Olli Rehn: Data-driven financial stability - challenges and opportunities

Opening remarks by Mr Olli Rehn, Governor of the Bank of Finland, at the "Data-driven financial stability" conference, Helsinki, 28 November 2019.

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Ladies and Gentlemen, dear friends,

It is my great pleasure to welcome you all to our conference entitled *Data Driven Financial Stability* here at the Finlandia Hall. We have recently had quite busy "tech weeks" in Helsinki. Just a few weeks ago Helsinki hosted one of the leading startup and tech events in the world – Slush. The programme of this year's Slush was particularly topical, as it focused on the ethics and regulation of technology.

Likewise, we at the central banking community consider ethics and regulation vital. Hence, we are working hard to form a solid understanding of all the potential consequences that the widespread use of e.g. artificial intelligence and mass volume data may have on finance.

From this angle, I will address three issues regarding the role of advanced technologies in finance. First, I will ask how advancements in technology could be used to provide new digital products and services. Second, I will turn to risks related to the widespread use of new technologies that may hamper the proper functioning of markets. Third, I will finish by looking at how the potential impact of new technologies on competition and diversity do call for greater domestic and international policy coordination.

Let me start with a question: What do we mean when talking about artificial intelligence and big data?

In the absence of a generally agreed definition, artificial intelligence can mean anything from a simple script to a very complex combination of automated processes and machine learning models. What comes to massive or big data, there are no universally accepted criteria on how large of a volume of data counts as 'big'.

Yet, while emerging technologies have some novel features, they are still largely based on the same technologies and statistical methods that we've been using for years. Hal Varian recently described artificial intelligence and big data as "*just doing the same sort of thing we did before, but at a much larger scale*".

From where do the potential benefits then stem? Firstly, with the help of new technologies, companies improve their existing processes and create new products, services and distribution channels. The low marginal cost of software solutions allow digital products to be customized, and thus to satisfy the unique preferences of each individual client. Secondly, the digital footprints that customers generate allow companies to better understand when and where digital products are consumed.

Central banks could use artificial intelligence and big data to improve their economic forecasts and enhance the quality of official statistics. The Eurosystem and the euro area authorities have worked extensively on new projects involving highly granular data. The AnaCredit, i.e. the analytical credit dataset on individual bank loans in the euro area, and the EU-wide derivatives data collected under the EMIR, European Markets Infrastructure Regulation initiative, are good examples of these.

The impact of fintech and bigtech challengers

Let me move to financial technology companies, or fintechs, that are especially agile in deriving value from data. They have had an opportunity to start from scratch and design their information architecture based on modern principles of collaboration, connectivity and iteration, without having to bear the burden of legacy systems. Modern data architecture gives these fintechs an advantage in data processing.

In this context 'platform economics' is particularly intriguing. The Bank of International Settlements has recently paid special attention to large technology firms with established user bases that enter finance. The crucial question is, how the entry of these large technology companies, or the so-called bigtech companies, is going to affect competition, financial inclusion, data protection and financial stability?

Will their entry pave a way to more resilient financial markets? Or will the bigtech companies ultimately exploit their efficiency on data collection and processing to gain market dominance and a monopoly position?

However, while these new entrants are efficient in processing data, it is premature to declare the beginning of the end of traditional financial intermediation. Banks will continue to be challenged by new entrants, and, thus, they need to invest heavily into new technology. This may compress profitability in the short-term. However, banks and other traditional financial intermediaries still have a long-term competitive advantage over new entrants that do not have long operating histories, and who may have less skills in business expertise, such as credit and risk management.

New forms of interconnectedness and systemic risk

When regulators say they worry about financial stability, they usually mean that they are concerned about how resilient the banking and financial system is to shocks. For instance, how would the market react if a large financial institution would encounter a breakdown that would make it unable to fulfill its promises to its clients and other relevant parties? How would the weakness in this financial institution impact functioning of the financial markets or the real economy?

Platform ecosystems create new challenges to financial stability, as they comprise of a highly complex matrix of digital products and services. Firms may offer advanced solutions that are built on a product of one key supplier, or may be heavily dependent on processing data on the information architecture that is rented from one key infrastructure provider.

The more complex these networks become, the more vulnerable these ecosystems become to more unconventional security risks. Vulnerabilities in data have so far been less pronounced, largely due to the fact that most datasets have been so-called structured datasets, where the relationships between different data points are clearly defined and specified.

Massive datasets are usually less rigidly specified, and encompass much less structure. For example data obtained from the web by scraping websites, or by reading in social media feeds, are good examples of modern unstructured data. There are no simple ways of certifying the authenticity and origin of these unstructured datasets, which makes them highly vulnerable to manipulation.

These types of security issues are also vulnerable to hybrid security threats. It is therefore extremely important that we stay vigilant to new developments in technology and understand what kind of security vulnerabilities these create. Central banks can also play a role in maintaining a high level of cybersecurity by promoting cybersecurity awareness and knowledge in among the financial market participants.

Ladies and Gentlemen,

Let me conclude. All in all, the financial industry is going through a major transformation, driven by the whole range of digital technologies and the explosive growth of data. Regulators, including central banks, are aiming at finding the right balance between regulation and innovation, so that consumers and businesses can benefit from new possibilities, while maintaining financial stability and a level playing field.

We also want to make sure that the society remains inclusive. That's why we want to look at digital transformation from the citizens' point of view, in order to identify what is real and what is only hype. From that angle, we can see that there are different developments going on:

- those that clearly increase societal welfare and should be benefitted from, such as mobile and real-time payments – as long as we also take care of enhancing financial literacy;
- those that should be watched, or even prevented, such as booms and busts related to crypto-assets; and
- those that can be further developed, such as machine learning and artificial intelligence.

This makes up a very challenging policy agenda for the central bankers, regulators and legislators alike, and for the financial industry. Let us approach it with an open mind for innovation and technology development, but at the same time mindful of financial stability and social inclusion.

With these thoughts, I thank you for your attention and wish you an exciting and useful conference!