Financial digitalization: Trends, opportunities and risks

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Abstract: During the last decade, we have observed a reinforcing trend of declining share of traditional banks in financial intermediation. One of the causes of this development is the process of digitization of the financial industry. In the financial sector, or better said, beside it, virtually new industry of FinTech has developed. This development brings several significant opportunities and risks in many aspects, especially in areas such as consumer satisfaction, effectiveness of financial intermediation, the effectiveness of monetary policy, or in the broader context of financial stability. In this article, we present a liturature overview on the topic and formulate the most significant opportunities and risks of ongoing innovations in the financial sector, with a special focus on digitization and the FinTech sector.

Keywords: financial industry, banks, fintech
JEL Classification: G21, G23, O33

1 Introduction

One of the most significant trends in the financial market in recent decades is growing competitive pressure on banks from Non-bank financial intermediaries (hereinafter referred to as NBFIs). This statement results from monitoring the development of the financial market, which is manifested through a number of "soft" indicators, such as marketing communication of banks and NBFIs, relatively lower market entry limits for NBFIs compared to banks (lower capital requirements, lower regulatory requirements) or the dynamics of innovations in the banking and non-banking sectors. The growing competitive pressure from the non-banking part of the financial system can be demonstrated through the development of market shares of various sub-sectors of the financial system. We consider the volume of assets under management of both subsectors to be a suitable indicator of the market shares of banks and NBFIs.

As we can see on Figure 1, there is an evident trend of a decrease in the share of banks in the management of financial assets on an (almost) global scale, especially in the last decade. [2] At the same time, market share of NBFIs have been rising accordingly. After the rapid growth of the market share of NBFIs at the beginning of the millennium, some consolidation took place during the global financial crisis, which was caused both by the decrease in the market value of financial assets under the management of NBFIs, but also to a large extent by the outflow of investors and savers to banks as "safe havens" during the escalation of the financial crisis. After the situation calmed down after the global financial crisis and the subsequent debt crisis in the Eurozone, NBFIs´ share on the management of financial assets gradually grew and surpassed the values of the previous decade, while the share of banks restored its declining trend.

We also note that in the 29 monitored jurisdictions, the share of central banks in total financial assets has grown substantially over the last two decades, from 4% in 2002 to 9.1% in 2021. In absolute terms, the volume of central banks' financial assets has increased in this period more than 9 times. Such rapid growth in the volume of financial assets of central banks, as well as growth in their market share, occurred with the significant contribution of various asset purchase programs on the financial market (also known as "quantitative easing" of monetary policy), which several central banks implemented to support market liquidity and availability credit in times of crisis. In percentage terms, the growth of financial assets under the management of central banks in the monitored jurisdictions was the most significant between 2002 and 2021, when it grew by an average of 12.4% annually. The average annual growth rate of financial assets under NBFI management in this period reached 8.6%, which exceeded the growth rate of assets in the banking sector by exactly two percentage points. These data also confirm the hypothesis of growing competition from the non-banking sector for banks.

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[2] The data is drawn from the FSB report (2022), which covers 29 jurisdictions representing approximately 80% of global GDP (including several Eurozone countries, the USA, the United Kingdom, Japan, the BRICS countries, Switzerland, Australia, Mexico, etc.)

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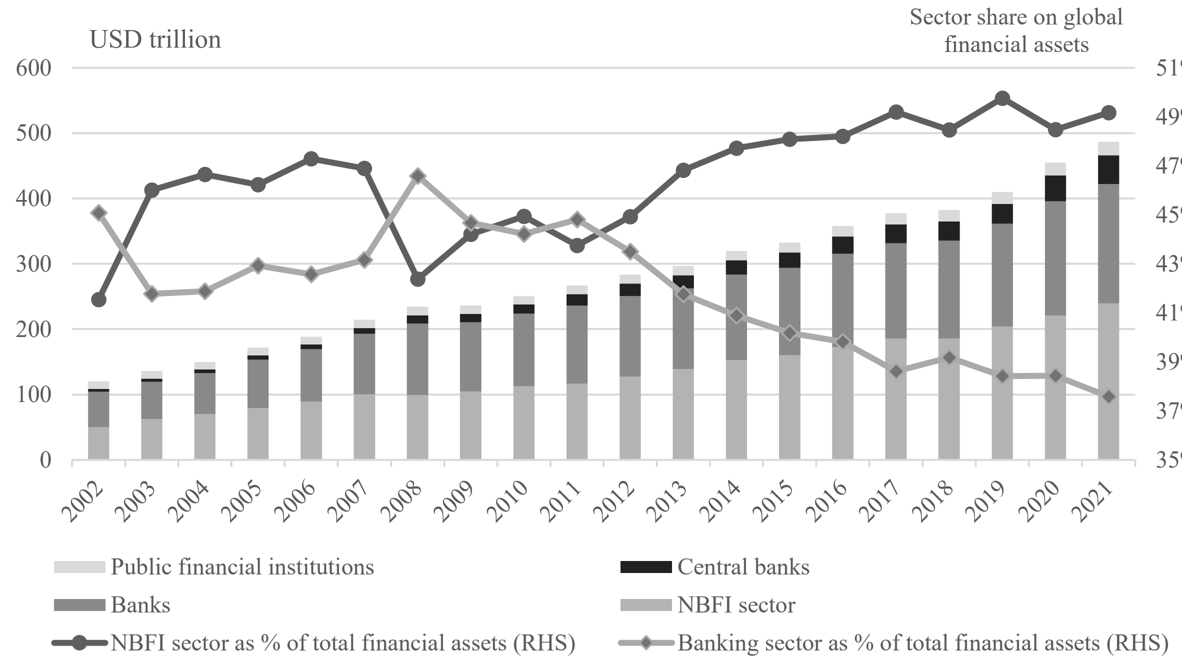
Figure 1 The amount of financial assets in selected 29 jurisdictions and the share of different sectors in the management of financial assets



Source: Financial Stability Board (2022) and own processing

2 Reasons behind the growth of NBFIs´ and Fintech´s role in the financial system

Vittas (1998) defines non-banking financial institutions as a diverse mix of institutions whose common feature is "*the mobilization of savings and the intermediation of financing for diverse activities, while not taking deposits from the public*". The NBFI sector consists of two subgroups: (i) insurance corporations and pension funds and (ii) other financial intermediaries, which include leasing and factoring companies, installment sales institutions, securities and derivatives dealers, venture capital companies, money market funds, hedge funds, Real Estates Investment Trusts (REITs), and more. However, it should be emphasized that despite some distinguishing elements of banks and NBFIs, these components of the financial system do not operate in isolation, but in mutual interaction. In some respects, their functions can be described as complementary (e.g. in terms of liabilities, banks and NBFIs largely satisfy the demand of different groups of investors, or savers, i.e. they do not compete with each other), in other respects they compete with each other. As Nijs (2020) notes, there is a competitive battle here, especially on the asset side, between bank financing products and the financing offer of other financial intermediaries ("market-based lending").

The NBFI sector is very diverse and therefore its crowding out offect on banks´ share in financial intermediation has complex causes. The causes of the cyclical nature in the second decade of the 21st century include very low interest rates, which led to a lower attractiveness of the banking sector's savings products, and also the losses that the eurozone banking sector suffered as a result of the global financial crisis and the subsequent debt crisis in the eurozone. The subsequent consolidation and restructuring of banks´ balance sheets naturally limited the possibilities and appetite for further expansion of the banking sector. In addition to cyclical factors that occurred in the past decade the European Central Bank´s (hereinafter ECB) study (2016) adds long-term (structural) factors to the growth of the market share of NBFIs at the expense of MFIs:

- demographic changes as aging of the population leads to increased public interest in saving and investing through investment funds, insurance companies and pension funds. In addition to the conclusions of the aforementioned ECB study, we can add that, on the contrary, the younger generations Y and Z, who grew up with the onset and expansion of digitalization, often prefer alternative investment products and payment systems outside the sector of traditional banks.
- regulatory arbitrage, as less stringent conditions of the NBFI regulatory framework compared to banking sector can lead to the opportunistic transfer of certain activities from the banking sector to the NBFIs. In

this context, Jones (2000) works with the term "regulatory capital arbitrage, which he defines as a technique that allows companies to reduce the equity capital ratio without proportionally reducing the portion of risk to which they are exposed.

It is also necessary to mention the accelerating dynamics of innovations in the financial sector, while this factor could also be classified as structural. Similar to other sectors of the economy, the financial sector has also been affected by the significant impact of digitization and technological changes in recent decades. In the financial sector, or better said, beside it, virtually new industry of FinTech has developed. Financial Stability Board defines FinTech as "innovations in financial services enabled by new technologies that can lead to new business models, applications, processes or products with a significant effect on financial markets, their institutions and the provision of financial services". The emerging importance of FinTech in the financial sector has gradually become an accepted reality, but as new technologies keep coming, the FinTech subsector is also changing and evolving, while it does not have a precisely defined structure and position in the financial sector. Companies belonging to the FinTech group are also very diverse, with their size varying from the smallest start-up companies to subsidiaries or divisions of technology giants such as Google, Alibaba, Amazon, Facebook, Apple, Samsung, or Microsoft (so-called "BigTech") . In this context, one can identify with the broader definition of the FinTech sector, which according to Valverde a Fernández (2020) involves all kinds of channels that connect technological companies and their innovation with finance.

According to a 2019 estimate by The Business Research Company, the market capitalization of FinTech companies in 2018 reached 128 billion USD, while it was expected to grow to 310 billion by 2022. USD. In fact, this level was already surpassed in 2021, but in the following year there was a sharp decline in the valuations of the companies of the FinTech sector by an average of 60% globally. According to a Boston Consulting Group (hereinafter BCG) (2023) study, these dynamics have occurred as a consequence of rising interest rates that have raised the cost of capital and essentially stopped the supply of zero-priced funding. The decline in market valuation in 2022 occurred in many sectors as a result of steep growth of inflation and geopolitical tensions, however it was much more pronounced in the FinTech sectors. However, according to the available forecasts, the growth of valuations and revenues of fintech companies is expected to continue at an average annual rate of around 20% until 2030. According to the current forecast of BCG FinTech penetration of global banking revenues will rise from 4% to 13% between 2021 and 2030. For the same period, FinTech penetration of banking valuations is expected to rise from 9% to 25%.

In the context of digital innovations, Philippon (2015, 2017) points to a paradoxical phenomenon, as according to his research, unit costs in the financial intermediation sector have decreased only marginally in recent decades, which is in sharp contrast to other industries. In fact, after various adjustments, according to Philippon, unit costs in financial intermediation in 2012 were very similar to those of the early 20th century. Stagnation of productivity in the traditional banking sector thus creates space for further penetration of FinTech solutions. The dynamic growth of the FinTech sector pushes financial institutions to integrate more and more "fintech" solutions into their business. The main business areas of FinTech companies currently include digital payments, cloud programming and processing of financial data, cryptocurrencies and blockchain, loan mediation (e.g. through "Peer-to-Peer" schemes), technological innovations in insurance (so-called InsurTech). Since digital technologies are an absolutely crucial part of the business of FinTech companies, cybersecurity have naturally growing weight in their business.

3 Some implications of the growing role of NBFIs and FinTech in the financial system

The Financial Stability Board´s (hereinafter FSB) study (2020) lists several positive impacts of NBFIs: “Non-bank financial institutions are a valuable source of financing for many companies and households. They strengthen competition on the supply side of financing and promote economic activity”. Simirlarly, the study of European Systemic Risk Board (2019) (hereinafter ESRB) study states that non-bank financial institutions are a welcome factor in diversifying sources of financing for real economy entities. In addition, non-bank financial institutions can be an important source of financing for the banking sector itself. According to ESRB data (2019), the share of non-bank financial institutions in euro area banking sector funding was around 8% between 2011 and 2018. Thus, we could summarize the benefits of the operation and expansion of the NBFI sector as follows:

- wider spectrum of financial services to clients,
- creation of additional resources and financing tools for economic agents,

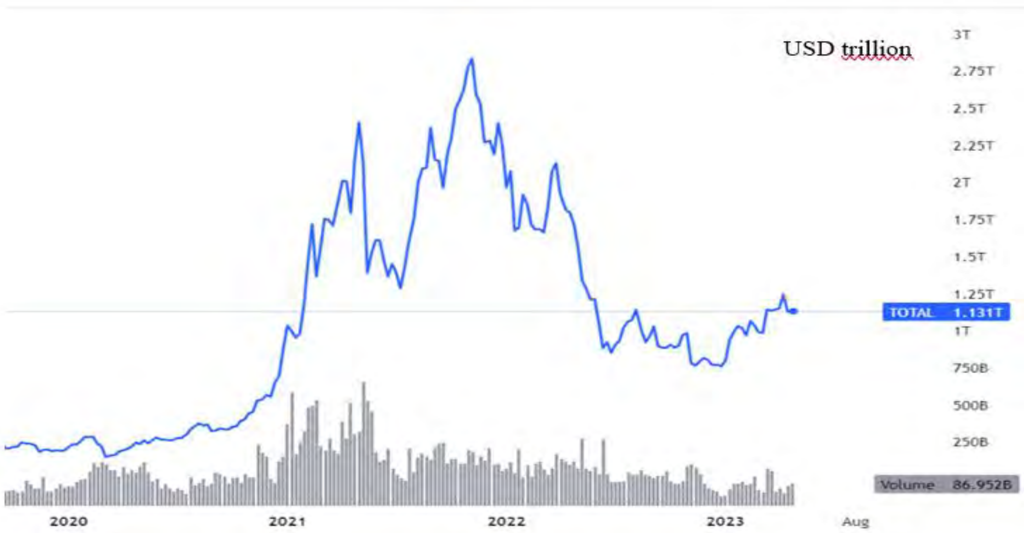
- NBFIs expansion improves effectivity, productivity and quality of services in the banking sector through competitive pressure and potentially quicker digital innovations,
- liquidity and maturity transformation.

Another stream of literature points to increasing financial risks arising from growth of NBFI sector. The FSB study (2020) states that non-bank financing can be a source of higher systemic financial risk, either directly or through existing links to other components of the financial system, especially if the institutions of the NBFI sector carry out activities typical of banks, such as transformation of the maturity and liquidity of financial assets, or the use of financial leverage. A study by the European Commission (2012) generalizes the above: the impact of financial risks of individual financial institutions (including NBFIs) is increased by several multipliers, primarily the size and interconnection of financial institutions.

In the context of the impact of the expansion of the NBFI sector on financial stability, its possible procyclical effect also resonates in the literature. Procyclicality in this sense means that the activities of the NBFI sector can accentuate fluctuations in economic and financial cycles, i.e. j. in times of growth they support booming effects and in times of contraction their activity decreases disproportionately. In other words, NBFIs are much more willing to use financial leverage intensively in times of low risk aversion and high market valuation of financial assets. As shown by Adrian and Shin (2008), the leverage ratio of NBFIs is high in times of growth in their balance sheet amount and vice versa.

The procyclical nature of the operation of some NBFI subsectors is also addressed by the authors of behavioral economics. Gennaioli et al. (2013) developed a theory of the individual decision-making process based on behavioral arguments. They are based on the knowledge that economic agents show a fundamental tendency to underestimate the risks associated with extreme values of the distribution ("tail risk") of economic variables and prices of financial assets. In their model, investors from the NBFI sector systematically ignore possible worst-case development scenarios, which leads to too high investments and price bubbles in times of growth, and conversely to a disproportionate collapse of the investment activity of "shadow banks" in times of decline. As Adrian and Ashcraft (2012) document, this theory is supported by a wealth of empirical evidence, including the expansion and subsequent contraction of the NBFI sector's activities before and during the global financial crisis.

Figure 2 Cryptocurrency market capitalization fluctuations since 2020



Source: tradingview.com

On the other hand, Mazelis (2016) argues that the expansion of the NBFI sector can be beneficial from the point of view of financial stability, especially in conditions of extremely low interest rates. In such a situation, the NBFI sector sees an influx of savers' deposits, as zero nominal interest rates discourage them from keeping deposits in banks. The transfer of deposits stimulates the supply of capital of the NBFI sector and subsequently investments in the economy, which alleviates the recession and accelerates the return of the economy back to normal.

Large swings of crypto market capitalisation can be considered as a prime example of the tendency of NBFIs (in this specific case of the FinTech sector) to pro-cyclical fluctuations. The extraordinary volatility of the market valuation of these assets is shown in Figure 2. From this graph, it is clear that since 2021, when cryptocurrencies experienced the most significant boom, the market capitalization of the cryptocurrency market and the volume of transactions have decreased significantly. Further developments will show whether this is just a period of consolidation in this asset market, or whether it is the beginning of a long-term decline. Although cryptocurrencies are a relatively popular topic these days, there are several reasons why they are unlikely to become a meaningful investment asset for a significant portion of investors in the foreseeable future. Probably the most important of these is the extreme volatility of this market. One should also take into account the relative size of this market. The market capitalization of cryptocurrencies in February 2020 reached 276 billion. USD (approx. 60% of that was Bitcoin). Market capitalization of companies in the S&P 500 stock index at the same time reached 26 trillion. USD, i.e. almost 100 times the entire cryptocurrency market.

Another group of authors addresses the issues of the effects of NBFIs expansion on the monetary policy environment and effectiveness. No doubt that the traditional banking sector plays a key role in the monetary policy transmission mechanism. ECB (2016) states that the growing role of NBFIs in the financial sector can lead to an acceleration of the transmission of monetary shocks, mainly through changes in risk attitudes. According to the cited study, the growing role of NBFIs can also lead to a faster transmission of monetary policy measures, as the NBFI sector is generally less regulated and thus more flexible in the implementation of measures during monetary policy changes. Analogous to the above, Adrian and Liang (2016) state that the growth of the weight of NBFIs in the financial system since the 1980s has led to higher variability in the velocity of money over time. This fact can be attributed to faster responses of NBFIs to changes in financial, economic and regulatory conditions compared to banks. Lorenzo Bini Smaghi (2010) argues that the expansion of the NBFI sector associated with the phenomenon of "collateralization" leads to a weakening of the transmission mechanism through the loss of control of central banks over some financial aggregates (e.g. credit creation) and a decreasing link between credit and monetary aggregates. In this regard, the Intrnational Monetary Fund´s (hereinafter IMF) study (2016) notes that the activity of NBFIs can both weaken and strengthen the effects of monetary policy measures. One of the channels of weakening of the monetary policy is fact that NBFIs are able to NBFIs are able to compensate for fluctuations in the supply of bank credit because the cost of funding in the non-banking sector is less affected by changes in monetary policy.

On the other hand, the NBFI sector can strengthen effects of monetary policy measures if the risk appetite in this sector is more sensitive to changes in monetary policy. Based on the conducted empirical analysis, the authors of the IMF study (2016) lean more towards this second option. Banks and most NBFI sub-sectors are seen shrinking their balance sheets as monetary policy tightens. In general, NBFIs adjust their balance sheet more significantly in response to changes in monetary policy compared to banks. Difficulty for business to substitute bank financing (loans) with market financing (bonds) in the short term also works against the hypothesis of NBFIs´ weakening of monetary policy measures.

We have shown that the impact of NBFIs expansion on the financial system cannot be understood as a binary choice. This also applies in the case of mutual relationship between traditional financial market institutions such as banks and the FinTech sector. In other words, both of these groups do not interact exclusively in a competitive position. According to international survey by Sopra Steria (2022), up to 77% of banks feel pressure to create partnerships with fintech firms, although almost the same percentage (74%) believe that fintechs are a threat to their existence. According to the survey banks are feeling the need to create partnerships with FinTech for several reasons, however the main ones come from consantly evolving requirements of their clients´ which banks alone are not able to meet. At the same time, 66% of banks said that they feel the need to establish cooperation with FinTechs due to the new regulation. Despite banks' fears about the rise of FinTech, most banks recognize potential benefits s the opportunities from partnerships with fintechs outweigh the threats. When asked why banks are considering partnerships with fintechs, 78% mentioned revenue growth, 77% shorter time to market, 77% higher customer loyalty and 76% better customer service. Furthermore, 65% of banks would prefer to partner with fintechs to help with their own digital transformation rather than building everything in-house. 49% of banks admitted that they do not have the necessary infrastructure to be able to successfully carry out digital transformation on their own.

4 Conclusions

Over the period of 10 years until 2021, the share of banking sector in the assets under management decreased by 8% to the level of 37% on a global scale. This development was mainly caused by the growth of the market share of non-bank financial intermediaries (NBFI), also with the contribution of the new FinTech industry. The decline in the banks' market share was caused by several cyclical factors, especially by extremely low interest rates and the tarnished reputation of the banks during and after the global financial crisis. At least the first of the mentioned cyclical factors is already losing importance today in 2023. However, this does not apply to the structural reasons for the growth of the role of NBFIs (including FinTech), with (i) demographic changes, (ii) regulatory arbitrage and (iii) digitalization of financial services as most significant structural factors.

Assessment of the impact of the NBFIs expansion is not a clear-cut. In some aspects, positive impacts prevail, especially in the issues of expanding the spectrum of financial services, mobilizing additional financial resources, or increasing the quality and efficiency of financial intermediation with the help of digital innovations. On the other hand, when evaluating the impact of the expansion of the NBFI sector on financial stability, pro-cyclical fluctuations in the prices of financial assets, or the efficiency of the transmission mechanism, there are more voices of caution. We assume that the dynamic growth of financial intermediation outside of traditional banks will continue in the coming years. As a result of the delay of the banking sector in the process of digital transformation, it can also be expected that the integration, or at least cooperation, between banks and the FinTech sector will deepen.

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