

DIGITAL INVESTMENT ADVICE: Robo Advisors Come of Age

SEPTEMBER 2016

Introduction

The financial services industry is undergoing a significant transformation in the way that advisory services are provided and delivered to individual investors. This evolution is being driven by a variety of factors from new regulations, to changing demographics, to technological advances. These changes are occurring at a time when the need for financial advice has never been greater, as savers grapple with global and geopolitical uncertainty, prolonged low and negative interest rates, and longer lifespans. Despite these significant headwinds, many innovators in the financial advice industry are working to ensure that individuals have access to financial advice that can meet their needs. New solutions are beginning to emerge in many forms.

Within this context, digital advisors – commonly referred to as “robo advisors” – have garnered considerable attention as regulators and investors attempt to understand the changing landscape.¹ While digital advisors represent a very small segment relative to more traditional financial advice providers, their recent rapid growth suggests a need for a focused analysis of the business and activities of these advisors. Digital advisors incorporate computer-based technology into their portfolio management processes – primarily through the use of algorithms designed to optimize various elements of wealth management from asset allocation, to tax management, to product selection and trade execution. Digital advice is not all the same, with many digital advisors pursuing different business models and investment philosophies, as well as offering varying degrees of sophistication in the services provided. The role of human involvement within digital advisors also varies based on the business model and the precise services provided.

Importantly, digital advice services are already subject to the same regulatory requirements as traditional financial advice services, including supervision by the SEC and FINRA in the US, the FCA in the UK, and equivalent authorities in other jurisdictions. That said, with the emergence of any new innovation in financial services comes the need to consider the applicability of existing regulation and determine appropriate supervisory approaches. Thus, it is not surprising that regulators have begun to consider digital advice in this regard (see Appendix A). Individuals need help saving and investing through greater access to advice, and advisors need new tools to better serve their clients. Digital tools, when combined with human advisors, can provide a new, scalable means to help bridge the increasing advice gap. Appropriate regulatory supervision is important, making it helpful for regulators to explore best practices in this space, while recognizing that business models and technology are evolving. In this *ViewPoint*, we review the landscape for digital advice, including the different business models present today, and the existing regulation of digital advice. We conclude with a series of observations and recommendations as the current landscape continues to evolve.

BLACKROCK®



Barbara Novick
Vice Chairman



Bo Lu
CEO of FutureAdvisor



Tom Fortin
Head of Retail
Technology



Shahriar Hafizi
Chief Compliance
Officer of FutureAdvisor



Martin Parkes
Government Relations
& Public Policy



Rachel Barry
Government Relations
& Public Policy

In this *ViewPoint*

- ▶ [Current Landscape for Financial Advice and Recent Trends](#) 2
- ▶ [What is Digital Advice?](#) 3
- ▶ [Potential Roles of Digital Advice in the Financial Landscape](#) 6
- ▶ [Regulatory Landscape and Best Practices for Digital Advisors](#) 8
- ▶ [Conclusion](#) 12

KEY OBSERVATIONS AND RECOMMENDATIONS

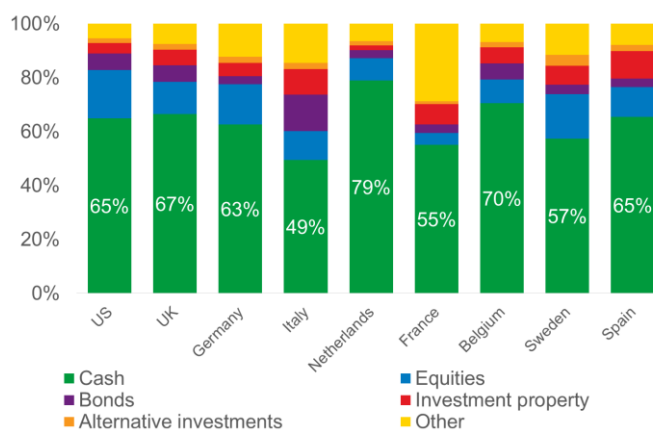
Digital advisors are subject to the same framework of regulation and supervision as traditional advisors; however, the applicability and emphasis may differ in some cases. We suggest that regulators focus on the following key areas:

- 1. Know your customer and suitability.** Suitability requirements across the globe require advisors to make suitable investment recommendations to clients based on their knowledge of the clients' circumstances and goals, which is often gained from questionnaires.² These rules apply equally to digital advice, though the means of assessing suitability may differ somewhat.
- 2. Algorithm design and oversight.** Digital advisors should ensure that investment professionals with sufficient expertise are closely involved in the development and ongoing oversight of algorithms. Algorithm assumptions should be based on generally accepted investment theories, and a plain language description of assumptions should be available to investors. Any use of third party algorithms should entail robust due diligence on the part of the digital advisor.
- 3. Disclosure standards and cost transparency.** Disclosure is central to ensuring that clients understand what services they are receiving as well as the risks and potential conflicts involved. Like traditional advisors, digital advisors should clearly disclose costs, fees, and other forms of compensation prior to the provision of services. Digital advisors should similarly disclose relevant technological, operational, and market risks to clients.
- 4. Trading practices.** Digital advisors should have in place reasonably designed policies and procedures concerning their trading practices. Such procedures should include controls to mitigate risks associated with trading and order handling, including supervisory controls. Risks associated with trading practices should be clearly disclosed.
- 5. Data protection and cybersecurity.** Digital advisors must be diligent about sharing and aggregating only information that is necessary to facilitate clients' stated objectives. Digital advisors should use the strongest data encryption, conduct third party risk management, obtain cybersecurity insurance, maintain business continuity management plans, and implement incident management frameworks.

Current Landscape for Financial Advice and Recent Trends

The need for financial advice is greater than ever as we observe several key challenges to individuals' financial security around the world: (i) high levels of cash, (ii) increasing longevity, (iii) retirement income gap, and (iv) lack of engagement, financial literacy, and access to advice.

Exhibit 1: AVERAGE ASSET ALLOCATIONS AS A PERCENTAGE OF TOTAL SAVINGS AND INVESTMENTS



Source: BlackRock Global Investor Pulse Survey 2015 (Investor Pulse). Depicts responses to the question, "Thinking of the total value of your savings and investment products, approximately what proportion is currently held in each?"

1. High Levels of Cash: BlackRock's Investor Pulse research shows that the majority of people choose to hold their savings in cash, rather than in other investment options such as bonds, equities, or alternative assets.³ For example, in the US, individuals surveyed held 65% of the total value of their savings and investments in cash, with similar results in the EU. Holding excess cash – especially in low and negative interest rate environments – delivers poor long-term returns, eroding individuals' future spending power.

2. Increasing Longevity: Average life expectancy has increased significantly since most retirement systems were established many years ago. In the US, in 1940, a 21-year-old male had roughly a 54% chance of living to age 65.⁴ Today, life expectancies are closer to 80 years, and more than one in three Americans who are 65 today will live past 90.⁵ Studies project that consumers' retirement contributions will not be adequate to satisfy their financial needs throughout retirement.⁶ The Employee Benefit Research Institute found in 2015 that only 61% of workers (or their spouses) are saving for retirement in the US. Further, 57% of workers have less than \$25,000 in total household savings and investments, including 28% who have less than \$1,000 in savings.⁷

3. Retirement Income Gap: As a result of these factors, we observe a growing retirement income “gap.” To compound this challenge, the global trend away from defined benefit (DB) pension schemes towards defined contribution (DC) plans is shifting the responsibility for retirement planning from employers and governments to individuals. Even in the case where individuals have access to employer-sponsored DB plans or other social programs (e.g., Social Security in the US), the future solvency of these programs is not guaranteed, which could significantly increase the retirement income gap.⁸ Notably, there is \$78 trillion in unfunded or underfunded government pension liabilities across 20 OECD countries⁹ and, in the US, it is projected that the combined Social Security trust fund reserves will be depleted by 2034.¹⁰

4. Lack of Engagement, Financial Literacy, and Access to Advice: At a time when the need for financial advice is so great for so many, levels of engagement with financial advisors are disappointingly low. Approximately 17% of individuals surveyed in both the UK and Germany and 14% of individuals in the Netherlands currently use the services of an advisor. In the US, only 28% of individuals surveyed use a professional financial advisor. Further, more than one-quarter of those surveyed who previously used advice had stopped taking advice because it had become too expensive.¹¹ Disengagement with advisors is especially prevalent in jurisdictions where regulators have prohibited commissions from financial product suppliers (e.g., mutual fund managers) to financial intermediaries as they seek to mitigate potential conflicts of interest.¹² This lack of consumer engagement is compounded by low levels of financial literacy, which may negatively reinforce individuals’ willingness to engage with financial advisors.¹³

Taken together, high levels of cash, inadequate savings, longer life expectancies, and a greater expectation for individuals to take responsibility for their own retirement add up to a significant challenge for consumers. Many individuals need professional financial advice to demystify the savings and investment process.

What is Digital Advice?

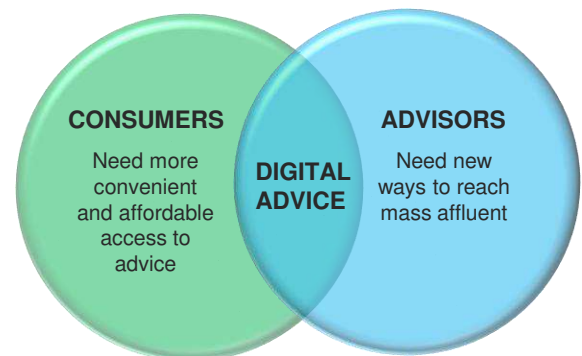
Over the past decade, an increasing number of firms have begun offering digital investment advice. What began as a niche part of the advisor market is becoming more accepted, with a growing number of new entrants and increased consumer interest. Recent regulatory changes may accelerate the use of digital advisors, as many investors will likely have more limited access to traditional advice models.¹⁴

Digital advisors provide a variety of advisory services to clients via internet-based platforms using algorithmic portfolio management strategies. Not surprisingly, the actual and

“Digital advisors incorporate automated, algorithm-based portfolio management advice into financial advice solutions. Digital advice may be delivered in a fully automated format or may supplement traditional advisory models.”

anticipated growth of digital advice has attracted the attention of regulators as they try to understand the role of digital advice and determine how to regulate both firms providing digital advice and digital advice products.

Exhibit 2: FINANCIAL ADVICE GAP

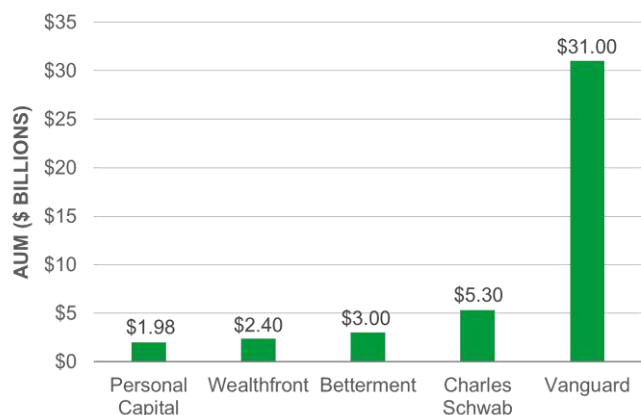


Source: BlackRock. For illustrative purposes only.

As with many financial innovations, not all digital advice is the same. Although digital advisory services were first introduced and developed by startups, traditional financial services firms including banks and broker-dealers have begun offering digital investment advice and wealth management services to retail investors. As we discuss on page 6, there are a number of different business models for firms offering digital advice. Exhibit 3 shows the largest digital advisors based on AUM as of December 2015. Even this short list illustrates the diversity of business models ranging from independent start-ups to organizations that are part of larger firms providing asset management and/or brokerage services. KPMG estimates the AUM for digital advice assets is somewhere around \$55-\$60 billion as of year-end 2015,¹⁵ a very small portion of total US retirement market assets of approximately \$24 trillion.¹⁶

Digital advisors have a number of different investment philosophies, methods, and strategies. The algorithms fueling digital advice vary in terms of sophistication. Algorithms can range from a simple or pre-packaged algorithm that builds a single portfolio to a complex multi-strategy algorithm that reviews thousands of instruments and scenarios in order to construct an aggregate portfolio based on an individual’s current holdings, investment horizon, and risk tolerance.

Exhibit 3: LARGEST US DIGITAL ADVISORS BY AUM



Source: Tracxn Report: Robo Advisors (Feb. 2016).

Multi-strategy algorithms may additionally offer tax loss harvesting strategies, efficient asset placement, and other strategies. Each algorithm is likely to have different assumptions, thresholds, and constraints (e.g., the frequency and/or threshold for rebalancing). Client responses to the questionnaire offer additional inputs that may drive algorithms to different recommendations.¹⁷ Further, some digital advisors offer a greater degree of human supervision of client services and trading systems than others.

Various types of entities provide digital advisory services, including asset managers, banks, broker-dealers, and technology firms. In defining digital advisors or assessing digital advisory services, policy makers must recognize that digital advisory tools can be used by financial professionals to support client-facing discussions or by retail clients who are do-it-yourself investors.

It is important to understand the varying degrees of sophistication across different digital advisors. Four key components of this variation are (i) customization, (ii) tax management, (iii) human intervention/oversight, and (iv) type of entity providing digital advice.

1. Customization

Some digital advisors place investors into one of several pre-determined asset allocation mixes. Based on the information provided by the client, digital advisors will select the appropriate asset allocation mix for the individual. Other digital advisors will provide more customization or bespoke solutions. For example, some digital advisors will optimize a client's existing portfolios to their specific investment horizon and risk tolerance.

2. Tax Management

Some digital advisors offer tax management capabilities, while others do not. Tax management capabilities include tax efficient asset placement and tax loss harvesting in the US. Tax loss harvesting enables investors to eliminate or offset capital gains with capital losses. While losses are realized to

FUTUREADVISOR

In August 2015, BlackRock announced the acquisition of FutureAdvisor, a digital advisor founded in 2010 and registered with the U.S. Securities and Exchange Commission. FutureAdvisor's technology-enabled advice capabilities include: personalized advice that can look holistically across clients' brokerage, IRA and 401(k) accounts; tax efficient portfolio management; mobile and web applications; and online account enrollment. FutureAdvisor uses BlackRock's iShares exchange-traded funds (ETFs) together with products from other fund families offered by a range of providers. As of August 2016, FutureAdvisor manages \$937 million AUM on behalf of individual investors.

provide tax benefits, the portfolio can remain similarly invested by holding equivalent positions in similar but alternative securities.¹⁸ This increases tax efficiency while not impacting the risk profile or asset allocation of the portfolio. Digital advisors have made it possible to implement this strategy even across small accounts.¹⁹

3. Human Intervention / Oversight

Digital advice models have the ability to help human advisors more effectively provide advice and automate routine processes. That said, digital advisors have a fundamental obligation to oversee their systems and mitigate risks associated with digital processes. As we discuss further on pages 8-12, digital advisors should have reasonable supervision and control programs that are designed to prevent failures and undesirable consequences.

Though some digital advisors are fully automated, many offer consumers multiple ways of engaging with a human professional, such as by online chat, phone call, or video call, even outside of traditional office hours. According to a 2015 report by Accenture, many consumers have indicated that they want the ongoing ability to access human advisors.²⁰ Most automated advice services provide the opportunity for the consumer to contact a person with queries or to discuss investment decisions.

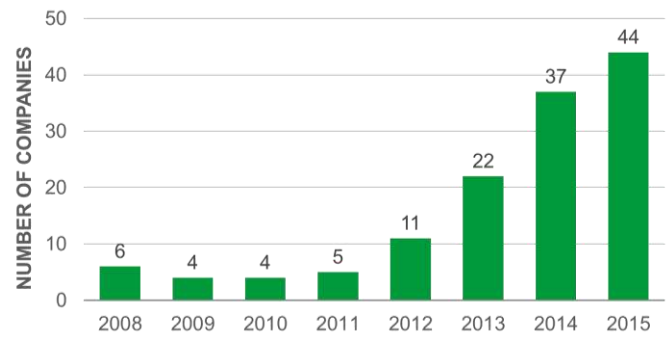
While digital advice tools provide a number of benefits, due diligence is important for digital advice just as it is for traditional advice. Two of the most obvious benefits of digital advice are the ability to interact with the tools 24/7 and the low ticket to entry. Regardless of location or the time of day, investors with a smart phone, tablet, or computer can make changes to their inputs, send instructions, access their portfolios, and get updated digital advice. Likewise, there is often little or no minimum balance to establish a robo advisory relationship, enabling investors to start investing without having first built a large nest egg. However, digital advisors do not replace the need for financial literacy. Investors must

do due diligence to understand the rules that the digital advisor will follow. For example, material factors that could impact an investor's results include potential biases embedded in the algorithm or the firm's ability to elect to suspend trading. Therefore, it is important for investors to educate themselves just as they should when working with a traditional financial advisor.

4. Type of Entity Providing Digital Advice

While digital advisors are new and relatively small in terms of market share, over the past eight years, the digital advisory business has grown at a rapid pace – a pace that is accelerating. Nearly 140 digital advisory companies have been founded since 2008, with over 80 of those founded in the past two years.²¹

Exhibit 4: DIGITAL ADVISORY FIRM LAUNCHES IN THE US



Source: Tracxn Report: Robo Advisors (Feb. 2016).

TRADITIONAL FINANCIAL ADVICE LANDSCAPE

At a high level, providing financial advice entails understanding the client's investment needs and financial situation and offering guidance on a variety of topics related to the management of the individual's wealth in an effort to help the individual meet their financial goals. Financial advisors provide services that can include establishing an appropriate asset allocation, selecting suitable investment products, developing tax efficient portfolio management strategies, arranging access to estate planning services, and facilitating the execution of client-directed trades. Financial advisors can provide some or all of these services to clients. Companies offering

financial advice pursue many different types of business models. The table below describes some of the common business models in the US and the EU, although this list is not all-inclusive. In the US, there are four main business models within the traditional financial advice landscape: (i) wirehouses, (ii) independent broker dealers, (iii) direct wealth managers, and (iv) registered investment advisors (RIAs). In the EU, with the notable exception of the UK with its strong individual financial advisor (IFA) networks, financial advice has traditionally been provided by the banking sector and/or self-employed agents linked to individual banking or insurance networks.

US	EU
<i>Wirehouses</i> generally provide a wide range of services, including full-service brokerage, advisory, wealth management, investment banking, trading, and research. They primarily employ financial advisors to offer products and services to investors, but may have direct offerings as well.	<i>Execution only dealing platforms</i> provided by banks or stand-alone providers generally allow investors to execute trades. They do not offer financial advice, though they may assess knowledge and experience before selling more complex products to clients.
<i>Independent broker dealers</i> are similar to wirehouses in that they provide full-service brokerage, advisory, and wealth management services; however, financial advisors at independent broker dealers are likely to be independent contractors rather than employees of the firm.	<i>Non-discretionary advice</i> is offered by banks and tied advisors. These providers typically offer commission-based products, which are often held in an insurance wrapper to maximize tax benefits.
<i>Direct wealth managers</i> primarily support client-directed trading on discount brokerage platforms, but many also employ financial advisors and offer traditional advisory and wealth management services.	<i>Discretionary management services</i> were traditionally bespoke services targeted at the wealthy and/or institutional sectors. However, there is increasing development of fee-based "off the shelf" predetermined model portfolios with automatic rebalancing.
<i>RIAs</i> are independent wealth managers that offer advice for a fee. RIAs are held to a fiduciary standard of care described in the Investment Advisers Act of 1940 and have a variety of business models. Most digital advisors are RIAs.	<i>Independent Financial Advisors</i> , like US RIAs, offer investment advice for a fee and custody client assets at a third party custodian, typically on a fund platform.

While the use of digital tools and digital advisors is increasingly being incorporated into the business models offered by the traditional players, digital advisors remain a relatively small component of the financial advice landscape.

THE EMERGENCE OF FINTECH

Technology is being used to supplement and enhance financial services in many ways. This has led to the development of the term FinTech, short for financial technology.²² Digital advice is one example of innovation in FinTech. FinTech firms use software or other technology to provide products and services traditionally offered by the financial services industry. This digital revolution is shaping lending and payment practices in the banking sector as well as various other areas in the asset management and insurance industries. The shift towards a more digital financial landscape is driven by a number of factors, including customer demand for more accessibility and convenience in conducting financial transactions in an increasingly technological world.²³ While many FinTech developments have been driven by start-ups and new entrants, some traditional players across different industries

Digital advice tools are used by a number of different market participants to connect with their clients. The primary business models are start-up direct to consumer digital advisors, established wealth managers with direct to consumer offerings (by a bank or asset manager), and business-to-business platforms.

- ▶ **Innovative start-ups** have developed automated advice models built on new proprietary algorithms. These firms face the hurdle of acquiring a new client base from scratch and may have less previous engagement with existing financial services legislation and regulations.
- ▶ **Established wealth managers with direct to consumer offerings** can include (i) asset managers offering platforms to increase their retail investor service offerings with the advantage of an established brand and (ii) banks seeking to provide investment management services to banking clients. There is particular focus on the mass retail and mass affluent sectors, where the goal is to provide advice in a more cost effective and consumer-focused way than under existing banking models.

have created or adopted their own FinTech solutions. Some of the most prominent trends in FinTech include:

- ▶ **Peer-to-peer lending**: a method of debt financing that enables individuals to borrow and lend money without the use of an official financial institution such as an intermediary.
- ▶ **Crowdfunding**: raising small amounts of capital from a large number of individuals, typically via the Internet, to finance a project or venture.
- ▶ **Blockchain**: distributed ledger technology in which transactions are recorded in order to improve payments, clearing and settlement, audit, or data management of assets.
- ▶ **Digital wallet**: a system that securely stores users' payment information and passwords for numerous payment methods and websites; can be used in conjunction with mobile payment systems.
- ▶ **Business-to-business platforms** provide digital advisory services to help existing advisors scale their business by offering expertise in technology, asset allocation, and risk management, potentially at a lower cost than under existing advisory models.

Potential Roles of Digital Advice in the Financial Landscape

Digital advisors may provide an effective way to engage consumers who have not considered using traditional investment management services or who have been discouraged by the costs associated with obtaining personalized investment advice. For a large segment of the investing public, digital advisory services have the potential to provide affordable and accessible services. These services can be advantageous for financial institutions, including traditional advisors, by automating routine aspects of the client servicing process and providing advisors with greater channels of communications with clients. Exhibit 5, from FINRA's March 2016 report on digital investment advice, illustrates the value chain of digital advice.²⁴

Exhibit 5: DIGITAL INVESTMENT ADVICE VALUE CHAIN



* Functionally typical in financial professional- and client-facing digital investment advice tools

** Functionally typical in financial professional-facing tools only

Source: FINRA 2016 Report.

Digital advice can increase the likelihood that people will engage on financial advice, particularly because younger generations may be more accustomed to electronic forms of communication.²⁵ This section explores two of the main benefits of digital advice.

Increase Efficiency in Communication with Clients

One of the benefits of financial advice, whether automated or not, is the ability to help consumers achieve long-term investment goals by attempting to moderate consumer behavioral biases that contribute to less ideal outcomes, such as holding excessive amounts of cash or the tendency to buy high and sell low.²⁶ Good service models, whether face-to-face or automated, will engage with consumers in times of market volatility and recommend appropriate courses of action to meet long-term savings objectives. Technology can offer advisors the ability to communicate more effectively with their clients, which is particularly valuable for client demographics that are comfortable with digital media as a communication tool. Technology can enable advisors to reach more clients, thereby increasing access to advice. Automated advice platforms can also benefit consumers by offering them the ability to retain and have easy access to client recommendations in an online vault. While electronic document storage is available in other servicing models, the design of automated advice services can facilitate its provision to consumers.

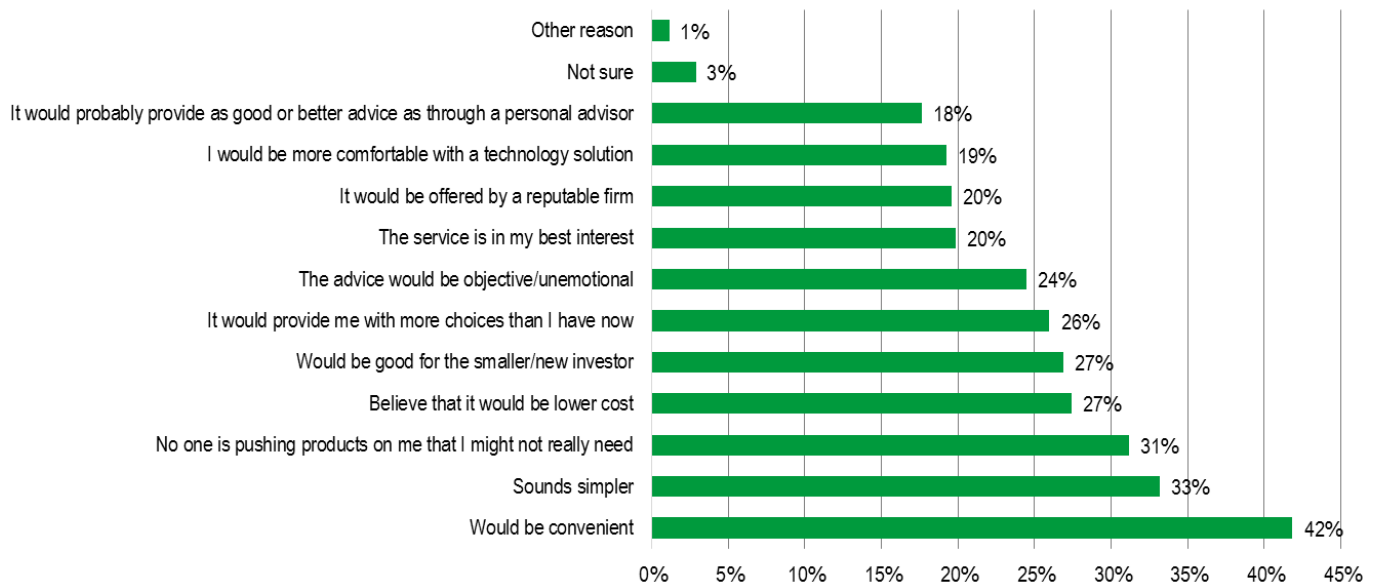
Allow Clients to Access Advice in the Comfort of their own Homes

Many people simply don't know how or where to start investing.²⁷ Online models may be less intimidating than approaching a financial advisor directly.

The findings from our Investor Pulse survey show that ease of access and greater alignment with consumers' needs are the primary drivers of the shift towards digital advice for many individuals, especially younger generations.²⁸ Additionally, many consumers are concerned that they don't have sufficient investible assets to be worthwhile for a traditional advisor. Given this sentiment, the ability of digital advisors to offer transparent services to cost-conscious consumers provides one potential solution to the advice gap.

Our Investor Pulse survey found that approximately 40% of the 4,000 US respondents (averaged across age groups) indicated that they were very/somewhat interested in digital investment services. We surveyed these respondents on why they would be interested in such services, asking investors about their reasons for accessing savings solutions through digital platforms or advisory services, with the backup option of speaking to an advisor via telephone or other means, rather than meeting with advisors for face-to-face advice. As illustrated in Exhibit 6, the most popular answers were that digital advice would be convenient (42%), sounds simpler (33%), and would not push products that the consumer may not really need (31%).

Exhibit 6: US CONSUMER PRIMARY REASON FOR INTEREST IN DIGITAL ADVICE



Source: Investor Pulse 2015. Depicts responses of US respondents to the question, "Why would you be interested in this type of service?"

Regulatory Landscape and Best Practices for Digital Advisors

Current regulations provide a detailed framework for the provision of investment advice designed to protect individual investors. Specifically, most regulatory regimes across the globe have standards of conduct for advisory services, trading practices rules, and safety and soundness rules governing electronic trading, information security regulations, and disclosure requirements. These rules apply to both traditional and digital advisors. In Appendix A, we compare the regulations governing the provision of digital advisory services in both the US and the EU at a very high level, highlighting similarities and differences between the regimes. We also refer to other jurisdictions that have broadly similar regulations that apply to both traditional and digital advice. In the US, digital advisors are subject to a range of substantive obligations under the Investment Advisers Act of 1940, which

govern their digital content, client suitability, and trading practices. In addition, most firms that employ algorithms are expected to establish governance, review, and supervision procedures that apply to the development, testing, trade execution, and investment strategies of the algorithms.

In addition, recent changes to regulation (e.g., the Department of Labor's Definition of the Term "Fiduciary"; Conflict of Interest Rule in the US and the Financial Conduct Authority's Retail Distribution Review in the UK)²⁹ have resulted in a greater focus on digital advice as a potential solution to provide low-cost investment advice with appropriately tailored outcomes to individual investors at scale. To this end, we expect continued innovation and an ongoing evolution of the digital advice landscape.³⁰ As business models continue to evolve, due consideration should be given to ensure that regulatory regimes encourage innovation that could be beneficial to consumers.

ONGOING DEVELOPMENTS: AGGREGATION AND DIGITAL IDENTITY

Account aggregation is a potentially useful service that gathers information on a customer's cash and securities holdings from many websites and presents that information in a consolidated format to the customer. In today's society, younger consumers move homes and jobs much more frequently than in previous generations. As such, an individual is likely to have multiple savings vehicles such as 529 plans for each of their children and multiple employer-sponsored retirement accounts or individual retirement accounts. Aggregation of accounts allows consumers to see all of their accounts in one place. Digital advisors can provide this service, enabling consumers to gain a holistic picture of their savings and investments and make more informed investment decisions.

One of the challenges of running effective account aggregation is the lack of common standards for sharing account information between different financial services providers. There are a number of initiatives in the EU to develop a Digital ID to address these challenges.³¹ The concept of the Digital ID is to provide consumers with a single point of entry to a range of different financial service providers such as insurers, banks, and asset managers. This would make it much easier for people to manage their assets in one place, with the added benefits of all anti-money laundering and know your customer procedures being completed once, up front. An initiative like this would reduce complexity and would mean that individuals would be less likely to lose track of their savings, as they could all be accessed in one place. A Digital ID would facilitate the development of digital account aggregation applications, especially if linked to a facility that would automatically update an individual's profile as their circumstances

change. In the EU, developing consistent know your customer and anti-money laundering processes around a Digital ID would also have the added benefit of simplifying the process for a consumer in one member state to buy a product based in another member state, thereby encouraging greater competition and choice.

More streamlined digital processes will help to address a number of the key barriers to the adoption of digital solutions, such as those recently identified by the UK's Financial Conduct Authority (FCA), which may prevent consumers from engaging with new online services such as digital advice.³² These barriers include the focus on physical documentation rather than digital solutions to meet anti-money laundering requirements, concerns that data protection legislation acts as a barrier to financial innovation, and a lack of clarity on the way payments services legislation operates. Addressing these issues requires close cooperation between policy makers, national regulators and industry. We welcome the recent call made by the European Commission for the creation of a European Digital ID for consumers dealing with the financial services industry, which should facilitate consumer dealings without sacrificing standards of consumer protection and crime prevention.³³ From the industry, the UK's Tax Incentivised Savings Association (TISA) is conducting work on the development of a Digital ID in conjunction with the UK Government, including extensive consumer testing on attitudes to using a Digital ID in conjunction with the Government Digital Service.³⁴ This highlights the need to develop a trusted brand with the support of both the government and major retail financial services providers. Addressing consumer confidence is key when implementing new consumer-facing technologies such as the Digital ID, and robust cyber security protections are paramount to the success of any account aggregation service.

In this section, we provide some color on the existing regulatory framework as well as commentary on best practices for applying this framework to digital advisors.

1. Know Your Customer and Suitability

While digital advisors are generally required to disclose risk factors associated with their investment methodologies and strategies, they must similarly ensure that their recommendations, investment methods, and strategies are suitable for their clients. For example, the SEC has stated that, as fiduciaries, investment advisors owe their clients a duty to provide suitable investment advice. Other regulators have articulated similar standards.³⁵ This fiduciary duty generally requires an investment advisor to determine that the investment advice given to a client is suitable for the client, taking into consideration the client's financial situation, investment experience, and investment objectives.³⁶ Digital advisors, like traditional advisors, are dependent on client-provided information to gauge suitability, which is typically obtained through questionnaires. The information gathered from these questionnaires should be used to make appropriate recommendations to clients. For example, some digital advisors use the age of the client to determine the appropriate asset allocation for the client using a glidepath that reduces equity exposures as the client approaches his/her investment horizon (this approach is similar that of the popular target date fund products).

Digital advice technologies are designed to meet specific objectives that require a small number of specific data points to achieve. Many digital advisors use algorithms that take key client information from a questionnaire (typically through an online user interface) to efficiently make recommendations based on their clients' specific goals, which is sometimes referred to as "goal-based" investing. In many cases, assessing the suitability of investment solutions designed to meet certain specific long-term objectives does not require an extensive list of data points. This concept is accepted in existing regulatory regimes. For example, the Pension Protection Act of 2006 permits target date funds to be used as Qualified Default Investment Alternatives (QDIAs) in US 401(k) plans.³⁷ The suitability of a given target date fund for an individual is assessed based on a single data input – the individual's birth date.

Suitability assessments must, therefore, be tailored to the clients' goals and the services that are being offered. In many cases, goal-based investing, where there is a single and specific investment objective, does not require a significant number of inputs to assess suitability, whereas a financial advisor may need more information for more comprehensive wealth management solutions that address different investment objectives over an individual's life course (e.g., the investor wants a financial plan that will allow him/her to buy a house in five years, send a child to college in

10 years, and retire in 20 years). Digital advisors should clearly state the objectives their services are designed to meet in order to ensure the services being offered are in line with client needs and objectives.

2. Algorithm Design and Oversight

A key component of digital advisors' service models is the use of optimization algorithms, which are designed to solve investment challenges ranging from portfolio allocation to tax efficient asset placement, while factoring in various tradeoffs such as transaction costs, liquidity, etc. The outcomes derived from algorithms used by any given digital advisor will vary based on the methodologies, assumptions, tools, and data inputs used by the algorithms. It is important that digital advisors reasonably design their algorithms based on their stated investment strategies and methods and make appropriate disclosures to clients concerning such investment strategies and methods. Asset allocation models should be based on generally accepted investment theories that take into account the historic returns of different asset classes, and key assumptions of the algorithms should be made available to investors.³⁸ In addition, algorithms should be designed to consider a range of factors including performance, transaction costs, and management fees associated with various products. Digital advisors should provide clear disclosure to investors in order to allow them to evaluate the assumptions of the models.

FINRA'S PRINCIPLES AND EFFECTIVE PRACTICES: GOVERNANCE AND SUPERVISION OF ALGORITHMS³⁹

Digital investment advice tools are dependent on the data and algorithms that produce the tools' output. Therefore, an effective governance and supervisory framework can be important to ensuring that the resulting advice is consistent with the securities laws and FINRA rules. Such a framework could include:

► Initial reviews

- assessing whether the methodology a tool uses, including any related assumptions, is well-suited to the task;
- understanding the data inputs that will be used; and
- testing the output to assess whether it conforms with a firm's expectations.

► Ongoing reviews

- assessing whether the models a tool uses remain appropriate as market and other conditions evolve;
- testing the output of the tool on a regular basis to ensure that it is performing as intended; and
- identifying individuals who are responsible for supervising the tool.

We emphasize the need for investment professionals to be closely involved in the design and oversight of the financial advice tool to ensure that the algorithm delivers the expected outcome. Digital advisors should ensure that their algorithms are managed under reasonably designed coding control procedures, including testing and review, prior to use. It is equally important to ensure appropriate governance and testing of the algorithm by investment and risk professionals. Testing and control of the algorithm should be a separate function from compliance or internal audit teams, whose role is to challenge and advise those responsible for the design and operation of the algorithm on an ongoing basis. Algorithms, projections, and simulations must be robust and have a reasonable methodology. Digital advisors should understand the analytic approaches that are used in the algorithm, even if it is provided by a third party, including assumptions about correlations in various asset price movements during normal and stressed markets.

A number of key questions to be asked when conducting due diligence on the algorithm include: (i) whether the algorithm factors in transaction costs or termination fees, if any; (ii) whether the algorithm factors in tax implications and, if so, does it have the cost basis of each asset; and (iii) whether the algorithm factors in the level of risk that is appropriate for the consumer, especially if the consumer has limited financial knowledge and experience. It is important that algorithms take into consideration appropriate risk appetites for clients in order to make suitable investment recommendations. A plain language description of algorithm assumptions should be available to investors.

Many advisors use algorithms developed either by the advisory firm or, increasingly, by third parties. Determining the respective responsibilities of parties involved in the development of the algorithms is essential. Any use of third party algorithms should entail robust due diligence on the part of the digital advisor.

3. Disclosure Standards and Cost Transparency

In using a digital advisor, clients should understand the risks and costs associated with the advisory service, as well as the risks of investing in general. To help investors understand these risks, digital advisors should disclose to clients the limits of their services and their dependence on client-provided information. For example, in cases where clients may have aggregated a subset of their assets for the digital advisor's management, the digital advisor may not be managing the entire asset base and, as such, will make limited recommendations. Digital advisors should disclose to clients the limits of their tax management capabilities if clients have not aggregated all accounts. The extent of the services being offered should be clearly disclosed. Simpler advisory models may not offer an automatic rebalancing service, whereas some advisors may offer a full discretionary service, which can include rebalancing.

“It is important that... users understand how the tool works and any limitations of the outputs it generates.”

– UK Financial Conduct Authority

Transparency of cost disclosure is a key selling point of many digital advice models, as is access to cheaper advice. Consumers need to be able to compare the costs of one model against another and understand the total costs of investing, how the digital advisor is remunerated, and the potential value associated with higher cost offerings. Advisors must clearly disclose the costs the client can incur, including disclosure related to up-front fees for advice, and whether fees are being levied on allocations to cash management vehicles. In Appendix A, we set out a summary of the comprehensive disclosure standards MiFID II will require advisors to meet when dealing with their customers in the EU beginning in January 2018.⁴⁰ These standards are designed to require disclosure of all costs and charges so that even where one aspect of a discretionary investment management or advice service under MiFID is said to be “free,” the consumer will be able to see where the advisor may derive their income, as well as the total cost of investing. Similarly, in the US, the Investment Advisers Act of 1940 prohibits advisors (digital and traditional) from placing advertisements that state that any report, analysis, or other service will be furnished for free or without charge if there are any conditions or obligations connected with the receipt of such report, analysis, or service, including hidden fees. In addition, for retail clients, registered investment advisors in the US need to disclose their advisory fee arrangements in their Form ADV Brochures. Digital advisors should develop and adopt, as appropriate, standards for performance reporting and fee disclosure so that clients can evaluate and compare the performance of any given digital advisor.⁴¹

Digital advisors should clearly disclose the tools and discretion available to address operational or market risk in both normal and distressed market scenarios. In a recent thematic review, the UK FCA commented on the use of automated advice tools, stating, “it is important that... users understand how the tool works and any limitations of the outputs it generates.”⁴² Digital advisors may have liquidity tools to address market stress events, including the ability to halt trading or place limitations on clients' ability to withdraw assets under certain circumstances, including during market turmoil or unexpected events. Advisors should clearly disclose such tools; this disclosure should include not only which tools the advisor can use, but also detail on when the advisor would use such tools. Some digital advisors may have the ability to halt trading but may only do so if trading were halted on the exchange they needed to trade on, while

others might use broader discretion to halt trading during market volatility events. For example, during the recent Brexit-related market volatility, digital advisors took different approaches to their order handling and had different policies for navigating market volatility. While one firm imposed a trading suspension and restricted client trading for several hours, other digital advisors were able to continue to conduct normal risk-controlled operations including placing trades to optimize portfolios.⁴³

In addition to the liquidity tools available to the digital advisor, the tools available to the underlying funds included in the client's portfolio should be disclosed to the client. This could include funds' ability to implement redemption gates that temporarily limit redemptions for a period of time or liquidity fees that may be levied during times of stress for redeeming shareholders. In the US, disclosures concerning the ability to redeem or withdraw cash are standard disclosures in investment management agreements and all registered investment advisors (digital or traditional) should disclose their withdrawal restriction policies in their Form ADV brochures in order to inform clients of any limitations on services or access to assets.

4. Trading Practices

Digital advisors, like traditional advisors, generally manage client assets on a discretionary basis and buy or sell equity securities, ETFs, and other broad-based securities. As part of these services, advisors must have trading capabilities that are reasonably designed to fulfill their stated investment methods and strategies and manage market and operational risk. Both digital and traditional advisors are required to have trading and portfolio management capabilities that operate under reasonably designed processes, policies, and procedures to provide best execution to clients and are supervised by skilled investment professionals. In the US, investment advisors must establish procedures, and a system for applying such procedures, that are designed to prevent and detect violations of federal securities laws by their personnel. Digital advisors should ensure that they periodically and systematically evaluate the quality of execution services received from the broker-dealers.

In addition, digital advisors should have procedures and disclosures concerning order management, including bundling of orders, fair allocation of trades to clients, and all other order handling procedures that may pose risks to client portfolios. Digital advisors should also have procedures to resolve any trading errors or errors resulting from their algorithm design and code changes.

5. Data Protection and Cybersecurity

As with any internet-based technological service provider, digital advisors should view cybersecurity as a critical component to the provision of their services, which includes safeguarding client sensitive data and personally identifiable information. At a global level, standard setters such as the International Organization of Securities Commissions (IOSCO) highlight the importance of robust cybersecurity within financial institutions. US regulators and the industry have, over the years, established increasingly stringent standards for such safeguards as new threats have emerged. Under current SEC guidelines, investment advisors should: (i) design a strategy to prevent, detect and respond to cybersecurity threats; (ii) assess threats, vulnerabilities and defensive measures currently in place; and (iii) implement that strategy through its information security program, including written policies and procedures, internal personnel training, and external client education.⁴⁴ The SEC's Privacy of Consumer Financial Information (Regulation S-P) requires registered broker-dealers, investment companies, and investment advisors to adopt written policies and procedures that address administrative, logical, and physical safeguards for the protection of customer records and information. Further, the National Institute of Standards and Technology sets forth guidelines for handling and protecting personally identifiable information. In addition, digital advisors should be encouraged to adopt a standard such as SSAE-16 Service Organization Control (SOC) 2 Type II Security, Availability, Confidentiality and Process Integrity Trust Principles.⁴⁵ Finally, consistent with industry best practices, digital advisors should follow the cybersecurity framework developed by the Federal Financial Institutions Examination Council (FFIEC) as it relates to their unique business models.⁴⁶

In addition to the requirements noted above, we recommend that all advisors, including digital advisors, adopt the following standards given the scope of their services:

- ▶ **Data Encryption.** Digital advisors should always use the strongest encryption (e.g., the National Institute of Standards and Technology's Advanced Encryption Standard⁴⁷) to ensure the data-at-rest or in-transit remains obfuscated. Additionally, and perhaps more importantly, digital advisors should use strong key and secret management mechanisms to ensure the encrypted data will remain out of the hands of unauthorized third parties. Encryption is not, however, a panacea. It will not substitute for other measures, such as authentication, authorization, and access control lists, and should be used in conjunction with these controls.

- ▶ **Third Party Risk.** Many digital advisors use third parties and as such, these advisors should perform due diligence assessments by using the FFIEC Vendor and Third Party Management guidance.⁴⁸ As a first step, digital advisors should identify third parties deemed to carry the biggest risk and then prioritize their risk assessment efforts accordingly. The outcomes of the assessments will help digital advisors determine and establish the appropriate monitoring controls required for each third party vendor. This approach ensures resources focus on the third parties that matter the most, reducing unnecessary work for relationships identified to be low-risk. Third party risk management is key for digital advisors that offer account aggregation to ensure client data is protected.
- ▶ **Cybersecurity Insurance.** Regulators should encourage all digital advisors to obtain appropriate levels of cybersecurity insurance that will mitigate losses from a variety of cyber incidents, including data breaches, business interruptions, and network damage. Cyber insurance terms of coverage, limitations, and exclusions should be reviewed as markets and offerings continue to evolve. While insurance is important, regulators should ensure that digital advisors do not rely on cybersecurity insurance in lieu of robust cybersecurity controls.
- ▶ **Business Continuity Management and Resilience.** Advisors should have procedures to maintain key services in the event of a business disruption.⁴⁹ In order to prevent incidents, advisors must be diligent to ensure they are sharing and aggregating only information that is reasonably necessary to facilitate stated investment objectives.

- ▶ **Incident Management.** Regulators should require the prompt confidential reporting to clients, upon discovery, of any material breaches that significantly impact clients or users of digital advisory services. In the event of any cybersecurity breach, digital advisors should take prompt action to remedy deficiencies in their policies and procedures. Public disclosure should not be required, as this could expose the advisor to increased risks of external parties exploiting system weaknesses or require disclosure of internal defense systems, which could facilitate future breaches.

Conclusion

Digital advisory services have the potential to significantly mitigate behavioral finance biases and provide customized investment tools to individual investors at a relatively low cost. As policy makers consider the rapidly evolving digital advice landscape and the application of existing regulations to digital advisors, it is important to allow for a variety of different digital advice business models that meet different client needs, including both start-up firms and existing market players such as established wealth managers with direct-to-consumer platforms or business-to-business platforms. Different investors have different needs and require different levels of complexity of strategy and human engagement. In thinking about where to focus attention in the digital advisory space, the five specific areas outlined in this paper warrant consideration: (i) disclosure standards and cost transparency, (ii) know your client and suitability requirements, (iii) algorithm design and oversight, (iv) trading practices, and (v) data protection and cybersecurity.

Appendix A: Global Regulatory Initiatives regarding Digital Advice

US		EU
Global	IOSCO	IOSCO published a report in 2014 on Social Media and Automation of Advice Tools showing the result of a survey among its members on the use of automated advice. ⁵⁰ At the time, regulators identified three areas where they believe additional guidance from IOSCO would be helpful in the future. IOSCO has indicated that it will review this work in the course of 2016. It is likely this will cover the following areas: 1. Best practices for intermediaries providing advice via automated tools (e.g., how best to comply with suitability obligations). 2. What principles should an intermediary consider when designing an automated tool? 3. What principles should regulators consider when regulating intermediaries that use automated tools?
US	FINRA	In terms of best practices for digital advisors in the US, FINRA outlined a number of suggestions for digital investment advice tools in its March 2016 report. ⁵¹ FINRA focused on the following areas: <ul style="list-style-type: none"> the governance and supervision of algorithms, the supervision of portfolios and conflicts of interest ensuring effective practices for customer profiling. implementing effective practices for automatic rebalancing implementing effective training practices for financial professionals before they are permitted to use a digital investment advice tool.
US	SEC	The SEC and FINRA issued a joint Investor Alert advising that investors consider the following when using digital advisors: the terms and conditions, tool limitations and key assumptions, dependency on client inputs, and information security controls. ⁵²
US	Massachusetts Securities Division	The Massachusetts Securities Division (the "Division") issued a policy statement in April 2016 outlining concerns with state-registered fully-automated robo advisors specifically regarding the ability of robo advisors to adequately conduct due diligence on clients and make appropriately customized investment decisions. The Division's concerns apply to fully automated digital-advisors that generally: (i) do not meet with or conduct due diligence on a client, (ii) provide investment advice that is minimally personalized, (iii) may fail to meet the standard of care imposed on the appropriateness of investment advisor's decision-making, and (iv) specifically decline the obligation to act in a client's best interest. ⁵³ In July 2016, the Division issued regulatory guidance that requires state-registered investment advisors that utilize a third party robo advisor to provide asset allocation and trading functions to: clearly identify the robo advisors it contracts with, inform clients if investment advisory services could be obtained directly from the third party robo advisor, detail the ways it provides value for its fees, detail the services it cannot provide, clarify the third party robo advisor may limit the investment products available to the client, and use plain English to describe the robo advisor's services. ⁵⁴
US	Department of Labor	The Conflict of Interest Rule (Fiduciary Rule) released on April 8, 2016 has implications for digital advisors. Under the Fiduciary Rule, digital advisors will be considered fiduciaries under ERISA for advice provided to qualified retirement plans and individual retirement accounts. Moving forward, digital advisors in the US will need to evaluate whether they need to make changes in their programs to ensure that they are compliant with ERISA fiduciary requirements. This may not require changes within the algorithms provided to clients, but it could impact recommendations made during the client engagement process, the specific products recommended to clients and compensation structures.
EU	EBA/EIOPA/ESMA	At a pan European level the European supervisory authorities (ESAs, including EBA/EIOPA/ESMA) recently published a Discussion paper on Automation in Financial Advice seeking comments on both the potential benefits for both consumers and firms but also a number of potential risks and confusion over business models. ⁵⁵ The ESAs note in the introduction to the Discussion Paper that "advice" is used in the common meaning of the word. ⁵⁶ In practice, the current European regulatory framework distinguishes between multiple types of advice and guidance and imposes a number of different standards on the providers of advice. Many of the risks identified by the ESAs arise out of consumer biases, which have been identified in traditional advice models and are not limited to digital advice. Further initiatives on automated advice are expected.
UK	FCA	The UK has recently undergone radical changes in its regulation of the distribution of financial product with a focus on eliminating conflicts of interest in the advisory process by banning the payment of advisor commission from product manufacturers as part of the Retail Distribution Review. ⁵⁶ The Financial Advice Market Review (FAMR) recognized the drop in consumers using financial advisors leading to an increasing advice gap as well as the practical and legal difficulties firms face with the different and often conflicting definitions of advice. ⁵⁷ The final FAMR report made a number of recommendations for rationalizing the definitions of advice by setting out clear duties and scope of liabilities as well as setting up a specialized advice unit to support the development and registration of automated advice models. This should benefit the development of automated advice models in the UK by providing greater regulatory clarity. In BlackRock's response to FAMR, we explored many of these issues in further detail, including the need for consistent guidance standards from regulators to help people manage their often conflicting financial short-term and long-term priorities more effectively. ⁵⁸
Australia	ASIC	ASIC has sought to position its regulation of digital advice as 'technology neutral' meaning that the obligations applying to the provision of traditional (i.e., non-digital) financial product advice are the same as those that will apply to digital advice. ASIC draws a distinction between 'general advice' and 'personal advice' with a far more rigorous set of regulatory requirements, including know your customer and provision of a statement of advice applying to the latter. As is the case in the context of traditional advice, where the line between these two categories lies for digital advice will have a significant impact upon the practical usability of digital advice in Australia. ASIC has recently issued draft industry guidance for consultation. This guidance emphasizes ASIC's focus on the importance of adequate organizational competence to support the provision of advice even where it is automated, monitoring and testing of algorithms and robust compliance arrangements to monitor and test quality of advice provided.
Hong Kong	SFC	In Hong Kong there is no clear regulatory treatment of digital-advisors yet but it is worth noting that the SFC formed a Fintech Contact Point and Committee in March 2016 to look at, among other things, digital-advisors and to encourage the application of financial technology in Hong Kong. ⁵⁹ In the absence of clear guidance around this topic, the obligations applying to the provision of traditional (i.e., non-digital) financial product advice are likely to be the same as those that apply to digital advice.

Notes

1. In Europe, the Joint Committee of the European Supervisory Authorities, which includes European Securities and Markets Authority (ESMA), European Banking Authority (EBA), European Insurance and Occupational Pensions Authority (EIOPA), published a discussion paper on digital advice. See Joint Committee Discussion Paper on Automation in Financial Advice (Dec. 4, 2015), available online at <https://www.eba.europa.eu/documents/10180/1299866/JC+2015+080+Discussion+Paper+on+automation+in+financial+advice.pdf> (ESAs Paper on Digital Advice). In the US, FINRA published a report on digital advice. This report noted that many rules are already in place and provided a framework for thinking about this evolving space. See FINRA, Report on Digital Investment Advice (Mar. 2016), available at <https://www.finra.org/sites/default/files/digital-investment-advice-report.pdf> (FINRA 2016 Report).
2. We are using the term suitability to broadly address the appropriateness of investment advice for investors. For example, in the US suitability requirements can include FINRA's suitability rule or fiduciary obligations enforced by the SEC under the Investment Advisors Act of 1940. In the EU, suitability requirements are set out in the Markets in Financial Instruments Directive (MiFID).
3. In this *ViewPoint*, we refer to consumer research that we conducted with end consumers regarding their attitudes on saving and investing: BlackRock's Global Investor Pulse 2015 (Investor Pulse). This survey was carried out using an online methodology in 20 countries. The total global sample size was over 31,000 people, making it one of the largest surveys of its kind in the world. For more information on the survey, see <http://www.blackrockinvestorpulse.com/>.
4. Social Security Administration, Life Expectancy for Social Security, available at <https://www.ssa.gov/history/lifeexpect.html>.
5. Social Security Administration, When to Start Receiving Retirement Benefits (Aug. 2015), available at <https://www.ssa.gov/pubs/EN-05-10147.pdf>.
6. US Government Accounting Office (GAO) studies found that increases in life expectancy has contributed to longevity risk in retirement planning, which creates a risk that Social Security and employer sponsored DB plans will be unable to meet obligations over their beneficiaries' lifetimes. Further, 60% of all households are without any defined contributions savings in 2013. See GAO, Report to the Ranking Member, Subcommittee on Primary Health and Retirement Security, Committee on Health, Education, Labor, and Pensions, US Senate: Shorter Life Expectancy Reduces Projected Lifetime Benefits for Lower Earners (Mar. 2016), available at <http://www.gao.gov/assets/680/676086.pdf>; GAO, Report to the Ranking Member, Subcommittee on Primary Health and Retirement Security, Committee on Health, Education, Labor, and Pensions, US Senate: Low Defined Contribution Savings may Pose Challenges (May 5, 2016), available at <http://www.gao.gov/assets/680/676942.pdf>.
7. Ruth Helman, Craig Copeland and Jack VanHerhei, Employee Benefit Research Institute, Issue Brief No. 413: The 2015 Retirement Confidence Survey: Having a Retirement Savings Plan a Key Factor in Americans' Retirement Confidence (Apr. 2015), available at https://www.ebri.org/pdf/briefspdf/ebri_ib_413_apr15_rcs-2015.pdf. These estimates exclude the value of the primary homes of workers.
8. BlackRock, *ViewPoint*, Addressing America's Retirement Needs: Longevity Requires Action (Sep. 2013), available at <http://www.blackrock.com/corporate/en-us/literature/whitepaper/viewpoint-retirement-needs-092013.pdf>.
9. Citigroup, The Coming Pensions Crisis (Mar. 2016), available at <https://ir.citi.com/CqVpQhBifberuzZKpfnSN25DVSesdUwJwM61ZTgQKceXp0o%2F0F4CbFnnAY1rRjW>.
10. Social Security and Medicare Boards of Trustees, 2016 Annual Report of the Board of Trustees of the Federal Old-Age and Survivors Insurance and Federal Disability Insurance Trust Funds (Jun. 22, 2016), available at <https://www.ssa.gov/oact/TR/2016/tr2016.pdf>.
11. Investor Pulse.
12. For example, Harriet Baldwin, Member of Parliament representing the UK and Economic Secretary to the Treasury, noted that in the UK "the average cost of advice is £150 per hour, and the average advice process takes over 7 hours for investment advice and 9 hours for retirement advice. This means that for many, advice is seen as unaffordable." See Harriet Baldwin, Speech on the Future of Financial Advice (Apr. 13, 2016), available at <https://www.gov.uk/government/speeches/economic-secretary-on-the-future-of-financial-advice>.
13. An EFAMA report highlighted that even relatively simple concepts such as the effect of inflation, interest rates and risk diversification are misunderstood by many consumers. EFAMA Report on Investor Education, Building Blocks for Industry Driven Investor Education Initiatives (Mar. 2014), available at https://www.efama.org/Publications/EFAMA_Investor_Education_Report.pdf at 18.
14. Regulations that are intended to mitigate conflicts of interests and protect consumers may have the opposite effect of limiting choice and increasing costs. See e.g., U.S. Department of Labor, Definition of the Term "Fiduciary"; Conflict of Interest Rule - Retirement Investment, 81 Fed. Reg. 20946 (Apr. 8, 2016), available at <https://www.gpo.gov/fdsys/pkg/FR-2016-04-08/pdf/2016-07924.pdf> (DoL Fiduciary Rule); Retail Distribution Review Post Implementation Review, Europe Economics, (Dec. 16, 2014); COBS 6.1A.17R and COBS 6.1A.24R of the FCA Handbook. For more detail, see Appendix A. A comprehensive discussion of the impact of these regulations is outside the scope of this *ViewPoint*.
15. KPMG, Robo Advising: Catching Up and Getting Ahead (2015), available at <https://advisory.kpmg.us/content/dam/kpmg-advisory/strategy/pdfs/2016/kpmg- robo-advisors-final.pdf?ct=t>.
16. ICI 2016 FactBook, available at https://www.ici.org/pdf/2016_factbook.pdf.
17. For illustrative examples of how different digital advisors build portfolios, see The Wall Street Journal, Putting Robo Advisers to the Test (Apr. 24, 2015), available at <http://www.wsj.com/articles/putting-robo-advisers-to-the-test-1429887456>.
18. Digital advisors can save investors time and effort in tax loss harvesting and ensure that trades comply with the IRS's wash sale rule. A wash sale occurs when an investor trades or sells a security at a loss and then buys a substantially identical security within 30 days of this sale. In doing so, the investor cannot claim a tax loss on the sale or trade of the security. Digital advisors can conduct daily analysis to both increase opportunities for tax loss harvesting and ensure that all trades are occurring within the legal parameters.
19. For more information, see FutureAdvisor, How Can Tax Loss Harvesting Improve Your Returns?, available at <https://www.futureadvisor.com/content/resources/getting-started/portfolio-strategy/tax-loss-harvesting>.
20. Accenture, The Rise of Robo-Advice: Changing the Concept of Wealth Management, available at https://www.accenture.com/t20160509T220506_w_us-en/acnmedia/PDF-17/Accenture-Wealth-Management-Rise-of-Robo-Advice.pdf#zoom=50. The report notes that 81% of wealth management clients surveyed say that face-to-face interaction is important. See also Ignites, Another German Robo-Adviser Launches Video Advice (Aug. 15, 2016), available at http://igniteseurope.com/c/1429803/164343/another_german_robo_adviser_launches_video_advice?referrer_module=emailMorningNews&module_order=7&code=YldGeWRHbHVMbkJoY210bGMwQmliiR0ZqYTNKdilkyc3VZMjI0TENBeU1EWXpNemN5TENBeE9UTTVPVEV3TVRVNA.
21. Tracxn Report: Robo Advisors (Feb. 2016).
22. KPMG and CB Insights, The Pulse of FinTech, Q1 2016 (May 25, 2016), available at <https://assets.kpmg.com/content/dam/kpmg/pdf/2016/05/the-pulse-of-fintech.pdf>.
23. PwC Global Fintech Report, Blurred Lines: How FinTech is Shaping Financial Services (Mar. 2016), available at <http://www.pwc.com/gx/en/advisory-services/FinTech/PwC%20FinTech%20Global%20Report.pdf>.

Notes

24. FINRA 2016 Report.
25. Investor Pulse. In the US, 58.5% of respondents aged 25-34 and 53.0% percent of respondents aged 35-44 were very/somewhat interested in robo advisory services. In contrast, less than 20% of respondents ages 55 and up indicated that they were very/somewhat interested in robo advisory services.
26. For example, see Dutch Autoriteit Financiële Markten research on the behaviour of self-directed investors (Dec. 4, 2015), available at <https://www.afm.nl/en/professionals/nieuws/2015/dec/eob-rapport>.
27. For example, in the UK 50% of people don't actively manage their spending and saving, One in six struggles to identify the balance on a bank statement and 17 million adults in England have numeracy skills equivalent to a primary school child. See Financial Capability Strategy for the UK (Aug. 2014), available at <http://www.thinknpc.org/publications/financial-capability-outcome-frameworks/>; National Numeracy Report, Manifesto for a Numerate UK, available at https://www.nationalnumeracy.org.uk/sites/default/files/media/manifesto_for_a_numerate_uk.pdf.
28. Investor Pulse.
29. See footnote 14.
30. The UK Financial Conduct Authority (FCA) has highlighted that digital advice can be more convenient for consumers and offer efficiency and cost benefits to providers. See FCA, Feedback Statement on Call for Input: Regulatory barriers to innovation in digital and mobile solutions (Mar. 2016), available at <http://www.fca.org.uk/static/fca/article-type/feedback%20statement/fs16-02.pdf> (FCA Feedback Statement on Call for Input).
31. Most recently, see UK Competition and Markets Authority's requirements at <https://www.gov.uk/government/news/cma-paves-the-way-for-open-banking-revolution> for UK banks to require banks to implement Open Banking by early 2018. Open Banking will enable personal customers and small businesses to share their data securely with other banks and with third parties, enabling them to manage their accounts with multiple providers through a single digital 'app', to take more control of their funds and to compare products.
32. FCA Feedback Statement on Call for Input.
33. In particular see comments by Commissioner Jonathan Hill on the benefits of an e-ID at the Public Hearing on Retail Financial Services (Mar. 2016), available at http://europa.eu/rapid/press-release_SPEECH-16-505_en.htm.
34. TISA/Open Identity Exchange White Paper: Could Digital Identities help transform consumers' attitudes and behaviours towards savings? (May 2016), available at <http://oixuk.org/wp-content/uploads/2016/05/TISA-Discovery-Project-white-paper-final-04.05.16.pdf>.
35. In the EU, see the suitability requirements set out in Article 25 of MiFID II, available at <http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32014L0065&from=EN>.
36. Investment Advisers Act Release No. 1406 (Mar. 16, 1994).
37. Pension Protection Act of 2006, Public Law 109-280 (Aug 17, 2006), available online at <https://www.gpo.gov/fdsys/pkg/PLAW-109publ280/pdf/PLAW-109publ280.pdf>.
38. See e.g., DoL Fiduciary Rule.
39. FINRA 2016 Report.
40. See European Commission Delegated Regulation (EU) of 25.4.2016 supplementing Directive 2014/65/EU of the European Parliament and of the Council with regards to organisational requirements and operating conditions for investment firms and defined terms for the purposes of that Directive, available at http://ec.europa.eu/finance/securities/docs/isd/mifid/160425-delegated-regulation_en.pdf.
41. In the EU, see detailed requirements for performance reporting to clients in Article 44 (4)-(6) of Commission Delegated Regulation (EU) of Apr. 25, 2016 supplementing the recast Markets in Financial Instruments Directive II (Directive 2014/65/EU).
42. FCA: Thematic review of Wealth management firms and private banks, Suitability of investment portfolios (Dec. 2015) at <http://www.fca.org.uk/static/documents/tr15-12.pdf>.
43. Michael Wursthorn and Anne Tergesen, The Wall Street Journal, Robo Adviser Betterment Suspended Trading During 'Brexit' Market Turmoil (Jun. 24, 2016), available at <http://www.wsj.com/articles/robo-adviser-betterment-suspended-trading-during-brexit-market-turmoil-1466811073>; Michael Wursthorn and Anne Tergesen, The Wall Street Journal, Robo Adviser Betterment Stokes Concern Over Brexit Trading Halt (Jul. 2, 2016), available at <http://www.wsj.com/articles/robo-adviser-betterment-stokes-concern-over-brexit-trading-halt-1467403366>; Alessandra Malito, InvestmentNews, Betterment's move to halt trading following Brexit vote sparks controversy (Jun. 28, 2016), available at <http://www.investmentnews.com/article/20160628/FREE/160629905/betterments-move-to-halt-trading-following-brexit-vote-sparks>.
44. SEC, Division of Investment Management, Cybersecurity Guidance, No. 2015-02 (Apr. 2015), available at <https://www.sec.gov/investment/im-guidance-2015-02.pdf>.
45. See Statement on Standards for Attestation Engagements (SSAE) SOC 2 Report, available at <http://www.ssaе-16.com/soc-2/>.
46. FFIEC, Cybersecurity Assessment Tool (Jun 2015).
47. National Institute of Standards and Technology, Advanced Encryption Standard (Nov. 26, 2001), available at <http://csrc.nist.gov/publications/fips/fips197/fips-197.pdf>.
48. FFIEC, IT Examination Handbook, Vendor and Third-party Management, available online at <http://ithandbook.ffiec.gov/it-booklets/retail-payment-systems/retail-payment-systems-risk-management/operational-risk/vendor-and-third-party-management.aspx>.
49. The SEC recently released a new proposal for business continuity management that would enhance requirements for investment advisors. See 81 Fed. Reg. 43530, SEC, Adviser Business Continuity and Transition Plans (Jul. 5, 2016), available at <https://www.gpo.gov/fdsys/pkg/FR-2016-07-05/pdf/2016-15675.pdf>.
50. IOSCO, Report on the IOSCO Social Media and Automation of Advice Tools Surveys (Jul. 2014), available at <http://www.iosco.org/library/pubdocs/pdf/IOSCOPD445.pdf>.
51. FINRA 2016 Report.
52. SEC and FINRA, Investor Alert: Automated Investor Tools (May 8, 2015), available at <https://www.sec.gov/oiea/investor-alerts-bulletins/autolistintoolshmt.html>.
53. Massachusetts Securities Division, Policy Statement, Robo-Advisers and State Investment Adviser Registration (Apr. 1, 2016), available at <https://www.sec.state.ma.us/sct/sctpdf/Policy-Statement--Robo-Advisers-and-State-Investment-Adviser-Registration.pdf>.
54. Massachusetts Securities Division, Policy Statement, State-Registered Investment Adviser's Use of Third-Party Robo-Advisers (Jul. 14, 2016), available at <https://www.sec.state.ma.us/sct/sctpdf/Policy-Statement-State-Registered-Investment-Advisers-Use-of-Third-Party-Robo-Advisers.pdf>.
55. ESAs Paper on Digital Advice.
56. BlackRock, *ViewPoint*, Retail Distribution Review: Looking Ahead (Nov. 2012), available at <https://www.blackrock.com/corporate/en-ca/literature/whitepaper/retail-distribution-review-looking-ahead.pdf>.

Notes

57. FCA, Financial Advice Market Review Final Report (Mar. 14, 2016), available at <https://www.fca.org.uk/static/fca/documents/famr-final-report.pdf>.
58. BlackRock, Comment Letter, Financial Advice Market Review Call for Input – FCA (Dec. 22, 2015), available at <https://www.blackrock.com/corporate/en-us/literature/publication/hmt-fca-financial-advice-market-review-call-for-input-221215.pdf>.
59. Hong Kong Securities and Futures Commission, SFC Establishes FinTech Contact Point (Mar. 1, 2016), available at <https://www.sfc.hk/edistributionWeb/gateway/EN/news-and-announcements/news/doc?refNo=16PR19>.

This publication represents the regulatory and public policy views of BlackRock. The opinions expressed herein are as of September 2016 and are subject to change at any time due to changes in the market, the economic or regulatory environment or for other reasons. The information in this publication should not be construed as research or relied upon in making investment decisions with respect to a specific company or security or be used as legal advice. Any reference to a specific company or security is for illustrative purposes and does not constitute a recommendation to buy, sell, hold or directly invest in the company or its securities, or an offer or invitation to anyone to invest in any BlackRock funds and has not been prepared in connection with any such offer.

This material may contain 'forward-looking' information that is not purely historical in nature. Such information may include, among other things, projections and forecasts. There is no guarantee that any forecasts made will come to pass.

The information and opinions contained herein are derived from proprietary and non-proprietary sources deemed by BlackRock to be reliable, but are not necessarily all inclusive and are not guaranteed as to accuracy or completeness. No part of this material may be reproduced, stored in any retrieval system or transmitted in any form or by any means, electronic, mechanical, recording or otherwise, without the prior written consent of BlackRock.

This publication is not intended for distribution to, or use by any person or entity in any jurisdiction or country where such distribution or use would be contrary to local law or regulation.

In the EU issued by BlackRock Investment Management (UK) Limited (authorised and regulated by the Financial Conduct Authority). Registered office: 12 Throgmorton Avenue, London, EC2N 2DL. Registered in England No. 2020394. Tel: 020 7743 3000. For your protection, telephone calls are usually recorded. BlackRock is a trading name of BlackRock Investment Management (UK) Limited. In Hong Kong, this is issued by BlackRock Asset Management North Asia Limited and has not been reviewed by the Securities and Futures Commission. In Korea, this is issued by BlackRock Investment (Korea) Limited. In Singapore, this is issued by BlackRock (Singapore) Limited (company registration number: 200010143N). In Taiwan, this is issued by BlackRock Investment Management (Taiwan) Limited. Address: 28/F, No. 95, Tun Hwa South Road, Section 2, Taipei 106, Taiwan. Tel: (02)23261600. Issued in Australia and New Zealand by BlackRock Investment Management (Australia) Limited ABN 13 006 165 975 AFSL 230 523 (BIMAL). This material contains general information only and does not constitute financial product advice. This material has been prepared without taking into account any person's objectives, financial situation or needs. Before making any investment decision based on this material, a person should assess whether the information is appropriate having regard to the person's objectives, financial situation and needs and consult their financial, tax, legal, accounting or other professional advisor about the information contained in this material. BIMAL is the issuer of financial products and acts as an investment manager in Australia. BIMAL does not offer financial products to persons in New Zealand who are retail investors (as that term is defined in the Financial Markets Conduct Act 2013 (FMCA)). This material does not constitute or relate to such an offer. To the extent that this material does constitute or relate to such an offer of financial products, the offer is only made to, and capable of acceptance by, persons in New Zealand who are wholesale investors (as that term is defined in the FMCA). BIMAL is a part of the global BlackRock Group which comprises of financial product issuers and investment managers around the world. This material has not been prepared specifically for Australian or New Zealand investors. It may contain references to dollar amounts which are not Australian or New Zealand dollars and may contain financial information which is not prepared in accordance with Australian or New Zealand law or practices. BIMAL, its officers, employees and agents believe that the information in this material and the sources on which the information is based (which may be sourced from third parties) are correct as at the date specified in this material. While every care has been taken in the preparation of this material, no warranty of accuracy or reliability is given and no responsibility for this information is accepted by BIMAL, its officers, employees or agents. Except where contrary to law, BIMAL excludes all liability for this information. Past performance is not a reliable indicator of future performance. Investing involves risk including loss of principal. No guarantee as to the capital value of investments nor future returns is made by BIMAL or any company in the BlackRock Group. In Japan, this is issued by BlackRock Japan Co., Ltd. (Financial Instruments Business Operator: The Kanto Regional Financial Bureau. License No375, Association Memberships: Japan Investment Advisers Association, The Investment Trusts Association, Japan, Japan Securities Dealers Association, Type II Financial Instruments Firms Association.) In Latin America and Iberia, this material is for educational purposes only and does not constitute investment advice nor an offer or solicitation to sell or a solicitation of an offer to buy any shares of any Fund (nor shall any such shares be offered or sold to any person) in any jurisdiction in which an offer, solicitation, purchase or sale would be unlawful under the securities law of that jurisdiction. If any funds are mentioned or inferred to in this material, it is possible that some or all of the funds have not been registered with the securities regulator of Brazil, Chile, Colombia, Mexico, Panama, Peru, Portugal, Spain, Uruguay or any other securities regulator in any Latin American country and thus might not be publicly offered within any such country. The securities regulators of such countries have not confirmed the accuracy of any information contained herein.

©2016 BlackRock. All rights reserved. iSHARES and BLACKROCK are registered trademarks of BlackRock.

All other marks are property of their respective owners.

GOV-0108

BLACKROCK®