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# *Technology and Finance (The Future of Banking 4)*

**Darrell Duffie, Thierry Foucault, Laura Veldkamp and Xavier Vives**

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This book contains the fourth report from ‘The Future of Banking’ series which was launched in 2019 and examines the evolution of banking systems and financial markets in the period after the financial crisis and during the COVID-19 crisis. These reports are released by the IESE Banking Initiative in conjunction with the Centre for Economic Policy Research (CEPR), and all four reports are characterised by the academic rigour of their analyses of the effects of regulatory policy and competition on banking’s business models. The studies have been coordinated by different top-tier economics scholars in the world of finances, and Xavier Vives, a professor of economics and finances at IESE Business School, has been a member of the coordinating team for all these reports and can therefore be considered the true inspirational force.

The three previous reports published in 2019, 2020 and 2021 focused on analysing the consequences of the decade of regulation since the financial crisis, the transformation of the banking model after the COVID-19 crisis and the resilience of the financial system in the face of climate and natural disasters, respectively. The latest report, reviewed below, analyses how the changes associated with the digital revolution have affected the world of finances and banking. This report was coordinated by Xavier Vives, as mentioned above, along with Darrell Duffie, a professor at Stanford Graduate School of Business; Thierry Foucault, a professor at HEC Paris; and Laura Veldkamp, a professor at Columbia University’s Graduate School of Business in New York.

In addition to the aforementioned report, this publication also contains the programme of the ‘Technology and Finances’ conference held on 8 April 2022, which echoed the three main areas dealt with in this report. The book also includes the intriguing keynote speech delivered at that conference by Fabio Panetta, a member of the Executive Board of the European Central Bank. Panetta focuses on outlining what he believes the implications of introducing a central bank digital currency (CBDC) may be. On the one hand, CBDCs diminish the role that traditional banks play as financial intermediaries and overseers of the risks taken on by the private sector.

On the other hand, the existence of a safe currency like digital euros could provoke banking panics at times of crisis, as commercial banks would then be perceived by their customers as much less insecure. Finally, a digital euro has undeniable consequences (both positive and negative) on the mechanisms of transmitting monetary policy.

As mentioned above, the report properly analyses the impact of digital technology on finances, along with the costs and benefits of this technology and the need for regulatory intervention. The first part examines the disruption in the payment system caused by these new technologies. It particularly analyses how the role of traditional deposits as a means of payment has been affected and how CBDCs have emerged as a potential replacement. The analysis echoes the arguments expressed by Fabio Panetta, but on the benefits side, emphasis is placed on the fact that CBDCs help protect the payment system and facilitate the financial inclusion of sparsely banked regions. Regarding the costs, the report mentions the risks associated with cyberattacks and the lack of privacy, in addition to the aforementioned greater propensity for banking panics during financial crises and the lower volume of loans from commercial banks. This last effect is a consequence of the rise in interest rates on deposits which banks are forced to offer in order to attract deposits from customers who would otherwise be attracted by digital currencies. Obviously, this rise in the remuneration of bank deposits would lead to a stricter selection of loans and therefore a drop in the amount lent.

Finally, the report introduces an important consideration in this section. CBDCs issued by economic powers like the United States could end up becoming internationally dominant and could therefore endanger the effectiveness of the monetary policies of smaller countries that are open to international trade. As such, the report advocates international agreements as a way to stave off this danger.

The second part of the report discusses how the availability and massive use of data affects the banking system. The use of big data helps companies improve their management and productivity, and they can therefore design and offer products and services that better match consumers' preferences. Fintech organisations are, in fact, companies that process vast amounts of information much more effectively than traditional banks, enabling them to offer loans much more quickly and efficiently. This is particularly appealing for small business owners and other population sectors that are partly excluded from the credit market.

Obviously, the availability of massive databases opens the door to price discrimination and the manipulation of potential customers to the benefit of financial intermediaries. If they can better identify customers' preferences, these operators can make much more personalised recommendations; therefore, data protection and use must be effectively regulated in order to prevent these practices. Another factor that should be borne in mind is that as a financial company grows, it generates more transactions and therefore more data, whose use, in turn, translates into more growth. The outcome of this spiral is that Big Tech platforms may end up monopolising the market, destroying the competition and therefore lowering aggregate wellbeing. The

authors of the report conclude this part with more technical considerations on how to calculate the 'value' of data as intangible assets of financial companies that have to be accurately valued.

One last aspect analysed in the report refers to the spread of financial market transactions via electronic platforms based on algorithms. This electronification of financial markets has had several effects, such as greater market fragmentation, given that each asset could have its own market; a significant rise in very high-frequency transactions thanks to the intensive use of algorithms; and a profound change in the business model of stock markets, as electronification has lowered fees and stepped up the competition between stock markets. Obviously, these changes also bring with them clear risks, such as the algorithms' potential vulnerability to cyberattacks, which could prompt a profound destabilisation in the financial markets and informational asymmetry between the owners of the platforms (who generate and have access to vast troves of data that they can process) and their users.

As is evident, this book analyses issues that are extraordinarily important in understanding the consequences of technology on the banking system and financial markets. The report is primarily targeted at an audience of regulators, scholars and private enterprises. Given the rigour and precision of the arguments it sets forth, it would inevitably be much more difficult for an audience without expertise in financial terminology and practice to read.

Future editions of these reports on the future of banking led by Professor Xavier Vives can be expected. Recent events like the difficulties faced by some regional banks in the United States, which have had to be rescued or have been absorbed by larger banks, highlight the relationship between monetary policy and the banking system. Indeed, the successive increases in interest rates dictated by the Federal Reserve have led to a strong devaluation in the treasury bonds that were part of these banks' assets, and this has unleashed banking panics. This interaction between anti-inflationary policies and the stability of banking may be the subject of a future report, just as the entry of artificial intelligence into the financial world will surely be.