

## Financial Technology: Applications within the Securities Sector

### Oslo Børs ASA: Stock exchange and Securities Conference 18 January 2017

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Ladies and gentlemen,

It is both an honour and a great pleasure to be here today to speak at the Oslo Børs ASA: Stock exchange and Securities Conference.

Let me start by thanking the Oslo Børs for hosting us today and for having invited me to participate. The issue of FinTech and the regulatory response is a critical topic for both regulators and market participants. The challenge is what I call a regulatory 'tipping point' when does the regulator step in --- the point between 'too small to care' and 'too large to ignore'.

In my remarks today, I will present to you a regulatory perspective on the opportunities and the challenges arising from financial technology and the securities sector. Allow me to add that the topics of technology and regulations are especially relevant, as most academic literature on the topic of financial innovation places them as the primary drivers of innovation.

#### *ESMA Mission*

As you know, ESMA's focus is on European securities markets and it has as its primary objective to promote investor protection, orderly markets and financial stability. It achieves this by assessing risks to investors, markets and financial stability, completing a single rulebook for EU financial markets, promoting supervisory convergence and directly supervising credit rating agencies and trade repositories. And specifically in terms of innovation, ESMA is in charge of ensuring a coordinated approach to the regulatory and supervisory treatment of new or innovative financial activities in the securities markets.

What do we mean when we say financial innovation? ('...the act of creating and distributing new financial instruments, processes, business models and markets, including the new application of existing ideas in a different market context.'). We view Financial Technology or 'FinTech' as a subset of financial innovation, and define it as a type of financial innovation that

relies on Information Technology to function, e.g. internet, cloud etc. and that can result in new business models, applications, processes, products, or services with an associated effect on financial markets and institutions and the provisions of financial services. Let us next discuss ESMA's approach to monitoring Financial Innovation.

### *Approach to Monitoring Financial Innovation*

ESMA has put in place a framework within which the analysis of financial innovation can best take place. The framework provides a principles-based approach to the work both in terms of the range of innovation we track as well as the tools we employ. In designing the framework, we have been guided by the three core objectives of ESMA --- investor protection, financial stability and orderly markets. The ESMA objectives serve to ground the analysis of financial innovation. We bring to the subject a balanced approach, both protective and supportive.

Let us now turn our attention to FinTech.

### *Drivers of FinTech Innovation*

We have observed that while we are now witnessing a virtual torrent of technological innovations coming to market, why has the FinTech phenomena occurred only now when compared to non-financial sectors some of which were borne over 20 years ago? If we look to commerce, we know the way in which goods and services are traded has been permanently transformed by the like of Amazon (founded in 1994); peer to peer merchandise trading such as EBay (founded in 1995); and more recently Airbnb (founded in 2008) and Uber (founded in 2009),

So what are some of the factors driving today's post-financial crisis FinTech revolution. Let us break them down by supply factors and demand factors. Supply factors are those that lead innovators to offer a new product or service, and demand factors are those that lead customers to use the innovation.

On the supply side. First, there has been a sharp increase in power of technological capabilities and an attendant decrease in costs. We see this in the increased ability to process large volumes of data combined with a sharp fall in hardware, software and storage costs.

Second, is a phenomenon that we refer to as the 'innovation spiral', where multiple new products or services may spring from a single innovation, which itself may or may not have been successful. For example, we see this in the way smart phones are transforming the way in which certain financial services are transacted --- payments, budgeting and investments. As we said, often times the original innovations are failures, but some derivative of the original spawns' successful innovations. The potential for the distributed ledger technology to change the way in which we transact, borne out of the largely discredited bit coins, is one such example.

Third, the withdrawal of traditional financial firms from some markets has opened the door to new entrants. Often these entrants arrive with novel ways of providing a service that legacy

providers may have overlooked. Those entrants employ new technology to scale up quickly. They often come unburdened by regulatory incumbency, compliance costs, capital requirements and legacy systems. Some point to the retreat of many traditional banks from certain riskier lending activities owing to capital requirements as the window that has allowed online market place lenders to occupy that space.

On the demand side. First, trust, post-financial crisis there has been a notable decline in trust in traditional institutions, i.e., banks. Previously this 'trust' factor had been a barrier to entry for new entrants to financial services. As a result, consumers may now be more willing to use the services of new market entrants, and crucially they may now be willing to use 'a la carte' specialist providers of some services, such as payment services and savings products, that formerly were offered by a single bank.

Second, heightened expectations, the spread of internet access and the real-time transacting capability of users of internet-connected devices provide an enhanced customer experience. This experience has given rise to higher customer expectations with regard to convenience, speed, cost and user-friendliness of financial services, which has in turn become one of the most important factors in consumer purchasing decisions. Furthermore, as consumers become increasingly accustomed to using internet-connected devices to undertake financial transactions, they may become more willing to use newer Fintech financial services providers.

Third, a related factor, are demographic factors driving demand. Today, the iPhone 6 has infinitely greater speed, processing power and memory than did the Apollo Guidance Computer that powered the first astronauts to the moon. As a result, generation Z are what we call 'digital natives' and have a very different relationship with, and expectation of, technology from the generations before it.

### *Regulatory Challenges*

The issue of FinTech and the regulatory response is a critical topic for both regulators and market participants. The challenge is to identify when the regulator should step in. This is the regulatory 'tipping point' --- the point between 'too small to care' and 'too large to ignore'. I want to share how ESMA approaches the challenge.

When confronted with a financial innovation, a regulator can roughly take one of three approaches, each of which is in its own way 'pro-active' rather than 'reactive':

- 1) Ban or restrict products or processes, in the light of the potential risks (restrictive approach).
- 2) Take a "wait and see" approach (watchful approach).
- 3) Actively facilitate and regulate the product or process because of its potential economic and social benefits (facilitative or catalyst approach) and/or because of known threats to our objectives.

The first, banning, is a power that ESMA and the MSs will have once MiFID II/MiFIR becomes effective on 1 January 2018. Until then, if we believe a harmful ‘tipping point’ has been reached, we can take measures such as issuing warnings as we have done against ‘contracts for differences’ in 2013, and reinforced this past year, or the Statement we issued in 2014 on the risks to investing in Contingent Convertibles, in which we outlined that these instruments should only be purchased by sophisticated investors and are not appropriate for retail.

The second, the ‘wait and see’ approach as I will make clear later, is largely the approach that ESMA, like most regulators, have taken towards the DLT. There is a collective need to better understand DLT and its possible applications in the financial market. Now, do not interpret this as a passive approach, but rather one in which we actively try to learn more about the innovation, but do so while it remains sufficiently immature that we are not placing our objectives, stability, protection and integrity, at risk by not taking action. At the same time, by waiting to see how the innovation develops we do not risk stifling a potentially socially or economically useful product or process. The innovation has not reached a ‘tipping point’ where active regulatory participation is needed.

The third of the three approaches, actively facilitate and regulate the product or process, is an approach we will take when we believe an innovation has matured or become too large to ignore; that is, a tipping point has been reached. An example of this is the work we did in investment-based crowdfunding, where after extensive research we saw the potential for investor protection harm to arise, if the crowdfunding platform operated outside of MiFID rules. We also recognized that there existed both EU-wide regulation and local regulation that were potentially serving to inhibit the growth of crowdfunding. Our action was to draft an Opinion to the 28 National Competent Authorities on how they should consider supervising crowd funding; and Advice to the European Institutions (Parliament, Council and the Commission) on how they should consider regulating crowd funding.

Why have we taken the second of the three approaches to the DLT? We can rule out the first --- restrictive approach as we do not see the DLT presently posing risk to our three objectives --- stability, protection and integrity. While the third, ‘facilitative’ approach has merits, it may reduce regulatory uncertainty around DLT and it may potentially lead to more rapid development in ways that are irresponsible, perhaps in accordance with guidelines established by regulator. However, if the technology fails to develop as anticipated, the approach could lead market participants to suggest that the Regulator acted impetuously.

In turn, I would like to discuss three topics each of which relates to the securities industry: --- Robo Advice, Artificial Intelligence/Big Data; and the Distributed Ledger Technology.

### *RoboAdvice*

‘Robo advice’ also known as automated advice is of interest to us as regulators across the financial sectors. In December 2015, the Joint Committee of the three European Supervisory Authorities launched a Discussion Paper on the topic of automation in financial advice, which explained the concept of automated advice and highlighted the potential benefits and risks to consumers and to financial institutions. The aim of the document was to assess what, if any,

regulatory or supervisory action is required to mitigate potential risks and at the same time how best to harness the potential benefits of this innovation.

Among the benefits repeatedly highlighted, was that this newfound means of delivering financial advice can potentially provide inclusion to consumers previously excluded from the provision of professional advice. Additionally, this expanded access to financial advice comes at a lower cost and with the potential to deliver highly consistent consumer experiences for those seeking financial advice. Other possible benefits relate to the standardisation that automation can bring, which can result in a more consistent consumer experience. A fully automated and standardised advice process can also facilitate record-keeping, allowing institutions to more easily check and audit the quality of the advice they have provided.

The results of the Discussion Paper highlighted certain risks to the automation of financial advice compared to traditional 'human' professional advice cited: first, the risk that consumers could misunderstand advice provided to them without the benefit of a professional advisor to support them through the advice process; second, the potential for limitations or errors in automated tools; and third risks associated with the widespread use of automated advice tools, for example the possibility of a "herding risk" if a significant volume of consumers end up transacting in the same way in relation to the same financial products and services.

The three ESAs having analysed the responses received to the DP and are in the process of deciding whether further cross-sectoral action is warranted or needed at this stage.

### *Big Data/Artificial Intelligence*

Artificial intelligence (AI) software largely relies on data to discern patterns, identify trends and make accurate predictions once reserved to humans. As the internet and connected devices have become core elements of our lifestyle, data is generated, collected, stored, processed and used at unprecedented rates and entire business sectors are being reshaped building on data analytics. All kinds of financial activities/products could be impacted, such as credit profiling of consumers, risk profiling for insurance underwriting, marketing campaigns, carrying out market segmentation decisions, developing products, pricing products/services, preventing fraud, increasing internal efficiency within firms, etc. I could go on.

In the investment management sector, quantitative investing, i.e., the use of risk factors to drive investment decisions has a longstanding place in active management. What is changing the sector today are three factors: first, the volume of data available to support decision making; second, the fall in the cost of computing power and storage; and third, algorithms have been developed to leverage the data. The use of AI in quant investing is different from the earlier generation of factor investing insofar as today's AI program seeks to use that data to improve its decision-making skills over time.

We will continue to analyse the issue in order to decide which, if any, regulatory and/or supervisory actions may be required to mitigate the risks while at the same time harnessing the potential benefits.

## *DLT*

ESMA began examining the topic in early 2013 as the virtual currency known, as 'bitcoin' became a widely known alternative payment service. ESMA then began analysing the degree to which there existed investment products that used virtual currencies as an underlying asset. We learned that such investment products were at best marginal at the time but should be monitored were they to grow and introduce risks to investors. As time passed, ESMA became aware that market participants' focus was largely shifting from virtual currencies as such to the underlying technology.

By 2015, ESMA had put in place a DLT Task Force made up of regulators from across the MSs as well as representatives of the EC and the ECB. Given ESMA's remit, the primary focus of the Task Force has been to better understand how the DLT would function in the area of post-trade activities. As well, the Task Force sought to establish an open dialogue with market players to better understand the potential use cases and begin to address how the technology and regulation would interact.

In June 2016, ESMA published a Discussion Paper to collect feedback from the market on the potential uses, benefits and risks of DLT applied to securities markets. The Discussion Paper also provided a stock-take, with a particular focus on post-trade activities, of the key EU regulations that would be applicable to DLT. We are using the feedback to develop a position on the use of the technology in securities markets and assess whether a regulatory response to the DLT may be needed. I expect our paper to be published later this month following the approval of our Board of Supervisors.

Let me share with you some initial thoughts on our analysis. ESMA's view is that DLT could bring a number of benefits to securities markets, including but not exclusively to post-trade processes. However, a number of challenges will need to be addressed before these benefits may materialise. Importantly, despite a number of interesting proofs of concept, DLT is still at an early stage and we remain unclear as to its capacity to overcome all of these challenges. Also, ESMA realises that while DLT may at once reduce or mitigate certain risks, it may also create or exacerbate others.

In securities settlements, differences in the timing between the delivery of securities and delivery of funds introduces settlement risks between counterparties and/or their intermediaries. To the extent that DLT technologies are designed to replace traditional reliance on trusted intermediaries to ensure settlement, they will need to demonstrate their ability to eliminate settlement risk. This is still more critical when the delivery of securities and the source of funding takes place on two different platforms.

We anticipate that the early applications of DLT will focus on optimising existing processes under the current market structure. Respondents to our DP confirmed this belief arguing that they expect DLT to start small in low volumes, niche, relatively 'simple' and mostly unregulated markets, which is consistent with the early projects that we are seeing. Segments of the markets or activities that are the least efficient will likely be targeted first. Sophistication in terms of applications will increase, as the technology develops. Over time, however, DLT might

help rethink some of the functions of financial intermediaries. ESMA's role in this context is to make sure that the regulatory framework provides relevant safeguards to investor protection, financial stability and orderly markets at all times.

I also want to stress the importance of existing regulation. Supporters of the technology need to consider existing rules when designing DLT solutions. There exist regulatory guardrails within the clearing and settlement sector for good reason. Safety and soundness of financial institutions and markets in the field of clearance and settlement are fundamental to financial stability. We expect private sector to share responsibility for deploying new technologies in ways that are at once consistent with existing regulation and have a thorough understanding of risks and how best to manage them.

We believe it is premature to appreciate all the technological changes and the potential regulatory response that may be needed, as the technology is still in its infancy. In analysing the responses to our Discussion Paper, we have not identified major impediments in the current EU regulatory framework that would prevent the emergence of DLT. Meanwhile, a number of concepts or principles, e.g., the legal certainty attached to DLT records or settlement finality, may require clarification as DLT develops. Also, ESMA realises that beyond pure financial regulation broader legal issues, such as contract law, insolvency law or competition law, may impact on the deployment of DLT.

ESMA will continue to closely monitor market developments around DLT to assess whether a regulatory response may be needed. Meanwhile, regulators must actively engage with market players to ensure both that the technology does not create unintended risks and that its benefits are not hindered by undue obstacles. For their part, we believe that the industry should work towards common solutions to the issues posed by the technology.

In summation, while we would look forward to ways in which FinTech can improve the ways in which the financial system operates, we at the same time are aware that such promises are not without risks. It is the reason that we as regulators must think carefully on how to respond.

### *Conclusion*

Regulators face a balancing act. We work to understand the risks that new entrants may introduce, cautious in allowing innovations to disseminate so widely such that in the event of unanticipated risks, they cannot be rolled back while at the same time not wanting to stifle innovation by restricting the use of certain technologies. We are responsible for designing and supervising the rules of conduct by which financial institutions operate with the aim of minimizing disruption to the markets and harm to market participants. In turn, regulated entities gain access to markets and certain safety nets by applying regulatory standards, and suffer penalties for non-compliance.

We have said that our framework for monitoring financial innovation is a principles-based approach. In turn, our framework needs to remain flexible and adaptive to market events. It also needs the subtlety to know when to respond in a supportive as opposed to a protective



manner, a tipping point of sorts. We intend to revisit the framework on a regular basis to ensure it remains effective and relevant.

Thank you for your time this afternoon.