

Erkki Liikanen: On the digitalization of financial services – opportunities and risks

Speech by Mr Erkki Liikanen, Governor of the Bank of Finland, at the 2017 RiskLab/BoF/ESRB Conference on Systemic Risk Analytics, Helsinki, 28-30 June 2017.

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1. Introduction

Advances in information and communication technologies have shaped the development of financial services already for several decades. Digitalization of financial services is a new name for this development. But undoubtedly the new name also reflects significant turns in recent developments, which have opened entirely new avenues.

A central phenomenon is that digitalization of information has recently been spreading to almost all areas of human activity. One result of that is the availability of 'Big Data', to use the well-known catchword. It is possible to combine information between sectors and activities more efficiently, often in surprising and productive ways. This is having an impact on all areas of economic activity from production and working patterns to leisure.

At the same time, techniques to handle and analyze the vast new data resources are in increasing demand. Prospects for technological applications which were once considered utopian, are coming a real possibility.

All this has opened new opportunities also to financial services. Both the incumbent institutions and new players are seizing these opportunities. Great benefits are available, but not without risks. Ideally, new technologies and players can increase competition which may lead to better and cheaper financial services to the end users: households, companies, and the public sector.

Today I want to share with you some thoughts regarding digitalization and financial services. I want rather raise questions and leave the search for answers to you, researchers.

Given that this is a conference on systemic risk analysis, I will discuss risks that might be gathering strength as digitalization continues. But I will start by discussing the benefits available, which will help us understand the drivers of new developments in financial services.

Second, I will discuss the role of regulation. Important regulation has already been launched to help reap the benefits made available by digitalization. New legislation needs to be technology-neutral.

To safeguard the benefits, regulation also needs to keep pace with the potential new risks. But therein lies a challenge: the speed of development has become so fast that it may easily exceed the speed with which regulation can adapt. So this is a new paradigm also for the legislators.

Finally, and what might come closest to the concrete issues dealt with in this conference, I will consider the potential role of new data and data analytics in helping us measure and manage the risks – both old and new – to financial stability.

2. Outlook for the future: digitalization

Fundamental shift in consumer expectations

Let us start with consumer expectations. How are they shaping financial services?

Customers, especially, expect that services are available when they are needed. They are used to 24/7 world. The immediacy of services is the new normal.

As to the user experience provided by a bank, consumers no longer necessarily use other *banks* as a benchmark. User experiences provided by tech companies in other services also shape expectations in banking services.

These shifts pose a challenge to traditional banks' infrastructure and organizational setup, perhaps even their mindset. In contrast, the opportunities opened up by digitalization has spawned fintech start-ups that strive to be customer oriented, providing immediacy of services, and being available 24/7 by design. Many banks try to meet this challenge, not without difficulty.

Fragmentation in payment services

Payments are an area where the new products and players are already quite visible.

If a decade ago we had the choice of whether to pay with credit card or cash, now we also have mobile apps for making payments, and in some rare cases even virtual currencies. Similarly for a merchant, the choice, what payment methods to accept has become more complex. At least in the short run this fragmentation of payment choices will likely continue.

Another phenomenon is that payment becomes embedded into other services. This emphasizes the need for sufficient financial literacy as it may become more difficult for customers to keep track of their spending. This is coupled with the fact that instant consumer credit decisions can be incorporated into these services.

Regulators need to stay alert at least from two perspectives: first, to ensure sufficient consumer protection, and second, to monitor the development of consumer credit aggregates from the viewpoint of financial stability.

It is worth noting that most of the new applications are still based on the existing infrastructure. This may impose restrictions on what can be achieved in terms of innovation. It also stresses the importance of thinking about the current systems in the background.

New business models

Fintechs typically challenge the most profitable parts of banking business by offering targeted services and using lean organizations. Competition may hence lead to lower margins in banks. In the short run, this may put a strain on profits in some incumbent institutions, given their heavier organizational structures.

In the longer run, the entry of fintechs could induce a change of business models also in the incumbent institutions. Who will eventually provide the new services? Synergies between different services would seem to be the key question. If there are no synergies between two services, then they will not necessarily be offered by the same institution. This could even have implications for bank structures.

A separate question is: How many companies which are providing payments services alone, will be profitable.

3. Regulating the digitalizing financial industry

3.1 Regulation as a catalyst to reaping the benefits

The changing landscape in the financial industry raises the question how the new digitalized financial services should be regulated. The goal is always to provide efficient but safe services

for households and businesses. Regulation should facilitate this and not be an impediment. It can help reap the benefits available from new technologies.

Comparison with regulatory development in telecom and payments

As a background, it can be useful to look at another industry that has experienced a similar change not too long ago. The telecommunication industry went through such a process in the early 2000s.

In Europe, one of the most important steps was to unbundle services from infrastructure. Until then, whoever owned the copper wire going into the household, had monopoly over the services offered to that household. New EU regulation ensured that new market entrants were given the possibility to offer services regardless of who owned the infrastructure.

The effect that this regulatory reform together with technological development had on households was truly significant. The prices of both devices and of services decreased significantly. As data connections became faster, cheaper and more common, also the demand for devices and services grew at a rapid pace. To use Finland as an example, 20 years later, 95% of households now have an internet connection, 90% have a computer, and 85% have a smart phone.

The industry structure and business models also changed. Telecom operators had to choose between becoming pure infrastructure providers or to widen their service offerings. Regardless of how each company chose, the industry consolidated. Companies were bought and merged, and there was a surge of investments. Occasionally investments resulted in failures: for instance, some technologies turned out to be victims of hype. For handset makers, value creation moved from devices to ecosystems.

Standardization played an important role in this development. Standards accelerated innovation and encouraged competition within the market.

Open banking (Payment Services Directive 2)

The telecom industry provides a useful learning case for the financial industry, especially payments. Telecom and payments are both network industries and share many similarities. EU regulation in payments, of which the Payment Services Directive 2 (PSD2) is the most recent case, is similar in spirit to what was done in telecoms earlier.

Regulation and de-regulation are needed to enable competition and innovation. This means opening markets to new entrants and reducing monopolistic market power. It also means that common standards are needed. The goal should be better and cheaper services for consumers and households. Everyone should have access to financial services at reasonable prices.

But PSD2 is not only about payments. It affects the financial industry more widely, since payments and other financial services are intricately connected. For banks, payments are the most frequent touchpoint to their customers. PSD2 forces banks to open their payments infrastructure to all kinds of service providers. Customers are free to choose, and will retain control of, who can access their accounts.

3.2 New types of risks – regulatory and macroprudential challenges

Let me next consider examples of risks, which need special attention as the digitalization process goes along.

Competition and financial stability

First, it is essential to facilitate competition, as I described above. But we must also mind the

potential trade-off between competition and stability. It is much debated and researched. In particular, when profit margins get tighter, the incentive for risk-taking may rise. One way to control such adverse incentives is to insure sufficient capitalization of financial institutions, so that their owners have sufficient 'skin in the game'. In this regard, regulators have done much after the Global Financial Crisis. But supervisors need to stay constantly alert.

Cyber security

Second, there is the issue of cyber security.

The European financial system is highly interconnected and interdependent. This constantly keeps the potential for financial contagion at the center of financial stability considerations. But the highly interconnected network of institutions also implies that cyber-attacks may pose an increasingly serious concern to the Eurosystem's financial stability.

The issue with cyber-attacks is further accentuated due to its dynamic, constantly evolving nature and because cyber-attacks are borderless. We may still lack sufficient pan-European law enforcement capability to fully monitor the potential for cyber-attacks. However, work has been started to enhance cyber resilience of the Eurosystem. For instance, promoting *cyber best practices* for financial market institutions, conducting *cyber surveys* to monitor progress, and establishing a framework for *testing* procedures would be important operational objectives in the short term.

Shadow banking, shadow markets and new unregulated players

Third, are there specific macroprudential issues that the digitalization development would raise?

One implication of the new technologies is that they may provide a way to move financial activities to less regulated areas. This would clearly be counterproductive because the goal of regulation should be to safeguard financial stability in the broad sense. It is therefore important that sufficient macroprudential measures are available to counteract potential excesses regardless of where they originate within the financial system. (Bank of Finland and SUERF are co-organizing a conference on shadow banking in September in Helsinki, which will provide a forum to discuss these issues further.)

4. Contribution to macroprudential analysis

My final question today is whether the new ample data resources and techniques to analyze large-scale data can help us tackle financial stability risks in general. For instance, are new powerful early warning indicators to be discovered by utilizing these data and techniques? This is clearly a question for which you in the audience can provide better answers. I hope that also this conference has given you opportunities to discuss these issues.

I believe that after the Global Financial Crisis there is an emerging consensus on a few principles. One is that so called nonlinearities matter much for understanding and modelling crises.

As an example of a nonlinear relationship, a shock to asset values of a certain size may not cause much harm if leverage in financial institutions is moderate. However, the same shock can lead to a devastating feedback effect on asset prices if the initial leverage is high.

Consequently, there is a high demand for innovative modelling of nonlinearities. Regarding the early development of such techniques using data-intensive analysis, we have an interesting history in Finland. Professor Teuvo Kohonen is a key developer of a well-known type of neural network algorithms, the Self-Organizing Maps (SOM). Professor Kohonen is widely cited for that.

What are the challenges in modelling non-linear behavior of financial instabilities?

Financial crises are rare events. Hence, it is a statistical challenge to test theoretical models that can generate financial crises.

Likewise, it is difficult to know whether we really capture true invariant relationships when we use data-driven empirical models to trace the likelihood of financial instabilities.

You are the experts in these matters, but it seems to me that the big challenge in this research area would be to find a way to combine the power of data-intensive nonlinear analytics to uncover hidden relationships in the data with a proper understanding of the underlying economic mechanisms at work.

In any case, given the limited number of crisis observations, it might be advisable to also use clever theoretical models to gauge future risks. The models could be used to produce scenarios of adverse developments, even such that may not have yet happened in the past.

To adapt the idea of a famous physicist in the opera *Dr. Atomic*, written by Peter Sellars, perhaps experts in financial stability analysis should regularly “indulg(e) in controlled fantasies, trying to dream up new ... phenomen(a) that (are) not contrary to our knowledge, but perhaps beyond our experience”.

5. Conclusions

To conclude, let us not forget that trust remains the necessary precondition for well-functioning financial markets. Building and maintaining trust will ultimately determine the success of the developers of financial services based on new technologies.

Regulation and supervision are necessary backstops to the new developments, and they must evolve with the times.

Thank you for your attention!