

The University of Toledo Law Review

Paying Attention to That Man Behind the
Curtain: State Securities Regulators' Early
Conversations with Robo-Advisers

Andrea L. Seidt, Noula Zaharis and Charles Jarrett

PAYING ATTENTION TO THAT MAN BEHIND THE CURTAIN: STATE SECURITIES REGULATORS' EARLY CONVERSATIONS WITH ROBO-ADVISERS

*Andrea L. Seidt, Noula Zaharis and Charles Jarrett**

BETTERMENT was the first pure robo-advisor firm to enter the securities markets in 2010. It took Betterment more than three months to attract its first million dollars to the platform and a full year to increase that number to \$10 million.¹ Today, Betterment brings in more than 10 million new investor dollars every day, boasting an impressive assets under management (“AUM”) total in excess of \$14 billion.² Far from alone, Betterment now competes with over 200 different robo-firms in the domestic market, which enjoys a robust blend of pure and hybrid models that together manage more than \$222 billion in assets. While growth is large and steady, robo-advisers are still comparatively small market players, collectively managing less than one-third of the assets held in a single Vanguard mutual fund—Vanguard Total Stock Market Index.³

In 2015, financial consulting firm A.T. Kearney saw great promise in the robo-adviser landscape and predicted that digital advice would soon become

* Andrea L. Seidt is the Ohio Securities Commissioner, a position that she has held with the Ohio Department of Commerce since 2008. Noula Zaharis is the Director of the Georgia Secretary of State’s Division of Securities, a position that she has held since 2014. Charles Jarrett is a Senior Enforcement Attorney with the Georgia Division of Securities. The authors would like to acknowledge support from the North American Securities Administrators Association (“NASAA”), the association of all state and provincial securities regulators in Canada, Mexico, and the United States. This paper is the result of a collaboration inspired by the authors’ work on NASAA’s Investment Adviser Section Committee.

1. Jon Stein, *The History of Betterment: Changing an Industry*, BETTERMENT (July 20, 2016), www.betterment.com/resources/inside-betterment/our-story/the-history-of-betterment; Peter Cohan, *Growing at 300% to \$8.5 Billion, Betterment Offers Fee, Tax Edge*, FORBES (Apr. 26, 2017, 8:29 AM), <https://www.forbes.com/sites/petercohan/2017/04/26/growing-at-300-to-8-5-billion-betterment-offers-fee-tax-edge/>.

2. Cohan, *supra* note 1; BACKEND BENCHMARKING, THE ROBO REPORT: FOURTH QUARTER 2018 (2019) [hereinafter THE ROBO REPORT].

3. Stein, *supra* note 1; Cohan, *supra* note 1. See also John H. Walsh & Sara Sabour, *Optimizing Your SEC and FINRA Compliance Examination Experience*, ALI-CLE Conference on Life Insurance Company Products, SZ003 ALI-ABA 461, (Nov. 2, 2017) (“A recent case study observed that robo-advisers are “doubling the assets under their management every few months, but their combined assets still run to less than \$20 billion compared with \$17 trillion for traditional money managers.”); Megan Leonhardt, *This Is the Best Robo-Advisor for Every Investor, From Beginning to Advanced*, MONEY (July 9, 2018), <http://money.com/money/5330932/best-robo-advisors-beginner-advanced-2018/>.

mainstream among U.S. consumers, estimating a \$2 trillion market by 2020.⁴ Others have since estimated that digital firm assets will balloon to \$5 trillion-\$7 trillion by 2025.⁵ Although some dismissed these early projections as overly aggressive, the digital advice industry more than doubled in size from 2016 to 2017.⁶ As of August 11, 2018, the top five robo-adviser firms in the United States all manage at least \$7.5 billion in investor assets. The largest in terms of AUM is Vanguard Personal Advisor Services with over \$112 billion, followed by: Schwab Intelligent Portfolios (\$33.3 billion); Betterment (\$14 billion); Wealthfront (\$10 billion); and Personal Capital (\$7.5 billion).⁷

None of the top five robo-adviser firms has the largest robo client base, however.⁸ The firm with the most robo clients is a unique app-based platform known as Acorns, which services over 2 million clients with an aggregate AUM of \$1.1 billion.⁹ Acorns charges a \$1 or \$2 monthly fee and funds investor accounts by “rounding up to the nearest dollar” electronic bank or credit card purchases.¹⁰ Following Acorns, the pure robo leaders are Betterment with 361,809 clients and Wealthfront with 221,142 clients.¹¹ In total, recent reports have estimated that the robo industry is comprised of 2 million users with projections of expanding to 17 million users by 2021.¹²

For regulatory oversight purposes, robo-advisers are generally registered with the SEC as federal advisers. While most other federal advisers register with the SEC based on their regulatory AUM (triggered by the federal requirement of \$100 million AUM for non-New York investment advisers), robo-advisers under that threshold can avail themselves of the multistate option available under SEC Rule 203A-2(d) or the internet adviser option under Rule 203A-2(e). Rule 203A-2(d) allows registration for Registered Investment Adviser (“RIA”) firms that are required to be registered in 15 or more states, triggered almost by default for digital

4. TERESA EPPERSON, BOB HEDGES, UDAY SINGH & MONICA GABEL, HYPE VS. REALITY: THE COMING WAVES OF “ROBO” ADOPTION 26 (2015), https://www.atkearney.com/documents/10192/7132014/Hype+vs.+Reality_The+Coming+Waves+of+Robo+Adoption.pdf. See also Barbara A. Friedburg, *Robo-Advisors with the Most Assets Under Management*, ROBO-ADVISOR PROS, www.roboadvisorpros.com/robo-advisors-with-most-aum-assets-under-management/ (last updated Aug. 11, 2018).

5. Benjamin P. Edwards, *The Rise of Automated Investment Advice: Can Robo-Advisers Rescue the Retail Market?*, 93 CHI.-KENT L. REV. 97, 106-07 (2018) (citing Anne Tergesen, *Robo Advisers Seen Exploding in Popularity*, WALL ST. J. (Dec. 11, 2015), <https://www.wsj.com/articles/robo-advisers-seen-exploding-in-popularity-1449860367>).

6. Leonhardt, *supra* note 3.

7. Friedburg, *supra* note 4.

8. Vanguard and Schwab do not differentiate between the number of clients in their robo versus traditional advisory platforms.

9. THE ROBO REPORT, *supra* note 2, at 6.

10. *Id.*

11. *Id.*

12. CHARLES SCHWAB, THE RISE OF ROBO: AMERICANS’ PERSPECTIVE AND PREDICTIONS ON THE USE OF DIGITAL ADVICE 2 (2018), https://www.aboutschwab.com/images/uploads/inline/schwab_rise_of_robo_report_2018_findings.pdf (citing *U.S. Digital Advice: Consolidation, Fee Disruption, and the Battle of the Brands*, AITE GROUP (Sept. 12, 2017), <https://www.aitegroup.com/report/us-digital-advice-consolidation-fee-disruption-and-battle-brands>).

platforms like robo-advisers that quickly acquire a client presence in every state.¹³ Rule 203A-2(e) allows registration for RIA firms that provide advice *exclusively* through an interactive website based on personal information provided by clients through the website.¹⁴ While robo-advisers are primarily regulated by the SEC, states nonetheless have a strong interest in these market players because their investor constituents and their small, state-registered investment advisers are increasingly using robo services.

As a result, the authors decided in 2017 to research these market participants to learn more about this industry (educational) and to identify areas impacting state securities oversight (regulatory). This article summarizes the authors' research from 2017 to 2018, much of which includes original research in the form of informal interviews with leadership and staff of robo-adviser firms, the real men and women behind the curtain.¹⁵

KEY FINDINGS

A. *Robos Versus Human Firms—Horse of a Different Color?*

While many commentators focus on the computer and machine aspects of the robo-adviser revolution, the authors believe it is important not to lose sight of the fact that there are real live human beings behind every aspect of the platform—designing, modeling, programming, implementing, and marketing these automated advisers.¹⁶ Indeed, in most instances, robos and traditional human advisers are utilizing the same technological tools to provide their service with the primary differences being the robos make their tools directly available to the investor without the human sales force.¹⁷ As noted by former SEC executive staff member Edward L. Pittman:

13. 17 C.F.R. § 275.203A-2(d) (2018). As of February 2019, there were 122 firms claiming multistate adviser registration pursuant to Rule 203A-2(d) and 165 firms claiming internet adviser registration pursuant to 203A-2(e). See U.S. SEC. & EXCH. COMM'N, REGISTERED INVESTMENT ADVISERS, FEBRUARY 2018 (2018), <https://www.sec.gov/help/foiadocsinvafoiahtm.html> [hereinafter REGISTERED INVESTMENT ADVISERS].

14. 17 C.F.R. § 275.203A-2(e).

15. From April 2018 to May 2018, the authors conducted telephonic interviews of 9 of robo-adviser firms: Betterment, Acorns, TD Ameritrade, Fidelity, LPL, Vanguard, Wealthfront, Jemstep, and Stashinvest [hereinafter Telephone Interviews]. To encourage open dialogue, only public commentary and industry-wide observations are provided.

16. Tom Baker & Benedict Dellaert, *Regulating Robo Advice Across the Financial Services Industry*, 103 IOWA L. REV. 713, 715 (2018).

17. This nuance is key to FINRA's differentiation between "digital investment tools" and "robo advisers."

[D]igital investment advice tools (also referred to as digital advice tools) support one or more of the following core activities in managing an investor's portfolio: customer profiling, asset allocation, portfolio selection, trade execution, portfolio rebalancing, tax-loss harvesting and portfolio analysis. These investment advice tools can be broken down into two groups: *tools that financial professionals use ... and tools that clients use ...*. Client-facing tools that incorporate the first six activities—customer profiling through tax-loss harvesting—are frequently referred to as "robo advisers" or "robos."

Quantitative management is not a completely robotic process. There is a subjective element, similar to that of traditional managers, that is an inherent part of the development, application, evaluation, and enhancement of models used by quantitative managers. For this reason, as mentioned elsewhere, models are accurately described as “decision support tools.” The false notion that models, and not advisers, manage portfolios is a common misconception Regardless of the degree of automation in a manager’s investment process, the adviser (and not models) signs investment management agreements, is vested with the authority to exercise discretion in managing client assets, and has fiduciary obligations. Whether they use third-party models, or proprietary models, investment personnel at quantitative firms, like those at traditional managers, make judgments about investment theories, data sets, and the investment strategy expressed in their models. Portfolio managers and investment committees also calibrate models, and interpret and apply model signals in the context of managing individual portfolios; and exercise discretion in determining when to intervene and revise or enhance their models, add new data sources, rebalance portfolio positions, or make other changes to portfolios that they manage based on hard or soft guidelines. In many index funds, for example, managers define the rules for the strategies; and in “smart beta” strategies, among others, they define the factors that they will emphasize. Thus, while quantitative models inform the decision-maker, they do not manage client assets.¹⁸

While some commentators have attempted to differentiate digital from traditional firms by the former’s reliance on short investor questionnaires as the underpinning for their service, Robert Shapiro, SEC’s Division of Investment Management’s branch, points out “[p]lenty of traditional advisors rely on questionnaires.”¹⁹ Industry officials also caution against overstating the role that automated processes play in management of digital firms, noting how traditional advisers also rely on algorithms to handle routine functions like portfolio rebalancing and risk profiling.²⁰

Many participants with whom the authors contacted pointed out that the automated internet investment platform is not a new concept; it is more of an evolution. The marketplace needed a more efficient way to make investing available to more consumers. Through the robo platform, they are leveraging technology to reach and serve more clients. This “direct to consumer” platform gives them the ability to engage clients in the early stages of investing while making it cost effective.

FIN. INDUS. REGULATING AUTH., REPORT ON DIGITAL INVESTMENT ADVICE 2 (2016) (emphasis added) [hereinafter FINRA REPORT].

18. Edward L. Pittman, *Quantitative Investment Models, Errors, and the Federal Securities Laws*, 13 N.Y.U. J.L. & BUS. 633, 713-14 (2017).

19. Kenneth Corbin, *SEC Puts Advisors on Notice Around Robo Advice*, FIN. PLANNING (Feb. 21, 2018, 10:58 AM), www.financial-planning.com/news/secs-robo-oversight-notes-disclosures-recommendations.

20. *Id.* (“There’s a common misconception that algorithms are driving the trading strategies, the portfolio selection That’s just generally not the case.”).

1. *Staffing*

One area where robo-advisers are different than most traditional federal advisers is staffing. “The typical fintech firm is small, leanly staffed, and narrowly focused on one type of service. For instance, the prominent robo-advisor Betterment has fewer than 200 employees and focuses solely on investment advice, eschewing other means for generating revenue.”²¹ The largest robo-advisor in terms of employee count, excluding clerical staff, is Vanguard with 878 employees.²² By contrast, Merrill Lynch, the largest traditional adviser in terms of employee count, has more than 40,000 employees.²³ All of the top five traditional advisers have more than 20,000 employees.²⁴ Not surprisingly, robo-advisers also have a higher concentration of IT staff compared to traditional adviser firms. One participant stated that its client service team is “tech support”; and although its tech support staff are not financial advisers per se, they are registered as investment adviser representatives.

2. *Products*

Another significant difference (but one that may be changing) between robos and traditional human advisers is that “robo-advisors primarily rely on passive indexing and diversification strategies and utilize exchange-traded funds (“ETFs”) that track broad market benchmarks.”²⁵ “[E]ven the most sophisticated robo-advisers that provide fully personalized advice based on specific investor inputs typically offer their investors a narrower range of investment choices than traditional investment advisers, often limiting choices to low-cost ETFs and

21. William Magnuson, *Regulating Fintech*, 71 VAND. L. REV. 1167, 1200 & nn.159-161 (2018) (citing Telis Demos, *Betterment Valued at Nearly \$500 Million in New Round*, WALL ST. J. (Feb. 19, 2015, 2:38 PM), <https://blogs.wsj.com/moneybeat/2015/02/19/betterment-valued-at-nearly-500-million-in-new-round/>); *Can Robo Advisers Replace Human Financial Advisers?*, WALL ST. J. (Feb. 28, 2016, 10:12 PM), <http://www.wsj.com/articles/can-robo-advisers-replace-human-financial-advisers-1456715553>. *But see* REGISTERED INVESTMENT ADVISERS, *supra* note 13. (noting Betterment’s employee base has grown to 216 employees; other employee counts at pure robo-firms as of October 2018 include: Personal Capital (222 employees); SigFig (168 employees); Wealthfront (165 employees); and Acorns (12 employees)).

22. *See* REGISTERED INVESTMENT ADVISERS, *supra* note 13.

23. *See id.*

24. *Id.* (remainder of top five includes: Wells Fargo Clearing Services, LLC (26,409 employees); Morgan Stanley (26,000 employees); Edward Jones (23,510 employees); and LPL Financial LLC (22,703 employees)).

25. Megan Ji, Note, *Are Robots Good Fiduciaries? Regulating Robo-Advisors Under the Investment Advisers Act of 1940*, 117 COLUM. L. REV. 1543, 1557 (2017) (citing *ETF Selection for Portfolio Construction: A Methodology*, BETTERMENT, <https://www.betterment.com/resources/research/etf-portfolio-selection-methodology> (last visited Feb. 16, 2019); WEALTHFRONT, WEALTHFRONT INVESTMENT METHODOLOGY WHITE PAPER (2015), <https://research.wealthfront.com/whitepapers/investment-methodology>; *Can Robo Advisers Replace Human Financial Advisers?*, *supra* note 21.

mutual funds.”²⁶ Consequently, product cost is comparatively low for digital advisers.²⁷

The majority of robo platforms contacted by the authors utilize the modern portfolio theory in building the client portfolios; as one stated, “These formulas are well known and established in the industry.”²⁸ These formulas, rooted in passive investments, are incorporated into their software, which determines an asset allocation and “glide path” for the client.²⁹

Betterment, Schwab, Vanguard, and SigFig compete with model portfolio expense ratios in the 0.05% to 0.22% range.³⁰ Betterment exclusively offers low cost ETFs with model portfolio expense ratios in the 0.07% to 0.16% range.³¹ Vanguard remains the cheapest option, with all index and actively managed funds operating with expense ratios less than 0.10%, but only for investors who can meet the required \$50,000 minimum.³² SigFig, on the other hand, has a lower minimum of \$2,000 with expense ratios in the 0.05% to 0.16% range.³³ Vanguard, Betterment, and SigFig were also the highest performing robo-advisers for the first year tracked by the *Robo Ranking* as of August 2018.³⁴ Hybrid advisers utilize lower cost ETFs but also throw in proprietary products and actively managed mutual funds. “Research suggests that this hybrid model will manage \$3.7 trillion in assets by 2020 and grow to \$16.3 trillion by 2025. These numbers represent 10% of global investable assets.”³⁵

3. Fees and Account Minimums

Lower product costs make robo-advisers a very affordable option. Fee models range from no fee for digital-only service to more traditional AUM models

26. Nicole G. Iannarone, *Computer as Confidant: Digital Investment Advice and the Fiduciary Standard*, 93 CHI.-KENT L. REV. 141, 151 (2018).

27. For an interesting and comprehensive review of robo-adviser fees and services, see THE ROBO REPORT, *supra* note 2. The report discusses how difference asset classes are utilized and how they are performing. Although these accounts are young, they were in place during the economic downturn of early 2018. SigFig boasted the best performance, returning 7.06%.

28. Telephone Interviews, *supra* note 15.

29. *Id.*

30. Nellie S. Huang, *Robo Advisers Get the Human Touch*, KIPLINGER (Sept. 2017), <https://www.kiplinger.com/article/investing/T023-C000-S002-robo-advisers-get-the-human-touch.html>.

31. *Id.*

32. *Id.*

33. *Id.*

34. BACKEND BENCHMARKING, THE ROBO RANKING: SUMMER 2018 EDITION 2-3 (2018). The *Robo Ranking* sorted firms based on the following criteria: size and tenure; performance; costs; customer experience; features; transparency and conflicts; financial planning; access to advisors; and account minimum. Vanguard was ranked the “Best Overall Robo” followed by Betterment. Betterment scored as the “Best Robo for First-Time Investors.” Personal Capital won the categories of “Best Robo for Digital Financial Planning” and “Best Robo for Complex Financial Planning Needs.” *Id.* at 2-6.

35. Bret E. Strzelczyk, Note, *Rise of the Machines: The Legal Implications for Investor Protection with the Rise of Robo-Advisors*, 16 DEPAUL BUS. & COM. L.J. 54, 80 (2017) (citing Barbara A. Friedberg, *Growth of Hybrid Robo-Advisors to Outpace Pure Robos*, INVESTOPEDIA (Feb. 23, 2017, 6:00 AM), <https://perma.cc/L8ND-W3MR>).

in the 0.25% to 0.90% range for full or premium service.³⁶ Robo-firms will increase the fee depending on the level of service provided, with higher fees typically charged for increasingly popular hybrid models that combine digital and human advice.³⁷ “[T]his hybrid of both automated and personal advice is sometimes referred to as ‘bionic’ advice.”³⁸ While the fees for hybrid services are higher than digital only service, they are still less (frequently half) than the fee charged for traditional human advice.³⁹

Even with robo-adviser fees being generally low, account minimums may not be. Large traditional advisers typically have account minimums in the \$5,000 to \$25,000 range for digital only service.⁴⁰ Several robo-firms pointed out they initially entered the market because traditional advisers tend to have high account minimums which make it more challenging for an early stage investor to “get in.” Larger account minimums are triggered for premium and hybrid models. For example, Betterment, Personal Capital, and Wealthsimple all require a minimum of \$100,000 for their premium services.⁴¹ Vanguard and T. Rowe Price offer hybrid models for accounts starting at \$50,000.⁴² The highest minimum, set at \$300,000, is for United Income.⁴³

Low fees are great for investors, but challenging for the robo-startup. With client acquisition costs in the \$500 to \$1,000 range, it would take a robo with a 0.25% fee six to eight years to recoup costs on a \$30,000 account.⁴⁴ Not all robos

36. See THE ROBO REPORT, *supra* note 2. Pure robos typically have no or low account minimums for their basic digital service: Acorns (none), Betterment (none), Ellevest (none), Fidelity Go (none), SigFig (\$2,000), SoFi (\$100), Wealthfront (\$500), Wealthsimple (none), and WiseBanyan basic (none). *Id.* at 12-13. Traditional firms, such as T. Rowe Price, also offer a no fee digital only service as an add-on for existing taxable and IRA clients. See Bernice Napach, *T. Rowe Price Launches Robo Platform With Only Actively Managed Funds*, THINKADVISOR (Mar. 16, 2017), <https://www.thinkadvisor.com/2017/03/16/t-rowe-price-launches-robo-platform-with-only-acti/?slreturn=20190303155439>.

37. See THE ROBO REPORT, *supra* note 2.

38. U.S. Sec. & Exch. Comm’n, *Investor Bulletin: Robo-Adviser*, INVESTOR.GOV (Feb. 23, 2017), <https://www.investor.gov/additional-resources/news-alerts/alerts-bulletins/investor-bulletin-robo-advisers>.

39. See Baker & Dellaert, *supra* note 16, at 730 & n.64 (providing the hybrid models offered by Vanguard and BlackRock as examples) (citing Clint Boulton, *Roboadvisors Stand at the Vanguard of Human-Machine Collaboration*, CIO (Mar. 25, 2016, 12:02 PM), <https://www.cio.com/article/3048318/vertical-industries/robo-advisors-stand-at-the-vanguard-of-human-machine-collaboration.html>; Bernice Napach, *With FutureAdvisor, BlackRock Seeks to Compete With Schwab, Vanguard*, THINKADVISOR (June 14, 2016 1:36 PM), <https://www.thinkadvisor.com/2016/06/14/with-futureadvisor-blackrock-seeks-to-compete-with/>).

40. See THE ROBO REPORT, *supra* note 2, at 17 (providing account minimums for: E*Trade (\$5,000); Merrill Edge (\$5,000); Morgan Stanley (\$5,000); Schwab’s Intelligent Advisory (\$25,000); TIAA (\$5,000); TD Ameritrade (\$5,000 for Essential Portfolio and \$25,000 for Selective Portfolio); and Wells Fargo (\$10,000)).

41. *Id.*

42. Huang, *supra* note 30.

43. THE ROBO REPORT, *supra* note 2, at 17.

44. Barbara Friedburg, *Are There Too Many Robo Advisors?*, U.S. NEWS & WORLD REP. (Aug. 15, 2018, 9:44 AM), <https://money.usnews.com/investing/investing-101/articles/2018-08-15/are-there-too-many-robo-advisors> (quoting Lex Sokolin, global director of fintech strategy at Autonomous Research in London) See also Edwards, *supra* note 5, at 99 (quoting Thomas Phillipon,

have been able to survive on such razor thin profit margins. Longstanding robo Hedgeable closed its doors in July after eight years and nearly \$80 million in AUM.⁴⁵ Other robos that have shut down include WorthFM and Learnvest, the latter sold to Northwestern Mutual only three years ago for \$250 million.⁴⁶ As head of wealth management at Texas firm Celent explained, the problem is not “too many” robo-firms entering the market, there are just too many with non-sustainable business models.⁴⁷

One should not infer from these recent exits that the new business model is fading in popularity. For every firm that closes its door, another opens theirs. New entrants include: Bloom (geared toward 401(k) management), Emperor Investments (stock portfolios only), IncomeClub (fixed income only), and Twine (John Hancock affiliate focused on investors under age 35).⁴⁸ Existing firms have also expanded their offerings, increasingly to niche markets. Betterment and Morgan Stanley, for example, now offer socially responsible investing and Ellevest provides a portfolio focused on stocks that positively impact women in the workplace.⁴⁹ Focusing on niche investors concerned about what specific equities comprise their portfolios, OpenInvest allows investors to select stocks and bonds based on a proprietary “issue profile” that takes into consideration a multitude of factors of importance to the individual investor.⁵⁰ Recently, OpenInvest’s algorithm has updated to support their niche platform by adding a function that allows investors to “Divest from Dark Money.”⁵¹

Has the U.S. Finance Industry Become Less Efficient? On the Theory and Measurement of Financial Intermediation, 105 AM. ECON. REV. 1408, 1413 (2015)) (stating that while technology should intuitively lower entry costs, one study found that “the unit cost of intermediation is about as high today as it was at the turn of the twentieth century”).

45. Friedburg, *Are There Too Many Robo Advisors?*, *supra* note 44; Crystal Kim, *A Robo-Advisor Bites the Dust*, BARRON’S (July 11, 2018 11:55 AM), <https://www.barrons.com/articles/a-robo-advisor-winds-down-1531324524>.

46. *Id.*

47. *Id.* (quoting Will Trout, head of Wealth Management at Celent). *But see* Bernice Napach, *Robo-Advisor Hedgeable Is Closing. Who’s Next?*, THINKADVISOR (July 13, 2018), <https://www.thinkadvisor.com/2018/07/13/robo-advisor-hedgeable-is-closing-whos-next/> (quoting Bill Winterberg, founder of FPPad.com, as saying the “market of independent automated investment services is saturated and the players need either hundreds of thousands of accounts or millions of dollars in order to succeed.”).

48. Friedburg, *Are There Too Many Robo Advisors?*, *supra* note 44.

49. Leonhardt, *supra* note 3.

50. Simone Foxman, *A New Robo-Adviser Lets You Build Portfolios That Shun Guns and Oils Shares*, BLOOMBERG BUSINESSWEEK (Feb. 9, 2017, 5:00 AM), <https://www.bloomberg.com/news/articles/2017-02-09/a-new-robo-adviser-lets-you-build-portfolios-that-shun-guns-and-oil-shares> (“Users click through a series of menus to create an ‘issue profile,’ checking boxes to select investment themes—such as gender equality or reduced carbon emissions—as well as groups of companies to exclude. The preset screens lean left. Users can nix weapons manufacturers, tobacco companies, and even those whose executives have backed Donald Trump.”).

51. Press Release, OpenInvest, OpenInvest Launches “Divest From Dark Money” Investing Category (Oct. 30, 2018, 7:01 ET), <https://www.prnewswire.com/news-releases/openinvest-launches-divest-from-dark-money-investing-category-300739881.html> (“The Divest from Dark Money screen allows investors to divest from companies that fail to publicly disclose whether corporate funds are supporting or opposing any political campaign, and proactively invest in companies committed to disclosing their political and lobbying spending.”).

4. *Convenience*

The convenience of this service model—24-hours-a-day online access to an automated portfolio—appeals to many investors, which is why robos have been so successful and grown steadily in market share.⁵² Schwab brought in more than \$16 billion through its robo platform in just its first two years (March 2015 to March 2017).⁵³ The model is especially credited with bringing new investors into the market. Fidelity reports that only about 10% of their robo clients have migrated from a traditional advice relationship,⁵⁴ suggesting an influx of new first-time investors or perhaps a shift from the brokerage and self-directed models.⁵⁵

These platforms can make advice far more affordable for smaller and younger investors, with the added benefit of younger investors' pre-existing familiarity with technology-based applications. Prior to the development of these robo-investing platforms, millennials were often an overlooked market segment because they tended to have small account balances and invested in retirement savings funds far less than older generations. Now, robo-advisers give millennials access to investment advice that was previously unavailable or too expensive.⁵⁶

While popular with millennials, industry data shows that robos appeal to all generations. With respect to its clients, Betterment reports that “the average age is around 35, which is on the cusp of millennial, but around 30 percent of our business comes from people over 50 years old.”⁵⁷ Regardless of age, most early robo-investors simply like the impersonal approach. Wealthfront spokesperson Kate Wauck says of their clients: “They consistently tell us, ‘We pay you *not* to talk to us.’”⁵⁸ Betterment agrees:

52. As robo pioneer Wealthfront touts, “Our software-only solution puts your money to work automatically, while managing your risk and keeping costs and taxes low. And it’s all effortless for you.” *Investing*, WEALTHFRONT, <https://www.wealthfront.com/philosophy> (last visited Feb. 16, 2019).

53. Huang, *supra* note 30. See also ACCENTURE FIN. SERVS., *THE VOICE OF THE CUSTOMER: IDENTIFYING DISRUPTIVE OPPORTUNITIES IN INSURANCE DISTRIBUTION* 6 (2017), <https://www.accenture.com/us-en/insight-insurance-distribution-marketing-consumer-study> (nearly 75% of consumers surveyed said they were open to robo-advice given low cost benefits and ease of use).

54. *THE ROBO RANKING: SUMMER 2018 EDITION*, *supra* note 34, at 8 (quoting Brooke Forbes, Senior Vice President of Digital Customer Experience at Fidelity). As one of the largest providers of self-directed accounts, Fidelity indicated that 75% of its robo clients had a preexisting account with Fidelity. *Id.* at 9.

55. John Lightbourne, Note, *Algorithms & Fiduciaries: Existing and Proposed Regulatory Approaches to Artificially Intelligent Financial Planners*, 67 *DUKE L.J.* 651, 652-53 (2017) (“[R]obo-advisers generally offer lower rates than their human alternatives, possibly encouraging lower-income investors to enter the market and incentivizing current investors to switch platforms.”).

56. Avery R. Barber, Comment, *Redefining Fiduciary in The Robot Age: How the Department of Labor’s New Definition Will Encourage Robo-Investment Platforms and Remove the Human Element From Investment Advising*, 18 *WAKE FOREST J. BUS. & INTELL. PROP. L.* 316, 329 (2008).

57. Iannarone, *supra* note 26, at 144 (quoting SEC, *FINTECH FORUM: THE EVOLVING FINANCIAL MARKETPLACE* 34 (2016) [hereinafter *FINTECH FORUM*]).

58. Huang, *supra* note 30.

A digital platform offered over a desktop or mobile device is not constrained by a human adviser's office hours, allowing investors to access their account information at any time. Robo-advisers' separation of investments, account information, and investor education from a person, set hours, and an office also affords investors a measure of privacy and control not necessarily available in a traditional advisory relationship. It is this instant access to information that makes some robo-advisers believe that their services appeal to both smaller investors and more sophisticated investors with higher account balances.⁵⁹

In light of early robo success, many traditional human advisers have joined the bandwagon and either launched their own robo platform, partnered with other robos to expand their client service, or developed new hybrid models whereby clients have direct access to both interactive robo tools and human advisers. While not necessarily the first movers into the industry, many traditional money managers have developed robo platforms to reach a broader number of clients, including Charles Schwab, E*Trade, Fidelity, Merrill Lynch, TD Ameritrade and Vanguard. The traditional firms are adapting to the demands of an evolving customer base.

An online study conducted by Edelman Intelligence showed that, among the study participants, 62% agreed that robo-advisers take the emotion out of investing, 49% believed that robos help to maintain a diversified portfolio, and 46% trust robo-advisers to provide more transparent financial advice.⁶⁰ The same study results supported the evolution in the robo-industry to provide more human interaction, or at least the possible of human interaction, with the digital advice, "Seventy-one percent of people want a robo advisor that also has access to human advice and nearly half (45 percent) not using a robo advisor today would be more likely to use one if it has quick and easy access to human support."⁶¹ This desire for human support crosses all generation boundaries, 79% of millennial participants want access to a human in robo advice; 73% of Gen X participants, and 64% of Baby Boomer participants answered the same.⁶²

Industry participants that engaged with the authors discussed the rise of "white labeling" and its impact on the industry. One participant noted that developing a robo platform could cost upwards of \$1 million just to develop the product. This cost rises when considering the cost of upkeep and maintenance of the platform. White labeling has allowed firms to purchase prepackaged platforms and tailor them to look and act like proprietary products. This can be as simple as purchasing an algorithm to purchasing a turnkey platform. If competition can effectively lower the cost of implementing and maintaining a robo platform, there is the chance that smaller advisers expand into robo advising, but the current expense of a proprietary system is cost prohibitive to all but a select few firms.

59. Iannarone, *supra* note 26, at 145 (citing FINTECH FORUM, *supra* note 57, at 33).

60. *Survey Finds Americans Like Robos—With a Human Touch*, NAPA (Nov. 6, 2018), <https://www.napa-net.org/news/managing-a-practice/industry-trends-and-research/survey-finds-americans-like-robos-with-a-human-touch/> (citing RISE OF ROBO, *supra* note 12, at 5).

61. RISE OF ROBO, *supra* note 12, at 4.

62. *Id.*

B. Regulators' Long Yellow Brick Road:

1. Disclosures

Robo models present unique compliance and oversight challenges for regulators. For starters, the current registration and reporting disclosure forms used for traditional investment advisers (Form ADV and Form U-4) were not drafted with robos in mind and do not neatly fit their profile. There are no “robo-adviser” checkboxes on the Form ADV⁶³ and no paper brochures for robos to “hand” to the customer during an in-person account review. Investors are generally presented information through various terms and conditions boxes that they may read or scroll through. “Pure disclosure-based regimes [in the digital world] are widely viewed as being unsuccessful at actually informing consumers and correcting for their bounded rationality.”⁶⁴ There is no reason to think that robo-investors lack the propensity exhibited by other consumers to “click through” important terms and conditions. As with online merchants and service providers, advisers could be tempted to “adjust[] terms at their convenience” and “at practically no expense, resting comfortably in the knowledge that consumer backlash to such changes (or even awareness of such changes) is highly unlikely.”⁶⁵ There is also the issue of the “digital divide,” which separates “those with easy access to technology and those without—including vulnerable populations such as the poor or elderly.”⁶⁶

While investing at the moment of inspiration, even in the twilight hours, might be an exciting prospect for some individuals, “ready credit [or investment] is not an unalloyed good when behavioral or psychological factors are taken into account.”⁶⁷ Investing for retirement, college tuition, or home ownership are incredibly important decisions that should be done carefully and thoughtfully. “Technologically enabled speed can hurt consumers, if the speed encourages bad decisions or provides inadequate time to make decisions. Regulatory arbitrage may again play a role in spurring the use of certain technologies if part of the allure of these technological tools is to evade regulations such as required ‘cooling-off periods.’”⁶⁸

63. U.S. SEC. & EXCH. COMM’N, FORM ADV, <https://www.sec.gov/about/forms/formadv-part1a.pdf>. Item 5(G), Part 1A asks investment advisers to disclose the type of services they offer. The list includes everything from financial planning, portfolio management generally for various clientele, to workshops, but does not mention robo-advice or automated portfolio management. Robo-advisers tend to check the portfolio management boxes, but a few will include robo-advice as a service in the “other” category.

64. Christopher G. Bradley, *FinTech’s Double Edges*, 93 CHI.-KENT L. REV. 61, 71 (2018) (citing OMRI BEN-SHAHAR & CARL E. SCHNEIDER, *MORE THAN YOU WANTED TO KNOW: THE FAILURE OF MANDATED DISCLOSURE* 176 (2014); Rory Van Loo, *Rise of the Digital Regulator*, 66 DUKE L.J. 1267, 1276-77, 1288-89 (2017); KATHERINE M. PORTER, *MODERN CONSUMER LAW* 124 (2016)).

65. Bradley, *supra* note 64, at 72.

66. *Id.*

67. *Id.* at 76.

68. *Id.*

2. *Fiduciary Duty*

There is also the thorny standard of care issue—do (or even *can*) robo-advisers fulfill the fiduciary duties required of investment advisers? For their part, robo-firms believe they are fiduciaries and defend that position vigorously.⁶⁹ As one robo-provider stated on our call, “The rules have not changed because the technology has changed.”⁷⁰ Others are not convinced. Melanie L. Fein, former Senior Counsel to the Federal Reserve’s Board of Governors, is a staunch critic who has written extensively in support of her view that robo-advisers *cannot* act as fiduciaries given what she perceives as their inability to provide personalized advice in the best interest of each investor individually.⁷¹

It is true that robos elicit fairly limited information from their clients:

Wealthfront’s risk assessment questionnaire only contains a mix of approximately ten multiple choice, fill-in-the-blank, and check the box questions before it delivers a risk assessment analysis and invites the user to sign up as a client. Betterment asks even fewer questions, all multiple choice, before inviting the user to sign up online with his or her Social Security number and other information.⁷²

The SEC has remarked that “some of these questionnaires are not designed to provide a client with the opportunity to give additional information or context.”⁷³

For that reason and the fact that responsibility for much of the investment decision-making is foisted upon investors, the Commonwealth of Massachusetts issued a policy statement in April 2016 that all robo-advisers seeking registration as an investment adviser will be evaluated on a case-by-case basis to determine whether they can satisfy the fiduciary duty owed to clients.⁷⁴

Robo-adviser questionnaires also come into play on the question of suitability. Financial Industry Regulatory Authority (“FINRA”) issued a report in 2016 that analyzed potential weaknesses in robo capacity to make suitable recommendations.⁷⁵ FINRA identified disparities in firm ability to differentiate

69. *E.g.*, *Getting to Know Betterment*, BETTERMENT, <https://www.betterment.com/frequently-asked-questions/> (last visited Feb. 16, 2019) (“Betterment offers advice as a fiduciary, and we help you manage your money.”); *A Whole New Way to Manage Your Money*, PERS. CAP., <https://www.personalcapital.com/> (last visited Feb. 16, 2019) (“Fiduciary advice with transparency.”).

70. Telephone Interviews, *supra* note 15.

71. Melanie L. Fein, *How Are Robo-Advisors Regulated?* 8-9 (Sept. 12, 2017), <https://ssrn.com/abstract=3028232>.

72. Caelainn Carney, Note, *Robo-Advisers and the Suitability Requirement: How They Fit in the Regulatory Framework*, 2 COLUM. BUS. L. REV. 586, 600 (2018). *See also* U.S. SEC. & EXCH. COMM’N, No. 2017-02 INVESTMENT MANAGEMENT GUIDANCE UPDATE (2017), <https://www.sec.gov/investment/im-guidance-2017-02.pdf> [hereinafter INVESTMENT MANAGEMENT GUIDANCE UPDATE].

73. Carney, *supra* note 72, at 603.

74. Commonwealth of Massachusetts’ Secretary of State William Galvin’s Policy Statement on Robo-Advisers and State Investment Adviser Registration 8 (Apr. 1, 2016), <http://www.sec.state.ma.us/sct/sctpdf/Policy-Statement--Robo-Advisers-and-State-Investment-Adviser-Registration.pdf> [hereinafter Policy Statement, William Galvin].

75. *See generally* FINRA REPORT, *supra* note 17.

between risk tolerance and risk willingness as well as omissions regarding household composition:

Perhaps even more foundational, these questionnaires have no way of taking into account a client's hesitation or confidence in asserting certain risk preferences: with mostly multiple choice questions, the adviser cannot see whether the client really vacillated between two options before selecting one or the other. A human adviser collecting this information from a potential client in person might more readily be able to read hesitation on the potential client's face and come to a more holistic risk assessment.⁷⁶

3. *Conflicts*

Robo-advisers have a unique ability to eliminate conflicts that commonly arise with human advisers, including unfettered optimism by some regarding their ability to produce high returns.

There is an entire body of research in fields of medicine, engineering, and even finance dedicated to proving that algorithms will always outperform humans. For example, John Bogle demonstrated this concept by comparing human stock-pickers to a Standard & Poor's 500 index fund, "an investment fund that operates on strict algorithmic rules about which companies to buy and sell and in what quantities." The humans never outperformed the algorithm.⁷⁷

Or, to add even a little more color to it (as Wealthfront has): "Picking stocks? A blindfolded monkey throwing darts can do better."⁷⁸ On the flip side, "If large firms create automated investment advice tools that simply recommend a firm's own, higher-fee funds, automated investment advice may not result in improved asset allocations."⁷⁹ "Of course, the quality of an automated investment advice tool's recommendations depends on the persons that create the automated investment advice tool."⁸⁰ The human quotient remains such that a robo's advice is as honest—or dishonest—as it is programmed to be.⁸¹ Regulators need to examine the potential for robos to manipulate algorithms to favor their own

76. Carney, *supra* note 72, at 602 (citing FINRA REPORT, *supra* note 17, at 10, 14-16).

77. Barber, *supra* note 56, at 330 (citing Baker & Dellaert, *supra* note 16, at 716-17); *Do Algorithms Beat Us at Complex Decision Making?*, FARNAM STREET, fs.blog/2017/03/algorithms-complex-decision-making (last visited Feb. 2, 2018); Robert Huebscher, *Jack Bogle: The Triumph of the Index Fund*, ADVISOR PERSPECTIVES (Mar. 27, 2012), https://www.advisorperspectives.com/newsletters12/pdfs/Jack_Bogle-The_Triumph_of_the_Index_Fund.pdf.

78. *Meet Our Team of Experts*, WEALTHFRONT, <https://www.wealthfront.com/expertise> (last visited Mar. 2, 2019) (referencing BURTON MALKIEL, *A RANDOM WALK DOWN WALL STREET* 16 (1985) ("[A] blindfolded monkey throwing darts at a newspaper's financial pages could select a portfolio that would do just as well as one carefully selected by the experts.")).

79. Edwards, *supra* note 5, at 103.

80. *Id.*

81. Baker & Dellaert, *supra* note 16, at 726.

accounts, enable kickback schemes, or inappropriately limit the options made available to investors.⁸²

While robo advisors have the potential to outperform humans in matching consumers to mass market financial products, they are not inherently immune from the misalignment of incentives that has historically affected financial product intermediaries. A robo advisor can be designed to ignore those incentives, but many consumer financial product intermediaries that develop or purchase robo advisors are subject to those incentives. It would be naïve to simply assume that intermediaries will always choose the algorithms and choice architecture that are best for consumers, rather than those that are best for the intermediaries.⁸³

There is a large federal investor class action case pending in the Northern District of Illinois alleging precisely that type of misconduct by Morningstar with its automated investment tool known as GoalMaker, which plaintiffs allege steered retirement investors to high-cost Prudential products.⁸⁴

The complaint alleges that GoalMaker was presented to savers as providing “unbiased asset allocation modeling” even though it actually “systematically influenced [investors] to put their money into a variety of high-cost retirement funds that paid excessive fees to the Prudential Defendants.” If proven, these allegations go directly to the worst fears about automated investment advice tools.⁸⁵

To be sure, moral and ethical issues loom large as computers take over decision-making impacting wealth and retirement. Some scholars recommend inputting ethical and moral principles directly into autonomous artificial agents. Wendell Wallach, chair of the Technology and Ethics Study Group at Yale University’s Interdisciplinary Center for Bioethics, is one such advocate, urging either a “top-down approach to morality, wherein the machine is governed by a series of laws or rules ... [or] a bottom-up system, in which morality is gradually programmed into a machine to mimic human learning.”⁸⁶

A top-down rules-based approach to inputting morality into derivatives market digital intermediaries would involve directly programming the prohibitions contained in specific statutory and regulatory provisions into the digital intermediary. For example, a digital intermediary would be programmed to know that wash trading—which involves trading with oneself (or someone under your control)—is illegal and therefore not permitted.

82. Barber, *supra* note 56, at 336.

83. Baker & Dellaert, *supra* note 16, at 732.

84. See Complaint, Green v. Morningstar, Inc., No. 17 C 5652 (N.D. Ill. Mar. 16, 2018), 2018 WL 1378176.

85. Edwards, *supra* note 5, at 110 (quoting Complaint, *supra* note 84, at 5).

86. Gregory Scopino, *Preparing Financial Regulation for the Second Machine Age: The Need for Oversight of Digital Intermediaries in the Futures Markets*, 2015 COLUM. BUS. L. REV. 439, 508 (2015) (citing Jim Shelton, *Open the Pod-Bay Door, Hal*, NEW HAVEN REG. (Jan. 11, 2009, 12:00 AM), <https://www.nhregister.com/news/article/Open-the-Pod-Bay-Door-Hal-11627926.php>).

A bottom-up, gradual approach to giving digital intermediaries morality likely would involve exposing the digital intermediary to specific rules and prohibitions over time, in succession, to mimic how children learn.⁸⁷

There does not appear to be any moves in this direction by regulators in the United States as of yet. That said, regulators are digging into foundational questions regarding the algorithms that are used by robo-firms. Professor Tom Baker from the University of Pennsylvania Law School and Benedict Dellaert, member of the board of Supervisors for the largest online insurance broker in the Netherlands, recommend that regulators focus specifically on the following areas: (1) explanation of the model and underlying data; (2) explanation of how data is appropriate for given model; (3) desired outcome for algorithms; (4) how algorithms performed toward desired outcome; (5) metrics used for algorithm success; (6) other algorithm alternatives explored and basis for rejecting them; and (7) other explanations that experts with more specific domain knowledge would suggest.⁸⁸

4. *Licensure*

Another question that regulators are examining is which humans behind the curtain need to be licensed agents. On April 7, 2016, the SEC approved FINRA's proposed amendments to NASD rule 1032 (Categories of Representative Registration), which requires FINRA members to register associated persons who are primarily responsible for the design, development, or significant modification of "algorithmic trading strategies" (or for the day-to-day supervision or direction of such activities) as "Securities Traders."⁸⁹ Algorithms used by robo-advisers, which solely generate a recommended asset allocation, are specifically carved out of the rule: "An automated investment service that constructs portfolio recommendations—but that is not equipped to automatically generate orders and order-related messages to effectuate such trading ideas into the market" would not trigger registration requirements under Rule 1032(f).⁹⁰

Former Special Counsel for the Commodity Futures Trading Commission ("CFTC"), Greg Scopino, argues that the CFTC should follow FINRA's lead and require persons who monitor or oversee automated software programs to register as associated persons to "better regulate the humans responsible for digital intermediaries."⁹¹ Scopino would go so far as to extend registration to software developers:

The definition of principal should also be expanded to include software programmers who create, design, or modify ATSS, algorithms, or related automated

87. *Id.* at 510 (internal citations omitted).

88. Baker & Dellaert, *supra* note 16, at 735.

89. FIN. INDUS. REG. AUTH., REG. NOTICE 16-21, QUALIFICATION AND REGISTRATION OF ASSOCIATED PERSONS RELATING TO ALGORITHMIC TRADING 6 (Jan. 30, 2017), <https://www.finra.org/sites/default/files/Regulatory-Notice-16-21.pdf>.

90. 83 Fed. Reg. 51,988, 52,001 (Oct. 15, 2018).

91. Scopino, *supra* note 86, at 517.

systems for a registrant. Generally, principals include enumerated persons who, due to their post or status, exhibit an amount of control or influence over registrants. A natural person who created the software program that a commodity trading advisor relies upon in deciding when to place trades in the futures trading accounts of clients arguably has considerable influence over the actions of that commodity trading advisor and would seem to warrant oversight as a principal.⁹²

Generally, an “investment adviser” is defined as:

[A]ny person who, for compensation, engages in the business of advising others, either directly or through publications or writings, as to the value of securities or as to the advisability of investing in, purchasing, or selling securities, or who, for compensation and as part of a regular business, issues or promulgates analyses or reports concerning securities.⁹³

Robo and digital advisers have agreed that their business models fall well within the definition of being an “investment adviser.” The more complicated question is whether individuals working with digital advisers are considered “investment adviser representatives.”⁹⁴ While the definition of investment adviser representatives, for both the SEC and the states, is broad, the definition includes several important limitations on who is not considered a representative of an investment adviser.

Some have also questioned what the proper registration category is for the robo-firms themselves, suggesting robo-advisers and other digital platforms are operating as unregistered investment companies.⁹⁵ An “investment company” is any issuer which “is or holds itself out as being engaged primarily, or proposes to engage primarily, in the business of investing, reinvesting, or trading in

92. *Id.*

93. 15 U.S.C. § 80b-2(a)(11) (2012). *See also* GA. CODE ANN. § 10-5-2(17) (West, Westlaw through 2018 reg. and spec. legis. sess.) (the Model Act adopted by the majority of state securities regulators follows the SEC definition of “investment adviser” but also provides that “[t]he term includes a financial planner or other person that, as an integral component of other financially related services, provides investment advice to others for compensation as part of a business or that holds itself out as providing investment advice to others for compensation.”).

94. 17 C.F.R. 275.203A-3(a)(1) (2013) provides that “[i]nvestment adviser representative’ of an investment adviser means a supervised person of the investment adviser: (i) [w]ho has more than five clients who are natural persons; and (ii) [m]ore than ten percent of whose clients are natural persons.” *See also* GA. CODE ANN. § 10-5-2(19) (“‘Investment adviser representative’ means an individual employed by or associated with an investment adviser or federal covered investment adviser who makes any recommendations or otherwise gives investment advice regarding securities, manages accounts or portfolios of clients, determines which recommendation or advice regarding securities should be given, provides investment advice or holds herself or himself out as providing investment advice, receives compensation to solicit, offer, or negotiate for the sale of or for selling investment advice, or supervises employees who perform any of the foregoing.”).

95. *See* JENNIFER L. KLASS & ERIC PERELMAN, THE EVOLUTION OF ADVICE: DIGITAL INVESTMENT ADVISERS AS FIDUCIARIES 14-15 (2016), <https://www.morganlewis.com/~media/files/publication/report/im-the-evolution-of-advice-digital-investment-advisers-as-fiduciaries-october-2016.ashx?la=en>. *See also* MELANIE L. FEIN, ROBO-ADVISERS: A CLOSER LOOK 29-30 (2015).

securities.”⁹⁶ Mutual funds and unit investment trust comprise the majority of groups registered under the Investment Company Act.

Of specific interest to those operating in the robo-adviser industry is the safe harbor created by Rule 3a-4.⁹⁷ To qualify for the safe harbor, “Each client’s account in the program is managed on the basis of the client’s financial situation and investment objectives and in accordance with any reasonable restrictions imposed by the client on the management of the account,” and “[t]he sponsor and personnel of the manager of the client’s account who are knowledgeable about the account and its management are reasonably available to the client for consultation.”⁹⁸ Whether robo-advisers are eligible for the safe harbor provision depends on the structure of the robo platform and the level of human service available to the individual clients. Robos using the hybrid model are less likely to fall afoul of the safe harbor because the availability of human interaction with the clients is likely considered “reasonable” under the safe harbor. Pure robos, however, will potentially have issues with showing that there are eligible for the same safe harbor and therefore not operating as unregistered investment companies.

5. *Programming Flaws and Other Technological Glitches*

While quantitative managers are commonplace in the securities industry, there is little regulatory guidance or treatment regarding their unique roles inside and outside of the robo-adviser space. What we do know is, as of 2016, 8 of the top 10 performing hedge funds fell in the “quant” category⁹⁹ and most model developers have at least a Master’s degree or a PhD in economics, math, finance, statistics, financial engineering, or computational finance.¹⁰⁰ Some firms reportedly employ over 100 PhDs while others license models developed by third-party vendors that specialize in quants.¹⁰¹ Likewise, there are no uniform standards for coding financial software. One prominent quants follower analogizes the coding process to the 700-year-old Japanese philosophy known as Wabi-Sabi, which “emphasizes appreciation of the beauty in imperfection and the notion that nothing is perfect, complete, or permanent.”¹⁰² Professors Baker and Dellaert agree, noting:

In our interactions in and around the financial services field, we have found that there is an inverse relationship between people’s experience working with data and their expectations regarding the completeness and accuracy of data. In our experience,

96. 15 U.S.C. § 80a-3(a)(1)(A).

97. 17 C.F.R. § 270.3a-4(a)(1) (2018).

98. *Id.* § 270.3a-4(a)(2)(iv). *See also* KLASS & PERELMAN, *supra* note 95, at 14-15.

99. Pittman, *supra* note 18, at 643 n.17 (citing Stephan Taub, *The 2016 Rich List of the World’s Top-Earning Hedge Fund Managers*, INSTITUTIONAL INV. (May 10, 2016), <https://www.institutionalinvestor.com/article/b18bk4p13shhny/the-2016-rich-list-of-the-world39s-topearning-hedge-fund-managers>).

100. *Id.* at 664 n.66.

101. *Id.* at 664.

102. *Id.* at 668.

people who work with data always expect to find problems with data; people who do not work with data tend to over-estimate the completeness and accuracy of data.¹⁰³

As a result, it is not uncommon for managers to debate which model is superior with great variations in the frequency of review, documentation of coding, and flow and formation of modeling, continually updating and evolving their software to correct and improve over time. With flaws in automated financial advice algorithms identified as the biggest risk introduced from these tools,¹⁰⁴ it is not surprising that managers are often reluctant to share detailed information regarding their proprietary models with regulators as a routine matter.¹⁰⁵

Models have been challenged by dramatic trading frenzies.¹⁰⁶ At least one robo-adviser was criticized for its handling of market volatility following the results of the Brexit referendum by arbitrarily halting trading on its platform for several hours without adequate notice and communication to investors.¹⁰⁷ Consequently, some robo-firms have started including “circuit-breaker” functionality in their algorithms to reduce market volatility and prevent domino effects.¹⁰⁸ Policy makers are slow to mandate these actions where benchmarks or other triggers are vulnerable to manipulation and “trading halts can trap investors in unwanted, unhedged positions, thus forcing traders to liquidate unrelated positions and spreading the impact of the event to otherwise unrelated markets.”¹⁰⁹

Another example of a simple but very costly code glitch—and regulatory response—would be the Knight Capital crash from 2012.¹¹⁰

While processing 212 small retail orders that Knight had received from its customers, [its automated routing system for equity orders] routed millions of orders into the market over a 45-minute period, and obtained over 4 million executions in 154 stocks for more than 397 million shares. By the time that Knight stopped sending the orders, Knight had assumed a net long position in 80 stocks of approximately \$3.5 billion

103. Baker & Dellaert, *supra* note 16, at 738.

104. Iannarone, *supra* note 26, at 154-55 & n.87 (citing Tom C.W. Lin, *Compliance, Technology, and Modern Finance*, 11 BROOK J. CORP. FIN. & COM. L. 159, 180 (2016) (“Uncertainty and risk in finance can never be perfectly modeled, reduced, or eliminated. Despite all the advances in new financial technology and artificial intelligence, there exists no machine so smart that it flawlessly forecasts financial futures and economic risks in a world filled with flawed, whimsical, and random human actors.”)).

105. Pittman, *supra* note 18, at 664 n.69.

106. Strzelczyk, *supra* note 35, at 65.

107. *Id.* at 65-66 (citing Tom Anderson, *Robo-Advisors May Have Too Much Control Over Your Portfolio*, CNBC (Sept. 2, 2016), cnbc.com/2016/07/25/robo-advisors-may-have-too-much-control-over-your-portfolio.html).

108. Magnuson, *supra* note 21, at 1218 & n.233 (“Circuit breakers are systems that slow or pause trading when markets become excessively volatile.”) (citing Hayden C. Holliman, *The Consolidated Audit Trail: An Overreaction to the Danger of Flash Crashes from High Frequency Trading*, 19 N.C. BANKING INST. 135, 144-47 (2015)).

109. Onnig H. Dombalagian, *Preserving Human Agency in Automated Compliance*, 11 BROOK. J. CORP. FIN. & COM. L. 71, 91 (2016).

110. Knight Capital Americas LLC, Exchange Act No. 70694, 2013 WL 5631976 (Oct. 16, 2013).

and a net short position in 74 stocks of approximately \$3.15 billion. Ultimately, Knight lost over \$460 million from these unwanted positions.¹¹¹

The crash was caused by the implementation of a discontinued computer code to handle certain transactions.¹¹² The SEC found that Knight violated Rule 15c3-5 by failing to have sufficient technology governance controls and supervisory procedures to handle and avoid such incidents.¹¹³ The Knight Capital release highlights the SEC's expectations for technology driven service providers that clearly would be a starting point for any action taken against a robo-adviser for technology failures:

Prudent technology risk management has, at its core, quality assurance, continuous improvement, controlled testing and user acceptance, process measuring, management and control, regular and rigorous review for compliance with applicable rules and regulations and a strong and independent audit process. To ensure these basic features are present and incorporated into day-to-day operations, brokers or dealers must invest appropriate resources in their technology, compliance, and supervisory infrastructures. Recent events and Commission enforcement actions have demonstrated that this investment must be supported by an equally strong commitment to prioritize technology governance with a view toward preventing, wherever possible, software malfunctions, system errors and failures, outages or other contingencies and, when such issues arise, ensuring a prompt, effective, and risk-mitigating response.¹¹⁴

One could argue that the established SEC expectations for technology risk management in this case is proof that regulators can adapt existing regulations to the robo-adviser model and that compliance with such expectations should not serve as a barrier to entry for new industry participants.

6. *State Adviser Use*

Robo-advice platforms are both industry- and investor-facing, with users who include financial advisers, investors working without financial advisers, and investors working with financial advisers. The financial industry has used digital tools for many years, perhaps even without investors' knowledge. ... Bob Lu, CEO of robo-adviser FutureAdvisor believes that robo-adviser technology assists human investment advisers in serving their clients because "they can have the digital platform take the

111. *Id.* at *1.

112. *Id.* at *5-6. (The SEC imposed sanctions on Knight Capital including corrective action, a censure, and a \$12 million fine).

113. *Id.* at *4. *See also* 75 C.F.R. § 240.15c3-5 (2011).

114. *Id.* at *2. *See, e.g.*, NASDAQ Stock Market LLC, Exchange Act Release No. 69655 at *15 (May 29, 2013); New York Stock Exchange LLC, Exchange Act Release No. 67857 (Sept. 14, 2012); EDGX Exchange, Inc, Exchange Act Release No. 65556 (Oct. 13, 2011).

workload off them and focus on things where they add the unique value, such as relationship-building, trust-building, and coaching with their clients.”¹¹⁵

Regulators have a strong interest in ensuring that registrants are making necessary disclosures to regulators and investors regarding robo use. Investment advisers should disclose when they are using robo services, which firms they are specifically using, and the fees associated with that use. To the extent the investment adviser is providing little to no review or service beyond that provided by the robo platform, advisers should expect even greater scrutiny.

In the current robo-adviser environment, the cost of implementing a proprietary system seemingly is cost prohibitive. While this generally serves as a barrier to entry for smaller state-registered investment advisers, a state-registered investment adviser can utilize the advantages of robo-advisers in several ways, primarily in a sub-advisory capacity or as a third-party asset manager.

The use of a third party to assist in the management of a client’s assets is not a novel concept. Under a sub-adviser relationship, the investment adviser hires the sub-adviser to manage some level of the client’s assets. The investment adviser is responsible for selecting the sub-adviser and communicating information necessary to allow the sub-adviser to make suitable investment decisions. At the same time, the investment adviser still maintains a fiduciary duty to the client and all choices made, from the selection of the sub-adviser to the monitoring of the sub-adviser, must be made in light of that fiduciary duty. Conversely, third-party asset managers are usually hired directly by the client, and while the investment adviser might maintain some level of duty to monitor the relationship,¹¹⁶ generally, a large portion of the duty shifts away from the investment adviser.

Both the sub-adviser arrangement and third-party asset manager relationship can be applied to the robo-adviser model without modifying the traditional regulatory and compliance requirements. Investment advisers who choose to involve a robo-adviser as a sub-adviser rather than a human sub-adviser still must maintain the same level of fiduciary duty. “As a fiduciary, an investment adviser has a duty to make full and fair disclosure of all material facts to, and to employ reasonable care to avoid misleading, clients.”¹¹⁷ The information should be presented in such a way that clients are likely to read and understand the information that is provided.¹¹⁸ The compliance requirements created by a robo sub-adviser may include the delivery of the disclosure documents, maintenance of the required books and records, consolidation of the account statements, best execution, and periodic suitability reviews. Additionally, the investment adviser who utilizes a robo sub-adviser will be required to disclose certain aspects of the sub-adviser in the investment adviser’s own disclosure documents. These disclosures may include: the criteria utilized by the investment adviser in selecting

115. Iannarone, *supra* note 26, at 149-50 (quoting FINTECH FORUM, *supra* note 57, at 38).

116. This duty can include reviewing the initial third-party contract and paperwork to determine if the relationship fits into the client’s financial goals and monitoring the status of the client’s assets with the third-party to see the impact of the client’s larger financial position and its effect on suitability.

117. INVESTMENT MANAGEMENT GUIDANCE UPDATE, *supra* note 72, at 3.

118. *Id.*

a robo sub-adviser, the associated fees charged by the investment adviser and sub-adviser, any conflicts of interest, any compensation received by the investment adviser for selecting a certain sub-adviser, the investment adviser's handling of the client's private information and associated cybersecurity concerns, and the frequency of periodic reviews.

At the state regulatory level, reviewing the disclosures for appropriateness and adhering to investment advisers' stated policies and procedures is important when examining whether the investment adviser has or can fulfill their fiduciary duty. At least one state regulator has raised concerns about advisers that delegate services to robo-advisers and disclose it as a wrap fee program. In this instance, the adviser charged significantly more for the wrap fee program than what the robo-adviser was charging. Additionally, another state regulator has questioned the ability of fully automated robo-advisers to act as fiduciaries.¹¹⁹ While this question is opened to some debate, it potentially creates a situation in which an investment adviser who wishes to use a robo sub-adviser introduces a non-fiduciary into the client relationship. This can cause more work for the investment adviser to fulfill their fiduciary duty. Depending on the flexibility of the robo adviser platform, an investment adviser might not be able to fulfill its fiduciary duty, i.e., a robo adviser that does not allow the client to override the investment decisions might prevent an investment adviser from making changes to reflect dynamic suitability. This situation highlights the importance of investment advisers selecting the right robo sub-adviser and being able to articulate the reasoning behind such a choice to clients and regulators in an examination capacity.

7. *Regulator Resources and Capacity*

Assuming robo-advisers successfully navigate all of the foregoing challenges, they still have to deal with regulators that may lack the capacity to effectively assess features that are unique to digital platforms, including: "algorithms and data incorporated in the automated advisers; choice architecture through which the advice is presented and acted upon; underlying information technology infrastructures; and downside risk from the scale that automation makes possible."¹²⁰ Developing this capacity requires hires from the science, computer science, behavioral economics, and psychology fields to work with the lawyers, economists, and behavioral scientists already on staff.¹²¹

Robo-firms are sensitive to this problem and have urged regulators to modernize their examination methodologies to be "capable of keeping up with what's happening with digital delivery of information."¹²² Regulators must upgrade their tools not only to monitor markets for fraudulent, unfair, and unethical conduct, but also to parse new trading practices and strategies and make educated guesses about their impact on market efficiency and public price discovery.¹²³

119. Policy Statement, William Galvin, *supra* note 74, at *4.

120. Baker & Dellaert, *supra* note 16, at 716.

121. *Id.* at 716-17.

122. Carney, *supra* note 72, at 606 (citing FINTECH FORUM, *supra* note 57, at 64).

123. *Id.*

Mark Goines, Vice Chairman of the robo-adviser firm Personal Capital, encouraged the SEC to take proper account of the differences between human and digital advisers in formulating its oversight plan, stating “the implementation of regulatory oversight needs to be different, there’s no question, because they are very different business practices.”¹²⁴ Goines indicated that regulatory guidance would be particularly helpful in the area of required investor “inputs” necessary to achieve or enhance compliance with the Investment Advisers Act of 1940. “[P]roprietary algorithms ... require robust inputs and are only as good as the information upon which they base their calculations and recommendations.”¹²⁵

Commentators agree. “Because rapidly automated investment advice firms already manage billions, regulators should fairly review their operations and devote resources to developing greater competency as digital regulators.”¹²⁶ Like other fintech firms, robo advisers can be more difficult to monitor than traditional firms because regulators “lack reliable information about the structure and operations of fintech markets.”¹²⁷

Needless to say, state securities regulators are not flush with experts in quantitative strategies and it is not clear how robust the SEC or FINRA’s capacity is in this area either. For an interesting take on the SEC’s handling of quantitative modeling cases, see Edward L. Pittman’s 2017 article in the New York University Journal on Law and Business, “Quantitative Investment Models, Errors, and the Federal Securities Laws.”¹²⁸ Pittman argues that quantitative modeling should be viewed as an adviser’s research tool that is inherently prone to programming flaws and mistakes. Consequently, he posits that it is inappropriate to hold an adviser strictly liable for a programming error, yet that is how he interprets the approach that the SEC has taken to date.¹²⁹

Regulators have worked hard to help robo-advisers fit into the 1940’s Act fold, motivated in part by the unique role robos could play in helping bridge saving and retirement gaps.

The United States now faces a looming retirement crisis. According to one recent survey, a third of Americans have no retirement savings.¹³⁰ In instances where Americans have retirement savings, they often do not have significant assets. Over half of the population has less than \$10,000 in assets stowed away. Financial insecurity may be particularly concentrated in minority communities. Over half of “black and Hispanic families have no retirement account savings.”¹³¹

124. *Id.* at 605 (citing FINTECH FORUM, *supra* note 57, at 64).

125. Iannarone, *supra* note 26, at 155.

126. Edwards, *supra* note 5, at 111.

127. Magnuson, *supra* note 21, at 1172.

128. *See generally* Pittman, *supra* note 18.

129. AXA Rosenberg Grp., LLC, 100 SEC Docket 1126 (Feb. 3, 2011) (order against firm); Barr M. Rosenberg, 101 SEC Docket 4053 (Sept. 22, 2011) (order against investment manager).

130. *See generally* Elyssa Kirkham, *1 in 3 Americans Has Saved \$0 for Retirement*, MONEY (Mar. 14, 2016), money.com/money/4258451/retirement-savings-survey/.

131. Edwards, *supra* note 5, at 101 (citing MONIQUE MORRISSEY, THE STATE OF AMERICAN RETIREMENT: HOW 401(K)S HAVE FAILED MOST AMERICAN WORKERS 6 (2016), epi.org/

“By providing greater access to advice at a lower cost, these new firms may reach persons that traditional financial advice firms have not yet served.”¹³² “Because of the scale that automation makes possible, these services have the potential to provide higher quality and more transparent financial advice to more people at lower cost than human financial advisors.”¹³³ Early indications are that these changes in wealth management have created efficiency gains for society at large as overall asset management fees have declined.¹³⁴

CONCLUSION AND NEXT STEPS

The authors have enjoyed these early research efforts and conversations with robo-advisers, but realize that much more research and work needs to be done to keep tabs on this ever growing and evolving industry participant. It will be important for the state and federal regulatory community to work together, share information, and upgrade their thinking and resources, as necessary, to ensure new models can prevail in ways that adequately protect investor interests.

files/2016/state-of-american-retirement-final.pdf). See also generally Mary Josephs, *How to Solve America's Retirement Savings Crisis*, FORBES (Feb. 6, 2017, 12:33 PM), www.forbes.com/sites/maryjosephs/2017/02/06/how-to-solve-americas-retirement-savings-crisis/#4713ccba15ae.

132. Edwards, *supra* note 5, at 103.

133. Baker & Dellaert, *supra* note 16, at 714.

134. Edwards, *supra* note 5, at 108.