

Vanessa Countryman, Secretary  
Securities and Exchange Commission  
100 F Street NE  
Washington DC 20549-1090

October 1, 2021

Re: File Number S7-10-21

Dear Ms. Countryman:

I appreciate the opportunity to comment on the Securities and Exchange Commission's request for information on the regulation of digital engagement practices (DEPs). I am a law professor who teaches and researches about the regulation of broker-dealers in securities, and enforcement of broker-dealer rules. I also worked for five years from 2015 to 2020 on the staff of the adjudications unit of the SEC's Office of the General Counsel, mostly focusing on broker-dealer and FINRA matters. I joined the faculty of the University of Nebraska College of Law after leaving the OGC staff in August 2020.<sup>1</sup>

My research generally focuses on retail securities markets where investors act like ordinary consumers. In these markets, competition and psychology affect the optimal regulation of services that money managers offer. Firms design contracts so consumers focus on perceived price, underestimating total cost of goods and services. They compete on salient attributes like price, and pair these with nonsalient attributes that are ignored (like costly contract terms, disclosed but opaque conflicts of interest, or long streams of micropayments in the form of inferior trade executions). There are perhaps one or two other securities regulation scholars in the United States studying this issue directly.

My comments highlight my recent scholarship, which bears directly on the SEC's request for information on digital engagement practices. The SEC may find this scholarship relevant to any future rulemaking it undertakes about digital engagement practices. To that end, this comment letter draws mainly on an essay and a working paper I have written in my academic capacity.<sup>2</sup> One article, coauthored with my University of Nebraska College of Law colleague Kyle Langvardt, is forthcoming in the YALE LAW JOURNAL FORUM. A draft version of that article is available online, and I will refer to it here by the shorthand "*Confetti Regulation*."<sup>3</sup>

A second article, a work in progress tentatively titled "*Gamification and Securities Regulation*," is also posted online; I anticipate that I will submit it for publication shortly, and the final

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<sup>1</sup> Current and past institutional affiliations given for identification and potential conflict-disclosure purposes only.

<sup>2</sup> Neither article was written on behalf of any other person (besides, in the one case, my identified coauthor).

<sup>3</sup> See Kyle Langvardt & James Fallows Tierney, *On Confetti Regulation: The Wrong Way to Regulate Gamified Investing*, 131 YALE LAW JOURNAL FORUM (forthcoming 2021), available at [https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=3928268](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3928268).

citation will be posted to the SSRN page online.<sup>4</sup> As one colleague noted in commenting on the paper, it thoroughly examines all the major arguments for and against regulating digital engagement practices.

Both pieces of scholarship are attached to this letter for the Staff's convenience. These papers look at the problem of digital engagement practices—and how securities regulation might address it—in detail. I will keep this letter's comments brief, summarizing the attached scholarly papers (which themselves include full elaboration and citations to underlying source material) to simplify my bottom-line comments.

I focus on three themes: how we got here; why digital engagement practices might be a subject of concern for securities law; categories of regulatory responses and interventions that the SEC might consider adopting in any future rulemaking on digital engagement practices.

## I. How we got here

To begin with, digital engagement practices are the nearly inevitable consequence of several convergent trends in market structure and regulatory practice. First, securities regulators and scholars have observed a long-term trend of retail investors substituting away from direct holding of corporate equities into institutional assets like mutual funds and ETFs, a trend that former SEC general counsel Brian Cartwright called “deretailization.” But recent empirical evidence about the volume of retail equity order flow, for instance, suggests a slowdown if not outright reversal of this trend. Ordinary people are now trading more than ever before, for a variety of reasons—only some of which may be traceable to digital engagement practices.

A related convergent trend is price competition on highly salient brokerage commissions. Many discount brokers have competed the price of equity trading commissions to zero, reducing the most significant transaction costs that historically acted as frictions against excessive trading. Brokers do not provide their services as a charity, of course, and have had to find substitute sources of revenue.

The third convergent trend reflects an increasingly important source of this substitute revenue for certain kinds of broker-dealers. At the risk of oversimplifying increasingly complex market structure issues, it is hard to offer a single national best bid or offer across geographically dispersed trade execution venues in continuous-time markets. Distance limits how quickly price quotations can be updated to reflect events on distant markets. Many trading firms have made significant investments in speed to update stale prices, earning fractions of pennies as compensation for this intermediation service. There are risks with this kind of business model, such as adverse selection. 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. Historically one way of doing that has been to trade against retail order flow.

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<sup>4</sup> See James Fallows Tierney, *Gamification and Securities Regulation* (manuscript dated Sept. 27, 2021), available at [https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=3916407](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3916407).

Other comment letters undoubtedly will focus on payment for order flow and related issues, and I will not belabor the topic here. It should suffice to say that some kinds of digital engagement practice are designed to encourage informationally noisy retail order flow to service the broker-dealer's need for a substitute revenue source. Regulators should pay close attention to broker-dealers' incentive to encourage noisy order flow in this way.

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

The request for information reveals wide ranging concerns about the role of digital engagement practices in retail securities markets. I focus on a handful of particularly important implications of these practices for securities law.

First, securities law should account for the fact that retail investors may trade for different reasons. 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 do worse the more they trade. But this does not itself support a conclusion that retail traders are all being “gamified” into trading more. 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.

Digital engagement practices appear to be more relevant to two other reasons why people trade in general (and in particular securities). 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. 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 justify regulatory intervention in the first place. Given the state of the research, in selecting among interventions regulators should be wary of relying too heavily on empirical evidence about how digital engagement practices change people's behavior outside the context of financial markets.

Second, there is indeed a plausible social welfare justification for prohibiting or sharply restricting digital engagement practices. 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 these practices. One 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 (and possibly other sorts of measurable welfare), even after taking into account welfare gains from zero-commission trading. 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.

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. 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. But the SEC should examine carefully the nature of these distributional claims. 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.

Second, digital engagement practices potentially implicates broker-dealer regulation’s traditional concern for reducing conflicts of interest in the broker-dealer relationship. 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.

To the extent that digital engagement practices are those that encourage trading for its own sake, regulators might analogize to these legacy 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. The modern version of these legacy doctrines, I suggest in both attached pieces of scholarship, might be the quantitative suitability component of brokers’ duty of care under Regulation Best Interest.

Third, securities regulation has not typically been concerned with retail investors who engage in self-directed excessive trading. To be sure, financial economists have found that retail traders perform worse the more actively they trade. But with limited exceptions—like FINRA’s rules about “pattern day traders”—in general securities law does not prohibit or even limit retail investors’ ability to trade excessively for speculative reasons. 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. 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. This does not mean regulators should not consider those solutions, just that they are not among securities law’s canonical policies.

The bottom line is that flashy app design is highly salient but not likely to have a meaningful effect in changing people’s propensity to trade. Much more worrisome is an entirely different category of DEP, behavioral prompts or personalized recommendation algorithms—combined with machine learning and data analytics practices that hone these practices’ ability to influence client behavior. 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. Existing rules may not be sufficient to respond to this kind of practice, especially if they cannot easily be fit into

legal categories like “recommendations.” In addition, as securities law specialists have pointed out to me at conferences, 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.

### III. Regulatory interventions

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

To begin, several responses are non-starters. Most notably, mandatory disclosure is a favored and common response in securities law, but there are already disclosures about the underlying business practices and it is unclear that any retail clients will consume disclosures about digital engagement practices. In addition, as Langvardt and I argue in *Confetti Regulation*, while simply banning objectionable design features might be an attractively simple solution, it would significant First Amendment litigation risk and would possibly bring unwanted scrutiny to other aspects of the securities laws, which are at their core content-based restrictions on speech.

More promising is to rely on legacy doctrines as a framework for thinking about digital engagement practices. 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. The quantitative suitability component of the duty of care under Regulation Best Interest 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. The crux is whether digital engagement practices are understood as a recommendation. As detailed in the attached *Gamification* article, longstanding pre-Reg BI interpretations of what constitutes a “recommendation” suggest that they can be.

As I point out in the article, there is also a more ambitious solution. Whatever the merits of other arguments for regulating behavioral design, and of other techniques for addressing the risks it presents to investors and markets, 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 engagement practices. 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. This would, of course, “waste” existing investments in speed to cater to the existing market. 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.

Finally, the attached articles do not address a number of other possible regulatory interventions, and I do not mean to rule these out by omission. Some may have theoretical or normative merit—like banning retail reading of corporate equities, crypto, or options and requiring individuals to hold funds or diversified portfolios instead—yet are political and

practical nonstarters. Others reflect the possibly unfinished business of the Dodd-Frank Act's ambition to harmonize standards of conduct for BDs and RIAs, as implemented in the BDIA regulatory package in 2019 that included Reg BI.

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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. To paraphrase one colleague who offered comments on the *Gamification and Securities Regulation* paper at an academic conference earlier today, digital engagement practices lay bare many of the contradictions in securities regulation policy—and in what the SEC, FINRA, and state regulators are trying to accomplish.

I thank you for your consideration. Please let me know if I can be of further assistance to the Commission, the Commissioners' counsel, or the Staff as the agency considers these issues further. For questions and additional information, please contact me by mail at the address below or by email at [jtierney4@unl.edu](mailto:jtierney4@unl.edu).

Sincerely,

James F. Tierney  
Assistant Professor of Law  
University of Nebraska College of Law

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# On “Confetti Regulation”: *the Wrong Way to Regulate Gamified Investing*

Kyle Langvardt and James Fallows Tierney\*

131 YALE LAW JOURNAL FORUM (forthcoming 2021)

Zero-commission investing apps like Robinhood have a business model that requires clients to trade as much as possible. To that end, these apps incorporate design features sometimes called “gamification”: behavioral prompts and flashy casino-like design elements that encourage trading.<sup>1</sup>

The “gamification” design elements that worry regulators 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.<sup>2</sup> The app developers point out that these features make investing more fun and approachable to retail investors.<sup>3</sup> The catch is that those features’ appeal to impulse, rather than deliberation, promotes patterns of risky trading that may not be in most retail investors’ best interests.<sup>4</sup>

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\* Assistant professors of law, University of Nebraska College of Law. For helpful conversations, we thank Josh Braver, Jacob Bronsther, Jake Charles, Jill Fisch, Gina-Gail Fletcher, Talia Gillis, Guha Krishnamurthi, Da Lin, Lidiya Mishchenko, Alex Platt, Shalev Roisman, Barbara Roper, Steve Schaus, David Simon, Will Thomas, and participants at the National Business Law Scholars Conference and Consumer Federation of America conference, and at the Junior Scholar Workshop Series and Research Accountability Group workshops. Special thanks to Casey Dodge and Alan Dugger for excellent research assistance. The authors acknowledge the support of McCollum summer research grants in writing this Essay.

<sup>1</sup> See, e.g., Testimony of Vicki L. Bogan, U.S. House of Representatives Committee on Financial Services Virtual Hearing, *Game Stopped? Who Wins and Loses when Short Sellers, Social Media, and Retail Investors Collide—Part II*, (Mar. 17, 2021); Hannah Levintova, *Robinhood Promises Free Trades. Did Alex Kearns Pay With His Life?* MOTHER JONES (Apr. 29, 2021).

<sup>2</sup> See, e.g., Jason Zweig, *When the Stock Market is Too Much Fun*, WALL ST. J. (Dec. 11, 2020); Michael Wursthorn and Eurim Choi, *Does Robinhood Make It Too Easy to Trade? From Free Stocks to Confetti*, WALL ST. J. (Aug. 20, 2020). On confetti, see *infra* note 26.

<sup>3</sup> See, e.g., Robert Schmidt & Ben Bain, *Robinhood’s Dark Side:irate Traders, U.S. Probe*, THINKADVISOR (Aug. 31, 2020).

<sup>4</sup> Scott Galloway, *iAddiction*, NO MERCY/NO MALICE (June 19, 2020) ([link](#)).

Securities law subjects the financial intermediaries behind these apps to broker-dealer rules governing their communications with retail investor clients. But there are new challenges. Regulators have focused on gamified, or video game-like, elements to encourage repeat engagement and trading. A majority of the Securities and Exchange Commission has expressed interest in regulating “gamification” and other behavioral prompts, and the deadline for the agency’s request for comment is looming.<sup>5</sup> Massachusetts securities regulators have meanwhile sought to revoke Robinhood’s broker-dealer registration, alleging that “gamification” violates state-law fiduciary duties owed to clients.<sup>6</sup> And FINRA, the self-regulatory organization for broker-dealers, signaled that its examination and risk monitoring program is “increasingly focused” on “risks associated app-based platforms with interactive or ‘game-like’ features.”<sup>7</sup>

Combined with zero-commission trading, gamification encourages maladaptive overconsumption of trades. Gamification shares characteristics with other habit-forming technologies like video machine gambling. These characteristics activate predictable cognitive and behavioral responses, giving rise to similar plausible harms. In responding to these harms, regulators should look to analogous regulatory techniques for addressing similar harms from other addictive technologies.<sup>8</sup>

In principle there are many ways both to define the problem and to address it through policy. We save addressing the full range for later work.<sup>9</sup> In this Essay, we focus on one approach to the problem—direct regulation of software design—and warn securities regulators away from it.

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<sup>5</sup> 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). On individual Commissioners’ interest in regulating, see Testimony of Gary Gensler, U.S. House Committee on Financial Services, *Game Stopped? Who Wins and Loses When Short Sellers, Social Media, and Retail Investors Collide, Part III* (May 6, 2021) ([link](#)); Chris Ekimoff and Kurt Wolfe, *Enforcing the Regulations—A Conversation with Commissioner Crenshaw*, INSECURITIES PODCAST (PLI) at about 19: to 22: min. (June 17, 2021) ([link](#)); Allison Herren Lee, Speech, *Leveraging Regulatory Cooperation to Protect America’s Investors*, Remarks at the 2021 Section 19(d) Conference (May 21, 2021) ([link](#)).

<sup>6</sup> See Motion for Leave to File Amended Administrative Complaint, *Robinhood Financial, LLC*, Docket No. E-2020-0047 (Mass. Sec. Div. filed April 15, 2021).

<sup>7</sup> FINRA, 2021 Report on FINRA’s Examination and Risk Monitoring Program 2 (Feb. 2021) ([link](#)).

<sup>8</sup> See Kyle Langvardt, *Regulating Habit-Forming Technology*, 88 FORDHAM L. REV. 129 (2019).

<sup>9</sup> See James Fallows Tierney, *Behavioral design and investor protection* (work in progress).

Regulators might find it tempting to ban objectionable design features like a burst of confetti after the successful execution of a trade. We use “confetti regulation” to describe command and control or prohibitory regulation of user-interface and -experience design choices: confetti splashes, yes, but also push notifications, leaderboards, behavioral prompts, and the like. Regulators might adopt confetti regulation either through new rulemaking or through enforcement of existing law.

We see two problems with “confetti regulation,” however. The lesser is that confetti regulation may be hard to implement and justify, and risks devolving into whack-a-mole. The greater problem is that confetti regulation would attract a lot of deregulatory energy from technology attorneys who cast informational molehills as free-speech mountains. Securities regulation is largely about information and communication—yet it has somehow avoided serious First Amendment scrutiny (read: judicial interference) for decades.<sup>10</sup> Against this backdrop, in recent years the SEC “has lost a string of important appeals before the high court” about its enforcement program.<sup>11</sup> In our view, it would be unwise for the agency to pursue regulatory strategies that would precipitate more deregulatory constitutional challenges—like a First Amendment landmark on the “right to code.”

The safer approach is to avoid making it *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 the old policy against “churning”—the overconsumption of trades not in the retail investor’s best interest, in order to maximize payment for order flow revenue to the broker. After framing gamification as self-directed but behaviorally prompted churning, we tee up for future work preliminary components of a framework for assessing behavioral design against the securities laws’ goals.

## I. Gamification and retail investing

Stock brokers historically charged high commissions that made active trading inaccessible to many investors. Deregulation in the 1970s and technological innovation

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<sup>10</sup> See *infra* Part III.

<sup>11</sup> Dave Michaels, *Supreme Court Justices Indicate They May Further Narrow SEC’s Enforcement Authority*, Wall St. J. (Mar. 3, 2020) ([link](#)); see, e.g., Alexander I. Platt, *Unstacking the Deck: Administrative Summary Judgement and Political Control*, 34 YALE J. ON REG. 439, 462 (2017) (describing challenges).

in the 1990s disrupted that model.<sup>12</sup> The ensuing price wars have led many online discount brokers to offer to zero-commission trading.<sup>13</sup>

Firms offering free services—particularly online services—often depend on other revenue sources that are less salient to the consumer.<sup>14</sup> They may collect and analyze consumer data for third parties (e.g., social media) or tease users into long series of microtransactions (e.g., Candy Crush).<sup>15</sup> The story at zero-commission brokerages is much the same: selling clients financial advice, margin lending, net interest income, and payment for order flow (PFOF).<sup>16</sup>

PFOF, in particular, drives much of the gamification trend. Third parties want information about or access to retail investors' trades.<sup>17</sup> These third parties then pay the broker (like Robinhood) to route those trades to them for execution, rather than elsewhere in the stock market.<sup>18</sup>

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 on device.<sup>19</sup>

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<sup>12</sup> See, e.g., Arthur B. Laby, *Selling Advice and Creating Expectations: Why Brokers Should be Fiduciaries*, 87 WASH. L. REV. 707, 727 (2010).

<sup>13</sup> See, e.g., Lisa Beilfuss & Alexander Osipovich, *The Race to Zero Commissions*, WALL ST. J. (Oct. 5, 2019).

<sup>14</sup> See, e.g., James Fallows Tierney, *Contract Design in the Shadow of Regulation*, 98 NEB. L. REV. 874, 889 (2020).

<sup>15</sup> See Langvardt, *supra* note 8, at 134-41.

<sup>16</sup> See, e.g., Jerry W. Markham, *Regulating Broker-Dealer Investment Recommendations—Laying the Groundwork for the Next Financial Crisis*, 13 DREXEL L. REV. 377, 443 (2021).

<sup>17</sup> 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).

<sup>18</sup> See, e.g., generally Hitesh Mittal and Kathryn Berkow, BestEx Research, *The Good, The Bad, & The Ugly of Payment for Order Flow* (May 3, 2021). We save for future work a full discussion of PFOF and its implications for the gamification debate.

<sup>19</sup> See, e.g., NIR EYAL WITH RYAN HOOVER, *HOOKED: HOW TO BUILD HABIT-FORMING PRODUCTS* 39-60 (2014).

Lots of time on device is an undesirable outcome for most retail traders. Decades of research shows that in aggregate retail investors underperform the more actively they trade. Some models account for the persistence of underperforming active trading as function of sensation seeking, overconfidence, and limited attention.<sup>20</sup> Behavioral design appeals to these tendencies. And recent studies have documented that Robinhood users exhibit attention-induced trading in sets of securities that are more salient because they appear on leaderboards within the app.<sup>21</sup>

This research raises troubling questions about the consumer-welfare implications of apps designed to stimulate frequent trading—especially in particular securities—by appeal to behavioral psychology. For that reason, we share regulators’ view that the problem of gamified investing is one worth addressing. As we discuss below, regulation would be consistent with a broader policy in securities law against brokers who exploit their clients’ overtrading. To that end, we focus here on a single, highly salient regulatory response: a ban on dangerous features. If gamification is bad, shouldn’t securities law regulate it as such?<sup>22</sup>

## II. The easy case against confetti regulation

In this section we discuss two reasons not to police broker app design directly.

### 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

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<sup>20</sup> See, e.g., Brad M. Barber & Terrance Odean, *The Behavior of Individual Investors*, in HANDBOOK OF THE ECONOMICS OF FINANCE 1533, 1535 (2013).

<sup>21</sup> See, e.g., Gregory W. Eaton et al, *Zero-Commission Individual Investors, High Frequency Traders, and Stock Market Quality* (preprint dated Apr 12, 2021) ([link](#)); Brad M. Barber et al, *Attention Induced Trading and Returns: Evidence from Robinhood Users* (preprint dated Feb. 11, 2021) ([link](#)).

<sup>22</sup> 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) ([link](#)) (attributing to Dennis Kelleher that regulators should investigate “everything from the user-experience design to the colorful nature of the app to its lists of most popular stocks”). Massachusetts’s enforcement action against Robinhood likewise purports to regulate gamification directly through a state law fiduciary standard. See *supra* note 6.

resemblance” to other games.<sup>23</sup> Gambling regulators have learned this the hard way.<sup>24</sup> We suspect that securities regulators taking on the mantle of “gamification regulators” would find themselves in the same whack-a-mole scramble.<sup>25</sup> And when the mole can be reconfigured and adjusted—as when Robinhood scuttled the “confetti” feature overnight<sup>26</sup>—regulators will struggle to update and define any ex ante regulations.

A second difficulty is that behavioral design is not always objectionable. Push notifications, for example, might serve as a call to action by notifying users that a stock is down more than 5%, or that they have not yet traded in their new account (so won’t they check out a list of popular stocks?).<sup>27</sup> But other push notifications seem helpful or benign. These include notifications that a good-til-canceled limit-order trade was executed, or that the account has been logged out after being idle. There are other gray areas: many notifications are defaults subject to opt out, while others might require opt in.

These line-drawing problems complicate the ex-ante rulemaking approach substantially.<sup>28</sup> Ex post adjudication, meanwhile, will remain subject to criticism of “regulation by enforcement.”<sup>29</sup> And when regulators draw lines that are either fuzzy,

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<sup>23</sup> See LUDWIG WITTGENSTEIN, *PHILOSOPHICAL INTERVENTIONS* §§ 65-71 (1953).

<sup>24</sup> See Langvardt, *supra* note 8, at 169 n.278.

<sup>25</sup> Securities and gaming law have long shared the concern that rules-based regimes can provide a roadmap for evasion. Compare, e.g., 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); *State v. Lipkin*, 84 S.E. 340, 343 (N.C. 1915).

<sup>26</sup> See Caitlin McCabe, *Robinhood to Remove Controversial Digital Confetti from Trading*, WALL ST. J. (Mar. 31, 2021) ([link](#)).

<sup>27</sup> See, e.g., Nicole Casperson, *Robinhood under pressure for bringing “gamification” to investing*, INVESTMENT NEWS (Dec. 18, 2020); see also *infra* note 67.

<sup>28</sup> 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 LAW CORNER (June 1, 2021) ([link](#)); Matt Levine, *Melvin Capital Had a Better Month*, BLOOMBERG OPINION (March 4, 2021) ([link](#)).

<sup>29</sup> Cf. Mark Schoeff Jr., *SEC member Robert Jackson calls out critics of agency “rulemaking by enforcement,”* INVESTMENT NEWS (Dec. 9, 2019).

misplaced, or informed by controversial science, they are likely to face challenges under the APA<sup>30</sup> or the First Amendment.

### **B. Confetti is arguably “speech” for First Amendment purposes.**

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 the term “Content Regulation Commission ... would not be wholly inaccurate.”<sup>31</sup> Yet securities law has remained mostly sheltered from the searching First Amendment scrutiny that courts have applied in other contexts.<sup>32</sup> Although the reasons for that shelter are unclear, it is slowly eroding.<sup>33</sup> Confetti regulation could accelerate that erosion.<sup>34</sup>

Suppose the SEC were to adopt a rule prohibiting gamification features like confetti, push notifications, and other “behavioral stimuli” to encourage trading—on the grounds that the prohibition was part of the broker’s duty of care and these were in the public interest and for the protection of investors.<sup>35</sup> Audiovisual content usually counts as speech, even if the message conveyed is ambiguous or thin.<sup>36</sup> So do videogames and

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<sup>30</sup> See *Motor Vehicle Mfrs. Ass’n v. State Farm Mut. Auto. Ins. Co.*, 463 U.S. 29, 43 (1983).

<sup>31</sup> Frederick Schauer, *The Boundaries of the First Amendment: A Preliminary Exploration of Constitutional Salience*, 117 HARV. L. REV. 1765, 1777 (2004).

<sup>32</sup> *Ohralik v. Ohio State Bar Ass’n*, 436 U.S. 447, 456 (1978); see also, e.g., *Nike, Inc. v. Kasky*, 539 U.S. 654, 678 (2003) (Breyer, J., dissenting from order dismissing writ of certiorari as improvidently granted).

<sup>33</sup> See, e.g., Schauer, *supra* note 31. 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 & Exchange Commission vs. Elon Musk & The First Amendment*, 70 CASE WESTERN 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).

<sup>34</sup> We say this despite our own skepticism that confetti regulation, whatever its other merits, would impair expressive freedom in any meaningful way.

<sup>35</sup> The SEC has statutory authority under the same sources it relied upon in undertaking the Reg BI rulemaking. See 84 Fed. Reg. at 33330 n. 122 (citing Dodd-Frank Act Section 913(f), and Exchange Act Sections 15(c)(6) and 17).

<sup>36</sup> See *Hurley v. Irish-Am. Gay, Lesbian & Bisexual Grp. of Bos.*, 515 U.S. 557, 569 (1995); see also *Candy Lab Inc. v. Milwaukee County*, 266 F. Supp. 3d 1139, 1146 (E.D. Wis. 2017) (finding protectable content in video game that lacked “plot, character or dialogue”).

software.<sup>37</sup> Stimuli that are part of the user interface design might therefore be characterized as within the First Amendment.

Once gamification is framed as falling within the First Amendment's protection, it would be easy 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 that banned confetti in trading apps but not 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.<sup>38</sup> If a court were to hold that confetti regulation is content or viewpoint discrimination, it would apply strict scrutiny.<sup>39</sup>

Securities lawyers who are acoustically separated from the technology bar and the technolibertarian "Californian ideology" that surrounds it underestimate these arguments at their peril.<sup>40</sup> Whether under the First Amendment or section 230 of the Communications Decency Act, it is routine in technology litigation to characterize controversies involving technology as implicating speech—often in abstract and unintuitive ways.<sup>41</sup> This kind of litigation has produced holdings that computer source

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<sup>37</sup> See *Brown v. Entertainment Merchants Association*, 564 U.S. 786 (2011) (video games); *Universal City Studios, Inc. v. Corley*, 273 F.3d 429 (2d Cir. 2001) (software).

<sup>38</sup> See *R.A.V. v. City of St. Paul, Minn.*, 505 U.S. 377, 391-92 (1992).

<sup>39</sup> If the SEC instead required investment apps to *add* design features, they 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); compare Neil Richards, *Apple's "Code = Speech" Mistake*, MIT Technology Review (March 1, 2016).

<sup>40</sup> Cf., 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 and Andy Cameron, *The Californian Ideology*, 1:3 Mute (1995) ([link](#)).

<sup>41</sup> See 47 U.S.C. § 230; Alan Rozenshtein, *Silicon Valley's Speech*, 1 J. FREE SPEECH L. — (forthcoming).

code is speech,<sup>42</sup> search results are akin to media editorial choice,<sup>43</sup> and that an online marketplace is immunized as a “publisher” for purposes of third-party tort liability.<sup>44</sup>

So let us suppose that confetti regulation would trigger heightened First Amendment scrutiny. It may have been reasonable at one time to expect those concerns largely to drop away when *securities regulators* regulate software design directly.<sup>45</sup> Even where other securities laws are as substantially overbroad in reaching speech, the SEC’s customary jurisdiction in this area may have shaped courts’ and litigants’ views of the salience of the First Amendment and afforded a wide berth. Securities law has traditionally avoided serious scrutiny even though it is full of “restrictions and requirements that in other contexts would set off a host of First Amendment alarm bells.”<sup>46</sup>

That expectation is less assured today, however, in light of an accelerating trend in favor of corporate speakers who brandish a “weaponized” First Amendment against profit-reducing regulations.<sup>47</sup>

Labeling and disclosure requirements have come under particularly close scrutiny, illustrated by the Supreme Court’s 2018 observation in *NIFLA v. Becerra* that there is no “professional speech” exception to the First Amendment.<sup>48</sup> The Court’s extreme hostility toward mandatory disclosures, together with its announcement that

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<sup>42</sup> See *Bernstein v. United States Dep’t of State*, 922 F. Supp. 1426, 1434-36 (N.D. Cal. 1996).

<sup>43</sup> See Langvardt, *supra* note 8, at 176 n.317 (collecting authority).

<sup>44</sup> See *McMillan v. Amazon.com, Inc.*, 433 F. Supp. 3d 1034, 1045 (S.D. Tex. 2020); *La Park La Brea A LLC v. Airbnb, Inc.*, 285 F. Supp. 3d 1097, 1105-1107 (C.D. Cal. 2017).

<sup>45</sup> See Schauer, *supra* note 31, 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.”).

<sup>46</sup> *Id.* at 1779–80.

<sup>47</sup> 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); *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 Manufacturers v. SEC*, 800 F.3d 518, 524 (D.C. Cir. 2015) (noting “the flux and uncertainty of the First Amendment doctrine of commercial speech” (“NAM”).

<sup>48</sup> *Nat’l Inst. of Fam. & Life Adv. v. Becerra*, 138 S. Ct. 2361, 2371-73 (2018) (“*NIFLA*”).

professional speech in regulated industries is on a par with fully-protected speech, bodes closer scrutiny for laws that regulate communications between professionals and their clients, including brokers and retail investors.<sup>49</sup> 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.”<sup>50</sup>

The D.C. Circuit foreshadowed this some time ago. In 2015 in *National Association of Manufacturers v. SEC*, for instance, the D.C. Circuit struck down the SEC’s “conflict mineral” disclosure rule on grounds that illustrate the stakes of First Amendment litigation risk in designing regulatory programs.<sup>51</sup> 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 of that ilk raise a significant First Amendment problem.”<sup>52</sup> Not so, the majority responded: the fact that securities law “is thick” with disclosure mandates doesn’t make those mandates immune from First Amendment scrutiny.<sup>53</sup>

In this environment, it seems unlikely that courts would extend confetti regulation the kind of automatic deference securities regulations have received in the past. And if courts did in fact treat confetti regulation as being about software rather than securities, that would evidence the continuing erosion of securities law’s historically exceptional treatment under the First Amendment. A court’s willingness to apply heightened scrutiny here could invite more daring raids against the securities laws’ core information controls, such as the Quiet Period in initial public offerings.<sup>54</sup>

Confetti regulations’ novelty, combined with the definitional difficulties discussed above, will always subject them to overbreadth challenges. Those challenges, in turn, will encourage courts to confine the scope and strength of the SEC’s policy mission

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<sup>49</sup> Compare, e.g., *Bulldog Investors G.P. v. Sec’y of Comm.*, 953 N.E.2d 647, 657-58 (Mass. 2011), with Brief of Amici Curiae Cato Institute et al., *Bulldog Investors G.P. v. Galvin*, No. 11-954 (U.S. 2012) ([link](#)).

<sup>50</sup> *NIFLA*, 138 S. Ct. at 2380 (Breyer, J., dissenting).

<sup>51</sup> 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 Final Rule, *Conflict Minerals*, 77 Fed. Reg. 56274 (Sept. 12, 2012).

<sup>52</sup> *NAM*, 800 F.3d at 531 (Srinivasan, J., dissenting).

<sup>53</sup> *Id.* at 521 (majority).

<sup>54</sup> See, e.g., Heyman, *supra* note 33, at 195.

through constitutionalized deregulation. At worst, a court may condemn large swaths of securities law as paternalistic and incompatible with the First Amendment's presumed commitment to unrestricted communication.<sup>55</sup>

### III. Implications

#### A. The securities laws and the First Amendment

In light of the First Amendment's increasingly antiregulatory orientation where business is concerned, securities law's historically light First Amendment coverage looks increasingly exceptional. "Securities regulation," Roberta Karmel observed over 30 years ago, "is essentially the regulation of speech."<sup>56</sup> 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."<sup>57</sup>

What would it look like if confetti regulation (or some other trigger) led courts to start treating the securities laws like other burdens on speech? In our view, 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 unregistered 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.<sup>58</sup> 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. The general exception is when issuers comply with narrow content-based exemptions that purport to allow particular kinds of speech (as in the quiet period safe harbors) or speech to a restricted audience (as in a

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<sup>55</sup> See *Citizens United v. Fed. Election Comm'n*, 558 U.S. 310, 356 (2010).

<sup>56</sup> Roberta S. Karmel, *Introduction*, 55 *BROOK. L. REV.* 1, 1 (1989).

<sup>57</sup> *SEC v. Wall Street Publishing Institute, 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).

<sup>58</sup> See 84 *Fed. Reg.* at 33320.

private offering for which general solicitation is not allowed).<sup>59</sup> In short, confetti regulation, as we have described it, would draw a potentially broad range of First Amendment attacks. Some of these could lead in a worst-case scenario to broader constitutional scrutiny for securities regulation more generally.<sup>60</sup>

This counsels pursuing regulatory techniques that would not precipitate the same kind of First Amendment entrepreneurship toward securities law. A strategy of “avoiding constitutional deregulation” by designing regulations to avoid future constitutional risks would predictably insulate the securities laws from these challenges for some time. How the judiciary applies the First Amendment on the ground is a function of the composition and commitments of the bench—the subject of ongoing political contestation. By favoring regulatory techniques least likely to bear this litigation risk, securities regulators would avoid calling attention to existing regulatory activity, leaving potential challengers to pursue less salient targets until doctrinal winds change. As a theoretical and prescriptive matter, however, this kind of strategy leaves something to be desired.<sup>61</sup>

We are suggesting, in some sense, that regulators kick the can down the road. If securities law is on a collision course with the market-fundamentalist conception of the First Amendment, some kind of conflict is inevitable. So regulators are left to grapple with the choice between eliciting challenges and upending doctrine in the area by pursuing a confetti regulation strategy—and pursuing a less risky option. 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 doctrines—churning and quantitative suitability—illustrate securities law’s normative concern that eliciting overtrading in a retail investor’s account is undesirable where it

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<sup>59</sup> See 15 USC § 77e(a), (c); Larry Ribstein, *The First Amendment, the securities laws and hedge funds*, Truth on the Market (Jan. 3, 2011) ([link](#)); Heyman, *supra* note 33, at 193-206; *supra* note 49.

<sup>60</sup> *But see* Schauer, *supra* note 31, at 1780 (noting that previous warnings of a “collision never happened”).

<sup>61</sup> Cf. 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 (2012).

leads to capital losses or to principal depletion. These doctrines aren't 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.<sup>62</sup> Zero-commission investment apps with gamification features promote the same kind of overtrading that was the core harm at issue in churning. Even without commissions, the revenue model generates the same result: the broker maximizes “payment for order flow” revenue from other market intermediaries who want to trade against retail investors.

Gamification is thus a matter of *behavioral churning*: overconsumption of trading by unsophisticated retail investors stimulated by the broker-dealer's revenue model. These strategies exploit behavioral psychology to drive engagement with the platform, increasing consumption of high-volatility speculative trading that generates non-salient revenue to the broker. In this view, behavioral churning provides a framework not only for scholarly work in this area but also for potential regulatory responses.<sup>63</sup>

To address the problem of behavioral churning, regulators might analogize to quantitative suitability doctrine. The SEC codified this doctrine as a component of the broker's duty of care under Reg BI.<sup>64</sup> Under that duty, broker-dealers must have a reasonable basis to believe that a series of recommended transactions—considered together—isn't excessive in light of the retail customer's investment goals, and doesn't put the broker's financial interests ahead of the customer's.<sup>65</sup> If 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

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<sup>62</sup> See, e.g., 8 LOUIS LOSS, JOEL SELIGMAN, & TROY PAREDES, *SECURITIES REGULATION* 471, 475 (2020); see, e.g., *Mihara v. Dean Witter & Co, Inc.*, 619 F.2d 814, 820 (9th Cir. 1980).

<sup>63</sup> See, e.g., Alessio M. Paces, *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 economic model of churning doctrine relative to noise trading and broker compensation incentives); see also, e.g., Tierney, *supra* note 9.

<sup>64</sup> Final Rule, *Regulation Best Interest: The Broker-Dealer Standard of Conduct*, 84 Fed. Reg. 33318, 33384-85 (July 12, 2019) (“Reg BI Adopting Release”).

<sup>65</sup> See *id.* at 33384-85. 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.*

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. 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?<sup>66</sup> 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: "Top Movers: Choosing stocks is hard. 📈 Get started by checking which stock prices are changing the most."<sup>67</sup>

Regulators have warned the brokerage industry about digitally mediated recommendations for decades. In 2001 FINRA's predecessor issued a notice, approved by the SEC and having force of law, about online communications that would generally be "recommendations." Two of the examples were "customer-specific ... pop-up screen[s]," and lists of securities for which the broker makes a market.<sup>68</sup> In this way, securities law has concerned itself before with the antecedents of behavioral churning—and frames it today 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 no 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.

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<sup>66</sup> See *id.* at 33335 (whether a communication is a "recommendation" involves 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") (cleaned up).

<sup>67</sup> Nicole Casperson, *Robinhood drops the confetti, but advisers aren't convinced*, INVESTMENT NEWS (Apr. 6, 2021) ([link](#)).

<sup>68</sup> NASD Notice to Members 01-23 3 (April 2001) ([link](#)).

#### IV. 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 macro-scale effects on asset allocation and market quality. 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 core aims of the securities laws—promoting competition and protecting investors.<sup>69</sup> 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.<sup>70</sup> 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. That depends on what the normative end goals of securities law’s “investor protection” regulatory mission should be.<sup>71</sup> 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.<sup>72</sup>

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<sup>69</sup> See, e.g., Robert J. Jackson, Jr., Speech, *Competition: The Forgotten Fourth Pillar of the SEC’s Mission* (Oct. 11, 2018).

<sup>70</sup> See Langvardt, *supra* note 8, at 134–41.

<sup>71</sup> For examples of the debate as applied to retail investor speculative trading, compare, e.g., Lynn A. Stout, *Are Stock Markets Costly Casinos? Disagreement, Market Failure, and Securities Regulation*, 81 VA. L. REV. 611 (1995), with Paul G. Mahoney, *Is There a Cure for “Excessive” Trading?*, 81 VA. L. REV. 713 (1995).

<sup>72</sup> See, e.g., Cynthia Weiyi Cai, *Nudging the financial market? A review of the nudge theory*, 60 ACCOUNTING & FIN. 3341 (March 2019); Nick Maynard and Mariele McGlazer, *The Gamification Effect: Using Fun to Build Financial Security*, COMMUNITIES & BANKING 6 (Federal Reserve Bank of Boston, Spring 2017) ([link](#)).

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 problem use 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 approaches, and the administratively simplest ones, will tend to involve the greatest litigation risk from deregulatory constitutional challenges. At one extreme, banning PFOF would require 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.

# Gamification and securities regulation

*James Fallows Tierney\**

*Popular zero-commission stock trading apps like Robinhood innovate in user-experience design, featuring digital engagement practices and prompts that appeal to investors' psychology and make it easy and fun to trade. These include leaderboards of popular stock, push notifications, and visual flourishes. Design features like these, sometimes called "gamification" or "digital engagement," have come under increased scrutiny. Regulators have announced plans to examine gamification in retail markets, with the SEC most recently in August 2021 requesting comment on potential responses in broker-dealer regulation.*

*This attention reflects considerable skepticism about behavioral design in securities markets. At best, it encourages engagement and democratizes the markets. But at worst, it produces a set of interrelated phenomena of concern, like the potential for problem use and significant idiosyncratic losses, as well as lower quality price discovery and distortions in capital allocation. How regulators should respond to behavioral design in investing apps is therefore a high-stakes matter not just for retail investors but for society more broadly, given that interventions in retail investor choice have significant implications for wealth inequality.*

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

*This article takes up the problem of digital engagement and behavioral design. It extends the literature on retail investment regulation by considering how gamification is the nearly inevitable consequence of fragmented market structure, competition on brokerage commissions, and the rise of retail investors who trade without superior information about a stock's fundamental value. Calls to regulate "gamification," I argue, often elide important distinctions between how securities law should treat active-traders who prefer risk, and those with preferences distorted by behavioral design. This article explains how we got here; examines the social-welfare case for regulating gamification, behavioral design, and related digital engagement practices; offers a typology of techniques that securities regulators can adopt in response; and assesses these candidate techniques against existing securities law doctrine and policy, as well as potential reforms that the SEC has recently floated. I also consider and respond to the techno-optimist claim that gamification can further literacy, and the techno-populist claim that this serves to democratize investing.*

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\* Assistant professor of law, University of Nebraska College of Law. This version submitted for the Chicagoland Junior Scholars conference, October 2021, with particular thanks to participants, organizers, and commenters. [Other acknowledgments here.]

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## INTRODUCTION

2021 might be called the year of the retail trader.<sup>1</sup> Retail traders piled into meme stocks like GameStop and other risky assets like crypto and options, launching asset prices like “rockets to the moon.”<sup>2</sup> More people are participating in these markets, too. Popular stock brokerage apps like Robinhood not only made active trading cheap, easy, and fun; they encouraged it.<sup>3</sup> Legal scholars have meanwhile celebrated the re-emergence of retail investors as a force in stock markets, reversing long-term trends.<sup>4</sup>

This airy story, resonant with overtones of the democratization of finance, obscures two somber truths about today’s stock market. First, while traditional finance prescribes patient investment in diversified portfolios including corporate equities, ordinary people don’t heed this advice. For behavioral and other reasons, many try to beat the market by trading stocks. Yet decades of research on retail investor behavior reveal that “trading is hazardous to your wealth.”<sup>5</sup> Retail traders buy and sell too much, and underperform the market.

The second somber reality is that the market involves an arms race between sophisticated financial firms that direct ever-greater attention to competing over ever-smaller intermediation rents, all with little apparent social benefit. Successful firms earn fractions of pennies per share, millions of times a day, by selectively trading against retail traders. Because retail orders tend to be “noisy,” or uncorrelated with private information bearing on the future price of a security, trading selectively against retail order flow can reduce certain risks and create profit opportunities. This selective trading can be so profitable that firms will pay broker-dealers for the privilege of taking the other side of these orders for execution. While it sounds nefarious, it has plausible consumer welfare benefits: along with other changes to the market—like the emergence of fractional share trading—these changes have enabled zero-commission trading. It is cheaper and easier than ever before for ordinary people to trade securities and financial products.

Yet regulators now worry that trading is *too* easy. What to do about it is

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<sup>1</sup> See Val Srinivas & Jill Gregorie, *The Rise of Newly Empowered Retail Investors: How They’re Changing Customer Expectations and Investing Dynamics* 1 (2021).

<sup>2</sup> See, e.g., Katherine Doherty & Brandon Kochkodin, *AMC Became the People’s Stock by Not Being a GameStop Remake*, BLOOMBERG BUSINESSWEEK (Jun. 4, 2021), <https://perma.cc/486X-EZVW> (describing meme stocks and “rockets to the moon”).

<sup>3</sup> See, e.g., Sergio Alberto Gramitto Ricci & Christina M. Sautter, *Corporate Governance Gaming*, 22 NEV. L. REV. —, 5–10 (2021).

<sup>4</sup> See *Id.* at \_\_; Jill Fisch, *Gamestop and the Resurgence of the Retail Investor* (presentation at NBLSC, June 2021).

<sup>5</sup> Brad M. Barber & Terrance Odean, *Trading Is Hazardous to Your Wealth: The Common Stock Investment Performance of Individual Investors*, 55 J. FIN. 773, \_\_ (2002).

a concern for broker-dealer regulation, a subfield of securities law.<sup>6</sup> Much of the regulatory worry has focused on Robinhood, a prominent zero-commission brokerage app.<sup>7</sup> In the market for zero-commission brokerage, app developers have innovated in user-interface design to compete with legacy discount brokers.<sup>8</sup> Robinhood famously would shower digital confetti down a smartphone screen upon successful execution of a trade.<sup>9</sup> Design innovations included not just intuitive and appealing design, but digital engagement practices that encourage users to interact with the app and that shape the information they consider in deciding whether to make trades. Specific examples include leaderboards of stocks that are currently volatile or popular with users, push notifications that prompt users to trade, and lotteries and other variable rewards.<sup>10</sup>

I call these practices “behavioral design,” but they also go by “gamification” or “digital engagement” practices. Behavioral design is a familiar feature of our online world. These practices reward, motivate, or engage us in some task to encourage responses we would not otherwise make.<sup>11</sup> The

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<sup>6</sup> Brokers are those “engaged in the business of effecting transactions in securities for the account of others” or for their own account. Exchange Act Sections 3(a)(4), (5), 15 U.S.C. §§ 78c(a)(4), (5). On the regulation of broker-dealers, *see, e.g.*, Peter H. Huang, *Trust, Guilt, and Securities Regulation*, 151 U. PA. L. REV. 1059, 1067–68 (2003).

<sup>7</sup> *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). For other examples, *see* Misyr-lena Egkolfopoulou et al., *How Robinhood Made Trading Easy—and Maybe Even Too Hard to Resist*, BLOOMBERG BUSINESSWEEK (Apr. 2021); Hannah Levintova, *Robinhood Promises Free Trades. Did Alex Kearns Pay With His Life?*, MOTHER JONES (Apr. 29, 2021), at \_\_\_, <https://www.motherjones.com/politics/2021/04/robinhood-gamestop-free-trades-alex-kearns/>; Annie Massa & Sarah Ponczek, *Robinhood’s Addictive App Made Trading a Pandemic Pastime*, BLOOMBERG BUSINESSWEEK (Oct. 22, 2020), <https://perma.cc/G62Y-EHUT>; Robin Wigglesworth et al., *The Lockdown Death of a 20-Year-Old Day Trader*, FINANCIAL TIMES (Jul. 1, 2020), <https://www.ft.com/content/45doao47-36of-4abf-86ee-108f436015a1>. As Part III will demonstrate, this article is not a brief against Robinhood; I hold trivial amounts of equities and crypto in a Robinhood account (equities as class demonstratives for my Business Associations class and crypto because volatility bets are fun, *see infra* notes \_\_-\_\_). Instead, this paper focuses on Robinhood because it is a highly salient example of a publicly traded, formerly-unicorn broker-dealer with large market share having been subjected to media and regulatory scrutiny.

<sup>8</sup> *See infra* notes \_\_ (describing this competition); Jennifer Schulp, *The Trading Game*, REGULATORY REVIEW (May 3, 2021) (CATO), <https://perma.cc/933Q-8YHL>; Nicole Casperson, *Robinhood Drops the Confetti, but Advisers Aren’t Convinced*, INVESTMENT NEWS (Apr. 6, 2021), <https://www.investmentnews.com/robinhood-drops-the-confetti-but-advisers-arent-convinced-204828> (quoting an investment adviser: “If anything, it’s the duller-than-dishwater experience of most financial platforms that has opened the door for dynamic and engaging platforms like Robinhood and Stash Invest to thrive.”).

<sup>9</sup> *See infra* note 33.

<sup>10</sup> *See infra* Part I.A.

<sup>11</sup> The SEC’s proposed rulemaking on “digital engagement practices” takes a similarly broad view of the category of interest: “behavioral prompts, differential marketing, game-like

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 behavioral design in altering investor behavior.<sup>12</sup>

The concern is that effective behavioral design stimulates and encourages engagement with the app. When effective, it elicits a higher volume of noisy retail order flow in securities that generate brokerage profits and cross-subsidize further trading.<sup>13</sup> Recent empirical research has shown how design can shape trading behavior in ways that are profitable for the broker, may not be in retail traders' interests, and may have downstream negative consequences on market quality.<sup>14</sup> Encouraging excessive trading also has significant implications for wealth inequality, which is partly a function of how securities law shapes ordinary people's ability to reliably grow wealth by participating in capital markets.<sup>15</sup>

To that end, behavioral design practices have come under increased regulatory scrutiny. Federal and state regulators are pursuing responses with rulemaking, enforcement, examination, and litigation.<sup>16</sup> The SEC has requested comment, due October 2021, on potential responses.<sup>17</sup>

This attention reflects considerable skepticism about behavioral design in securities markets. Cast in the best light, behavioral design can encourage engagement, motivate investor education efforts, and even democratize markets. At worst, it produces interrelated phenomena like problem use, as well as higher volatility, lower quality price discovery, and other distortions

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features, and other design elements or features designed to engage retail investors." Request for Information and Comments on Broker-Dealer and Investment Adviser Digital Engagement Practices No. 92766, Exchange Act Release 92766, 86 Fed. Reg. 49067 \_\_ (Sep. 1, 2021). ("Digital Engagement Release"). This overlaps with the definition of "gamification" in the literature on game studies, which in at least one sense refers to the presence of "game design elements in non-game contexts." Sebastian Deterding et al., *From Game Design Elements to Gamefulness: Defining "Gamification,"* MindTrek '11: Proceedings of the 15th International Academic MindTrek Conference: Envisioning Future Media Environments \_\_. (describing games in this sense as being "characterized by explicit rule systems and the competition or strife of actors in those systems toward discrete goals or outcomes"); see also, e.g., Katie Seaborn & Deborah I. Fels, *Gamification in theory and action: A survey*, 74 INT. J. HUMAN-COMP. STUD. 14, 14 (2015).

<sup>12</sup> See, e.g., [Digital Engagement Release No. 92766].

<sup>13</sup> See *infra* notes [\_\_-\_\_]; see, e.g., Kyle Langvardt & James Fallows Tierney, *On "Confetti Regulation": How Not to Regulate Gamified Investing* (Jun. 2021); *Game Stopped? Who Wins and Loses When Short Sellers, Social Media, and Retail Investors Collide, Part III: Hearing Before the U.S. House Comm. on Fin. Servs.* \_\_ (May 6, 2021) (Gensler statement).

<sup>14</sup> See *infra* Parts II.A and III.A.

<sup>15</sup> See, e.g., Emily Winston, *Unequal Investment: A Regulatory Case Study*, CORNELL L. REV. \_\_ (2021).

<sup>16</sup> See *infra* Part I.B

<sup>17</sup> Digital Engagement Release No. 92766.

in capital markets that have undesirable practical and expressive effects.<sup>18</sup>

Securities law does not have a readymade theory for trading off these concerns. That underscores the urgent need for scholarship situating these practices in theory and doctrine.<sup>19</sup> Despite a rich literature on 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.<sup>20</sup> This Article fills that gap, articulating from the ground up a theory of behavioral design in securities regulation.<sup>21</sup>

Behavioral design, 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. Yet modern securities law has largely ceded the field of investor protection to the sectoral interests of sophisticated financial intermediaries in the guise of producing two quasi-public goods: liquidity and price discovery. Capital markets regulation has, since the beginning, been oriented toward production of those two goods, as well as about division between brokers and clients of the surplus from trading securities.<sup>22</sup>

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<sup>18</sup> See generally Part IV.

<sup>19</sup> Nizan Geslevich Packin has addressed how securities regulation should deal with gamification as a particular problem of appealing to minor children's financial activities. See Nizan Geslevich Packin, *Financial Inclusion Gone Wrong: Securities Trading For Children* (2021).

<sup>20</sup> Other than Packin's article, the closest legal scholarship in this area has come is that some scholars have examined how securities law conceives of the ways that principles of behavioral economics such as choice architecture bear on retail investor behavior. For instance, Jacob Hale Russell has surveyed the theoretical and empirical literature on why retail investors trade excessively, and distinguished the normative basis for regulatory intervention based on whether the reasons are taste or circumstance based. See 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 most of the online discount brokers dropped trading commissions to zero in late 2019, *cf. infra* note 86, some of his normative prescriptions flowing from his analysis are based on factual assumptions that no longer hold. On the ambivalent attitude of securities law and its scholarship toward innovative technologies, see, for example, Eric C. Chaffee, *Securities Regulation in Virtual Spaces*, 74 WASH. & LEE L. REV. 1387, \_\_ (2017); Frank Pasquale, *Law's Acceleration of Finance: Redefining the Problem of High-Frequency Trading*, 36 CARDOZO L. REV. 2085, 2086 (Aug. 2015) ("Whereas most legal commentators assume that the technology of finance is independent of legal rules, such rules are in fact a prime driver of technological developments in finance."); *cf.* 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 AND SOCIETY 245, 246 (Mar. 2020) (studying "the relative neglect of technology as an object of [securities] regulation").

<sup>21</sup> In a short essay, Kyle Langvardt and I briefly discussed the problem of gamification, focusing on first-party problem-use harms and a ban on gamification as a highly salient regulatory response. We wrote to highlight the administrability and litigation risk associated with such a ban, but explicitly left open the higher-order theoretical, doctrinal, and normative questions that this article addresses. Langvardt & Tierney, *supra* note 14, at \_\_.

<sup>22</sup> See, e.g., Michael D. Guttentag, *Law and Surplus: Opportunities Missed*, 2019 UTAH L.

How to regulate behavioral design, then, is the most recent fault line in this long running process of contestation over legal rules that purport to divide that surplus in particular ways.<sup>23</sup> By encouraging retail traders to engage in risky bets that underperform the market on average, all for the broker-dealer’s benefit, securities law subordinates its “investor protection” function to its liquidity and price discovery functions—twin altars at which retail traders are encouraged to sacrifice themselves. What to do with behavioral design is thus a high-stakes matter not just for retail investors but for society more broadly.

The rest of the article proceeds like this. Part I introduces the concept of gamification, identifies emergent regulatory responses, and situates gamification as the product of several convergent trends in law and market structure. Part II turns to the article’s first claim: our assessment of how securities regulation should handle behavioral design is a function of our models of retail investor behavior. I situate criticisms of gamification within existing empirical and theoretical models for why ordinary people actively trade, as well as securities law theory on retail trader participation in securities markets.

I then turn to doctrinal and normative implications. Drawing from literatures on regulation in response to imperfect rationality and habit forming technologies, Part III identifies first- and third-party harms from gamification in investing apps. Regulating behavioral design is likely to be socially desirable, given what we know about retail trader behavior and its second-order effects on personal finance and markets. I offer a typology of potential regulatory responses, including disclosure, mandatory downtime, counter-addictive design, and bans on dangerous features. I also sketch out alternative regulatory frameworks that focus on broader questions of market structure and why securities law is encouraging an arms race in precise but often inaccurate asset pricing. Finally, Part IV offers normative takeaways, and responds directly to three claims about behavioral design and gamification: the techno-populist claim that zero-commission retail trading and gamified investing generally are ways of “democratizing” investing; the techno-optimist claim that it can further investor education and financial literacy efforts; and the techno-pessimist claim that it will undermine confidence in markets.

## I. BEHAVIORAL DESIGN FOR RETAIL INVESTORS

In a simple model, retail investors engage with the securities market in two stages. The first involves deciding among brokers, and the second deciding among securities and related financial products and services. As commissions have been bid to zero, brokers have competed for younger, more

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REV. 607, 658–60 (2019).

<sup>23</sup> See *infra* notes \_\_.

digitally savvy clients with flashy and attractive user interface design. Once clients are with a brokerage, they decide which securities to buy, sell, and hold—a decision shaped by behavioral design and presentation of information.

This Part I illustrates the problem of behavioral design and digital engagement in retail securities markets. Brokers use these digital engagement practices to attract clients and to encourage them to produce a high volume of noisy retail order flow. This has attracted the attention of regulators and scholars.<sup>24</sup> After surveying this regulatory scrutiny, I wrap up this background by situating gamification as a product of three historical trends.

#### A. Behavioral design in theory and practice

Our increasingly online world often features user interface and experience designs that appeal to our psychology to elicit desired behaviors. For digitally mediated transactions, firms often control flow through a business process, such as whether to engage in a transaction. This enables firms to shape or nudge consumer choice by presenting information flow and making options salient.

Sometimes called “gamification” or “digital engagement,” what I call behavioral design involves the presentation of information and choices about goods, services, transactions, and markets that appeal to imperfectly rational cognitive processes to elicit behavior that benefits the designer.<sup>25</sup> Several related literatures address these design strategies in contexts ranging from game studies and human-computer interface design to behavioral finance.<sup>26</sup> One common thread is the influence of how information is presented on the decisions people make. They encourage intuitive and habitual responses rather than deliberation over preferences and choices.<sup>27</sup>

These strategies are increasingly prevalent in business, education, and

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<sup>24</sup> Some of the attention is concerned that behavioral design and digital engagement are predatory against children. The Massachusetts state securities regulator has sued Robinhood for breach of state law over its gamification practices with respect to younger and less financially sophisticated clients.

<sup>25</sup> The SEC uses the term “digital engagement.”

<sup>26</sup> 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 (Stefen P. Walz & Sebastian Deterding eds., MIT Press 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”).

<sup>27</sup> For instance, user interfaces “nudge consumers toward a selection that is likely to be unpopular with them but profitable for the company,” like signing up for an autorenewing periodic subscription at a higher rate or a long tail of small-value microtransactions. Jamie Luguri & Lior Jacob Strahilevitz, *Shining a Light on Dark Patterns*, 13 J. LEGAL ANALYSIS 43, \_\_ (2021).

other fields.<sup>28</sup> They offer an attractive proposition because user engagement can “be harnessed for profit.”<sup>29</sup> As Securities and Exchange Commission (SEC) chairman Gary Gensler pointed out in Congressional hearing testimony, behavioral design is thus but one element of “a host of [other] features that have come to be familiar in our increasingly online world,” including “behavioral prompts, predictive analytics, and differential marketing.”<sup>30</sup> For regulators and scholars alike, there is a common concern underlying these features and related concepts like dark patterns and habit-forming technology: design exploits people’s imperfect rationality, prompting and distorting their behavior in ways that generate private profit while socializing costs.<sup>31</sup>

Businesses have taken up the practical implications, appealing to predictably imperfect rationality in service of private profit. One firm that has attracted attention is the developer of Robinhood, an app through which clients can trade securities and certain cryptocurrencies.<sup>32</sup> Robinhood has adopted a user interface and user experience that incorporate behavioral design. In a zero-commission world, firm profits scale relative to the amount of client engagement with the app (and with securities transactions). The rest of this subpart illustrates practices that have attracted attention.

*Surprise stock awards.* Robinhood offers users lotteries for potentially

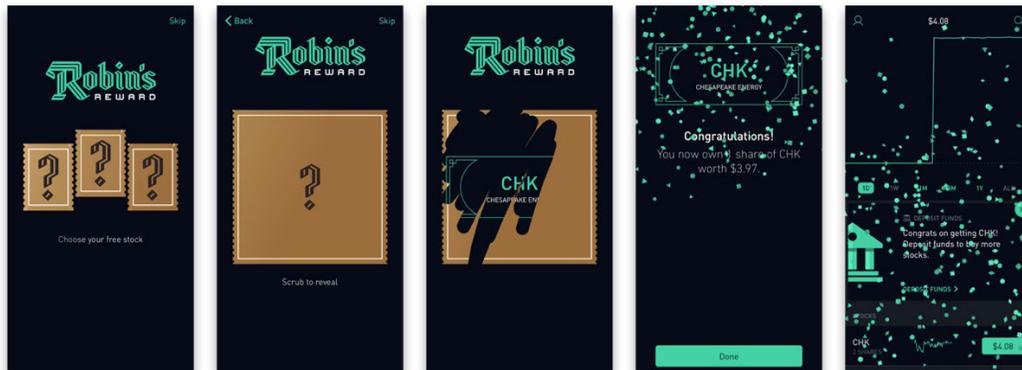


Figure 1: User flow during selection of variable reward, circa 2018<sup>33</sup>

<sup>28</sup> See Tae Wan Kim & Kevin Werbach, *More than Just a Game: Ethical Issues in Gamification*, 18 ETHICS INF TECHNOL 157, 157–58 (2016).

<sup>29</sup> James “Pigeon” Fielder, *Robinhood Makes Wall Street Feel like a Game to Win—Not a Place Where You Can Lose Your Savings*, FAST COMPANY (Mar. 27, 2021), <https://perma.cc/452B-ALEY>; Ned Welch, *A marketer’s guide to behavioral economics*, MCKINSEY Q. (Feb. 1, 2010).

<sup>30</sup> *Game Stopped? Who Wins and Loses When Short Sellers, Social Media, and Retail Investors Collide, Part III: Hearing Before the U.S. House Comm. on Fin. Servs.* \_\_ (May 6, 2021) (statement of SEC Chairman Gary Gensler).

<sup>31</sup> See, e.g., Luguri & Strahilevitz, *supra* note 28, at \_\_; Gus Hurwitz, *Designing a Pattern, Darkly*, 22 N.C.J. L. & TECH. 57, 61–64 (2020); Langvardt & Tierney, *supra* note 14.

<sup>32</sup> See Robinhood Markets, Inc., Registration Statement (Form S-1) (July 1, 2021).

valuable surprise stocks as rewards for linking their bank accounts or referring new users. Figure 1 shows the flow of screens that a user would experience—three card monte, a scratch ticket, and a flurry of confetti—during the selection of a variable reward as of winter 2018.<sup>33</sup> This reflects on its face a visual frame that calls to mind lottery-like phenomena, encouraging people to equate stock and crypto assets as having the potential to be “jackpots.”<sup>34</sup>

*Push notifications.* Some apps present users with brief messages on the screen upon the occurrence of some event, known as a push notification. Many push notifications are designed to encourage monitoring and trading, while others are informational and more benign.<sup>35</sup>

*Eye candy.* People sometimes use “gamification” to mean aesthetically pleasing design. The user interface of many zero-commission apps is littered with “eye candy.” Consider Robinhood: crypto price charts project forward into the phone screen’s plane, while the market price beats up and down like an EKG on up and down ticks. An evocative example of “gamification,” and Robinhood’s “signature” piece of eye candy, was digital confetti.<sup>36</sup> Upon completion of a first trade, confetti would rain down the screen (as seen in Figure 1).<sup>37</sup> The firm’s early ads showed a young man, sitting at dinner looking at a phone, and reacting in surprise when the phone showers confetti over him.<sup>38</sup> Confetti is not the most objectionable thing about gamification, but people do love to talk about it.

*Engagement devices.* Traditional “gamification” features reward engagement for its own sake. Free-to-play apps often reward frequent engagers with preferential access to new features. So when Robinhood first launched, prospective users signed up for a waitlist and engaged with “a referral-based viral loop” that allowed them to move up the waitlist by referring other prospective users.<sup>39</sup> The firm offered a similar waitlist for a cash management

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<sup>33</sup> Tory Hobson, *Gamification in the Most Delightful Way*, MEDIUM: PINCH PULL PRESS (Jan. 25, 2018), <https://link.medium.com/uxXrSIPuCdb> (image source). 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), <https://perma.cc/8B8J-6ETM>.

<sup>34</sup> See Hobson, *supra* note 61 (noting that the physical user interface feature of “scrub[bing] the ticket” provides “that same feeling of excitement” as a “scratch-off lottery ticket”).

<sup>35</sup> Langvardt & Tierney, *supra* note 14, at \_\_

<sup>36</sup> See *supra* note \_\_.

<sup>37</sup> Wursthorn & Choi, *supra* note 8.

<sup>38</sup> See *Id.*

<sup>39</sup> George Vasiliadis, *How Robinhood Got Nearly 1 Million Users Before the Company Even Existed*, VIRAL LOOPS (Medium) (Nov. 23, 2017), <https://medium.com/inside-viral-loops/how-robinhood-got-nearly-1-million-users-before-the-company-even-existed-dfb1a57231f8>.

product, using design features often seen in casino gaming machines to encourage repeated and habitual engagement to keep place on the waitlist.<sup>40</sup>

*Recommendation algorithms.* Many brokers give clients lists of stocks to consider, even without explicitly recommending them. These lists increase salience of certain stocks, like “top movers” with greatest percentile changes that day, stocks with high trading volume across the market or at the broker-dealer, or most concentrated holdings among clients. These have a tendency to promote the salience of these securities among the potential choice set. This increased salience can induce demand, a phenomenon of attention-induced noise trading.

But brokers may also select and present stocks on these lists based on factors that are not apparent to the client. Robinhood offers clients highly salient, prepopulated “lists” of securities grouped by sector or type, similar to other brokers’ stock screening search functions. But Robinhood also reports that it populates its lists based on a proprietary “combination of FactSet, Morningstar, and other trusted industry sources to determine what stocks and ETFs to include in our sector lists.”<sup>41</sup> It also historically used boards that show stocks popular among users, and still shows lists of top movers based on “a proprietary algorithm” of mid-cap stocks with large interday price movements.<sup>42</sup>

*Metaphorical gaming.* There is finally a sense in which the availability of easy-and-free trading, combined with social and expressive aspects of speculation and herding, can be thought of as making a game of trading.<sup>43</sup> Congressional committee staff, for instance, have suggested that meme stock trading might be a consequence of “the gamification of investing and ... the

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<sup>40</sup> Scott Galloway, *Robinhood Has Gamified Online Trading into an Addiction*, MARKET (Jul. 2020), <https://perma.cc/HMX2-MP77>; Matthew Q. Knipfer, *Optimally Climbing the Robinhood Cash Management Waitlist*, MEDIUM (Nov. 5, 2019), <https://perma.cc/G3TR-FZFF>.

<sup>41</sup> Robinhood, Help Center, *Lists* (Aug. 28, 2020), <https://robinhood.com/us/en/support/articles/lists/>.

<sup>42</sup> Dan Clarendon, *Robinhood Restricted its Popularity Data, You Can Still See Top Movers*, Market Realist (Jan. 21, 2021), <https://marketrealist.com/p/robinhood-top-movers/>. 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), <https://fortune.com/2020/08/10/robinhood-popularity-data-robintrack-stock-market-trading-tracker/>. The public API for that feature had for some time provided a rich source of retail trader data to financial economists, whose preliminary findings are discussed below.

<sup>43</sup> Gamification in this sense refers more broadly than my more limited definition of encouraging digitally intermediated micro-transactions. Game studies scholar Sebastian Deterding, for instance, has evaluated the discourse of gamification focusing on online user experience design that appeals to cognitive psychology and behavioral economics, and distinguished this discourse from others that instead center expressive, performative, and other functions of the “gameful world.” Deterding, *supra* note 27, at 34–47.

increasing role that social media and technology play in capital markets.”<sup>44</sup> By drumming up interest in meme stocks, herding and momentum traders act against traditional finance’s prescription to buy and sell based on mispricing of assets compared with their “true” fundamental value.<sup>45</sup> This seems to be a residual category of what some people mean by “gamification.” According to market commentator Matt Levine, in this model Robinhood offers “in-app purchases” for which “you can end up spending a lot of money,” like Candy Crush but with larger amounts of money at stake. And like with other games, it’s possible to pursue other expressive, performative, and “gameful” ends that don’t involve making money—like engaging in meme stock herding trades.<sup>46</sup> According to a pessimistic view to which I return in Part IV.I, this may be bad for markets and even worse for public confidence in them.

## B. Gamification as object of regulatory scrutiny

Behavioral design has increasingly become an object of legislative and regulatory scrutiny. When zero-commission brokerage gained popularity in 2019, it quickly became apparent that behavioral design and digital engagement practices were driving growth—with potential for social harm.<sup>47</sup> To that end, the Biden administration’s SEC Chairman, Gary Gensler, has made gamification a priority.<sup>48</sup> Testifying before Congress in May 2021, Gensler criticized brokerage apps that use “psychological prompts to get people to trade more,” even though active trading “doesn’t mean better returns.”<sup>49</sup> Since then, a majority of the Commission—Gensler, along with Commissioners Allison Lee and Caroline Crenshaw—has expressed interest in regulating gamification.<sup>50</sup> In addition, Commissioner Hester Peirce

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<sup>44</sup> *Staff Memorandum on the Game Stopped Hearing 5*, <https://perma.cc/J7FM-J9JY>.

<sup>45</sup> *See, e.g., Annie Massa and Tracy Alloway, Robinhood, Meme Stocks and Investing as a Game: QuickTake*, *Bloomberg Law* (June 22, 2021).

<sup>46</sup> Matt Levine, *Money Stuff: Playing the Game of Infinite Leverage*, *BLOOMBERG OPINION* (Nov. 5, 2019) (noting that modern retail trading might not just be about “conventional financial analysis,” but “impressing people with your wit and boldness” on social media). On “gameful” ends, see generally Deterding, *supra* note 27.

<sup>47</sup> David Ingram, *Designed to Distract: Stock App Robinhood Nudges Users to Take Risks*, *NBCNEWS.COM* (Sep. 12, 2019), <https://perma.cc/JGH7-6KNU>. Gamification had been an understood part of the firm’s business model since at least 2017. *See, e.g., Vasiliadis, supra* note 39.

<sup>48</sup> *See Benjamin Bain & Robert Schmidt, Gensler Targets Broker “Gamification” After Trading Tumult*, *BLOOMBERG* (Mar. 2, 2021) (confirmation hearing).

<sup>49</sup> Testimony of Gary Gensler, U.S. House Committee on Financial Services, *Game Stopped? Who Wins and Loses When Short Sellers, Social Media, and Retail Investors Collide, Part III* (May 6, 2021), <https://www.youtube.com/watch?v=vX2X8xxHEns>; *see Ben Bain, Robinhood, Citadel Threatened by SEC Chief’s Push for New Rules*, *BLOOMBERG* (May 5, 2021).

<sup>50</sup> *See Allison Herren Lee, Speech, Leveraging Regulatory Cooperation to Protect America’s Investors: Remarks at the 2021 Seciton 19(d) Conference* (May 21, 2021) (May 2021);

has defended gamification in capital markets and even encouraged the Commission to “gamify” its own communications with investors.<sup>51</sup>

The particulars of the SEC’s potential response remain open-ended. The staff is considering various options for addressing these practices, including the adequacy of existing securities laws and the possible need for “fresh” rules.<sup>52</sup> In August 2021, the SEC published a request for comment on these practices.<sup>53</sup>

Gamification has also attracted the attention of the Financial Industry Regulatory Authority (FINRA), the self-regulatory organization (SRO) for broker-dealers.<sup>54</sup> FINRA makes and enforces rules for brokers, and it implements these through an examination program that monitors regulatory risks.<sup>55</sup> In February 2021, FINRA issued guidance that it was increasing its evaluation of member firms’ compliance with rules governing communications with retail clients in app-based investing platforms.<sup>56</sup> FINRA noted the tradeoff between increased access and the possibility of “increased risks to customers if not designed with the appropriate compliance considerations

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Chris Ekimoff and Kurt Wolfe, *Enforcing the Regulations: A Conversation with Commissioner Crenshaw*, Insecurities Podcast (PLI) at 18:00-22:00 (June 17, 2021), <https://insecurities.podbean.com/e/enforcing-the-regulations—a-conversation-with-commissioner-crenshaw/>.

- <sup>51</sup> See, e.g., Hester M. Peirce, Speech,  *Atomic Trading* , George Washington University Law School Regulating the Digital Economy Conference (Feb. 22, 2021).
- <sup>52</sup> Prepared testimony of Gary Gensler before the U.S. House Committee on Financial Services, *Game Stopped? Who Wins and Loses When Short Sellers, Social Media, and Retail Investors Collide, Part III 2* (May 6, 2021). The SEC staff is considering regulatory responses. See, e.g., Tom Zanki, *SEC Launches Review of Equity Market Rules*, LAW360 (Jun. 9, 2021); Dean Seal, *SEC Maps Out Gensler’s Regulatory Ambitions Over Next Year*, LAW360 (Jun. 11, 2021).
- <sup>53</sup> Request for Information and Comments on Broker-Dealer and Investment Adviser Digital Engagement Practices No. 92766, Exchange Act Release 92766, 86 Fed. Reg. 49067 49067 (Sep. 1, 2021).
- <sup>54</sup> FINRA is a registered national securities association under Exchange Act Section 15A, 15 U.S.C. § 780-3. For discussion of FINRA’s status and role in brokerage industry self-regulation, see Benjamin P. Edwards, *The Dark Side of Self-Regulation*, 85 U. CIN. L. REV. 573, — (2017).
- <sup>55</sup> See, e.g., 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, 150-53 (2011).
- <sup>56</sup> See FINRA Rule 2210; FINRA, *2021 Report on FINRA’s Examination and Risk Monitoring Program 2*, 20-22 (Feb. 2021) (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”). Besides this examination effort, FINRA has settled several enforcement actions with zero-commission brokers for disclosure and best-execution violations related to receipt of payment of order flow and other issues arising from the underlying business model.

in mind.”<sup>57</sup> More recently, FINRA has issued other guidance and announced plans to explore further responses to gamification and the business model.<sup>58</sup>

State securities regulators also play a role in enforcing broker-dealers’ obligations under the securities laws.<sup>59</sup> Massachusetts regulators have been boldest in pursuing gamification claims under state law. They brought administrative enforcement proceedings against Robinhood, alleging that gamification violates state-law fiduciary duties to clients.<sup>60</sup> In an amended complaint, the state alleged that Robinhood targeted unsophisticated investors, luring them in with app design features and “gamification strategies to manipulate [them] into continuous interaction and constant engagement with its application.”<sup>61</sup> These practices, Massachusetts has alleged, violate state securities laws prohibiting broker-dealers from engaging in unethical practices, state fiduciary-duty rules, and state reasonable-supervision rules.<sup>62</sup>

### C. The emergence of behavioral design

This regulatory scrutiny highlights an important big-picture question: should securities law respond to behavioral design practices, and if so how? To tackle that problem, it’s worth first considering the origins of behavioral design. Behavioral design is a product of several convergent trends in retail stock markets: (1) the “re-retailization” of capital markets; (2) price competition on brokerage commissions; and (3) intermediation profits in the national market system. These convergent and mutually reinforcing trends

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<sup>57</sup> *Id.* at 22.

<sup>58</sup> See, e.g., Al Barbarino, *FINRA to Seek Public Input on “Gamification” of Stock Market*, LAW360 (May 19, 2021), <https://www.law360.com/securities/articles/1386379/finra-to-seek-public-input-on-gamification-of-stock-market>. For guidance related to other aspects of the business model, see FINRA Regulatory Notice No. 21-23 (Jun. 23, 2021); FINRA Regulatory Notice No. 21-12.

<sup>59</sup> Broker-dealers are licensed not only at the national level but also by regulators in the states where they operate. See Andrew Jennings, *State Securities Enforcement*, 47 B.Y.U. L. REV. —, — (2021). The separation of rulemaking and enforcement authority owing to federalism can give rise to different standards of conduct at federal and state levels. Massachusetts’s enforcement action, discussed below, 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, e.g., Benjamin P. Edwards, *The Fate of State Investor Protection*, 21 TRANSACTIONS: TENN. J. BUS. L. 213, — (2020).

<sup>60</sup> See Complaint, *Robinhood Financial, LLC*, Docket No. E-2020-0047 (Mass. Sec. Div. filed Dec. 16, 2020) (“Mass. Compl.”). The regulator sought to file an amended complaint seeking to revoke Robinhood’s registration as a broker-dealer in the state. See Motion for Leave to File Amended Administrative Complaint, *Robinhood Financial, LLC*, Docket No. E-2020-0047 (Mass. Sec. Div. filed April 15, 2021) (“Mass. Amended Admin. Compl.”).

<sup>61</sup> Mass. Amended Admin. Compl., *supra* note 60, at 6; see, e.g., Mass. Gen. Laws ch. 110A, § 204(a)(2)(G); 950 Mass. Code Regs. 12.207(1)(a).

<sup>62</sup> See Mass. Amended Admin. Compl., *supra* note 60, at 22-24.

have produced an incentive for broker-dealers to elicit from clients a large volume of noisy retail order flow. As a result it is rational, and perhaps necessary, for broker-dealers to adopt behavioral design practices in offering free-to-use investing apps to retail customers.<sup>63</sup>

### 1. “Re-retailization” in securities markets

One of the most important precipitating trends has been the re-emergence of retail investors in securities markets. Securities regulators and scholars might not have seen this looming trend on the horizon ten years ago, when retail interest in individual corporate stocks seemed moribund. At the time, securities law had identified a pair of trends—deretailization and institutionalization—that had shifted trading in single-name corporate stock from retail investors to institutional investors like public and private funds.<sup>64</sup> During the post-war golden era of the American economy, retail investors made up the bulk of corporate shareholders.<sup>65</sup> By some measures, they owned in the range of 70-75% of all corporate stock in the United States in 1979.<sup>66</sup> That proportion reversed over the next several decades, with almost 70% of stock held by institutional investors by 2011.<sup>67</sup> Retail traders had in significant numbers exited the market for individual equities, and shifted instead into diversified funds.<sup>68</sup>

But since these dire warnings, the deretailization trend has slowed if not reversed. Retail traders are participating more deeply and broadly than in

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<sup>63</sup> See Langvardt & Tierney, *supra* note 14.

<sup>64</sup> See Brian G. Cartwright, SEC General Counsel, Speech by SEC Staff: The Future of Securities Regulation (Oct. 24, 2007) (coining the term); see also, e.g., Donald C. Langevoort, *The Sec, Retail Investors, and the Institutionalization of the Securities Markets*, 95 VA. L. REV. 1025, \_\_ (2009) (“the market for corporate securities ... is no longer substantially retail in nature”); see also, e.g., Gaia Balp, *The Corporate Governance Role of Retail Investors*, 31 LOY. CONSUMER L. REV. 47, 66–68 (2018); Jill E. Fisch, *Rethinking the Regulation of Securities Intermediaries*, 158 U. PA. L. REV. 1961, \_\_ (2010); Alicia Davis Evans, *A Requiem for the Retail Investor*, 95 VA. L. REV. 1105, \_\_ (2009); Steven M. Davidoff, *Paradigm Shift: Federal Securities Regulation in the New Millennium*, 2 BROOK. J. CORP. FIN. & COM. L. 339, 347–53 (2008). The secular shift away from actively managed to passively managed funds, moreover, reflected the awareness of the role of intermediary fees as a drag on performance.

<sup>65</sup> See, e.g., Sarah Haan, *Corporate Governance and the Feminization of Capital*, 74 STAN. L. REV. \_\_ (forthcoming 2022).

<sup>66</sup> Estimates vary based on the underlying data and the method. See, e.g., [Embattled CEOs at 996-97] (estimating about 68% in 1980 based on Federal Reserve flow of funds accounts data); Jack B. Jacobs, *“Patient Capital”: Can Delaware Corporate Law Help Revive It?*, 68 WASH. & LEE L. REV. 1645, 1650 (2011). (about 75%).

<sup>67</sup> *Id.*

<sup>68</sup> See, e.g., Paul G. Mahoney, *Is There a Cure for “Excessive” Trading?*, 81 VA. L. REV. 713, 733 n.65 (Apr. 1995); Evans, *supra* note 65, at 1117 n.44; cf. Brian G. Cartwright, *Whither the SEC Now*, 95 VA. L. REV. 1085, 1092 (2009).

recent years. Retail investors are also make up a larger share of trading volume. That share also rose from 2019 to 2020, and even more in 2021.<sup>69</sup> Figure 2 reports data from Bloomberg Intelligence for individual investors' share of U.S. equities trading volume between 2011 and the first quarter of 2021.<sup>70</sup> Retail investors' trading volume is also disproportionately high relative to ownership share of total market value.<sup>71</sup>

Individual investors' share of U.S. equities trading volume

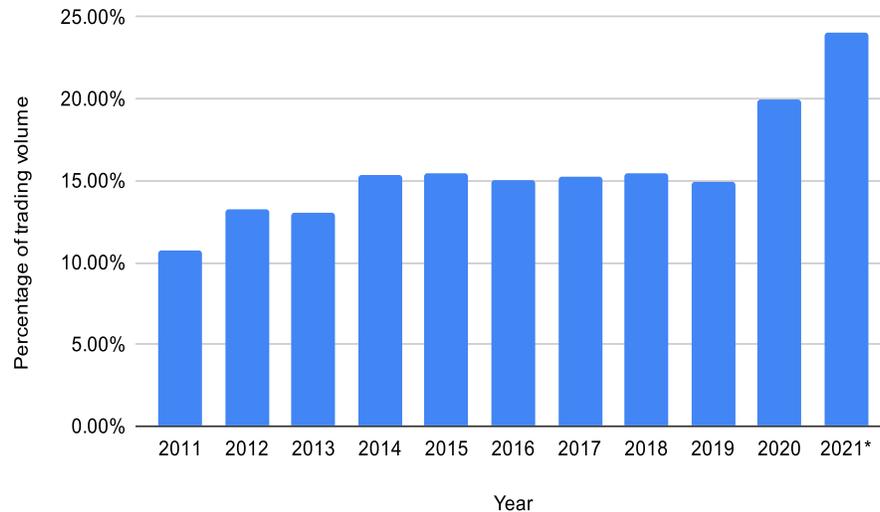


Figure 2: Data from Bloomberg Intelligence on retail investor trading volume

Retail investors are not just becoming more active, as a group they are growing in size and becoming more diverse. A research study sponsored by the FINRA Foundation found that people who opened an investment account for the first time in 2020 “were younger, had lower incomes, and were more racially diverse” than existing investors.<sup>72</sup> Of course, given wealth and income inequality, participating in equity markets remains out of reach for many people.<sup>73</sup> And the wealthiest households’ share of ownership has only

<sup>69</sup> Katie Martin & Robin Wigglesworth, *Rise of the Retail Army: The Amateur Traders Transforming Markets*, FINANCIAL TIMES (Mar. 8, 2021).

<sup>70</sup> Caitlin McCabe, *It Isn't Just AMC. Retail Traders Increase Pull on the Stock Market*, WALL ST. J. (June 18, 2021) (reporting Bloomberg Intelligence data). The data for 2021 is from first quarter, not annual.

<sup>71</sup> See, e.g., Richard Stanley, *Retail investors comprise 10 percent of U.S. daily trading*, PRECISE INVESTORS (July 1, 2021), <https://preciseinvestors.com/retail-investors-comprise-10-percent-of-u-s-daily-trading/>.

<sup>72</sup> Mark Lush et al., *Investing 2020: New Accounts and the People Who Opened Them* (Feb. 2021).

<sup>73</sup> See, e.g., Winston, *supra* note 16, at \_\_; Lydia Saad & Jeffrey M. Jones, *What Percentage of Americans Owns Stock?*, GALLUP (Aug. 13, 2021) (“Stock ownership is strongly correlated with household income, formal education, age and race.”); cf. SIFMA Insights, *Q: Who*

continued to grow over time.<sup>74</sup>

Despite all that, record numbers of ordinary people have also been participating in the stock market.<sup>75</sup> Greater liquidity in household finance—from changed budgets and exogenous wealth shocks from social welfare programs—has also plausibly encouraged a rise in investment.<sup>76</sup> In this view, trading is a substitute for other kinds of entertainment.<sup>77</sup>

It is time, first, to update the received wisdom from a decades-old scholarly debate about retail investors. Zero-commission trading has enabled partial *re-retailization* of capital markets. It has not, apparently, disrupted trends passive strategies. But the greater ease with which people can trade securities has enabled them to buy—or, in economists’ lingo, increased the elasticity of demand for buying—corporate equities directly, opening up stock investing to a more mass market audience. That greater ease is partly a function of technology, which has given traders around the world nearly direct access to markets. Less obvious, however, is the emergence of common availability of trading in fractional shares, or portions of stock less than one share. This reduces barriers to entry, allowing investors to buy based on the amount of money they have rather the arbitrary number of shares they

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*Owns Stocks in America? A: Individual Investors, A Chart Book on Stock Ownership* (Oct. 2019), <https://www.sifma.org/wp-content/uploads/2019/10/SIFMA-Insights-Who-Owns-Stocks-in-America.pdf>.

<sup>74</sup> See, e.g., *Id.*; Thomas Piketty et al., *Distributional National Accounts: Methods and Estimates for the United States\**, 133 THE QUARTERLY JOURNAL OF ECONOMICS 553, — (May 2018).

<sup>75</sup> See, e.g., Madison Darbyshire, ‘*The Stimulus Has Landed: US Retail Traders Set to Hit Stock Market*’, FINANCIAL TIMES (Mar. 17, 2021), <https://www.ft.com/content/e67f5076-c517-4bd5-9688-c70cde011452>.

<sup>76</sup> See, e.g., Matt Phillips, *Recast as ‘Stimmies,’ Federal Relief Checks Drive a Stock Buying Spree*, N.Y. TIMES (Mar. 21, 2021), <https://perma.cc/ST8G-WCSJ>; Massa & Ponczek, *supra* note 8.

<sup>77</sup> 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. See, e.g., Matt Levine, *Money Stuff: If You’re Bored You Can Trade Stocks*, BLOOMBERG OPINION (Apr. 30, 2020); Matt Levine, *Money Stuff: The GameStop Game Never Stops*, BLOOMBERG OPINION (Jan. 25, 2021), <https://www.bloomberg.com/opinion/articles/2021-01-25/the-game-never-stops>. See also, e.g., Daniel Dorn & Paul Sengmueller, *Trading as Entertainment?*, 55 MGMT. SCI. 591 (2009). (modeling demand for trading as recreation, sensation seeking, and aspiration for riches). Consistent with this prediction, evidence of retail trader behavior in Taiwan around introduction of a new source of legal gambling suggests that “some investors may view investing and gambling as substitutes.” Michael Strahilevitz, *A Closer Look at the Causes and Consequences of Frequent Stock Trading*, in FINANCIAL BEHAVIOR: PLAYERS, SERVICES, PRODUCTS AND MARKETS 45, 211 (H. Kent Baker et al. eds., 2017) (citing Brad M Barber et al., *Just How Much Do Individual Investors Lose by Trading?*, 22 REV. FIN. STUD. 609 (2009).); cf. Massa & Ponczek, *supra* note 8.

can afford.<sup>78</sup>

## 2. Competition and innovation

Price competition is a second factor in the emergence of behavioral design in stock trading apps. Retail investors bear certain costs for buying and selling stocks. One cost is the bid-ask spread, or the difference between prices at which a buy or sell order can be immediately filled; the spread is the compensation for market makers that stand ready to fill these orders.<sup>79</sup> Another, more salient cost is the brokerage commission that brokers collect in compensation for effecting the client's buy or sell order. These commissions used to be fixed, providing exchange-member brokers with monopoly profits.<sup>80</sup> Commissions made up a large part of the transaction costs of trading stocks, dragging investor returns and dampening trading volume.<sup>81</sup> But reforms in the 1970s deregulated trading commissions; federal law adopted "competition" as a new foundational normative goal of the securities laws. This permanently changed Wall Street's culture, encouraging cutthroat price competition.<sup>82</sup>

One of the more important consequences was the emergence of "discount" brokerage firms. Brokers compete on price and other service attributes, and commissions are highly salient. Full-service brokers had traditionally offered services like financial planning, security selection, account monitoring, and research and information. By contrast, discount brokers offered cheap order-execution services without much more. This was attractive to those investors who were self-directed and wanted only cheap execution services.<sup>83</sup> Combined with technological innovation in the 1990s, price

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<sup>78</sup> See SEC Office of Investor Education and Advocacy, *Fractional Share Investing — Buying a Slice Instead of the Whole Share* (Nov. 9, 2020); see also Asaf Raz, *Share Law: Toward a New Understanding of Corporate Law*, 40 U. PA. J. INT'L L. 255, 315 (2018). To illustrate, someone with \$20 who wants to buy an interest in stock trading at \$80 can buy 0.25 shares. Though state corporate law authorizes and grants certain rights with respect to shares issued in fractional form, see, e.g., Model Business Corporations Act § 6.04, contractual rights govern treatment of fractional shares traded or acquired through a transaction in less than a whole share or through dividend reinvestment. Fractional shares might also be thought to be beneficial insofar as they open up access to investment to a broader range of small-dollar investors. See, e.g., Jill Fisch, Presentation, National Business Law Scholars Conference (May 2021).

<sup>79</sup> See Stanislav Dolgoplov, *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).

<sup>80</sup> See, e.g., VI LOUIS LOSS ET AL., *SECURITIES REGULATION* 277 (5th ed. ed. 2015).

<sup>81</sup> According to one estimate, it would have cost about 1%, or "a one-way commission of \$39," to trade a round lot of 100 shares in a stock at the then-average price for NYSE-traded stocks; "[t]his is a substantial fraction." Charles M. Jones, *A Century of Stock Market Liquidity and Trading Costs* 7 (May 2002).

<sup>82</sup> For history and details, see LOSS ET AL., *supra* note 81, at 289.

<sup>83</sup> See, e.g., Janice Traflet & Michael P. Coyne, *Ending a NYSE Tradition: The 1975*

competition allowed investors to sort into the amount of hand-holding they wanted.<sup>84</sup>

As price competition disrupted the industry, many retail-oriented broker-dealers offered zero-commission trading. The leaders were online brokers featuring apps with slick design. Robinhood first offered commission-free trading in 2013.<sup>85</sup> Legacy discount brokers like Charles Schwab, Fidelity, and TD Ameritrade slowly reduced commissions in response; all cut commissions to zero in 2019.<sup>86</sup> Now many retail clients of discount brokers trade without paying meaningful commissions for public company stocks.<sup>87</sup>

Commission pricing is particularly important to retail investors. This reflects salience models of decisionmaking in the market for brokerage services.<sup>88</sup> Standard economic theories assume that rational consumers will consider all the attributes of some good or service, but in practice people are boundedly rational. Even the informed lack cognitive processing power to comparison shop across all attributes and consequences of one choice over another. So in entering a transaction, they consider and decide based on fewer than all the attributes of the service at issue, and focus instead on a handful of highly salient attributes—price, quality, and so on.<sup>89</sup> As people don't pay attention to nonsalient attributes, these do not bear on the

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*Unraveling of Broker's Fixed Commissions and its Long Term Impact on Financial Advertising*, 25 *ESSAYS IN ECON. & BUS. HIST.* 131 (2007); cf. John C. Coffee, *Market Failure and the Economic Case for a Mandatory Disclosure System*, 70 *VA. L. REV.* 717, 727 n.30 (1984).

<sup>84</sup> See, e.g., Caroline Bradley, *Disorderly Conduct: Day Traders and the Ideology of Fair and Orderly Markets*, 26 *J. CORP. L.* 63, 67 (2000).

<sup>85</sup> Some observers suggested that this was an obvious next step in brokerage industry price wars. See Patrick McKenzie, *How Discount Brokerages Make Money*, *KALZUMEUS* (June 26, 2019), <https://perma.cc/RXS5-4ZQZ>.

<sup>86</sup> Matt Levine, *Money Stuff: The Trades Will Be Free Now*, *BLOOMBERG OPINION* (Oct. 2, 2019). See also, e.g., Richard Henderson, *America's e-Brokerages Scramble to Protect Margins amid Fee War*, *FINANCIAL TIMES* (Oct. 24, 2019), <https://www.ft.com/content/06379154-f641-11e9-9ef3-eca8fc8f2d65>; Lisa Beilfuss & Alexander Osipovich, *The Race to Zero Commissions*, *WALL ST. J.* (Oct. 5, 2019), <https://www.wsj.com/articles/the-race-to-zero-commissions-11570267802>; J. Alexander Ortner, *Pricing Wars Are Hitting E\*Trade's Bottom Line*, *THE MOTLEY FOOL* (Jan. 27, 2020), <https://www.fool.com/investing/2020/01/27/pricing-wars-are-hitting-etrades-bottom-line.aspx>.

<sup>87</sup> See Lyle Daly, *Online Brokerage Statistics for 2020*, *The Ascent* (June 19, 2020). Of course, traders also bear other costs like the bid-ask spread and SEC-imposed transaction fees. See, e.g., Yu-Chuan Huang, *Determinants of Trading Costs*, in *MARKET MICROSTRUCTURE IN EMERGING AND DEVELOPED MARKETS* (2013).

<sup>88</sup> 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 et al., *Out of Sight, Out of Mind: The Effects of Expenses on Mutual Fund Flows*, 78 *J. BUS.* 2095 (Nov. 2005).

<sup>89</sup> See, e.g., Russell Korobkin, *Bounded Rationality, Standard Form Contracts, and Unconscionability*, 70 *U. CHI. L. REV.* 1203, 1206 (2003); Pedro Bordalo, Nicola Gennaioli & Andrei Shleifer, *Salience and Consumer Choice*, 121 *J. POL. ECON.* 803 (2013).

decision to transact. To the extent there are no marginal customers selecting on these nonsalient attributes—which can include pricing dimensions and contract terms—the attributes are not subject to competitive pressure.<sup>90</sup>

Price competition has bid the price of brokerage commissions down to zero, leaving broker-dealers to generate revenue other ways. Offering “free” pricing requires a cross subsidy from less- or nonsalient revenue sources.<sup>91</sup> This might involve the client paying directly, a strategy seen with in-app micropayments in games like Candy Crush.<sup>92</sup> But it might also involve a third party paying for information: thus the modern adage that “[if] something is free, then you’re not the customer—you’re the product being sold.”<sup>93</sup> Zero-commission brokers use a combination of these revenue sources. These include “selling clients financial advice, margin lending, net interest income, and payment for order flow (PFOF).”<sup>94</sup> The last of these, PFOF, has had a peculiarly strong influence in zero-commission trading apps that use behavioral design.

### 3. Market fragmentation and intermediation

Market fragmentation is another trend giving rise to behavioral design, because of the profit opportunities it creates. Technological innovation, price competition, and deregulatory fragmentation of market structure have dramatically changed how ordinary individuals and sophisticated participants alike buy and sell stocks.<sup>95</sup> The stock market today is a national market system of fragmented and competing trading venues: not a single place to trade stocks, but a dispersed and interlocking set of rules, institutions, and practices. As a result, there are many opportunities for sophisticated market participants to bridge gaps, providing liquidity while using information about retail order flow for profit.<sup>96</sup>

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<sup>90</sup> James Fallows Tierney, *Contract Design in the Shadow of Regulation*, 98 NEBRASKA LAW REVIEW 874, \_\_ (2020).

<sup>91</sup> See, e.g., *Id.* at 889; Levine, *supra* note 87 (noting that the “obvious” implication of zero-commission brokerage services is to “give people a good deal on the salient headline thing, and ... make your profits where they aren’t looking”).

<sup>92</sup> See, e.g., Kyle Langvardt, *Regulating Habit-Forming Technology*, 88 FORDHAM L. REV. 129, 134–41 (2019).

<sup>93</sup> Levintova, *supra* note 8.

<sup>94</sup> Langvardt & Tierney, *supra* note 14, at \_\_ (citing Jerry W. Markham, *Regulating Broker-Dealer Investment Recommendations—Laying the Groundwork for the Next Financial Crisis*, 13 DREXEL L. REV. 377, 443 (2021)); see also Shane Swanson, *The Impact of Zero Commissions on Retail Trading and Execution* (2020).

<sup>95</sup> See, e.g., Merritt B. Fox et al., *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”).

<sup>96</sup> See, e.g., WALTER MATTLI, *DARKNESS BY DESIGN: THE HIDDEN POWER IN GLOBAL CAPITAL MARKETS* (2019).

When retail investors trade stocks, they can be executed several ways. The broker can execute the order internally, matching with other customer orders or securities on its balance sheet. It can route the order to a national securities exchange or alternative trading system.<sup>97</sup> Or, as with most retail orders, it can sell the order with others to a third party that wants to trade against it.<sup>98</sup> This competitive landscape is the product of the same 1970s deregulatory reforms that promoted the creation of a national market system.<sup>99</sup> When open, the market runs a matching auction in continuous time.<sup>100</sup> At any instantaneous time, there is a single best nationwide price—the national best bid or offer—that should apply to certain trades that carry important price information.<sup>101</sup>

All this illustrates a key attribute of the national market system: nationally-best continuous time pricing on geographically dispersed execution venues.<sup>102</sup> This has enabled competition among dispersed venues. But it has also enabled arbitrage opportunities. Some of the arbitrage opportunities arising from market structure are the result of physical infrastructure limits. The national best bid or offer references prices on exchanges that may be physically far away. It takes time for signals to be sent across long distances, and price information on one trading venue may be “stale” when it has not been updated with information from other trading venues.

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<sup>97</sup> See *id.* The days are long gone when securities were sold in open-outcry trading floors. To the extent they are routed to exchanges rather than other venues, orders are generally handled with electronic order books and matching engines.

<sup>98</sup> See *infra* note 107.

<sup>99</sup> See also *Market Data Infrastructure*, Exchange Act Release No. 90610, 2020 WL 7413527, at \*577 (Dec. 9, 2020) (describing the “market for trading services in NMS stocks [as] currently consist[ing] of 16 national securities exchanges, as well as off-exchange trading venues including wholesalers and 34 NMS stock alternative trading systems”). For criticisms of the national market system, see Hester Peirce, *Rethinking the National Market System*, 43 J. CORP. L. 649 (2018); Daniel M. Gallagher, *How to Reform Equity Market Structure: Eliminate “Reg NMS” and Build Venture Exchanges*, in PROSPERITY UNLEASHED: SMARTER FINANCIAL REGULATION 95 (Norbert J. Michel ed., Heritage Foundation 2017).

<sup>100</sup> Eric Budish et al., *The High-Frequency Trading Arms Race: Frequent Batch Auctions as a Market Design Response* \*, 130 THE QUARTERLY JOURNAL OF ECONOMICS 1547 (Nov. 2015).

<sup>101</sup> See 17 C.F.R. § 242.600(50) (describing the “national best bid and national best offer” for purposes of Regulation NMS). See, e.g., Onnig H. Dombalagian, *Best Execution: An Impossible Dream?*, in THE CAMBRIDGE HANDBOOK OF INVESTOR PROTECTION 7 (Arthur B. Laby ed., Cambridge University Press 2021).

<sup>102</sup> Donald MacKenzie, *Material Signals: A Historical Sociology of High-Frequency Trading*, 123 AM. J. SOC. 1635, — (May 2018) (“[T]he rules that constrain today’s U.S. share trading are formulated in terms of the best currently available price nationally, when in the Einsteinian materiality of speed-of-light signaling and microsecond response times that current best price depends on something not even mentioned in Reg NMS, an algorithm’s precise spatial location.”).

Some proprietary trading firms engage in latency arbitrage, leveraging superior investments in speed to capture tiny price differences across geographically dispersed venues before prices can be updated.<sup>103</sup> Nowhere is the effect of the national market system more apparent than in the arms race in developing 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. One recent working paper estimates that this has a modest tax on trading and increases social costs of liquidity.<sup>104</sup>

But fragmentation has another consequence as well. This relates to adverse selection in the asynchronous arrival of orders in a continuous time market. Buyers and sellers of stock arrive naturally at securities markets at different times, creating a potential liquidity problem.<sup>105</sup> One way broker-dealers solve this problem is by routing retail investor orders to principal trading firms—known in the business as wholesale dealers—that profit from taking the contra side. These firms provide liquidity to the markets, taking the opposite side of trade orders and (they hope) exiting them at a higher price. But they are concerned with the problem of “adverse selection”: an unknown trader on the other side might have better information about the future direction of the stock price, inhibiting a profitable exit from the trade. Retail investors generally aren’t better informed in this sense, so exposure to them reduces adverse selection risk.<sup>106</sup> By paying retail brokers for retail order flow, these principal-trading firms make it more likely that their trades will remain profitable. And indeed, “nearly all market orders in listed securities are routed to wholesale dealers rather than an exchange.”<sup>107</sup>

Zero-commission brokers have to find other sources of revenue. One source is a kind of kickback known as PFOF: third-party principal trading firms compensating the broker-dealer in exchange for routing retail order flow to them for execution. By virtue of being noisy, retail order flow creates profitable opportunities for these firms to take the other side of the trade.<sup>108</sup> PFOF gives brokers an incentive to send order flow to these “wholesaler”

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<sup>103</sup> See Tom C.W. Lin, *Reasonable Investor(s)*, 95 B.U. L. REV. 461, 489–91 (2015). On the emergence of high-frequency trading, see DONALD A. MACKENZIE, *TRADING AT THE SPEED OF LIGHT* (2021); MATTLI, *supra* note 97.

<sup>104</sup> Matteo Aquilina et al., *Quantifying the High-Frequency Trading “Arms Race”* (Jul. 2021)..

<sup>105</sup> See MAUREEN O’HARA, *MARKET MICROSTRUCTURE THEORY* (1995).

<sup>106</sup> Staff of the Division of Trading and Markets, Securities and Exchange Commission, Memorandum to Equity Market Structure Advisory Committee, *Certain Issues Affecting Customers in the Current Equity Market Structure* 6 (Jan. 26, 2016), <https://www.sec.gov/spotlight/equity-market-structure/issues-affecting-customers-em-sac-012616.pdf> (“TM Staff Mem.”); *cf.*, e.g., Joel Press & Daniel Schmidt, *Glued to the TV: Distracted Noise Traders and Stock Market Liquidity*, 75 J. FIN. 1083 (2019).

<sup>107</sup> Dombalagian, *supra* note 102, at 7.

<sup>108</sup> TM Staff Mem., *supra* note 106.

trading firms rather than internalize it themselves, and to maximize their own compensation for doing so.<sup>109</sup> PFOF has been legal for years, though these payments must be disclosed and must be consistent with brokers' duty to provide "best execution" to their clients.<sup>110</sup> But the practice is also controversial. Some observers are concerned that brokers are putting their own interests ahead of their duty to the customer to provide best execution.<sup>111</sup>

Fragmentation may well be good if it promotes liquidity and price discovery. But some of the animating motivations of stock market design supposed that "principal trading by broker-dealers did not serve the interests of ordinary investors."<sup>112</sup> The final of the three trends, then, tees up a potential conflict of interest in brokers' adoption of behavioral design. It encourages a source of transaction-based revenue for the broker-dealer that is nonsalient to the investor. This encouragement, I suggest, is the most important basis for calls to regulate behavioral design.

## II. DILEMMAS OF REGULATING BEHAVIORAL DESIGN IN RETAIL INVESTMENT MARKETS

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

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<sup>109</sup> SEC, OCIE, *Special Study: Payment for Order Flow and Internalization in the Options Markets* (Dec. 2000), <https://www.sec.gov/news/studies/ordpay.htm>; see Exchange Act Rule 10b-10(d)(8), 17 CFR § 240.10b-10(d)(8); see also, e.g., Hitesh Mittal & Kathryn Berkow, *The Good, the Bad & the Ugly of Payment for Order Flow* (May 2021); *Robinhood Financial, LLC*, Securities Act Release No. 10906, 2020 WL 7482170, at \*4 (Dec. 17, 2020); Speech by Elizabeth King, Associate Director, SEC Division of Market Regulation, to the 2003 Options Industry Conference, 2003 WL 2010053, at \*2 (Apr. 25, 2003) ("[I]f there is value in an order, why should it not belong to the customer? It is not clear to us right now that the value derived from customers' orders [through payment for order flow] is passed on to them, either directly or indirectly.").

<sup>110</sup> See TM Staff Mem., *supra* note 106, at 8 ("To date, the Commission has pursued an approach based primarily on disclosure to address concerns about the potential conflicts of interest caused by payment-for-order-flow arrangements."); see generally Allen Ferrell, *A Proposal for Solving the Payment for Order Flow Problem*, 74 S. CAL. L. REV. 1027 (2001). The broker's duty of best execution is a requirement to exercise "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." FINRA Rule 5310(a)(1); see also, e.g., *Newton v. Merrill, Lynch, Pierce, Fenner & Smith*, 135 F.3d 266, 270-72 (3d Cir. 1998) (describing common law duty of best execution).

<sup>111</sup> TM Staff Mem., *supra* note 106, at 7 (citing Final Rule, *Payment for Order Flow*, Exchange Act Release No. 34902, 59 Fed. Reg. 55006, 55009 (Nov. 2, 1994)); see also, e.g., Written Testimony of Gina-Gail Fletcher before the U.S. Senate Committee on Banking, Housing, and Urban Affairs, *Who Wins on Wall Street? GameStop, Robinhood, and the State of Retail Investing* 13 (Mar. 9, 2021), <https://www.banking.senate.gov/imo/media/doc/Fletcher%20Testimony%203-9-21.pdf>.

<sup>112</sup> Paul G. Mahoney, *Equity Market Structure Regulation: Time to Start Over*, — MICH. BUS. & ENTREPRENEURIAL L. REV. forthcoming, 6 (2021)

models within securities law theory.

#### A. Theoretical and empirical models of retail trader decisionmaking

Concerns about “gamification” reflect a longstanding puzzle about retail traders. Active traders underperform the market, often by a lot, yet excessive trading persists. Why? One suggestion is that behavioral design encourages potentially excessive trading. As this subpart discusses, recent empirical research bears out that information presentation can alter retail trader behavior in ways that may generate excessive or maladaptive trading.

But trader behavior is not all alike, and the determinants of “excessive” trading differs cross-sectionally. Different traders contribute to the volume of noisy order flow for different reasons. Some trade for entertainment, sensation seeking, and aspiration to riches. Others trade because a security is highly salient to them, or because they have been duped into doing so.<sup>113</sup>

Calls to regulate gamification often elide the distinctions between these models of investor behavior.<sup>114</sup> Inattention to these distinctions would have real normative implications for securities regulation. Traditionally securities law has been concerned with the problems of salience and duping. But it has not generally speculating for entertainment.<sup>115</sup> This subpart draws from literatures in financial economics modeling to illustrate why retail traders produce noisy order flow, and why broker-dealers and third parties might wish to encourage that order flow.

##### 1. Risk preferences and consumption of nonpecuniary benefits.

The first model supposes that traders are rational, transacting in securities consistent with their risk preferences and with relatively complete information. Securities law likewise historically understood investors as rational, capable of consuming and processing information, and making optimal choices about risk and return.<sup>116</sup> Yet retail traders do not act consistent with traditional finance’s predictions about optimal asset allocations and trading behavior. They trade frequently, for reasons unrelated to liquidity, tax, or rebalancing needs.<sup>117</sup> And they do so to their detriment.<sup>118</sup>

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<sup>113</sup> Not all investors need to trade for these reasons for behavioral design to work its magic. Those profit opportunities will exist as long as there are sufficient retail traders in the market to create noise that generates profit opportunities.

<sup>114</sup> *Cf.*, e.g., Lisa M. Fairfax, *The Securities Law Implications of Financial Illiteracy*, 104 VA. L. REV. 1065, \_\_ (2018) (noting a similar inattention of securities regulation to investors with different disclosure needs).

<sup>115</sup> See Lynn A. Stout, *Why the Law Hates Speculators: Regulation and Private Ordering in the Market for OTC Derivatives*, 48 DUKE L.J. 701 (1999)?

<sup>116</sup> *See*, e.g., Lin, *supra* note 104, at 467.

<sup>117</sup> *See*, e.g., Mahoney, *supra* note 69; Brad M. Barber et al., *The Cross-Section of Speculator Skill: Evidence from Day Trading*, 18 J. FIN. MKTS. 1 (2014).

<sup>118</sup> *See*, e.g., Brad M Barber et al., *Just How Much Do Individual Investors Lose by Trading?*,

One answer to the question of “excessive trading” is that it is not really excessive by the traders’ own lights. Under this model, traders are trying to satisfy their preferences for a variety of things. Some prefer risk or for consumption of entertainment, in much the same way as gambling. Researchers have linked excessive trading with preferences for risky activities like speeding and gambling.<sup>119</sup> Others (especially the young?) prefer high volatility lotteries when trying to grow their wealth.<sup>120</sup> In one empirical paper, clients of a German discount broker demonstrated nonpecuniary motives for trading, with the researchers finding evidence linking preference for gambling with portfolio turnover, a measure of trading frequency. They identified three plausible reasons for entertainment trading: “recreation, sensation seeking, and an aspiration for riches.”<sup>121</sup> Still others may derive expressive or other nonpecuniary benefits from coordinating with likeminded traders online.<sup>122</sup> These nonpecuniary aspects of “playing” the stock market are also what most make it like a “game”.<sup>123</sup>

Note that in this category of models, traders need not decide to trade based on any superior information bearing on the fundamental value of a security, or even (in its ideal form) on the future direction of a security’s price. A popular strategy of momentum trading, which seeks to chase short-term price momentum in stocks, might or might not have any relationship with future stock prices, depending on the time horizon.

The flip side to the entertainment / risk preferences model is that

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*supra* note 78; Barber & Odean, *supra* note 6.

<sup>119</sup> See, e.g., Dorn & Sengmueller, *supra* note 78 (gambling, entertainment); Mark Grinblatt & Matti Keloharju, *Sensation Seeking, Overconfidence, and Trading Activity*, 64 J. FIN. 549 (John Wiley & Sons, Ltd Apr. 2009) (speeding).

<sup>120</sup> The implication is that younger people trying to grow their wealth may be particularly interested in markets for these pseudo-lotteries, especially those featuring attractive behavioral design. This bears on the importance of brokers’ attempts to target younger investors on regulatory responses.

<sup>121</sup> Dorn & Sengmueller, *supra* note 78, at 593; see also Strahilevitz, *supra* note 78, at 212; Łukasz Markiewicz & Elke U. Weber, *DOSPERT’s Gambling Risk-Taking Propensity Scale Predicts Excessive Stock Trading*, 14 J. BEHAV. FIN. 65, \_\_ (Routledge Jan. 2013).

<sup>122</sup> John P. Anderson et al., *Social Media, Securities Markets, and the Phenomenon of Expressive Trading*, 25 LEWIS & CLARK L. REV. (2021), [https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=3834801](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3834801). To the point that traders can often have divergent reasons for trading (relative to the normative prescriptions of traditional finance), Lynn Stout offered a “heterogeneous expectations model of speculation posit[ing] that differences in traders’ beliefs—that is, subjective beliefs and bearishness—can be a catalyst for trading.” Lynn A. Stout, *Irrational Expectations*, 3 LEGAL THEORY 227, 228 (Cambridge University Press 2009/02/16 ed. 1997); see also Stout, *supra* note 116, at \_\_. Some trades may be related to portfolio rebalancing or “buy the dip” preferences, with a broader effect of supplying liquidity to markets. See, e.g., Ivo Welch, *The Wisdom of the Robinhood Crowd* \_\_ (Dec. 2020).

<sup>123</sup> Aegis J. Frumento, *[In]Securities Guest Blog: Mind Games*, BROKE AND BROKER (May 7, 2021), <http://www.brokeandbroker.com/5835/insecurities-aegis-frumento-gamification>.

rational traders should learn over time from their investment performance and the costs that they incur in trading. In theory, if retail traders underperform the market, then they should exit upon loss of capital, learning of their relative inability, or being warned in advance of engaging in active trading. Several empirical models of retail “trading to learn” suggest that losing traders are more likely to stop trading, but most traders persist even when incurring losses.<sup>124</sup> The point is not a merely academic one, as Robinhood’s cofounder said in a podcast interview that its brokerage clients traded to learn—and suggested that performance improved with learning.<sup>125</sup> The persistence of losing traders in the market is puzzling, but it is not clear that securities law has any ambition to address it.

## 2. Attention-induced noise trading.

A second category of models focuses on the role of trading on highly salient “information” that is nonetheless noisy.<sup>126</sup> Noise has an important role in financial markets.<sup>127</sup> Some people trade for reasons uncorrelated with payoff-relevant information. This is information that goes to the economic payoff of the trade (say fundamental value of the underlying asset).<sup>128</sup> Other people think, incorrectly, that they have an informational edge and can beat the market. It typically 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.

Most trading by ordinary investors will be noisy with respect to payoff-relevant information. As this kind of noisy order flow from retail investors grows, it creates liquidity—and per Fischer Black’s classic essay *Noise*, “it will become more profitable for people to trade on information, but only because the prices have more noise in them.”<sup>129</sup>

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<sup>124</sup> Brad M Barber et al., *Learning, Fast or Slow*, 10 THE REVIEW OF ASSET PRICING STUDIES 61 (Feb. 2020); Brad M. Barber et al., *Do Day Traders Rationally Learn About Their Ability?* (Oct. 2017), <https://faculty.haas.berkeley.edu/odean/papers/Day%20Traders/Day%20Trading%20and%20Learning%20110217.pdf>.

<sup>125</sup> Interview with Vlad Tenev, *This Week in Startups* (2021).

<sup>126</sup> See WAI MUN FONG, *THE LOTTERY MINDSET: INVESTORS, GAMBLING AND THE STOCK MARKET 2* (Palgrave Macmillan UK 2014).

<sup>127</sup> See, e.g., Fischer Black, *Noise*, 41 THE JOURNAL OF FINANCE 528, \_\_ (John Wiley & Sons, Ltd Jul. 1986); cf. JENS BECKERT, *IMAGINED FUTURES: FICTIONAL EXPECTATIONS AND CAPITALIST DYNAMICS* \_\_ (Harvard UP 2016).

<sup>128</sup> See, e.g., Zohar Goshen & Gideon Parchomovsky, *The Essential Role of Securities Regulation*, 55 DUKE L.J. 711, 714–15 (Feb. 2006).

<sup>129</sup> Black, *supra* note 128, at \_\_. 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.

Securities law theory recognizes that retail traders are noisy or act in ways uncorrelated with the market. Emerging in the 1980s and 1990s, “noise trader” models of retail trader behavior shaped much of the law and economics literature on securities regulation.<sup>130</sup> This literature 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 order flow being a key category in theories of stock market participants.<sup>131</sup> Whatever the origin of these traders’ propensity to trade based on noise,<sup>132</sup> “[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.”<sup>133</sup>

One of the noisy reasons that people decide to buy or sell stocks (or crypto) is that they are susceptible to the presentation of information. The decision to buy, sell, or sell a risky asset is a partly a decision about the expected 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, as in other markets, retail investors act like ordinary consumers. And like in those other markets, in making informationally complex decisions, people tend to choose based on a subset of highly salient attributes.<sup>134</sup>

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<sup>130</sup> See, e.g., Sanford J. Grossman & Joseph E. Stiglitz, *On the Impossibility of Informationally Efficient Markets*, 70 THE AMERICAN ECONOMIC REVIEW 393, \_\_ (American Economic Association 1980).

<sup>131</sup> See, e.g., Lin, *supra* note 104; Goshen & Parchomovsky, *supra* note 129.

<sup>132</sup> See, e.g., the last subpart. Behavioral finance is largely indifferent to the source of heterogeneous expectations or noise, though of course there are some exceptions. Recent literature on sociology in financial markets may be instructive in this regard. Jens Beckert argues that, to decide about future states of the world under incomplete information and cognitive power, people rely on “fictional expectations” that bring about future states of the world. BECKERT, *supra* note 128, at \_\_.

<sup>133</sup> Alessio M. Paces, *Financial Intermediation in the Securities Markets Law and Economics of Conduct of Business Regulation*, 20 INTERNATIONAL REVIEW OF LAW AND ECONOMICS 479, 494 (Dec. 2000).

<sup>134</sup> John Beshears et al., *Behavioral Household Finance*, in HANDBOOK OF BEHAVIORAL ECONOMICS: APPLICATIONS AND FOUNDATIONS 1, 177, preprint § VIII, at 46–47 (B. Douglas Bernheim et al. eds., 2018) (collecting literature on “situations in which households have been shown to overweight salient attributes and underweight shrouded attributes”). Other models in financial economics have underscored the role that salience of product attributes plays in shaping customer choice. When people are subject to cognitive processing constraints, they cannot comparison shop on the basis of more than a handful of attributes, so they select on those that are particularly salient to them. The implication is a business model that we see across different markets and industries in our increasingly technologically mediated world: “firms exploit these propensities by designing products and contracts that make appealing attributes salient while shrouding fees and quality problems.” *Id.* at 47.

The concern for regulators and scholars is that “behavioral design” induces noise trading in particular assets that are salient among the choice set. Empirical research in financial economics has found evidence of this kind of attention-induced noise trading. Some of this evidence looks at the trading behavior of Robinhood investors, based on the firm’s onetime willingness to share information about investor holdings and trades through its computer API.

Eaton, Green, Roseman, and Wu model Robinhood traders as uninformed noise traders, and focus on “high attention stocks that Robinhood investors often favor.”<sup>135</sup> Examining market quality measures at times the app had access outages, they find evidence that “quoted spreads, effective spreads, realized spreads, and price impact” are higher quality when Robinhood investors exit the market, suggesting that the presence of zero-commission traders has a negative effect on market quality. They also find that retail trader ownership of stocks is unrelated to future returns, and that the Wallstreetbets sub-Reddit “strongly predicts future zero-commission retail trading in ways that have implications for market quality.”

In addition, Barber, Huang, Odean, and Schwarz model attention-induced noise trading and momentum herding trades among Robinhood investors.<sup>136</sup> They find that Robinhood clients tend to trade disproportionately in attention-induced and highly salient stocks. They find that the top mover list increases the salience of these stocks, inducing demand for trading of them. They also find that herding trades have negative returns for Robinhood investors.

Stein examines entry of stocks into Robinhood’s now-deprecated leaderboard of most concentrated stocks in user portfolios.<sup>137</sup> He documents the role of salience in influencing investor behavior, finding that entry into the leaderboard is predictive of a spike in trading volume among users and that a short-term buy and sell strategy may be a profitable trade.

Finally, a working paper from Havakhor, Rahman, Zhang, and Zhu examines the role of technologically mediated access to raw financial data on inducing retail trader demand for stocks.<sup>138</sup> Exploiting the effect of the shutdown of the free Yahoo Finance API on returns to retail-trader-favored stocks, they find a short term decrease in trade volume and, for the remaining trades, an increase in “predictiveness of future returns.” They posit that access to this data fosters “a false sense of knowledge and control,” with

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<sup>135</sup> Gregory W. Eaton et al., *Zero-Commission Individual Investors, High Frequency Traders, and Stock Market Quality* \_\_ (Apr. 2021).

<sup>136</sup> Brad M. Barber et al., *Attention-Induced Trading and Returns: Evidence from Robinhood Users* (Feb. 2021).

<sup>137</sup> Rob Stein, *The Top 5 predictable effects of new entries in Robinhood’s “100 Most Popular” List* (Sept. 2020).

<sup>138</sup> Taha Havakhor et al., *Tech-Enabled Financial Data Access, Retail Investors, and Gambling-like Behavior in the Stock Market: Evidence from a Natural Experiment* (2021).

“overconfidence ... lead[ing] to more excessive trading” and “aggravat[ing]” ... behavioral biases.”

### 3. Behavioral design and choice distortion.

There is a third kind of model of investor behavior that depends less on financial economics’ understanding of investor behavior and more on ordinary people’s general susceptibility to the way that information is presented in ways that change their behavior in ways that depart from their preferences. This third kind of model, which likewise draws on economic logic, is the bread and butter of research on “gamification,” “behavioral design,” “dark patterns,” “habit forming technology,” and other ways that user interface and user experience design features can affect decisions and choices made. In particular, economic models of gamification see it as firm intervention in individual decisionmaking to produce a result the person otherwise would not otherwise have chosen.<sup>139</sup>

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. So regulators might look to broader literatures on the effect of particular user interface design practices on consumer behavior. One study of Robinhood, in particular, was bearish that it was designed to promote good consumer behavior. In undertaking regulatory responses on the basis of a third model—about the role of behavioral design generally, and not attention induced noise trading specifically—regulators should remain attuned to the limits of what the more general academic research can tell us about the retail trading context.<sup>140</sup>

Still, what unites these three seemingly disparate models of retail trader behavior is that they elicit trading for non-informational reasons. When people don’t have superior private information, modern financial economics considers their transactions to be uncorrelated or noisy. This “informationally noisy” speculative trading by retail investors has emerged alongside price competition in brokerage services. That is because noise can itself carry some information. Market structure thus dictates a pair of strategies for popular “free-to-play” stock investing apps. These apps encourage retail investors to trade actively in high-volatility stocks, and they do so several ways that are relevant to the securities laws.

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<sup>139</sup> Juho Hamari et al., *Gamification and Economics*, in *THE GAMEFUL WORLD: APPROACHES, ISSUES, APPLICATIONS* 139, 140 (Steffen P. Walz & Sebastian Deterding eds., MIT Press 2015).

<sup>140</sup> See Rachel Geoffroy & Heemin Lee, *The Role of Academic Research in SEC Rulemaking: Evidence from Business Roundtable v. SEC*, 59 J. ACCT. RES. 375 (2021).

## B. Situating behavioral design 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. Securities law has traditionally been concerned about the latter: certain kinds of excessive trading at the hands of broker-dealers, and about broker-dealer communications that encourage impulsive trading behavior inconsistent with their considered preferences. Behavioral design reflects this familiar phenomenon.

### 1. Agency costs in brokerage and investor protection.

Retail traders must access markets through intermediaries. The resulting need to engage an agent to execute trades gives rise to an agency-cost problem of a type familiar to scholars of capital markets: misaligned incentives typical in other sorts of principal-agent relationships when monitoring and bonding is costly.<sup>141</sup> And indeed, for nearly a century, one of the central concerns of broker-dealer regulation has been the fundamental conflict of interest between brokers and their clients over the volume of trading activity. As in other principal-agent relationships, brokers' pursuit of their own rational self-interest may conflict with the client's interests.<sup>142</sup>

One such misaligned incentive arises from brokerage compensation.<sup>143</sup> Brokers predominantly receive transaction-based compensation, so they have an incentive to get their clients to trade more—perhaps even more than they want.<sup>144</sup> Recent disputes over sales-practices rules like Regulation Best

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<sup>141</sup> See Paces, *supra* note 134, at 481, 483 (characterizing broker-dealer regulation as “aimed at mitigating principal-agent conflicts of interest in the characteristic interaction between securities professionals, on one side, and individual, unsophisticated (and thus uninformed) investors, on the others side”); see generally J.J. LAFFONT & D. MARTIMORT, *THE THEORY OF INCENTIVES: THE PRINCIPAL-AGENT MODEL* (Princeton University Press 2009). For other literature using an agency cost model of broker-dealer regulation, see James Fallows Tierney & Benjamin P. Edwards, *Error Costs in FINRA Expungement*; Deborah DeMott, *Rogue Brokers and the Limits of Agency Law*, in *CAMBRIDGE HANDBOOK OF INVESTOR PROTECTION* \_\_ (2021); Iris Chiu, *Securities Intermediaries in the Internet Age and the Traditional Principal-Agent Model of Regulation: Some Observations from the EU's Markets in the Financial Instruments Directive*, 2 *J. INT'L COMM. L. & TECH.* 38, \_\_ (2007); Mahoney, *supra* note 69, at \_\_.

<sup>142</sup> See, e.g., DeMott, *supra* note 142, at \_\_.

<sup>143</sup> See, e.g., Allan Michael Roth, Exchange Act Release No. 90343, 2020 WL 6488283, at \*3 (SEC Nov. 4, 2020).

<sup>144</sup> See, e.g., Benjamin P. Edwards, *Conflicts & Capital Allocation*, 78 *OHIO ST. L.J.* 181, 184 (2017); see also, e.g., Allen Ferrell & John D. Morley, *The Regulation of Intermediaries*, in *SECURITIES MARKET ISSUES FOR THE 21ST CENTURY* 311, 370 (Merritt B. Fox et al. eds., 2018) (noting that the “recurring and longstanding concern” has “continued unabated” since the 1960s). This incentive effect was of concern to the SEC in 1964, which noted that one of the problems of commission compensation is the resulting economic incentive “to persuade customers to enter into as many transactions as possible, thereby creating the danger of excessive trading or churning.” Securities and Exch. Comm'n, *Report*

Interest, for instance, reflect tradeoffs between competing visions of what securities regulation should do about this agency cost. 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 (though this distinction is becoming increasingly blurry).

The concern is that brokers have a conflict of interest arising from a particular business model. In this business model, revenue depends on brokers driving a high volume of retail order flow, because the more flow the more PFOF revenue. Gamification critiques suppose that retail investor behavior can be shaped in particular ways that drive this volume of retail order flow.

But the basic problem of shaping consumer behavior for private profit is not new, even in the world of retail investment markets. One traditional concern of broker-dealer regulation was the boiler room, memorialized in an eponymous 2000 film with Vin Diesel and Giovanni Ribisi: a call center in which high-pressure brokers pitch speculative securities to strangers.<sup>145</sup> The boiler room has largely gone away, but operated on the same premise of appealing to people's psychology in ways that encourage them to trade when they otherwise wouldn't.

What increasingly worries regulators is that technology has allowed the boiler room to take a new form. Digital engagement practices appeal to retail investors' cognitive psychology. 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. But the use of "game design" should not itself be of concern to securities law, or an object of regulatory intervention. Behavioral design in brokerage apps is not primarily objectionable because it is flashy or because it makes children want more screen time. Rather the concern is with what behavioral design does: encourage maladaptively excessive *trading*, regardless of who the traders are.

To build out this intuition, imagine the following hypothetical.<sup>146</sup> 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. On otherwise identical occasions, two clients separately walk into the brokerage office to open an account and place a securities trade. Upon confirmation that the

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*of Special Study of Securities Markets*, No. H. Doc. No. 95, 88th Cong., 1st Sess. Ch. 3, 254 (1964); see Merritt B. Fox et al., *Securities Market Issues for the 21st Century: An Overview*, in *SECURITIES MARKET ISSUES FOR THE 21ST CENTURY* 1, \_\_ (Merritt B. Fox et al. eds., 2018).

<sup>145</sup> See *BOILER ROOM* (2000).

<sup>146</sup> Thanks to Alex Platt for the basic contours of the hypothetical.

trade 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. The only salient difference between the two hypothetical occasions is that the client is twenty-six years old in one, and sixteen years old in the other. What is the basis for our objections, if any, to these scenarios?

Consider first the sixteen year old's scenario, which presents a number of plausible objections. Children typically lack capacity to enter into brokerage contracts. Perhaps, too, there is a social judgment that children are not competent to bear equity risk, at least without being underwritten or co-signed by adults. Or perhaps our objection is to the broker's failure to maintain supervisory practices and procedures reasonably designed to assure compliance with know-your-customer duties in connection with sixteen year olds showing up with fake IDs.

Yet these objections largely disappear in the scenario involving the older trader. The older trader's circumstances bear ability to bear equity risk, especially for a novice trader who is underinformed and undersophisticated. But the capacity and know-your-customer issues would be eliminated. All we are left with is a broker flinging confetti across the office at an adult who probably should feel sheepish about the whole thing.<sup>147</sup>

What might remain objectionable, however, is the confetti's consequence. If the confetti encourages the client to place another trade that would not have otherwise been made, the confetti would no longer have merely expressive effect. In the one-client hypothetical, the confetti becomes the means through which the broker alters the client's propensity to trade in a way that increases revenue to the broker: a call to action, if you will.<sup>148</sup>

Now expand the hypothetical and let there be thousands of adult client interactions with brokers that play out this way. While individual clients might show variability in their responses, in this variation imagine that as a population the clients tend on average to trade more than they would have, all else equal, had they not experienced the confetti and air horn. Here, the confetti and air horn practice can be seen to no longer express a message about the value of, or excitement associated with, executing a trade. Instead it becomes about creating a predictable upward deviation in clients' baseline

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<sup>147</sup> To be certain, we might still consider this practice crass, or out of the norm for the typically staid brokerage industry's norms governing communications. Yet 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 Rules 2210(a)-(d). This reflects, apparently, the contestable policy judgment that non-written, non-electronic expression pose relatively little investor-protection risk.

<sup>148</sup> See *infra* notes \_\_\_-\_\_\_ (explaining that a primary doctrinal hook for engaging behavioral design is through Regulation Best Interest and its concept of a "recommendation," defined in part as a "call to action").

propensity to trade, without regard to the actual security traded and without regard to direction (buy or sell). This deviation from the baseline is an empirical question with respect to any behavioral design function. Scholars and regulators are collecting data, and academic and regulatory financial economists will face interesting if thorny questions of causation in identifying behavioral design practices that have this effect.<sup>149</sup>

Confetti here is, of course, a stand-in for whatever attribute of behavioral design regulators are solving for. But this illustrates that securities law is primarily concerned with investors being *duped*—not with protecting them from crassness, or more than incidentally with protecting children. This counsels a particular orientation in responding to behavioral design: securities law ought to orient its response to behavioral design choices that are objectionable because they have a *causal* effect in bringing about undesired consequences for retail investors and third parties.

## 2. Excessive noise trading and the gambling analogy

For as long as there've been noise trader models of retail investor behavior, securities regulation scholars have suggested that law should respond by tamping down on noise trading. The main case for curbing noise trading reflects a concern that it is behaviorally maladaptive. Donald Langevoort suggested a decade ago 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.”<sup>150</sup> And Alicia J. Davis has argued that “if 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.”<sup>151</sup>

Scholars' prescriptions of restricting transactional freedom are even stronger where there is evidence that traders are engaged in cognitive or behavioral errors. As Jeffrey Rachlinski has described the field, “the cognitive error story suggests placing significant restrictions on access to the markets.”<sup>152</sup> In addition, behavioral interventions may be particularly warranted where there is a risk that these cognitive errors lead to people getting bilked.<sup>153</sup> If people are overtrading to their detriment, the paternalistic view would deem it “better for a wise and sympathetic central authority to limit

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<sup>149</sup> Securities law has historically faced problems of proof in connection with damages in “churning” claims.

<sup>150</sup> Langevoort, *supra* note 65, at 1081.

<sup>151</sup> Alicia J. Davis, *Market Efficiency and the Problem of Retail Flight*, 20 STAN. J.L. BUS. & FIN. 36, 44 (2014).

<sup>152</sup> Jeffrey J. Rachlinski, *The Uncertain Psychological Case for Paternalism*, 97 NW. U. L. REV. 1165, 1185 (2002).

<sup>153</sup> 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)

that freedom.”<sup>154</sup> Still, as Rachlinski argues, “[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.”<sup>155</sup> These are empirical questions for regulators and scholars to consider.

One suggestion of gamification’s critics is that we ought to supplant individual choice and prohibit a kind of casino-like speculation in stock markets by retail investors entirely. Securities markets are not lotteries, of course, and there are disparate regulatory regimes covering gambling and gaming in jurisdictions where they are legal.<sup>156</sup> But suppose we were to say that people could not trade stocks, only institutions could.<sup>157</sup> It might be objected that law would, in this manner, put a thumb on the scale in favor of a particular view of securities trading—i.e., that people should quit speculating on individual stocks and trading actively. Yet we already restrict participation in financial activity in all sorts of ways—such as in the Rule 144A market for resale of private placements between qualified institutional buyers, or as Emily Winston has described in the context of short sales.<sup>158</sup>

Indeed, in analogous contexts law already expresses a normative preference for certain retail investment behavior, though only as a default rule. The Uniform Prudent Investor Act, which is part of the Restatement (Third) of Trusts, supposes a reasonable investor who allocates capital in the shadow of traditional finance’s normative prescriptions.<sup>159</sup> This encourages and constrains investment options for the benefit of ordinary people, channeling them toward what reasonable and prudent investors would do: buying and holding a portfolio allocated to assets that are suitable and that produce an optimal risk-return tradeoff (unless some other allocation would be in the person’s best interest).<sup>160</sup> The default rules thus express normative preferences for how prudent people invest. They shouldn’t be day trading, and even less so in Dogecoin.<sup>161</sup> Still, we ought to be humble about the

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<sup>154</sup> Mahoney, *supra* note 69, at \_\_.

<sup>155</sup> Rachlinski, *supra* note 153, at \_\_.

<sup>156</sup> See, e.g., Thomas Lee Hazen, *Disparate Regulatory Schemes for Parallel Activities: Securities Regulation, Derivatives Regulation, Gambling, and Insurance*, 24 ANN. REV. BANKING & FIN. L. 375, \_\_ (2004); Anthony N. Cabot & Louis V. Csoka, *The Games People Play: Is It Time for a New Legal Approach to Prize Games?*, 4 NEV. L. REV. 197, 240 (2004).; cf. John Luttig, *Finance as Culture*, SUBSTACK: LUTTIG’S LEARNINGS (Feb. 28, 2021), <https://luttig.substack.com/p/finance-as-culture>.

<sup>157</sup> Langevoort offered this thought experiment in considering what such a market would look like if protected by an antifraud-only rule, and suggested that it would look something like today’s Rule 144A market, which is limited to institutional participants.

<sup>158</sup> Winston, *supra* note 16, at \_\_.

<sup>159</sup> See Uniform Prudent Investor Act § 3 cmt. (1994).

<sup>160</sup> See *id.* § 2.

<sup>161</sup> See Marilyn Odendahl, *Estate planning attorneys say clients must keep their crypto-keys in a secure place*, THE INDIANA LAWYER (May 26, 2021).

ability of law or regulation to tamp down on peoples' excitement for speculative asset markets not based on superior private information. Some amount of 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).<sup>162</sup> As Paccès has noted, because “[n]oise trading cannot be prohibited as such,” the question is how much to tolerate.<sup>163</sup>

Securities law is structured in many ways that reduce opportunities for short-term speculation on price momentum in asset markets.<sup>164</sup> Regulating behavioral design 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. As markets for crypto 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. These make up a large proportion of transaction volume on Robinhood.

Many of the objections to behaviorally distorted active trading apply just as robustly to active trading generally. Calls to regulate gamification and behavioral design tee up a core policy question. To what extent should securities law empower or instead constrain active (and bad) trading in service of the investor-protection goal? Once we suppose that deploying behavioral design to elicit informationally noisy trading that a person otherwise would not undertake is a kind of advantage taking, of nonculpable exploitation, “[w]e are right back to the task of defining opportunism in the laws regulating the securities industry, which the SEC cannot comfortably ignore.”<sup>165</sup>

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 robust social provisioning, prudent investing is essential to ensure successful and comfortable smoothing of income across time to achieve financial goals. Leaving that big responsibility up to individuals is a daunting enough prospect when they are predictably bad at it, let alone when the financial advisors to whom they entrust their money deplete against them.

### III. WHETHER AND HOW TO REGULATE BEHAVIORAL DESIGN?

This Part sets up a framework for thinking about the harms from behavioral design, then offers a typology of regulatory techniques.

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<sup>162</sup> See Robert J. Schiller, *Irrational Exuberance* (2005).

<sup>163</sup> Paccès, *supra* note 134, at \_\_.

<sup>164</sup> See Stout, *supra* note 116, at 703.

<sup>165</sup> Langevoort, *supra* note 65, at 1047.

## A. The social costs of behavioral design in retail investment markets

There are many reasons to suspect that behavioral design in this context runs against the public interest—and in turn, many possible justifications for regulation. Some of these justifications are drawn from other areas of regulation, like habit-forming technology. Behavioral design blurs the distinction between speculative gambling, long seen as a bad kind of engagement with markets, and responsible investing. Turning investing into a more casino-like environment threatens prospective losses to investors, creates a kind of problem-use harm similar to gambling, and threatens to disrupt the traditional capital allocation functions of secondary capital markets.

### 1. Loss and waste.

Perhaps the biggest concern about behavioral design is that it leads to suboptimal or maladaptive financial outcomes for traders. As Lynn Stout predicted in 1997, reducing transaction costs of trading corporate equities induces demand for speculative brokerage trading. That trading has become easier as costs have been bid to zero. Concern that Robinhood makes it “too easy” to trade reflect what Stout predicted but characterized as an “exaggerated” image in 1997 when she considered social welfare effects of these trades.<sup>166</sup> 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.”<sup>167</sup> But that payoff can be manipulated through the presence of other behavioral design 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 socially wasteful.<sup>168</sup>

Behavioral design 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 uninformed participants in capital markets.<sup>169</sup> But behavioral biases are another drag on investment return. As in other markets for complex financial products and services, retail investors—ordinary consumers—are overconfident in their

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<sup>166</sup> Lynn A. Stout, *Technology, Transaction Costs, and Investor Welfare: Is a Motley Fool Born Every Minute*, 75 WASH. U. L. Q. 791, 810 (1997) (explaining that even if trading costs went to zero—as they since have—investors would still have to bear transaction costs from sitting in front of their computers researching).

<sup>167</sup> See Matt Levine, *Money Stuff: Melvin Capital Had a Better Month*, Bloomberg Opinion (Mar. 4, 2021), <https://www.bloomberg.com/opinion/articles/2021-03-04/melvin-capital-improves-from-gamestop-reddit-struggle>; cf. Brian Knutson and Peter Bossaerts, *Neural Antecedents of Financial Decisions*, 27 J. NEUROSCI. 8174 (2007).

<sup>168</sup> Mahoney, *supra* note 69, at 728 (“These expenditures also prompt excessive investment of human and physical capital in the securities industry.”).

<sup>169</sup> See Fairfax, *supra* note 115, at \_\_\_.

abilities, myopic about the consequences of their action, and avoid the cognitively complex tasks required to do assessment of the prospects of different financial choices.<sup>170</sup>

Inexperienced and unsophisticated investors can experience significant harm from the kind of compulsive trading enabled by zero-commission brokerage and behavioral-design strategies.<sup>171</sup> Years of academic research show that self-directed retail investors who try to pick stocks typically are unable to beat the average return on a market portfolio—especially when they try to chase price momentum in high-volatility stocks.<sup>172</sup> Retail investors who actively trade underperform inactive traders as well as benchmarks net of transaction costs.<sup>173</sup> 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 selection, that explain the poor investment performance of [these] households.”<sup>174</sup>

Gamification’s goal of encouraging engagement with the app creates conditions for poor financial decision making. For some subset of individual traders, moreover, behavioral prompts can lead users to engage in actively self-destructive and problematic-use behavior. Even a relatively casual zero-commission investing habit has the potential to do meaningful damage at an individual level.

## 2. Distribution in the brokerage agency relationship.

Separate from the possibility that behavioral design will lead to maladaptive trading, some have contended that it effects a redistribution of trading profits from retail investor clients to an intermediary. To understand the nature of the objection, consider the kind of conflict of interest in a client-broker relationship. These relationships can be thought of as principal-

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<sup>170</sup> See Oren Bar-Gill, *SEDUCTION BY CONTRACT: LAW, ECONOMICS, AND PSYCHOLOGY IN CONSUMER MARKETS* 17-23 (2012); see also Tierney, *supra* note 26, at 882.

<sup>171</sup> There is evidence that the volatility in “meme stocks” like GameStop, combined with active trading and poor market timing, resulted in many retail investors experiencing significant losses. See, e.g., Rachel Louise Ensign, *GameStop Investors Who Bet Big—and Lost Big*, *Wall St. J.* (Feb. 15, 2021), <https://www.wsj.com/articles/gamestop-investors-who-bet-big-and-lost-big-11613385002>. Undoubtedly many were winners too, and others haven’t yet realized gains or losses. There is also a question of whether Robinhood investors are good or bad traders at the aggregate level. 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 et al., *A within Investor-Time Analysis of New Technologies and Trading Behavior* 6 (Apr. 2021).

<sup>172</sup> See, e.g., Brad M. Barber & Terrence Odean, *All that Glitters: The Effect of Attention and News on the Buying Behavior of Individual and Institutional Investors*, 21 *REV. FIN. STUD.* 785 (2008).

<sup>173</sup> See, e.g., Brad M. Barber & Terrence Odean, *Trading Is Hazardous to Your Wealth: The Common Stock Investment Performance of Individual Investors*, 55 *J. FIN.* 773 (2002).

<sup>174</sup> Barber & Odean, at 776

agent relationships, as Deborah DeMott has recently modeled.<sup>175</sup> To the extent the broker profits more the greater the trading volume, brokers will always have an incentive to encourage trading. The fundamental tension behind the history of brokerage regulation is about trying to constrain and channel the means by which brokers can earn profits at the “expense” of their clients.

These criticisms are part of an ongoing historical process of regulatory contestation about how to divide the profits from capital markets trading between retail investors and sophisticated financial intermediaries. The academic literature on securities law has grappled with that problem for some time, trading off notions that these profits should be ordered by the market or should be constrained through fiduciary duty. One of the key tensions since deregulation has been about how to split up the pie between brokers and their clients. And as a distributive matter, by distorting and obstructing the processes by which retail investors make informed and pro-adaptive choices about asset allocation and security selection, behavioral design encourages risky trading behavior primarily to permit third-party intermediaries to skim trading profits. 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 simply don’t know better.<sup>176</sup>

Securities law in this context seeks to trade off several goals: producing efficient markets, encouraging capital formation, and protecting investors. Securities regulation protects investors not only through disclosures of broker-dealer and investment advisor practices, but also through substantive regulation of their sales practices. The political economy of broker-dealer regulation, moreover, tends to put a thumb on the scale in favor of retail investors. To that end, FINRA and the SEC are publicly concerned with “Mr. and Mrs. 401(k)” or the “main street” investor, even as rules are designed largely with the interests of Wall Street in mind.<sup>177</sup>

The SEC has said that commission-free trading comes “with a catch”

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<sup>175</sup> DeMott, *supra* note 142.

<sup>176</sup> See, e.g., Steven McNamara, *The Law and Ethics of High-Frequency Trading*, 17 MINN. J. L. SCI. & TECH. 71, 74 (2016). (explaining that “a number of characteristics of [high frequency trading] suggest they constitute, to some degree at least, a rent extracted from long-term investors”); Daniel Avis, *Warren Says ‘Sharks’ Citadel, Robinhood Prey on Consumers*, BLOOMBERG (Mar. 9, 2021), <https://www.bloomberg.com/news/articles/2021-03-09/warren-says-sharks-citadel-robinhood-profit-off-of-customers> (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”).

<sup>177</sup> See, e.g., Alexander I. Platt, *The Non-Revolution Door*, J. Corp. L. (forthcoming 2021) (describing revolving-door concerns about whose interests matter to the SEC); Michael Iselin, Bret Johnson, Jacob Ott, and Jacob Raleigh, *Protecting Wall Street or Main Street: SEC Monitoring and Enforcement of Retail-Owned Firms* (Dec. 2020); David J. Lynch, *SEC boss Clayton touts his populist shift*, FIN. TIMES (July 26, 2017).

of potential breach of best execution.<sup>178</sup> But we should be careful about explaining the nature of the distributional criticism in favor of retail investors. Breach of best-execution duty “is often imperceptible to the retail investor.”<sup>179</sup> Even a simple illustration helps show why it is unclear whether PFOF effects a redistribution in a way that leaves investors 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. This would make it economically infeasible to put a small amount of money into the stock market at any time. Suppose that I had \$100 with which to buy stocks—5 shares of a stock worth \$20 each. After transaction costs I would have been left with about \$95 in value, or a 5% tax on each share.<sup>180</sup> Even at higher transaction amounts—say a “round lot” of 100 shares at \$20 each—the commission would have eaten away 5 cents per share, or 0.25% on each share.

In an era of zero commission pricing, I get the full value without paying the tax-like commission. The flipside is that I might get slightly inferior execution compared to what I am legally entitled. But for a trade like this, the zero commission pricing will leave many retail investors better off than any inferior execution they might receive from their broker. Inferior execution in this sense shows up on the price at which the retail order executes. A liquid stock trading for \$20 at the midpoint might actually, as a matter of market structure, be bid of \$19.99 and ask of \$20.01. Dealers capture the two cent spread as compensation for taking the other side of these trades. Inferior execution might mean slight variance of the effective price relative to the best bid or ask. Retail traders in this situation have more to fear from a wide spread in an illiquid security, which if wide enough (a bid might approximate the 5% effective commission on that order. But for slippage in execution to start to matter, the spread has to be much wider. This suggests that the distributional objection is weak when considered in light of consumer welfare benefits from zero commission trading.

### 3. External harms to markets and capital allocation.

Attributes that encourage habitual consumption of a good or service tend to distort individual decisionmaking in ways that can produce systemic external harms. As the capital markets play an important coordinating role in our economy, making the potential harms from distorted individual decisionmaking all the more acute. These harms include the price discovery and capital allocation functions of capital markets.<sup>181</sup>

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<sup>178</sup> See, e.g., *In re Robinhood* (Dec. 17, 2020).

<sup>179</sup> Dombalagian, *supra* note 102, at \_\_\_ (explaining that any harm from breach of the duty of best execution “is often imperceptible to the retail investor”).

<sup>180</sup> By the same token, why pay gas fees for Ethereum?

<sup>181</sup> Behavioral design and shift to a zero-commission model might also reduce incentives for

Take price discovery. Noise trading is based on the notion that it is uninformed, which is to say it is uncorrelated with new information going to the fundamental value of the security. The presence of noise traders in a market may nonetheless promote informational efficiency, as they attract more informed traders to “bring prices in line with fundamental values.”<sup>182</sup>

Several recent studies have suggested that the particular combination of zero-commission trading with behavioral design distorts the price discovery process by increasing both price movement and volatility in stocks popular among retail investors.<sup>183</sup> One study, for instance, looked at market quality on days when retail investors could not access the Robinhood app because it was down. The study authors report that on these days, the stocks otherwise most popular on Robinhood showed less price volatility and less trading volume.<sup>184</sup> “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.”<sup>185</sup>

The piling-on trades that aggressive gamification promotes can also distort allocation in capital markets.<sup>186</sup> The combination of the online “retail army,” combined with the ease and encouragement of in-and-out trading through zero-commission brokerage, has the potential to alter the capital markets’ traditional capital-allocation function.<sup>187</sup> In 2020, retail traders unexpectedly embraced a trade on the common stock of the holding company for Hertz, the car rental agency. The company was insolvent and debt markets signaled that exit from bankruptcy would zero out the equity, making any trade on a positive-equity-value exit appear to be an inherently losing proposition. This was so unexpected that the company proposed to help pay off more senior claimants in bankruptcy by issuing new stock to uninformed

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the production of brokerage research. Thanks to George Georgiev for this point.

<sup>182</sup> Evans, *supra* note 65, at 1119–20

<sup>183</sup> See, e.g., Eaton et al., *supra* note 136. (characteristics of Robinhood users and effects on stock market quality); Samuel Adams & Connor Kasten, *Retail Order Execution Quality under Zero Commissions* (Jan. 2021). (finding “that the elimination of commissions for retail investors improved execution quality for orders directed to third-party market makers”); Pankaj Jain et al., *Trading Volume Shares and Market Quality in a Zero Commission World* (2021).

<sup>184</sup> See Gregory W. Eaton, T. Clifton Green, Brian S. Roseman, and Yanbin Wu, *Zero-Commission Individual Investors, High Frequency Traders, and Stock Market Quality*, preprint (April 2021). The authors also reported descriptive evidence, “consistent with lack of expertise,” that the most commonly visited topic on Robinhood’s FAQ page was “what is the stock market.” *Id.* at 13.

<sup>185</sup> *Id.* at 5–6.

<sup>186</sup> See, e.g., Benjamin P. Edwards, *Conflicts and Capital Allocation*, 78 OHIO ST. L.J. 181, 186 (2017) (explaining that conflicts of interest between brokers and clients have the potential to “drive[] capital misallocation, causing significant macroeconomic and other harms”).

<sup>187</sup> See, e.g., Fletcher, *supra* note 111, at 13.

retail investors—a plan that looked like it would work until the SEC stepped in.<sup>188</sup> Hertz has the process of emerging from bankruptcy under a plan that, again unexpectedly, would give some institutional and accredited investors a payout.<sup>189</sup> But encouraging retail investors to overconsume trading can distort the traditional allocative functions of capital markets.

## B. Surveying regulatory responses.

Securities regulators should be expected to respond to broker-dealer practices that impose acute harms on retail investors. What might these responses look like? Regulators need not draw on a blank slate, for scholars have identified regulatory techniques for responding to habit-forming and behavioral technologies. These include mandatory disclosure of gamification and its harms; adoption of responsible-use devices like warnings and mandatory downtime; counter-addictive design; and bans on dangerous features.<sup>190</sup> I address these four techniques and draw from existing doctrines in broker-dealer regulation to highlight a fifth. I examine existing securities law as well as options for tinkering around doctrinal margins.

### 1. The false promise of mandatory disclosure solutions.

Law often adopts labeling or mandatory-disclosure solutions to behavioral design technology. Disclosure solutions are an obvious and superficially attractive regulatory response to behavioral design. That is especially so here: disclosure is the favored idiom of the securities laws.<sup>191</sup> As with warning labels on packs of cigarettes, regulators can plausibly require labeling or disclosure to better inform consumers and de-bias their consumption choices.<sup>192</sup>

Yet there is reason to be skeptical about disclosure here: behavioral design endures even though securities law already mandates a significant degree of disclosure about the practice. The SEC adopted in 2019 a requirement that broker-dealers deliver to retail investors at the beginning of the relationship a client relationship summary (Form CRS). One disclosure mandate is about the underlying conflict of interest that gives rise to

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<sup>188</sup> See, e.g., Matt Levine, *Day Traders Might Have Fun Saving Hertz From Bankruptcy*, BLOOMBERG OPINION (June 12, 2020).

<sup>189</sup> See, e.g., Katherine Doherty & David Welch, *Once-Doomed Hertz Rebounded So Much Even Redditors Were Right*, BLOOMBERG (May 12, 2021).

<sup>190</sup> See Langvardt, *supra* note 93, at \_\_\_. In the same vein, the “asymmetric paternalism” framework identifies an overlapping set of “existing and potential regulatory responses to errors in decision making”: “(1) default rules; (2) provision or reframing of information; (3) cooling-off periods; and (4) limiting consumer choices.” Colin Camerer et al., *Regulation for Conservatives: Behavioral Economics and the Case for “Asymmetric Paternalism,”* 151 U. PA. L. REV. 1211, 1224–50 (2003).

<sup>191</sup> See, e.g., Langevoort, *supra* note 65, at 1043.

<sup>192</sup> See Langvardt, *supra* note 93, at 154.

behavioral design: payment for order flow as a source of transaction-based revenue for the broker-dealer that is nonsalient to the investor.<sup>193</sup> There are other disclosure requirements outside Form CRS, too. Rule 10b-10 under the Securities Exchange Act of 1934, for instance, requires a broker-dealer to send clients trade confirmations with information about their receipt of PFOF and how the client can learn more.<sup>194</sup> Broker-dealers must also publicly report transactions they route to other venues for execution.<sup>195</sup>

These rules already require a significant degree of disclosure about the business model underlying behavioral design. This is not to say more disclosure would be unwelcome; what is disclosed remains spotty, and in the case of trade confirmation notices comes too late to bear on the decision to enter into an irreversible transaction.<sup>196</sup> Form CRS, moreover, mandates disclosure of the conflict interest while implications that may be materially important to investors—the behavioral design choices that flow from the incentive—remain left unsaid.<sup>197</sup> As existing disclosure rules have not moved the needle, regulators should not rest on disclosure solutions alone.<sup>198</sup>

## 2. Mandatory downtime and other behavioral interventions.

Another regulatory technique is to require monitoring of customer use patterns and intervening in problematic use with warnings, salience shocks, or mandatory downtime.<sup>199</sup> Through the same mechanism as behavioral design, consumer financial behavior might be manipulable through just-in-time interventions. Warnings, salience shocks, and downtime might focus attention to nonsalient attributes they are overlooking.<sup>200</sup>

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<sup>193</sup> Form CRS Relationship Summary, Exchange Act Rule 86032, 84 Fed. Reg. 33492, 33533 (July 12, 2019).

<sup>194</sup> See Exchange Act Rule 10b-10(a), 17 C.F.R. § 240.10b-10(a). The SEC has settled an enforcement action with Robinhood over allegations that it misleadingly omitted from certain communications with retail customers information about the role of payment for order flow in its business model, and made false claims about its order execution quality. See *Robinhood Financial, LLC*, 2020 WL 7482170, at \*7-9.

<sup>195</sup> See, e.g., Regulation NMS Rule 606, 17 C.F.R. § 242.606; Final Rule, *Disclosure of Order Handling Information*, Exchange Act Release No. 84528, 83 Fed. Reg. 58,338 (Nov. 19, 2018); see also Note, *The Perils of Payment for Order Flow*, 107 HARV. L. REV. 1675, 1690-92 (1994).

<sup>196</sup> See, e.g., *Temporary Rule Regarding Principal Trades with Certain Advisory Clients*, Advisers Act Release No. 2653.

<sup>197</sup> Robinhood, for instance, discloses that “it earns revenue from your trade activity and therefore has a monetary incentive for you to trade more.” Robinhood Financial LLC Form CRS 2 (June 9, 2021), <https://perma.cc/5MGW-Z2HW>.

<sup>198</sup> Dombalagian, *supra* note 102, at 10.

<sup>199</sup> See Langvardt, *supra* note 93, at 154.

<sup>200</sup> See, e.g., Cary Frydman & Baolian Wang, *The Impact of Salience on Investor Behavior: Evidence from a Natural Experiment*, 75 J. FIN. 229, — (Feb. 2020); Thomas F. Crossley et al., *Can Survey Participation Alter Household Saving Behaviour?*, 127 THE ECONOMIC

In general, securities law has not adopted salience shocks. But it is instructive to look at a modest mandatory-downtime intervention relevant to retail investors.<sup>201</sup> “Pattern day trading” is 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.<sup>202</sup> 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.<sup>203</sup> Pattern day-trading rules intervene by limiting margin access and buying power, rather than by impose mandatory downtime at the level of the behavioral prompt.<sup>204</sup>

We could take this intervention one step further. Securities law *could* require broker-dealers to monitor client transactions to determine whether some threshold had been reached. Yet regulators would face difficult questions defining the population to which these interventions apply. That particular problem is illustrated by the story of the “SOES bandits,” who

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JOURNAL 2332, \_\_ (Nov. 2017); *see also, e.g.*, Dean Karlan, Margaret McConnell, Sendhil Mullainathan, & Jonathan Zinman, *Getting to the Top of Mind: How Reminders Increase Saving*, 62 *Mgmt. Sci.* 3393 (2016). Though notices and warnings can backfire. *See* Paolina C. Medina, *Side Effects of Nudging: Evidence from a Randomized Intervention in the Credit Card Market*, 34 *Rev. Fin. Stud.* 2580 (2021).

<sup>201</sup> Securities regulators are also considering other mandatory cooling-off period requirements for corporate insiders who wish to transact in company stock despite insider-trading law constraints on their ability to do so. Exchange Act Rule 10b5-1 permits insiders nonetheless to transact in corporate securities by adopting a preset plan for transacting in corporate securities in the future as long as they are not in possession of material nonpublic information (MNPI). *See* 17 CFR 240.10b5-1. Yet Rule 10b5-1 technically allows insiders to cancel these plans while in possession of MNPI, underscoring the importance of recent empirical evidence that insiders use these plans opportunistically to sell stock and avoid losses. *See, e.g.*, David F. Larcker, et al., *Gaming the System: Three “Red Flags” of Potential 10b5-1 Abuse*, Stanford Closer Look Series (Jan. 19, 2021). In response, the SEC is considering adopting a mandatory “cooling off period of four to six months between the adoption of a 10b5-1 plan and the execution of its first trade” to cut back against opportunistic trading plans. Dean Seal, *SEC Chair Aims to Seal “Cracks” in Exec Insider Trading Rules*, LAW360 (Jun. 7, 2021), <https://www.law360.com/articles/1391641/sec-chair-aims-to-seal-cracks-in-exec-insider-trading-rules>.

<sup>202</sup> Jill E. Fisch, *Regulatory Responses to Investor Irrationality: The Case of the Research Analyst*, 10 *LEWIS & CLARK L. REV.* 57, 75 (2006).

<sup>203</sup> 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.

<sup>204</sup> To mitigate this risk, securities law requires pattern day traders to post \$25,000 minimum equity in their margin accounts, limits their day-trading buying power, and subjects them to further restrictions if they exceed buying power and do not meet a margin call. *See, e.g.*, FINRA Rule 4210(f)(8) (pattern day trading rule); *Order Approving Proposed Rule Changes Relating to Margin Requirements for Day Trading*, Exchange Act Release No. 44009, 66 *Fed. Reg.* 13,608 (Mar. 6, 2001).

accessed NASDAQ through discount brokers in the 1990s and sought to earn riskless arbitrage profits by picking off stale dealer quotations. NASDAQ tried to issue a rule defining the SOES bandits as “professional” day traders so it could limit access to one of its services. The D.C. Circuit later remanded the rule to the SEC to fix definitional problems.<sup>205</sup> Besides that particular problem, even the broader regulatory technique would raise line-drawing questions about when to trigger mandatory downtime based on the excessiveness of trading. In contexts like churning and quantitative suitability, discussed below, securities law links that inquiry to the particular facts and circumstances.

Regulators might also look to lessons from 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.<sup>206</sup> Empirical studies

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<sup>205</sup> In the 1990s, the NASDAQ exchange sought to address a similar market structure problem: arbitrage to pick off stale quotations, with small profits, in pursuit of price discovery. An early group of semiprofessional day traders had attempted to place orders against relatively uninformed bids and offers that market makers had posted. 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 56 Fed. Reg. 52092 (Oct. 17, 1991); cf. MacKenzie, *supra* note 103, at \_\_ (discussing efforts by exchange incumbents to use political economy and law to engage in conflict over “how U.S. shares should be traded”). 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. Empirical evidence suggests that the SOES bandits were able to pursue a profitable strategy, at the expense of the market makers. See Jeffrey H. Harris & Paul H. Schultz, *The Trading Profits of SOES Bandits*, 50 JOURNAL OF FINANCIAL ECONOMICS 39, \_\_ (Oct. 1998). In response to market makers’ complaints that freelance traders were using SOES to earn riskless arbitrage profits at the expense of market makers with stale price quotations, the SEC approved a rule that (among other things) defined professional traders and prohibited them from using the SOES system. See Exchange Act Release No. 29809 (Oct. 10, 1991), 56 Fed. Reg. 52092 (Oct. 17, 1991). The concern was that if these professional traders were permitted to use SOES, market makers would exit the market, widening bid-ask spreads and reducing liquidity. So in sustaining a vagueness challenge to the rule, the D.C. Circuit in *Timpinaro v. SEC* 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, the court directed the agency to adjust the professional trading pattern definition in ways that provided more guidance and less vagueness. For the rule on remand, see Exchange Act Release No. 33377, 1993 WL 534173 (Dec. 23, 1993).

<sup>206</sup> See, e.g., Rules of the Shanghai Stock Exchange §§ 3.1.4, 3.1.5 (2018 revision), <http://english.sse.com.cn/start/rules/sse/trading/c/4962524.pdf>. See generally Ming Guo et al., *A Unique “T+1 Trading Rule” in China: Theory and Evidence*, 36 JOURNAL OF BANKING & FINANCE 575, \_\_ (Feb. 2012); China Securities Regulatory Commission, CHINA CAPITAL MARKETS DEVELOPMENT REPORT 2008, 243 (Nov. 2009),

of intraday speculative trading in Chinese capital markets indicate that this kind of regulation may have the effect of reducing trading volume, with a side effect of reducing price transparency.<sup>207</sup>

### 3. Counter-addictive design.

A third regulatory response involves purposeful mechanism design that seeks to reduce investors' propensity to engage in trading. In theory, if the main social harms come from unlimited access to zero-commission trading—and if gamification is simply the tool by which the app encourages this kind of trading—then regulators might seek to address that root problem.<sup>208</sup> For the analogous problem of addictive technology, scholars have identified “counter-addictive design” as a class of possible regulatory responses that “mitigate the habit-forming effects of persuasive design,” such as by imposing “some degree of transactional friction.”<sup>209</sup>

Transactional frictions are familiar if underused tools in securities regulation.<sup>210</sup> Such frictions might take the form of minimum commission pricing. Stock brokerage commissions were fixed until deregulation in 1975 brought about competitive pricing. It was not long after that economists began examining transactional frictions in potentially excessive speculative short-term trading in securities, noting that securities transaction or stock transfer taxes might be a possible solution.<sup>211</sup> Surveying the debate about

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[http://www.csrc.gov.cn/pub/csrc\\_en/Informations/publication/200911/P020091103520222505841.pdf](http://www.csrc.gov.cn/pub/csrc_en/Informations/publication/200911/P020091103520222505841.pdf). On securities regulation in China generally, see JING BIAN, CHINA'S SECURITIES MARKET: TOWARDS EFFICIENT REGULATION (2014).

<sup>207</sup> See, e.g., See Zhengyang Bao et al., *Do Regulations Work? A Comprehensive Analysis of Price Limits and Trading Restrictions in Experimental Asset Markets with Deterministic and Stochastic Fundamental Values*, 178 JOURNAL OF ECONOMIC BEHAVIOR & ORGANIZATION 59, \_\_ (Oct. 2020); Xinyun Chen et al., *Does the T+1 Rule Really Reduce Speculation? Evidence from the Chinese Stock Index ETF*, 57 ACCOUNTING & FIN. 1287 (Dec. 2017).

<sup>208</sup> There is mixed empirical evidence on the causal mechanism underlying this kind of proposal. Compare, e.g., Eaton et al., *supra* note 136, at \_\_, with Charles M. Jones & Paul J. Seguin, *Transaction Costs and Price Volatility: Evidence from Commission Deregulation*, 87 AM. ECON. REV. 728 (1997).

<sup>209</sup> Langvardt, *supra* note 93, at \_\_ (discussing counter-addictive design).

<sup>210</sup> A recent example familiar in securities regulation involved the stock exchange IEX, which sought to impose transactional frictions in the form of a “speed bump” in its matching engine to cut down on this kind of latency arbitrage. See, e.g., *Application of Investors' Exchange LLC for Registration as a National Securities Exchange*, Exchange Act Release No. 78101, 81 Fed. Reg. 41141 (SEC June 23, 2016); see also MacKenzie, *supra* note 103, at \_\_ (describing conflict between IEX and high frequency traders reflected not just “law and political economy,” and “what the purposes of share trading should be,” but a physical “re-figur[ation of] at least a small part the technological system of U.S. share trading”).

<sup>211</sup> See, e.g., Lawrence H. Summers & Victoria P. Summers, *When Financial Markets Work Too Well: A Cautious Case for a Securities Transaction Tax*, 3 J. FIN. SERVICES RES. 261 (1989); but see Joseph A. Grundfest & John B. Shoven, *Adverse Implications of a Securities*

excessive trading in 1995, Paul Mahoney noted that transfer taxes could implement transactional frictions against noise traders' excessive speculation.<sup>212</sup> If excessive speculation through securities trading substitutes for gambling, these might be analogous to excise taxes on gambling.

Even if they worked, however, we should not as a practical matter anticipate that legislators or regulators will adopt minimum commission pricing. Financial transaction taxes have been a staple in recent progressive legislation in Congress for different purposes.<sup>213</sup> But these efforts have also been unsuccessful. The political economy faces headwinds, too: it would be "politically terrible" to require brokers to move from "free" to nonzero commissions.<sup>214</sup> Modern securities law won't adopt minimum commission pricing as a friction on retail trading, no matter its merits.

#### 4. Bans on dangerous features.

Regulators might also look to regulation of other habit-forming technologies, and ban dangerous features altogether.<sup>215</sup> Bad options include confetti regulation. More promising options include fiduciary duties, recommendations under Regulation Best Interest, and traditional doctrines like churning and quantitative suitability. Better yet would be to prohibit the dangerous and socially wasteful arms race in promoting precision, but not accuracy, in securities price information.

##### *a. Confetti regulation theories.*

Securities law does not directly regulate features trading apps must have. One solution is command and control regulation of app design, requiring it be dull and monotonous. To those who consider "design" the objectionable aspect of gamification and behavioral design, banning software design regulators disapprove of is a superficially easy solution.<sup>216</sup> Kyle Langvardt and I have argued, however, that whatever the social welfare case for addressing gamification, regulators should avoid "making it about the software." Confetti regulation would be hard to design, and also to justify; how much

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*Transactions Excise Tax*, 6 J. ACCT. AUDITING & FIN. 409 (1991).

<sup>212</sup> Mahoney, *supra* note 69, at 714.

<sup>213</sup> See, e.g., Joe Light, *Wall Street Transaction Tax Wins Backers on GameStop Furor*, BLOOMBERG TAX (Feb. 19, 2021).

<sup>214</sup> See Matt Levine, *Money Stuff: People Are Worried About Payment for Order Flow*, BLOOMBERG OPINION (Feb. 5, 2021).

<sup>215</sup> See Langvardt, *supra* note 93, at \_\_\_.

<sup>216</sup> Even easier would be for FINRA to promote the use of specific "actionable design guidelines for retail investing applications." Sayan Chaudhry & Chinmay Kulkarni, *Design Patterns of Trading Apps and Their Effects on Investing Behaviors*, Proceedings of Design in Interactive Systems 777, 785 (Jun. 2021).

confetti is too much?<sup>217</sup> 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. The Supreme Court’s First Amendment jurisprudence is increasingly oriented toward protecting businesses from economic regulation.<sup>218</sup> Given second-order effects of such challenges for other socially important aspects of securities law, we have argued that regulators should avoid directly regulating expressive aspects of app design. Instead, they should attempt to target the underlying harm: modestly expressive design choices that encouraging financially irresponsible trading behavior.

*b. Excessive trading theories.*

Another idea is to simply ban “excessive” trading. Gamification is objectionable, but is secondary to the harm from maladaptive trading, so trading is the natural target. The problem with this approach, however, is that excessiveness is in the eye of the beholder. What’s excessive will rarely be evident on the ground. So these proposals become efforts to divide “risk preferences” traders into categories of traders whose activity we approve of or don’t: professional or semi-pro traders on one side, and retail traders on the other—an unflattering inquiry.<sup>219</sup>

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<sup>217</sup> Langvardt & Tierney, *supra* note 14, at \_\_. Ann Lipton has illustrated the definitional problem with reference to a similar provision of Regulation Crowdfunding, which identifies “objective criteria” that crowdfunding platforms can rely on in deciding to “highlight offerings on the funding portal’s platform.” 17 C.F.R. § 227.402(b); see Lipton, *supra* note \_\_ (noting that the definitional problem is “not easy to resolve”); Final Rule, Crowdfunding, 80 Fed. Reg. 71387, 71463 (Nov. 16, 2015). For other illustrations of definitional troubles, consider a bill introduced by Sen. Josh Hawley in 2019 that purported to address certain addictive technologies. See S. 2314, Social Media Addiction Reduction Technology Act, 116th Cong. (introduced July 30, 2019). Yet in defining addictive features in terms of features like an “infinite scroll,” the bill suggested that it is tailored to ensnare specific social media networks like Facebook, Twitter, and Instagram as a form of partisan favoritism. See Emily Stewart, *Josh Hawley’s bill to limit your Twitter time to 30 minutes a day, explained*, VOX RECODE (July 31, 2019), <https://www.vox.com/recode/2019/7/31/20748732/josh-hawley-smart-act-social-media-addiction>.

<sup>218</sup> 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).

<sup>219</sup> Securities law’s uncertainty with what to do about retail investment here also shows up in gatekeeping access to restricted markets or products elsewhere. It uses a similar distinction with respect to who counts as an “accredited investor” for purposes of investing in private companies. See 17 CFR § 230.501(a) (accredited investor definition). People who are sufficiently wealthy, have high enough annual income, or are in certain financial fields are deemed to be sophisticated enough to be able to fend for themselves without the securities laws’ disclosure protections—or at least have enough of a buffer to withstand losses. The SEC’s regulatory definition has been long criticized for being both over- and underinclusive, and remains contested to this day. See Final Rule, *Accredited Investor Definition*, Securities Act Release No. 10824, 85 Fed. Reg. 64234 (Oct. 9, 2020). This illustrates the difficulty with dividing investors based on proxies for their ability to bear risk without

If we do not proxy excessiveness by professional status, the question is how to articulate a manageable definition of “excessive” trading. Scholars have long been skeptical that this is possible, and by all accounts *Timpinaro* was the death knell for efforts of that sort. Its legacy is to caution some skepticism that it’s possible to surmount definitional problems in excessive-trading rules.

*c. Fiduciary duty theories.*

Another popular ban on dangerous features involves linking behavioral design to the quality and nature of relationship between broker and client. Ordinary sales relationships are known for sharp dealing, and sales representatives in most industries do not owe special duties to their customers. This reflects the intuition that commercial strategies meant to activate or alter consumers’ behavioral or cognitive processes, and eliciting 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.<sup>220</sup>

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. But the distinctions between the kinds of financial advisory relationships are often blurry. At common law, brokers were not fiduciaries, except when that status sprung from some aspect of the relationship suggesting that the client needed the additional protection of the law.<sup>221</sup> The Dodd-Frank Act built from that common-law baseline, directing the SEC to examine whether to harmonize the duties that brokers and RIAs owe to their customers.<sup>222</sup> Regulation Best Interest was the product of long negotiations over the extent to which the SEC should in fact harmonize those duties or subject brokers to a lighter duty to clients. One of the common objections to Reg BI is that it did not go far enough in this respect.

In a multi-enforcer system and absent preemption, one solution to perceived inadequacy of federal law is to level-up state law. Several states have considered adopting broker fiduciary rules in response to Regulation BI. Massachusetts, for instance, has had both common-law rules governing when broker-dealers are fiduciaries, as well as state-law conduct regulations

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incurring financial ruin.

<sup>220</sup> Fiduciary relationships are those involving one with special access or intimate influence over the affairs of another, which give rise to a greater degree and broader set of duties than ordinarily exist.

In some sense gamification should not be surprising, as “there is nothing terribly new about merchants shaping the customer experience to their own advantage.” Hurwitz, *supra* note 32, at 63.

<sup>221</sup> See, e.g., *Patsos v. First Albany Corp.*, 433 Mass. 323, 336 (2001).

<sup>222</sup> See Dodd-Frank Wall Street Reform and Consumer Protection Act § 913.

applicable to broker-dealers registered to do business in Massachusetts. In March 2020, its state securities regulator amended those regulations to impose an across-the-board fiduciary standard on those brokers, beyond what the common law rule would have covered.<sup>223</sup> And in December 2020, the regulator brought an administrative enforcement proceeding against Robinhood, alleging that it violated the new fiduciary standard by engaging in gamification.<sup>224</sup> Robinhood has challenged this rule, arguing that because the federal government rejected a proposal to adopt a uniform fiduciary standard, the state agency was preempted from adopting the rule—and that in any case a state agency could not on its own change the state’s common law.<sup>225</sup>

The main implication for us is that fiduciary theories are a plausible regulatory response to behavioral design. Gamification, in this model, can be understood as a breach of heightened duties arising out of a fiduciary relationship. 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 discretionary accounts, in the accounts of people who lacked capacity to manage their affairs, or in the accounts of people who blindly accepted recommendations without any further thought.

Fiduciary claims are an important plank of regulatory efforts to respond to behavioral design, and offer a readymade basis rich with common law support for going after broker-dealers that target children and other investors who lack legal capacity to participate in risky speculative asset markets.<sup>226</sup> But we also shouldn’t overstate their promise. In adopting new fiduciary-duty rules, Massachusetts secretary of state Bill Galvin (its longtime securities regulator) has effectively dared the state Supreme Judicial Court to approve an extension of state fiduciary law past what the SEC has recognized applies to brokers.<sup>227</sup> Even if Galvin can drag the state supreme court along, these fiduciary claims remain state law, limiting their scope.

*d. Churning and quantitative suitability.*

One of the more attractive “ban on dangerous features” option is to treat

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<sup>223</sup> See Adopting Release, Amendments to Standard of Conduct Applicable to Broker-Dealers and Agents (Mass. Sec. Div. Feb. 21, 2020), <https://www.sec.state.ma.us/sct/sctfiduciary-conductstandard/Adopting-Release.pdf>.

<sup>224</sup> For this litigation, see *supra* notes 59-62.

<sup>225</sup> Robinhood also argued that regulation of gamification through a ban on dangerous features would burden commercial speech in violation of its First Amendment rights. See *Compl., Robinhood Fin., LLC v. Galvin*, No. 2184 cv 0084 BLS (Mass. Super. Ct. filed Apr. 15, 2021) (“Robinhood Compl.”); see also *supra* notes \_\_\_-\_\_.

<sup>226</sup> Other than baseball cards.

<sup>227</sup> Cf. Dan Seal, *Robinhood Fight Will Test Mass. Securities Chief’s Authority*, LAW360 (May 7, 2021), <https://www.law360.com/securities/articles/1378416>.

behavioral design, including engagement practices and personalization algorithms, as implicit recommendations under the securities laws. This approach can be implemented in part under existing law, though some changes may have to be made around the margins.

Kyle Langvardt and I argued in *On Confetti Regulation* that behavioral design reflects a new, behavioral variant on “churning,” an old and familiar problem in securities law.<sup>228</sup> Brokers have incentives to cause excessive trading in a customer account to increase compensation.<sup>229</sup> Recent regulatory reforms have sharpened the toolkit under Reg BI in ways that naturally lend themselves to framing the harm as self-directed churning.

SEC and FINRA rules have long imposed obligations on broker-dealers in connection with the making of recommendations. FINRA has historically required broker-dealers to have a reasonable basis for believing that any recommended security was suitable for the client, under the facts and circumstances.<sup>230</sup> More recently, Reg BI requires broker-dealers, in making recommendations to retail customers, to act in the best interests of their clients. In particular, the duty of care under Exchange Act Rule 15c-1 codifies what has historically been called the “quantitative suitability” requirement. Under this aspect of the duty of care, broker-dealers in making recommendations must 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 take the financial or other interest of the broker . . . ahead of the interest of the retail customer.”<sup>231</sup>

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<sup>228</sup> See Langvardt & Tierney, *supra* note 14, at \_\_\_.

<sup>229</sup> 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 LOSS ET AL., *supra* note 81, at 475; see *id.* at 471-72 (noting that churning “may violate federal and state securities fraud provisions, the former Rules of Fair Practice, . . . any pertinent securities exchange rules, . . . common law fraud or breach of contract,” and particular SEC-adopted Exchange Act rules); see, e.g., *Mihara v. Dean Witter & Co, Inc.*, 619 F.2d 814, 820 (9th Cir. 1980) (“Churning occurs when a securities broker engages in excessive trading in disregard of his customer’s investment objectives for the purpose of generating commission business.”). 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.” *Id.* at 476 (explaining that “the real issue is whether the investor was capable of independently evaluating the recommendations”). 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 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 (Mar. 19, 2020). In Reg BI, the SEC had codified the broker’s duty of care not to make quantitatively unsuitable recommendations—whether or not in a controlled account.

<sup>230</sup> See, e.g., FINRA Rule 2111.

<sup>231</sup> Regulation Best Interest, Exchange Act Rule 15c-1(a)(2)(ii)(C), 17 C.F.R. § 240.15c-

Ann Lipton has argued that this covers gamification.<sup>232</sup> 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. So to Lipton, "the question is whether these encouragements are, in fact, recommendations." That raises a broader line-drawing problem about other design features that "bring certain items to the customer's attention."<sup>233</sup>

In *On Confetti Regulation*, Langvardt and I observed that many behavioral design features plausibly fit within the existing legal category of "recommendation."<sup>234</sup> Recommendations are judged by a malleable facts-and-circumstances standard.<sup>235</sup> Under that standard, "[f]actors considered in determining whether a recommendation has taken place 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.'"<sup>236</sup> As the SEC explained in the Reg BI adopting release, "[t]he more individually tailored the communication to a specific customer or customer segment, the greater the likelihood that the communication is a recommendation."<sup>237</sup> And as FINRA's chief executive officer wrote in February 2021 in response to an inquiry from Senator Elizabeth Warren, "differences in platform design and the nature of communications may affect whether or not a firm provides a 'recommendation.'"<sup>238</sup>

Securities regulators have articulated decades worth of rules and

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1(a)(2)(ii)(C).

<sup>232</sup> See Ann Lipton, *Robinhood's Interface*, Business Law Prof Blog (Feb. 5, 2021), [https://lawprofessors.typepad.com/business\\_law/2021/02/robinhoods-interface.html](https://lawprofessors.typepad.com/business_law/2021/02/robinhoods-interface.html).

<sup>233</sup> *Id.* It does not matter that gamification appears in self-directed accounts. Brokers don't have a federal-law duty to look out for quantitative suitability for clients that make their own trades—unless, that is, the broker has made a recommendation. This heightens the stakes of categorizing these design features that way.

<sup>234</sup> Langvardt & Tierney, *supra* note 14, at \_\_.

<sup>235</sup> 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. Final Rule, *Regulation Best Interest: The Broker-Dealer Standard of Conduct*, 84 Fed. Reg. 33318, 33335 (July 12, 2019) ("Reg BI Adopting Release"). The SEC is reluctant to give certainty to regulated industry, as risk of creating a roadmap for evasion, so courts will look to all the circumstances.

<sup>236</sup> *Id.*

<sup>237</sup> *Id.* Machine learning, AB testing, and related efforts to fine-tune recommendation algorithms have become increasingly integral part of consumer-facing applications as companies try to wring out greater efficiency from their consumer contacts. Netflix, for instance, uses data analytics to shape and personalize the streaming shows that are presented to customers based on their interaction with the app.

<sup>238</sup> Letter from Robert Cook, President, FINRA, to Senator Elizabeth Warren (Feb. 23, 2021), <https://www.warren.senate.gov/imo/media/doc/FINRA%20Response.pdf>.

guidance about when brokers' presentation of information online might be a "recommendation." Some behavioral design features fit easily within that category, like recommendation algorithms. Yet Regulation BI's application to "recommendations" reflects a deeper if largely unarticulated orientation toward broker conduct that increases 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 behavioral design 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 targets particular users with content that will call *them*, more than others, to action.<sup>239</sup>

To this point, some broker-dealers appear to use algorithms that tailor what 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.

The more that 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. Indeed, a policy statement issued by FINRA's predecessor NASD in 2001 suggests that many of these activities may qualify as recommendations for purposes of the suitability rules.<sup>240</sup> A search engine for securities, NASD said, 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."<sup>241</sup> The SEC approved this SRO rule change, giving it force of law in enforcement proceedings.<sup>242</sup> And this existing SRO rule

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<sup>239</sup> See Gensler, *supra* note \_\_ (describing the use of gamification and behavioral design in connection with "predictive data analytics, which has allowed apps to analyze the success of individual gamification and behavioral prompts to increase activity," and thus adjust the "features that are differentially communicated to different customer segments"); Ana Carolina Tomé Klock et al., *Tailored Gamification: A Review of Literature*, 144 INTERNATIONAL JOURNAL OF HUMAN-COMPUTER STUDIES 102495 (Dec. 2020).

<sup>240</sup> See NASD Notice to Members 01-23, *Suitability Rule and Online Communications*, <https://www.finra.org/rules-guidance/notices/01-23>.

<sup>241</sup> *Id.*

<sup>242</sup> 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); *ABNAMRO Clearing Chicago LLC*, Exchange Act Release No. 83849, 2018 WL 3869452, at \*2 (Aug. 15, 2018); *Fiero v. FINRA*, 660 F.3d 569 (2d Cir. 2011) (describing the SRO rule change provisions). On enforcement of SRO "rules," see Benjamin Edwards & James Fallows Tierney, Comment Letter on Financial Crimes Enforcement Network advance notice of proposed rulemaking "*Anti-Money Laundering Program Effectiveness*," Docket No. FINCEN-2020-0011, RIN 1506-AB44, 85 Fed. Reg. 58,023 (Sept. 17, 2020).

reasonably and fairly implies an interpretation that “recommendations” have for twenty years included algorithms producing lists in which brokers are disproportionately compensated.<sup>243</sup>

This is not to suggest that any particular behavioral design practice is a recommendation. As in most areas of securities law, the devil is in the details.<sup>244</sup> So securities regulators will have to grapple with the contours of what constitute recommendations, 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.

The objective of a gamified zero-commission investment app is to promote the same kind of overconsumption of trading, regardless of the client’s investment objectives, that traditionally was the core harm at issue in churning cases. The revenue model is to create a pool of unsophisticated retail investors who the broker-dealer then makes recommendations about engaging in securities trades. These recommendations are not generally about the desirability, from a fundamental valuation perspective, of buying, selling, or holding any particular security. Rather they come in the form of digital engagement practices that encourage trading without regard to that desirability—and largely to remunerate the broker.

In this way, 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 care as to quantitative suitability are prospective legacy devices for regulating these potential problems from gamification. These doctrines might be sufficient—on their own or in

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<sup>243</sup> See Langvardt & Tierney, *supra* note \_\_, at \_\_.

<sup>244</sup> But one thing is clear: it doesn’t matter that a broker tells its customers that it is not making recommendations. See, e.g., *William H. Murphy & Co., Inc.*, Exchange Act Release No. 90759, 2020 WL 7496228, at \*10 (SEC Dec. 21, 2020) (holding that “a disclaimer that a communication is not an offer to sell securities ... cannot alter the character of [the] solicitation of interest”); *Kenneth R. Ward*, Exchange Act Release No. 47535, 2003 WL 1447865, at n.47 (SEC Mar. 19, 2003) (“Boilerplate disclaimers in no way overrode Ward’s unqualified recommendations regarding specific securities”), *aff’d*, 75 F. App’x 320 (5th Cir. 2003). Securities law doesn’t recognize this kind of “ceci n’est pas un pipe” defense. Cf. René Magritte, *The Treachery of Images* (1929). Indeed, FINRA’s rules provide that “a member cannot avoid or discharge its suitability obligation through a disclaimer where the particular communication reasonably would be viewed as a recommendation given its content, context, and presentation.” *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*, Exchange Act Release No. 44178, 66 Fed. Reg. 20697, 20700 (Apr. 24, 2001) (filed by FINRA’s predecessor NASD with the SEC). In pre-Reg BI articulations of its suitability rule, FINRA prohibited broker-dealers from “disclaim[ing] any responsibilities under the suitability rule.” FINRA Rule 2111.02. The SEC described this non-disclaimer rule as part of the “regulatory baseline” and “existing framework” to which Reg BI added.

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.

##### 5. Alternative techniques — new regulatory frameworks?

I have examined some existing regulatory tools that are common to other areas of broker-dealer regulation. But there are other options for expanding the regulatory toolkit, too. Other than examples suggested by Langvardt’s framework, regulators have proposed additional responses to concerns about gamification. 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.<sup>245</sup> It might be preferable for regulators to conceive of the problem of one as supervision, compliance, and knowledge about customers. Securities regulators rely on these tools to fill gaps where substantive regulations do not exist.

Other options are less modest in their ambition. Some scholars and consumer advocates have called for Congress to prohibit the practice of payment for order flow, on the notion that this will reduce the first-order harms that come from excessive noisy trading.<sup>246</sup> But the most ambitious “fix” is to attack the underlying market structure problems that have encouraged these practices to emerge. If market fragmentation and continuous time nationally best market pricing have created undesirable opportunities for the arbitrage that makes gamification profitable, then regulators might attack those structural issues instead of the app design that inexorably flows from it. These flaws in the national market system have been known for years. Among the salient problems: it encourages an all-out arms race in investments in technological speed (at the physical limits of communications infrastructure). That arms race is socially costly, as it diverts investment from

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<sup>245</sup> See, e.g., Al Barbarino, *FINRA Report Puts ‘Game-Like’ Trading Apps on Notice*, Law360 (Feb. 2, 2021), <https://www.law360.com/articles/1350865/finra-report-puts-game-like-trading-apps-on-notice>; Ann Lipton, *Robinhood’s Interface*, Business Law Prof Blog (Feb. 5, 2021), [https://lawprofessors.typepad.com/business\\_law/2021/02/robinhoods-interface.html](https://lawprofessors.typepad.com/business_law/2021/02/robinhoods-interface.html). In its February 2021 examination and risk monitoring report, FINRA identified supervisory and compliance “risks associated with app-based platforms with interactive or game-like features that are intended to influence customers, their related forms of marketing, and the appropriateness of the activity that they are approving clients to undertake through those platforms.” FINRA, 2021 Report on FINRA’s Examination and Risk Monitoring Program 2 (Feb. 2021), <https://www.finra.org/sites/default/files/2021-02/2021-report-finras-examination-risk-monitoring-program.pdf>. According to FINRA, these features “may result in increased risks to customers if not designed with the appropriate compliance considerations in mind.” *Id.* at 22.

<sup>246</sup> See, e.g., Benjamin Bain and Robert Schmidt, *Gensler Swims Against Tide in Payment-for-Order-Flow Fight*, BLOOMBERG (Aug. 31, 2021).

the real economy into efforts to shave miniscule rents from improvements in intermediation, liquidity, and price transparency. Scholars have suggested that a solution to this arms race is to switch from continuous time pricing to periodic batch auctions.<sup>247</sup>

This final category of alternative regulatory technique, I suggest, offers advantages over others. It gets at the root cause rather than the app design that is a symptom. It promises to shift the attention of intermediary firms, and their decisions about how to allocate capital, away from wasteful competition over increasingly smaller fractions of a penny in serve of liquidity and price transparency. And it sharpens legislators' and regulators' focus on dismantling one of the pernicious second order effects of the national market system, which left unchecked reinforces the primacy of liquidity and price transparency over other visions of what securities law should try to accomplish. Not allocating capital to its highest value uses, or smoothing consumption over time—but encouraging trading at the sacrificial altar of the market.

#### IV. NORMATIVE AND THEORETICAL IMPLICATIONS

This Part IV addresses some of the broader implications of the social-welfare case for regulating gamification, and responses to some claims about those implications. I address the techno-skeptic idea that this is going to reduce our public confidence in capitalism; the techno-populist claim that this will increase public participation in corporate governance and investing more broadly; and the techno-optimist claim that behavioral design can be harnessed for good. I also offer some thoughts about the tradeoffs that securities regulation is making under the status quo between investor protection and the production of other important things like liquidity and price discovery.

##### A. Techno-skepticism: access and confidence in ludic capitalism.

One set of objections to behavioral design can be described as broadly techno-skeptical. In this view, behavioral design and gamification are bad because they undermine confidence in markets as institutions. There is a superficial sense in which encouraging people to treat investing “as a game” makes it appear less serious, and reduces the “salien[ce of] the risk of a significant drawdown of capital, and the resulting loss.” There is also a deeper concern that making investing like a game signals some lower social value from speculation—that it is in some sense a game played by Wall Street with a deck stacked in its favor.<sup>248</sup>

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<sup>247</sup> See, e.g., Budish et al., *supra* note 101; Roberto Ricco and Kai Wang, *Frequent Batch Auctions vs. Continuous Trading: Evidence from Taiwan* (Jun 2021).

<sup>248</sup> See, e.g., Arjen van der Heide & Dominik Želinský, ‘Level up Your Money Game’: An Analysis of Gamification Discourse in Financial Services, *J. CULTURAL ECON.* 1, 2 (Routledge

The assumption underlying these claims is that we ought to reinforce public confidence in markets as mechanisms for allocating capital to high value uses. Yet our confidence in markets should reflect whether price mechanisms reflect reality. And the concern that turning finance into a game “obscures the connection between price and value, fueling the phenomenon known as meme stocks,”<sup>249</sup> reverses the causal arrow. Asset markets have for some time experienced a disconnection between price and “value,” at least as it is measured by traditional normative finance. 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 produce for herding traders returns from divorcing price from what traditional normative finance “values.” Price and value have had a disjointed relationship in many asset markets for a long time, but the techno-skeptic worries that it’s a problem now that retail investors are involved. But it seems more desirable to spread public awareness of that disjoint and the forces that have produced it, than to 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 an unceasing drive toward financialization.

Public confidence in markets may also be endogenous to other things, like wealth endowments. Financial commentators have predicted for some time that gamification will play an increasingly significant role in how financial advisers attract and retain clients who are engaged and motivated to achieve their financial goals. 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.”<sup>250</sup> And according to some sociologists, even the discourse around gamification as a feature is meant to highlight risk to incumbent financial firms associated with generational wealth transfer and generational change in investing behavior.<sup>251</sup>

This narrows in on a significant aspect of “gamification” discourse that reflects unease with a looming generational wealth transfer, and implied

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Feb. 2021) (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”).

<sup>249</sup> Annie Massa & Tracy Alloway, *Robinhood’s Role in the Gamification of Investing*, BLOOMBERG, <https://www.bloomberg.com/news/articles/2020-12-19/robinhood-s-role-in-the-gamification-of-investing-quicktake>.

<sup>250</sup> PAOLO SIRONI, FINTECH INNOVATION: FROM ROBO-ADVISORS TO GOAL BASED INVESTING AND GAMIFICATION 142–43 (2016)

<sup>251</sup> See van der Heide & Želinský, *supra* note 249, at 2.

distrust that the transferees will be good stewards of wealth.<sup>252</sup> By all accounts, millennial and younger traders are less wealthy than their parents' generations were at the same age. They stand to inherit significant amounts over the next several decades in what has been called an unprecedented looming wealth transfer.<sup>253</sup> To that end, many of gamification's proponents in industry and scholarship have celebrated its role in engaging millennials.<sup>254</sup> Describing this discourse of gamification, social theorists have suggested that it shapes incumbent firms' and regulators' views about the looming generational wealth transfer and the extent to which the business of "high earner, not rich yet" millennials will be up for grabs in years to come.<sup>255</sup>

If these criticisms are right, it suggests gamification discourse means something different to industry and to regulators. That's not a reason to ignore gamification, but rather to peel back the layers of the onion. Regulating gamification is a fight about capturing and distributing rents from market intermediation. Who benefits from noisy flow of retail investors, and who would benefit by capturing that flow? Efforts a decade and a half ago to privatize social security had a similar angle in permitting Wall Street to capture a significant stream of rents from retirement savers.

As we saw above, the pure distributional objection is too obscure to support far-reaching gamification regulation. But focusing on the political economy of behavioral design in investing apps might also change our prescription. Our society has an interest in retirement and old-age social provisioning. 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, not speculation. And securities law should not tolerate, let alone promote, practices that tend to burden achievement of financial goals.

## B. Techno-populism and the democratization of finance.

A second set of claims are optimistic that technology will usher broader and deeper participation by ordinary people in finance and business. These "techno-populist" claims emphasize technology's role in mediating coordination among ordinary people in corporate governance and capital allocation. This has been an ambition of securities law scholars for decades:

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<sup>252</sup> "C'mon, mom, it's just a few NFTs. No big deal."

<sup>253</sup> See, e.g., Victoria J. Haneman, *Intergenerational Equity, Student Loan Debt, and Taxing Rich Dead People*, 39 Va. Tax. Rev. 197, 199 (2019).

<sup>254</sup> See, e.g., van der Heide & Želinský, *supra* note 249, at 6 (analyzing the role in gamification discourse of narratives about "digital natives" and "multigenerational wealth transfer" to "millennials," which "serve primarily—though not exclusively—to foster uncertainty among incumbent financial services providers and to unsettle their dominant position").

<sup>255</sup> See *Id.* at \_\_ (arguing that "gamification" discourse positions disruptive firms against incumbents in a competition for looming intergenerational wealth transfer).

“technological change has some potential to democratize the securities markets.”<sup>256</sup> But while these claims are not new, they have taken on new salience in an era of behavioral design. We ought not dismiss lightly the idea that behavioral design in investing apps might still have some role (desirable on its own terms) in broadening participation in equity markets. It’s easier to participate under zero commission trading in attractive, low-friction apps. But the techno-populist utopia faces significant headwinds.

Consider first the notion that gamified investing will encourage retail traders to participate in corporate governance. Shareholder voting has long suffered from a problem of retail investor apathy. It rarely is worthwhile for retail investors to participate in shareholder governance, given the usual collective action problem surrounding research and monitoring for which the shareholder will internalize the cost but not all the benefits. As Ricci & Sautter have argued, however, social media may enable “affective” participation in mass coordination, a force that can plausibly be harnessed for pro-social corporate-governance ends.<sup>257</sup> Lower costs of coordinating on social media, and through forums like the sub-Reddit /r/WallStreetBets, have made it easier for retail traders to engage in herding or momentum trades.<sup>258</sup> These trades may also have expressive or affective dimensions. 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.<sup>259</sup>

This has led Ricci and Sautter to be optimistic that affective trading and mass coordination will overcome the typical barriers to retail participation in shareholder voting and corporate governance.<sup>260</sup> But they are mistaken, in my view, in thinking that gamifying corporate governance will lead to prosocial outcomes rather than just the same kind of wealth-extractive shareholder activism that has dominated corporate governance in the last 30 years. It is just the newest form of activism: looking out for itself, mediated through Reddit rather than through pension and hedge funds. Even if social media encourages ordinary investors’ participation in shareholder democracy, it doesn’t follow that this improves social welfare if those

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<sup>256</sup> Bradley, *supra* note 85, at 69.

<sup>257</sup> See, e.g., Ricci & Sautter, *supra* note 4, at \_\_\_.

<sup>258</sup> This claim focuses on herding or momentum trades; naïve versions of these trades call for buying stocks that have recently had positive returns, and selling those that have not. These trades are popular because, by permitting people to get in to a momentum trade early and help construct demand for the trade, they offer a plausible “leg up” over the market to retail traders who typically lack any information advantage over other (typically institutional) traders.

<sup>259</sup> See Jonathan R Macey, *Securities Regulation as Class Warfare*, COLUM. BUS. L. REV. (2021); cf. Winston, *supra* note 16, at \*4 (describing how securities law shapes wealth inequality by gatekeeping investment opportunities with different return profiles).

<sup>260</sup> See Ricci & Sautter, *supra* note 4, at \_\_\_.

shareholders' preferences look different from the rest of society's.<sup>261</sup>

Focus on how behavioral design “democratizes” finance also underscores the prominent role of financialization in our modern economy.<sup>262</sup> Where ownership and control are not just separated as a matter of corporate law, but practically also in the hands of a small minority, it is overstatement to think that increasing access to stock trading democratizes anything. Even on its own terms, democratized investment offers little promise to achieve its goal of “giv[ing] access to the stock market to everybody ... roughly equivalent to home ownership.”<sup>263</sup> The appropriate analogy to building equity through homeownership is not trading, but patient investing by dollar cost averaging over time into low-cost diversified funds in retirement accounts. Edward Ongweso has described this as the “people’s delusion” about “democratizing” finance: it focuses on building a broad base of wealth (and, more abstractly, a broad base of democratic participation in governance of joint economic enterprise) through *trading*. But if people are trading for informationally noisy reasons, and especially if they are trading often, empirical research suggests that building wealth may not be in their future. And if active traders tend to lose on average, and trade as a substitute for gambling, it might be undesirable to encourage “democratization” that just broadens the pool of potential traders who can provide captive noisy order flow to proprietary trading firms—but does not otherwise help ordinary people build wealth.<sup>264</sup>

If this reading of the discourse is too abstract, we need look no further than Robinhood’s framing of its own service, which suggests it is high on its own supply. The first sentence of paragraph 1 of its complaint challenging Massachusetts’s fiduciary rule makes clear: “Robinhood’s mission is to democratize finance for all.”<sup>265</sup> Like the band of outsiders led by highwayman Locksley, Robinhood’s branding screams to the world that *this* broker-dealer steals from the rich and gives to the poor.<sup>266</sup> While clever, this hides that the enterprise is about enticing unsuspecting travelers for a “free” visit

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<sup>261</sup> Cf., e.g., Jedediah Britton-Purdy et al., *Building a Law-and-Political-Economy Framework: Beyond the Twentieth-Century Synthesis*, 129 YALE L.J. 1784 (2020)

<sup>262</sup> See, e.g., Greta R. Krippner, *The Financialization of the American Economy*, 3 SOCIO-ECONOMIC REVIEW 173, — (May 2005) (defining financialization as “a pattern of accumulation in which profits accrue primarily through financial channels rather than through trade and commodity production”); cf. Till van Treeck, *The Political Economy Debate on “Financialization”—a Macroeconomic Perspective*, 16 REV. INT’L POL. ECON. 907, 924–25 (2009).

<sup>263</sup> Edward (Jr.) Ongweso & Luke Savage, *The Gamestop Affair is Just the Latest Incarnation of the “People’s Capitalism” Delusion*, JACOBIN (Feb. 2021).

<sup>264</sup> Id. (describing democratization of finance as “open[ing] up the casino to as many people as possible, while masking it in the language of universal stock ownership”).

<sup>265</sup> Robinhood Compl., *supra* note 225, at ¶ 1.

<sup>266</sup> See, e.g., ROBIN HOOD: MEN IN TIGHTS (Mel Brooks, dir. 1993).

so the highwayman's real customers<sup>267</sup> can take a nonsalient toll for the privilege. This metaphor underscores the sociological criticism of gamification's role in neoliberal capitalism. Democratizing finance disperses noise-trading labor in the markets, encouraging ordinary people to volunteer and discipline their labor toward generating the noisy volatility necessary to generate liquidity and price discovery in service of private profit.<sup>268</sup>

That is a core, and possibly intractable, problem of "democratized finance" understood as "free trading." It would be one thing if democratized finance concept meant everyone had equitable access to ownership of equity interests in the means of production.<sup>269</sup> But it doesn't, and they don't. To techno-populists, democratizing finance instead means that a greater number of people with surplus capital can put it to work in secondary markets for securities (and other speculative assets like crypto), the same way the rich do.<sup>270</sup> Yet from the perspective of traditional finance, anyway, decisions to allocate capital in primary and secondary markets can lead to mispriced assets if made without regard to information relevant to a security's payoff.<sup>271</sup>

If behavioral design elicits this kind of noise trading, we might expect that the "democratization" function would tend to generate the kind of noisy, volatile speculation that generates profit to principal trading firms, rather than investment in economic coordination that will grow the real economy. At risk of belaboring the metaphor: the undesirable result is to target a different kind of traveler, ripe to be skimmed passing through Sherwood Forest, than in the outlaw legend. This band steals micropayments

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<sup>267</sup> Principal trading firms, in case this metaphor is too obscure.

<sup>268</sup> See, e.g., Kim & Werbach, *supra* note 29, at 160 (citing C.S. Rigby, *Gamification and Motivation*, in *THE GAMEFUL WORLD: APPROACHES, ISSUES, APPLICATIONS* 113 (Steffen P. Walz & Sebastian Deterding eds., MIT Press 2015)); cf. Eva Szalay, *Retail Trading Frenzy Reflects "broken" US Equity Markets, Says XTX's Gerko*, *FINANCIAL TIMES* (Jun. 7, 2021). To another critic, gamification "appropriates non-alienated activity," 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* 277, 280 (Steffen P. Walz & Sebastian Deterding eds., MIT Press 2015). ; see also, e.g., WOLFGANG STREECK, *HOW WILL CAPITALISM END?* 46 (verso 2016). (noting that "capital 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"). Cf. Adam S Hayes, *The Active Construction of Passive Investors: Roboadvisors and Algorithmic 'Low-Finance'*, *SOCIO-ECONOMIC REVIEW* (Oct. 2019).

<sup>269</sup> See, e.g., JOHN E. ROEMER, *EQUAL SHARES: MAKING MARKET SOCIALISM WORK* \_\_\_ (Erik Olin Wright ed., 1994).

<sup>270</sup> See, e.g., Eric Levitz, *Robinhood Banning GameStop Proves the Free Market is a Lie*, *N.Y. MAG. INTELLIGENCER* (Jan. 28, 2021), <https://nymag.com/intelligencer/2021/01/robinhood-ban-gamestop-share-price-explained.html>. (quoting journalist Chris Arnade: "if the rich are going to be able to play this game, then why are you surprised when the less rich start playing").

<sup>271</sup> See, e.g., Edwards, *supra* note 145, at \_\_\_.

from the poor and gives to the rich, giving the illusion of participating in the commonwealth, while the rest of King John's England suffers from underinvestment.<sup>272</sup>

### C. Techno-optimism and gamification as investor education

The final set of normative claims worth considering are what I call “techno-optimist.” These proponents of behavioral design “celebrate the problem-solving potential of gamification” and the social wealth and positive externalities it might create.<sup>273</sup> To proponents, this technology is desirable because it can improve motivation and engagement with content or processes that people might otherwise prefer not to engage.

It's worth considering what techno-optimists find so promising and seductive about gamification: the possibility that it might help us move past low levels of financial literacy. Baseline levels of financial literacy are woefully low.<sup>274</sup> 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 behavior targeted by the intervention (like savings versus debt).<sup>275</sup> To proponents of thoughtfully adopted behavioral design, by making work or education or some other domain of boring effort “fun,” we can encourage greater motivation and engagement among end users.

One of the SEC's Commissioners, Hester Peirce, has promoted gamification's potential in investor education on this basis.<sup>276</sup> We ought not be

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<sup>272</sup> Cf. Wint (@dril), Twitter (Oct. 31, 2015), <https://twitter.com/dril/status/660644922744262656> (“Sorry. Im sorry. Im trying to remove it.”).

<sup>273</sup> van der Heide & Želinský, *supra* note 249, at 3. Sociologists van der Heide and Zelinsky, for instance, celebrate the promise to democratize finance. They identify two types of educative functions, one like the app Duolingo, in which “reward loops entice users progressively to learn,” while the other is like paper trading: “learning by simulation where users trade in highly stylized virtual stock market environments to gain ‘familiarity’ with the mechanisms of finance.”

<sup>274</sup> See, e.g., Fairfax, *supra* note 115, at \_\_\_.

<sup>275</sup> See, e.g., Margaret Miller et al., *Can You Help Someone Become Financially Capable? A Meta-Analysis of the Literature*, 30 THE WORLD BANK RESEARCH OBSERVER 220, \_\_\_ (Aug. 2015); Daniel Fernandes et al., *Financial Literacy, Financial Education, and Downstream Financial Behaviors*, 60 MANAGEMENT SCIENCE 1861, \_\_\_ (INFORMS Jan. 2014).

<sup>276</sup> See, e.g., *supra* note 51. In addition, in a statement regarding an SEC enforcement action against a firm offering simulated day trading accounts with real payoffs, Peirce wrote that she had “reservations” about the expressive value of the enforcement action in “closing the door to these types of educational experiences.” According to her statement, “gamification of educational experiences can promote learning, and the use of awards or prizes—even cash prizes—can provide incentives to take the game seriously and thus increase the educational value of the experience.” Hester M. Peirce, Statement Regarding Tradenet Capital Markets Ltd. (Oct. 23, 2020); see Tradenet Capital Markets Ltd., Securities Act Release No. 10878 (SEC Oct. 23, 2020); see also Dean Seal, *SEC's Peirce Has “Reservations” About Recent Agency Action*, LAW360 (Oct. 23, 2020).

concerned that investing is “too fun,” she told a legal reporter, because participation in the market is something securities regulators ought to encourage—along with “making sure that [investors are] getting information that’s really valuable in making good decisions or informing their questions.”<sup>277</sup> Other proponents have noted this optimistic role for thoughtful design.<sup>278</sup>

Techno-optimist claims like these suggest a plausibly promising role for gamification and behavioral design in closing gaps in financial literacy—and the risks that less financially savvy investors bear. Empirical research suggests “just-in-time” interventions may encourage financially responsible behavior.<sup>279</sup> Given modest prospects of more foundational financial education efforts, regulators could encourage the use of “just-in-time” processes to drive motivation and engagement for specific purposes like improving financial literacy about particular financial products and services.

These techno-optimistic claims are attractive because they promise to promote learning and to encourage better substantive financial outcomes, all with modest regulatory touch. Securities law relies primarily on information delivery through mandatory disclosure, yet one of the implementation challenges is in making sure that people consume the disclosures. We want people to read and understand them, if that is even an attainable goal. It might not be attainable, of course; securities disclosures are boring and complex, and people tend not to engage with them. If only we could gamify securities disclosures, according to techno-optimist claims, we could encourage healthy financial behavior the same way a preschooler earns stickers to build good habits.

But I will offer three reasons to doubt techno-optimist claims that gamification generates these outcomes. The first rests on the weakness of supporting evidence that these interventions have any sticky effect on substantive behavioral outcomes.<sup>280</sup> Some studies have found evidence that

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<sup>277</sup> Al Barbarino, *SEC’s Peirce on Crypto Ambitions, GameStop’s Lessons*, LAW360 (May 3, 2021), <https://www.law360.com/securities/articles/1379758/sec-s-peirce-on-crypto-ambitions-gamestop-s-lessons>.

<sup>278</sup> The consulting firm Ernst & Young reported in 2018 that “gamification could be invaluable in educating clients.” 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://www.ey.com/en_us/digital/how-gamification-could-take-investor-experiences-to-a-new-level). And according to political scientist James Fielder, broker-dealers might use gamification to “reward [users] for taking an investment education program” rather than for encouraging engagement for its own sake. James “Pigeon” Fielder, *Robinhood makes Wall Street feel like a game to win—not a place where you can lose your savings*, FAST COMPANY (Mar. 27, 2021), <https://www.fastcompany.com/90619112/robinhood-gamification-dark-side>.

<sup>279</sup> See, e.g., Fernandes et al., *supra* note 276, at \_\_\_

<sup>280</sup> See, e.g., Lauren E. Willis, *Against Financial Literacy*, 94 IOWA L REV 197, 263–64 (2008) (“People generally do not serve as their own doctors or lawyers and for reasons of efficient division of labor alone, generally should not serve as their own financial experts”); see also, e.g., Peter H. Huang, *How Do Securities Laws Influence Affect, Happiness, & Trust?*, 3 J. BUS. & TECH. L. 257, 300 (2008) (describing as “compelling” Willis’s “arguments against

gamification techniques can promote financial education.<sup>281</sup> But what makes gamification so attractive from a business perspective is its modular applicability to new contexts: just add some leaderboards and badges, and you will have increased motivation among your users (and increased profits for your shareholders). But your average human-resources compliance training webinar will illustrate that this kind of superficial gamification isn't *fun*.<sup>282</sup> Superficial gamification, focusing primarily on easy-to-implement extrinsic rewards and incentives, is unlikely to build engagement and motivation in the long term. That is because those effects tend to dissipate once the extrinsic rewards are taken away. Triggering and activating intrinsic motivation is a much thornier problem requiring thoughtful design and implementation, though the problem is not insurmountable.<sup>283</sup>

A second reason to doubt the techno-optimist claim is the real possibility that “positive” gamification efforts will backfire. To techno-skeptics, we ought not use technology to teach people that finance is less risky than it is. 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.”<sup>284</sup>

A final reason for doubt is that gamification might be normatively objectionable even if it has benefits to end users. Gamification and behavioral design involve interventions in our cognitive processes and decisionmaking in ways that seek to alter our behavior. Even where these processes are for prosocial and paternalistic ends, gamification still involves using people like means, a potentially objectionable basis on which to relate with others.<sup>285</sup>

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regulators attempting to increase financial literacy”).

<sup>281</sup> See, e.g., L.F. Rodrigues et al., *Gamification to Teach and Assess Financial Education: A Case Study of Self-Directed Bank Investors*; see also, e.g., Luís Filipe Rodrigues et al., *Playing Seriously – How Gamification and Social Cues Influence Bank Customers to Use Gamified e-Business Applications*, 63 COMP. IN HUM. BEHAV. 392 (2016).

<sup>282</sup> In the evocative question of one sociological critic, “the gamification of economic activity ... faces a certain paradox: how can gamifiers control behavior without ruining the game?” Cf. Rey, *supra* note 269, at \_\_\_\_.

<sup>283</sup> 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 12 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, e.g., Kevin Bell, *Gameful Design: A Potential Game Changer*, EDUCAUSE REV. (May 7, 2018); Rick Van Eck, *Digital Game-Based Learning: Still Restless, After All These Years*, EDUCAUSE REV. (Oct. 15, 2015).

<sup>284</sup> Peter H. Huang, *supra* note 281, at 302.

<sup>285</sup> For examples of normative objections to gamification, see Tae Wan Kim, *Gamification of Labor and the Charge of Exploitation*, 152 JOURNAL OF BUSINESS ETHICS 27, \_\_\_\_ (Sep. 2018); John Danaher et al., *The Quantified Relationship*, 18 AM. J. BIOETHICS 3, \_\_\_\_

By these lights, people may also object to being subject to processes that are designed to be more addictive to them—making them feel trapped, like they have lost control—even if for prosocial ends.

These concerns should be serious to those who are empathetic to the promise of harnessing technology in these prosocial ways. Calibrating the right kinds of gamification, responsibly designed to generate engaging and intrinsically motivating experiences, is easier said than done. This justifies a healthy measure of skepticism that securities law can improve education and disclosure-delivery processes with “white hat” rather than “black hat” gamification.<sup>286</sup>

#### D. Price discovery, liquidity, and the ends of securities regulation

A final normative implication of this analysis of behavioral design relates to the role of technology in generating non salient revenue streams: a kind of digital farming. Securities regulation was historically concerned about compensation in the form of commissions, as well as the kinds of conflicts of interest that 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—its deepest normative ends.

That securities law has pushed broker-dealers toward arrangements that encourage a pool of noisy retail order flow illustrates its orientation toward particular ends. Investor protection is a core purpose of the securities laws, but so is the reproduction of orderly markets. The design of market institutions and rules evolves over time toward practices that reconstitute and reinforce markets as such. Many of the recent regulatory fault lines about the role of technology in capital markets reflect disagreement about the tradeoff between widespread price transparency and private profits for generating that transparency. Order book and pricing information is incredibly valuable to exchanges, and their sales of this information make up a significant fraction of their revenue. Some of the major regulatory fights in stock exchange structure over the last several years have been about access to this information. Trying to shave profits off that information is not itself normatively objectionable, or at least I don’t argue in this paper that it’s

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(Taylor & Francis Feb. 2018); Kim & Werbach, *supra* note 29, at \_\_\_.

<sup>286</sup> We should not expect that the market will produce this prosocial gamification on its own. The regulatory concern about behavioral design is that app designers exploit weaknesses in cognitive processes, not to build intrinsic motivation but because of a profit motive that responds to incentives within a fragmented market characterized by zero-commission retail trading. 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 Dan Awrey, *The Limits of Private Ordering Within Financial Markets*, 34 REV. BANKING & FIN. L. 183, \_\_\_ (2014–2015).

anything other than wasteful. What is objectionable, however, is the role that securities law has played in encouraging a system that tries to pursue the goals of liquidity and price transparency as ends in themselves, rather than as components of healthy markets.

That reflects a deeper, contested view of what markets are for. In a more fundamentalist view, markets are good in their own right. But in a more skeptical view, they are only good as far as they are effective at producing and encouraging human flourishing. Digital engagement practices, behavioral design, gamification, recommendation algorithms, A/B testing: all of these are designed to generate the kind of informationally noisy engagement with capital markets that makes it valuable for dealers to try to do information arbitrage and promote price transparency. Of course, liquidity and price transparency are important services to provide in a continuous time geographically dispersed market by going up against the physical limits of infrastructure and improve. But as that market structure is not necessary, massive investments in arbitraging it seem to divert lots of attention and capital toward unproductive ends.

That raises deeper normative questions about the extent to which securities law should prioritize technology's role in producing valuable information given existing market structure and design—or whether it should reevaluate market structure and design.<sup>287</sup> Technology is of course essential to constructing and stabilizing financial markets. It gives financial actors the ability to communicate, process, calculate, and do other things with vast reams of financial data. And technological innovation in this sense has always been in service of a project of production of price discovery or transparency—back to even before the days of the ticker tape.<sup>288</sup> As Alex Preda describes contemporaneous accounts of watching the stock market in the

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<sup>287</sup> It also has important bearing on the future of innovative technology, like crypto transactions. Though I've discussed crypto, this paper is largely not about that. Crypto is not currently within the SEC's jurisdiction. But from the external view, 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. Robinhood's Form S-1, filed in connection with its IPO, disclosed that transaction volume in Dogecoin is such a large portion of its revenue that demand for that cryptocurrency presents a material risk for investors.

<sup>288</sup> Alex Preda, *Socio-Technical Agency in Financial Markets: The Case of the Stock Ticker*, 36 SOC STUD SCI 753, 760–61 (SAGE Publications Ltd Oct. 2006) (examining the pre-ticker history of production of price information, including differences between discontinuous and continuous time markets that had preferential access for different groups, creating “boundaries between authoritative and less authoritative price data”); see also 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, \_\_ (SAGE Publications Ltd Nov. 2017) (noting that “[t]rader surveillance and the content of market data were early sites of friction” between regulators and exchange constituents—“[t]raders, brokers, and specialists”—that culminated in the broader contest over the national unification of stock markets in the early 1970s”).

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."<sup>289</sup> In this sense, retail participation in stock trading has had a gameful-play element since its earliest days—one that has always been interwoven with technological advances in price transparency.

Given the central role of technology—in how traders interact with posted bids and spreads, in how trades are crossed in matching engines, and in how high-frequency proprietary trading algorithms try to shave miniscule profits by arbitraging stale prices—to the maintenance of securities markets, it is puzzling that securities regulation has formally kept at arms-length technology as a regulatory object. In 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 acted upon markets with seemingly little possibility of control."<sup>290</sup> The result is to naturalize expectations among the regulated community, and among regulators themselves, about the role that law plays in constituting and constraining market forces.

## CONCLUSION

Gamified brokerage apps make trading more fun. That will always be a problem for regulators who must face the headwinds for being spoil sports. There are plausible social welfare reasons, however, for regulators to prohibit or limit behavioral design 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 behavioral design in investing apps in the first place, but are often overlooked.

Securities law has a number of techniques available for responding to behavioral design. Most promising are those that treat behavioral design as a recommendation, or that try to get at quantitative suitability. And while regulation of gamified investing is a salient problem, less salient are the market structure problems that gave rise to it and that it reinforces. If regulators want to be bold in addressing the problems that gave rise to gamified investing, they should reevaluate the aspects of market structure that make it profitable to stock a pond with noisy retail order flow.

That has real stakes, because retail investors can lose big by trading excessively. But it has higher order consequences for how we approach markets. While some techno-skeptics object that people will lose confidence in markets, that is in some sense inevitable. Across many markets asset prices

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<sup>289</sup> ALEX PREDA, FRAMING FINANCE: THE BOUNDARIES OF MARKETS AND MODERN CAPITALISM 133 (2009).

<sup>290</sup> Pardo-Guerra, *supra* note 21, at 271.

regularly do not reflect fundamental value, if that can even be ascertained, and thus in a traditional finance sense these prices are *inaccurate*. Yet securities law encourages investment of massive sums toward prices that are *precise* in the form of continuously updated order books deep with liquidity and transparency across geographically dispersed execution venues in continuous time.

Retail traders don't beat the market by trading actively. Securities law shouldn't let brokers encourage retail traders to do so for conflicted reasons. It also shouldn't succumb to the allure that it's important to encourage this noisy trading to promote inaccurate but very precise pricing in stock markets. Especially not if it endangers the financial security of retail investors. By the same token, we ought to welcome greater skepticism toward the social functions of stock markets. If "meme stocks" reveal this disjointed problem with asset pricing, that would be good for a popular understanding of what capital markets in late capitalism are even for.

There may be other arguments for regulating behavioral design, and other techniques for addressing the risks it presents to investors and markets. But a bold and modern securities law would step in primarily to address the market structure problem.