HARVARD LAW SCHOOL | The Case Studies

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Robo-Advising

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Memorandum

DATE: February 1, 2019

TO: Jay Cleighton, Chair, Securities and Exchange Commission &
Robert W. Coke, President and CEO, Financial Industry Regulatory Authority

FROM: Office of Craig Fillups, Counsel, Department of the Treasury

RE: Concept Paper on a Maximally Digital Robo-adviser—iRobo, Inc.

Now that the shutdown is behind us, Craig Fillups has asked me to reach out to the two of you about a potentially promising new initiative in the FinTech space.

As we have discussed together on numerous occasions, the Trump Administration is committed to improving the financial well-being of all Americans by supporting responsible innovation in financial services. Over the past few months, we have been approached by dozens of FinTech entrepreneurs with new and exciting value propositions. As a pilot program, Craig Fillups has decided to vet a handful of these proposals with leadership of key regulatory agencies. To that end, I am sending along materials regarding a proposal to set up a "maximally digital" robo-advisory firm (iRobo, Inc.). Mr. Fillups received the proposal last week, and we're forwarding this package in the hopes of beginning a high-level conversation regarding

Written by Ryan Chan-Wei, HLS LLM '19, under the supervision of Howell Jackson, James S. Reid, Jr. Professor of Law. Cases are developed solely as the basis for class discussion. They are not intended to serve as endorsements, sources of primary data, legal advice, or illustrations of effective or ineffective management.

the desirability and viability of this approach. To the extent your schedule permits, we were hoping to set up a preliminary meeting on the topic next week, on Thursday afternoon. We envision the conversation as being entirely informational with the understanding that this proposal would remain subject to otherwise applicable legal processes.

As you will see, the iRobo team contemplates an advisory platform with markedly reduced level of human involvement: it will only have one human employee. The advisory process itself will be fully automated, with a view to keeping costs as low as possible and increasing access to capital market investments. More details can be found in the letter and supporting documents, which are appended to this memorandum.

At our meeting next week, we hope to take up two questions:

1. Whether a proposal of this sort is desirable as a matter of public policy, and
2. The extent to which it could be implemented under current laws and regulations.

At the same time, we will be having a Treasury Department team consider whether the iRobo proposal is consistent with the Department's own recommendations in its July 2018 FinTech Report. We are also reaching out to senior management at Betterment to solicit their opinion on these issues as well.

Thank you.

Letter of Transmittal: Time-dated 21 January 2019; 14:32:45

I-ROBO, INC.

DATE: February 2019

TO: Office of Craig Fillups, Department of the Treasury

FROM: Ernie D'Amato

RE: Proposal of a Maximally Digital Robo-Adviser—iRobo, Inc.

I obtained your address from one of my professors, and he encouraged me to get in touch. I am a recent MBA graduate of the Harvard Business School, and I am writing to enlist the support of the Department of the Treasury for a robo-advisory firm that I am planning to set up (iRobo, Inc.).

iRobo would be the first maximally digital robo-adviser. Indeed, I will be the only human employee. As far as possible, all processes will be executed using computer algorithms. Where necessary, we will hire outside contractors, for instance to handle compliance with anti-money laundering requirements and other compliance matters.

This idea was conceived as part of a business school class, "FinTech Innovation," and I am writing to you now because I hope to secure the backing of the Department of the Treasury as we attempt to obtain regulatory approval.

As currently envisioned, iRobo would be a dual registrant, both an SEC-registered broker-dealer and a registered investment adviser under applicable state and federal laws. In working up our business proposal, my colleagues and I became aware that issues have arisen with respect to how robo-advisers can comply with the regulatory standards applicable to such firms. We foresee that these concerns may be amplified with respect to iRobo, because it will have far fewer human employees than any existing robo-advisory firm.

We have, however, addressed these issues, and to that end I am attaching a paper written by one of my classmates in the FinTech Innovation course. That classmate is a recent JD graduate of the Harvard Law School, and her paper explains how iRobo could meet both the suitability and fiduciary standards incumbent on dual registrants. (We've addressed other issues related to recordkeeping, custodial arrangements, and related compliance materials elsewhere.)

As her paper documents, the investment advice given by humans is not inherently superior to advice dispensed by algorithms, and indeed the supervision of algorithms is likely more straight-forward than the supervision of humans. I trust you find her arguments as persuasive as I did.

I look forward to hearing back from you and gaining your support for this endeavor.

The iRobo Business Model

This is a brief overview of how the iRobo platform would operate:

1. Potential clients begin by visiting the iRobo website (www.irobo.com).
2. They click on the "Get Started" tab, which prompts them to create an account by providing their identification, contact, and bank account details.
3. Clients are asked to fill in a questionnaire with respect to age, occupation, investing experience, annual income, investable assets, investing goals, and risk profile. Clients will also be required to complete an additional survey designed to generate an accurate estimate of each client's appetite for risk. Our algorithm matching process was designed by computer scientists, adapting practices refined in on-line dating applications with a demonstrated record of eliciting unbiased customer profiles and successful matches.
4. Clients are free at all times to amend the responses to both questionnaires and surveys and will be reminded on a monthly basis of their ability to make these amendments.
5. Clients are directed to an external consultant's website to address compliance with anti-money laundering requirements. (Outside vendors will also provide compliance and other recordkeeping and custodial services required of registered broker-dealers and investment advisers.)
6. Clients deposit an initial sum of money into their iRobo accounts and are given the option to set up an "Auto Deposit," which enables them to make regular, periodic deposits from their checking account to their iRobo accounts.
7. iRobo's algorithms process the information provided above and identify an appropriate asset allocation and targeted annual rate of return, then execute what it determines to be an optimal investment strategy for each client
    a. Clients are given the option of viewing further details, such as:
        i. An in-depth analysis of the assets held (e.g. characteristics and disclosure documents related to all holdings)
        ii. A detailed breakdown of how their assets are allocated (e.g. percentages and investment horizons)
        iii. Key components of the iRobo optimization algorithm (e.g., risk return goals, tax efficiency, expense minimization, etc.)
    b. Clients are also given the option to engage in further customization (e.g. setting stop-loss orders or adjusting asset allocation) at any point.
    c. Our investment algorithms will track market movements in real time and update investment strategies and optimization protocols as appropriate.

8. Customers will receive all required disclosures and statements in electronic format through a computerized process overseen by our compliance algorithm. For those interested in verbal communications, iRobo has purchased a state-of-the-art automated, AI-driven phone system to respond to customer queries.

9. iRobo has hired a panel of leading computer scientists to review the operation of its algorithms on a periodic basis (initially monthly, but eventually quarterly or yearly). All algorithms and databases will be available for review by supervisory personnel at any time, including (if desired) on a real-time feed. (iRobo does, however, request this information be treated as confidential supervisory information and not disclosed to third parties.)

The Regulation of Robo-Advising

What Is the Minimum Amount of Human Involvement Required to Provide Investment Advice?

Prepared by Jane Gonzales (HLS JD '18)
in connection with the HBS Financial Innovation Competition

Introduction

Robo-advisers have changed the complexion of the financial services industry in a multitude of ways, not least by reducing the need for a human adviser to be present for investment advice to be dispensed. This paper will focus on that issue, by examining the minimum amount of human involvement required to provide investment advice.

Although there are myriad robo-advisory services, for the sake of clarity this paper will focus on robo-advising firms that are regulated as "dual registrants." These firms perform the dual functions of investment adviser and broker-dealer and are consequently regulated as such—they are required to register with both the SEC and FINRA.

The upshot is that dual registrants—as the name suggests—face twofold obligations. On the one hand, they are subject to the fiduciary obligations imposed on investment advisers by the Investment Advisers Act of 1940. On the other hand, they also must comply with the suitability standard set out for broker-dealers in the Securities Exchange Act of 1934 and FINRA Rule 2111.

Admittedly, in the case of dual registrants, it is difficult to draw a bright-line distinction between the fiduciary and suitability standards; they often shade into each other, and there have been calls for a harmonized fiduciary standard. However, it is beyond the ambit of this paper to delve into the nuances of that debate. For the purposes of understanding the regulatory issues discussed below, it will suffice to note that the fiduciary and suitability standards are sufficiently distinct to warrant separate treatment.

This paper will argue that the minimum amount of human involvement required for a robo-adviser to provide investment advice is <u>one</u> person, and to that end it will proceed in four stages:

1. The first section will provide a brief explanation of the fiduciary and suitability standards and elaborate on the minimum amount of human involvement required for *any* dual registrant to provide investment advice (i.e. one person).

2. The second section will situate the central claim of this paper—that only one human being is needed—and set out the key arguments that must be justified for this claim to stand. In essence, this paper will need to show that the use of robo-advising technology does not affect the ability of a dual registrant to fulfill either the fiduciary or suitability standard, which would mean that a dual registrant robo-advising firm can thus dispense investment advice just as *any* dual registrant would. Therefore, in accordance with the prevailing regulatory requirements, this would mean that only one person is needed.

   As a tangential matter, this section will also draw on empirical research to contend that robo-advisers are not necessarily inferior to human advisers. Much ink has been spilt over concerns that algorithms

can never replicate a "human touch," but I will argue that the underlying thrust of this paper—that robo-advising firms should be welcomed—is ultimately borne out by empirical evidence.

3. The third section will discuss the suitability standard that must be met by broker-dealers and evaluate the arguments for and against whether robo-advising firms can meet that standard. Although this goes against the grain of academic opinion, I will argue that robo-advisers are in fact able to fulfill the suitability standard.

4. In a similar vein, the fourth and final section will discuss the fiduciary obligations incumbent on investment advisers and assess the arguments for and against whether robo-advisers can successfully discharge those obligations. As with the preceding section, I will argue that robo-advisers can also satisfy the fiduciary standard, although it may be harder to do so than with the suitability standard.

1. The Existing Regulatory Framework

This paper focuses on robo-advising firms that are regulated as dual registrants, and such firms face twofold regulatory requirements. As investment advisers, they are held to a fiduciary standard; as broker-dealers, they must comply with a suitability standard. This section will explain what these standards entail and highlight the existing regulatory framework for the minimum number of humans required for investment advice to be dispensed.

The exact content of the fiduciary obligations that an investment adviser must discharge is not cut and dried, but it is sometimes described as constituting: 1) a duty of loyalty to serve the best interests of clients and disclose any conflicts of interest, and 2) a duty of care requiring the investment adviser to provide suitable advice and seek the best execution of his clients' securities transactions.[1]

The suitability standard for broker-dealers can be found in FINRA Rule 2111, and it is markedly similar to the second limb of an investment adviser's fiduciary duty. Specifically, it requires that a broker-dealer "must have a reasonable basis to believe that a recommended transaction or investment strategy involving a security or securities is suitable for the customer."[2]

Although the fiduciary and suitability standards sound similar, they are in fact sufficiently distinct to warrant different treatment. To understand the relationship between the fiduciary and suitability standards, it is best to simply see the latter as "a less intensive form of fiduciary duty" than the one imposed on investment advisers.[3] An excellent explanation can be found in a forthcoming article by Professor Howell Jackson and Talia Gillis, who argue that the suitability requirement for broker-dealers "tracks the essence of a fiduciary duty: legal obligations that arise out of the nature of the relationship between a firm and its customers."[4]

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1 Stephen Wink, Stefan Paulovic and Michael Shaw, 'Dually Registered Brokers and Advisers' (2013) 46 The Review of Securities & Commodities Regulation 191, 195.

2 FINRA Rule 2111, Suitability, http://finra.complinet.com/en/display/display_main.html?rbid=2403&element_id=9859 [https://perma.cc/RKN9-E6UG], accessed January 31, 2019.

3 Howell Jackson and Talia Gillis, 'Fiduciary Duties in Financial Regulation' (*Social Science Research Network*, 2018) Harvard Public Law Working Paper No. 18-24, 16 , https://papers.ssrn.com/sol3/abstract=3149577 [https://perma.cc/MJY7-KEMP], accessed 28 November 2018.

4 ibid.

Lastly, under the existing regulatory framework, at minimum only one human is needed for a dual registrant to dispense investment advice. For both investment advisers and broker-dealers, this information can be found in their SEC registration documents—Form ADV and Form BD respectively. Their registration documents allow for the possibility of an investment adviser functioning as a "sole proprietor," with the individual in question wearing multiple hats (e.g. Chief Executive Officer and Chief Compliance Officer).[5]

2. Only One Human Is Needed

The central claim of this paper is that the minimum amount of human involvement required for a robo-adviser to provide investment advice is one person, and this section will set out the key arguments that must be justified for this claim to stand.

So far, it has been established that at minimum only one human is required for a typical dual registrant to dispense investment advice (i.e. a sole proprietor), and the overarching argument of this paper is that the use of robo-advising technology does not affect this minimum requirement.

Subsequent sections will show that the use of robo-advising technology does not impair the ability of a dual registrant to fulfill either the fiduciary or suitability standard, which would mean that a dual registrant robo-advising firm could thus dispense investment advice just as *any* dual registrant would. In essence, the prevailing regulatory framework would still apply to robo-advisers, and therefore only one human would be needed.

In addition, it is important at this juncture to address the normative question of whether robo-advising algorithms are inherently inferior to human advisers. The succeeding discussion will operate on the working assumption that robo-advisers are at least equal, if not superior, to human advisers; therefore, before proceeding, it is worthwhile to assuage concerns that algorithms can never replicate a "human touch" in decision-making.

Much ink has been spilt over the notion that robo-advising algorithms are less effective than human advisers, especially because of their "inability to address subtleties" that humans can provide through "personalized advice."[6] The implication is that human advisers have superior judgment and following their advice allows clients attain a better rate of return on their investments compared to robo-advisers.

However, there is in fact a plethora of empirical research suggesting the contrary. Brian Melzer and his colleagues have conducted research in Canada which suggests that advice proffered by human advisers is

[5] Division of Investment Management, 'Form ADV' (*Securities and Exchange Commission*, 2017) SEC 1707 (07-17), Part 1A, 1 <https://www.sec.gov/about/forms/formadv-part1a.pdf> accessed 28 November 2018; Division of Trading and Markets, 'Form BD' (*Securities and Exchange Commission*, 2008) SEC 1490 (1-08), 1, https://www.sec.gov/files/formbd.pdf [https://perma.cc/SVU5-AWDK], accessed 29 November 2018.

[6] Tara Bernard, 'The Pros and Cons of Using a Robot as an Investment Adviser' (*The New York Times*, 29 April 2016), http://www.nytimes.com/2016/04/30/your-money/the-pros-and-cons-of-using-a-robot-as-an-investment-adviser.html [https://perma.cc/V4F9-DYFB], accessed 25 October 2018.

"one-size-fits-all" rather than "personalized,"[7] and that human advisers often hold "misguided beliefs."[8] Similarly, Terrance Odean has published a wealth of articles suggesting that humans tend to behave irrationally when making investments;[9] he points out that humans making investments "systematically share biases"[10] and are particularly susceptible to the disposition effect, which is the tendency "to hold losing investments too long and sell winning investments too soon."[11]

The abovementioned papers only scratch the tip of the iceberg—behavioral economists have conducted a substantial amount of research on these issues[12]—but the upshot is that robo-advising algorithms are not necessarily inferior to human advisers and may in fact be superior because they bring to bear a level of dispassionate objectivity that humans are not capable of. The corollary of this is that robo-advising firms offer much that can be welcomed, and the remainder of this paper should be read in that light.

3. Meeting the Suitability Standard

The suitability requirement states that a broker-dealer "must have a reasonable basis to believe that a recommended transaction or investment strategy involving a security or securities is suitable for the customer."[13]

The argument that robo-advisers cannot meet the suitability requirement without additional human involvement turn on the concern that robo-advisers "are not a substitute for human judgment."[14] For example, FINRA has taken the view that human judgement is a sine qua non condition for fulfilling the suitability requirement; specifically, FINRA sees human judgement as an indispensable component of conducting portfolio analysis in a way that is "appropriate for an individual client,"[15] because robo-advising algorithms do not possess "the requisite knowledge about the securities or customer necessary to make a suitable recommendation."[16]

In particular, FINRA is concerned about the inability of robo-advisers to 1) gather and adequately evaluate all of the required information about clients to make a suitability determination; 2) rectify conflicting

[7] Stephen Foerster, Juhani Linnainmaa, Brian Melzer and Alessandro Previtero, 'Retail Financial Advice: Does One Size Fit All?' (2017) 72 The Journal of Finance 1441.

[8] Juhani Linnainmaa, Brian Melzer and Alessandro Previtero, 'The Misguided Beliefs of Financial Advisers' (*Social Science Research Network*, 2018) Kelley School of Business Research Paper No. 18-9, https://papers.ssrn.com/sol3/id=3101426 [https://perma.cc/4TSB-LSQ8], accessed 26 November 2018.

[9] For example, see Brad Barber and Terrance Odean, 'The Behavior of Individual Investors' in George Constantinides, Milton Harris and Rene Stulz (eds), *Handbook of the Economics of Finance: Volume Two* (Elsevier 2013).

[10] Brad Barber and Terrance Odean, 'The Courage of Misguided Convictions' (1999) 55 Financial Analysts Journal 41.

[11] Terrance Odean, 'Are Investors Reluctant to Realize Their Losses?' (1998) 53 The Journal of Finance 1775.

[12] For example, see Matthew Rabin, 'Psychology and Economics' (1998) 36 Journal of Economic Literature 11; Robert Shiller, 'Human Behavior and the Efficiency of the Financial System' (1999) NBER Working Paper No. 6375; Harrison Hong, José Scheinkman and Wei Xiong, 'Advisers and Asset Prices: A Model of the Origins of Bubbles' (2008) 89 Journal of Financial Economics 268.

[13] FINRA (n2).

[14] Melanie Fein, 'Regulatory Focus on Robo-Advisors' (*Social Science Research Network*, 2017) SSRN Scholarly Paper ID 3028259, 7, https://ssrn.com/abstract=3028259 [https://perma.cc/U75Y-DNXC], accessed 10 November 2018.

[15] Melanie Fein, 'FINRA's Report on Robo-Advisors: Fiduciary Implications' (*Social Science Research Network*, 2016) SSRN Scholarly Paper ID 2768295, 2, https://ssrn.com/abstract=2768295 [https://perma.cc/6ZXX-VG95], accessed 10 November 2018.

[16] Regulatory Operations, 'Report on Digital Investment Advice' (*Financial Industry Regulatory Authority*, 15 March 2016) 5, http://www.finra.org/sites/default/files/digital-investment-advice-report.pdf [https://perma.cc/MR4W-4Y2D], accessed 11 November 2018.

answers to client profile questionnaires; and 3) pair clients' investment profiles with suitable securities or investment strategies.[17]

FINRA's concerns are understandable, but these problems are by no means insurmountable; I will address them in turn and show how robo-advisers can in fact meet the suitability standard. Ultimately, the lack of human involvement that many perceive to be robo-advising's greatest weakness should instead be seen as its greatest strength, and regulators should therefore be careful not to throw the baby out with the bathwater.

An important caveat to the discussion that follows is that it will be proceeding on the assumption that the robo-advisers in question are "well designed." While this is undoubtedly "stacking the deck in favor of robo-advisers," as Tom Baker and Benedict Dellaert have done, it is necessary to delimit the scope of this paper lest it morphs into a paper on algorithm design.[18]

Gathering Information

Firstly, FINRA is concerned about the ability of robo-advisers to "gather and adequately evaluate all of the required information about clients to make a suitability determination."[19] This concern is understandable and will be swiftly evident to anyone who has signed up for an account at any of the major robo-advising platforms.

For instance, a Betterment account can be opened in less than 5 minutes, and the pre-sign-up questionnaire consists almost entirely of multiple-choice questions;[20] and even though Wealthfront has a more comprehensive pre-sign-up process that also involves a risk assessment analysis,[21] it also still falls short of the level of nuance required to conduct an appraisal of suitability tailored to the individual customer.[22]

By way of an example, consider Wealthfront's risk tolerance questionnaire,[23] which asks a customer how they would respond to a steep market correction. In response, a customer can only choose from the following four options: "buy more," "keep them all," "sell some," or "sell them all"; there are no intermediate options that allow a customer to specify an exact percentage of their stock portfolio or the price(s) at which they would buy or sell.[24] However, this is far removed from reality—trying to invest effectively with only four options for action is like trying to hit a baseball pitch by swinging the bat at four pre-determined angles.

[17] Melanie Fein (n 14), 8.

[18] Tom Baker and Benedict Dellaert, 'Regulating Robo Advice across the Financial Services Industry' (2018) 103 Iowa Law Review 713, 724.

[19] Melanie Fein (n 14), 8.

[20] Betterment, 'Get Started: Here's what to expect' (*Betterment*, 2018), https://wwws.betterment.com/app/basic_signup/what_to_expect, accessed 19 November 2018.

[21] Wealthfront, 'Get Started: Let's build a smart investment plan' (*Wealthfront*, 2018), https://www.wealthfront.com/investment-intro [https://perma.cc/XW49-6QV6], accessed 19 November 2018.

[22] Caelainn Carney, 'Robo-Advisers and the Suitability Requirement: How They Fit in the Regulatory Framework' (2018) 2018 Columbia Business Law Review 586, 601.

[23] Wealthfront (n 21).

[24] Caelainn Carney (n 22), 601.

It is therefore unsurprising that FINRA has expressed unease about this aspect of robo-advising. However, the issue does not lie with robo-advisers per se, but rather with the structure of the client onboarding questionnaire. For that reason, rather than concluding that robo-advisers are inherently unable to meet the suitability standard, I humbly suggest that the better response is to set out guidelines for questionnaires that would assist robo-advisers in obtaining the information required to meet the suitability standard.

This is not an inordinately difficult undertaking, as the questionnaires do not need to be especially sophisticated; they only need to replicate a typical conversation that a human investment adviser would have with their client, and this should not be hard to accomplish considering the advancement of artificial intelligence technology.[25]

Essentially, such a questionnaire could take the form of a chatbot that mimics the reactive and adaptive nature of human conversation—if a customer says that he would "sell some" of his stocks in a market downturn, the chatbot would then ask him to specify a percentage of his portfolio and a price range for his shares. By the end of the online conversation, the robo-adviser platform should have enough information to make investment decisions that are sufficiently tailored to the specific context of the client, moving one step closer towards meeting the suitability standard.

At the end of the day, the difference between human and robo-advisers is one of degree rather than kind; admittedly, humans offer a "warm body effect" that robo-advisers do not possess,[26] but the substantive process is similar. A human adviser that has dealt with hundreds of clients will inadvertently have a mental checklist that he subconsciously refers to during the client onboarding process,[27] and this is no less formulaic than how a robo-advising algorithm would operate.

Rectifying Conflicting Answers

Secondly, FINRA is concerned about the ability of robo-advisers to "rectify conflicting answers to client profile questionnaires."[28] Not to belabor the point, but once again the concerns here stem from an issue with questionnaire design rather than with robo-advisers per se; it would be inadvisable to dismiss robo-advisers as being inherently unable to meet the suitability standard without first considering alternative solutions to this problem.

For example, a possible solution might involve adding inbuilt triggers to the questionnaire that 1) prompt a customer when their responses appear to be internally inconsistent, and 2) flag the inconsistent

[25] Jennifer Hill, W. Randolph Ford, Ingrid Farreras, 'Real conversations with artificial intelligence: A comparison between human–human online conversations and human–chatbot conversations' (2015) 49 Computers in Human Behavior 245; Heloisa Candello, Claudio Pinhanez, David Millen and Bruna Daniele Andrade, 'Shaping the Experience of a Cognitive Investment Adviser' in Aaron Marcus and Wentao Wang (eds), *Design, User Experience, and Usability: Understanding Users and Contexts* (*Part 3)* (Springer 2017).

[26] Jill Fisch, Marion Laboure and John Turner, 'The Economics of Complex Decision Making: The Emergence of the Robo Adviser' (*University of Pennsylvania Law School – Institute for Law and Economics*, 2017) 15, https://www.geog.ox.ac.uk/events/170911/Robo-vs-Human-Advisers-Aug-28.pdf [https://perma.cc/8CCP-ETF6], accessed 20 November 2018.

[27] For an example of such a checklist, see Daniel Kahneman and Mark Riepe, "Aspects of Investor Psychology" (1998) 24 Journal of Portfolio Management 52, 64.

[28] Melanie Fein (n 14), 8.

information for further review by a human adviser before an account can be opened.[29] The upshot is that conflicting responses would be subject to multiple levels of checks, and a customer would not be able to start an account with a robo-advising platform until the conflicts have been resolved.

As with the preceding subsection, FINRA's concerns over resolving conflicting responses to questionnaires can be alleviated, and they should not pose any obstacle to robo-advisers meeting the suitability standard.

Pairing Clients with Investments

Lastly, FINRA is concerned about the ability of robo-advisers to "pair clients' investment profiles with suitable securities or investment strategies."[30] However, of all the issues raised thus far, this is the easiest to resolve. As discussed earlier, empirical research has demonstrated that human advisers are susceptible to a surfeit of biases, suggesting that dispassionate robo-advisers should be able to match customers to investments at least as well as—if not even better than—human advisers.[31]

This leads to the corollary conclusion that if human advisers are capable of meeting the suitability standard, then so are robo-advisers. Understandably, this then raises questions of algorithm design (i.e. only well-designed robo-advisers should be able to meet the suitability standard, in the same way that only competent human advisers can do so), but the answers to those questions lie beyond the scope of this paper.

Considering that this subsection has resolved the concerns surrounding the third and final aspect of FINRA's objections, it is clear at this point that robo-advising firms can in fact meet the suitability standard just as any broker-dealer would.

Discharging Fiduciary Obligations

Having addressed the suitability standard, this section will move on to examine the question of whether robo-advising firms can meet the fiduciary obligations incumbent on investment advisers. This is a thorny issue, and robo-advisers have faced a resounding chorus of rejection on this front. However, this section will argue for the contrarian position that robo-advisers can in fact meet the fiduciary standard, even though their case might not be as strong as with the suitability standard.

Having established earlier that the suitability standard is "a less intensive form of fiduciary duty,"[32] and since the suitability standard has already been examined in the previous section, this section will focus on the area in which the fiduciary standard goes above and beyond what is required under the suitability standard.

[29] Caelainn Carney (n 22), 603; Division of Investment Management, 'IM Guidance Update: Robo-Advisers' (*Securities and Exchange Commission*, 23 February 2017) No. 2017-02, 7 https://www.sec.gov/investment/im-guidance-2017-02.pdf [https://perma.cc/UT5K-2MFW], accessed 21 November 2018.

[30] Melanie Fein (n 14), 8.

[31] Stephen Foerster, Juhani Linnainmaa, Brian Melzer and Alessandro Previtero (n 7); Juhani Linnainmaa, Brian Melzer and Alessandro Previtero (n 8); Brad Barber and Terrance Odean (n 9); Brad Barber and Terrance Odean (n 10); Terrance Odean (n 11); Matthew Rabin (n 12); Robert Shiller (n 12); Harrison Hong, José Scheinkman and Wei Xiong (n 12).

[32] Howell Jackson and Talia Gillis (n 3), 16.

This aspect of the fiduciary standard bears repeating, because it is at the crux of the debate: the key distinguishing feature is that the investment adviser fiduciary relationship requires advisers to act in the "best interest" of their clients. While the content of "best interest" is not "well defined,"[33] for the purposes of the discussion about robo-advisers, it will suffice to know that it is a higher bar than the suitability standard because it requires the adviser to conduct "initial and ongoing due diligence."[34] In essence, this means that the investment adviser fiduciary relationship is a continuing relationship, as opposed to the predominantly transactional nature of broker-dealer relationships.

It is therefore inherently more challenging for robo-advisers to meet the fiduciary standard than the suitability standard, because they "have no human contact with the client" and it is consequently harder for them to identify their client's best interest within the context of an "ongoing relationship."[35] This is the position taken by a broad spectrum of commentators, ranging from Melanie Fein and Professor Arthur Laby to the Massachusetts Securities Division.

Challenges Faced in Meeting the Fiduciary Standard

For instance, the Massachusetts Securities Division has argued that robo-advisers "may be inherently unable" to carry out the fiduciary obligations of an investment adviser.[36] The division arrived at this conclusion primarily on the grounds that robo-advisers 1) do not conduct either initial or ongoing due diligence on clients and 2) often disclaim the obligation to act in a client's best interests.[37] Specifically, on the latter point, they argue that clients are routinely left to provide crucial updates about any changes to their financial or personal situation; robo-advisers typically decline any ongoing duty to make such inquiries, despite the fact that such changes may well have an impact on the appropriateness of investment decisions.[38]

Similarly, Professor Arthur Laby has suggested that robo-advisers will struggle to meet the fiduciary standard because they are unable to capture the nuances that would ordinarily arise in a human-to-human interaction.[39] Professor Laby argues that clients cannot inform robo-advisers of "wrinkles," such when the client anticipates the possibility of significant changes in their financial situation (e.g. an inheritance), and this inability to account for the complete factual matrix means that a robo-adviser cannot be said to be acting in a client's "best interest."[40]

Melanie Fein goes one step further and argues that robo-advisers cannot meet the fiduciary standard not only because they are unable to conduct "ongoing due diligence," but also because they are not equipped

[33] Caelainn Carney (n 22), 598.

[34] Melanie Fein (n 15), 4.

[35] Melanie Fein, 'Are Robo-Advisors Fiduciaries?' (*Social Science Research Network*, 2017) SSRN Scholarly Paper ID 3028268, 18, https://ssrn.com/abstract=3028268 [https://perma.cc/LS4C-QXS7], accessed 12 November 2018.

[36] News and Updates, 'Policy Statement: Robo-Advisors and State Investment Adviser Registration', (*Massachusetts Securities Division*, 1 April 2016) 8, https://www.sec.state.ma.us/sct/sctpdf/Policy-Statement--Robo-Advisers-and-State-Investment-Adviser-Registration.pdf [https://perma.cc/P92H-4CV5], accessed 14 November 2018.

[37] ibid.

[38] Melanie Fein (n 14), 20.

[39] Tara Bernard (n 6).

[40] ibid.

to act in a client's "best interest" during times of severe market corrections.[41] This notion finds support from former SEC Commissioner Kara Stein, who has also raised concerns that "robo-advisers will not be on the phone providing counsel if there is a market crash."[42]

These concerns are not unfounded—after all, even though algorithms are disinterested and dispassionate, their human clients are still subject to the emotional turmoil wrought by market vicissitudes.[43] Since robo-advisers are unable to appreciate the nuances of human emotion (e.g. fear or greed) in providing investment advice, human advisers will still be needed during market downturns to provide the emotional reassurance that algorithms cannot offer. This has been described as the "warm body effect,"[44] and is perhaps best summarized by a Wall Street Journal article that argued "an email or text message in the fall of 2008 would not have sufficed to keep millions of panicked savers from selling, with devastating consequences for their nest eggs."[45]

Overcoming the Challenges

There are two primary issues that have been identified, namely the inability of robo-advisers to 1) conduct "ongoing due diligence," and 2) act in the "best interests" of clients during times of market stress. Both contain a kernel of truth, but I humbly suggest that these concerns have been blown out of proportion.

Firstly, while it is true that robo-advisers are unable to conduct "ongoing due diligence" in the sense that they depend on customer inputs, the issue yet again lies with algorithm design rather than with robo-advisers per se. After all, Professor Laby's concern that robo-advisers are not able to account for "wrinkles" applies to human advisers just as much as it does to robo-advisers—a human investment adviser would also be unable to account for such information if not for the fact that it has been disclosed to him.

The inability to conduct "ongoing due diligence" is thus not an insuperable barrier to meeting the fiduciary standard; critics may have painted robo-advisers as entirely passive platforms, but this is not necessarily the case. Just as an investment adviser might call his clients to check for updates to their financial situation, so too could a robo-adviser be pre-programmed to prompt clients monthly to provide updates (if any) regarding their financial and personal situation.

Secondly, concerns about the inability of robo-advisers to act in the "best interests" of clients during market downturns are similarly overstated. Admittedly, a robo-adviser may not be able to provide the reassurance that comes with the "warm body effect,"[46] but it can hardly be said that human investment

[41] Melanie Fein, 'Robo-Advisors: A Closer Look' (*Social Science Research Network*, 2015) SSRN Scholarly Paper ID 2658701, 5, https://ssrn.com/abstract=2658701 [https://perma.cc/2BXF-TQAQ], accessed 15 November 2018.

[42] Kara Stein, 'Surfing the Wave: Technology, Innovation, and Competition' (*Remarks at Harvard Law School's Fidelity Guest Lecture Series*, 9 November 2015), http://www.sec.gov/news/speech/stein-2015-remarks-harvard-law-school.html [https://perma.cc/MHF8-6T8Y], accessed 19 November 2018.

[43] Bret Strzelczyk, 'Rise of the Machines: The Legal Implications for Investor Protection with the Rise of Robo-Advisors' (2018) 16 DePaul Business and Commercial Law Journal 54, 62.

[44] Jill Fisch, Marion Laboure and John Turner (n 26), 15.

[45] Robert Litan and Hal Singer, 'Obama's Big Idea for Small Savers: "Robo" Financial Advice', (*Wall Street Journal*, 21 July 2015), https://www.wsj.com/articles/obamas-big-idea-for-small-savers-robo-financial-advice-1437521976 [https://perma.cc/C6A4-AC82], accessed 20 November 2018.

[46] Jill Fisch, Marion Laboure and John Turner (n 26), 15.

advisers always have a steady hand on the tiller when market corrections occur. After all, it has been observed by John Bogle that "investors are more volatile than investments."[47]

Considering that human advisers are not likely to be paragons of calm during market crashes, it is not implausible that robo-advisers could do at least as good a job as human advisers in acting for the "best interests" of their clients during times of market stress. For example, robo-advisers could be pre-programmed to execute stop-loss orders during severe downturns, with the trigger price determined by answers to the risk appetite questionnaire during the client onboarding process.

Additionally, it is also possible for robo-advisers to protect the "best interests" of their clients by implementing a trading "kill switch" that is activated when the market volatility exceeds a predetermined benchmark. For example, although it was not specifically referred to as a "kill switch," this occurred on the morning after the Brexit vote in 2016, when Betterment suspended all trading on its platform for over two hours. The rationale behind the trading halt was to protect the "best interests" of Betterment's clients—Betterment explained that it would have been "undesirable" for their clients to trade into such "wild price swings,"[48] and the halt was meant to "protect clients from making panicked decisions that would result in poor trade execution and higher transaction costs."[49]

Therefore, we can see that neither objection is insurmountable, and that perhaps it might be possible for robo-advisers to meet the fiduciary standard after all.

Disclosure-and-Consent Requirements

Up to this point, the arguments in favor of robo-advisers meeting the fiduciary standard have primarily been defensive—i.e. arguing that the criticisms levelled against robo-advisers can be rebutted. However, this subsection will attempt to put forward a novel argument, by arguing that their fiduciary obligations could also be discharged through disclosure-and-consent requirements.

The foundation for this idea is borrowed from a forthcoming article titled *Fiduciary Duties in Financial Regulation* by Professor Howell Jackson and Talia Gillis, in which they point out that "sometimes disclosure-and-consent requirements are so onerous that they approximate rules of conduct."[50]

The reasoning behind this approach is that 1) disclosure-and-consent requirements and 2) conduct rules are essentially two sides of the same "fiduciary duty" coin. In light of the fact that it is structurally more challenging for robo-advisers to meet conduct rules (e.g. since they lack volition), the emphasis should instead fall on the use of disclosure-and-consent requirements as a means by which robo-advisers can

[47] John Bogle, 'Black Monday and Black Swans' (2008) 64 Financial Analysts Journal 30, 34.

[48] Michael Wursthorn and Anne Tergesen, 'Robo Adviser Betterment Suspended Trading During 'Brexit' Market Turmoil' (*Wall Street Journal*, 24 June 2016), http://www.wsj.com/articles/robo-adviser-betterment-suspended-trading-during-brexit-market-turmoil-1466811073 [https://perma.cc/D3KM-J2A8], accessed 21 November 2018.

[49] Megan Ji, 'Are Robots Good Fiduciaries? Regulating Robo-Advisors Under the Investment Advisers Act of 1940' (2017) 117 Columbia Law Review 1543, 1568.

[50] Howell Jackson and Talia Gillis (n 3), 17.

meet the fiduciary standard. After all, as long as the disclosure-and-consent requirements are "sufficiently stringent," they can be approximated to a rule of conduct.[51]

As Professor Jackson and Talia Gillis suggest, a "sufficiently stringent" regulatory framework could take the form of *ex post* disclosure-and-consent requirements, such as "where a fiduciary must obtain consent for every transaction falling within a certain category."[52] An *ex post* disclosure-and-consent requirement might seem like an unduly onerous burden for both robo-advisers and their clients, especially since robo-advising is meant to streamline and automate the investment advisory process. However, it is a necessary imposition if a balance is to be appropriately struck between allowing robo-advisers to discharge their fiduciary obligations and ensuring that clients are protected.

This paper does not have the scope to flesh out the specificities of an *ex post* disclosure-and-consent requirement for robo-advisers, but a model might be drawn from Article 24(4) of the European Union's recently implemented Markets in Financial Instruments Directive II.[53] The full text of the provision is too long to reproduce here, but it will suffice to note that Article 24(4) imposes an *ex post* disclosure requirement on investment advisers that is precisely of the sort desired in this subsection, with the only difference being the lack of an additional requirement for informed consent.

Amongst other things, Article 24(4) requires that the following information be provided to clients "in good time":

> whether or not the advice is provided on an independent basis;
>
> whether the advice is based on a broad or on a more restricted analysis of different types of financial instruments and, in particular, whether the range is limited to financial instruments issued or provided by entities having close links with the investment firm or any other legal or economic relationships… so close as to pose a risk of impairing the independent basis of the advice provided[54]

Additionally, Article 24(4) also requires that "the information about all costs and charges . . . which are not caused by the occurrence of underlying market risk, shall be aggregated to allow the client to understand the overall cost as well as the cumulative effect on return of the investment, and where the client so requests, an itemized breakdown shall be provided. Where applicable, such information shall be provided to the client on a regular basis . . . during the life of the investment."[55]

Ex post disclosure-and-consent requirements are thus a possible means by which robo-advisers could discharge their fiduciary obligations, although this is by no means as straightforward as meeting the suitability standard. After all, no matter how stringent they may be, the notion that meeting disclosure-

[51] Howell Jackson and Talia Gillis (n 3), 21.

[52] ibid; the specific example used is Section 206(3) of the Investment Advisers Act of 1940, which requires investment advisers to acquire consent for every relevant transaction when trading with a client as principal. Professor Jackson and Talia Gillis argue that "such a consent requirement creates an insuperable barrier to certain kinds of transactions, effectively approximating a rule of conduct."

[53] Article 24(4) of Directive 2014/65/EU of the European Parliament and of the Council of 15 May 2014.

[54] ibid.

[55] ibid.

and-consent requirements alone could be sufficient for a robo-adviser to perform its fiduciary duty does not comport with the orthodoxy of investment adviser fiduciary law.

However, although it may be easy to conclude that this proposal holds no prospect of success, it is important to pay heed to recent guidance from the SEC, which hints at a likelihood that such a disclosure-based strategy could work.[56] Specifically, the SEC appears to be amenable to the notion that robo-advisers can meet the investment adviser fiduciary standard, provided they comply with key qualitative metrics: such as *ex ante* "adequate and effective disclosure."[57]

In fact, the SEC's suggestion of an *ex ante* disclosure-only requirement is less rigorous than what has been proposed in this subsection. What they suggest is more similar to a hedge clause, in that they recommend that robo-advising firms alert potential clients to, amongst other things, "the particular risks inherent in the use of an algorithm;[58] they also emphasize that the disclosures should be written in "plain English" and brought to the attention of potential clients (e.g. "through design features such as pop-up boxes").[59] In essence, the SEC seems to suggest that sufficient *ex ante* disclosure would entail ensuring that clients signing up to a robo-advising platform do so with a heightened awareness of its unique features and attendant risks.

The proposal in this subsection goes even further than the SEC's *ex ante* disclosure-only requirement by arguing for an *ex post* disclosure-and-consent requirement; therefore, even though it may be unconventional, it is likely to be sufficient to allow robo-advisers to discharge their fiduciary obligations.

Conclusion

Ultimately, this paper has sought to demonstrate that robo-advisers are capable of meeting the suitability and fiduciary standards, and thus the prevailing regulatory framework should apply to them—meaning that at minimum only one human being is needed for investment advice to be dispensed.

However, an important caveat is that the preceding discussion takes place at a very high level of abstraction: although it is a helpful intellectual exercise to consider the minimum amount of human involvement required for a robo-adviser to provide investment advice, in practice robo-advising firms are unlikely to be pushing that envelope. After all, dual registrants of the sort discussed in this paper will often have assets under management in excess of $100 million, and it would be inadvisable for a single individual to be responsible for such vast sums.

Lastly, the overarching theme of this paper has been that robo-advising algorithms are our friend, not foe; and that regulators should be careful to avoid knee-jerk responses that risk throwing the baby out with the bathwater. It is sometimes said that it is "better to be approximately right than precisely wrong,"[60]

[56] SEC Division of Investment Management (n 29).

[57] Nicole Iannarone, 'Computer as Confidant: Digital Investment Advice and the Fiduciary Standard' (2018) 93 Chicago-Kent Law Review 141, 158.

[58] SEC Division of Investment Management (n 29), 4.

[59] ibid 5.

[60] This aphorism is often attributed to Warren Buffett.

and the advent of robo-advising provides us with the opportunity to do just that; the path ahead is uncertain but filled with transformative potential, and in stepping forward we should be careful not to sacrifice financial innovation on the altar of over-regulation.[61]

[61] Chris Brummer and Yesha Yadav, 'FinTech and the Innovation Trilemma' (*Social Science Research Network*, 2018) SSRN Scholarly Paper ID 3054770, 12 https://www.ssrn.com/abstract=3054770 [https://perma.cc/88QQ-DJAJ], accessed 21 November 2018.

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Note: The Treasury Department FinTech Report of July 2018 addresses issues related to robo-advising on pages – 159 to 164.