, Do Investors Save When Market Makers Pay? Retail Execution Costs Under Payment for Order Flow Models (Nov. 2021) (unpublished manuscript), https://ssrn.com/abstract=3975667 [https://perma.cc/6VBP-7FR2] (comparing off-exchange retail investor execution costs with on-exchange costs and finding that PFOF likely does not harm retail investors); SVIATOSLAV ROSOV, CFA INST., PAYMENT FOR ORDER FLOW IN THE UNITED KINGDOM: INTERNALISATION, RETAIL TRADING, TRADE-THROUGH PROTECTION, AND IMPLICATIONS FOR MARKET STRUCTURE (2016), https://www.cfainstitute.org/-/media/documents/article/position-paper/payment-for-order-flow-united-kingdom.pdf [https://perma.cc/6C8W-CDCU] (examining the 2012 clarification of the U.K.'s rule regarding illegality of PFOF and finding that the clarification likely increased the percentage of retail-sized trades executed at the best quoted prices).

121. *See, e.g.*, BURTON G. MALKIEL, A RANDOM WALK DOWN WALL STREET: THE TIME-TESTED STRATEGY FOR SUCCESSFUL INVESTING 17–19, 291–300 (10th ed. 2012) (reflecting on forty years of evidence supporting the first edition's "simple" claim that retail investors "would be far better off buying and holding an index fund than attempting to buy and sell individual securities or actively managed mutual funds," including evidence that most "professional portfolio managers" couldn't beat the "unmanaged S&P 500 Index"); Brad M. Barber & Terrance Odean, *The Behavior of Individual Investors*, *in* 2 HANDBOOK OF THE ECONOMICS OF FINANCE 1533, 1547 (George M. Constantinides, Milton Harris & Rene M. Stulz eds., 2013) (concluding from the "empirical evidence" on long-term retail-investor returns that, "in aggregate," retail investors "would be better off had they invested in a low-cost index fund"); *see also, e.g.*, Max M.

actively—even though the odds are stacked against them, and for reasons unrelated to liquidity, tax, or rebalancing needs.[122] They do so to their detriment.[123] Yet excessive and noisy active trading by retail investors is a persistent feature of securities markets.

Securities law often overlooks that there is no single explanation for the excessive trading phenomenon.[124] As this subpart explains, across active-trading retail investors, reasons for trading differ.[125] Some people engage in losing trades rationally, because they are "consuming" something; they trade for entertainment, sensation-seeking, aspiration for riches, or expressive reasons. Others trade because they have been nudged or duped into doing so, which is the concern about gamification and related digital engagement practices.

Calls to regulate gamification often elide these distinctions, with potentially undesirable implications for securities regulation.[126] Securities law has traditionally not prohibited people from trading for entertainment or risk preferences and has instead tried to protect them from being duped, defrauded, or manipulated into trading when they

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Schanzenbach & Robert H. Sitkoff, *The Prudent Investor Rule and Market Risk: An Empirical Analysis*, 14 J. EMPIRICAL LEGAL STUD. 129, 135 & n.9 (2017) (discussing the gradual replacement of the risk-averse "prudent man rule" of trust law with the "*prudent investor rule*," which instead promoted "portfolio-as-a-whole investing" and "risk management consistent with modern portfolio theory"); UNIF. PRUDENT INVESTOR ACT §§ 2–3 & cmt. (NAT'L CONF. OF COMM'RS ON UNIF. STATE L. 1994) (supposing a model of a reasonable investor who allocates capital in the shadow of traditional finance's normative prescriptions, buying and holding a portfolio allocated to assets that are suitable for the investor and that produce an optimal risk-return tradeoff unless some other allocation would be in the best interest of the beneficiary).

122. *See, e.g.*, Mahoney, *supra* note 73, at 717; Brad M. Barber, Yi-Tsung Lee, Yu-Jane Liu & Terrance Odean, *The Cross-Section of Speculator Skill: Evidence from Day Trading*, 18 J. FIN. MKTS. 1, 2 (2014).

123. *See, e.g.*, Brad M. Barber, Yi-Tsung Lee, Yu-Jane Liu & Terrance Odean, *Just How Much Do Individual Investors Lose by Trading?*, 22 REV. FIN. STUD. 609, 622 (2009); Barber & Odean, *Trading Is Hazardous to Your Health*, *supra* note 5, at 799–800.

124. For a notable exception, see Lin, *supra* note 114, at 468–71 (discussing a range of behavioral and cognitive factors contributing to excessive and uninformed trading by "irrational" investors).

125. *See, e.g.*, Henrik Cronqvist & Danling Jiang, *Individual Investors*, *in* FINANCIAL BEHAVIOR: PLAYERS, SERVICES, PRODUCTS, AND MARKETS 45 (H. Kent Baker, Greg Filbeck & Victor Ricciardi eds., 2017).

126. *Cf., e.g.*, Lisa M. Fairfax, *The Securities Law Implications of Financial Illiteracy*, 104 VA. L. REV. 1065, 1068–69 (2018) (arguing that "the normative foundation of the federal securities law regime" is "flawed" to the extent that securities law overlooks the wrongness of the premise that retail investors are financially literate).

otherwise would not.[127] But practices in securities markets can still be objectionable absent fraud. This subpart explores the reasons why people trade, and the extent to which those reasons are defensible, by reviewing the empirical literature on two different models of retail investor behavior. One model looks at active, uninformed trading as a kind of entertainment or consumption trading. Another model looks at active, uninformed trading as a product of efforts by intermediaries to make certain securities more salient or prominent in investors' attention. In doing so, this subpart illustrates why gamification might seek to encourage active trading.

1. *Rational trading as consumption*. One answer to the question of excessive active trading by retail investors is that it is not excessive by the traders' own lights. Some people indeed trade rationally because they are trying to satisfy nonpecuniary preferences for entertainment or consumption. Researchers studying clients of a German discount broker identified several plausible reasons for entertainment trading, including "recreation, sensation seeking, and an aspiration for riches."[128] Some active traders thus appear to treat it as a substitute for gambling.[129] As other researchers have found, some active traders may want to feel the wind through their hair.[130] Still others may have a preference for high-volatility lottery-like assets when trying to grow their wealth.

In addition, a new body of scholarship has focused on expressive or group-affinity motives for coordinating with likeminded traders

127. *See* Lynn A. Stout, *Why the Law Hates Speculators: Regulation and Private Ordering in the Market for OTC Derivatives*, 48 DUKE L.J. 701, 713 (1999) [hereinafter Stout, *Why the Law Hates Speculators*].

128. Daniel Dorn & Paul Sengmueller, *Trading as Entertainment?*, 55 MGMT. SCI. 591, 593 (2009).

129. *See id.* at 592 (linking gambling and portfolio turnover, a measure of trading frequency); *see also, e.g.*, Michal Strahilevitz, *A Closer Look at the Causes and Consequences of Frequent Stock Trading*, *in* FINANCIAL BEHAVIOR: PLAYERS, SERVICES, PRODUCTS, AND MARKETS, *supra* note 125, at 209, 212 (discussing how investing is for many investors a gambling substitute); Łukasz Markiewicz & Elke U. Weber, *DOSPERT's Gambling Risk-Taking Propensity Scale Predicts Excessive Stock Trading*, 14 J. BEHAV. FIN. 65, 66 (2013) (discussing the connection between gambling, risk-taking propensity, and trading).

130. *See, e.g.*, Mark Grinblatt & Matti Keloharju, *Sensation Seeking, Overconfidence, and Trading Activity*, 64 J. FIN. 549, 551–52 (2009) (linking excessive trading to propensity to engage in other sensation-seeking activities like speeding).

online—though empirical evidence on this point is mixed.[131] Lower costs of coordinating online have made it easier for retail traders to engage in herding or momentum trades.[132] These trades may also have expressive or affective dimensions.[133] Some traders participating in these strategies report being motivated by concerns about wealth inequality and disparate opportunities for different kinds of traders to earn returns in capital markets.[134] Nonpecuniary reasons for trading may make online trading appear more like a "game."[135]

131. *See, e.g.*, John P. Anderson, Jeremy Kidd, & George A. Mocsary, *Social Media, Securities Markets, and the Phenomenon of Expressive Trading*, 25 LEWIS & CLARK L. REV. 1223, 1224 (2022) ("There is evidence that at least some of the recent [social-media-driven] retail trading in GameStop and other securities is not only motivated by the desire to make a profit, but rather *to make a point*."). Financial economists, by contrast, have concluded that most retail traders of GameStop they examined were not doing so for affective reasons—protesting Wall Street—given trading that reflected prior patterns of risky trading behavior and "their desire for gambling." Tim Hasso, Daniel Müller, Matthias Pelster & Sonja Warkulat, *Who Participated in the GameStop Frenzy? Evidence from Brokerage Accounts*, 45 FIN. RSCH. LETTERS, no. 102140, 2022, at 1, 9.

132. In their simplest, naïve versions, momentum, trend-following, or herding strategies are those that encourage buying stocks that have recently had positive returns and selling those that have not. *See, e.g.*, MARKO KOLANOVIC & ZHEN WEI, J.P. MORGAN, MOMENTUM STRATEGIES ACROSS ASSET CLASSES: RISK FACTOR APPROACH TO TREND FOLLOWING 9 (2015), https://www.cmegroup.com/education/files/jpm-momentum-strategies-2015-04-15-1681565.pdf [https://perma.cc/BF8C-BVBE]. On investors' herding behavior, see generally David Hirshleifer & Siew Hong Teoh, *Herd Behaviour and Cascading in Capital Markets: A Review and Synthesis*, 9 EUR. FIN. MGMT. 25 (2003) (discussing incentives for herding behavior, as well as incentives for parties to shield themselves from or use others' herding to their advantage). When mediated through social media, these strategies are popular for other than-expressive reasons because they let people get in early, coordinate, and help construct demand for the trade. In doing so, they offer a plausible leg up over the market to retail traders who typically lack any information advantage over other (typically institutional) traders. *Cf. infra* note 140 and accompanying text (discussing insider trading). Thanks to Brian L. Frye for suggesting that this might make trader flow a form of "new fundamentals" presenting potential career risks to institutional traders who do not account for it. *See also, e.g.*, Sue S. Guan, *Meme Investors and Retail Risk*, 63 B.C. L. REV. (forthcoming 2022) (manuscript at 1), https://ssrn.com/abstract=4002708 [https://perma.cc/P9ED-48J9] (discussing the risk associated with coordinated retail trading); Terrence Hendershott & Albert J. Menkveld, *Price Pressures*, 114 J. FIN. ECON. 405, 421 (2014) (discussing "inventory risk" for dealers in connection with retail trades of this kind).

133. *See* Anderson et al., *supra* note 131, at 1224.

134. *See* Jonathan R. Macey, *Securities Regulation and Class Warfare*, 2021 COLUM. BUS. L. REV. 796, 804.

135. Aegis J. Frumento, *[In]Securities: Mind Games*, BROKE & BROKER: GUEST BLOG (May 7, 2021), http://www.brokeandbroker.com/5835/insecurities-aegis-frumento-gamification [https://perma.cc/Y4PQ-H9H4]. As with other games, it's possible to pursue expressive, performative, and "gameful" ends that don't involve making money—like engaging in meme stock herding trades. *See* Levine, *Playing the Game*, *supra* note 56 (observing that "impressing people with your

Nonpecuniary benefits can come at pecuniary cost. If traders lose more than they make up for in other benefits, we should expect them to stop trading. Research on "trading to learn" suggests that losing traders are more likely to stop trading, but that losing traders persist as a group.[136] The point is not merely academic, as Robinhood's cofounder has indicated that firm clients traded to learn—and suggested that performance improved with learning.[137] The persistent presence of "rational" losing retail traders in markets is puzzling, but securities law has so far shown little ambition to address it.[138]

2. *Attention-induced noise trading*. Another model of retail investor behavior focuses on imperfect rationality and informational asymmetry in shaping human behavior. Bounded rationality is a limit on all kinds of human decisionmaking.[139] And securities law theory recognizes that bounded rationality leads retail traders to act noisily—in ways uncorrelated with the market.

Retail investors routinely but incorrectly believe that knowledge of already public information about a company gives them an informational edge.[140] Suppose a company issues an announcement,

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wit and boldness" on social media is a motivation). On "gameful" ends, see Deterding, *supra* note 33, at 34–47.

136. *See* Brad M. Barber, Yi-Tsung Lee, Yu-Jane Liu, Terrance Odean & Ke Zhang, *Learning, Fast or Slow*, 10 REV. ASSET PRICING STUD. 61, 65 (2020).

137. *See E736: Robinhood Uses Free Stock Trading To Open Access to the Entire American Financial System; Co-Founder Vlad Tenev Talks Mission, Building a Billion Dollar Startup & the Business of Millennial Money Management*, THIS WEEK IN STARTUPS, at 28:30 (May 30, 2017), https://thisweekinstartups.com/vlad-tenev-robinhood [https://perma.cc/GE5W-X8J6].

138. I plan to consider in future work the social welfare and other implications of rational consumption trading, including the extent to which it's desirable to have markets that act as substitutes for gambling but are regulated in very different ways. Whether we want markets to accomplish something more than deference to the preferences of speculators is ultimately a question of the public interest. Although a preliminary normative hot take is that rational consumption trading is bad because it encourages gambling, the bottom-line assessment on that question may depend on how much we care about the second order effects on how markets allocate capital to socially valuable uses (whatever criteria we have for assessing that). *Cf. infra* notes 190, 255 and accompanying text.

139. *See* Roger P. Alford & James Fallows Tierney, *Moral Reasoning in International Law*, *in* THE ROLE OF ETHICS IN INTERNATIONAL LAW 11, 34 (Donald Earl Childress, III ed., 2009).

140. *See, e.g.*, Charles M. Jones, Donghui Shi, Xiaoyan Zhang & Xinran Zhang, Understanding Retail Investors: Evidence from China 34 (June 2022) (unpublished manuscript), https://ssrn.com/abstract=3628809 [https://perma.cc/U97P-YG2Z] (studying Chinese retail investors, finding heterogeneity in ability to "predict and process public information," and noting that ability is correlated with account size); *cf.* Henry L. Friedman & Zitong Zeng, Retail Investor Trading and Market Reactions to Earning Announcements 3 (July 1, 2021) (unpublished

and sophisticated, informed traders buy or sell on this information, promptly impounding it into the price of a security as the efficient market hypothesis proposes. The next day after the market reopens, the price has changed to account for this information. A retail investor comes along later that day and decides to buy because the information improves the company's prospects—and thus, she believes, the value of its stock. The retail investor didn't have superior private information; the announcement had already been reflected in the security's price.[141] When ordinary people buy and sell securities, it is usually for reasons uncorrelated with information that is relevant to the economic payoff of the trade (say fundamental value of the underlying asset, or the future price path).[142] When we don't have superior private information, our transactions can be thought of as uninformed, uncorrelated, or noisy.[143]

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manuscript), https://ssrn.com/abstract=3817979 [https://perma.cc/ZA9R-7Y32] (finding that the presence of retail investors "seem[s] to improve the price response to public earnings information for firms whose prices may be expected to be less efficient ex ante," and interpreting this as evidence that retail investors "provid[e] liquidity to sophisticated traders whose activity impounds information into prices" rather than earn arbitrage profits themselves). Meanwhile, it's usually illegal for them to trade when they *do* have an informational edge. *See* Karen E. Woody, *The New Insider Trading*, 52 ARIZ. ST. L.J. 594, 600–14 (2020) (explaining that insider trading law prohibits people in most circumstances from personally benefiting from trading on material nonpublic information when they have a duty of trust and confidence to the source of the information).

141. *See* Robert A. Prentice, *The Internet and Its Challenges for the Future of Insider Trading Regulation*, 12 HARV. J.L. & TECH. 263, 277 (1999) (noting that under the semi-strong version of the efficient capital markets hypothesis, there is "no benefit . . . to be gained from trading on . . . formerly secret information" once the "stock price has adjusted to reflect the new information").

142. *See, e.g.*, Zohar Goshen & Gideon Parchomovsky, *The Essential Role of Securities Regulation*, 55 DUKE L.J. 711, 714–15 (2006); WAI MUN FONG, THE LOTTERY MINDSET: INVESTORS, GAMBLING AND THE STOCK MARKET 2 (2014).

143. Noise has an important role in financial markets. Some level of noise, in the sense of mistaken or heterogeneous beliefs about the quality of information relevant to the payoff from an economic asset, is necessary for liquidity to exist. Otherwise, there will not be the kind of difference of opinion needed for buyers and sellers of securities to transact on beliefs about their private information, knowing that others likewise have analogous beliefs informing their own trade. *See, e.g.*, Fischer Black, *Noise*, 41 J. FIN. 528, 530 (1986) ("If there is no noise trading, there will be very little trading in individual assets. People will hold individual assets, directly or indirectly, but they will rarely trade them."). Lynn Stout offered a "heterogeneous expectations model of speculation posit[ing] that differences in traders' beliefs—that is, subjective bullishness and bearishness—can be a catalyst for trading." Lynn A. Stout, *Irrational Expectations*, 3 LEGAL THEORY 227, 228 (1997); *see also* Stout, *Why the Law Hates Speculators*, *supra* note 127, at 741–51 (outlining heterogeneous expectations mode of speculation); DANIEL KAHNEMAN, OLIVIER SIBONY & CASS R. SUNSTEIN, NOISE: A FLAW IN HUMAN JUDGMENT 3–7 (2021) (describing noisiness as highly variable, widely scattered data in a variety of contexts). Recent literature on sociology in financial markets may also be instructive in this regard. Jens Beckert argues that, to decide about future states of the world under incomplete information and cognitive power, people

Retail investors are typically uninformed in this way, so their orders are informationally "noisy." It usually isn't cost-effective for retail investors to engage in fundamental analysis or research to learn private information that can be traded on for profit. As the volume of noisy order flow from retail investors increases, it creates liquidity because other people want to trade against them.[144] Noise is defined in distinction with information. Because their orders are typically uninformed in this way, retail traders have become nearly synonymous with "noise."

"Noise traders," then, are those who trade for reasons other than superior private information about a security's payoff.[145] Financial economics models of trader behavior distinguishing between informed and noise traders began emerging in the 1980s and 1990s.[146] These noise trader models have influenced securities regulation scholarship in the behavioral law and economics tradition.[147] This literature has touched on issues such as how law should conceive of and respond to the presence of uninformed and noisy retail order flow in capital markets. Noise trader models continue to be influential in securities law theory, with noisy retail being a key category of stock market participant.[148] Whatever the origin of these traders' propensity to trade based on noise, "[o]vertrading phenomena are . . . likely to be exacerbated by individual investors' operating through financial intermediaries, who have generally a specific economic incentive to encourage trading."[149]

One of the noisy reasons people decide to buy or sell securities is that they are susceptible to the presentation of information. The decision to buy, sell, or hold a risky asset is partly about the expected

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rely on "fictional expectations" that bring about future states of the world. JENS BECKERT, IMAGINED FUTURES: FICTIONAL EXPECTATIONS AND CAPITALIST DYNAMICS 9 (2016).

144. Black, *supra* note 143, at 532 ("[I]t will become more profitable for people to trade on information, but only because the prices have more noise in them."); *see supra* Part I.C.3.

145. *See* Alex Preda, *The Ethnography of Noise in Electronic Finance, in* NOISE: LIVING AND TRADING IN ELECTRONIC FINANCE 1, 1 (2017).

146. *See, e.g.*, Sanford J. Grossman & Joseph E. Stiglitz, *On the Impossibility of Informationally Efficient Markets*, 70 AM. ECON. REV. 393, 393 (1980) (describing a model that compares informed and uninformed traders).

147. *See, e.g.*, Robert Prentice, *Whither Securities Regulation? Some Behavioral Observations Regarding Proposals for Its Future*, 51 DUKE L.J. 1397, 1409–12 (2002) (summarizing other academics' treatment of noise in undermining efficiency in the market).

148. *See* Lin, *supra* note 114, at 466–67; Goshen & Parchomovsky, *supra* note 142, at 714–15.

149. Alessio M. Pacces, *Financial Intermediation in the Securities Markets Law and Economics of Conduct of Business Regulation*, 20 INT'L REV. L. & ECON. 479, 494 (2000). On plausible sources of that propensity, see *supra* note 143.

outcome of different states of the world. It's costly to calculate these expected outcomes and weigh them against other attributes, and ordinary people don't make asset trading decisions on that basis. Rather, retail investors often act like ordinary consumers in other markets; as discussed above, we focus on attributes that are most salient among the choice set.[150]

The concern for regulators and scholars is that gamification induces noise trading in particular assets that are salient. Empirical research in financial economics has found evidence of this kind of attention-induced noise trading. One study of days when Robinhood's app experienced outages have found that indicia of market quality are higher when Robinhood users exit the market, suggesting that these users are uninformed noise traders whose ownership of stocks is unrelated to future returns.[151] Other studies have found that retail investors trade disproportionately in highly salient stocks, like those that enter the "leaderboards"—like the lists of stocks held most by clients, or lists of stocks that have gained or lost the highest percentage that day.[152] Yet another study found that widespread access to raw financial data may lead to higher trade volume and less predictable future returns, an indicator that trades are noisy or uninformed.[153] Taken together, this research suggests a significant role of trading app features in calling trader attention to stock, activating preferences for trading in salient securities, and inducing noise trading (to the extent that salience may not be payoff-relevant information).

Recognizing that gamification and app design can intervene in decisionmaking processes to encourage outcomes the person otherwise

150. *See supra* notes 96–98 and accompanying text.

151. *See* Gregory W. Eaton, T. Clifton Green, Brian S. Roseman & Yanbin Wu, Zero-Commission Individual Investors, High Frequency Traders, and Stock Market Quality 4 (Apr. 2021) (unpublished manuscript); *see also* Friedman & Zeng, *supra* note 140, at 2 (reporting that "Robinhood outages are associated with less retail trading activity" and "that retail frictions are associated with weaker price responses to earnings announcements").

152. *See* Roberto Stein, The Top 5 Predictable Effects of New Entries in Robinhood's "100 Most Popular" List 4 (Sept. 17, 2020) (unpublished manuscript), https://ssrn.com/abstract=3694588 [https://perma.cc/3Z64-2T4C]; Brad M. Barber, Xing Huang, Terrance Odean & Christopher Schwarz, *Attention-Induced Trading and Returns: Evidence from Robinhood Users*, J. FIN. (forthcoming 2022) (manuscript at 2), https://ssrn.com/abstract=3715077 [https://perma.cc/BJU4-K529].

153. Taha Havakhor, Mohammad S. Rahman, Tianjian Zhang & Chenqi Zhu, Tech-Enabled Financial Data Access, Retail Investors, and Gambling-like Behavior in the Stock Market: Evidence from a Natural Experiment 20 (Apr. 26, 2021) (unpublished manuscript), https://ssrn.com/abstract=3434812 [https://perma.cc/7L34-BLWS].

would not have chosen—trading in this security at this time—does not help us completely define the scope of objectionable attention-induced noise trading. In securities markets it can be hard to discern what people would have chosen "otherwise." Empirical strategies that rely on observed trading behavior are particularly hard because trading preferences are endogenous. And as Michael Guttentag has pointed out, a full assessment of the allocation of economic surplus can't be limited to behavioral exploitation in simple cases where people are duped into transactions they wouldn't have entered; it also bears on cases where behavioral exploitation leads them to enter into a transaction that disfavorably reallocates economic surplus to the counterparty, even where they have not exceeded their reservation price.[154]

Broader literatures on the effect of user-interface design practices on consumer behavior may also help delineate the boundaries of how gamification and other engagement practices generate attention-induced noise trading and distinguish other bases for objection. Suppose a brokerage app offers a subscription to some information or news service for a monthly fee and hides an option to cancel within layers of settings menu options. That might be objectionable for the same reason that "dark patterns" are in other areas—such as because they put up "hurdles to performing a behavior that's bad for the company," like canceling a subscription that has a monthly cost nonsalient to the customer but is valuable to the company.[155] But that basis for objection is very different from suggesting that gamification features in mobile apps are eliciting noisy trading behavior. In considering interventions, regulators should remain attuned to the limits of what the more general academic research about user-interface and user-experience design can tell us about how apps encourage trading.[156]

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154. Guttentag, *supra* note 35, at 611–16, 659.

155. Eric Ravenscraft, *How To Spot—and Avoid—Dark Patterns on the Web*, WIRED (July 29, 2020, 9:00 AM), https://www.wired.com/story/how-to-spot-avoid-dark-patterns [https://perma.cc/8MMP-Q57H] (noting that this kind of design requires people to put in cognitive or other effort "to make a task harder because, from the company's perspective, it shouldn't be easy" (emphasis deleted)).

156. *Cf.* Rachel Geoffroy & Heemin Lee, *The Role of Academic Research in SEC Rulemaking: Evidence from* Business Roundtable v. SEC, 59 J. ACCT. RSCH. 375, 376 (2021) (discussing the role and benefits of academic research in SEC rulemaking broadly).

B. Situating Gamification Within Securities Law Theory

These models of investor behavior reflect that some people have preferences for speculative trading, while others are essentially duped into trading speculatively. Duping, not speculation, has traditionally been the concern of securities law. This subpart introduces several of the underlying theoretical and normative policies of the securities laws and assesses how these bear on regulatory interventions toward gamification.

1. *Agency costs in brokerage and investor protection*. Retail traders must access markets through brokers, who act as agents. As in other principal-agent relationships, brokers' pursuit of their own rational self-interest may conflict with the client's interests.[157] Agents have different incentives than principals. So where it's costly to monitor or build trust in the relationship, agents can act in ways that aren't in the principal's interests. One such misaligned incentive arises from brokerage compensation. The receipt of transaction-based compensation is a hallmark of brokerage.[158] This kind of compensation gives rise to an incentive to encourage more trading—perhaps even more than clients want.[159]

This kind of agency cost problem is intimately familiar to scholars of capital markets.[160] And so too to regulators: the SEC's guidance on economic analysis in rulemakings, for instance, identifies "principal-

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157. *See* Deborah A. DeMott, *Rogue Brokers and the Limits of Agency Law*, *in* CAMBRIDGE HANDBOOK OF INVESTOR PROTECTION (Arthur B. Laby ed., forthcoming 2022) (manuscript at 7) ("Notwithstanding a client's right of control as principal in an agency relationship, the risk of betrayal by the agent is always present, as it is in all fiduciary relationships.").

158. *See, e.g.*, *In re* James S. Tagliaferri, Exchange Act Release No. 80047, 2017 WL 632134, at *4 (Feb. 15, 2017) (describing receipt of "[t]ransaction-based compensation, or commissions" as "one of the hallmarks of being a broker-dealer" (alteration in original) (quoting SEC v. Helms, No. A-13-CV-01036, 2015 WL 6438872, at *3 (W.D. Tex. Oct. 20, 2015))).

159. *See, e.g.*, Benjamin P. Edwards, *Conflicts & Capital Allocation*, 78 OHIO ST. L.J. 181, 184 (2017) ("Some products offer the advisors larger commissions, and advisors have an incentive to steer clients toward products that maximize advisor commissions.").

160. *See, e.g.*, Pacces, *supra* note 149, at 481, 483. *See generally* JEAN-JACQUES LAFFONT & DAVID MARTIMORT, THE THEORY OF INCENTIVES I: THE PRINCIPAL-AGENT MODEL (2001) (offering synthesis of the literature on incentives when a principal delegates to an agent). For other examples from the literature using an agency cost model for the brokerage industry, see James Fallows Tierney & Benjamin P. Edwards, Secretly Recidivist Stockbrokers: An Error Cost Theory of BrokerCheck Expungement 2–6 (Aug. 10, 2022) (unpublished manuscript) (on file with the author); DeMott, *supra* note 157, at 2; Benjamin P. Edwards, *The Professional Prospectus: A Call for Effective Professional Disclosure*, 74 WASH. & LEE L. REV. 1457, 1469 (2017).

agent problems (such as economic conflicts of interest), and asymmetric information" as justifications for regulatory action.[161] In fact, concerns about the conflict of interest in brokerage have been a mainstay of broker-dealer regulation for nearly a century.[162]

This model is premised on provision of advice consistent with professional duties of care. As a result, securities law has traditionally distinguished between self-directed investors and those advised by brokers.[163] Even more recent disputes over sales practices rules like Regulation Best Interest ("Reg BI") reflect tradeoffs between competing visions of what securities regulation should do about this agency cost.[164] The SEC under the Trump administration's chair, Jay Clayton, adopted in that regulation a model that largely preserved the most significant source of agency costs for retail brokers, limiting most of the duties in cases of self-directed trades not involving a "recommendation."[165]

But the basic problem of shaping consumer behavior for private profit is not new.[166] One traditional worry of broker-dealer regulation was the boiler room, memorialized in the Leonardo di Caprio film THE WOLF OF WALL STREET: a call center in which high-pressure salesmen compete for high commissions by pitching speculative securities to strangers.[167] The boiler room has been a longtime target of securities regulators and has largely gone away in its silver-screen form.

161. Memorandum from Div. of Risk, Strategy & Fin. Innovation & Off. of Gen. Couns., Sec. & Exch. Comm'n, to Staff of the Rulewriting Divs. & Offs., Sec. & Exch. Comm'n 5 (Mar. 16, 2012) [hereinafter SEC Staff Memorandum], https://www.sec.gov/divisions/riskfin/rsfi_guidance_econ_analy_secrulemaking.pdf [https://perma.cc/YC4V-R7PX].

162. *See, e.g.*, Allen Ferrell & John D. Morley, *The Regulation of Intermediaries*, *in* SECURITIES MARKET ISSUES FOR THE 21ST CENTURY 311, 370 (Merritt B. Fox, Lawrence R. Glosten, Edward F. Greene & Menesh S. Patel eds., 2018); SEC. & EXCH. COMM'N, REPORT OF SPECIAL STUDY OF SECURITIES MARKETS, No. H. Doc. No. 95, 88th Cong., 1st Sess. Ch. 3, 254 (1964).

163. *See*, *e.g.*, Christine Lazaro, *The Future of Financial Advice: Eliminating the False Distinction Between Brokers and Investment Advisers*, 87 ST. JOHN'S L. REV. 381, 398–99 (2013).

164. *See infra* Parts III.B.4–5.

165. *See infra* notes 326–328 and accompanying text; *see also* William D. Cohan, *"It's the Trumpification of the SEC": As Standards Are Lowered for Investment Pros, "Mr. and Ms. 401(k)" Could Be Screwed*, VANITY FAIR (June 5, 2019), https://www.vanityfair.com/news/2019/06/sec-new-rule-broker-investors-401k [https://perma.cc/Z7H7-USKM] (observing that the 2019 reforms left us with "not a great system" in which brokers can recommend complex securities for commissions to people who lack the "financial sophistication" to "challenge their recommendation").

166. *See* Hurwitz, *supra* note 34, at 63.

167. THE WOLF OF WALL STREET (Paramount Pictures 2014); *see also, e.g.*, BOILER ROOM (Team Todd 2000) (providing another cinematic depiction of the broker-dealer boiler room). On

What increasingly worries regulators is that technology has allowed the boiler room to take a new form. Gamification may appeal to retail investors' cognitive psychology in much the same way.[168] In a world in which trading commissions have been bid down to zero, broker-dealers compete for clients on other attractive product and service attributes: flashy app design, push notifications, leaderboards, lotteries for stock awards, and highly salient attention-grabbing lists of attractive stocks.

The use of "game design," however, should not itself be of concern to securities law or an object of regulatory intervention.[169] Some design features are the natural evolution of sales techniques that have long existed in physical space.[170] Gamification should not be *primarily* objectionable because it is digital, flashy, or appeals to children.[171] It is objectionable because it encourages maladaptively excessive patterns of trades and trading in securities for reasons that are unrelated to the payoff of the security, in service of greater profits in the financial sector.

To build out this intuition, imagine the following hypothetical.[172] A brick-and-mortar brokerage office is slickly designed with lots of glass, video monitors, free coffee, and other attributes that make the waiting area an attractive place to wait while another customer is helped. A client walks into the brokerage office to place a securities trade. The client looks at the video monitors in the lobby, sees that a stock has been volatile recently, and places an order to buy that stock. Upon confirmation that the order has been executed, the broker's representative hands a trade confirmation to the client without saying a word, then flings confetti in the air and sets off an air horn ("🎉

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the history of boiler rooms, see 5 THOMAS LEE HAZEN, TREATISE ON THE LAW OF SEC. REG. § 14:150 (May 2022 update).

168. *See* Chris Gullotti, *Why I'm No Fan of Trading Apps That Treat Investing Like a Game*, KIPLINGER (Feb. 24, 2021), https://www.kiplinger.com/investing/602326/why-im-no-fan-of-trading-apps-that-treat-investing-like-a-game [https://perma.cc/8FNT-6LQQ] (suggesting that DEPs make apps like boiler rooms).

169. *See* Langvardt & Tierney, *supra* note 14, at 720.

170. *Cf.* SIFMA Comment Letter, *supra* note 29, at 4 (noting that DEPs reflect "the same potential conflicts" as in any client communication).

171. *Cf. infra* note 174 and accompanying text (discussing when gamification may be objectionable for these reasons).

172. Thanks to Alex Platt for suggesting the basic contours of the hypothetical.

📢").[173] What about *that* should securities law consider objectionable?[174]

In this hypothetical, the confetti and air horn are meant to be a bit tongue in cheek. They are an illustrative stand-in for various attributes of gamification that regulators are solving for. One implication is the causal consequence of gamification features. If the confetti and air horn encourage the client to place another trade that would not have otherwise been made, they would be the means through which the broker alters the client's propensity—or makes a "call to action"—to trade in a way that increases revenue to the broker.[175] John C. Coffee, Jr. has pointed out that what may matter is the refinement of the interaction over time to encourage trading.[176] Several other observers

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173. *Cf.* Christina Ayele Djossa, *Bwaaat! How the Air Horn Made Noise in Pop Music*, ATLAS OBSCURA (Feb. 8, 2018), https://www.atlasobscura.com/articles/airhorn-pop-reggae-hiphop-music-history [https://perma.cc/4VUN-LGDL] (noting that air horns are widely recognized in music as a celebratory sound).

174. That investment games might appeal to children raises special issues not applicable to gamified investing apps generally. *See* Packin, *supra* note 22, at 22–24 (addressing special legal issues with FinTech and decentralized finance apps that appeal to children). Suppose there are two differently situated traders, one 14 and the other 24. Children typically lack legal capacity to accept brokerage contracts. *See* DEP RFI, *supra* note 13, at 49,074 ("Broker-dealers . . . are required to maintain customer account information, including whether a customer is of legal age."). Perhaps, too, there is a social judgment that children are not competent to bear equity risk, at least without being underwritten by adults. Or perhaps the broker has failed to maintain supervisory practices and procedures reasonably designed to assure compliance with know-your-customer duties in connection with high school freshmen showing up with fake IDs to start trading options. *See, e.g.*, FINRA MANUAL, *supra* note 68, § 4512 (providing FINRA's rules for what customer account information is required or reasonably expected to be on file for each account); 17 C.F.R. § 240.17a-3(a)(17) (2021) (requiring brokers to keep accurate books and records about customers).

These objections disappear for the 24-year-old trader. That trader's circumstances may still relate to ability to bear equity risk—and it may make a particular product unsuitable, especially for a novice. But the capacity and know-your-customer issues would be eliminated. All we are left with is a broker flinging confetti and setting off an air horn at an adult who probably should feel sheepish about the whole thing. We might still consider *that* practice crass, or out of the norm for the typically staid brokerage industry's norms governing communications. Yet even this would not be the sort of expression that would fall within FINRA's rules providing for review and content standards for communications with retail investors, which apply only to written and electronic communications distributed to more than 25 retail clients. *See* FINRA MANUAL, *supra* note 68, § 2210. This reflects, apparently, the policy judgment that non-written, non-electronic expression poses relatively little investor-protection risk if it does not constitute a "recommendation." *See infra* notes 329–331 and accompanying text.

175. On recommendations as "calls to action," see *infra* Part III.B.4.

176. *See* John C. Coffee, Jr., *Gamification: Why Do We Care About Robinhood? What Could the SEC Realistically Do?*, LAW.COM: N.Y. L.J. (Nov. 17, 2021, 12:45 PM)

have suggested that the SEC might care about an empirical upward deviation in a retail customer's propensity to take action.[177]

But it would be difficult to implement and administer a standard that focuses on empirical upward deviations in trading propensity. How could we measure deviation from a counterfactual baseline in which investors had not experienced the confetti and air horn? Market structure and the conduct of market participants are inseparable from the rules that constitute and construct those markets.[178] There is no obvious "pure" and noninterventionist baseline of trading volume against which to assess whether changes in retail trading behavior are an upward deviation. The pre-gamification model of retail trading had many transaction costs that impeded trading, and we cannot be sure that this was the optimal level of trading.[179] If the shift to commission-free brokerage itself increases demand for trading but is also endogenous to the rise of gamification, it would seem difficult to disaggregate gamification features' effect on propensity to trade.

This suggests some caution about the suggestion in Part III.B.4 to rely on sales practices rules that focus on whether gamification features are recommendations, understood as "calls to action." But that there are evidentiary problems here does not make the regulatory challenge insurmountable. The SEC doesn't typically look to causal evidence in deciding whether something is a recommendation. Nor is it as tied to economic analysis when it relies on its statutory authority as a market fairness regulator.[180] Indeed, securities law is in safe territory in responding to the brokerage conflict of interest on fairness grounds. Part III.B suggests ways of addressing the problem through sales practices and fiduciary-duty rules, and through more ambitious market structure reforms.

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https://www.law.com/newyorklawjournal/2021/11/17/gamification-why-do-we-care-about-robinhood-what-could-the-sec-realistically-do [https://perma.cc/Y7X5-WGML].

177. *See, e.g.*, Blaine F. Aikin, Founder and Principal, Fiduciary Insights, LLC & Frank C. Mindicino, Founder and Managing Partner of Practice Growth Partners, Comment Letter on Digital Engagement Practices (Sept. 30, 2021), https://www.sec.gov/comments/s7-10-21/s71021-9314900-259986.pdf [https://perma.cc/KU4R-S5K6] (arguing that "DEPs that lead to statistically significant changes in investment behavior are rendering either recommendations or advice").

178. *See infra* notes 359–367 and accompanying text.

179. Thanks to Adam Thimmesch for discussion on these points.

180. *See* J.W. Verret, *Robinhood's Threat To Sue the SEC over Broker-Inducement Regulation Unlikely To Succeed* 30 (George Mason Univ., L. & Econ. Rsch. Paper No. 21-38, 2021), https://ssrn.com/abstract=3974960 [https://perma.cc/H862-SP46].

2. *Trading, gambling, and paternalism*. How should securities law account for the fact that some people trade actively for "rational" gambling-like reasons, while others trade because they think incorrectly that they have an informational edge? That retail investors might be unable to fend for themselves is a core feature of modern securities law. But what kind of regulatory intervention, if any, does that imply here?

For as long as there've been noise trader models of retail investor behavior, securities regulation scholarship has considered whether law should respond by tamping down on noise trading.[181] Donald C. Langevoort suggested that if securities law were to direct attention to behavioral economics and the problem of unsuitable investment, this "scrutiny, in turn, might allow a coherent policy on retail investor protection to emerge."[182] And Alicia J. Davis has argued that "[i]f individuals, as a group, act as noise traders, society might be better served if the direct participation of retail investors in securities markets did not exist."[183]

These perspectives reflect the intuition that if noise trading is maladaptive, it should be discouraged. It might logically follow that securities law should discourage gamification features that generate informationally noisy trading: gamification leads at least some people to make unreflective decisions to trade too much—and to confuse "trading" with "investing" as the way to build wealth. Even if some users trade excessively for rational reasons, others speculate unintentionally. They want to make money but trade excessively for imperfectly rational reasons to their disadvantage. For all but a tiny fraction of professional traders and asset managers, it is nearly impossible to beat the market over time by picking stocks and trading actively.[184] Traders are overconfident in their ability to do so. Retail investors in particular trade for uninformed reasons and are attracted to things that are salient. They exhibit herding behavior in stocks that

181. For an early example suggesting that noise trader models "underscore[] the need for a general market remedy" to protect uninformed retail traders, see Mark H. Van De Voorde, Note, *The Fraud on the Market Theory and the Efficient Markets Hypothesis: Applying a Consistent Standard*, 14 J. CORP. L. 443, 478–79 (1989).

182. Donald C. Langevoort, *The SEC, Retail Investors, and the Institutionalization of the Securities Markets*, 95 VA. L. REV. 1025, 1081 (2009).

183. Alicia J. Davis, *Market Efficiency and the Problem of Retail Flight*, 20 STAN. J.L. BUS. & FIN. 36, 44 (2014).

184. *See, e.g.*, MALKIEL, *supra* note 121, at 415.

are salient for whatever reason—a broker's recommendation, a social media tout, a coordinated manipulation (like a pump and dump), local exposure, or other exogenous publicity (like a movie character dying after using the company's product).[185]

If noise trading is unintentional and maladaptive, involving unwitting casino-like speculation in stock markets, one solution would be to prohibit it entirely. After all, at least gamblers know what they're doing; mightn't it be better if we just said retail investors had to invest in target-date index funds? This kind of proposal reflects a longstanding concern in U.S. thinking on financial markets about the function and desirability of speculation.[186] Securities markets are not lotteries, of course, and there are disparate regulatory regimes covering gambling and gaming in jurisdictions where they are legal.[187]

What would it look like to say that ordinary people could not trade stocks because it is too speculative—too much like gambling? The main implication is that only institutions could trade stocks.[188] Securities law would thereby put a thumb on the scale in favor of a particular view of securities trading: that people should quit

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185. *See, e.g.*, Fernando Chague, Bruno Giovanetti & Guilherme Paiva, Out of Sight, Out of Mind: Local Stores and Retail Day-Trading 1 (July 12, 2022) (unpublished manuscript), https://ssrn.com/abstract=4054018 [https://perma.cc/ES7W-6WD5] (finding that local familiarity with a business leads to increased day trading); Aimee Picchi, *Peloton Stock Slumps After Morbid Product Placement in "Sex and the City,"* CBS NEWS (Dec. 10, 2021, 1:24 PM), https://www.cbsnews.com/news/peloton-stock-death-by-peloton-just-like-that-mr-big [https://perma.cc/GK43-JV7G] (noting that Peloton's stock price dropped following a morbid scene in a popular TV show casting its product in a negative light).

186. *See, e.g.*, STUART BANNER, SPECULATION: A HISTORY OF THE FINE LINE BETWEEN GAMBLING AND INVESTING 1 (2017) [hereinafter SPECULATION] (recounting the historical debate in American law and society about how to encourage investment while discouraging speculation, and about how to distinguish the two); Stout, *Why the Law Hates Speculators*, *supra* note 127, at 712–33 (considering the history of antispeculation rules in the U.S.). *See generally* STUART BANNER, ANGLO-AMERICAN SECURITIES REGULATION: CULTURAL AND POLITICAL ROOTS, 1690-1860 (1998) (considering longstanding debates about how to regulate securities markets, and especially the trading of corporate equities, in England and the United States).

187. *See* Thomas Lee Hazen, *Disparate Regulatory Schemes for Parallel Activities: Securities Regulation, Derivatives Regulation, Gambling, and Insurance*, 24 ANN. REV. BANKING & FIN. L. 375, 375 (2005) (discussing the different regulatory schemes for securities and non-securities, like gambling and gaming). *But see* John Luttig, *Finance as Culture*, SUBSTACK: LUTTIG'S LEARNINGS (Feb. 28, 2021), https://luttig.substack.com/p/finance-as-culture [https://perma.cc/QB6M-VXUC] (noting that day trading looks like a "nihilistic lottery").

188. Langevoort offered this thought experiment in considering what such a market would look like if protected by an antifraud-only rule. He suggested that it would look something like today's Rule 144A market, which is limited to institutional participants. Langevoort, *supra* note 182, at 1057–58.

speculating and trading.[189] The view that people should not trade because it is bad for them smacks of paternalism and burdens transactional freedom in order to protect people from themselves. Consider those who trade excessively for rational and clear-eyed reasons—perhaps because they are doing so as entertainment, satisfying risk-seeking or sensation-seeking preferences. If they would otherwise be gambling, who are we to object and tell them they can't play the stock market instead?[190]

The problem with the objection that securities law shouldn't be paternalistic is that it doesn't reflect securities law's stance toward retail investors generally. Securities law routinely intervenes in the transactional freedom of retail investors. Sometimes, it shuts them out of the market entirely, as in the Rule 144A market for resale of private placements between qualified institutional buyers. Other times, securities law tailors those interventions by looking at existing wealth as a proxy for sophistication or ability to bear risk.[191] While the Securities Act of 1933 usually protects investors by requiring registration and disclosure, under a statutory exemption private company securities can be sold without those protections to those sophisticated enough to "fend for themselves."[192] A regulatory safe harbor to that exemption, Regulation D, provides that "accredited investors" are sophisticated enough—and has historically defined that status in a way that limits investment in private-company securities to sufficiently wealthy individuals and institutions.[193]

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189. That view is in significant tension with the longstanding approach to American securities regulation preferring disclosure over merits review, which would prescribe which investments people should make. *Cf.* Wendy Gerwick Couture, *A Glass-Half-Empty Approach to Securities Regulation*, 76 MD. L. REV. 360, 371 (2017) (describing how the SEC was largely set up to be a disclosure regulator rather than merit regulator).

190. *Cf. supra* note 138 and accompanying text (pondering whether rational consumption trading's encouragement of gambling is bad, and how its second-order market effects may help inform our normative opinion on the topic).

191. *See generally* Greg Oguss, Note, *Should Size or Wealth Equal Sophistication in Federal Securities Laws?*, 107 NW. U. L. REV. 285 (2012) (considering wealth proxies in the offering exemptions).

192. *See* SEC v. Ralston Purina Co., 346 U.S. 119, 125 (1952); *see also* Securities Act of 1933 §§ 4(a)(2), 5(a), (c), 15 U.S.C. §§ 77d(a)(2), 77e(a), (c) (providing together that "transactions by an issuer not involving any public offering" are exempt from otherwise applicable registration requirements for the offer and sale of securities).

193. *See* 17 C.F.R. § 230.501(a) (2020) (defining terms used in Regulation D (§§ 230.500–.508)). This definition has been criticized for some time for over- and under-inclusiveness. *See* STAFF OF U.S. SEC. AND EXCH. COMM'N., REPORT ON THE REVIEW OF THE DEFINITION OF

Securities law intervenes in transactional freedom in other ways that discourage active speculative trading. For example, it limits short-term speculation on price momentum in asset markets by requiring retail investors to put up a sufficient amount of money in advance.[194] Consider the problem of "pattern day trading," a risky activity involving more than four "day trades"—roundtrip purchases and sales of the same security on the same day—within a five-day period in an account financed with margin.[195] Pattern day traders try to profit off price momentum, buying low and selling high after short holding periods. In these cases, regulators' primary concern is in the day trader's use of borrowed money for intraday trades.[196] The pattern day trader rules gatekeep access to the already wealthy by requiring customers to post $25,000 minimum collateral in a margin account to engage in roundtrip day trading.[197] Pattern day trader rules were an

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"ACCREDITED INVESTOR" 43–44 (2015), https://www.sec.gov/files/review-definition-of-accredited-investor-12-18-2015.pdf [https://perma.cc/T5MG-A7X7]. Despite recent amendments, the definition remains contested to this day. *See* Accredited Investor Definition, 85 Fed. Reg. 64,234, 64,234–78 (Oct. 9, 2020) (to be codified at 17 C.F.R. pts. 230, 240); *see also* Bill Myers, *Gensler Eyes Accredited Investor, Shareholder of Record Reforms*, REGUL. COMPLIANCE WATCH (June 27, 2022), https://www.regcompliancewatch.com/gensler-eyes-accredited-investor-shareho lder-of-record-reforms [https://perma.cc/JS76-PWDE] (reporting that the SEC Chairman "is pushing Commission staff to come up with new rule proposals that would change the definition[] of accredited investor[]," and collecting possible changes, including "[r]aising the wealth thresholds . . . and pegging them to inflation"); Lydia Beyoud, *SEC 'Accredited Investor' Definition Tweak Faces Equity Concerns*, BLOOMBERG L. (Feb. 23, 2022, 6:00 AM), https://www.bloomberglaw.com/bloomberglawnews/securities-law/XB357SBC000000 [https://perma.cc/4KR9-TLCY] (explaining how changing the definition of "accredited investor" could limit investment opportunities for those from underrepresented communities). This illustrates the difficulty with dividing investors based on proxies for ability to bear risk without financial ruin.

194. *See* Stout, *Why the Law Hates Speculators*, *supra* note 127, at 703.

195. *See* FINRA MANUAL, *supra* note 68, § 4210(f)(8)(B)(i)–(ii) (defining "day trading" and "pattern day trader"); *see also* Jill E. Fisch, *Regulatory Responses to Investor Irrationality: The Case of the Research Analyst*, 10 LEWIS & CLARK L. REV. 57, 75, 77–78 & n.109 (2006) (noting that pattern day trading rules reflect a policy intervention in which "certain classes of investors [are] barred from types of trading that are viewed as particularly risky"). Like other margin rules applicable to taking downside bets by selling shares short, the pattern day trading margin rules mean that you can't play if you can't maintain the applicable margin. *See* Winston, *supra* note 17, at 817–18 (discussing the margin rules applicable to short sales).

196. Margin is typically calculated based on end-of-day holdings, but day trading exposes brokers to financial risk even if traders close out their holdings and have a flat account balance at the end of the day.

197. In addition to requiring pattern day traders to post $25,000 minimum equity in their margin accounts, securities law also limits day-trading buying power, and subjects traders to further restrictions if they exceed buying power and do not meet a margin call. *See, e.g.*, FINRA MANUAL, *supra* note 68, § 4210(f)(8)(B)(iv) (providing the relevant FINRA restrictions on day-

explicit response to retail investor behavior limiting their transactional freedom.[198]

These examples reflect that securities law is already thick with paternalism, everywhere you look.[199] Securities law limits investors' transactional freedom all the time, justifying these interventions for their consequences rather than for their burden on transactional freedom.[200] It shapes not only the allocation of transactional opportunity but also the distribution of economic surplus. As Emily Winston has recently argued, that is a reason for securities law to consider explicitly the effect of unequal access to investment opportunity on worsening wealth inequality.[201]

Securities law can do only so much to solve the problem of active trading for noisy reasons, because the problem is ultimately not one of law. Its policy interventions limit who can speculate in securities

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trading buying power and equity minimums); Order Approving Proposed Rule Changes Relating to Margin Requirements for Day Trading, 66 Fed. Reg. 13,608, 13,610 (Mar. 6, 2001).

198. In approving these margin rules in 2001, the SEC emphasized the role "advances in technology" played in encouraging "a dramatic increase in day trading by customers." Order Approving Proposed Rule Changes Relating to Margin Requirements for Day Trading, 66 Fed. Reg. at 13,609. Individual commenters had suggested the rule would be a barrier to entry and was "designed to exclude" small retail investors. *Id.* at 13,613.

199. *See, e.g.*, Susanna Kim Ripken, *Paternalism and Securities Regulation*, 21 STAN. J.L. BUS. & FIN. 1, 2 (2015) ("[T]he federal securities laws have always contained significant elements of paternalism, and over the last eighty years, have become increasingly protectionist and paternalistic.").

200. As far as it is practiced, securities law is not particularly concerned with being too "paternalistic." *See, e.g.*, Mercer Bullard, *The Fiduciary Standard: It's Not What It Is, but How It's Made, Measured, and Decided*, 87 ST. JOHN'S L. REV. 337, 351 (2013) (observing that securities law debates rest on assumptions that "deregulatory policies" and "market-directed outcomes" will "create greater net social wealth," and not on concerns about "the enhanced freedom of markets, and their participants" (emphasis removed)); *cf.* Ripken, *supra* note 199, at 2–3, 11–15 (considering the tension between securities law's supposedly high-level "anti-paternalistic philosophy" and the specific paternalistic rules that "abound").

201. *See generally* Winston, *supra* note 17 (considering the relationship between rising wealth inequality in the U.S. and securities laws that limit access to investment opportunity); *see also* James Tierney, *Securities Law's Effects on Wealth Inequality: The Case of Asymmetric Investment Opportunity*, JOTWELL (Feb. 4, 2022), https://corp.jotwell.com/securities-laws-effects-on-wealth-inequality-the-case-of-asymmetric-investment-opportunity [https://perma.cc/L77M-SAK2] (observing that because "expanding the pool of people who can access particular investments" will just "shift[] where we allow the inequality gap to widen" but not "alter the structural" relationship identified in Winston's framework, regulators "have to take into account whether tinkering with individual access to investment opportunities will be . . . in the public interest").

markets, and those interventions may have expressive effects.[202] But we ought to be humble about the ability of law or regulation to tamp down on people's excitement for speculative asset markets not based on superior private information. Some noise trading will be inevitable so long as people trade based on irrational exuberance (and so long as securities law does not "save" them from doing so).[203] What's more, noise trading is a necessary component of markets in which informed trading is profitable. Because "[n]oise trading cannot be prohibited as such," the question is how much to tolerate, and by whom.[204]

All of this suggests that, in designing interventions to address gamified investing, securities law should consider the different reasons people trade. That some people are essentially duped into trading based on salience does not change the fact that others trade "rationally" for entertainment or consumption reasons. The case for regulatory intervention is weaker in the latter case than where there is evidence of market failures in which participants are subject to cognitive or behavioral errors. As Jeffrey Rachlinski has described this field, "the cognitive error story suggests placing significant restrictions on access to the markets."[205] Behavioral interventions may be particularly warranted where there is a risk that these cognitive errors lead to people getting bilked.[206] If people are overtrading to their

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202. So, too, interventions like the prudent investor rule express a normative preference for certain kinds of investment behavior. *See generally* Schanzenbach & Sitkoff, *supra* note 121 (explaining the prudent investor rule and its impact on investment behavior).

203. *See* ROBERT J. SHILLER, IRRATIONAL EXUBERANCE, at xii–xxiii (3d ed. 2005) (examining psychological factors underlying market behavior). As markets for crypto may well illustrate, when retail demand can't fill its risk preferences in regulated securities and derivatives markets, it exerts hydraulic pressure elsewhere in the system as people try to substitute into other speculative assets. *See, e.g.*, Sudheer Chava, Fred Hu & Nikhil Paradkar, Gambling on Crypto Tokens? 5 (July 25, 2022) (unpublished manuscript), https://ssrn.com/abstract=4149937 [https://perma.cc/5AC8-H5RH] (reporting evidence from 2016–18 that "investor interest in [initial coin offerings] appears to be driven by gambling preferences, which have real effects on both token and investor outcomes"); W.C. Bunting, A Better Legal Definition of Gambling 1–2, 61–67 (Aug. 5, 2022) (unpublished manuscript), https://ssrn.com/abstract=4137847 [https://perma.cc/6TQ2-838K] (articulating a model statutory definition of gambling as involving "risk creation as a limiting principle to distinguish [it] from other bilateral risk transactions," and offering that certain cryptocurrency markets are "the theoretical equivalent of a casino chip"); *supra* note 129 and accompanying text (noting that trading can substitute for gambling).

204. Pacces, *supra* note 149, at 497.

205. Jeffrey J. Rachlinski, *The Uncertain Psychological Case for Paternalism*, 97 NW. U. L. REV. 1165, 1185 (2002).

206. Elaine A. Welle, *Freedom of Contract and the Securities Laws: Opting Out of Securities Regulation by Private Agreement*, 56 WASH. & LEE L. REV. 519, 581 (1999).

detriment, the paternalistic view would deem it "better for a wise and sympathetic central authority to limit that freedom."[207] Not by prohibiting them from trading directly, but by intervening in the processes that result in them getting bilked by investment apps that encourage excessive trading.

Regulating gamification in investing apps raises hard questions about the role of retail investors in securities markets—and whether securities law should promote not just prudent investing but also speculative gambling. It likewise raises questions about when retail investors should be left to their own devices or protected from exploitation and opportunism. Suppose that we think exploitative gamification is the kind that can be reasonably expected to generate informationally noisy trading for brokers' profit. Once we take that step, "[w]e are right back to the task of defining opportunism . . . in the laws regulating the securities industry, which the SEC cannot comfortably ignore."[208]

That question becomes even more urgent when we consider why we care about retail investor regulation. One reason is that investor protection promotes the confidence necessary to ensure the system does not unravel. But there is an often overlooked but equally important second reason. In a capitalist society without a robust social welfare system, prudent investing is essential to ensure successful and comfortable smoothing of income across time to achieve financial goals. Leaving that responsibility up to individuals is a daunting enough prospect when we are predictably bad at it. It is even worse when the financial firms with whom we entrust our money depredate against us.

C. Contemplating Alternative Visions of Investment Games

This Part has identified relevant models of retail investor behavior and situated these within accounts of the securities laws' normative policies. It turns now to briefly identifying and responding to three alternative visions of gamification: the techno-optimist view that it will promote investor education, the techno-populist view that it will

207. Mahoney, *supra* note 73, at 714. Rachlinski argues that "[t]he psychological case for paternalism . . . must rest on a relative assessment of the cognitive costs of improved decision against the costs of supplanting individual choice." Rachlinski, *supra* note 205, at 1168. On the asymmetric deployment of cost-benefit arguments in cases where transactional freedom is being constrained or broadened, see Bullard, *supra* note 200, at 347.

208. Langevoort, *supra* note 182, at 1047.

enable shareholder democracy, and the techno-pessimist view that it will undercut confidence in markets.

1. *Techno-optimism*. Some "techno-optimist" observers are bullish that gamified investing can improve motivation and engagement. Across society financial literacy is low, and interventions to improve it are hard to design effectively.[209] Might gamification be a solution?[210] Among other proponents, SEC Commissioner Hester Peirce has argued that thoughtful design might encourage greater motivation and engagement among end users, closing the financial literacy gap.[211] This may be attractive for its promise of a light regulatory touch.[212] In addition, if financial literacy is an important

209. *See* Fairfax, *supra* note 126, at 1077, 1107–11; *see also infra* notes 212–215 and accompanying text (discussing the difficulties of designing gamification methods in a way that successfully encourages financial literacy). Meta-analysis of research has suggested that most financial-literacy interventions have weak explanatory value for observed financial behavior, may be weaker for lower-income groups, and may operate differently on the kind of household financial behavior (e.g., savings, consumption, or debt) targeted by the intervention. *See generally* Luís Filipe Rodrigues, Abílio Oliveira & Carlos J. Costa, *Playing Seriously – How Gamification and Social Cues Influence Bank Customers To Use Gamified e-Business Applications*, 63 COMPUTS. HUM. BEHAV. 392 (2016) (arguing that gamification can lead to increased customer engagement); Margaret Miller, Julia Reichelstein, Christian Salas & Bilal Zia, *Can You Help Someone Become Financially Capable? A Meta-Analysis of the Literature*, 30 WORLD BANK RSCH. OBSERVER 220 (2015) (noting that financial literacy increases savings but does not decrease loan defaults); Daniel Fernandes, John G. Lynch, Jr. & Richard G. Netemeyer, *Financial Literacy, Financial Education, and Downstream Financial Behaviors*, 60 MGMT. SCI. 1861 (2014) (finding that financial literacy does not explain changing financial behaviors).

210. *Cf.* Arjen van der Heide & Dominik Želinský, *'Level Up Your Money Game': An Analysis of Gamification Discourse in Financial Services*, 14 J. CULTURAL ECON. 711, 713 (2021) (diverging from the techno-optimist view that "celebrate[s] the problem-solving potential of gamification").

211. *See* Al Barbarino, *SEC's Peirce on Crypto Ambitions, GameStop's Lessons*, LAW360 (May 3, 2021, 11:48 AM), https://www.law360.com/securities/articles/1379758/sec-s-peirce-on-crypto-ambitions-gamestop-s-lessons [https://perma.cc/CL4K-QSE6]; *see also* Mike Lee, *How Gamification Could Take Investor Experiences to a New Level*, ERNST & YOUNG (Apr. 26, 2019), https://www.ey.com/en_us/digital/how-gamification-could-take-investor-experiences-to-a-new-level [https://perma.cc/AMK8-HAF6] (arguing that gamification simplifies and makes the experience of trading more engaging). For other comments by Peirce, see Dean Seal, *SEC's Peirce Has 'Reservations' About Recent Agency Action*, LAW360 (Oct. 23, 2020, 11:19 PM), https://www.law360.com/articles/1322567/sec-s-peirce-has-reservations-about-recent-agency-action [https://perma.cc/ZRS7-LFGE] (describing a statement in connection with an enforcement action against a firm offering simulated day trading accounts with real payoffs, in which Peirce urged the role of investment games in "provid[ing] incentives to take the game seriously and thus increase the educational value of the experience").

212. *Cf.* Ismail Erturk, Julie Froud, Sukhdev Johal, Adam Leaver & Karel Williams, *The Democratization of Finance? Promises, Outcomes and Conditions*, 14 REV. INT'L POL. ECON. 553,

social goal, then there are plausible welfare benefits to interventions that expand financial literacy in their own right.

There are several reasons for skepticism about the techno-optimist position, however. First, these interventions may have only weak effects on behavior.[213] Superficial gamification, focusing primarily on easy-to-implement extrinsic rewards and incentives, does not build engagement and motivation in the long term; those effects tend to dissipate once the extrinsic rewards are taken away.[214] Calibrating the right kinds of gamification, responsibly designed to generate engaging and intrinsically motivating experiences, requires thoughtful design and implementation.[215] This probably goes beyond what we can expect the market to produce.[216]

Second, and more fundamentally, the engagement function of gamification might be normatively objectionable even if it has benefits to end users. Gamification intervenes in cognitive processes and decisionmaking in ways that seek to alter our behavior, typically in service of private profit. Even when inflected with prosocial ends (like increasing financial literacy), it still involves using people as means to

571 (2007) (noting that while investment in financial literacy programs is "probably justified because reductions in gross [financial] illiteracy are highly desirable," they are unlikely to "prevent" as compared to "discourage . . . irresponsible behaviour," so "it is unlikely that literacy can be raised far and fast enough to justify a lighter regulatory touch" (parentheses omitted)).

213. *See* Lauren E. Willis, *Against Financial-Literacy Education*, 94 IOWA L. REV. 197, 263 (2008); Peter H. Huang, *How Do Securities Laws Influence Affect, Happiness, & Trust?*, 3 J. BUS. & TECH. L. 257, 300 (2008); *supra* note 209.

214. *See* Lachlan Ford, *Gamification Often Misses the Point*, SMART SPARROW (Jan. 7, 2016), https://www.smartsparrow.com/2016/01/07/gamification [https://perma.cc/ATB8-EKD2].

215. Some of the challenges are in making a game intriguing—in activating the same kinds of responses that make children want to play Minecraft for twelve hours straight. Replicating that same kind of intrinsic motivation in the educational context is not a matter of adding badges and notifications to facilitate disclosure but building disclosure and information into a framework that provides a kind of intrinsic challenge, offers feedback, and encourages support and growth. *See* Kevin Bell, *Gameful Design: A Potential Game Changer*, EDUCAUSE REV., May–June 2018, at 40, 41; Richard N. Van Eck, *Digital Game-Based Learning*, EDUCAUSE REV., Nov.–Dec. 2015, at 12, 22.

216. Without regulatory intervention, market-led efforts at gamification will prioritize engagement for profit over other learning-related functions like improving intrinsic motivation, because firms face a collective action problem in investing in learning and forgoing profit opportunities. On similar themes, see generally Dan Awrey, *The Limits of Private Ordering Within Financial Markets*, 34 REV. BANKING & FIN. L. 183 (2014–15) (considering the limits of private ordering and exploring how changes to regulatory regimes could lead to significant improvements).

generate private profits—which is, to some, an objectionable basis on which to relate with others.[217]

Even those sympathetic to prosocial use of technology should recognize these concerning implications. They call for a healthy measure of skepticism that securities law can improve education and disclosure-delivery processes with "white hat" rather than "black hat" gamification.

2. *Techno-populism*. Another group of scholars supposes that gamified investing will promote ordinary people's participation in finance and corporate governance.[218] This article refers to these claims as "techno-populist." The notion that technology might "democratize" finance is not new.[219] But gamification has renewed hopes of broadening participation in equity markets.

Most prominent is the hope that gamification will encourage participation in corporate governance. Shareholder democracy has a well-known collective action problem resulting in retail apathy and free riding; it's rarely worthwhile for retail investors to participate.[220] This equilibrium means that the results of shareholder votes won't reflect

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217. For discussion of normative objections to gamification, see generally Tae Wan Kim, *Gamification of Labor and the Charge of Exploitation*, 152 J. BUS. ETHICS 27 (2018); John Danaher, Sven Nyholm & Brian D. Earp, *The Quantified Relationship*, AM. J. BIOETHICS, Feb. 2, 2018, at 3; Kim & Werbach, *supra* note 30.

218. *See infra* notes 220–224.

219. *See* Bradley, *supra* note 92, at 69. Other recent efforts to democratize access to capital markets have included equity crowdfunding platforms. Andrew A. Schwartz, *The Digital Shareholder*, 100 MINN. L. REV. 609, 625–29 (2015) (offering an optimistic prediction for equity crowdfunding markets). Exempting equity crowdfunding offerings was supposed to help level the playing field for "ordinary non-accredited investors . . . to take a chance and invest in the same type of unregistered securities of a stranger's startup" as the wealthy can. *Id.* at 626. For recent mixed empirical research on issuers and offerings in the crowdfunding market, see Iman Dolatabadi, Cesare Fracassi & Lin Yang, Equity Crowdfunding in the U.S. 1 (Oct. 1, 2021) (unpublished manuscript), https://ssrn.com/abstract=3934662 [https://perma.cc/KS9X-ZSY5]; Douglas J. Cumming, Sofia Johan & Robert S. Reardon, Governance and Success in U.S. Securities-Based Crowdfunding 2 (Nov. 15, 2021) (unpublished manuscript), https://ssrn.com/abstract=3950966 [https://perma.cc/7825-YKJ7]; Andrew A. Schwartz, *Crowdfunding Issuers in the United States*, 61 WASH. U. J.L. & POL'Y 155, 155 (2020); *cf.* Jacob Hellman, *Venture Capitalists in Miniature? Deregulation and Equity Crowdfunding in the United States*, 51 ECON. & SOC'Y 443, 443 (2022) (describing ethnographic study suggesting limits to crowdfunding's democratization ambitions).

220. *See, e.g.*, Jill E. Fisch, *Standing Voting Instructions: Empowering the Excluded Retail Investor*, 102 MINN. L. REV. 11, 44 (2017).

the participation of retail investors, a problem "regardless of whether retail shareholders vote differently from institutional voters."[221]

Digital brokerage and social media offer a potential corrective, especially as activating even a modest number of retail investors might make a significant difference for corporate governance.[222] Sergio Alberto Gramitto Ricci and Christina M. Sautter have thus argued that social media-enabled affective participation in mass coordination can plausibly be harnessed for prosocial corporate-governance ends.[223]

Some scholars are optimistic for this reason that dispersed retail trading, mediated by digital brokerage apps, will help overcome typical barriers to retail participation in shareholder voting and corporate governance.[224] And we ought not discount too much gamification's role in disrupting corporate governance, which might be a blind spot in a securities-law-based approach that focuses on trading and markets rather than the work of governance. In particular, the welfare implications of gamification-mediated retail-investor trading may start looking more murky when we account for the corporate governance implications of retail investors owning individual company stocks.[225] To the extent increased retail-investor participation in corporate governance is valuable in its own right, or for the superior results it generates, then we might cautiously celebrate how retail investors are disrupting corporate governance.[226]

221. *Id.* at 15–16; *see* Gaia Balp, *The Corporate Governance Role of Retail Investors*, 31 LOY. CONSUMER L. REV. 47, 71–88 (2018) (suggesting that the passivity of retail shareholders is not a trivial matter and describing efforts to activate retail votes).

222. Fisch, *GameStop*, *supra* note 4, at 23.

223. *See* Ricci & Sautter, *supra* note 3, at 83–88.

224. *See id.*; Fisch, *GameStop*, *supra* note 4, at 27–28.

225. *See, e.g.*, Kobi Kastiel & Yaron Nili, *In Search of the "Absent" Shareholders: A New Solution to Retail Investors' Apathy*, 41 DEL. J. CORP. L. 55, 66 (2016) (suggesting that even a modest increase in retail investor participation in corporate governance would have meaningful consequences for contested outcomes).

226. There is reason to hesitate before concluding that gamifying corporate governance will lead to prosocial outcomes—rather than the wealth-extractive shareholder activism that has dominated corporate governance in the last thirty years. Much of that activism has sought to maximize return to shareholders, with disastrous consequences across the real economy. *See, e.g.*, James Fallows Tierney, *Woke Capital?*, LPE BLOG (May 5, 2021), https://lpeproject.org/blog/woke-capital [https://perma.cc/35J2-4ZML] (collecting evidence of the "dystopia" that has resulted from the shareholder value revolution); *see also, e.g.*, LYNN STOUT, THE SHAREHOLDER VALUE MYTH 11 (2012) ("[M]any and perhaps most of our corporate problems can be traced . . . to . . . the idea that corporations are managed well when they are managed to maximize share price.").

The related techno-populist claim is that gamification will help "democratize finance."[227] Wealth creation is, of course, the primary reason retail investors participate in capital markets: in a capitalist society, the main reason to own stock is that returns to equity capital outpace returns to other, safer kinds of assets.[228] As only a small percentage of the population has historically owned equity capital,

So there is cause for concern that mediated retail trading is just the newest form of shareholder activism: looking out solely for itself, mediated through Reddit rather than through pension and hedge funds. And even if social media encourages ordinary investors' participation in shareholder democracy, it doesn't follow that this improves social welfare if shareholders' preferences differ from the rest of society's. As Fisch correctly notes, retail shareholders have multifaceted roles in society, as workers, consumers, and people living on earth—so their "interests reflect [their] overall role in society, and each shareholder's individual utility function reflects his or her preferences with respect to stakeholder issues" bearing on corporate governance. Fisch, *GameStop*, *supra* note 4, at 32. Through voting rules and the like, law endows shareholders' preferences with legitimacy and priority—over outsiders, anyway—in influencing firms' actions. That shareholders have different social roles with different interests might imply they should rationally prefer for firms to maximize overall social welfare, measured in the distribution across those different roles. But that has only the weakest bearing on whether the outcomes of shareholder democracy will reflect the aggregate, equally weighted preferences of the rest of society, an important criterion in assessing rules about economic ordering. *Cf.* Jedediah Britton-Purdy, David Singh Grewal, Amy Kapczynski & K. Sabeel Rahman, *Building a Law-and-Political-Economy Framework: Beyond the Twentieth-Century Synthesis*, 129 YALE L.J. 1784, 1827 (2020) (arguing that "law's creation of economic order should be accountable to those who live in that order," and that a purportedly neutral vision of shareholder priority "erect[s] barriers to political judgments about economic order").

227. Robinhood, for its part, says its "mission is to democratize finance for all." Complaint at 3, Robinhood Fin., LLC v. Galvin, 2022 WL 1720131 (Mass. Super. Ct. Apr. 15, 2021) (No. 2184CV0084) [hereinafter Robinhood Compl.]. Invoking the mythical outlaw and his band of outsiders, this framing suggests limited, ad hoc redistribution. *See* ROBIN HOOD: MEN IN TIGHTS (Brooksfilms 1993); *cf.* E.J. HOBSBAWM, PRIMITIVE REBELS: STUDIES IN ARCHAIC FORMS OF SOCIAL MOVEMENT IN THE 19TH AND 20TH CENTURIES 24 (1959) (describing Robin Hood as the archetype of "a modest and unrevolutionary" social banditry, with the limited ambition to correct specific excesses of injustice rather than to fundamentally reorder structures of distribution). Zero-commission trading plausibly effects redistribution. *See infra* Parts III.A.2–3. But the entire business model depends on the "poor"—ordinary investors with surplus capital—making capital allocation decisions without regard to information relevant to a security's payoff, so that the "rich" can benefit. It generates profit to principal trading firms, rather than investment in economic coordination and social provisioning that will grow the real economy. At risk of straining the reader's patience and belaboring the metaphor, the result is a different kind of redistribution than in the outlaw legend: enticing unsuspecting travelers for a "free" visit to Sherwood Forest in the illusion of participating in the commonwealth, so the highwayman's real customers—principal trading firms—can take a nonsalient toll for the privilege. Meanwhile, the rest of King John's England suffers from underinvestment.

228. *See, e.g.*, Òscar Jordà, Katharina Knoll, Dmitry Kuvshinov, Mortiz Schularick & Alan M. Taylor, *The Rate of Return on Everything, 1870–2015*, 134 Q.J. ECON. 1225, 1228 (2019) (finding historically high returns to housing and equity, with higher returns for equity since the 1950s).

limited participation in capital markets deepens wealth inequality.[229] In the techno-populist view, gamification can broaden access to equity capital, helping solve the inequality problem.[230]

Investment games probably cannot bear the weight of that burden. For starters, it'd be one thing if "democratized finance" meant everyone had equitable access to ownership of equity interests in—and to democratically mediated governance claims over—corporate means of social provisioning.[231] Rather, it focuses on "democratizing" finance by encouraging people with surplus capital to start *trading,* even though the main consequence is to generate profit for sophisticated intermediaries.[232] Scholars of household finance have identified preconditions to effective "democratization": predictability of income and wealth, baseline financial literacy, and access to financial products

229. *See, e.g.*, Winston, *supra* note 17, at 11–12 (citing THOMAS PIKETTY, CAPITAL IN THE TWENTY-FIRST CENTURY 23–27 (2013)).

230. *See, e.g.*, Fisch, *GameStop*, *supra* note 4, at 24, 26–27.

231. *See, e.g.*, Lenore Palladino, *Democratizing Investment*, *in* DEMOCRATIZING FINANCE 244, 246 (Fred Block & Robert Hockett eds., 2022) (exploring how "new innovations in distributed technologies allowed instead for *public* facilitation of new opportunities for wealth appreciation and a rebalancing of power within capital markets"); Erik Olin Wright, *Introduction* to JOHN E. ROEMER, EQUAL SHARES: MAKING MARKET SOCIALISM WORK 1, 2–3 (Erik Olin Wright ed., 1996) (collecting proceedings of a workshop on John Roemer's "market socialism" proposal for "relatively freely functioning market mechanisms along with a sustainable egalitarian distribution of property rights, a roughly equal distribution of profits, and a significant planning capacity of the state over broad investment priorities").

232. *See, e.g.*, Luke Savage, *The Gamestop Affair Is Just the Latest Incarnation of the "People's Capitalism" Delusion: An Interview with Edward Ongweso Jr*, JACOBIN (Feb. 2, 2021), https://jacobin.com/2021/02/gamestop-stock-market-reddit-robinhood [https://perma.cc/6PZ7-NCH6] (describing democratization of finance as "open[ing] up the casino to as many people as possible, while masking it in a language of universal stock ownership"). This also highlights the sociological criticism of gamification's role in neoliberal capitalism. Democratizing finance disperses noise-trading labor in markets, encouraging ordinary people to volunteer and discipline their labor toward generating the uncorrelated volatility necessary to generate liquidity and price discovery in service of private profit. *See, e.g.*, Gordon Kuo Siong Tan, *Democratizing Finance with Robinhood: Financial Infrastructure, Interface Design and Platform Capitalism*, 53 ECON. & SPACE 1862, 1870 (2021); *see also* Kim & Werbach, *supra* note 30, at 159–65 (identifying concerns that "gamification adds a new dimension to the economic relationships and power dynamics that normally hold sway in business," and considering implications for exploitation and manipulation). To one critic, gamification "appropriates . . . non-alienated activity," or the things we spend time doing other than in exchange for wages, "and renders it useful to the capitalist goal of wealth accumulation." PJ Rey, *Gamification and Post-Fordist Capitalism*, *in* THE GAMEFUL WORLD: APPROACHES, ISSUES, APPLICATIONS, *supra* note 33, at 277, 280; *see also, e.g.*, WOLFGANG STREECK, HOW WILL CAPITALISM END? 46 (2016) (noting that "[c]apital accumulation after the end of capitalist system integration hangs on a thin thread: on the effectiveness, as long as it lasts, of the social integration of individuals into a capitalist culture of consumption and production").

with legible risk and return.[233] Most nonparticipation in equity markets is because people lack that kind of predictability of income and wealth; even with capital windfalls like unexpected inheritances, cognitive or behavioral constraints also contribute to nonparticipation.[234]

The techno-populist vision has little to say about barriers to the democratization of finance. Nor is encouraging trading likely to fix the problem: empirical evidence suggests that trading actively, for informationally noisy reasons, is a volatile and risky strategy to build wealth.[235] If active traders lose on average, and do so as risk consumption as a substitute for gambling, then even a modestly antipaternalist view of the securities laws might tolerate this behavior—but it should not *promote* it.

3. *Techno-pessimism.* A third set of claims might be considered "techno-pessimist," in that they claim that gamification undermines public confidence in markets and capitalism. Investment games make market participation appear less serious, obscuring the risks of capital drawdown and loss.[236] And it casts finance as a game played by Wall Street with a deck stacked in its favor.[237] These techno-pessimist claims are premised on the importance of robust public confidence in markets as mechanisms for allocating capital to high-value uses.

Yet that confidence might justifiably reflect whether price mechanisms reflect reality.[238] Asset markets have for some time

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233. *See* Erturk et al., *supra* note 212, at 555.

234. *See, e.g.*, Steffen Andersen & Kasper Meisner Nielsen, *Participation Constraints in the Stock Market: Evidence from Unexpected Inheritance Due to Sudden Death*, 24 REV. FIN. STUD. 1667, 1668–70 (2011).

235. *See infra* notes 264–266 and accompanying text.

236. *See, e.g.*, Gullotti, *supra* note 168; Memorandum from Majority Staff, H. Comm. on Fin. Servs., to Members, H. Comm. Fin. Servs. 5 (Mar. 15, 2021), https://www.congress.gov/117/meeting/house/111355/documents/HHRG-117-BA00-20210317-SD002-U2.pdf [https://perma.cc/J7FM-J9JY]. Peter Huang has cited this as a reason against financial education that "treat[s] investing like playing a video game": trying to make financial education "engaging, fun, and relevant" risks leading the audience to discount "the seriousness of investing and irreversibility of financial ruin." Huang, *supra* note 213, at 302.

237. *See, e.g.*, van der Heide & Želinský, *supra* note 210, at 712 (noting that while some firms adopting gamification "explicitly embrace the label . . . others . . . seem more reluctant to do so in public, most likely for the simple reason that it may undermine finance's claims to be a productive activity").

238. The concern that turning finance into a game "obscures the connection between price and value, fueling the phenomenon known as meme stocks," Annie Massa & Tracy Alloway, *Robinhood's Role in the 'Gamification' of Investing*, WASH. POST (June 19, 2021, 11:39 AM), https://www.washingtonpost.com/business/robinhoods-role-in-the-gamification-of-

experienced a disconnection between price and "value," at least as it is measured by traditional normative finance.[239] The techno-pessimist worries that this is a problem now that retail investors are involved. But it seems desirable to spread public awareness of that disjoint and the forces that have produced it, rather than carry on as if market failures do not exist. And while we can't expect neoliberal capitalism to do anything but foster public support for markets as markets, we might also question how much effort society should invest in salvaging public confidence in markets that reflect an unceasing drive toward financialization.

Public confidence in markets may also be endogenous to other things, like how wealth endowments differ between generations of retail traders and how these endowments will change over time. Financial commentators have predicted that gamification will play a role in advisers attracting and retaining younger clients.[240] Millennials and younger generations are less wealthy than their parents' generations were at the same age.[241] But they stand to inherit significant amounts from the wealthiest generation ever—baby boomers—in what has been called an unprecedented looming wealth transfer.[242] Social theorists have suggested that worries about gamification shape incumbent firms' and regulators' views about this generational wealth transfer and the extent to which "high earner, not rich yet" millennials and younger generations will in years to come be

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investing/2021/07/16/11b0dbc6-e5eb-11eb-88c5-4fd6382c47cb_story.html [https://perma.cc/y8qn-baqf], may reverse the causal arrow. Meme stock trading reflects that people understand and celebrate a disconnect between price and value—and now they can finally play it as a game, just as if they had $1,000-a-month Bloomberg terminals too. In this view, social media has permitted the kind of coordination needed to generate returns to herding trades. *See* Tom Duterme, *Bloomberg and the GameStop Saga: The Fear of Stock Market Democracy* 3 (Louvain Papers on Democracy & Soc'y, Working Paper No. 80, 2021).

239. *See infra* note 351 and accompanying text.

240. *See, e.g.*, van der Heide & Želinský, *supra* note 210, at 716–17 (analyzing gamification narratives about "digital natives" and "multigenerational wealth transfer" to "millennials").

241. *See* William G. Gale, Hilary Gelfond, Jason J. Fichtner & Benjamin H. Harris, *The Wealth of Generations, with Special Attention to the Millennials* 10 (Nat'l Bureau of Econ. Rsch., Working Paper No. 27123, 2020), https://www.nber.org/papers/w27123 [https://perma.cc/VW7H-9NSL].

242. *See, e.g.*, Victoria J. Haneman, *Intergenerational Equity, Student Loan Debt, and Taxing Rich Dead People*, 39 VA. TAX REV. 197, 203 (2019).

responsible stewards of wealth, and their business will be up for grabs.[243]

If these perspectives are right, gamification discourse hits differently. It highlights that regulating gamification means intervening in a fight among market actors about capturing and distributing profits from market intermediation. For digitally savvy retail investors in particular, intermediation profits may not be salient in a market that increasingly offers salient zero pricing, must cross subsidize with other revenue sources, and competes primarily based on attractive user interface. If traders do not understand they are transferring surplus from trading to their brokers, competition is unlikely to eliminate these practices from the market.[244] Whether the distributively sensitive investor-protection policy of the securities laws should intervene as to gamification may in turn reflect who benefits from noisy flow, and who would benefit by regulating it.[245]

Focusing on the political economy of gamification in this way might also shift the prescription away from gamification's three techno futures—optimism, populism, and pessimism. Our society has an interest in retirement and other kinds of social provisioning—to say nothing of an interest in discouraging wide disparities in distributions of wealth or of life chances. Unstable social provisioning for old age, let alone for smoothing consumption across the lifecycle, is destabilizing and impedes human flourishing. Securities law should encourage responsible planning for retirement and other financial goals in the public interest—not trading for the sake of participating in capital markets. An ambitious and public-interest-oriented securities law would not encourage bare engagement with markets without regard to the effects on other desirable social goals.

243. *See* van der Heide & Želinský, *supra* note 210, at 716; *see also, e.g.*, *12 Industries that Will Thrive Thanks to Millennials*, CBINSIGHTS (June 30, 2021), https://www.cbinsights.com/research/report/millennials-industries-thriving [https://perma.cc/3CWL-BEC4] (explaining that to compete for millennial market share and "stay relevant, legacy financial institutions will need to offer mobile apps that are both technologically sophisticated and simple to use," not like a website "from the 1990s"—ugh, as if!); Melkorka Licea, *Millennials 'Only' Making $100k a Year Feel Strapped*, N.Y. POST (Oct. 23, 2019, 7:34 PM), https://nypost.com/2019/10/23/millennials-only-making-100k-a-year-feel-strapped [https://perma.cc/C6JW-UP2C] (deploying the arsenal of tropes about "High Earner[] Not Rich Yet" millennials who spend too much on frivolities like artisanal fair-trade avocado toast and save too little).

244. *See supra* note 97 and accompanying text.

245. *See infra* notes 367–370 and accompanying text.

III. WHETHER AND HOW TO REGULATE GAMIFICATION?

This Part sets up a framework for thinking about the harms from gamification and offers a typology of regulatory interventions for addressing those harms. It concludes with observations about how securities law accounts for innovative technologies that shape markets and influence investor behavior—and how this position promotes a narrow vision of what modern stock markets should be for.

A. The Social Costs of Gamification in Retail Investment Markets

There are many reasons to suspect that gamification in this context runs against the public interest—and in turn, many possible justifications for regulation. Turning investing into a more casino-like environment threatens prospective losses to investors, plausibly reallocates surplus from traders to financial intermediaries, and threatens to disrupt the traditional capital allocation functions of secondary capital markets. Gamification imposes second-order harms on market quality and capital allocation, encourages traders' worst impulses, and may burden their ability to achieve financial goals. These are all reasons for regulators to embrace their roles in promoting fairness with respect to gamification and digital engagement practices.[246]

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246. Congress has authorized the SEC to adopt rules "as necessary or appropriate in the public interest and for the protection of retail customers" relating to "the legal or regulatory standards of care for brokers, dealers, investment advisers," and their associated persons. Dodd-Frank Wall Street Reform and Consumer Protection Act, Pub. L. No. 111-203, § 913(f), 124 Stat. 1376, 1827–28 (2010). The SEC relied on this authority in adopting Reg BI. *See* Regulation Best Interest: The Broker-Dealer Standard of Conduct, 84 Fed. Reg. 33,318, 33,330 n.122 (July 12, 2019) [hereinafter Reg BI Adopting Release] (to be codified at 17 C.F.R. pt. 240). The SEC has substantially more leeway in fulfilling its investor-protection function as a fairness regulator than when relying also or instead on its "public interest" authority. When adopting rules implicating its "public interest" authority, the SEC has to consider "efficiency, competition, and capital formation." National Securities Markets Improvement Act of 1996 § 106(a)(2), 15 U.S.C. § 77b(b). This implicates economic analysis in rulemaking, as the D.C. Circuit has held the SEC has a "statutory obligation to determine as best it can the economic implications of [a proposed] rule." Chamber of Com. v. SEC, 412 F.3d 133, 143 (D.C. Cir. 2005). For an argument that "SEC rulemaking" under the investor-protection "fairness objective alone" would not implicate "economic analysis requirements," while rulemaking considering the "fairness objective and another objective together" would, see Verret, *supra* note 180, at 5 (emphasis omitted).

The agency is therefore on strong footing in responding to supposed market failures and in protecting investors. Its fairness mission permits it to consider the cross-sectional and transactional allocation of surplus in support of an investor protection mission. Moreover, in response to D.C. Circuit cases on economic analysis in SEC rulemaking, staff at the agency have explicitly identified a number of justifications for adopting rulemaking. These include correcting

1. *External harms to market quality and capital allocation*. Encouraging unreflective consumption of goods and services tends to distort individual decisionmaking in ways that can produce systemic external harms. Capital markets play a coordinating role in a capitalist economy. When people trade stocks for unreflective or distorted reasons, the potential harms can be acute. These harms include the price discovery and capital-allocation functions of capital markets.[247]

Consider price discovery first. One role for markets is to aggregate information about the value of assets, which then gets impounded into the asset's price. Remember that retail investors are not, as a group, more informed than the market about the fundamental value of the security. But retail investors' noisy trading might still promote price discovery: that their orders are informationally noisy in this way attracts more informed traders to "bring prices in line with fundamental values."[248] The combination of zero-commission trading and gamification may distort price discovery processes by increasing both price movement and volatility in the stocks most popular among retail investors.[249] One study referenced above looked at indicia of market quality on days when Robinhood experienced service outages. On these days, the stocks most popular with Robinhood users showed less price volatility and less trading volume.[250] "Taken together," the authors wrote, "the findings support the view that zero-commission traders have negative effects on stock market quality, consistent with behavioral noise trader and inventory risk models."[251]

Gamification also tends to distort the process of capital allocation. Financial markets are thought to be tools for directing valuable

market failures of the sort identified here. *See* SEC Staff Memorandum, *supra* note 161, at 5–6. This subpart has identified several undesirable social welfare effects of broker-dealer regulation. In economic terms, the first is an externality, while the other two are forms of residual costs associated with principal-agent problems.

247. Gamification and shift to a zero-commission model might also reduce incentives for the production of sell-side brokerage research. Thanks to George Georgiev for this point.

248. Alicia Davis Evans, *A Requiem for the Retail Investor?*, 95 VA. L. REV. 1105, 1119–20 (2009).

249. *See* Eaton et al., *supra* note 151, at 29 ("[W]hen zero-commission trading is restricted, stocks favored by Robinhood users experience reduced bid-ask spreads and price impacts as well as lower return volatility."); Jain et al., *supra* note 120, at 38 (noting "a decrease in the amount of price improvement per share after commissions decreased to zero, especially for stocks that are popular among retail investors").

250. *See* Eaton et al., *supra* note 151, at 29.

251. *Id.* at 6.

resources to particular (and ideally productive) uses in the real economy.[252] The accuracy of stock prices is one channel through which financial markets direct capital this way.[253] Yet gamification practices can capture retail investors' attention and thereby induce trading in stocks for reasons—like the payoff that the intermediary receives from generating this order flow—that are unrelated to the "value" the investment offers. Legal scholar Benjamin P. Edwards has explained that conflicts of interest of this sort between brokers and their clients "drive[] capital misallocation, causing significant macroeconomic and other harms."[254] As a product of this kind of conflict, gamification's encouragement of informationally noisy active trading tends to generate capital misallocation that has effects across the macroeconomy: increasing the cost of capital to businesses seeking external financing, encouraging excessive investment in financial innovation, and diverting valuable social resources from the real economy.

Indeed, protecting markets from investors—not the other way around—offers the strongest normative case for intervening to regulate investment games. It is about promoting the value, whatever it may be, of having lots of retail investors participate in securities markets: to provide liquidity and price discovery; to increase the amount of capital that can be allocated across the real economy; to ensure people can achieve their financial goals; and to spread across a broader population economic claims over and rights to participate in shared governance over the means of social provisioning and production.[255] These are reasons for thinking about investor protection in ways that are attuned to allocation and distributive issues—but are

252. *See* Wallace C. Turbeville, *A New Perspective on the Costs and Benefits of Financial Regulation: Inefficiency of Capital Intermediation in a Deregulated System*, 72 MD. L. REV. 1173, 1176 (2013) ("[T]he principal social value of financial markets is not to assure the lowest transaction costs for market participants. Rather, it is to facilitate the efficient deployment of funds held by investors to productive uses.").

253. *See* Marcel Kahan, *Securities Laws and the Social Costs of "Inaccurate" Stock Prices*, 41 DUKE L.J. 977, 1005 (1992). In the case of secondary securities markets—outsiders buying and selling stock after the firm has already issued it—price discovery promotes capital allocation mainly through the indirect channel of permitting investors to exit for liquidity or diversification reasons. *See* Merritt B. Fox, Lawrence R. Glosten & Gabriel V. Rauterberg, *Stock Market Manipulation and Its Regulation*, 35 YALE J. ON REGUL. 67, 84–85 (2018); Michael Morelli, *Regulating Secondary Markets in the High Frequency Age: A Principled and Coordinated Approach*, 6 MICH. BUS. & ENTREPRENEURIAL L. REV. 79, 99 (2016).

254. Edwards, *supra* note 159, at 186.

255. On the goals of "democratizing finance," see *supra* Part III.C.2.

concerned not primarily with idiosyncratic losses but to the reasons for encouraging *trading* rather than even more productive investment of time and money that will promote the real economy.[256]

2. *Loss and waste*. Another concern about gamification is that it leads to first-party harms to users, for whom the financial outcomes are suboptimal or maladaptive. The late professor Lynn Stout foresaw in 1997 that zero-commission retail trading would be socially wasteful. Stout predicted that (if it ever were to happen) retail traders would "daily waste hours at their computers . . . in their statistically hopeless quest to beat the market."[257] Today, regulatory concern that gamification makes it too easy to trade echoes what Stout predicted but characterized as an "exaggerated" image in 1997 when she considered the social welfare effects of these trades.[258]

Remember that some trade excessively for rational reasons. The main payoff for this kind of trade is not engaging with the design; in Matt Levine's telling, "seeing if you made money" is "the main dopamine payoff."[259] But that payoff can be manipulated through the presence of other gamification features, even where customers can see that they have not made money. Some subset of traders will experience idiosyncratic or catastrophic loss of principal. And where people trade too much, engaging on average in a series of transactions that have negative net present value, encouraging that kind of losing transaction is itself socially wasteful.[260] That is especially so if people are led to

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256. *Cf. supra* note 138 and accompanying text.

257. Lynn A. Stout, *Technology, Transactions Costs, and Investor Welfare: Is a Motley Fool Born Every Minute?*, 75 WASH. U. L.Q. 791, 810 (1997).

258. *Id.* at 810 n.44. Although she hoped this prediction "prove[d] exaggerated," Stout suggested that "observer[s] sensitive to speculation's peculiar welfare effects" might not be "reassur[ed]" by the prospect of regular access to markets on your "PC, pager, or other wireless device." *Id.*; John Crabb, *Opinion: Robinhood Needs More Regulatory Oversight*, IFLR (Sept. 18, 2020), https://www.iflr.com/article/2a645eymbcnhnuvads2dc/opinion-robinhood-needs-more-regulatory-oversight [https://perma.cc/59V8-EZCS] (urging legal restrictions against "allowing unsophisticated retail investors 24/7 access to complex equity and option trading in a manner that simulates a computer game, while offering little in the way of education about the downsides").

259. Matt Levine, Opinion, *Melvin Capital Had a Better Month*, BLOOMBERG (Mar. 4, 2021, 12:27 PM), https://www.bloomberg.com/opinion/articles/2021-03-04/melvin-capital-improves-from-gamestop-reddit-struggle [https://perma.cc/8GFM-QQVF]; *cf.* Brian Knutson & Peter Bossaerts, *Neural Antecedents of Financial Decisions*, 27 J. NEUROSCI. 8174, 8174–75 (2007) (summarizing studies that identified connections between anticipation of gain and activity in different regions of the brain).

260. Mahoney, *supra* note 73, at 728 ("These expenditures also prompt excessive investment of human and physical capital in the securities industry."). It is not always wasteful, of course.

believe they are "investing" rather than speculating on their ability to beat the market through trading.[261]

Gamification can also lead us to make unreflective decisions that are bad for us, in the sense that they are against our otherwise undistorted preferences. Many retail investors lack financial literacy and are relatively uninformed participants in capital markets.[262] But behavioral biases are another drag on investment return. As in other markets for complex financial products and services, retail investors tend to be overconfident in our abilities, be myopic about the consequences of our action, and avoid the cognitively complex tasks required to assess financial choices.[263]

Inexperienced and unsophisticated investors can experience significant harm from the kind of compulsive trading enabled by zero-commission brokerage and behavioral-design strategies.[264] Self-directed retail investors who try to pick stocks are almost never able to beat the average return on a market portfolio—especially when they

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Suppose someone engages in transactions that might not have incurred losses had they made better securities-selection or asset-allocation decisions, like putting it in an index fund. But they also could have played the lottery, or toured around the country going to the jam band Phish's concerts, or bought avocado toast. *Cf. supra* note 243. Perhaps spending time thinking about investing prevents them from spending time on even more wasteful endeavors, like thinking about stare decisis as "law," or tweeting. But as Part III.A.1 suggests, the strongest case for an investor-protection is not primarily about protecting people from idiosyncratic losses, for people can find ways to make worse choices about their money. *Cf.* Benjamin J. Burton & Joyce P. Jacobsen, *Measuring Returns on Investments in Collectibles*, 13 J. ECON. PERSPS. 193, 202 (1999) (noting that investment in a diversified portfolio of Beanie Babies theoretically could have been profitable for those who got in on the ground floor, before the market fell out).

261. *See* SPECULATION, *supra* note 186, at 279–306 (discussing modern implications, including for active equities trading, of longstanding debates in American securities law theory and practice about how to draw the line between good long-term investment and bad short-term speculation).

262. *See* Fairfax, *supra* note 126, at 1077–83.

263. *See* BAR-GILL, *supra* note 35, at 17–23 (2012); *see also* Tierney, *Contract Design in the Shadow of Regulation*, *supra* note 35, at 882 (discussing contractual complexity, myopia, and overconfidence).

264. This raises the question whether Robinhood investors are good or bad traders at the aggregate level. For discussion of the evidence, see Part II.A.2. If you focus at aggregate level, it "might mask substantial investor heterogeneity, making it difficult to understand potential redistributive effects of this technology." Ankit Kalda, Benjamin Loos, Alessandro Previtero & Andreas Hackethal, *Smart(Phone) Investing? A Within Investor-Time Analysis of New Technologies and Trading Behavior* 6 (Leibniz Inst. for Fin. Rsch. Sustainable Architecture for Fin. in Eur., Working Paper No. 303, 2021).

try to chase price momentum in high-volatility stocks.[265] Retail investors who actively trade underperform inactive traders as well as benchmarks net of transaction costs. For instance, Barber and Odean reported a significant performance penalty for actively trading households; in their sample it was "the cost of trading and the frequency of trading, not portfolio selections, that explain the poor investment performance of [these] households."[266]

Gamification's goal of encouraging engagement with the app may, in this view, create conditions for poor financial decisions. Whether that is a sufficient reason to justify regulatory intervention depends on empirical evidence about the magnitude of the social welfare effects of idiosyncratic loss. The difficulty is if loss is idiosyncratic; harms may be concentrated in a small number of excessively trading investors but not representative of the median.[267]

3. *Distribution in the brokerage agency relationship*. A third kind of objection to gamification is that it redistributes trading profits to intermediaries. Some practices are commonly seen as objectionable, such as in the simple case where people are deceived into entering into transactions that they otherwise would not make.[268] Other times, the normative analysis is more complex, as where there is no deception but the practice shifts economic surplus without inducing a transaction that otherwise would not have occurred.[269]

Securities regulation is concerned at a high level with the distribution of economic surplus between broker-dealers and their clients. The SEC's powers as a fairness regulator reflect these distributive commitments.[270] For instance, as legal scholar Deborah

265. *See, e.g.*, Brad M. Barber & Terrance Odean, *All That Glitters: The Effect of Attention and News on the Buying Behavior of Individual and Institutional Investors*, 21 REV. FIN. STUD. 785, 790 (2008).

266. Barber & Odean, *Trading Is Hazardous to Your Health*, *supra* note 5, at 776.

267. Thanks to Eleanor Wilking for this point.

268. For example, Kim and Werbach survey several normative objections to gamification, drawing on "varied fundamental values about decisionmaking" including autonomy. Kim & Werbach, *supra* note 30, at 164. It is not enough that gamification "shap[es] actions without conscious rational consideration," they argue; there must also be "some factor that *inhibits* rational self-reflection." *Id.* They offer "the following as a rule of thumb: when a player would, upon rational reflection, conclude the time participating in a gamified activity would have been better spent otherwise, there is good *prima facie* reason to believe the line has been crossed." *Id.* at 165.

269. *See* Guttentag, *supra* note 35, at 658–60.

270. *See supra* note 246 and accompanying text.

DeMott has recently modeled, brokerage relationships are principal-agent relationships in which conflicts of interest are rampant.[271] If brokers profit from higher trading volume, they have an incentive to encourage trading. The history of brokerage regulation is largely about trying to constrain and channel how brokers can earn profits at the "expense" of their clients.[272] This reflects ongoing scholarly and regulatory contestation about whether the distribution of these profits should be ordered by the market or should be constrained through fiduciary duty.[273]

The weaker form of the objection is that gamification distorts and obstructs the processes by which retail investors make informed and pro-adaptive choices about asset allocation and security selection. It encourages retail investors to undertake risky trading behavior primarily to benefit third-party intermediaries. This is not only a tax on the entire system; it is plausibly a zero-sum redistribution to financial intermediary firms from retail investors who don't know better.[274]

The stronger form of the distribution objection is that the economic flows underlying gamification—payment for order flow, and losses from breaches of the duty of best execution—effect a reallocation of trading profits that is itself objectionable.[275] The SEC has said that commission-free trading comes "with a catch" of potential

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271. DeMott, *supra* note 157, at 6, 9, 34.

272. *See, e.g.*, James Fallows Tierney, The Political Economy of Securities Industry Bars 33–38 (Feb. 24, 2021) (unpublished manuscript), https://ssrn.com/abstract=3761903 [https://perma.cc/TWA2-Y4XU] ("The New Deal settlement in securities law was in large part about allocating power between investors and industry over how to split the economic surplus from the capital markets.").

273. *See infra* note 360 and accompanying text.

274. *See, e.g.*, Steven R. McNamara, *The Law and Ethics of High-Frequency Trading*, 17 MINN. J.L. SCI. & TECH. 71, 74–75 (2016); Daniel Avis, *Warren Says 'Sharks' Citadel, Robinhood Prey on Customers*, BLOOMBERG (Mar. 9, 2021, 8:02 PM), https://www.bloomberg.com/news/articles/2021-03-09/warren-says-sharks-citadel-robinhood-profit-off-of-customers [https://perma.cc/Y363-VNYG] (quoting Senator Elizabeth Warren at a Senate Banking Committee meeting: PFOF can be thought of as "skim[ming] off the top at the expense of small investors"); *see also, e.g.*, Battalio & Loughran, *supra* note 115, at 37 ("Purchasers and internalizers of order flow in the market may cause prices quoted on the NYSE to deteriorate, making all investors worse off."); MITTAL & BERKOW, *supra* note 106, at 18 (describing "price improvement on retail market orders [as] akin to getting a 30% discount on an item after the shopkeeper raises the price by 40%"); BETTER MKTS., FACT SHEET: REDDIT, ROBINHOOD, GAMESTOP & RIGGED MARKETS: THE KEY ISSUES FOR INVESTIGATION 2 (2021), https://bettermarkets.org/wp-content/uploads/2022/03/Better_Markets_Reddit_Robinhood_Gamestop_RiggedMarkets_02-01-2021.pdf [https://perma.cc/RJ9Z-WQ32] (describing PFOF as "legalized bribery").

275. *See* Fletcher Statement, *supra* note 109, at 14–17.

breach of best execution.[276] And legal scholar Gina-Gail Fletcher has noted that while payment for order flow enables brokers to offer "price improvement," it is not clear that customers are actually receiving better prices from internalization than from having their orders routed to exchanges.[277]

We should be careful about explaining the nature of the strong-form distributional criticism. Breach of best-execution duty "is often imperceptible to the retail investor."[278] Even a stylized illustration helps show why it is unclear whether PFOF effects a redistribution in a way that leaves retail traders noticing that they are worse off.

In 2018, before the emergence of zero-commission pricing, it would have cost an ordinary retail investor about $5 to trade a stock or ETF.[279] This would make it economically infeasible to put a small amount of money into the stock market at any time. Suppose a trader buys 5 shares of a stock worth $20 each. The trader would pay $105 including commissions and keep $100 in value, for a tax of 5% (or 25% per share). Even at higher transaction amounts—say a "round lot" of 100 shares at $20 each—the commission would have cost 5 cents or 0.25% per share.

In an era of zero-commission pricing, the trader gets closer to full value. She buys 5 shares at $20 each and receives the full $100 in value (ignoring some negligible transaction costs that would apply in either case). The flipside is that she might get slightly inferior "execution" relative to her legal rights. Best execution relates to whether my order was filled in the best manner, in terms of price, speed, and the like. Inferior execution shows up on the price at which the retail order executes. Suppose a stock trading for $19.95 at the midpoint is bid $19.90 and ask $20. The trader submits a market order that gets filled for $19.98 per share, including $0.02 in price improvement; the wholesaler sells her stock that costs it $19.90, and it (and the broker) pockets the difference. Retail traders in this situation have more to fear

276. *See In re* Robinhood Fin., LLC, Securities Act Release No. 10906, 2020 WL 7482170, at *1 (Dec. 17, 2020).

277. *See* Fletcher Statement, *supra* note 109, at 16–18.

278. Dombalagian, *supra* note 111, at 1.

279. *See, e.g.*, James Royal, *In the Race to Zero-Fee Broker Commissions, Here's Who the Big Winner Is*, BANKRATE (Oct. 4, 2019), https://www.bankrate.com/investing/zero-fee-broker-commissions-long-term-investors-win [https://perma.cc/PF6Y-Y8RW] (collecting legacy discount brokers' commissions ranging from $4.95 to $6.95 for equities trades, after an earlier round of price cuts in 2017); Constine, *supra* note 54 (noting in 2013 that, before Robinhood's introduction of free trading, other brokers were charging commissions of "$7 to $10 a trade").

from a wide bid-ask spread in an illiquid security, which if wide enough might approximate the 5% effective commission on that order in a commission world. For retail investors to care about poor execution, net of savings from zero-commission pricing, the spread must be very wide (or price improvement must be small). Measured solely by cost metrics like commissions and best execution—and holding equal how much trading people are doing—it seems retail traders may give up less trading surplus to other participants under zero-commission trading and PFOF than before. This undermines the strong-form distributional objection, which focuses on pricing as the relevant criterion for consumer welfare.

But there are other plausible distributional objections, as in the weak form above. For instance, even if PFOF is not itself objectionable on a pricing dimension, it may induce investor demand for trading stocks. If this increase in trading generates misallocation of capital, diversion of investment from the real economy, or loss and waste, these consequences may all effect an objectionable redistribution from ordinary people to financial firms. This is another way of saying that encouraging wasteful trading is bad for the additional reason that it lines the pockets of financial intermediaries. It is a sympathetic objection. But this weak-form objection is different from saying that the harm comes from a redistribution of trading surplus in the form of poor execution quality, net of the savings from zero-commission pricing.

B. Securities Law's Typical Regulatory Interventions

How might securities regulators respond to gamification in trading apps? In other areas, law has adopted different kinds of regulatory interventions in response to behavioral exploitation.[280] Transactional

280. *See* Colin Camerer, Samuel Issacharoff, George Loewenstein, Ted O'Donoghue & Matthew Rabin, *Regulation for Conservatives: Behavioral Economics and the Case for "Asymmetric Paternalism*,*"* 151 U. PA. L. REV. 1211, 1224 (2003) (identifying "existing and potential regulatory responses to errors in decision making": "(1) default rules; (2) provision or re-framing of information; (3) cooling-off periods; and (4) limiting consumer choices"); Langvardt, *supra* note 53, at 154–60.

frictions,[281] mandatory downtime or cooling-off periods,[282] and direct bans of dangerous features[283] are likely to be politically infeasible or unworkable solutions to the problem of gamified investing apps.

281. If the problem with gamification is that it elicits too much noisy trading by retail investors, regulators might seek to address that root problem by imposing transactional frictions, such as minimum commission pricing. Commissions were fixed until deregulation in 1975 brought about competitive pricing. *See supra* notes 88–89 and accompanying text. Economists began examining transactional frictions in potentially excessive speculative short-term trading in securities. *See, e.g.*, Joseph E. Stiglitz, *Using Tax Policy To Curb Speculative Short-Term Trading*, 3 J. FIN. SERVS. RSCH. 101, 101 (1989); Lawrence H. Summers & Victoria P. Summers, *When Financial Markets Work Too Well: A Cautious Case for a Securities Transactions Tax*, 3 J. FIN. SERVS. RSCH. 261, 261 (1989). Surveying the debate in 1995, Paul Mahoney noted that transfer taxes could implement transactional frictions against noise traders' excessive speculation. *See* Mahoney, *supra* note 73, at 714. If excessive speculation through securities trading substitutes for gambling, these might be analogous to excise taxes on gambling. For examples of other kinds of transactional frictions that securities regulation has adopted recently, see Investors' Exchange, LLC, Exchange Act Release No. 78101, 81 Fed. Reg. 41,142, 41,150, 41,165 (June 23, 2016) (determination on application for registration as a national securities exchange) (adopting a "speed bump" in a matching engine to cut down latency arbitrage) and MacKenzie, *supra* note 113, at 1670–71. Thanks, too, to Jeremy Kress for suggesting that widening the tick size might work as a transactional friction. *Cf., e.g.*, Rui Albuquerque, Shiyun Song & Chen Yao, *The Price Effects of Liquidity Shocks: A Study of the SEC's Tick Size Experiment*, 138 J. FIN. ECON. 700, 701 (2020) (examining the SEC's tick size pilot and finding that "quoted spreads, effective spreads, and price impact increase and trading volume decreases as compared to stocks in the control group after the increase in tick size").

We might be skeptical about the adoption of these kinds of frictions, however, because it would be "politically terrible." Matt Levine, Opinion, *People Are Worried About Payment for Order Flow*, BLOOMBERG (Feb. 5, 2021, 12:09 PM), https://www.bloomberg.com/opinion/articles/2021-02-05/robinhood-gamestop-saga-pressures-payment-for-order-flow [https://perma.cc/JXY2-65C4]. Progressive efforts to legislate financial transaction taxes have been unsuccessful. *See, e.g.*, Joe Light, *Wall Street Transaction Tax Gets Fresh Look After GameStop Frenzy*, BLOOMBERG BUSINESSWEEK (Feb. 19, 2021, 1:54 PM), https://www.bloomberg.com/news/articles/2021-02-19/wall-street-transaction-tax-gets-fresh-look-after-gamestop-furor [https://perma.cc/UZ4U-7J6D].

282. Another regulatory technique is to require monitoring of customer use patterns and intervening in problematic use with warnings, salience shocks, or mandatory downtime. On monitoring, see *infra* note 306 and accompanying text. Through the same mechanism as gamification, consumer financial behavior might be manipulable through just-in-time interventions. On education, see *supra* Part II.C.1. Warnings, salience shocks, and downtime might focus attention to nonsalient attributes they are overlooking. In this respect, regulators might look to comparative securities law. China's securities exchanges have responded to concerns about "excessive" speculative trading by prohibiting same-day round-trip transactions in certain kinds of securities, known as the T+1 trading rule. *See, e.g.*, TRADING RULES OF SHANGHAI STOCK EXCHANGE §§ 3.1.4, 3.1.5 (2018). *See generally* Ming Guo, Zhan Li & Zhiyong Tu, *A Unique "T + 1 Trading Rule" in China: Theory and Evidence*, 36 J. BANKING & FIN. 575 (2012) (studying the T+1 trading rule and comparing it to a scheme allowing same-day trades). Research indicates that this may reduce trading volume and "speculative trading," but may also hinder price discovery in times of low liquidity. Xinyun Chen, Yan Liu & Tao Zeng, *Does the T + 1 Rule Really Reduce Speculation? Evidence from Chinese Stock Index ETF*, 57 ACCT. & FIN. 1287, 1287 (2017).

This subpart focuses instead on the prototypical regulatory interventions in securities law, including reforms to mandatory disclosure, antifraud, compliance, sales practices, fiduciary duties, and market structure. Some of these are more aspirational than others. None is singly required in order to respond to gamification, and none is a goldilocks solution to the problems this Article has identified, though some interventions are more likely to be effective than others. The simplest and most politically salable solution involves modest tweaks to existing sales practices rules like Regulation Best Interest. As this Article suggests, existing law gets most of the way there, though a new regulatory category might need to be developed so gamification features do not carry with them all the trappings of "recommendations." Regulators might be attracted to other solutions, like supervisory compliance rules that discourage gamification features reasonably expected to result in noisy trading, but these raise hard

283. Securities law does not directly regulate features trading apps must have. One solution is command-and-control regulation of app design—perhaps requiring apps to be dull and monotonous. Or as computer-human interface design scholars have suggested, FINRA might mandate "actionable design guidelines for retail investing applications." *See* Chaudhry & Kulkarni, *supra* note 38, at 785. To those who consider "design" the objectionable aspect of gamification, this solution is superficially easy. But whatever the social welfare case for addressing gamification, we argued, regulators should avoid "making regulations about the software." Langvardt & Tierney, *supra* note 14, at 721. Confetti regulation would be hard to design, and also to justify; how much confetti is too much? *See generally id.* (identifying difficult definitional problems in direct command-and-control regulation of user-experience design features like "confetti"). A similar definitional problem about what draws attention to securities offerings plagues the crowdfunding space, in which crowdfunding platforms can't make recommendations. Joan MacLeod Heminway, *The New Intermediary on the Block: Funding Portals Under the CROWDFUND Act*, 13 U.C. DAVIS BUS. L.J. 177, 195 (2013). The SEC's "Regulation Crowdfunding" purports to identify "objective criteria" that crowdfunding platforms can rely on in deciding to "highlight offerings on the funding portal's platform." Regulation Crowdfunding, 17 C.F.R. § 227.402(b)(2) (2021); *see* Ann Lipton, *Robinhood's Interface*, BUS. L. PROF BLOG (Feb. 5, 2021), https://lawprofessors.typepad.com/business_law/2021/02/robinhoods-interface.html [https://perma.cc/6TPK-2GHM] (noting that the definitional problem is "not easy to resolve"); Crowdfunding, 80 Fed. Reg. 71,388, 71,463 (Nov. 16, 2015) (codified at 17 C.F.R. pts 200, 227, 232, et al.).

In addition, the more regulatory responses look like direct command-and-control regulation of software, the greater the litigation risk under the First Amendment theories from the technology bar. In other work, I have argued that instead of targeting app design, regulators should look to the underlying harm: modestly expressive design choices that encourage financially irresponsible trading behavior. *See* Langvardt & Tierney, *supra* note 14, at 721 ("Regulators should consider framing gamification and other digital-engagement practices as . . . technologically mediated efforts to appeal to cognitive and behavioral tendencies that encourage self-directed clients to behaviorally churn their own accounts, maximizing revenue to the broker.").

definitional problems. Other simple interventions, like mandatory-disclosure rules, are unlikely to be effective.

More ambitious and public-interest-oriented solutions involve going beyond small tweaks. A securities law that is aspirational in this way would also address the artificial split between fiduciary advisers and nonfiduciary brokers, and deem as manipulative efforts to gin up retail order flow for artificial reasons. And it would also eliminate the stock-exchange market-structure problems that give an incentive to gamify retail stock trading in the first place.

1. *Disclosure*. Mandatory disclosure is securities law's favored intervention.[284] Disclosure interventions can help inform investors and markets, and potentially can de-bias their consumption choices. Securities law already mandates some disclosure about incentives for brokers to adopt gamification practices. Brokers must deliver to retail investors at the beginning of their relationship a client relationship summary that describes conflicts of interest.[285] They must tell customers about the compensation they receive for order flow,[286] and must tell regulators and the market about the transactions they route to other venues for execution.[287] Greater disclosure would be welcome because what is currently disclosed is spotty. In the case of trade confirmation, notices come too late to bear on a retail investor's decision to transact, and pertain to the business model but not the gamification practices themselves.[288]

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284. *See, e.g.*, Langevoort, *supra* note 182, at 1043.

285. Form CRS Relationship Summary, 84 Fed. Reg. 33,492, 33,493, 33,533 (July 12, 2019) (codified at 17 C.F.R. pts. 200, 240, 249, 275, 279).

286. *Supra* note 107 and accompanying text.

287. Regulation NMS Rule 606, 17 C.F.R. § 242.606 (2021); Disclosure of Order Handling Information, 83 Fed. Reg. 58,338, 58,340 (Nov. 19, 2018) (codified at 17 C.F.R. pts. 240, 242).

288. *See, e.g.*, Disclosure of Order Handling Information, 83 Fed. Reg. at 58,340 (requiring brokers to make quarterly reports of "aggregated order routing disclosures," and to provide on request "customer-specific disclosures" about order handling "for the prior six months"); Temporary Rule Regarding Principal Trades with Certain Advisory Clients, 72 Fed. Reg. 55,022, 55,024 (Sept. 28, 2007) (codified at 17 C.F.R. pt. 275). *See generally* Form CRS Relationship Summary, 84 Fed. Reg. at 33,492 (requiring broker dealers to provide a summary of information about the firm, its business, compensation, conflicts, legal relationship, disciplinary history, and other information). Robinhood discloses on its Form CRS that "[it] earns revenue from your trade activity and therefore has a monetary incentive for you to trade more." *Robinhood Financial LLC Form Customer Relationship Summary ("CRS")*, ROBINHOOD 2 (June 17, 2022), https://cdn.robinhood.com/assets/robinhood/legal/RHF%20Customer%20Relationship%20Summary.pdf [https://perma.cc/Q8QC-ZUZH].

But disclosure will be an ineffective solution standing alone, and regulators should not rest on that solution.[289] As in other markets for complex financial products where ordinary people are overconfident and myopic, and avoid cognitively complex tasks, retail investors tend not to read existing disclosures.[290] Additional disclosures would also be additive, and likely to get lost due to oversaturation.[291] If disclosures are not salient and there are too few disclosure-reading consumers on the margin selecting on the disclosures, those consumers are unlikely to move the market.[292]

2. *Antifraud rules*. Antifraud and antimanipulation rules are another favored intervention of securities law.[293] The Exchange Act makes it unlawful "to use or employ, in connection with the purchase or sale of any security . . . any manipulative or deceptive device or contrivance" in violation of implementing regulations.[294] Manipulation claims under the antifraud rules, for instance, involve the "deception of investors into believing that prices at which they purchase and sell securities are determined by the natural interplay of supply and demand, not rigged by manipulators."[295] These doctrines have implications for modern securities market structure, in which market making can often look like manipulation.[296] Implementing gamification features might be the predicate manipulative act, where part of an intentional scheme to induce an artificial supply of order flow in securities the broker's retail customers otherwise would not transact

289. *See* Dombalagian, *supra* note 111, at 10.

290. *See* Robert A. Prentice, *Moral Equilibrium: Stock Brokers and the Limits of Disclosure*, 2011 WIS. L. REV. 1059, 1070. *See generally* BAR-GILL, *supra* note 35 (discussing consumer psychology and behavior in other markets).

291. *See* OMRI BEN-SHAHAR & CARL E. SCHNEIDER, MORE THAN YOU WANTED TO KNOW: THE FAILURE OF MANDATED DISCLOSURE 8 (2014).

292. *See supra* note 97 and accompanying text; *see also* Tierney & Edwards, *supra* note 160, at 23–27 (discussing practical issues with disclosures).

293. Thanks to Ann Lipton for discussion on this point.

294. Exchange Act Section 10(b), 15 U.S.C. § 78j(b); SEC Rule 10b-5(a), (c), 17 C.F.R. § 240.10b-5(a), (c) (2022).

295. City of Providence v. Bats Glob. Mkts., Inc., 878 F.3d 36, 49 (2d Cir. 2017) (quoting Gurary v. Winehouse, 190 F.3d 37, 45 (2d Cir. 1999)) (finding complaint stated a claim under antifraud and antimanipulation rules by charging different fees to different users for market access).

296. *See, e.g.*, Stanislav Dolgopolov, *The Doctrinal Quandary of Manipulative Practices in Securities Markets: Artificial Pricing, Price Discovery, and Liquidity Provision*, 45 J. CORP. L. 1, 26–33 (2019).

in.[297] Doctrine around manipulation claims is uncertain and open-textured, however, making it a risky strategy—to say nothing of the evidentiary difficulties with trying to prove manipulative intent.[298]

More fundamentally, antifraud rules are tailored to rooting out practices that deceive the investing public. They would be a blunt instrument for encouraging socially beneficial brokerage sales practices. Although some gamification practices may be manipulative, it is hard to characterize most that way.[299] Gamification encourages patterns of trading that are unreflective and potentially maladaptive—with first- and third-party harms that flow from it.[300]

3. *Compliance and supervisory procedures*. If the concern with gamified stock trading apps is that they encourage excessive trading, regulators could conceivably seek to prohibit excessive trading. In practice, that would mean imposing on brokers some duty to detect potentially "excessive" trades—and either report them or prevent their execution. Indeed, FINRA has alerted member firms to the possibility that they will be examined for compliance with supervisory rules requiring adequate policies and procedures that might be implicated by gamification.[301] This might be a preferable framing for the problem of gamification: one as supervision, compliance, and knowledge about customers. Securities regulators rely on these tools to fill gaps where substantive regulations do not exist.

One option would be to adopt a compliance and supervisory duty that imports concepts like communications rules (or other concepts that do not quite rise to the level of a "recommendation" under sales practices rules).[302] FINRA's communications rules apply to brokerage

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297. *See, e.g.*, JAMES D. COX, ROBERT W. HILLMAN, DONALD C. LANGEVOORT & ANN M. LIPTON, SECURITIES REGULATION: CASES AND MATERIALS 712 (10th ed. 2021) (noting that *Bats Global Markets* involved claims that the exchanges had "[sold] special services to [high frequency traders] and [misled] others about those services," thereby "creat[ing] a fraudulent scheme . . . that catered to the HFT firms at the expense of individual and institutional traders"); 3 HAZEN, *supra* note 167, § 12:2 ("Although it can take many forms, manipulation consists of any intentional interference with supply and demand.").

298. *See* Gina-Gail S. Fletcher, *Deterring Algorithmic Manipulation*, 74 VAND. L. REV. 259, 273 (2021) (noting the "confusion and ambiguities that plague securities and commodities anti-manipulation laws").

299. *See supra* notes 38–56 and accompanying text.

300. *See supra* Part III.A.

301. *See supra* notes 67–70 and accompanying text.

302. *See infra* notes 329–330 and accompanying text.

firm communications with retail customers, including "websites and apps," and require them to be "fair and evenhanded with appropriate risk disclosure."[303] Regulators could draw on these models, requiring brokers to adopt and implement supervisory policies and procedures reasonably designed to result in the design and use of app features that comply with these rules—such as by ensuring, as a matter of "fair dealing" and just and equitable principles of trade, that they do not encourage excessive trading or cause attention-induced trading in securities simply because they are more salient to customers. This approach would target the development back-end of brokerage apps, with a goal of encouraging a culture of compliance among developers. But it is risky to regulate "about the software."[304]

Another option would link compliance to account monitoring. Brokers do not have ongoing obligations to monitor self-directed customers' accounts.[305] Securities law *could* require broker-dealers to monitor client transactions to determine whether some threshold had been reached.[306] Yet professional proprietary traders would not want to be covered in such a regime. In principle, it could be limited to "retail customers" as Reg BI defines that term.[307] Doing so would impose a flat duty across the industry to monitor the accounts of retail customers; at that point, the straightforward solution would be to dissolve the artificial dividing line between brokerage and advice, a solution discussed below.

Could regulators adopt a more restrictive definition, requiring transaction monitoring in only a subset of retail investors' self-directed accounts? This would raise difficult definitional problems about the population to which transaction-monitoring duties would apply.

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303. *House Gamification Hearing III*, *supra* note 14, at 84–85 (statement of Robert W. Cook, President & Chief Exec. Off., Fin. Indus. Regul. Auth.); *see, e.g.*, FINRA MANUAL, *supra* note 68, § 2210 (requiring, in section (d)(1)(A), that communications be "based on principles of fair dealing and good faith, . . . be fair and balanced, and . . . provide a sound basis for evaluating the facts in regard to any particular security").

304. Langvardt & Tierney, *supra* note 14, at 721 (emphasis removed).

305. *See* De Kwiatkowski v. Bear, Stearns & Co., 306 F.3d 1293, 1302 (2d Cir. 2002).

306. Broker-dealers have certain duties to know their customer, to know the pattern of orders, to have supervisory policies and procedures related to suitability, and the like. This is not the same as an ongoing duty to monitor a self-directed account, but it has inched the obligation in that direction. *See* Bullard, *supra* note 200, at 359–60.

307. *See* Reg BI Adopting Release, *supra* note 246, at 33,342 (defining a retail customer, in part, as one who receives and "uses the recommendation primarily for personal, family, or household purposes").

Regulators have already failed once to navigate a similar problem of defining "professional" from non-professional traders, in an earlier attempt to gatekeep access to exchange order execution systems.[308]

4. *Brokerage sales practices: Regulation Best Interest and "behavioral churning."* One of the more attractive options is to treat certain kinds of gamification as the kinds of brokerage sales practices that are already the subject of existing regulation. This approach could be implemented in part under existing law, though some changes may have to be made around the margins.

SEC and FINRA rules have long imposed obligations on broker-dealers in connection with the making of recommendations. Under longstanding "suitability" doctrine, FINRA required broker-dealers to have a reasonable basis for believing that any recommended security was suitable for the client, under the facts and circumstances.[309] In 2019, the SEC built on suitability doctrine when it adopted Reg BI.[310] That

308. Consider the "SOES bandits." Market makers in NASDAQ were required to give preferential electronic access to retail broker orders of 1,000 shares or fewer through the Small Order Execution System ("SOES"). *See* Order Approving Proposed Rule Changes Relating to the Small Order Execution System, 56 Fed. Reg. 52,092, 52,092–93 (Oct. 17, 1991). A cottage industry of direct-market-access discount brokerages gave freelance traders (the SOES bandits) access to SOES, creating risk for market makers of adverse selection on pricing. This strategy shifted trading profits from market makers to the SOES bandits. *See* Jeffrey H. Harris & Paul H. Schultz, *The Trading Profits of SOES Bandits*, 50 J. FIN. ECON. 39, 39–41 (1998). In response to market makers' complaints that freelance traders were using SOES to earn riskless arbitrage profits by picking off stale price quotations, the SEC approved a rule that (among other things) defined professional traders and prohibited them from using the SOES system. *See* Order Approving Proposed Rule Changes Relating to the Small Order Execution System, 56 Fed. Reg. at 52,092. In sustaining a vagueness challenge to the rule, the D.C. Circuit emphasized the definitional problem: "a trader would be hard pressed to know" when the number of trades had passed the line into being a "professional"—putting the trader "in danger of triggering an adverse reaction from the NASD." Timpinaro v. SEC, 2 F.3d 453, 460 (D.C. Cir. 1993). Among other factors the court found objectionable were references to "excessive" trading. *Id.* In remanding the rule to the SEC for unrelated reasons, the court also directed the agency to adjust the professional trading pattern definition in ways that provided more guidance and less vagueness. *Id.* On remand the Commission noted that the D.C. Circuit's decision implicitly held that exchanges may "distinguish among [types of] investors and limit access to [their] systems for certain trading practices if such distinctions and limitations are consistent with the [Exchange] Act," but determined to approve rules on remand that "would not draw distinctions between customers based on their status as traders." Order Partially Approving Proposed Rule Change Relating to the Small Order Execution System on Pilot Basis, Exchange Act Release No. 33,377, 1993 WL 534173, at *5, *7 (Dec. 23, 1993).

309. *See* FINRA MANUAL, *supra* note 68, § 2111.

310. *See* Reg BI Adopting Release, *supra* note 246, at 33,331 ("Regulation Best Interest imposes a duty of care that enhances existing suitability obligations.").

regulation governs broker-dealers' recommendations to retail customers.[311] One part of the Reg BI duty of care is "quantitative suitability," which requires broker-dealers in making recommendations to have a reasonable basis for believing that a series of recommended transactions—even if in the retail customer's best interest when viewed in isolation—is "not excessive and is in the retail customer's best interest . . . and does not place the financial or other interest of the broker . . . ahead of the interest of the retail customer."[312]

Scholars and industry participants have noted that Reg BI already gives the SEC tools to address at least some objectional facets of gamification.[313] A broker that makes recommendations to elicit noisy retail order flow for its own profit, and without regard to the retail clients' best interest, would violate the duty of quantitative suitability. But absent a "recommendation," Reg BI's duties do not apply.[314]

This raises the stakes of categorizing design features as "recommendations"—and underscores line-drawing problems about gamification features that "bring[] certain items to the customer's attention."[315] The SEC does not like to get pinned down on issues like the definition of a recommendation, so it judges them with a malleable facts-and-circumstances standard.[316] The factors that bear on whether a communication is a "recommendation" are nonetheless well known, and "include whether the communication 'reasonably could be viewed as a "call to action"' and 'reasonably would influence an investor to trade a particular security or group of securities.'"[317] The level of

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311. *Id.* at 33,329 (noting that the rule addresses "broker-dealer conduct obligations when they make recommendations to a retail customer").

312. Exchange Act Rule 15*l*-1(a)(2)(ii)(C), 17 C.F.R. § 240.15*l*-1(a)(2)(ii)(C) (2021).

313. *See* Coffee, *supra* note 176; Lipton, *supra* note 283.

314. *See infra* notes 326–327. This is a longstanding feature of the brokerage sales practice rules. *See* Nancy C. Libin & James S. Wrona, *The Securities Industry and the Internet: A Suitable Match?*, 2001 COLUM. BUS. L. REV. 601, 614 ("The NASD's suitability rule . . . applies only to securities that the broker-dealer 'recommends' to customers.").

315. Lipton, *supra* note 283; *see* Langvardt & Tierney, *supra* note 14, at 738–39; Studdard, *supra* note 22, at 75–79; Fisch, *GameStop*, *supra* note 4, at 37–39.

316. According to Reg BI's adopting release, "what constitutes a recommendation is highly fact-specific and not conducive to an express definition," and thus the SEC would continue to follow the "existing framework" for defining a recommendation under suitability doctrine. *See* Reg BI Adopting Release, *supra* note 246, at 33,335. The SEC is reluctant to give greater certainty, as it is concerned with not creating a roadmap for evasion. *See* Welle, *supra* note 206, at 561–62 (discussing the roadmap-to-evasion concern about bright-line rules in securities regulation).

317. Reg BI Adopting Release, *supra* note 246, at 33,335 (citation omitted).

tailoring to the particular customer also bears on status as a recommendation.[318]

But the standard is not as uncertain as it appears. Regulators have articulated decades' worth of rules and guidance about when brokers' presentation of information—including in online communications with customers—might be a recommendation. Indeed, many digital engagement practices have been understood to be recommendations since a 2001 release from FINRA's predecessor that has the force of law.[319]

Some gamification and engagement features may plausibly fit within that category, like stock-picking algorithms, leaderboards of stocks popular among the broker's customers, and push notifications. Yet Reg BI's application to recommendations reflects a deeper if largely unarticulated orientation toward broker conduct that increases the salience of securities to traders deciding to make a transaction. Some salience is unavoidable, as some information will be presented to an investor by default. And it is somewhat unnatural to think of most gamification features in terms of recommendations—"calls to action"—to buy, sell, or hold a particular security. Many are more naturally thought of as inducements to trade generally. That question becomes more complex, however, when these practices are combined with data analytics that tailors content to users and targets content that will call *them*, perhaps more than others, to action.[320] The more that

318. *Id.* (noting that "[t]he more individually tailored the communication to a specific customer or [customer segment] . . . the greater the likelihood that the communication may be viewed as a 'recommendation'").

319. *See* NAT'L ASS'N OF SEC. DEALERS REGUL., INC., NOTICE TO MEMBERS 01-23: SUITABILITY RULE AND ONLINE COMMUNICATIONS (2001), https://www.finra.org/rules-guidance/notices/01-23 [https://perma.cc/P7L5-5K6G]. A search engine for securities would *not* qualify as a recommendation, but only where "the algorithms for these tools are not programmed to produce lists of securities . . . that favor those securities in which the member makes a market." *Id.* The SEC approved this self-regulatory organization rule change, giving it force of law. *See, e.g.*, 15 U.S.C. § 78s(b); Exchange Act Rule 19b-4(a)(6), 17 C.F.R. § 240.19b-4(a)(6) (2021); ABN AMRO Clearing Chicago LLC, Exchange Act Release No. 83,849, 2018 WL 3869452, at *2 (Aug. 15, 2018) (noting that "Section 19(b)(1) of the Exchange Act generally requires an SRO's rules to be filed with and approved by the Commission," and holding that SRO disciplinary proceedings can only be "premised upon" properly filed and approved rules). On enforcement of SRO rules, see generally Benjamin P. Edwards & James F. Tierney, Comment Letter on Financial Crimes Enforcement Network Advance Notice of Proposed Rulemaking on Anti-Money Laundering Effectiveness (Nov. 16, 2020), https://ssrn.com/abstract=3731801 [https://perma.cc/X4GN-GELT].

320. *See* Ana Carolina Tomé Klock, Isabela Gasparini, Marcelo Soares Pimenta & Juho Hamari, *Tailored Gamification: A Review of Literature*, INT'L J. HUM.-COMPUT. STUD., Dec. 2020, at 1, 10–19. To this point, some broker-dealers appear to use algorithms that tailor what

algorithms and personalization are tailored toward presenting this kind of information, and the more that information correlates with greater sources of revenue for the broker, the more easily it is characterized as a recommendation.

Still, this is not to suggest that any particular gamification practice is a recommendation. This is an area of securities law in which "principles-based" approaches predominate—those approaches allergic to providing bright-line answers to the application of law.[321] The devil is in the details.[322] So securities regulators will have to grapple with the "recommendation" concept, as well as the role of existing and new doctrines in addressing the plausible harms from gamification features. But as this paper shows, they do not write on a blank slate.

Existing sales practices rules give regulators other options beyond quantitative suitability. Gamification reflects a behavioral variant of "churning," an old and familiar problem in securities law.[323] Brokers with discretionary control over customer accounts had incentives to

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information is presented to encourage engagement with the particular client. Other algorithms tailor information to the cross section of the broker's clients, as in a list of securities in which there is the highest volume of buy and sell orders from the broker's customers. *See, e.g.*, Studdard, *supra* note 22, at 19–20 (discussing Robinhood's personalized push notifications). Machine learning, AB testing, and related efforts to fine-tune recommendation algorithms have become increasingly integral parts of consumer-facing applications as companies try to wring out greater surplus from their consumer contacts. *See House Gamification Hearing III*, *supra* note 14, at 90 (statement of Gary Gensler, Chair, Sec. & Exch. Comm'n) (explaining how "game-like features," "behavioral prompts," and "predictive data analytics . . . are implemented across many different technologies, from streaming platforms to fitness trackers"); Rory Van Loo, *Rise of the Digital Regulator*, 66 DUKE L.J. 1267, 1272 (2017) (observing that just as firms can "profit from consumer misperceptions" through shrouded and nonsalient attributes, "digital intermediaries can do the same through their search engines and web interfaces").

321. *See, e.g.*, Langvardt & Tierney, *supra* note 14, at 727 (discussing the SEC's reliance on "[e]x post adjudication of principles-based rules" in this area, as well as the resulting "criticisms that the SEC is engaging in 'regulation by enforcement'") (citing James J. Park, *The Competing Paradigms of Securities Regulation*, 57 DUKE L.J. 625, 634–41 (2007)); *see also supra* note 316 and accompanying text. *See generally* Cristie L. Ford, *New Governance, Compliance, and Principles-Based Securities Regulation*, 45 AM. BUS. L.J. 1 (2008) (arguing for principles-based, outcome-oriented securities regulation over the traditional rules-based approach).

322. It doesn't matter that a broker tells its customers that it is not making recommendations. *See, e.g.*, William H. Murphy & Co., Exchange Act Release No. 90,759, 2020 WL 7496228, at *10 (Dec. 21, 2020); Suitability Rule and Online Communications, 66 Fed. Reg. 20,697, 20,700 (Apr. 24, 2001); FINRA MANUAL, *supra* note 68, § 2111 (noting in Rule 2111.02, a pre-Reg BI articulation of the suitability rule, that disclaimers of responsibility for suitability are prohibited). Securities law doesn't recognize this kind of "ceci n'est pas un pipe" defense. *Cf.* RENÉ MAGRITTE, *The Treachery of Images* (painting) (1929).

323. *See* Langvardt & Tierney, *supra* note 14, at 737–39.

trade excessively to increase compensation.[324] In prohibiting that practice, as in requiring quantitative suitability, securities law already reflects a particular normative policy about retail investors and broker-dealers. It discourages broker-dealers from eliciting overconsumption of expected-negative net-present-value transactions by those who do not know better and are discouraged from learning better.

Churning and the Reg BI duty of quantitative suitability are prospective legacy devices for regulating these potential problems from gamification. These doctrines might be sufficient—on their own or in connection with other doctrines—to handle the problem of behavioral churning. But they also involve tradeoffs between reactive principles-based enforcement and proactive rulemaking, with sobering implications for the effectiveness of regulatory policy in this area.[325]

Recent regulatory reforms have sharpened the toolkit under Reg BI in ways that naturally lend themselves to framing the harm as self-directed churning. But the main wrinkle is that Reg BI is triggered in the event of a "recommendation" to a retail customer, heightening the stakes of that legal categorization. It does not "apply to self-directed or otherwise unsolicited transactions," absent a related recommendation.[326] SEC Investor Advocate Rick Fleming has highlighted that some DEPs, possibly including some gamification

324. Churning is "a conflict of interest in which a broker or dealer seeks to maximize his or her remuneration in disregard of the interests of the customer." 8 LOUIS LOSS, JOEL SELIGMAN & TROY PAREDES, SECURITIES REGULATION 475 (5th ed., 2015); *see id.* at 471–72 (noting that churning "may violate" a wide range of laws and regulations); *see, e.g.*, Mihara v. Dean Witter & Co., 619 F.2d 814, 820 (9th Cir. 1980). Traditionally the churning theory applied where the client had given the broker discretion over trades in an account, but also where the "customer routinely accepts the broker-dealer's recommendations, typically because the customer is naive, unsophisticated, or inexperienced." 8 LOSS ET AL., *supra*, at 475–76. FINRA codified churning doctrine in its quantitative suitability requirement under its Rule 2111, then proposed to eliminate the control element. *See* Notice of Filing of a Proposed Rule Change to FINRA's Suitability, Non-Cash Compensation and Capital Acquisition Broker (CAB) Rules in Response to Regulation Best Interest, Exchange Act Release No. 88422, 85 Fed. Reg. 16,974, 16,975 (Mar. 25, 2020). In Reg BI, the SEC codified the broker's duty of care not to make quantitatively unsuitable recommendations and applied this duty regardless of whether the broker has actual or de facto control over the account. Reg BI Adopting Release, *supra* note 246, at 33,327.

325. *See generally* Ford, *supra* note 321 (discussing tradeoffs between principles-based and more prescriptive approaches to governance).

326. *See* Reg BI Adopting Release, *supra* note 246, at 33,334–35.

features, "may blur the line between solicited and unsolicited transactions."[327]

That highlights three potential gaps in Reg BI the SEC could fix. First, if brokers elicit order flow subtly through gamification, the broker's duties "should not turn on whether the customer technically initiates the trades after" experiencing the gamification feature.[328] The SEC should make clear what kinds of gamification and other digital engagement practices fall within the category of "recommendation," triggering Reg BI quantitative suitability duties.

Second, some practices might not be easily characterized as recommendations. In any case, industry practices are likely to evolve in any event to avoid falling in that doctrinal category. We might therefore expect the doctrinal concept of a recommendation to prove insufficient to implement the social welfare case for regulating gamification. If that is so, the SEC should consider addressing gamification by reopening two important aspects of the deal struck in Reg BI that have proved not up to the task: stopping short of harmonizing the standards of conduct for broker-dealers and registered investment advisers, and limiting the broker's duties to situations involving "recommendations."

Finally, to the extent that the SEC has an ambition to add new regulatory categories, it might even define DEPs as a middle-ground category that do not rise to the level of recommendations. Where recommendations are involved, Reg BI imposes on brokers extensive duties relating to care, disclosure, compliance, and conflicts of interest.[329] It may not be appropriate to trigger all these duties with respect to every kind of gamification feature or DEP. One solution would be to apply a subset of these duties, like quantitative suitability and the conflict-of-interest obligation, to app design features that are customer communications but can't easily be categorized as "recommendations."[330]

327. Rick Fleming, Inv. Advoc., Sec. & Exch. Comm'n, Remarks at SEC Speaks: Investor Protection in the Age of Gamification: Game Over for Regulation Best Interest? (Oct. 13, 2021), https://www.sec.gov/news/speech/fleming-sec-speaks-101321 [https://perma.cc/3CKA-8UQF].

328. *Id.*

329. *See generally* Reg BI Adopting Release, *supra* note 246 (explaining new standards that "enhance[] the broker-dealer standard of conduct beyond existing suitability obligations, and align[] the standard of conduct with retail customers' reasonable expectations").

330. *See also supra* notes 302–304 (describing related supervisory and compliance duties).

5. *Fiduciary duty theories*. There is a more fundamental aspect of the deal struck in Reg BI that the SEC might reopen: the quality and nature of the broker-client relationship. Ordinary arms-length commercial or sales relationships in most industries, under most states' laws, do not give rise to special duties to customers.[331] This reflects the intuition that commercial strategies meant to activate or alter consumers' behavioral or cognitive processes, and elicit behavior that generates private profit, might be the proper subject of unfair trade or other bodies of regulation—but not the heightened duties of fiduciaries.[332]

Securities law has long grappled with whether brokers are more like mere salespeople, who do not owe fiduciary duties to their customers, or more like investment advisers, who have more of a confidential advisory role with their clients.[333] The distinctions between the kinds of financial advisory relationships are often blurry.[334] Brokers do much of what registered investment advisers do. Yet they are exempted from the fiduciary duties that apply to RIAs because there is an exemption for brokerage advice that is solely incidental to brokerage business—an exemption that has been thoroughly interpreted away so as to render it toothless.[335] At common law, brokers were not fiduciaries, except when that status sprang from some aspect of the relationship suggesting that the client needed the additional protection of the law.[336] The Dodd-Frank Act built from that

331. *See, e.g.*, Pension Comm. of the Univ. of Montreal Pension Plan v. Banc of Am. Secs., LLC, 592 F. Supp. 2d 608, 624 (S.D.N.Y. 2009) (noting that "no fiduciary duties arise where parties deal at arm's length in conventional business transactions").

332. *See* Meinhard v. Salmon, 164 N.E. 545, 546 (N.Y. 1928) (observing, in the classic case on fiduciary duty, that "[m]any forms of conduct permissible in a workaday world for those acting at arm's length, are forbidden to those bound by fiduciary ties").

333. *See, e.g.*, Arthur B. Laby, *Advisors as Fiduciaries*, 72 FLA. L. REV. 953, 1021 (2020); Arthur B. Laby, *Selling Advice and Creating Expectations: Why Brokers Should Be Fiduciaries*, 87 WASH. L. REV. 707, 726–36 (2012) (describing the history of regulatory contestation over broker-dealer fiduciary status between deregulation in 1975 up to a few years before adoption of Reg BI); Benjamin P. Edwards, *Fiduciary Duty and Investment Advice: Will a Uniform Fiduciary Duty Make a Material Difference*, 14 J. BUS. & SEC. L. 105, 108–16 (2014).

334. *See* Arthur B. Laby, *Fiduciary Obligations of Broker-Dealers and Investment Advisers*, 55 VILL. L. REV. 701, 704 (2010) (noting the law of fiduciary duty in this context "has vexed courts and commentators for decades").

335. *See* Investment Advisers Act of 1940 § 202(a)(11)(C), 15 U.S.C. § 80b-2(a)(11)(C); Commission Interpretation Regarding the Solely Incidental Prong of the Broker-Dealer Exclusion from the Definition of Investment Adviser, 84 Fed. Reg. 33,681, 33,685 (July 12, 2019).

336. *See, e.g.*, Patsos v. First Albany Corp., 741 N.E.2d. 841, 851 (Mass. 2001).

common-law baseline, directing the SEC to examine whether to harmonize the duties that brokers and RIAs owe to their customers.[337]

Reg BI came out of that statutory mandate. It was the product of long negotiations over whether to harmonize those duties or subject brokers to a lighter duty.[338] One objection is that Reg BI did not go far enough, implying regulators might address this unfinished business.[339] Reg BI was adopted by an SEC dominated by Republican appointees, and the shift to an SEC dominated by Democratic appointees may bring fresh scrutiny to whether Reg BI should be extended in this or other regards.[340]

But fiduciary duty theories may have some traction in addressing gamification even if the SEC does not continue to harmonize the broker-dealer and RIA standards of conduct. In a concurrent enforcement system, absent preemption, states can respond to federal rules or enforcement efforts thought to be inadequate.[341] Several states have considered adopting broker fiduciary rules after Reg BI. Massachusetts, for instance, has state regulations applicable to brokers registered to do business there.[342] In 2020, its state securities regulator amended those regulations to impose a fiduciary standard building on

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337. *See* Dodd-Frank Wall Street Reform and Consumer Protection Act, Pub. L. No. 111-203, § 913(b), 124 Stat. 1376, 1824 (2010).

338. *See, e.g.*, James A. Fanto, *Techniques of Regulatory Implementation: The Case of Reg BI and Form CRS*, *in* CAMBRIDGE HANDBOOK OF INVESTOR PROTECTION (Arthur B. Laby ed., forthcoming 2022) (manuscript at 9–11) (on file with author).

339. In October 2021, the director of the SEC's Office of the Investor Advocate told an industry conference that DEPs "blur the line" between brokerage and investment advice, and that if the SEC "fails to brighten the distinction between advisers and brokers, it will make little sense to regulate the two with such distinct regulatory models." Fleming, *supra* note 327.

340. *See* MORGAN LEWIS, 2020 YEAR IN REVIEW AND A LOOK FORWARD: SELECT SEC AND FINRA DEVELOPMENTS AND ENFORCEMENT CASES 11 (2021); *cf.* Mark Schoeff, Jr., *SEC Can Handle Digital 'Nudges' with Regulation Best Interest: SIFMA*, INV. NEWS (Dec. 7, 2021), https://www.investmentnews.com/sec-can-handle-digital-nudges-with-regulation-best-interest-sifma-214906 [https://perma.cc/6ZP9-X8FQ] (discussing a major Wall Street trade organization's comment letter, which argues against scrutinizing Reg BI).

341. *See, e.g.*, James Fallows Tierney, *Summary Dismissals*, 77 U. CHI. L. REV. 1841, 1860–61 (2010) (noting that in a federal system, "it should be unsurprising" to see states experimenting by adopting rules that "are welfare maximizing" relative to more permissive federal-law standards). For discussion of the costs and benefits of states' role in this kind of regime, see Amanda M. Rose, *State Enforcement of National Policy: A Contextual Approach (with Evidence from the Securities Realm)*, 97 MINN. L. REV. 1343, 1351–59 (2013).

342. *See* 950 MASS. CODE REGS. 12.201–.202 (2020) (requiring and providing procedures for licensing and registration); *cf.* MASS. GEN. LAWS ch. 110A, § 201(a) (2002) ("It is unlawful for any person to transact business in this commonwealth as a broker-dealer . . . unless he is registered under this chapter.").

the common law rule.[343] And in December 2020, it brought an enforcement proceeding alleging that Robinhood's gamification violated those regulations.[344] Robinhood challenged the regulations, arguing federal preemption and that the state agency could not change state common law.[345] In adopting these rules, Massachusetts securities regulators effectively dared the state Supreme Judicial Court to approve an extension of state fiduciary law beyond both what the common law and the SEC had recognized applies to brokers.[346] Though the Massachusetts superior court concluded that the securities division couldn't do that, the agency has appealed that ruling—so the state fiduciary-law story is not over yet.[347]

The main implication for us is that fiduciary theories are a plausible, if risky, regulatory response to gamification. The traditional common-law bases for assigning fiduciary status to a broker typically involved firms that were trying to earn rents in nonsalient ways by manipulating people's trading—in accounts that are discretionary, owned by people who lack capacity to manage their affairs, or owned by those who blindly accept recommendations without further thought.[348] These theories offer a readymade basis, rich with common law support, for going after broker-dealers that target children and other investors who should not be taking brokers' advice about risky

343. *See generally* Adopting Release, Amendments to Standard of Conduct Applicable to Broker-Dealers and Agents, 1412 Mass. Reg. 61, 62 (Mass. Sec. Div. Feb. 21,, 2020) (explaining that the regulation would apply a fiduciary conduct standard to broker-dealers and agents "when they make recommendations or provide advice with respect to securities").

344. *See supra* note 72 and accompanying text.

345. *See* Robinhood Compl., *supra* note 227, at 20, 24.

346. *See* Dean Seal, *Robinhood Fight Will Test Mass. Securities Chief's Authority*, LAW360 (May 7, 2021, 3:49 PM), https://www.law360.com/securities/articles/1378416 [https://perma.cc/5R4N-GL3W]. For the argument that federal law neither expressly nor implicitly preempts these regulations, see Maria E. Vaz Ferreira, Note, *Staying True to NSMIA: A Roadmap for Successful State Fiduciary Rules After Reg BI*, 94 ST. JOHN'S L. REV. 557, 579–83 (2020).

347. *See* Robinhood Fin., LLC v. Galvin, No. 2184CV00884, 2022 WL 1720131, at *14–15 (Mass. Super. Ct. Mar. 30, 2022), *appeal filed* (Sept. 6, 2022); *see also* Lauren Berg, *Robinhood Gets Judge To Strike Down Mass. Investment Rule*, LAW360 (Mar. 30, 2022, 11:28 PM), https://www.law360.com/articles/1479359/robinhood-gets-judge-to-strike-down-mass-investment-rule [https://perma.cc/2ZQ6-GCUD] (situating the Robinhood enforcement action within the state securities regulator's broader efforts to promote a robust state investor-protection regime); Chris Villani, *Campbell Wins Mass. AG Primary, Galvin Survives Challenge*, LAW360 (Sept. 6, 2022, 10:10 PM), https://www.law360.com/articles/1527748/campbell-wins-mass-ag-primary-galvin-survives-challenge [https://perma.cc/L7EC-A858] (noting that incumbent Bill Galvin was reelected in a contested primary for his "eighth term" as "the state's longest serving Secretary of the Commonwealth, overseeing the state's . . . enforcement of securities" laws).

348. *See supra* note 324 and accompanying text.

speculative asset markets. But we also shouldn't overstate their promise, especially at the state level. Even the viable fiduciary claims remain state law, limiting their scope until the SEC completes the unfinished work of Dodd-Frank in harmonizing the broker-dealer and investment adviser standards of conduct.

C. Securities Law's Role in Picking the Investment Game's Winners

Gamification, and calls to regulate it, highlight a tension at the core of securities markets. Investing is an essential way of growing wealth in a capitalist economy, and securities law expresses a normative commitment toward protecting investors. Securities regulation was historically concerned about compensation in the form of commissions, as well as the kinds of conflicts of interest this would generate. The emergence of a business model that gives rise to nonsalient compensation, and equally important but less apparent conflicts of interests, raises tensions about what securities law is trying to accomplish in its investor-protection goals.

These tensions are likewise reflected in techno-pessimist concerns that investment games, left unchecked, will lead retail investors to become increasingly skeptical toward finance and toward markets themselves.[349] That investment games will generate this skepticism is in some sense inevitable. Across many types of asset markets today, prices simply do not reflect anything like fundamental value, if that can even be ascertained.[350] From the perspective of traditional finance's concern for intrinsic or fundamental value, market prices are often *inaccurate*.[351] Yet securities law encourages an arms race in developing

349. *See supra* notes 236–245 and accompanying text.

350. What is the intrinsic value of Dogecoin? *See* Martin C. W. Walker, *Impossible Finance — the Zero Coupon Perpetual Bond*, MEDIUM (Feb. 21, 2019), https://martincwwalker.medium.com/impossible-finance-the-perpetual-zero-coupon-bond-eaf4460d80ef [https://perma.cc/ZE7Z-RP44] (drawing on bond valuation theory to zero in on the value of assets like cryptocurrencies that pay no coupon in perpetuity); *see also, e.g.*, Savva Shanaev, Satish Sharma, Arina Shuraeva & Binam Ghimire, The Marginal Cost of Mining, Metcalfe's Law, and Cryptocurrency Value Formation: Causal Inferences from the Instrumental Variable Approach 2, 11–26 (June 7, 2019) (unpublished manuscript), https://ssrn.com/abstract=3432431 [https://perma.cc/9SY3-ARS7] (reporting evidence from causal inference methods that transaction data is inconsistent with "widely considered important" factors for valuation of proof-of-work cryptocurrencies).

351. *See, e.g.*, Kahan, *supra* note 253, at 988–96 (discussing causes of market-price inaccuracies, and consequences for markets); Troy A. Paredes, *Blinded by the Light: Information Overload and Its Consequences for Securities Regulation*, 81 WASH. U. L.Q. 417, 481, 483–84 (2003) (noting reasons why "a significant divergence between security prices and fundamental value can develop," and citing evidence of "sustained mispricings and inefficiencies in capital

physical infrastructure and trading algorithms that can earn very small profits, many times a day, to "correct" mispricings or promote price discovery across distance in continuous time.[352] One recent working paper estimates that this imposes a modest tax on trading and increases the social costs of liquidity.[353] The goal is ensuring that market prices are infinitesimally *precise*—in the form of constantly updated limit order books deep with liquidity and transparency across geographically dispersed execution venues in continuous time.

Viewed at a high enough level of generality, the technologies that enable liquidity, price discovery, and price transparency are central to constructing and stabilizing financial markets. These technologies give financial actors the ability to communicate, process, calculate, speculate, and do other things with vast reams of financial data. Innovation has long served the production of these goods, back to even before the days of the ticker tape.[354] And retail investors have long used these innovative technologies in engaging with markets. As Alex Preda describes contemporaneous accounts of watching the stock market in the broker's office around 1907, one's "ability to watch and be in touch" with markets and pricing information "*all the time* was a key condition of playing the [investing] game."[355] In this sense, retail stock trading has had a gameful-play element since its earliest days—one that has always been interwoven with technological advances in price transparency.

Technology is thus central to the maintenance of securities markets: in how traders interact with posted bids and spreads, trades cross in matching engines, and proprietary trading algorithms shave

markets"). *See generally* SHILLER, *supra* note 203 (offering a theory of behavioral finance and bubbles in asset markets).

352. *See* Andrew G. Haldane, *The Race to Zero*, in THE GLOBAL MACRO ECONOMY AND FINANCE 245, 261–62 (Franklin Allen, Masahiko Aoki, Jean-Paul Fitoussi, Nobuhiro Kiyotaki, Roger Gordon & Joseph E. Stiglitz eds., 2012) ("If the way to make money is to make markets, and the way to market markets is to make haste, the result is likely to be a race – an arms race to zero latency . . . . Arms races rarely have a winner."). *See* McNamara, *supra* note 274, at 73–75.

353. *See generally* Matteo Aquilina, Eric Budish & Peter O'Neill, *Quantifying the High-Frequency Trading "Arms Race*,*"* 137 Q.J. ECON. 493 (2022) (estimating the tax at 17 percent).

354. Alex Preda, *Socio-Technical Agency in Financial Markets: The Case of the Stock Ticker*, 36 SOC. STUD. SCI. 753, 760–61 (2006). *See generally* Devin Kennedy, *The Machine in the Market: Computers and the Infrastructure of Price at the New York Stock Exchange, 1965–1975*, 47 SOC. STUD. SCI. 888 (2017) (discussing the history and use of market data technology to disseminate information about securities).

355. ALEX PREDA, FRAMING FINANCE: THE BOUNDARIES OF MARKETS AND MODERN CAPITALISM 133 (2009) [hereinafter PREDA, FRAMING FINANCE].

miniscule profits by arbitraging stale prices. Given this, however, it's puzzling that securities regulation has formally kept technology at arm's length as a regulatory object. In a semantic analysis of SEC commissioner speeches from 1935 to 2010, Juan Pablo Pardo-Guerra argues that regulators have increasingly framed technology as a kind of exogenous, "inscrutable force[] that act[s] upon markets with seemingly little possibility of control."[356] The result is to naturalize expectations among the regulated community, and among regulators themselves, about law's role in constituting and constraining market forces.

So how *should* securities law prioritize technology's role in producing information about markets that is valuable for a select few participants? Noting securities law's somewhat ambivalent stance toward new technology, legal scholar Eric C. Chaffee offers one approach in the context of virtual investments.[357] Like former SEC Commissioner Roisman, he has encouraged clarity and a light regulatory touch to encourage technological innovation.[358] There is some merit to the light-regulatory-touch approach, especially when there is an uncertain forward path of technological innovation in the kinds of projects that will attract capital investment. In my view, the social welfare case for intervention is stronger, however, where evidence suggests innovative technologies use behaviorally exploitative methods to produce order flow—generating significant harms to capital markets' allocative functions and to retail investors themselves.

Whichever way securities law decides to intervene here, it is certain to shape trading technology's development. As Frank Pasquale has observed, contrary to the view "that the technology of finance is independent of legal rules, such rules are in fact a prime driver of technological developments in finance."[359] Market structure and the

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356. Juan Pablo Pardo-Guerra, *Where Are the Market Devices? Exploring the Links Among Regulation, Markets, and Technology at the Securities and Exchange Commission, 1935–2010*, 49 THEORY & SOC'Y 245, 271 (2020).

357. *See* Eric C. Chaffee, *Securities Regulation in Virtual Space*, 74 WASH. & LEE L. REV. 1387, 1454–56 (2017); *cf.* Pardo-Guerra, *supra* note 356, at 246 (studying "the relative neglect of technology as an object of [securities] regulation").

358. *See* Chaffee, *supra* note 357, at 1454–56; Seal, *supra* note 60.

359. Frank Pasquale, *Law's Acceleration of Finance: Redefining the Problem of High-Frequency Trading*, 36 CARDOZO L. REV. 2085, 2086 (2015).

activity of market participants are largely inseparable from the legal rules that construct those markets.[360]

Technology like gamification pits the interests of retail investors against those of sophisticated financial intermediaries. Securities law has pushed arrangements that encourage informationally noisy engagement with capital markets that makes it valuable for dealers to try to do information arbitrage and promote price transparency. That arms race is socially costly, as it diverts investment from the real economy into efforts to shave miniscule rents from improvements in intermediation, liquidity, and price transparency.[361] These are important services to provide in a continuous-time geographically dispersed market. But that kind of market structure is not necessary, making investments in arbitraging seem like significant diversions of attention and capital toward unproductive ends. An ambitious legislative response would be to address these market structure features that have encouraged gamification practices to emerge.[362] Recall that market fragmentation and continuous-time nationally best pricing have created undesirable opportunities for the arbitrage that makes gamification profitable. Reform might address those structural issues instead of the app design that inexorably flows from it—addressing the disease directly, not just treating the symptoms.[363]

360. Recent scholarship on law and political economy, for instance, has underscored law's (and legal scholarship's) market-structuring role in "determining who is subject to market ordering and on what terms and who is exempted in favor of other kinds of protection or provision." Britton-Purdy et al., *supra* note 226, at 1833 (noting that "law is . . . perennially involved in creating and enforcing the terms of economic ordering" through the institutional design of markets).

361. *See supra* notes 352–353 and accompanying text.

362. As John Coffee suggested in an op-ed, a "major redesign of market structure" would "face the most organized resistance." Coffee, *supra* note 176. For examples of the SEC floating reforms like a ban on PFOF and the resistance that has followed, see Katherine Doherty & Lydia Beyoud, *Wall Street Gets Ready To Rumble over Stock-Trading Rules*, BLOOMBERG (June 23, 2022, 5:00 AM), https://www.bloomberg.com/news/articles/2022-06-23/robinhood-hood-stock-trading-could-lead-to-new-sec-rules [https://perma.cc/C4YD-PGP6]; Katherine Doherty, *Former SEC Chair Clayton Defends Payment for Order Flow Model*, BLOOMBERG L. (Aug. 3, 2022, 11:22 AM), https://news.bloomberglaw.com/securities-law/former-sec-chair-clayton-defends-payment-for-order-flow-model [https://perma.cc/UU34-CZPY].

363. Some regulators, scholars, and consumer advocates have called for Congress to prohibit the practice of payment for order flow, on the notion that this will address distributional concerns about gamification. *See, e.g.*, Benjamin Bain & Robert Schmidt, *Gensler Swims Against Tide in Payment-for-Order-Flow Fight*, BLOOMBERG (Aug. 31, 2021, 4:35 PM), https://www.bloomberg.com/news/articles/2021-08-31/gensler-swims-against-tide-floating-payment-for-order-flow-ban [https://perma.cc/GS7Q-NG36]. But standing alone a ban on PFOF would appear not to

Financial scholars have suggested that a solution to this arms race is to switch from continuous-time pricing to periodic batch auctions.[364]

This kind of technocratic solution still would not get at the underlying incentive structure that produces gamification, however. Today the regulation of modern stock markets largely promotes the sectoral interests of sophisticated financial intermediaries in the guise of producing two quasi-public goods: liquidity and price discovery.[365] The political economy of capital markets regulation has, since the beginning, found ways of making order flow more legible to promote the production of those goods.[366] Self-regulated groups of market participants have evolved to claim these goods as private property, seeking to protect them as sources of private wealth and profit.[367] These goods are profitable for their producers.[368] Technological innovation enables lower costs of acquiring information, which begets an incentive for greater innovation. But as economist Roxana Mihet has suggested, if rational uninformed investors have an incentive to exit information-rich markets, "financial technology reduc[tion of] barriers to access . . .

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address other first- and third-party harms from investment gaming, even if it might make the business model less profitable.

364. *See, e.g.*, Budish et al., *supra* note 112, at 1594–1608; *cf.* Yi-Tsung Lee, Roberto Riccó & Kai Wang, Frequent Batch Auctions vs. Continuous Trading: Evidence from Taiwan 3 (Feb. 25, 2022) (unpublished manuscript), https://ssrn.com/abstract=3733682 [https://perma.cc/GZD5-4BG6] (studying Taiwan Stock Exchange's switch from frequent batch auctions to continuous trading, and noting that "[w]hile frequent batch auctions can potentially increase liquidity provision and reduce the severity of crashes, they can also reduce pre-trade transparency and the number of strategies implementable by investors").

365. *See* MATTLI, *supra* note 104, at 5–6.

366. *See* PREDA, FRAMING FINANCE, *supra* note 355, at 241–43 (suggesting that "the observational mode of the microscope, allowing the continuous observation of price flows in real time, is the dominant mode of global financial markets," and situating this within a larger project tracing the development of this mode over time). *See generally* David C. Donald, *Information, and the Regulation of Inefficient Markets*, *in* THE POLITICAL ECONOMY OF FINANCIAL REGULATION (Emilios Avgouleas & David C. Donald eds., 2019) (describing the role of information production in market design).

367. *See* KATHARINA PISTOR, THE CODE OF CAPITAL: HOW THE LAW CREATES WEALTH AND INEQUALITY 208 (2019) ("The key to understanding the basis of power and the resulting distribution of wealth lies . . . in the process of bestowing legal protection on select assets and to do so as a matter of private, not public, choice.").

368. *See generally, e.g.*, Charles M. Jones, Understanding the Market for U.S. Equity Market Data (Aug. 31, 2018) (unpublished manuscript), https://www0.gsb.columbia.edu/faculty/cjones/papers/2018.08.31%20US%20Equity%20Market%20Data%20Paper.pdf [https://perma.cc/AAR9-7NT9] (analyzing the market conditions of and uses for equity market data).

deter[s] financial market participation."[369] Innovative technology that enables information production may cause exit by investors who will forgo earning equity risk premiums. If so, it "may be worsening financial income inequality."[370]

How to regulate gamified investing is thus but the most recent battle over the design of legal rules that distribute surplus not from market exchange, but from the production of markets as goods themselves. Taken together, this illustrates securities law's orientation toward elevating the interests of financial exchanges and intermediaries above other capital markets participants. In doing so, it risks overlooking an alternative conception of markets in which price discovery and liquidity are but means to ends: components of markets that are oriented toward the public interest and are valuable primarily insofar as they are effective at producing and encouraging human flourishing.

Let's wrap up by situating investment games within this sketchy effort to offer a political economy of retail investment regulation. Retail traders don't beat the market by trading actively. We shouldn't expect brokers, wholesalers, and other market intermediaries to ignore incentives to encourage retail investors to trade excessively in service of price discovery and liquidity. The uncompensated labor of retail investors in generating noisy, volatile order flow is an input to the production of those two goods. So from intermediaries' perspective, gamified investing may be an integral part of generating data for their profit.[371]

But securities law doesn't have to sit idly by, either. And it should not succumb to the notion that we should promote noisy trading by retail investors in service of infinitesimally precise but wildly inaccurate prices. The consequences of doing so are to drive misallocation of capital, divert investment and attention from the real economy to the financial economy, and potentially endanger ordinary people's financial security and achievement of their long-term goals. We might even welcome the skepticism that gamification casts toward the social functions of stock markets. If "meme stocks" and investment games reveal these disjointed problems with asset pricing and capital

369. Roxana Mihet, Who Benefits from Innovations in Financial Technology? 3 (Jan. 9, 2020) (unpublished manuscript), https://news.unil.ch/document/1578925328797.D1578925328891 [https://perma.cc/WP65-4XGP].

370. *Id.*

371. *See supra* note 232 and accompanying text.

allocation, that would be a welcome antidote to our understanding of what capital markets in late capitalism are even for.

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To summarize Part III, there are several plausible social welfare justifications for regulating gamified investing and related digital engagement practices. Encouraging retail investors to churn their own accounts for noisy reasons, and potentially to excess, is likely to degrade market quality and the processes by which financial markets allocate capital to projects that will grow the real economy. It may also harm investors directly, preventing them from achieving their financial goals.

Regulators concerned about gamification's consequences have a menu of potential interventions to choose from. These interventions run the range from modest (disclosure) to ambitious (market structure reform). The most politically achievable and plausibly effective interventions likely involve a combination of modest tweaks to existing sales practices rules and the adoption of compliance-like monitoring duties—either standalone or as part of extending fiduciary duties to brokers. Yet merely technocratic tweaks like these do not address a normative problem underlying gamified investing: that it sees retail investors not as participants in the economic project of encouraging widespread human flourishing, but as sacrifices to the production of price discovery and liquidity in the market.

CONCLUSION

Gamified brokerage apps make trading more fun. That will always be a problem for regulators who must face the headwinds for being spoilsports. There are plausible social welfare reasons, however, for regulators to prohibit or limit gamification and other digital engagement practices. As always, regulators should be cautious to tailor interventions consistent with empirical evidence. But in doing so, securities law should be attuned to cross-sectional differences in retail investors' trading motives. Those differences may align with objections to gamification in investing apps in the first place but are often overlooked.

Securities law has a number of doctrinal interventions for addressing the associated principal-agent, surplus allocation, and externality concerns. Most promising are those that try to get at whether trading is quantitatively suitable, or those that harmonize the standards of conduct for broker-dealers and investment advisers. Regulators should also consider the problems that give rise to gamified investing, making it profitable to stock a pond with noisy order flow from retail investors. But a bold and modern securities law would not stop at small fixes; it would step in to address the market structure problem too.