

New technologies within and beyond capital markets

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Ladies and gentlemen,

Good evening, and thank you to AFME for inviting me to give a speech at the start of this conference. I am delighted to be here with you all and to be able to talk on such an interesting and wide-ranging theme: the way technology is transforming capital markets. This is a hugely important topic. Its importance stems from two simple observations. First, technological advances are profound, and are happening now. Second, capital markets have a great impact on our prosperity and our society.

Technological change in capital markets is therefore likely to have major consequences. As a regulator, it is my job to ensure investor protection, market integrity and financial stability. We should bear these objectives in mind when thinking about the impact of technology on markets.

I am optimistic that technology has the potential to make capital markets work better and in a more inclusive way. However, there are risks, too. We should support innovation where it is beneficial to markets and investors, while addressing risks as required. Mostly, we need to do this by actively monitoring innovations and examining each development on its own merits. Sometimes, however, it is good to take a step back and to think more broadly. I am not going to start making predictions, as I do not have a crystal ball. But it is a useful exercise to consider what technological innovations elsewhere may mean for capital markets. That is the focus of my remarks this evening.

It is important not to get carried away – there is often a lot of hype around technology, but much of it is speculative or premature. Instead of getting lost in the hype, we can still marvel at the technologies we already use. Indeed, we are in the midst of a technological revolution so successful that its wonders have become commonplace.

All (or nearly all) of us here have smartphones, allowing us to communicate across the globe, to obtain detailed information on almost any imaginable subject and to transact, organise and share our experiences. This democratisation of information would have been unimaginable a generation ago. However, we have seen recently that this development also brings risks. A single tweet can move markets. So it is vital to be able to interrogate information. Who is

responsible for checking the facts you hear? Who is the gatekeeper of the stories you read? Has a tweet by a CEO the same value as a line in a press release?

Online and mobile applications and platforms allow us to do new things, but also make it much simpler to do things we could do before. For example, online banking makes it quicker and easier to manage our household finances, freeing up time for more fulfilling activities. I can now even pay my children their allowance for doing household chores at the touch of a screen, transferring money into their account electronically rather than rummaging around for loose change. Though of course, technology may also prove a distraction. Even the most disciplined among us find ourselves over-using social media and computer games. And who can blame us, when firms are spending millions applying behavioural economics to vast datasets to make these products so appealing?

Increasingly, we see stories in the news about artificial intelligence, or AI. AI is a good example of just how astonishing some recent technological advances have been. Indeed, it can be hard to distinguish fact from science fiction. For example, machines can now have conversations over the phone with a human being, with the human being unaware they're talking to a machine. This was for example shown at this year's Google's annual developer conference: Google presented a demo of "Google Duplex," a feature where an AI-powered assistant calls actual real humans at real businesses to do things like scheduling dinner reservations. In other words, in some situations machines are now passing the 'Turing Test' devised by Alan Turing in 1950 as a way to determine to what extent machines exhibit intelligence.

The unprecedented volume and use of data, wider consumer access and new forms of marketing are some key themes we see repeatedly across sectors. In other words, the technological revolution is all around us. What may it have in store for securities markets and for investors?

New links between firms and investors

Part of the answer may be found by looking at the retail sector. After all, consumers have been purchasing goods and services online since the 1990s. Online purchases continue to grow in market share in many parts of the retail sector as consumers increasingly turn away from buying in-store to buying from a website. If I am looking to buy my weekly groceries, then avoiding a trip to the supermarket is often appealing. Although I might occasionally like advice on what type of cheese to buy or have the chance of running into an old friend while I do my shopping, these are small considerations compared to the greater convenience of shopping remotely. Purchasing a financial product is different, however, as the decision is much more complex than deciding among brands of toothpaste. Many people buying financial products have spoken with a financial adviser. The strength of capital markets ultimately depends on trust between people.

The fact that investing involves complex decision-making and requires trust are important reasons why many financial products are still sold in person. There has been some shift towards online provision of such products, but not in the same way as in other retail sectors. Nonetheless, we are seeing a number of developments pioneered by FinTech firms that are

already having an impact on the way investment funds are distributed to clients. A prominent example is automated advice. More and more consumers now use automated tools when seeking recommendations or advice prior to purchasing or selling financial products and services.

One major benefit of automated advice is to financial inclusion in the investment fund sector. Automated advice may be provided alongside other automated tools customers can use to plan their finances – such as to monitor and manage their savings or debts – and inform themselves about financial products. The development of these new options can help widen access to investment funds and provide comparatively low cost professional advice at lower entry minimums to EU households. Products and tools, which in the 1980s were usually only available to high net worth individuals, can now be accessed by a broader section of society.

Financial inclusion is, of course, a worthy objective in its own right, as it helps households meet their savings goals. In addition, it encourages new investment channels, contributing to the economies of scale that drive down the costs of running or distributing a fund. These cost savings appear to be at least in part passed on to consumers, with automated advice tools offered by most providers as a low cost alternative to human advice. In its third annual assessment, Better Finance concludes that platforms using robo advice can offer individual investors much better value for money than their traditional counterparts.¹

As financial services moves increasingly online, we should remain vigilant as to the ways in which online services can price discriminate more easily. On the internet, companies are able to personalize prices based on information about consumers. Information about an individual can be used to make inferences as to income, age, and social strata, which may be informative about a website visitor's willingness to pay. Likewise, past purchases and browsing behaviour can be used to make assumptions about someone's expected willingness to pay for a product. While pricing strategies are inherently difficult to uncover, a classical example in this respect is that the travel site Orbitz showed Apple users more expensive hotels than it showed to Windows users.²

In financial services, we already know that personal characteristics may give rise to cost differences resulting in price differences, for instance in insurance and credit markets. Based on demographic data or a person's track record, he or she may have a higher probability to cause a traffic accident, fall ill, become unemployed, or default on a loan. By consequence, the cost of providing insurance or credit will differ. While different pricing may be at times justified, as the three ESAs stated earlier this year in the report on big data³, it is important to continue to assess whether new pricing practices introduced as a result of technological innovation are consistent with the fair treatment of financial consumers.

¹ Better Finance, Robo-Advice, June 2018.

² Wall Street Journal, On Orbitz, Mac Users Steered to Pricier Hotels, August 23 2012.

³ Joint Committee Final Report on Big Data, March 2018.

AI-powered investing

Another way in which technology may affect capital markets and investors is in the form of AI-powered investment and trade execution strategies. AI and machine learning tools are being used by portfolio managers – especially systematic or ‘quant’ funds – to detect subtle patterns in data to help predict price movements. Their aim is to generate alpha, and to do so they comb through vast datasets from sources as diverse as satellite images and Twitter feeds.

At present the amount of money in AI-based strategies is limited, and so any impact on financial stability are limited too. However, as AI tools become more widely used, we will want to keep monitoring this area. ESMA contributed to a report by the Financial Stability Board, published last November, which noted the scope for new forms of interconnectedness resulting from the use of AI in financial services.

New tools to protect investors

Finally, a very different application of AI outside of the financial sector is that examination boards are reportedly using machine learning algorithms to spot people cheating on exams. As a former academic who had to set exams for my students, I can certainly see the value of such a tool. It acts as both a deterrent and as a way to ensure the system is fair and reflects the work students have actually done. Now that I am a regulator, one of the goals of my work is to ensure the integrity of markets. Algorithms can be used to help identify where people may be ‘cheating’ in other ways, such as acting on insider information or other bad conduct. This is an illustration of supervisory technology, or SupTech. Regulators have for example been exploring how best to put in place data analytics and pattern recognition systems to study trading behaviour to detect market abuse. While we are still at an early stage in applying tools such as AI-powered surveillance of market conduct, I see significant potential in this area.

The flipside of the SupTech coin is RegTech: the use of new technology by financial market participants to meet their regulatory obligations such as reporting and risk management. Automation of regulatory and compliance functions by financial market participants can increase efficiency and reduce the scope for human error. RegTech is for example extensively used to meet the reporting obligations for investment firms under MIFID 2, allowing for more automation in data reporting. Common reporting standards, such as LEI, ISIN and ISO20022 underpin the successful application of RegTech.

Conclusion

Ladies and gentlemen, it is time to conclude. While there is much hype around technology, we have seen staggering new technologies in recent years across sectors. Capital markets, a crucial engine of the economy, are no exception. As such it is both timely and important that we are here at this event to discuss technological transformation of capital markets.

Regulators face a balancing act. We work to understand and respond to the risks that new technologies and entrants may introduce while at the same time not wanting to stifle innovation by restricting the use of certain technologies. When making this assessment, I think it is



important to keep in the back of our minds that common capital markets phenomena like a derivative, a mutual fund, and even a stock exchange once came to life as a financial innovation.

Thank you for your time this evening.