The Role of Robo Advisors in Retirement Security

University of Michigan Gerald R. Ford School of Public Policy

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Introduction

In the Fall of 2018, Corey Fitzgerald, Jessica Kaplan, and Elizabeth Nelson, Masters Degree Candidates at the University of Michigan's Gerald R. Ford School of Public Policy, partnered with members of the Government Accountability Office (GAO) Employment, Work, and Income Security Team to produce this report. The report analyzes the potential impact of Robo Investment Advisors on retirement security. Over the course of the semester the student team conducted research to address the following topics:

- The importance of financial advice to retirement security
- Financial advice access, quality, and accountability
- Emerging trends in digital investment advice (robo advisors)
- Issues in digital investment advice
- Financial advice regulation and differences between human and robo advisors
- Legislative and regulatory landscape

The student team conducted stakeholder interviews, analyzed relevant academic literature, industry reports, and articles, and investigated robo advisory firms' websites and disclosures. The scope of this project was limited to the United States market and trends in investment and retirement within the U.S.

The student team's work culminated in a presentation to the GAO on December 10th, 2018. This report serves to complement that presentation.

Current State of Retirement Security in the U.S.

With the U.S. population over the age of 65 projected to reach 20.9 percent by 2050, retirement security is a pressing issue not only for retirees but for the broader health of the U.S. economy and future generations.[1] Currently, one-third of beneficiaries depend on Social Security benefits for more than 90% of their retirement income. Only 51% of private sector workers had access to a retirement plan in 2014 and only 40% of workers participated in a workplace retirement. Furthermore, 59.3% of working age individuals do not own any retirement account assets.[2]

The three pillars of retirement security include Social Security, employer-sponsored retirement savings, and individual savings. As The GAO previously identified in its 2017

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[1] Poterba, James M. 2014. "Retirement Security in an Aging Population." American Economic Review, 104 (5): 1-30.
[2] NIRS "*Retirement in America: Out of Reach for Working Americans?*" 2018

State of Retirement report, each pillar faces major challenges in the coming decades.[3] Social Security, which currently replaces only 40% of average earners' income, is projected to be unable to pay full benefits as early as 2035, when the Trust Fund may only be able to pay beneficiaries 75% of their benefits.[4] Within employee-sponsored plans, there has been a shift from predictable defined benefit plans (e.g. pensions) to self-directed defined contribution plans, transferring more risk and responsibility onto individuals for their retirement. Finally, the individual savings pillar is threatened by economic and societal trends including, but not limited to, slow wage growth, household debt, increased life span, and soaring healthcare costs.[5]

In light of these challenges, some question whether or not new technologies can play a role in alleviating barriers to retirement saving or democratizing access to investment advice. Burgeoning technologies like digital investment advice algorithms called "Robo Advisors" have changed the investment advisory landscape in unstudied ways, and the unprecedented shift from human accountability to algorithmic accountability brings new challenges to the regulation of this industry, particularly with regard to retirement.

Working Definition of Robo Advisors

For the purposes of this report, Robo Advisors have three key attributes, adapted from The Financial Industry Regulatory Authority (FINRA)'s report on digital investment advice:[6]
1. **Rule-based investment advice and services.** Robo advisors are digital tools that use algorithms to execute a range of services related to financial investment management. These services may include but are not limited to customer profiling, asset allocation, portfolio selection, trade execution, portfolio rebalancing, tax-loss harvesting, and portfolio analysis.
2. **Digital platform.** Application or web-based access to financial advice and investment portfolios.
3. **Direct-to-consumer.** Professional wealth managers and financial advisors routinely rely on portfolio allocation software and algorithms to determine asset allocation for clients. What distinguishes a "robo advisor" in this context is their consumer-facing capabilities, which is a growing trend in the market since 2008.

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[3] Office, U. S. G. A. (2017). The Nation's Retirement System: A Comprehensive Re-evaluation Is Needed to Better Promote Future Retirement Security, (GAO-18-111SP). Retrieved from https://www.gao.gov/products/GAO-18-111SP
[4] Office, U. S. G. A. (2017), Ibid.
[5] Office, U. S. G. A. (2017), Ibid.
[6] The Financial Industry Regulatory Authority (FINRA). (2016). *Report on Digital Investment Advice* (p. 17). 1735 K Street, NW Washington, DC 20006-1506. Retrieved from https://www.finra.org/sites/default/files/digital-investment-advice-report.pdf

How Do Robo Advisors Work?

Each robo advisor is slightly different, but Charles Schwab explains a process that is representative of the majority of robo advisors:[7]

1. The client completes a brief questionnaire to assess his/her investment needs (risk tolerance, investment amount, time horizon, age, income, etc.).
2. The robo advisor automatically builds the client a diversified portfolio of Exchange-Traded Funds (ETFs) selected by a team of investment professionals and automatically rebalances portfolio.
3. Experts regularly monitor market activity and every underlying investment to ensure the client's portfolio is rebalanced appropriately by a sophisticated algorithm.
4. Some robo advisors include access to live consultants or Certified Financial Planner (CFP)™ professionals who can help further hone and personalize the client's financial plan.
5. Clients can log in to their account to track their progress, make adjustments, add contributions, and continue working toward new goals.

The Robo Advising Market

The growth of robo advisors has risen in tandem with a sea-change within wealth management as institutional and individual investors shift from actively managed funds to passively managed funds. According to Moody's, passively managed funds currently account for 29% of the market but are projected to grow to more than half between 2021 and 2024.[8] Given this context, robo advisors are well situated to offer a digital product that streamlines and customizes investment advice for clients seeking low cost and hands-off investments.

Prior to the financial crisis in 2008, algorithm-based investment advice only existed as tools for human advisors that were embedded within existing financial institutions. Institutional wealth managers have long relied on software to automate elements of their workflow. In 2008, the first direct-to-consumer robo advisors, Betterment and Future Advisors, were launched. These services sought to fill a gap of investment advice with lower costs and attract new and younger generations who were skeptical of the stock market and financial advice post-2008.

Since 2008, it has been a rapidly growing market with dozens of new entrants. In 2014, large, incumbent institutions like Charles Schwab, Vanguard, and Fidelity began to

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[7] What is a Robo Advisor. (2018). Retrieved December 19, 2018, from https://www.schwab.com/public/schwab/investment_advice/what_is_a_robo_advisor

[8] Hunnicutt, Trevor. "Index funds to surpass active fund assets in U.S. by 2024: Moody's." *Reuters.* February 2, 2017. https://www.reuters.com/article/us-funds-passive/index-funds-to-surpass-active-fund-assets-in-u-s-by-2024-moodys-idUSKBN15H1PN

introduce their own robo advising products. In recent years, there have been numerous exits, mergers, acquisitions, and partnerships within the market, as firms begin to diversify their product offerings and expand their capabilities. For example, in October of 2018, Wealthfront announced a strategic partnership with Intuit, which will allow integration of tax data through TurboTax for Wealthfront customers.[9]

While the current robo advising industry is rapidly evolving, it still only represents a small share of total assets under management (AUM) in the U.S. market. As of 2016, total AUM in the U.S. amounted to $17 trillion, with robo advisors only making up $150 billion (0.9%).[10] A recent KPMG report, however, projects the robo advising industry to grow to a $2.2 trillion market by 2020.[11]

Within this market, the top five firms by AUM are Vanguard Personal Advisor Service, Schwab Intelligent Portfolios, Betterment, Wealthfront, and Personal Capital. Vanguard and Schwab, while being the newest entrants to this market, make up the majority of AUM (Appendix A: Robo Advisor Matrix). These products promise cost-efficient investing and lower overhead than personal financial advisors through automated tasks and services.

Robo advisors' fees range (as a percentage of AUM) from 0 to 89 basis points, or 0.89%, compared to human advisors who charge 1% on average. Vanguard and Schwab offer a hybrid model, whereby investors receive automated advice with some access to a human advisors. Stand-alone robo advisors like Betterment offer a tiered business model, whereby investors only have access to automated advice until they reach a specified investment AUM threshold, at which point they gain access to a human advisor and/or other services.

These lower cost and lower investment minimums attract younger investors looking for a hands-off investment advisory service. The initial target audience had been Millennials with less complex financial advice needs who are still accumulating wealth. This strategy, however, may be changing as new firms and service target older generations with potentially more sophisticated algorithms that can address complex financial needs of individuals nearing retirement. One such firm is United Income, which specifically markets to baby boomers seeking more comprehensive financial advice.

While the core competency of most robo advisors is targeting the "individual investment" pillar of retirement security, some firms have introduced business to business model for

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[9] Wealthfront News. "Announcing our Partnership with Intuit." *Wealthfront.com.*
https://blog.wealthfront.com/intuit-partnership/
[10] "Customizing passive investing: What the passive revolution foretells for automated advice." *Goldman Sachs Group Investment Research.* September 25, 2017
[11] "Robo Advising: Catching Up of Getting Ahead." *KPMG LLP.* Dealbook Conference 2015.
https://home.kpmg.com/content/dam/kpmg/pdf/2016/07/Robo-Advising-Catching-Up-And-Getting-Ahead.pdf

401(k) retirement plans. Citing a broken distribution model, Betterment Business, For Us All, Morningstar, and Financial Engines, offer ERISA fiduciary advice, account management, fund selection and compliance and administration services to businesses.[12]

While there has been considerable hype around and growth within the robo advising landscape, it is important to assess the added value of robo advisors compared to existing services. We have identified four comparison services:

- Robo advice vs. Defined Contribution plans
    - The investment advice provided by most robo advisors is functionally similar to that of a defined contribution plan or target date fund. However, given that robos are available to individuals who do not have access to an employer-based plan, they may be more widely accessible.
- Robo advice vs. Index Funds
    - Given that robo advisors typically use index funds, the investment advice and mechanism does not differ very much from an index fund. Many robo advisors will have additional and higher fees than simply an individual investing in an index fund, or series of index funds, themselves. The robo advisor would provide a user-friendly interface and account aggregation that may not be available otherwise.
- Robo advice vs. Average *Active* Do-It-Yourself (DIY) Investor
    - Given that research tells us most DIY *active* investors do not outperform the market, robo advisors offer a significant added value compared to DIY active investors, as they avoid risk of human behavioral biases. The robo advisor can help clients "stay the course" and can provide automatic rebalancing, tax loss harvesting, etc.
- Robo advice vs. Traditional Human Financial Advisor
    - Some stakeholders expressed concern of the loss of face-to-face interaction with human advisors, particularly the loss of "hand-holding" in times of market turbulence. However, robo advisors' clientele may not have had prior access to a human investment advisor.

Robo Advisors and the Regulation of Financial Advice

This section examines how robo advice fits into the existing regulation of financial advice, specifically investment advice. Closely related fields have seen the adoption of "robo advisor" tools including banking and insurance, however, the scope of this report is confined to investment advice. Further research could also examine how broad concerns raised by robo advisors compare with other financial technologies, and how regulators are approaching their regulation from an ecosystem lens.

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[12] Iacuri, Greg. "401(k) robo revolution is underway." *Investment News.* (March 17, 2018) https://www.investmentnews.com/article/20180317/FREE/180319943/401-k-robo-revolution-is-underway

Regulatory Landscape for Financial Advice

Financial advice is regulated by two primary agencies: the Department of Labor (DOL) and the Securities and Exchange Commission (SEC), while the Internal Revenue Service (IRS) also plays a role in the regulation of Individual Retirement Accounts (IRAs). Figure 1 highlights some of the core standards applicable to financial advice, retirement accounts, and financial advisors.[13]

Figure 1 – Standards and Rules: Investment and Retirement Advice

	Suitability Standard	Fiduciary Standard (Advisers Act)	*Best Interest Rule*	*Fiduciary Rule (DOL)*	Fiduciary Standard (ERISA)
	Individual Savings Pillar				**Employer-Sponsored Pillar**
Regulatory Entity/ies	SEC	SEC	SEC	DOL/IRS	DOL
Status			Proposed	Vacated	
Applies to:	Broker-Dealers	Registered RIAs Investment Advice and Management	Broker-Dealers	Individual Retirement Accounts	Employer-sponsored Retirement Accounts
Requires:	Reasonable effort to recommend suitable financial products	Duty of Care (due diligence) Disclosure of Conflicts of Interest			Duty of Care and Duty of Loyalty (conflict-free advice) No variation of compensation across portfolios

Most notably, the fiduciary standards vary across agencies, with some more stringent than others. From a consumer perspective, these standards are difficult to understand and know whether or not a financial advisor is required to act in their best interest, disclose when they make recommendations not in the client's best interest, or must only adhere to the suitability standard, where broker-dealers must only make a reasonable effort to recommend suitable financial products. Further, under different circumstances a fiduciary standard may apply to an account, an advisor, or a firm and distinguishing these nuances for consumers is time-consuming and comes with a high cost.

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[13] Non-governmental associations and organizations like the Certified Financial Planners Board (CFP) and National Association of Personal Financial Advisors (NAPFA) have their own Fiduciary standards and definitions; The 4 Different Types Of Fiduciary Financial Advisors. (2017, January 12). Retrieved December 18, 2018, from https://www.kitces.com/blog/the-4-different-types-of-financial-advisor-fiduciaries/;

When looking at the subset of financial advice or investment advice related to *retirement advice,* there are several important considerations:

1. Retirement accounts through employer-sponsored plans are held to the 1974 Employer Retirement Security Act (ERISA) fiduciary standard and are not enabled to provide advice not in the client's best interest.

2. On the individual investment side, registered RIAs adhere to SEC fiduciary standard while certain additional professional certifications adhere to voluntary, and similar fiduciary standards.

3. The DOL attempted to extend a similar protection to IRAs through the 2015 DOL fiduciary rule, however, the current standards for these accounts are only the suitability standard. For non-retirement accounts overseen by the SEC, firms or accounts that are not RIAs are only held to the suitability standard.

4. Recent developments around the adoption of the DOL's 2015 fiduciary rule (and subsequent vacatur in the summer of 2018[14]) which would have applied stricter standards to IRAs, and the new proposed SEC Regulation Best Interest rule for broker-dealers demonstrate the dynamic nature of regulation in this arena as well as the relatively low bar applied to financial advice across robo advisors and traditional financial advisors alike.

Regulatory Complexity and Consumer Protection

Untangling the landscape for financial regulation and understanding the qualifications and incentives of a financial advisor is difficult from a consumer's perspective. Unlike the employer pension paradigm, current retirement saving within and beyond employer-sponsored plans is the responsibility of the individual. This includes navigating the market for financial and investment advice.[15] For one, consumers face an "alphabet soup" of certifications and qualifications that may be challenging to navigate. Consumers looking for financial advice cannot easily determine who is a fiduciary, and for that matter which type of fiduciary standard their advisor may be held to – for example, are they required to simply disclose conflicts of interest or are conflicts of interest banned? These concerns are similar for robo advisors and traditional financial advisors, illustrated in figure 2.

"The baseline is a confusing and opaque market for advice, particularly around how advisors are compensated" – Anonymous, Stakeholder Interview

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[14] The rule was vacated this summer citing "unreasonableness," and that the Dept. of Labor's implementation of the rule constitutes "an arbitrary and capricious exercise of administrative power," via Investopedia. (2018, October 18). The DOL Fiduciary Rule Explained. Retrieved December 7, 2018, from https://www.investopedia.com/updates/dol-fiduciary-rule/
[15] Investor Bulletin: Robo-Advisers | Investor.gov. (2017, February 23). Retrieved October 29, 2018, from https://www.investor.gov/additional-resources/news-alerts/alerts-bulletins/investor-bulletin-robo-advisers

Newer entrants into the robo advisory marketplace are generally registered investment advisers (RIAs) and are incentivized to differentiate themselves on the marketplace for financial advice through virtuously adhering to higher standards, while for recent legacy or incumbent firms adding services in the robo advisor market it was more difficult to distinguish their vertical product integration, revenue models, incentive structure and regulatory framework.

Figure 2 – Consumer Perspective on Financial Advice

A Complex Regulatory Landscape: Consumer Perspective
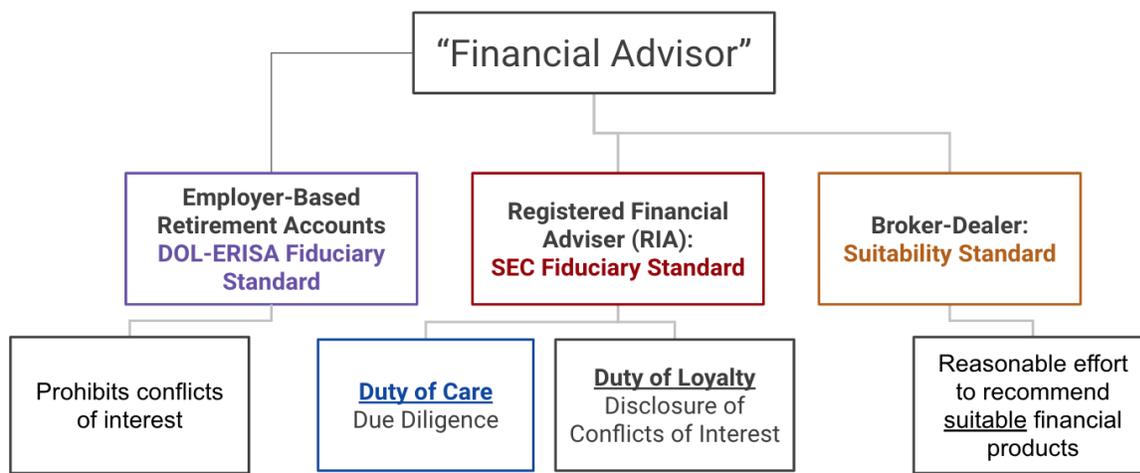
Can a Robo Advisor Be a Fiduciary?

There is a contentious debate among legal scholars as well as industry and consumer advocates about whether or not a robo advisor can be a fiduciary.[16][17][18][19] An article from Barron's succinctly summarizes, "In one camp are those who say most robos already act as fiduciaries. Most if not all are RIAs, required to act and advise in clients' best interests. Robos RIAs in the 401(k) market must also comply with ERISA's fiduciary rules. The opposing camp argues that it's impossible for robo advisors to act as fiduciaries. 'People have duties,' Elliot Weissbluth, founder and CEO of HighTower, tells MarketWatch. 'Machines have functions. Machines don't yet have the capacity to discharge a duty to a human being.'"[20]

[16] Fein, M. L. (2017). *Are Robo-Advisors Fiduciaries?* (SSRN Scholarly Paper No. ID 3028268). Rochester, NY: Social Science Research Network. Retrieved from https://papers.ssrn.com/abstract=3028268

[17] ji, M. (2017). ARE ROBOTS GOOD FIDUCIARIES? REGULATING ROBO-ADVISORS UNDER THE INVESTMENT ADVISERS ACT OF 1940. *Columbia Law Review*, *117*(6), 1543–1583.

[18] Baker, T., & Dellaert, B. (2018a). Regulating Roboadvice Across the Financial Services Industry. *Iowa Law Review*, *713*+.

[19] Lightbourne, J. (2017, December). ALGORITHMS & FIDUCIARIES: EXISTING AND PROPOSED REGULATORY APPROACHES TO ARTIFICIALLY INTELLIGENT FINANCIAL PLANNERS. *Duke Law Journal*, *67*(3), 651-.

[20] Robo Advisors: Fiduciaries or Not? (2017, March 10). Retrieved November 10, 2018, from http://www.barrons.com/articles/robo-advisors-fiduciaries-or-not-1489167529

> *"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"* – 2017 SEC Guidance[21]

The following section analyzes robo advisors within the fiduciary framework, examining whether or not they are capable of serving in a client's best interest understood through the lens of the components of the fiduciary standard: 1) Duty of Care and 2) Duty of Loyalty.

Can a Robo Advisor Fulfill the Duty of Care?

Duty of Care: "Employ reasonable care to avoid misleading clients and you must provide full and fair disclosure of all material facts to your clients and prospective clients."[22]

The Duty of Care relates to an advisor's ability to thoroughly determine a client's position in terms of risk tolerance, goals, expected retirement, and income in order provide thoughtful recommendations. Initially, several concerns emerge with regards to robo advisors as summarized by the SEC:[23]

- Length and quality of questionnaires vary
- Lack of face-to-face, human interaction could limit information collected from clients
- Clients cannot provide context to responses and financial circumstance
- Robots are not good at gathering information from open-ended questions, but can be designed to ask as many questions as they want
- Inability to deal with internally inconsistent responses to questionnaires
- Challenge of handling self-directed changes in investment strategies that may not be in clients best interest

When asking whether a robo advisor can perform the Duty of Care, the implicit question is whether or not an algorithm can be programmed to perform this duty. A robo advisor creates investment allocation portfolio recommendations based on the information furnished through and processed by the firms' algorithms, some consisting of questionnaires as brief as five questions and others longer than 25 questions, although the length of questionnaires is too simplistic to represent the comprehensiveness of information collected.

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[21] IM Guidance Update: Robo Advisors. (2017, February). US Securities and Exchange Commission Division of Investment Management. https://www.sec.gov/investment/im-guidance-2017-02.pdf
[22] Investment Advisers Act of 1940
[23] IM Guidance Update: Robo Advisors. (2017, February). Ibid.

As stated, concerns exist around whether this questionnaire is sufficient. Perhaps a consumer has a high debt-to-income ratio and not investing is really in their best interest, or the consumer holds other investment accounts with differing risk profiles and the additional account would be fine with a higher risk allocation. Of course, robo advisors neither promise nor represent their services to be the same as comprehensive financial planning, information typically disclosed on company websites and in digital product disclosures. Indeed, in Canada and some other countries, firms refer to robo advice as "light advice."

Can a Robo Advisor Fulfill the Duty of Loyalty?

Duty of Loyalty: a "fundamental obligation to act in the best interest of your clients"..."should not engage in any activity in conflict with the interest of any client.[24]"

Although the Department of Labor heralded robo advisors as a cost-effective, conflict-free source of financial advice in 2015,[25] algorithms do not automatically provide "more objective" advice. Their advice is only as objective as they were created to perform based on the incentives and goals of firms that created them. Mirroring the existing investment advisory industry, the biggest grey areas and potential red flags with robo advisors surround the Duty of Loyalty. It is incredibly important for consumers and regulators to understand:

1. The underlying investment philosophy of firms

2. Their governance structures

3. Their incentives, fees, commissions, revenue models and partnerships

4. Their disclosures surrounding conflicts of interest (as with other financial advice firms focusing on personal financial advice).

Since access to firm's proprietary algorithms, internal governance, and business models were unattainable, examining firm's disclosures and Form ADV are the public point of access to understanding these issues. Given that the SEC fiduciary standard merely requires the disclosure of conflicts of interest and is less strict than the ERISA standard, many robo advisors retain but disclose conflicts. Some of the key concerns in this area have already been identified; Megan Ji notes that firms provide disclosures in their robo advisors commonly including: "(1) utilization of an affiliated broker-dealer, and (2) promoting affiliated services and products."[26] Two specific examples include[27]: (1), prevalent in maybe 20% of advice industry is that advising firm has affiliated broker-dealer. Betterment's disclosure indicates that "clients must establish a brokerage relationship with

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[24] Investment Advisers Act of 1940

[25] Via Fein, M. L. (2015). *Robo-Advisors: A Closer Look* (SSRN Scholarly Paper No. ID 2658701). Rochester, NY: Social Science Research Network. Retrieved from https://papers.ssrn.com/abstract=2658701

[26] ji, M. (2017). ARE ROBOTS GOOD FIDUCIARIES? REGULATING ROBO-ADVISORS UNDER THE INVESTMENT ADVISERS ACT OF 1940. *Columbia Law Review*, *117*(6), 1543–1583.

[27] ji,M. (2017). Ibid.

our affiliated broker-dealer…" regardless of best interest of client, and (2) firms may recommend other services not in client best interest: Schwab's robo SIP "0 fee" service invests a share of client cash in their retail banking service ("cash allocation").

In another paper comprehensively reviewing disclosures from three top robo advisors, Melanie Fein identifies specific language from firms, demonstrating how firms display conflicts of interest in long, cumbersome disclosures:[28]

- "The client understands and agrees that ... [the client] has not engaged [the robo-adviser] to provide any individual <u>financial planning</u> services."
- "the [client] is responsible for determining that investments are in the best interests of [the client]'s financial needs."
- "all brokerage transactions ... will be routed to [the robo-adviser's brokerage affiliate] for execution, which may not always obtain as favorable a price as another broker-dealer."[29]

Additional examples of conflicts of interests across the top five robo advisors are included in the Robo Advisor Matrix (See Appendix A).

Disclosures

Information communicated through robo advisors' disclosures is not substantially different from traditional financial advisors' disclosures. In general, disclosures are long, complex, and often assume financial literacy on behalf of the reader. Disclosures also assume that clients take the time to read and understand them.

Several unique considerations apply to disclosures for robo advisors. The main difference is that information is only communicated through a digital platform. Disclosures therefore demand clear explanation of the business model and algorithms used. They also need to be abundantly clear about the scope of the advice provided (e.g. tax loss harvesting is not tax advice, investment advice is different from comprehensive financial planning). Finally, both the aesthetic choices in the user interface design and the timing of disclosures are important to ensure consumers are making informed decisions. Some firms pride themselves on the application of behavioral finance and behavioral economics underpinning their robo advisory products, but the same principles must apply to information included in disclosures for consumers to be "nudged" in the right direction and ensure they have full information about the products and services they are using.

Additional Considerations

Given some of the concerns raised above, it is also important to highlight several possible advantages of robo advisors with regards to regulation and serving consumers:

1. Robo advisors potentially provide a "black box" or a permanent record of the advice

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[28] Fein, M. L. (2015). *Robo-Advisors: A Closer Look*, Ibid.
[29] Fein, M. L. (2015). *Robo-Advisors: A Closer Look*, Ibid.

provided *based on the inputs provided by clients.*[30] This process could mirror a "handbook" for human advisors, but it could also go a step further providing a way for regulators to examine advice ex post facto. Firms and regulators could more easily catch discriminatory advice.

2. Testing and backtesting requirements of algorithms: Through additional availability of data on advice provided based on client inputs, it is theoretically possible for more comprehensive testing of algorithms. First, testing methods could compare and validate consistency of investment advice across clients and across firms. Second, experiments could validate that a robo advisor's algorithms perform true to the firm's professed investment philosophy. Current regulation mandates many firms to keep this kind data for a minimum of seven years.

3. "Translation" of the algorithm into plain English for compliance purposes could assist consumers and regulators in better understanding assumptions and process of robo advice algorithms, with the caveat that firms may not wish to disclose proprietary algorithms to protect their competitive advantage (although, our research shows that most robo advisors appeared substantially similar and based on similar passive portfolio investment principles).

Accumulation vs. Decumulation

In general, many robo advisors have a compelling incentive to be transparent with their fee structure. Many early market entrants, including robo advisor only firms, have low fees as a percentage of AUM to align the incentives of an investor and advisor. (As the assets grow, so do the advisor's fees, as it calculated as a percentage of the assets.) This phase of retirement preparedness is referred to as the "accumulation phase." There is emerging literature around meeting the needs of consumers approaching retirement called the "decumulation phase." There are fewer opportunities for incentive alignment in this phase as consumers draw down funds and deplete their assets. There are also few fee structures that incentivize comprehensive financial advice, for example in meeting consumer needs around Social Security draw down, Medicare, and other tax decisions. More attention is warranted to the ability to align incentives during the decumulation phase.

Regardless, the growth of robo advisory services catering to the decumulation phase will likely continue to grow and understanding the unique needs of early career savers compared with new retirees and aging adults will be vital. Baker and Dellaert (Figure 3) describe some of the features being built into robo advisors that are compatible with, and useful to, the decumulation phase.

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[30] Baker, T., & Dellaert, B. (2018b, January). Regulating Robo Advice Across the Financial Services Industry. *Iowa Law Review*, *103*(2), 713-.

Figure 3 – "Survey of Decumulation Features of Leading Investment Robo Advisors" [31]

Firm	Business Model	Side Payments	Human Assist	Auto reallocate with age?	Retirement income tool?	Annuity support?	Soc. Sec. tool?	Medicare tool?
United Income	Indep. B2C Senior focus	None	Robo or Hybrid	Yes	Yes	Human advisor; tool in production	Yes	Human advisor; tool in production
True Link	Indep. B2C Senior focus	Annuity commissions	Pure hybrid	Yes	Yes	Human advisor	No	No
Betterment	Indep. B2C	None	Robo or Hybrid	Yes	Yes	Human advisor	Yes	Human advisor
Wealthfront	Indep. B2C Millenial focus	Fees from related fund (can opt out)	Pure robo	No	No	No	No	No
Vanguard	FundCo B2C	Fees from related funds & annuity commissions	Pure hybrid	Yes	Yes	Human advisor	Yes	Human advisor; tool in production
Schwab	FundCo B2C	Fees from related funds & annuity commissions	Pure hybrid	No	Yes	Human advisor	Human advisor	Human advisor
BlackRock iRetire	FundCo B2B2C	Fees from related funds	Adviser tool	Advisor dependent	Yes	Yes	No	No
Income Discovery	SAAS B2B & B2B2C	None	Adviser tool	Yes	Yes	Yes	Yes	No

Conclusions

We have developed several conclusions from our research:

First, the investment advisory industry will not solve the retirement security crisis. Experts are skeptical that financial advice (robo or human) will improve welfare and retirement security in a meaningful way. This may be because the challenges of retirement security extend beyond what can be addressed through financial advice. Robo advisors may, however, improve convenience and accessibility of investments within the individual savings pillar, but for limited population that is earning enough to save and invest.

Second, the Fiduciary Rule should apply to all investment accounts, especially retirement accounts. Broker-dealers are merely held to a Suitability Standard, meaning inherent conflicts of interests are permissible and they can recommend certain products in their own best interest (i.e. commissions) with high fees for their clients. Robo advisors may offer an alternative choice for consumers with much lower fees and transparent products such as index funds or Exchange Traded Funds (ETFs).

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[31] "Table 1" from Baker, Tom and Dellaert, Benedict G. C., Behavioral Finance, Decumulation and the Regulatory Strategy for Robo-Advice (July 24, 2018). U of Penn, Inst for Law & Econ Research Paper No. 18-19. Available at SSRN: https://ssrn.com/abstract=3219955

Third, robo advisors are changing the investment advisory industry in a myriad of ways. Many legacy firms have introduced Robo Advising Services, thus changing the way they do business and interact with clients. Certified Financial Planners (CFPs) have benefitted from the time saved in the client onboarding and intake process, which could conceivably allow them to focus their time and energy on more value-added tasks, provided better client service.

Recommendations for Further Research

1) Many claim robo advisors represent a "democratization of investment advice." To evaluate the public value of robo advisors, we need to understand:
  - Are robo advisors reaching new investors who would not otherwise have access to financial advice? What proportion of those customers would not have met minimum investment requirements for traditional human advisors?
  - Are more people investing and saving as a result? How many new customers are first-time investors?
  - Are robo advisor users beginning to save for retirement earlier than they would have without these platforms?
  - Or, are robo advisors just another, lower cost tool for the investment savvy?

2) We also recommend a comprehensive analysis of the other applications of these technologies and evolving applications of technology to robo advisors
  - How have similar consumer-facing algorithm-based advice services impacted lending, mortgages, insurance, and other banking products?
  - What additional data and technologies are being built into robo advisor models on the backend? (Machine learning, predictive modeling, integration with other consumer data)
  - What additional technologies are being built into robo advisor models on the front end? (Chat clients, Alexa)

3) We need a clear understanding of client data protection and firms data security practices
  - How are robo advisors using and protecting client data?
  - Are robo advisors selling data? Might they plan to?

4) Finally, an international comparison that would track developments in regulatory landscape, and benchmarking progress.
  - How have they adapted their regulations to accommodate new financial technology in general?
  - How have other countries regulated financial advice?

Appendix A: Robo Advisor Matrix

Firm	Category	Year Founded	Assets Under Management	Primary Model	Secondary Model	Minimum Investment Required?	Advisory Fees	Average ETF Expense Ratio	Type of funds they are invested in	Cash Allocation	Do They Have Their Own Funds?
Vanguard Personal Advisor Services	Hybrid (Incumbent)	2015	$112 Billion	Hybrid: Robo paired with human personal advisors	N/A	$50,000	0.3% (for under $5 million AUM)	N/A	Vangaurd Advisors, Inc. (VAI) Index funds and actively managed	0%	Yes
Schwab Intelligent Portfolio	Hybrid (Incumbent)	2015	$30 Billion	Hybrid: Robo paired with human personal advisors	N/A	$5,000	Management: 0%, advisory: 0%	0.23%	ETFs; Cash	6-29%	Yes, 53 Schwab and 3rd party ETF
Betterment	Tiered	2008	$15 Billion	Betterment Digital: Fully automated	Betterment Premium: Hybrid human and auto advice	Digital: no minimum. Premium: $100,000	Digital: 0.25%; Premium: +0.40%	0.15%	ETFs that track 13 Asset classes. 6 in equities, 6 in fixed income	0%	No
WealthFront	Tiered	2008	$10 Billion	Fully Automated	$100k+ : direct indexing (enhanced tax loss harvesting services)	$500	0.25%	0.14%	Vangaurd ETFs (primary) Schwab and State Streets (secondary)	0%	No
Personal Capital	Tiered	2009	$8 Billion	Fully Automated	$200,000+: access to smart indexing services	$100,000	0.49% - 0.89%	0.08%	ETFs	Yes Ave. not stated	No

Appendix B: Stakeholder Interviews

Stakeholder Organizations
AARP
Betterment
Boston College Center for Retirement Research
CFP Board
FinRegLab
Milken Institute
U-M Center on Finance, Law and Policy
U-M Computer Science & Engineering
U-M Ford School of Public Policy
U-M Law School
U-M Retirement Research Center

Additional Research

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