

# Digital-Savvy Retail Investors – How Can the Financial Industry and Regulation Help Them to Prosper?

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## Abstract

Digitalisation and technology are dramatically changing how retail investors invest. Four emerging trends are shaping retail investors' behavior: the use of mobile apps, robo-advice, social media platforms, and the rising interest in crypto investment. On the one hand, such changes offer easier access to investment (e.g. at lower cost), raising retail investors' interest and helping them to define a strategic allocation and rebalancing of their portfolio. On the other hand, they may also have unexpected negative impacts on investment behaviour and amplify investment biases (e.g. return chasing, disposition effect). To address these challenges and eliminate potential risks, the financial industry should educate investors and promote financial literacy, expand and adapt their product offering and services to the needs and behaviours of investors, as well as attract new generations of investors against their 'digital' competitors (e.g. finfluencers).

Regarding the regulatory and supervisory framework, it should become innovation-friendly, technologically neutral, and sufficiently future-proof to be fit for the digital age. This may require improving the regulatory framework regarding online disclosure, marketing communications and practices on social media and through third parties, and digital engagement techniques (e.g. nudging, gamification). Moreover, it is also important to continue strengthening supervisory enforcement, especially in the context of the growth of digital channels, particularly with the cross-border provision of services in mind.

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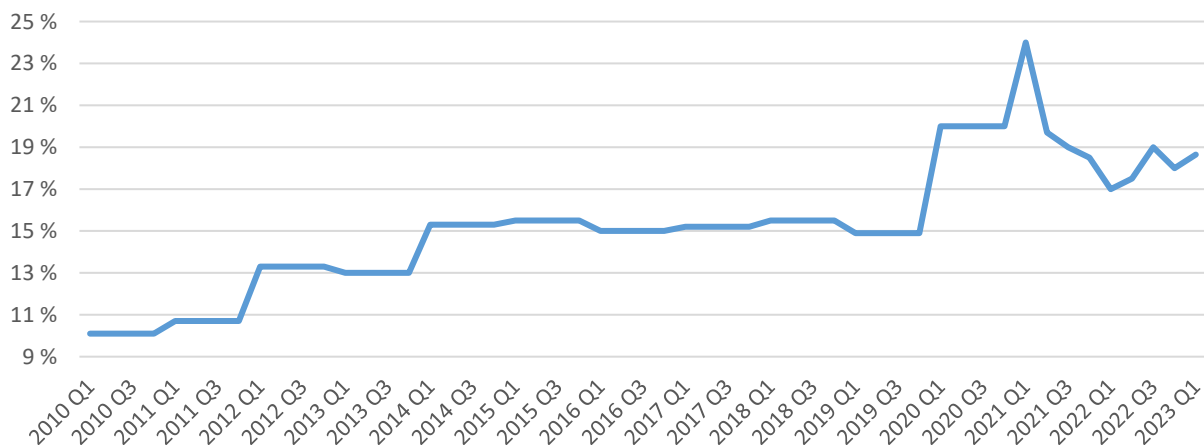
## Introduction

The advancement of financial technology (FinTech) has reshaped the way people access financial services, from the introduction of internet-based trading in the 1990s to the growing importance of mobile apps, the rise of robo-advisors and the growing importance of social media. These digital innovations have removed many of the barriers preventing retail investors from accessing financial markets<sup>1</sup> and contributed to retail investors' appetite for investment. The recent pandemic also added to this growing appetite, with individuals suddenly left with extra time and extra cash. A new class of retail investors emerged, exhibiting new types of motivation and behaviour.

In 2010, retail trading accounted for less than 10 % of the total stock market trading volume in the US, while it nearly doubled by the end of Q1 2023 (see Figure 1). More than [10 million new brokerage accounts](#) were opened in 2020 (around [15 % of US stock market investors](#) first began investing in 2020) and approximately [30 million between 2020-2022](#). Moreover, more than 6 million Americans [downloaded a trading app](#) in January 2021 alone. Similar trends in retail trading could be observed in [Europe](#) and [Asia](#).

Being optimistic about the prospects of financial markets, this new generation of retail investors participates in investment forums, trades on apps and invests in a wide range of different asset classes, not only public equities (e.g. cryptos, currencies, crowdfunding)<sup>2</sup>. In recent years, crypto has been growing in popularity, with many people treating it as an investment opportunity. Still, views about cryptos remain very polarised. For many investors, the main appeal of crypto is the possibility to invest in an innovative digital asset. While some use it for short-term speculative purposes, others own it as part of their diversification strategy.

Figure 1. Retail investors' share of US equities trading volume (Q1 2010 to Q1 2023)



Source: Amundi Institute on Bloomberg intelligence data.

<sup>1</sup> In the US, the introduction of new digital trading platforms with no minimum investment accounts and zero-commissions and the introduction of fractional shares trading.

<sup>2</sup> In the UK, for example, the number of people trading on the foreign exchange (FX) [increased](#) by 23 % between May 2020 and May 2021. Similarly, the average African FX brokerage saw its trading volumes rise by [more than 20 %](#) over the same period, largely due to the high number of traders using their smartphone.

In what follows, we examine **four emerging trends in retail investors’ behaviour**, related to **technological change**. These trends include the use of mobile apps, robo-advice, social media platforms, and the rising interest in crypto investment. We then explore how financial players could **adapt their product offering and services** to cope with these new behaviours, before concluding on whether the current **regulatory landscape** is up to date.

### Using smartphones to invest: Does it make a difference?

**The rise of investment apps.** Smartphones are the [most owned](#) consumer technology product. In 2023, the number of smartphone users worldwide reached [4.6 billion](#), and the average user spent [3 hours and 15 minutes](#) on their smartphone every day. This widespread adoption of smartphones has led to a boom in the development of mobile trading applications allowing investors to access market information and to trade anytime and anywhere. The number of people worldwide using smartphones to trade securities has increased from 36 million in 2017 to more than [130 million](#) in 2021. Consequently, [more than 20 %](#) of all trades by retail investors were executed using mobile devices. What is the impact of retail investors’ adoption of financial apps on their investment behaviour?

**A large impact on risk taking.** Recent [research](#) has examined the impact of trading apps on investors’ behaviour. Studying the transactions of 15 000 clients of two large German retail banks that introduced mobile apps over 2010-2017 shows that the use of smartphone trading apps increases the probability of **purchasing risky assets** (volatile or ‘lottery-type’ stocks) by 67 % in relative terms compared to non-smartphone trades. Moreover, it increases the probability of **‘chasing’ returns** (i.e. buying assets in the top 10 % of past performance) by 71 %. Importantly, the results do not appear to be short-lived and driven by the initial enthusiasm over the new technology.

**Amplification of investment biases.** The widespread adoption of investment apps also seems to amplify cognitive biases such as self-control problems and overconfidence. Evidence from a leading investment adviser in China<sup>3</sup> shows that after the introduction of a mobile app, investors’ [attention and trading volume](#) increased substantially (by 143 % and 80 % respectively). At the same time, investors’ flows into mutual funds became **more volatile and more sensitive to short-term (one week) fund returns** and market sentiment. Young investors, who are presumably more prone to self-control problems, experienced a greater increase in logins and trading intensity. Male investors, more likely to be more overconfident, were more affected than female investors.

**What explains this?** The design of the app itself could play a role. App notifications, such as those displaying top movers (like in the example of the Robinhood platform), impact investors’ [trading](#)

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<sup>3</sup> The adviser managed assets of RMB 300 billion (approximately USD 43 billion) through 65 mutual funds ranging from equity and bond funds to hybrid and money market funds. Prior to the launch of the smartphone app, clients could only access an official website with an internet browser, primarily via a PC.

[decisions](#). But even when the app does not have its own specific design compared to the website, retail investors' behaviour is still different. This could also be due to smartphones' physical attributes, particularly their smaller screen. However, there are no differences in trading via devices with different screen sizes (i.e. iPhones vs. iPads).

Another possible explanation, could be the **different circumstances** (e.g. different hours or different conditions) in which investors access the app. It has been found that smartphone effects are stronger during the [after-hours](#) period (i.e. following exchange closure). This is probably because individuals are more likely to rely on [more intuitive thinking later in the day](#)<sup>4</sup>. However, these puzzling effects still require further investigation.

### Do robo-advisors add value to investors?

**A growing market.** Robo-advisors are attracting growing interest. Using automated procedures, ranging from relatively simple algorithms to complex systems built around big data, robo-advisors **recommend how to allocate funds across different types of assets**. A client profiling technique is employed to assess an investor's goals and characteristics (e.g. risk aversion, financial knowledge, investment horizon), which are then used to build client portfolios. In addition to recommending an initial allocation of funds, algorithms can monitor the clients' portfolios and detect deviations from their targeted profile. Whenever deviations are identified, the client is alerted or, in the case of 'managed accounts', the portfolio is automatically rebalanced. Portfolios can also be rebalanced to reduce risk or cater for changes in investors' risk tolerance or investment goals. In the US, robots propose to implement 'tax harvesting' techniques: selling assets that experience a loss and using the proceeds to buy assets with similar risk profiles to decrease capital gains and taxable income.

**Improved investment decisions.** Recent academic studies document that robo-advising services tend to increase investors' [risk-adjusted returns](#). This is partly a result of static changes in portfolio choices, such as [improving diversification](#) and therefore reducing risk for a given level of expected returns. However, higher risk-adjusted returns may also occur over time, by allowing investors to [rebalance their portfolios](#) in a way that stays closer to their target risk-return profile.

The use of robo-advising tools, such as a portfolio optimiser, has been shown to have [beneficial effects](#) to under-diversified investors by increasing their portfolio diversification, reducing their risk, and boosting their mean returns. But not all investors are winners, as it has been found that robo-advisors do not improve the performance of already-diversified investors. Studying the effects of a large [US robo-adviser](#) on the portfolios of previously self-directed investors, revealed that – across all investors – robo-advice users reduced their money market investment and increased their bond holdings. The introduction of robo-advice also **reduced idiosyncratic risk** by reducing the holdings of individual stocks and active mutual funds, while raising exposure to low-

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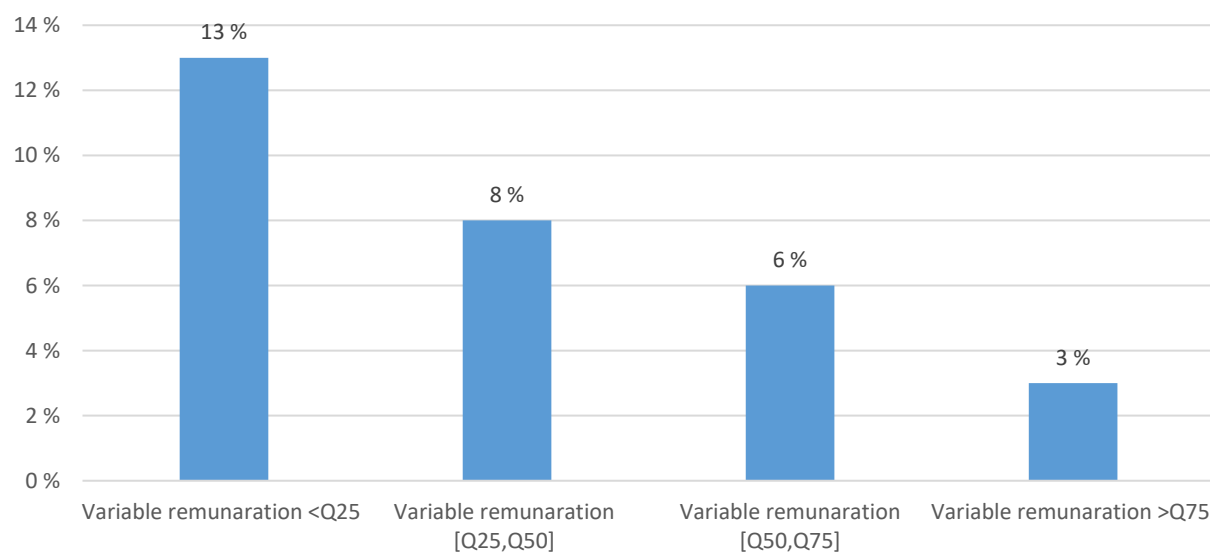
<sup>4</sup> System 1 is the fast, instinctive and emotional mode of thinking. System 2 is the slower, more deliberative and logical mode of thinking.

cost indexed funds. Furthermore, their **portfolios' home bias** was reduced by an increase in the international equity and fixed income diversification.

The use of a large French robo-advisor on employee savings' plans [showed](#) that relative to self-management, accessing the robo-advice services is associated with an increase in individuals' investment and risk-adjusted returns, net of fees (see Figure 2)<sup>5</sup>. Investors **invest more in equities and rebalance their portfolios** in a way that keeps their allocation closer to the target. When looking at performance improvement, two-thirds of it is due to the introduction of dynamic rebalancing. In fact, self-directed investors tend to invest passively, letting their asset allocation drift following market movements.

**Financial inclusion.** An important promise of robo-advisors is to promote financial inclusion. Offering financial services often involves substantial fixed costs, which can make it unprofitable to serve poorer consumers. New technologies allow a dramatic decrease in costs, allowing financial services to reach individuals who have been traditionally [under-served](#). Robo-advisors typically require [lower](#) initial capital to open an account and charge [lower fees](#) than human advisors. A reduction of the minimum account size from USD 5 000 to USD 500 by a major US robo-advisor has been [found](#) to result in a **59 % increase in the share of 'middle class' participants** (i.e. with wealth between USD 1 000 and USD 42 000), but no increase in participation by households with wealth below USD 1 000.

Figure 2. Robo impact on equity investment depending on income quantiles



Note: The figures show risk-adjusted returns for different levels of remuneration (a proxy for income).

Source: [Bianchi and Briere \(2021\)](#).

<sup>5</sup> The increase in risk exposure and portfolio returns is larger for investors with smaller portfolios (or a lower income) and lower equity exposure before robo-adoption.

## Does social media help when making investment decisions?

**The social nature of investing.** A large body of literature highlights the **influence of peers on investment decisions**. As Robert Shiller [explains](#): *‘Investing in speculative assets is a social activity. Investors spend a substantial part of their leisure time discussing investments, reading about investments, or gossiping about others’ successes or failures in investing’*. In this context, social networks have always had a great influence on investors. The London Stock Exchange started in 17<sup>th</sup> century [coffee houses](#), and social dynamics gave rise to famous bubbles like the [South Sea Bubble](#). However, it is only recently that digital platforms have made social networks much larger. Today, retail investors are increasingly active on finance-related social media through creating content, discussing news events, sharing investment research, and debating investment strategies.

**The development of social trading.** The last two decades saw the development of various types of social media in finance. Some social media platforms (e.g. StockTwits, SeekingAlpha) allow investors to share opinions about securities without offering trading services. Others, (e.g. eToro, Skilling, ZuluTrade) combine social media with a trading platform, a major innovation in online trading. These platforms are different from classic trading platforms because they offer the possibility of so-called **mirror trading** (copying and automatically executing the investment strategies of other traders, referred to as ‘signallers’, or ‘trade leaders’<sup>6</sup>). Social trading platforms charge users fees, for example spreads or order costs. This social trading culture has created a new type of market enabling social interaction between signallers and followers. Social interactivity, as well as the gamification of trading apps, [increases users’ engagement](#) and contributes to the addictive nature of these apps, leading to more trading and potentially reduced performance of retail investors who tend to trade more than they actually need to.

**Good advice?** There is an intense debate over the value of social media recommendations. Some studies suggest that [social media spread stale news](#), and that beliefs formed in ‘[echo chambers](#)’ lead to lower ex-post returns, more siloing information and more trading volume. Data from a popular Chinese social trading platform revealed that social learning on average [encourages riskier trading](#) and high-volatility stocks, while it hurts performance and leads to lower stock returns.

On the other hand, certain types of social media platforms may provide investment value in terms of predicting [future stock returns](#) and [earnings](#), and the measuring market’s [expectations of earnings](#). However, and with regard to social trading portfolios (e.g. wikifolios), [evidence](#) shows that on average they do not outperform the market, even if the best performing ones earn significant short-term returns.

When deciding who to follow, investors do not always select trade leaders rationally based on [past performance](#), but they are also largely influenced by social dynamics such as a trader’s credentials

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<sup>6</sup> Signallers display their trading strategy, performance, number of followers and ranking on their profile, and they are compensated for sharing their investment ideas based on performance fees.

and their [number of followers](#). Nevertheless, **followers tend on average to [select the right signallers](#)**, despite the fact that signallers tend to herd and replicate their competitors' strategies.

**An amplification of investment biases.** Social interaction may contribute to biased trading behaviour. Traders search for [mutually beneficial peer-connections](#) when their strategies display attractive performance and they have greater bargaining power. This tends to exacerbate retail investors' **disposition effect** (i.e. the tendency to sell winning assets while holding losers). The bias is even strongest among inexperienced traders that presumably have the most to gain from forming social connections.

On social media platforms, retail investors choose to **selectively expose themselves to [confirmatory information](#)**, meaning that they choose to consume information that aligns with their peers' views (i.e. echo chambers). This was highlighted in a large exercise that considered 33 million posts and 14 million follower-connections by 400 000 users of StockTwits – one of the largest social networks for investors. StockTwits users mark their posts as bullish (or bearish), and one can see who they choose to follow. The results showed that self-described bulls are five times more likely to follow a user with a bullish view of the same stock than self-described bears<sup>7</sup>. Additionally, investors are more likely to seek confirmatory information when they have 'skin in the game'. Users that have an ongoing trade are three times more likely to follow same-sentiment users, relative to users who are not trading.

**The negative impact of upward social comparison.** Social trading exposes investors to upward social comparison (i.e. the process of comparing oneself to better peers), which may have a negative impact on investment behaviour. In particular, [research](#) shows that social influence results in irrational and impulsive trading behaviour, which is linked to **taking more risk and trading more actively**, as well as reporting significantly lower satisfaction with their own performance. This is one of the pitfalls of digital investment platforms offering peer group comparison.

## What is special about crypto investments?

**Who owns cryptos?** Households' investment in cryptos rose sharply during the Covid-19 period. Mid-2022, almost [15 % of individuals](#) had conducted transfers in cryptos<sup>8</sup>, with the majority of US crypto holders being mostly [young white males with higher incomes](#) and are more libertarian or politically independent compared to non-crypto holders. In general, crypto assets represent a small fraction of their financial wealth, even though almost 20 % of households report that cryptos account for at least 50 % of their financial portfolio. Furthermore, crypto holders are usually homeowners who are higher income earners and spenders than non-holders (especially via credit cards) and twice as likely, when compared to non-holders, to have ever gambled.

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<sup>7</sup> This selective exposure generates significant differences in the newsfeeds of bulls and bears: over a 50-day period, a bull will see 62 more bullish messages.

<sup>8</sup> Based on a sample of 5 million clients checking accounts transactions to retail crypto platforms.

However, crypto investors are not a homogeneous group. Those that entered the market early (prior to the 2017 Bitcoin price run up) are more likely – compared to late adopters – to be relatively [large spenders](#), run overdrafts on their checking account and have gambled. They also tend to be [more wealthy](#), financially educated<sup>9</sup>, and living in places with a higher concentration of managerial workers. In contrast, late adopters are generally not only less wealthy but, on average, fare worse due to buying later into upward price trends.

**Polarised views.** Since its inception in 2009, Bitcoin has polarised views, from strong support (e.g. [Elon Musk](#)) to treating it as a vehicle for speculation or even as a form of poison (e.g. [Jerome Powell](#) or [Warren Buffet](#)). This difference of opinion is reflected in the general population. One of the main reasons why retail investors buy cryptos is **their belief that it will [generate high returns](#) and [diversify traditional portfolios](#)**. While many investors view them as offering a [store of value and a hedge](#) against inflation, they are also acting on a desire to support the development of this asset class. Conversely, non-holders of crypto assets justify their decisions by a lack of knowledge and a view that these assets are not only too risky, but that they also do not add much value to their portfolios. When asked about expected returns, crypto holders have much more optimistic views than those of traditional investors (traditional assets holders and non-holders have, on average, the same return expectations).

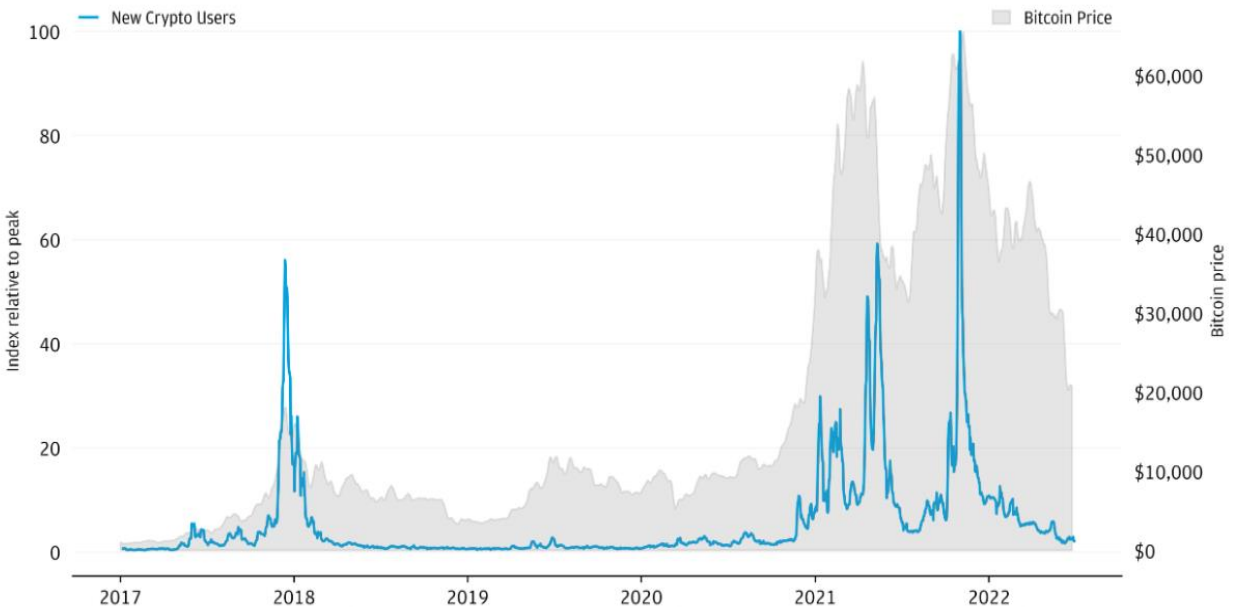
**Investment behaviours.** The share of crypto holders rose sharply between 2021 and 2022 ([from 3% to 11%](#)) at a time when Bitcoin prices were rising (see **Error! Reference source not found.**). Interestingly, **people were not discouraged by the decline** in crypto assets valuations that occurred during the [2022 crypto winter](#): indeed, the share of people holding cryptos rose further to 12 %. However, owners of large wallets [reduced their Bitcoin holdings](#) in the days after the episodes of market turmoil, while smaller holders increased their holdings. This suggests that larger investors were able to sell their assets to smaller ones before the steep price decline while smaller investors suffered large losses.

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<sup>9</sup> Although, the opposite also appears to be true: more financially literate retail investors are [more likely not to have held any cryptos](#).



Figure 3. Number of new Bitcoin users and Bitcoin price



Notes: The blue line depicts the number of new crypto users over time, as a percentage of the maximum number observed. New crypto users are those that have conducted a transaction to or from a crypto exchange. The grey area depicts the price of Bitcoin. Data points are weekly and span from Jan 2017 to June 2022.

Source: [JPMorgan Chase Institute](#).

Crypto holders differ, not only in their demographic characteristics, but also in their [investment behaviour](#) in both crypto and traditional assets. They are **more active traders** (nine vs two trades per month), and log into their brokerage accounts more often (82 vs 27 times per month). They also compose their portfolios differently from the average investor: they are significantly **more likely to hold single stocks, equity derivatives, and warrants**. Technology adoption is a strong determinant of cryptocurrency investment. Crypto holders are three times more likely to have used the **mobile-banking** or mobile-trading app offered by their bank. Interestingly, robo-advice usage is unrelated to crypto investment. Investors tend to follow **momentum strategies** when trading in cryptos, transferring money to crypto accounts when these assets were significantly higher in value than recent levels. New investors tend to enter the market during the [peaks of crypto prices](#), especially investors with lower levels of education.

### Do financial services need to adapt?

New technologies have made **investment more attractive** to retail investors, which is great news. But they have also led to new types of investment behaviours, sometimes **riskier and more subject to additional investment biases**. Can the financial industry offer these new investors the tools and services they need to be successful?

**Financial education.** These new types of investors are **eager to learn more about investment**. A recent [survey](#) shows that more than 90 % of them would like to access information and tools to do their own research, or receive educational material to improve their investment skills. Financial

institutions could develop educational programmes that promote financial literacy – for example, personalised coaching, reiterating sound investment principles and providing information during times of market turbulence. Some [banks](#) have already developed new types of applications to increase investment knowledge, including virtual reality learning modules and embedding key financial concepts in popular video games.

**Digital advice.** 80 % of retail investors say that [having access to financial advice](#) is important when making investment decisions. However, less than half of them actually work with a financial advisor, being a robot or a human advisor. Offering wider access to digital financial advice (for example, using improved chatbots which make use of the recent advances in large language models) and behavioural ‘debiasing’ on investment platforms would help to fill this gap, as well as hybrid or human advice.

Moreover, and for financial advisers to stay competitive in an increasingly digitalised world (e.g. compared to influencers), more consideration should be given on how to attract a new generation of investors. This is because [Gen-Z investors find little use in accessing a personal financial adviser](#), with costs being one of the main barriers for them. Thus, a way forward for financial advisers may be to apply more long-term thinking over the value of their client base<sup>10</sup> and find ways to better position themselves against their ‘digital’ competitors (e.g. in terms of tailored information, quality assurance, professional competence, duty of care).

**Customised diversified products.** Greed and seeking novelty have led many new investors to turn to individual stocks or cryptocurrencies, with a lack of diversification in their portfolio. Platform companies and digital-first players have advantages in offering attractive digital tools but typically lack the financial knowledge of what should be the best products or services to offer. Giving wider access to diversified investment products, customised to investors’ needs (e.g. direct indexing, investment products with personalised guarantees, or funds which are a good fit for investors’ preferences or personal risk appetite) would be key.

### Is the regulatory landscape up to date?

The increasing popularity of investment apps, robo-advisors, social media platforms, and the surge in cryptos, are having profound impacts on the way people invest. This is because they are creating new opportunities in terms of easier access to investment products and capital markets, easier comparability, and lower costs. Thus, this promotes the uptake of retail investment products by enabling consumers to make informed choices that are aligned with their needs.

Nevertheless, **technological change also carries its own risks and poses challenges to retail investors**, as it offers easier access to potentially riskier products. At the same time, investor protection rules may no longer be fit for purpose. If digitalisation and innovation are not customer centric, they risk limiting retail investments and discouraging retail investors’ participation in

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<sup>10</sup> Although currently many Gen-Z investors may not be considered viable clients, they will most likely accumulate more wealth in the future.

capital markets. On top of this, limited digital skills and a lack of financial knowledge may exclude investors from investing in the digital era.

The need for a **fit for purpose and digital-friendly regulatory framework** is more pertinent than ever. However, the current regulatory framework, although intended to be technology-neutral, was designed before the app revolution and did not consider digital distribution. EU rules are not always designed to allow consumers to easily access and absorb relevant information through various channels (e.g. a desktop computer, laptop, tablet, smartphone)<sup>11</sup>. Going forward, financial services legislation must be innovation-friendly, technologically neutral and sufficiently future-proof to be fit for the digital age.

The [Retail Investment Strategy](#) (RIS) proposes measures to leverage opportunities while also addressing emerging risks. The aim is to create a more digital-by-default approach and incentivise a broader use of interactive tools. Similarly, the [Framework for Financial Data Access](#) (FIDA), a cornerstone of the EU Digital Finance Strategy, aims to improve investment advice for consumers and facilitate their access to a comprehensive overview of their financial and investment situation.

However, not all digitalisation risks are addressed by RIS or FIDA. Although the RIS introduces new rules targeting biases in the advisory process, these may come at the expense of **increased complexity**, while requiring more adequate and effective supervision and enforcement than there is today. Another example is related to communication and marketing practices. As the new rules are only applicable to authorised entities, non-licensed entities operating in the digital space are out of scope. Regarding FIDA, there are risks in relation to deceptive practices of combining the sale of financial products with other non-financial goods. In December 2023, the European Securities and Markets Authority issued a [discussion paper](#) seeking comments from stakeholders and consumers on the digitalisation of investment services. In particular, the focus is on the use of digital engagement practices such as nudging techniques, the design of choice architecture and the use of gamification techniques, as well as on how communication to investors could be improved.

Going forward, it is important to continuously monitor risks to **ensure that regulation and supervision remain fit for purpose in the digital age**. Instead of introducing new rules, the starting point should be to first ensure that the current regulatory regime is applied and enforced properly and then adapt accordingly (when and where necessary) to meet digital and technological developments.

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<sup>11</sup> The [Insurance Distribution Directive](#) and the [Packaged Retail and Insurance-based Investment Products \(PRIIPs\) Regulation](#) require pre-contractual information to be provided to consumers on paper by default. It may only be provided in another way (e.g. via email or online) if this is approved by the consumer in advance.

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