

ARTICLE

Banks, Digital Banking Initiatives and the Financial Safety Net: Theory and Analytical Framework

Stephen Lumpkin¹ Sebastian Schich^{2*}

1. United Nations, previously OECD
2. OECD Directorate of Financial and Enterprise Affairs

ARTICLE INFO

Article history

Received: 6 October 2019

Accepted: 14 November 2019

Published Online: 10 February 2020

Keywords:

Banks

Digital banking initiatives

Financial innovation

Financial safety net

Fintech

Finance and digitalisation

ABSTRACT

This report presents an analytical framework for exploring the implications of Fintech innovations for incumbent banks and for provision of the financial safety net. The focus is on “digital banking initiatives”, that is, on Fintech initiatives that provide retail financial services akin to those traditionally provided by banks. Banks perform a wide range of functions for individual and institutional customers that help facilitate large-scale economic activity. In fact, in most economies the system of financial intermediation centres on banks and relies on their core products and services for financing of the economy and the maintenance of liquidity. On account of the central role banks play in the financial system, along with concerns about potential systemic instability linked to the riskiness of their activities, these institutions have long been regarded as “special”, as reflected in their prudential regulation and coverage under the various provisions of the financial safety net. Recent developments raise questions about the special status of banks. Two sets of questions are addressed herein: To what extent do new digital banking initiatives change the role that incumbent banks play in the financial system and the way that they perform their functions? To what extent are some of the new digital banking initiatives securing the benefits of the financial safety net without paying the commensurate price? To help address these questions the report first revisits the literature on core functions of the financial system to provide a framework for analysing recent developments. Particular attention is paid in this context to banks and their products and services. The “special” role of banks is discussed, which links to the provisions of the traditional safety net. These overview sections are followed by evidence on Fintech innovations that overlap the core banking products. Based on an examination of the characteristics of these new initiatives, the study then touches on the issue of whether banks are still special and whether some of these initiatives are or should be covered by financial safety net provisions.

**Corresponding Author:*

Sebastian Schich,

OECD Directorate of Financial and Enterprise Affairs;

Email: Sebastian.SCHICH@oecd.org

** Stephen Lumpkin is consultant for the United Nations and was Principal Economist in the OECD at the time of writing this article. Sebastian Schich is a Principal Economist in the OECD Directorate of Financial and Enterprise Affairs. The article draws on a report prepared by the authors for a meeting of the OECD Committee on Financial Markets (CMF) in October 2018 and has benefited from comments made at that meeting and in writing by CMF delegates. The article does not however necessarily reflect the views of the OECD nor its member countries. The authors are solely responsible for remaining errors and views expressed in the article.*

1. Executive Summary

This report presents an analytical framework for exploring the implications of Fintech innovations for incumbent banks and for provision of the financial safety net (FSN). History shows that the FSN is not a rigid construct. Its contours and provisions have been altered over time as events have required. Recent Fintech developments in the banking sector are again raising questions as to the optimal scope of the FSN. The focus in this context is on “digital banking initiatives”, that is, Fintech initiatives that provide retail financial services akin to those traditionally provided by banks.

Banks provide a bundle of products and services that are central to financing of the economy and the maintenance of liquidity. Digital banking initiatives overlap many of the activities and functions that banks provide in the retail market segment, including some of the functions typically deemed to make banks “special” under the provisions of the financial safety net. They are effectively unbundling and re-bundling retail banking services and products, which they provide (1) separately in some cases, (2) in re-bundled form together with other services, or (3) together with new services or at least in a manner that is more convenient for customers.

While increased competition among suppliers of products and services in the financial system is generally thought to be “good” because it reduces frictions and lowers costs for end-users, opinions are more divided when it comes to banks. This reflects in part the central role banks play in the financial system and the importance of their core products and services to financing of the economy but also concerns about the potential systemic implications of major banking sector instability. In fact, the desire to minimize systemic risk and preserve stability of the financial system are the principal motivations for bank regulation and safety net arrangements consisting of deposit insurance and the services of a lender of last resort, with the former representing the *de facto* price paid for the protections under the FSN¹. Factors that make banks special in this context include the following three financial functions:

- (1) Taking deposits that are withdrawable on demand at par;
- (2) Providing liquidity to other entities, and thus, given the first function, engaging in maturity transformation;
- (3) Acting as conduits for the payment system and for monetary policy transmission.

“Specialness” owes in part to the fact that some activi-

¹ The literature on deposit insurance notes that while deposit insurance can eliminate the incentive for depositors to run and thereby constrain risk taking on the part of bank managers, it also gives rise to moral hazard, which requires someone else to monitor and discipline banks.

ties, namely deposit taking² and maturity transformation, require the backing of the FSN to the extent they are intended to be performed by private intermediaries. Maturity transformation is necessary to ensure that the system has an adequate supply of liquid funds, and the current system of fractional reserve banking fundamentally relies on banks producing adequate supplies of money. In fact, a crucial characteristic of the current system entails banks taking demandable deposits and engaging in maturity transformation by on lending them at longer maturities. These are the two types of activities of banks that are linked to most of their own and the financial system’s core functions. The fact that banks have historically been the only institutions engaged in the joint conduct of these activities explains why banks as institutions have uniquely been at the core of the financial safety net—beneficiaries of its protections but also subject to its costs.

On this point, the report concludes that banks remain unique in providing the specific combination of three core financial functions listed above. To the extent this bundle remains the sole criterion for access to all safety net requirements, then banks will be the only institutions at the core of the FSN. However, it is important to note that the FSN is not a rigid construct. Rather, its scope has been altered over time as events have required. Recent developments are again raising questions as to the optimal scope of the financial safety net.

For example, digital banking initiatives provide transaction accounts, and in many cases, the balances are covered by deposit insurance. In fact, the report notes that a growing number of digital banking initiatives that were established independently from incumbent banks have applied for and in many cases obtained deposit insurance coverage. Banks pay deposit insurance premiums but are also regulated to limit the moral hazard of excessive risk taking on the financial safety net. Shouldn’t digital banking initiatives pay a commensurate price?

Digital banking initiatives serve as a reminder of the limitations of an entity-based approach to regulation. While the need for regulatory and supervisory approaches to Fintech to be in principle more activities-based rather than entity-based has been acknowledged for some time, in practise, the entry point for regulators and supervisors remains an entity, and new entities are not automatically included within the perimeter of the FSN. Consequently, the unbundling and re-bundling of financial services by digital banking initiatives implies that financial services

² Bank customers in a fractional reserve banking system know their deposits are not backed by enough liquid assets. Thus, the only certain way to retrieve all their funds in times of uncertainty is to be among the first to withdraw funds. even otherwise solvent banks can fail if a large enough fraction of its depositors or creditors behave this way.

that are similar, if not functionally the same, are partly provided by regulated incumbent banks and partly by new and more lightly (or un-) regulated digital initiatives. Where new and lightly regulated digital initiatives are providing services that are also part of the bundle of services provided by banks (and are part of the services that make banks special and justify their position at the core of the FSN), raises questions about the special status of banks. The report argues that banks remain special, not least because the consensus view among policy makers and central bank officials continues to be that the prevailing system of intermediation centred on banks has functioned adequately and needs no fundamental change.

As for the competitive challenge digital banking initiatives pose to incumbent banks, it is important to note that banks and Fintech initiatives are not always direct competitors. Rather, there are various forms of collaborations between incumbent banks and new Fintech initiatives. They include contractual relationships, partnerships, and acquisitions. These collaborations make it difficult to assess the degree to which digital banking initiatives pose a serious competitive threat. The report pays particular attention to one form of collaboration—the use of application programming interfaces (APIs). The use of APIs has been encouraged by regulatory initiatives such as the second European Payments Services Directive (PSD2) and by “open banking” initiatives introduced or under consideration in various jurisdictions, such as the United Kingdom and Australia. APIs are becoming the primary mechanism by which banks enable third parties to develop applications that run on top of their infrastructure to link to the banks’ client bases. The nature of the access granted, how access is priced, and the function of the API in the structure are keys to understanding what role if any the banking licence plays in the relationship. APIs represent a connection between new digital banking initiatives, which might or might not be covered by prudential regulation, with other provisions of the FSN, such as deposit insurance. If so, the question of whether an adequate price is paid for FSN access needs to be carefully assessed to protect the safety net from any potential undue risks.

2. Introduction

The financial services sector has experienced marked structural changes over periods of time. The pace of change tends to ebb and flow in response to shifts in competition and innovation, in deregulation versus re-regulation, and rising protectionist moves versus initiatives to open the marketplace to outside competitors. These factors explain the pattern in recent years, with rapid and significant improvements in information technology play-

ing a central role. Developments have also been supported by an easing or removal of regulatory and other barriers to entry in some market segments and aided by changes in customer needs and risk preferences.

The effects of these changes can be seen across the full spectrum of financial system value chains, ranging from the types of service providers, the range of products and services offered, and the distribution channels used to deliver them to different types of customers. The process of digitalisation has been underway for a few decades, although the pace of change has quickened more recently, especially as digital infrastructure has been further deployed and as devices like smart phones, which are many times faster and more powerful than computers of old, provide ubiquitous computing and access.

The digital transformation is having pronounced effects across the economy and finance is no exception. Whether we are somehow at the cusp of a paradigm shift remains to be seen but putting aside the hype that can arise during periods of sustained innovation, the potential for further marked structural change is quite high. The technological shift to digital forms of interaction has already begun to alter the nature of assets that generate value, how ownership is imparted and where value is being generated. In turn, these shifts change the structure and operation of markets, enable the formation of mini-economies or eco-systems and ultimately influence how relationships – both economic and social – are developed, maintained and located^[22].

This report looks at the implications of digital innovations for certain core functions of the financial system. Its focus is on the functions typically associated with depositary institutions (i.e. banks) and the provision of the *financial safety net* (FSN). Questions that arise in this context include whether banks remain “special” and thus warrant the protections afforded by the FSN or, rather, as Bill Gates once quipped ‘banking is necessary, banks are not’. The types of commercial-loan and deposit-like substitutes that have emerged in the financial marketplace move this question from the hypothetical realm to the board room, pushing banks to become more data-driven and innovative.

The report proceeds as follows: the next section revisits the literature on core functions of the financial system to provide a framework for analysing recent developments. This review leads to consideration of the ways in which the functions are achieved, with attention focused on retail banking institutions and products. The analysis of institutions and products is followed by a discussion of the special role of banks, which links to the provisions of the traditional safety net. These overview sections are followed by evidence on related Fintech innovations in areas

overlapping the core banking products. We label these innovations “*digital banking initiatives*” to focus on entities or arrangements that are directed at subsets of retail banking. The final section offers preliminary conclusions regarding the questions whether banks are still special and whether new digital banking initiatives are and should be given access to the FSN.

3. Core functions of the financial system

3.1 The Financial Intermediation Process

To examine the implications of digital banking initiatives for incumbent banks and the FSN we look first at the economic functions that are being performed and at the underlying products and services that are used. The financial services business entails a wide range of products and activities. Our focus is on the small subset of products and activities that relate to the core functions of the financial system. According to Merton ^[21], ‘The core function of the financial system is to facilitate the allocation and deployment of economic resources, both spatially and across time, in an uncertain environment’. It is a means to an end, namely helping the economy to fully exploit its growth potential by ensuring that viable investment opportunities receive necessary funding at appropriate costs.

There is both an allocative efficiency effect and a scale effect at work here, but it is not completely clear which dominates; that is, whether a well-functioning financial system improves economic growth primarily through higher levels of investment or by targeting investments to more productive uses. There is less ambiguity as to what happens when the financial system malfunctions.

The financial crisis of the late 1990s is another in a long list of examples. It was the result of misallocation on a grand scale and the economic and social costs that resulted from it illustrate why so much attention is devoted to efforts to avoid crisis outcomes. In fact, what differentiates successful economies from others is the ability to reduce the risk and frequency of financial crises and, thereby, the costs of shocks. The FSN is one component of these policies. Ensuring the financial system functions properly is another.

In general, good financial systems depend on good “institutions”, which include not only financial intermediaries and markets but also properly functioning informational, regulatory, legal, and judicial frameworks. This foundation enables the financial system to perform its functions. The process seems simple: all it takes is a source of excess funds and a roughly offsetting source of demand. The key is the intermediation process that brings the two together. The challenge is that the needs and preferences of those

looking to finance projects and those looking to invest excess funds may not coincide in terms of time horizons, risk tolerances, expected returns/costs, or as regards particular contract dimensions.

In the traditional theory of financial intermediation, the nature of the information asymmetry between savers (sources of funds) and borrowers (users of funds) determines when direct versus intermediated exchanges will be feasible. Intermediaries play a role when the transactions costs of intermediated exchange (e.g. costs of search, bargaining, and contracting) are lower than the costs of direct transacting between market participants.

In the hypothetical *perfect capital market*, all transacting is direct and the organisation of economic activity, *i.e.* firms, institutions, and the location of economic agents, is irrelevant. There is a frictionless flow of capital. In such a market, contracts that cover all future contingencies can be concluded at no cost, such that all valuable investment opportunities are exploited optimally, and households can achieve optimal consumption smoothing and risk sharing over their lifecycle.

In reality, markets are not perfect and frictionless. Economic agents do not have identical information sets and capital is dispersed across many investors who have different time and risk preferences. And ownership of investment capital is separated from control.

An extensive literature has discussed the various arrangements in the financial system that address these departures from the ideal. The functions entailed include ³:

- (1) Facilitating the exchange of payments, both domestically and across borders;
- (2) Mobilising and pooling scarce and dispersed savings;
- (3) Monitoring investments to ensure adherence to the contracts that consumers and investors hold;
- (4) Facilitating the management of risks;
- (5) Producing information about potential investments and alternatives for allocating capital;

The result is a matrix of financial institutions, financial markets, and infrastructure support to perform these functions. The markets are the means by which financial claims of various kinds are exchanged between parties. They also provide the avenues by which financial institutions and their clients manage their financial risks. Financial institutions are major players in the financial system and are the entities on whose balance sheets reside many of the risks in the financial system. They include commercial/savings banks, credit unions, postal savings institutions, finance companies, insurance companies, invest-

³ See, for example, Allen and Santomero (1997) and Scholten and Wesveen (2000).

ment banks, collective investment schemes, pension funds and other institutional investors. Some institutions confine their activities to narrow areas and compete as specialists. Other institutions offer a more comprehensive range of products through a wide variety of distribution channels. Banks are the classic example of a multi-product financial intermediary and in most economies are the dominant players in the financial system.

3.2 The Special Role of Banks

Banks (and other intermediaries) are a solution to the information disparity between borrowers and savers. They also add value via diversification (i.e. expanding the investment choices available to savers and the sources of credit for borrowers, as well as the traditionally important role of management and diversification of risk) and by transforming financial contracts and securities of one form, maturity, etc. into another⁴. Banks are notable among intermediaries for their role in helping to reduce the risks that funds are mismanaged, by monitoring investments more efficiently than individual savers would be able to do. As well, they are more efficient than individuals in allocating funds to their most efficient uses, given their superior information sets.

Banks have been at the core of the intermediation process. They offer a bundle of products and services and engage in activities that address most of the mismatches discussed above. The specific activities include safekeeping, scaling, searching, screening, contracting, monitoring, and enforcing.⁵

(1) Safekeeping: Banks offer a range of savings accounts to provide safety for the liquid assets of the public, accompanied by accounting statements that enable savers to keep track of their income and expenditures.

(2) Scaling: Banks pool savings from many small savers in order to provide financing for large-scale projects.

(3) Searching and screening: Banks collect and process large amounts of standardised financial information along with more specific information on the characteristics of individual loan applicants, which helps to avoid adverse selection and moral hazard risks arising from information asymmetries. This process also helps expand the investment choices available to savers and the sources of credit for borrowers.

(4) Contracting: Banks set their loan terms according to the perceived risks of individual borrowers, levying higher interest charges and other fees on risky borrowers

and using non-price terms to reduce the risk of default and mitigate other agency costs. These contract terms protect the bank's interests but also those of its creditors.

(5) Monitoring and enforcing: In addition to actively screening loan applicants, banks also monitor loan recipients to ensure compliance with loan covenants to reduce the risks that borrowed funds are mismanaged. Increasing returns to scale in monitoring mechanisms enable lenders to perform this activity more efficiently than individual savers would be able to do. That said, in the event problems are uncovered, lenders take enforcement actions to increase the likelihood of repayment by borrowers.

These activities are the basic ways in which banks add value to the economy. They offer products and services that map directly to the list of core functions of the financial system, as highlighted in Table 1.

Table 1. Relationship between core functions of banks and the core functions of the financial system

Core functions of the financial system	Core functions of banks	Related activity
Payments	Transactions accounts (redeemable in cash on demand)	Deposit taking
Pooling of funds	Transactions accounts Delegated monitor	Deposit taking Lending
Transfer of resources	Transactions accounts Providing liquidity services Delegated monitor	Deposit taking Lending Lending
Management of risk	Transactions accounts Providing liquidity services Delegated monitor	Deposit taking Lending Lending
Coordinating actions via prices	Delegated monitor Conduits for transmission of monetary policy	Lending Lending
Dealing with asymmetric information	Delegated monitor	Lending

Source: Authors' extension of Merton^[21], shown in first column.

The entire process evolves from how banks manage two sets of cash flows – loans and deposits. Collecting small denomination, withdrawable-on-demand deposits and transforming them into larger denomination, longer-term loans or using them in the mediation of various other credit, market and duration risks gives rise to two of the key activities of banks – liquidity provision and maturity transformation – which in the view of some researchers are what make banks “special” (Table 2).

Bank credit can help to bridge the gap between short-term funds and longer-term equity positions. Moreover, banks can provide such credit even in stressful situations, drawing initially on their links to other banks to access available liquidity through the interbank market and the reverse repurchase market, or through the issuance of large certificates of deposits. These exchanges of liquidity allow the direct and contingent credit facilities from banks

4 As noted by Gurley and Shaw (1960), Benston and Smith (1976) and Fama (1980).

5 This list is derived from the one in Chapter 11 of Cecchetti and Schoenholtz^[10].

Table 2. What makes banks special?

Source	Factors that make banks special
Boot and Thakor ^[5]	The first <i>raison d'être</i> for banks relates to their capacity as information processors and delegated monitors, and these aspects are primarily related to the management of credit risk. The second <i>raison d'être</i> relates to the provision of liquidity. Banks invest in illiquid assets but finance themselves with highly liquid demand deposits, and through this intermediation process, they create liquidity in the economy.
Huertas ^[19]	Banks are special, as non-banks (individuals and institutions have their accounts at banks; banks have accounts at the central bank. Individuals and institutions therefore use banks to access the payment system. Banks lend to non-banks and provide the economy at large with a liquidity backstop.
Werner ^[29]	Banks are different from non-bank financial institutions “because they can individually create money out of nothing.”
Gande and Saunders ^[17]	Various scholars have argued that banks are special, due to the monitoring that they provide in connection with loans. However, other financiers (notably private equity firms) also monitor firms in which they invest or to whom they extend credit.
Olson ^[23]	Significant increases in international capital flows among bank and non-bank entities, in addition to a broad range of specialized financial instruments, mean banks can no longer be considered the only source of transaction accounts. Except for their access to the Federal Reserve discount window, banks are no longer the dominant provider of liquidity for other financial industries. However, banks remain the key access point to the dominant wholesale payments network, and they still provide federally insured checking and savings deposits. With the rise of new financial services, products, and techniques, moreover, banks have expanded their role in providing liquidity in more indirect ways, for example, through securitization of loans and backup commitments to securitization vehicles and other capital-markets instruments. Even when banks may not be “special” or unique providers in a particular market, banks have proven themselves to be formidable competitors and innovators – which only reinforces banks’ importance in the proper functioning of our financial system. In short, the public’s trust and confidence in banking continue to be vital to our financial well-being.
Calomiris ^[6]	“The social value of banking arises from banks’ specializing in information creation and contract enforcement (the so-called delegated-monitoring function of banks). Although this delegation makes it costly for outsiders to monitor the riskiness of bank assets, such intermediation is highly productive since it economizes on the costs of information and control by creating banks that specialize in these activities. ... The regulation of bank risk could be accomplished easily because deposit risk would be costlessly observable to everyone. But without asymmetric information, there would also be no need for banks, much less a bank safety net.”
Corrigan ^[12]	Corrigan identifies three characteristics that distinguish banks from other types of financial institutions. These characteristics have to be jointly present for a bank to be considered “special”: 1) offering transactions accounts redeemable in cash on demand; 2) serving as the backup source of liquidity for all other institutions and individuals; and 3) as conduits for the transmission of monetary policy to the broader economy.

Source: Authors’ assessments.

to serve as a backstop source of liquidity on which other credit markets depend. Even when market stress is more generalised and affects the banking sector itself, banks can rely on their “exclusive” direct links to central banks and other provisions of the FSN. As a result of this privileged access, banks have been the conduits of (quasi)⁶ “risk-free liquidity” to financial and payment systems.

This access also brings another benefit. It allows the public to treat bank liabilities as stores of safe purchasing power, which makes deposits a source of stable funding. As deposits are backed only partly by reserves under the prevailing fractional reserve system, banks in effect create money as a by-product of their lending activities. That money creation function applies to the entire banking system, although some have argued that it applies to each individual entity. For example, Werner ^[29] observes that in the process of making credit available in the borrower’s bank account, the lending bank does not mechanically transfer the money away from other internal or external accounts (nor does the bank always check whether such transfers were feasible at all), but instead “invents” the funds by crediting the borrowers’ account with a deposit,

⁶ The financial safety net is only as strong as the public authorities backing it.

even though no such deposit had taken place. As a result, a bank “can individually create money out of nothing”.

Be that as it may, if the money created is not completely misallocated, the economy benefits from this additional financing and thereby from the maturity transformation between banks’ risky assets and their “safe” liabilities. That said, in times of stress, fears on the part of depositors about the safety of their funds can result in “runs”, whereby numerous depositors attempt to withdraw their funds at the same time. The same adverse events are also likely to prompt draws against the binding liquidity commitments banks have made. This sudden mismatch between assets and liabilities, the core of the fragility problem of banks, can result in rapid outflows.

Banks hold buffer stocks of liquid assets to handle unanticipated outflows, but while they bear all the costs of the buffer, they do not capture all the social benefits and, hence, may not always have incentives to hold enough. In the event a bank’s liquidity buffer falls short, it is forced to find liquidity elsewhere, either by borrowing in the interbank market or by selling assets. Either option can prove elusive. For example, selling assets in a stressed market environment to meet short-term liquidity demands risks getting prices well below the assets’ intrinsic quality,

which can worsen rather than ameliorate an institution's problems (i.e. on account of the implied hit to capital).

Moreover, both fire sales of assets and the failure of the bank can have spillover effects on other financial institutions and the broader economy, which result at least in part from accompanying contractions in credit availability. It is this externality that creates a role for policy.

The role intermediaries play in an economy influences the relative weight assigned to them and their products and services in the overall regulatory framework and the financial sector is special compared with many other sectors of the economy. It faces a greater risk of instability, both at the level of individual financial intermediaries and markets and at the level of the overall financial system. For similar reasons, banks are special among intermediaries. Most governments provide support for the liquidity and sometimes even the solvency of banks to reduce the likelihood of panic and the spread of the difficulties to the real economy. Functioning under this support structure has been the privileged position of banks.

3.3 Digital Channels of Financial Intermediation

In periods of rapid change in the provision of financial services, one can lose sight of the fact that the basic needs being met remain more or less the same. In this context, retail clients still have a need for some type of current account, for loans to finance large purchases and investments, for financial advice, and for remittance capabilities and money transfers. What is changing, from the viewpoint of the end-users, is how the needs are met.

Banks have traditionally provided a bundle of products and services, often without being the low-cost provider of any of them. Operating under the shelter of the FSN, banks could rely on the stickiness of their retail client base, which had a strong preference for safety of their deposit funds and stayed with their existing provider, often even when better terms were on offer elsewhere, trading off security and on-demand access for higher returns. Hence, banks have been the primary repositories for the savings of the retail public.

In the expanding digital space, that close link between a bank branch and the saving/borrowing public has begun to loosen in favour of digital interfaces. The channels through which funds flow from sources of funds to users are being altered by the new digital technologies and related services, which replicate some of the functions typically performed by banks, including liquidity provision, credit intermediation, foreign exchange operations and especially payments services. The question arises as to whether banks will continue to control the current account as the primary interface with the retail banking clientele.

The answer depends in part on the relative importance to customers of the bundle of services provided by banks versus the unbundled equivalent available separately.

Digital banking initiatives are performing several retail banking functions, although available evidence indicates that the distribution of initiatives across functions is unequal. For example, a recent stock-taking of the Fintech landscape in France suggests that funding, payments and foreign exchange operations are particularly affected, if judged by the number of Fintech entities^[28]. As of end-2017, 285 Fintech entities were identified, with the majority related to a narrow subset of functions traditionally performed by deposit-taking banks.

Looking across a broad range of jurisdictions, one finds different operational models, technology employed, product features, and entities. Three common types of initiatives in the payments, clearing and settlement, credit, and deposit categories include digital or mobile banks, mobile wallets, and peer-to-peer (online) platforms.

3.4 Digital Banks and Related Initiatives

In the mid-2000s, references to digital banks typically referred to online banks launched by traditional banks, which were aimed at those customers drawn to the flexibility of remote banking relationships and the more attractive pricing it offered. These days, the "digital bank" label applies to a range of initiatives that make extensive use of technology (e.g. via smartphone apps or internet-based platforms) to offer retail banking services, including current and deposit accounts, credit cards, financial advice, and loans. The entities take various forms depending on the products offered and the laws of the resident jurisdiction. For example, some jurisdictions limit 'deposit-taking' to entities specifically licensed as "banks". Where that is the case, a digital bank must be an entity in possession of a banking licence, with all the requirements this entails. Digital banking initiatives in this context can take different forms. They may be stand-alone entities or subsidiaries of existing banks or even of non-financial companies, where rules permit. Table 3 provides a side-by-side comparison of three different digital banking initiatives (to be distinguished from licenced banks) to illustrate some of the differences in the structure and operations of mobile banking entities.

The "digital bank" label is sometimes misapplied to entities that are not, strictly speaking, banks, although they may offer some traditional banking products and services. Mobile banking entities in this category offer a fully modernised and fully digital relationship model, often based on big data technologies and advanced data analytics. Being fully digital means they are unencumbered by legacy in-

Table 3. Features of selected financial service providers in the areas of deposits, payments and credit (free retail accounts in France)

	Orange Banque	Revolut	N26
Deposit-taking			
Bank charter	YES (France)	NO (e-wallet, United Kingdom)	YES (Germany)
Offering transaction accounts	YES	YES	YES
Taking deposits	YES	NO	YES
Deposit protection	Deposit insurance (Fonds de Garantie des Dépôts et de Résolution)	Segregation (Segregated Revolut account at Barclays Bank)	Deposit insurance (Compensation Scheme of German Banks)
Organised as resident bank	YES (France)	NO	YES (Germany)
Subsidiary of other firm/bank	YES (non-financial firm <i>Orange</i>)	NO	NO
Branch of other firm/bank	NO	NO	NO
Passporting	NO	YES (in several EU countries)	YES (in 17 EU countries)
Payments			
Payment provider	YES	YES	YES
Credit card	NO	NO	NO
Debit card	YES (with Visa)	YES (with Visa)	YES (with MasterCard)
Receive bank transfers	YES	YES	YES
Recurrent payments	YES	YES	YES
Domestic transfers	YES	YES	YES
International transfers	YES	YES (in 26 currencies)	YES (in 19 currencies with partner TransferWise)
Lending			
Making loans	YES	NO	YES (with partner platforms)

Note: This table does not take into account the potential implications of the announcement on 13 December 2018 by Revolut (see blog.revolut.com; retrieved on 15 January 2019) that the ECB has approved the company’s application for a European banking license. That announcement states “nothing is going to change right away”.

Source: Authors’ assessments

frastructure, which enables them to adopt and employ new technology at lower cost and more rapidly than incumbent institutions and in a more modern format. Such mobile banking entities typically target individuals, entrepreneurs and small to medium-sized enterprises, particularly those customers that have not been served by traditional banks, such as the unbanked and the underbanked.

Mobile banking entities may link their operations with scalable infrastructure through cloud providers or API-based systems to better interact through online, mobile and social media-based platforms.

3.5 E-Wallet

Another category of digital service provider in the payments, clearing and settlement category is the mobile wallet or eWallet for short. The eWallet is an innovative payment mechanism most often executed by use of a connected device such as a smartphone. Many mobile wallets have been developed by third-party technology compa-

nies and include Apple Pay⁷, Samsung Pay, and Android Pay as common examples, but others have been launched by the likes of MasterCard, Alibaba, and Tencent.

Digital wallets allow money to be withdrawn on demand and at par or to be transferred on demand to another eligible account. The funds in such digital wallets in turn could in principle be invested in risky, longer-term fixed-maturity and/or illiquid assets. In this case, the digital wallets would engage in maturity, liquidity or credit risk transformation, although they would not be covered by commensurate prudential regulation. As a general rule, funds are required to be held in safe assets. For example, in the European Union (EU), the E-Money Directive requires e-money providers to invest the funds of digital wallets with transaction functions in bank deposits or fairly safe assets such as government bonds. So far, digital wallets are not systemically important. Despite considerable and perhaps even increasing competition in this area,

7 Apple Pay is a mobile payments scheme largely used offline in a physical store, or for transit. PayPal, by contrast, is a digital payments scheme, used to shop online and in apps and via a mobile browser with mobile devices.

network effects could imply that one financial service provider comes to dominate specific markets.

Most e-Wallets are offered in conjunction with a partner bank, in a distributed bank scenario, whereby the bank in question offers third-party wallets. In contrast, some banks have developed mobile wallets in-house.

3.6 Marketplace Platforms (Peer-to-peer, Online, Mobile platforms)

Lending platforms are another digital-based means of facilitating financial retail transactions. Automation of lending processes is achieved through the setting of lending criteria in terms of risk, maturity, amounts, etc., resulting in transactional costs of financial intermediation below those of traditional banks. Lending platforms use alternative sources of data and scoring models to evaluate credit applications. Such data could include utility payments, rent payment history, insurance claims, use of mobile phones, social media, sales data, or other personal data of consumers that traditional banking organizations may not typically use.

Some commentators claim that the use of alternative sources of data may result in expanded access, a faster turn-around of credit decisions, convenience, and reduced costs, which succeeds not only in reducing the cost of funding to usual borrowers but also in expanding credit access, particularly for the unbanked and the underbanked.

Others point out that more analysis is needed to determine whether alternative sources of data are better than traditional sources or instead more prone to errors and inaccuracies, and whether they may create unfair disadvantages for consumers and lead to disparate impacts and violations of fair lending rules. It is essential for the new financial service providers, like traditional lenders, to ensure the security of the collection, use and disclosure of personal and sensitive consumer information in order to avoid the potential harm to consumers of a data breach and any privacy law violations.⁸

Many countries have set up specific regulation applying to either one or both types of platforms. Country-specific regulatory approaches were reviewed by the Financial Stability Board and Committee on the Global Financial System (CGFS/FS, 2017), and, for Europe, by the European Securities and Markets Authority^[14] and Havrylchuk^[18].

8 For example, New York State’s Department of Financial Services released a report recommending additional regulations for online lenders, which emphasizes that existing consumer protection laws and usury limits apply equally to online lenders as well as chartered institutions. Reportedly, “Financial Services Superintendent Maria T. Vullo noted that borrowers, whether consumers or small businesses, require protection, and banks deserve a ‘level playing field’”. See New York Department of Financial Services at https://www.dfs.ny.gov/reportpub/online_lending_survey_rpt_07112018.pdf.

While all platforms are similar in the sense of connecting lenders and borrowers directly, various types of contracts are involved. Havrylchuk proposes a classification based on a taxonomy developed by the Cambridge Centre for Alternative Finance, which is used in Table 4 to list and categorise selected platforms.

Table 4. Examples of activities of selected lending platforms

Broad type of financial contrast	Entities
Credit to consumers	Zopa and Ratesetter in the United Kingdom, Prosper and Lending Club in the United States, Bondora in Estonia
Credit to SMEs	Funding Circle in the United Kingdom, Geldvoorelkaar in the Netherlands, Lendix and Unilend in France
Property-secured lending to property developers	LendInvest in the United Kingdom, Investly in Estonia
SMEs sale of invoices to investors	MarketInvoice in the United Kingdom, Investly in Estonia
Investments in sustainable development	Lendosphere in France, Abundance in the United Kingdom

Source: Adapted from Havrylchuk^[18], based on the taxonomy developed by Cambridge Centre for the Alternative Finance.

As these examples suggest, digital banking initiatives are performing a number of retail banking services (Table 5). Some initiatives focus on activities that would be more likely to attract only certain groups of customers, such as younger populations who embrace technology and are less averse to switching providers and international populations (e.g. ex-pats) who have a need for cross-border payment services. However, other initiatives, namely those providing basic safekeeping and transactions accounts, offer products and services that comprise the initial components of the typical financial retail customer interface, which often serves as the gateway to the associated full value chain.

Table 5. Core functions & activities of banks and FinTech initiatives

Core functions/activities of banks	Functions that make banks “special” under the FSN	Functions of digital banks and other FinTech initiatives
Safekeeping (deposit taking)	Safekeeping (deposit taking)	Safekeeping (eW); Deposit taking (DB)
Offering transactions accounts (redeemable in cash on demand)	Offering transactions accounts (redeemable in cash on demand)	Offering transactions accounts (DB, eW)
Liquidity provision	Liquidity provision	Liquidity provision (DB, eW)
Maturity transformation	Maturity transformation	
Clearing and settling transactions (payments)	Clearing and settling payments	Facilitating the exchange of payments (DB, eW, API)

Serving as conduits for transmission of monetary policy	Serving as conduits for transmission of monetary policy	
Lending		Lending (DB,P)
Financial risk management		Financial risk management (DB, eW)
Pooling		Pooling (P)
Underwriting (credit assessment)		Credit scoring (P)
Matching		Data aggregation (API)
Scaling capability		
Delegated monitoring		

Source: Authors' assessments.

Notes: DB = digital bank; eW = eWallet; API = automated programming interface; P = online platform.

4. Exploring Linkages between Digital Banking Initiatives and Banks

4.1 APIs and the Positioning of Fintech Initiatives Relative to Incumbent Banks

Taken as a group, digital banking initiatives overlap several of the activities and functions that banks provide in the retail market segment. A point that may not be readily apparent in the descriptions of selected digital banking initiatives is that bank accounts are often still part of the intermediation process, especially as regards many digital payments methods. Banks are involved in such digital initiatives in numerous ways, both directly and in partnership with other entities.

One structure that is becoming a more common approach in the digital transformation of banking services is the use of application programming interfaces (APIs) to link banks' own infrastructures to innovative digital products developed by third-party developers. APIs allow for the automatic transfer of funds from one account to another.

The use of APIs has clearly been encouraged by regulatory initiatives such as the second European Payments Services Directive (PSD2) and by "open banking" initiatives introduced or under consideration in various jurisdictions, such as the United Kingdom. But many large banks appear to have settled on their use independently, as part of their own digital transformation. The exact nature of the embedded protocol varies depending on the particular application but, in general, the API specifies all the components necessary to perform the intended interaction, including who is allowed access and the format used in the exchange, the underlying data and the type of connection required to enable the particular function or operation to be conducted.

The details obviously matter but, for the purposes here, it suffices to state that APIs are becoming the primary mechanism by which banks enable third parties to develop applications that run on top of their infrastructure to link to their client bases. The nature of the access granted and how it is priced and the function of the API in the structure are keys to understanding what role if any the banking licence plays in the relationship.

4.2 Other Collaborations between Digital Banking Initiatives and Incumbent Banks

The positioning of digital banking initiatives within in the banking ecosystem varies, but many initiatives increasingly operate within the framework of a partnership with established players. Collaborations between banks and Fintech initiatives take various forms, including contractual relationships, partnerships and acquisitions. For example, Figure 1 distinguishes between the initiative producing financial products and services and the entity maintaining the interface with the customer, depending on what the new initiative is actually doing, for example, competing with existing service providers, distributing the products of existing providers or providing new financial services.

For example, a report by the Financial Stability Board and Committee on the Global Financial System (FSB/CGFS, 2017) distinguishes between four types of interactions between traditional banks and lending platforms. These are:

- (1) for banks to provide specific operational services to the platforms, such as payment and settlement services and custodial services;
- (2) for banks to originate loans on the behalf of lending platforms;
- (3) partnership agreements that, for example, require that borrowers denied credit from a bank are referred to lending platforms;
- (4) direct investments.

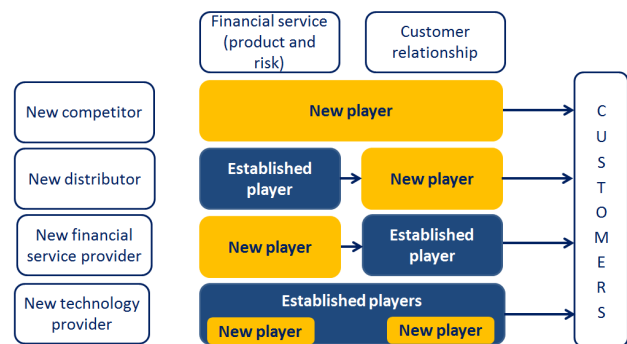


Figure 1. Positioning of new players in relation to incumbents

Source: Autorité de Contrôle prudentiel et de résolution [1].

Incumbents might acquire Fintech entities for strategic reasons and to complement their own portfolio of services offered or providing similar services at lower costs. One motivation might also simply be “If you can’t beat them, buy them.” An overview of selected Fintech acquisitions by banks is provided in Table 6.

According to some consultancy reports, a new strategy is for incumbents to acquire digital applications or entities in their early stage (start-ups) and develop their own Fintech arrangements in-house. In April 2018, *Santander* announced that it had launched a cross-border payments system based on blockchain, using that technology with a view to competing with payment services such as *TransferWise*. The system, called *One Pay FX*, was developed over two years and uses distributed ledger technology developed by California-based *Ripple*, in which Santander’s *InnoVentures* venture capital fund had invested in 2015. In other developments also involving US blockchain specialist *Ripple*, a few Japanese banks have started offering customers free, real-time money transfers via new mobile apps.

4.3 Direct Establishment of Digital Banking Initiatives by Banks

An alternative to acquisition of Fintech start-ups by banks is the establishment of their own in-house initiatives. In the past, *circa* the mid-2000s, digital transformation by banks mainly implied the launch of an online bank, which fulfilled the needs of those customers tempted by the

flexibility of remote customer relationships and attractive pricing policies. Today, most French banking groups have a banking solution that is fully remote (online, via mobile or via telephone). Those banks that until recently did not offer this service have decided to launch their own offering, as they have become increasingly aware that a fully remote solution attracts certain groups of people (i.e. young and international populations or people who would be likely to switch providers).

The tightening of the regulatory and supervisory framework, especially for large and complex banks, might explain the timing by which incumbent or traditional banks have participated in digital initiatives. Discussion in the trade press suggests that banks’ IT budgets are stable over a period of years and initially the regulatory tightening was reflected in banks allocating IT investments in a way that facilitated their compliance with the new regulation. Once these new systems were in place, banks started to allocate IT investments more towards new initiatives that would support revenue-generation further down the road.

In this context, banks in many jurisdictions have begun to develop their own mobile applications, although in some cases significant investment is still required to further improve application ergonomics and enhance functionality beyond the most basic operations. At a minimum, banks are endeavouring to retain their relationship with customers and remain their first financial partner, by offering a broader range of products and services to serve customers over the long term. Maintaining control of

Table 6. Fintech acquisitions by selected banks (2013 to 2018)

	Artificial intelligence	White label banking	Lending/ credit	Online banking	Payments	Personal financial management	Pricing tool	Real estate	Student loan refinancing	Trading	Wealth
BBVA Compass				Simple Holvi	Openpay			Madiva			
Goldman Sachs			Financeit Final								HonestDollar
BNP Paribas				Compte Nickel							GAMBIT
Capital One					LevelMoney	PARIBUS					
JP Morgan Chase & Co.				MCX wepay							
Ally										TradeKing	
Credit Suisse			TRADE-Plus								
First Republic Bank									Gradifi		
Silicon Valley Bank		Standard Treasury									
TD Bank	LAYER6										

Source: Authors’ assessments and CBInsights^[9], https://www.cbinsights.com/reports/CB-Insights_Banks-In-Fintech-Briefing.pdf

everyday payment and banking services is central in the battle for customers, as reflected in the establishment of digital banks by most incumbent institutions.

5. Examining Financial Safety Net Trade-offs Related to Digital Banking Initiatives

5.1 Deposit-taking and Maturity Transformation

Some banking activities require the backing of the FSN if private intermediaries are to perform them. Deposit taking and maturity transformation are the two types of activities of banks that are linked to most of their own and the financial system's core functions (see Table 5). And it is the performance of these activities that explains why the provisions of the FSN protect banks.

Maturity transformation (i.e. taking deposits and on lending them) is necessary to ensure that the system has an adequate supply of liquid funds, and the current system of fractional reserve banking fundamentally relies on banks producing adequate supplies of money. Other systems have existed at different points in time and proposals have been made to reconsider the current system.⁹

The *lender-of-last resort function* and, to some extent, the deposit insurance function are meant to avoid "runs". Any financial intermediary, and not just commercial banks, performing maturity transformation is subject to "runs". While "runs" on insolvent financial firms can be efficient or not, runs on illiquid but solvent firms are always inefficient as long as there are transaction costs involved in the resolution of a failing financial firm. In fact, a market failure arises because of asymmetric information and the initial normative function of the lender of last resort was to provide support to solvent but illiquid banks in the face of liquidity shocks, associated with their traditional business model of taking deposits withdrawable on demand and lending out the funds over longer-term fixed periods.

The *deposit insurance function* primarily protects depositors, while the lender-of-last-resort function primarily protects the system (although in doing so it also protects depositors as well as other end-users of the financial sys-

tem).

There are, however, some important caveats to the provision of both the lender-of-last-resort and the deposit insurance functions. First, access to these provisions of the FSN are counterbalanced by additional restrictions imposed by a bank *regulatory framework*, implementation of and adherence to which is enforced by *supervision*. The regulatory and supervisory functions are the quid-pro-quo for access to the deposit insurance and lender-of-last resort functions. Second, out of concern that the safety net does not become overextended, policy makers have not only limited the extent of deposit coverage but have also limited deposit taking to a limited set of institutions. The set includes commercial banks and, in principle, entities licensed to provide related commercial-bank-like functions.

The recent global financial crisis served notice that the dimensions of the regulatory framework cannot focus solely on microprudential concerns but, rather, must also entail a macroprudential approach. To be effective in maintaining financial stability it is not sufficient to focus on the safety and soundness of an individual institution, but also to consider the level and distribution of risk at the aggregate level, given the close interconnections among banks through interbank claims, derivatives transactions, and similar portfolio compositions. These interlinkages are not stable over time; they change as part of the dynamic nature of the financial system. New and emerging financial technologies are among the factors transforming the nature and extent of these interlinkages.

The crisis also made it clear that the speed of resolution is also a key issue in restoring calm and that traditional corporate insolvency rules are ineffective when it comes to ensuring that failure resolution of a large financial firm does not precipitate a contagious collapse of the system. Hence, while resolution frameworks for banks were in the past linked mainly to deposit insurance, more recently, a wider set of arrangements has been adopted to ensure smooth and efficient exit of large financial firms.

One new element concerns the function of the *guarantor-of-last-resort*, which was introduced *de facto*¹⁰ as part of the financial safety net as part of the policy response to the global financial crisis. It consisted of assurance to financial market participants that the safety of the liabilities (and sometimes even assets) of financial intermediaries would be guaranteed by public authorities to avoid a potential "run" on banks by counterparties and creditors. Policy makers in some jurisdictions announced that bank

9 In Switzerland, a recent popular referendum on a proposal to make the Swiss National Bank (SNB) the sole issuer of money and end the traditional system was rejected on Sunday, 10 June 2018. Over 75% of Swiss voters rejected the Initiative "For crisis-resistant money: end fractional-reserve banking (Vollgeld)". The proposal contained several elements. Financial institutions could manage transactional accounts for customers but must hold equivalent assets with the Swiss National Bank. Commercial banks would have been prevented from "creating" money when issuing loans, thus effectively ending fractional reserve banking, under which only a fraction of deposits held by banks on behalf of customers are backed by notes and coins or banks' deposits at central banks.

10 One can argue that it was always more or less present, given that many governments have stepped in to provide guarantees when faced with systemic banking problems.

deposits would be protected without limits, Ministries of Finance set up various funds to protect specific types of financial firm liabilities (and in some cases also assets), and central banks gave assurance that central bank liquidity would always be ample).

In discussing the initial policy response to the global financial crisis, the OECD Committee on Financial Markets opined that the addition of the guarantor-of-last-resort function was perhaps necessary to avoid a worst-case outcome but noted that this response was not costless. The costs include the perception that some banks are so “special” that their debt is implicitly insured by public authorities, which means they are unlikely to be forced to exit the market, at least not in an uncontrolled way. Current financial regulatory reform explicitly aims to reign in such expectations, although one can ask how successful that exercise will prove to be ^[26].

5.2 Deposit Insurance and Digital Banking Initiatives

5.2.1 The Customer Perspective

Where deposit insurance exists in sufficient coverage amounts, it largely eliminates the contagion effect whereby depositors flee the system when an unaffiliated institution is in trouble. It also substantially reduces their incentive to flee their own institution in times of trouble. This protection has its obvious benefits in the sense of helping to maintain calm, but it also has potential drawbacks.

The primary drawback of the safety net is “moral hazard”. The risk is particularly acute in the case of deposit insurance.¹¹ History suggests that in order for a deposit insurance system to succeed as a stabilising mechanism, it must cover a sufficiently high monetary value of deposits to remove the incentive for depositors to run at the sign (or perception) of problems. But once the coverage amount becomes high enough to remove the incentive for depositors to run, it has the potential to create incentives for banks either to hold less than the socially optimal level of liquid reserves or, worse, hold an excessive amount of risky assets. In short, there is a trade-off between the ability of a deposit insurance system to prevent runs on banks and the soundness of the incentives it gives to depositors and bank managers.¹²

As with most policy trade-offs, there is no obvious

place where to draw the line between too much and not enough coverage. Most governments have proceeded by creating a deposit insurance system to maintain the confidence of depositors in the banking system, but they have accompanied it with various design elements such as up-front pricing¹³ to avoid or minimise negative side effects.

Responsibility for paying for deposit insurance coverage rests, in principle, with banks, as they and their clients are the direct beneficiaries of an effective system. But the likelihood of a deposit insurance payout is not evenly distributed among banks, being higher in the case of financially weaker institutions. If participation in the system is voluntary, it is the higher-risk banks that have the greater incentive to opt-in, while stronger, lower-risk banks would have less incentive to participate; hence, the reference to adverse selection.

The potential for uneven burden sharing can arise whenever the risks to the system posed by covered institutions are unbalanced across the pool. As a general rule, the deposit insurer will want to monitor the portfolio decisions of member banks to ensure that the system is not exposed to unacceptable risk. Even an incentive-compatible deposit insurance scheme needs to be supported by appropriate regulatory and supervisory practices to ensure that banks adhere to high capital adequacy standards, observe proper market conduct, and are fair and honest in their dealings with clients and customers. Monitoring is most easily accomplished when all participants operate under the same regulatory regime, with a similar approach to prudential supervision and oversight.

In some deposit insurance systems, the ability of the deposit insurer to control the risks the system assumes is facilitated by granting the deposit insurer control over entry criteria for membership in the system. But in other systems, membership in the deposit insurance scheme is granted automatically upon a depository institution’s receipt of a banking licence or is instead a condition for receiving the licence.

This discussion on eligibility for deposit insurance coverage is relevant for the topic at hand. For instance, should accounts at digital banking initiatives be covered by the traditional deposit insurance system? On the one hand, the desire to ensure adequate protection for retail investors supports covering all retail “deposits”, including those held at digital banking initiatives. But on the other, many digital banking initiatives lack a banking licence and are not subject to the same form of regulation as existing member banks. Including them in the deposit insurance pool could expose the deposit insurance system to unfa-

11 The moral hazard problem associated with deposit insurance arises from the potential for the deposit-taking institution, the depositor, or both to be less “prudent” than might otherwise occur, relying instead on the existence of the state-supported safety net to underwrite mistakes.

12 A voluminous economic literature analyses deposit insurance with contrasting views both on whether such systems should be introduced and how best to make them incentive compatible.

13 A typical deposit insurance premium paid by banks is in the range of 0.1% to 0.5% of insured deposits.

miliar risks.

To decide which hand is chosen requires a better understanding of what type of account we are addressing. As part of the digitalisation of retail finance, both incumbent banks and new entities use new financial technologies to provide specific financial services that were previously provided in bundled form by banks, or they provide altogether new financial services. Many of these services are in the payments area.

Table 7. Maturity transformation and liquidity provision services provided by different institutions (Example using US institutions and regulations)

Entity	Execution: ...by offering...	Financial safety net access?
Banks	Passbook savings accounts	FDIC insurance
Banks	Certificates of deposits (CDs) & small time deposits	FDIC insurance
Thriffs	Other deposit and “interest-bearing products”	FDIC insurance
Investment banks & thriffs	Money market mutual funds, offering interest rate and immediate withdrawal at par or payable-through drafts	No, at least not explicitly
Fintechs, Tech-fins, payment service provider	e-wallet, offering returns on assets and allowing transfers	No, at least not explicitly

Note: “Entity” either identifies the financial intermediary that incurs a liability on its own balance sheet as a result of the execution of the economic function or in cases where there is no such liability it specifies “security”.

Source: Authors’ assessments.

5.2.2 The Provider Perspective

The provision of services related to payments, including money transfers, and foreign exchange transactions, has historically been the province of banks, given their front-end relationships with customers, their links to other banks via the inter-bank market, and their direct access to central bank facilities. Depending on the nature of an institution and the jurisdiction in which it operates, a bank may offer various types of transactions accounts, giving account owners often-immediate access to funds and enabling them to transfer funds to third parties in a variety of ways – for a fee.

The current account is often the main interface between retail customers and banks. It bundles together several services, including safekeeping, payments and transfers, and short-term credit in the guise of overdraft protection, and sits at the core of banks’ efforts to cross-sell more advanced products and services over time to the retail segment. This arrangement – based on long-term relationships between consumers and service providers – has long

been the essence of the retail market segment.

New digital banking initiatives seek to unbundle these services into separable components. As noted by Mark Carney, Governor of the Bank of England, “FinTech’s true promise springs from its potential to unbundle banking into its core functions of: settling payments, performing maturity transformation, sharing risk and allocating capital...” Their eventual success, especially in terms of scale, will depend not only on unbundling the products and services but also on unbundling the retail customers from their existing banks.

The conventional view is that banks tend to specialise in lending to customers for whom adequate information on payment histories is lacking, a category that includes individuals and new and small businesses. But there is a caveat. Banks have economic incentives to invest in such customers if they can develop long-term relationships with them that enable the banks to recoup the costs of the initial investment in information gathering. In the case of small businesses, costs would also entail nurturing the firms along. For banks, the true benefit from the relationship accrues over time to the extent they can extract surplus rents through subsequent lending to the customer or through additional fee-generating business as the customer relationship matures.

The benefits of these banking relationships are not necessarily one-sided, however, if the underlying information asymmetry persists. Retail customers may benefit from the maintenance of a long-term relationship with a given service provider, the capitalised value of which may be sacrificed if they switch to another institution that does not know them as well. The rationale in this case is the potential *adverse selection* problem the new service provider faces. Because the existing relationship is based on privileged information, a new institution would not know in advance the quality of a prospective client. Owing to this information asymmetry, a high-quality customer attempting to switch from an institution with which it has an established relationship to a new provider may initially encounter unfavourable terms – those typically offered to lower quality customers.

The presumed information problem is used to explain why retail customers tend to stick with a given service provider, even when better value products are available elsewhere. Retail customers appear to value a good reputation and the perception that an institution is safe more highly than the savings from lower fees and prices available elsewhere. Ultimately, they become, in effect, “locked in” with their existing service provider and are likely to never switch to a new provider if they remain in the same local vicinity.

Viewed from the perspective of alternative service providers, the existence of inelastic demand curves arising from this behaviour of retail consumers is a type of market entry barrier. What advantage is there for an institution to invest in technology to become a low-cost provider of a given product or service if consumers prefer long-term relationships with their existing provider and are relatively insensitive to price? If customers find it costly to switch from one service provider to another for whatever reason, then the existing service provider gains, at least in principle, a measure of market power over customers with whom it has an established relationship, which also provides some protection against rival providers.

The existence of high switching costs in the retail market segment continues to be a major concern in competition policy circles¹⁴, where a decided preference exists for market configurations that enable consumers to switch readily from one service provider to another (*e.g.* flexible distribution channels). These configurations have the potential to offset (somewhat) the otherwise conservative tendencies of retail customers.

This reasoning explains the rise in open banking initiatives in several jurisdictions, which aim to foster competition and innovation by opening up access by third parties to bank customer data, albeit with explicit consent by the customer, and allowing customers to use third parties for payments-related services. Such third parties could include other banks, small and large technology firms and new payment providers.

5.2.3 The Interface between the Retail Customer and Service Provider

At a micro level, retail consumers of financial products and services have idiosyncratic information endowments (*i.e.* what they know) and therefore needs (*i.e.* what they should know), reflecting their individual circumstances and risk preferences. These individual characteristics carry through to the behaviour of financial consumers, which can differ across such demographic characteristics as age and gender, and income levels, while culture and related social factors are also relevant in some contexts. These differences are reflected in the uptake of digital banking initiatives, where for example estimates suggest that customers in the 25- to 44-year-old age bracket show the most comfort with Internet and mobile technologies and are the early adopters of new digital banking offers.

¹⁴ Competition policy is motivated not only by the desire to protect consumers from detriment associated, for example, with mispricing on the part of service providers, but also with a view towards ensuring market forces work to enhance the efficiency of allocation within the financial sector and between the financial sector and the rest of the economy.

Uptake tends to decline for customers aged 45 years and older.

The younger, presumably more digitally savvy demographic segment is more drawn to digital financial services, given the added convenience, increased transparency, and availability of offerings that are more tailored to their more mobile, digital-based existence. In contrast, customers in the older demographic group are more likely to be involved in a long-term banking relationship with an existing provider and to perceive that loyalty carries benefits or simply that switching entails risks. For these customers, trust is likely to be gained only if they are confident that the same level of protection is available no matter which type of entity—branch-based or digital entity—is providing the financial services.

The benefits of digital banking innovations for customers can include a superior and seamless customer experience, a wider range of products and services at a lower cost and potential for access to financial services for underserved customers (such as some SMEs) or the underbanked. But for safekeeping of funds, safety first seems to apply and for many retail savers that appears to mean deposit insurance.

If security of the funds remains an indispensable aspect of digital retail banking services, as is the case for traditional arrangements, then in the absence of formal deposit insurance some other safety mechanism needs to be part of the digital banking solution. A fundamental question is whether a solution exists that provides an equivalent degree of safety without destroying the economic viability of the arrangement. If a cost-efficient solution does exist, a second question that arises is whether it is scalable.

Data limitations make it difficult to address this issue directly. But one can draw inferences from anecdotal evidence. For example, many providers of digital banking initiatives that began as non-bank entities subsequently acquired or applied for a true banking license, which can bring eligibility for deposit insurance coverage.

Table 8 shows features of selected digital banking initiatives that have applied for a banking license. Although the specific financial services provided by each entity are different, current accounts with a payment (mostly debit) card are provided in several instances.

Other anecdotal evidence consistent with the importance of access to deposit insurance protection for digital banking initiatives is implicit in the communication strategies of new digital banks. Several digital banks are generally known to place a sharp focus on the interaction and communication they maintain with (voluntary) designated digital bank “communities”, which allow bank management to obtain direct feedback from the users of their

Table 8. Features of selected new digital banking initiatives

	Atombank	Monzo	N26	Revolut	Fidor
Launch or bank charter date	Bank license in June 2015.	February 2015. Bank license in April 2017.	February 2013. Bank license in July 2016.	July 2015. E-money license, but applied for bank license 2017.	Founded as digital bank in 2009.
Base	United Kingdom	United Kingdom	Germany	United Kingdom	Germany
Products	Personal finance app, then savings account, loans and mortgages.	Initially a pre-paid card, but now transitioning existing customers to current account. Optional overdrafts (against a fee) if eligible.	Current account with Mastercard, using TransferWise, Google Pay and Apple Pay.	Debit card and currency exchange app. Business account. E-wallet to hold and transfer cryptocurrency via Bitstamp exchange. Peer-to-peer loans.	Current account with (debit) Mastercard and savings account. “Crowdinvesting” and “Crowdfunding” added to banking platform.
Deposit insurance	FSCS	FSCS	German banks	None	German banks
Investors	Broad base including venture capital firms and BBVA.	Venture capital firms.	Venture capital firms, Allianz X and Tencent.	Venture capital firms.	Acquired in 2016 by BCPE.

Note: These new digital banking initiatives (not all of them are legally banks) are also sometimes referred to as ‘neo banks’ so as to distinguish them from digital arms of traditional banks. That said, traditional banks may well be directly or indirectly invested in these banks. FSCS is the Financial Services Compensation Scheme in the United Kingdom. The label German banks refers to the statutory compensation scheme for German banks (Entschädigungseinrichtung deutscher Banken). The term “license” refers to a bank license. The company Revolut announced on 13 December 2018 that the ECB has approved the company’s application for a European banking license.

Source: Authors’ assessments based on CBInsights^[9] and company websites.

products and services. The existence of deposit insurance coverage for the banks’ current accounts, where they exist, is prominently featured in the promotional material the banks disseminate to advertise their product.

5.2.4 Automated Programming Interfaces

An alternative to the direct approach to deposit insurance coverage is the use of contractual arrangements to innovate around the regulatory restrictions on access. One strategy that has been employed in several arrangements involves a contractual agreement between the digital banking initiative and a traditional bank. Many Fintech initiatives do not involve holding clients’ money themselves, but instead pull money from clients’ current or credit card accounts. To the extent that they do hold customer funds, however, “e-money” regulations require the funds to be invested in liquid assets such as bank deposits or government bonds, so that any liquidity mismatch is limited. An example is *Revolut*, which offers an *e-wallet* to hold, exchange and transfer fiat currencies, as well as cryptocurrencies via the Bitstamp cryptocurrency exchange, although a premium as opposed to standard account is required for customers to access services related to cryptocurrencies.

In principle, deposit insurance applies to fiat currencies only and is typically restricted to legal domestic tender, but a smart contract can be used to automate transactions and processes, possibly shifting funds in and out of the perimeter of deposit insurance on demand, which allows the funds to benefit from deposit insurance while held at

the bank (Figure 3).

Many financial technology initiatives can be developed in this way. An example is discussed by Latimore and Greer^[20], who in describing a Bitcoin platform suggest: “*With Bitcoin.de, Fidor realized an API-supported real-time settlement process that allows Fidor customers to trade their Bitcoins instantly by leveraging Fidor’s API infrastructure. This makes Bitcoin.de the only Bitcoin trading platform with a direct interface to the classic banking system powered by Fidor. Bitcoin transactions soon even could be shown within the Fidor SMART account, but no Bitcoins are stored.*”

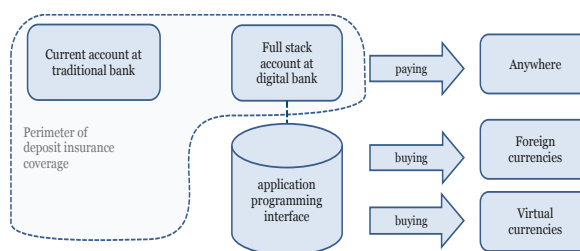


Figure 3. Stylised depiction of a contractual arrangement between a traditional bank and a Bitcoin-related initiative

Source: Authors’ assessments.

Arrangements of this nature are characteristic of open bank models, whereby the bank retains the basic customer relationship via the current account or other transactions account, but with automatic access granted to external digital product offerings by virtue of an API link to the bank’s infrastructure. At the present stage, however, it is still too early to draw conclusions as to whether open banking or other scenarios will prevail.

Digital providers appear to have several advantages over incumbents, including importantly, their adaptability to individual client needs. Unencumbered by legacy infrastructures and focused on only a few core services, new digital banking initiatives can offer a more tailored, faster, and more cost-effective service. But to whom?

5.2.5 Institutions vs. Functions

As the discussion above indicates, Fintech initiatives are engaged in many of the same activities as commercial banks, including a few that make banks special under the FSN (Table 9). They offer benefits of speed, convenience, and lower costs for most retail payments and transactions services. They also offer safekeeping accounts, but the only way they have found, so far, to match the comfort and safety consumers feel with insured deposits is either to enter into contractual arrangements to acquire coverage indirectly or to convert to a bank charter to acquire coverage directly. Retail customers appear not only to prefer deposit insurance for their savings accounts but also make distinctions among the providers of the guarantees. Either way, the preference consumers demonstrate for safety of their deposits has thus far favoured banking institutions over non-bank providers.

The need to maintain the integrity of the deposit insurance system argues in favour of limiting deposit insurance coverage to institutions that are subject to the appropriate regulation and supervision. That explains why several digital banking initiatives have sought banking licences.

Table 9 shows two major exceptions between the functions that make banks special under the FSN and those performed by digital banking initiatives. They are maturity transformation and serving as conduits for the transmission of monetary policy, as shown by the grey shaded corresponding cells. These exceptions are important.

Table 9. Functions of banks and digital banking initiatives

Functions that make banks “special” under the FSN	Functions of digital banks and other FinTech initiatives
Safekeeping (deposit taking)	Safekeeping (eW); Deposit taking (DB)
Offering transactions accounts (redeemable in cash on demand)	Offering transactions accounts (DB, eW)
Liquidity provision	Liquidity provision (DB, eW)
Maturity transformation	
Clearing and settling payments	Facilitating the exchange of payments DB, eW, API)
Serving as conduits for transmission of monetary policy	

Source: Authors’ assessments.

One might recall from the discussion on banks and the financial safety net that the fundamental reasons why traditional banks as institutions are considered special reflects the specific combination of three functions that they perform, which imply maturity transformation. The three functions are:

- (1) taking deposits that are withdrawable on demand and at par and on-lending funds;
- (2) providing liquidity to other banks and non-banks, thus effectively engaging in maturity transformation;
- (3) serving as conduit for monetary policy transmission.

The literature on why banks are special implies that this mix of functions explains why banks, as *institutions*, are given access to all financial safety net components (Figure 4) and why the boundaries of the FSN have tended to be focused on institutions rather than *functions*. In any event, banks have been the only institutions that provide all three relevant functions.

What makes a bank special depends at least in part on legislation, which changes over time and is adapted to changes in the institutional provision of banking-like financial services. But the specialness of banks also depends crucially on decisions of the central banking community to support a system of intermediation based largely on the provision of central bank money to and withdrawal of central bank money from commercial banks. The sight deposits that commercial banks hold with the central bank are particularly important in this context, as they are used for the settlement of payment transactions. Therefore, the importance of banks as conduits of monetary policy should not be minimised when thinking about which types of entities should be covered by the full financial safety net.

Such an argument does not, however, preclude the separable availability of selected safety net components to a broader list of service providers, but these components will likely exclude access to the central bank balance sheet and the lender-of-last-resort function. The exception means that new digital Fintech initiatives can offer some banking services, but those entities unaffiliated with incumbent banks and lacking a banking charter will not have formal access to the lender-of-last resort function. Moreover, as they are currently not sufficiently important systemically or otherwise, they would also not be expected to have access to the (non-explicit) guarantor-of-last-resort function, which was provided during the recent episode of systemic financial distress.



Figure 4. Financial safety net provisions

Note: Traditionally, the financial safety net was defined as consisting of a lender of last resort and a deposit insurance function (which could include special bank failure resolution regimes) and, as a counterbalance for the privileges associated with these functions, a regulatory and supervisory framework. The policy response to the recent global financial crisis consisted effectively of making available the government-supported function of guarantor-of-last-resort in more explicit form, thus changing the design of the financial safety net. Governments and central banks provided a wide range of explicit guarantees for the liabilities and sometimes assets of financial institutions and in particular banks. As a result of these interventions, a fourth function has been added to the traditional financial safety net in more explicit form.

Source: Schich ^[25].

5.3 Conduits for Monetary Policy Transmission

At the peak of the global financial crisis, the perimeter of the FSN was extended, but subsequently a declared policy objective has been to clarify that so-called shadow banking activities are excluded from the perimeter of the FSN.¹⁵ According to Adrian and Ashcraft ^[2], shadow banking consists of financial intermediation that involves credit, maturity and liquidity transformation, thus creating financial stability risks, but without the access to the FSN provisions that banks have.

Banks are special at least to some extent because they have been made "special" by central banks, mainly on account of their role as the main conduits through which monetary policy actions are transmitted to the real economy. In this regard, Huertas ^[19] notes, however, that some change is taking place. For example, central banks have broadened the perimeter of entities that form part of the monetary policy transmission channel. In particular, via

¹⁵ The most recent discussions of the Financial Stability Board (FSB) suggest to use the term "non-bank financial intermediation" instead shadow banking, but for simplicity and conformity with common references, the present discussion continues to refer to shadow banking activities.

quantitative easing policies and other measures, central banks have broadened the group of counterparties they use beyond banks. Thus, at least along this dimension, banks have become somewhat less special.

Traditionally, central banks mainly used banks to transmit monetary policy impulses to the economy. The policy rate set by central banks has either been the rate at which the central bank lends to banks or the rate at which banks can borrow central bank money in the market. Central banks have conducted monetary policy by either directly lending to banks or by conducting open market operations with them. As a result of these measures, the level of central bank reserves at banks is altered, which in turn affects the banks' capacity to lend to finance economic activity.

Under quantitative easing policies, central banks interact with securities markets and investors in a more direct way. Central banks determine the eligibility of assets as collateral for lending and repurchase activity and they directly acquire a range of assets via open market operations. In the process, central bank decisions on the range of securities eligible as collateral for central bank open market operations became an additional monetary policy tool, the effects of which go beyond the banking sector. In fact, the choice of the new apparatus of monetary policy tools results, in part, from the view that the relatively weak economic recovery, especially in Europe, even after a decade following the global financial crisis was due to the improper functioning of the traditional monetary policy transmission channel.

Yet another potential challenge for the role of banks as conduits for monetary policy transmission might derive from cryptocurrencies, which could be public or private. The latter are non-convertible into cash, although they might be convertible into other cryptocurrencies or services. As a general rule, they lack any intrinsic value and a recent report by the Bank of International Settlements (BIS) is rather sceptical as to the potential of private crypto currencies to rival legal tender. Yet another scenario would be issuance of public cryptocurrency, which could be legal tender. Thus far, however, the odds of this happening anytime in the near term seem remote.

5.4 Unbundling vs Bundling Retail Banking Services – The Current State of Play

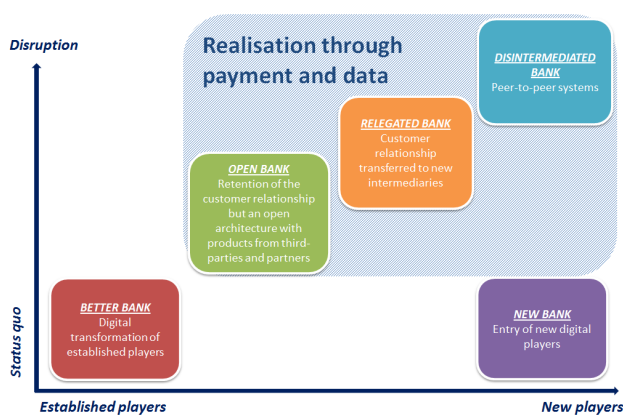
5.4.1 Potential Outcomes of Technological Advances

A lot of attention in the popular press has focused on the challenges the digital transformation poses for incumbents. Researchers have postulated for quite some time that the advance of technology and the related decline in

information asymmetries would lead to an unbundling of the value chain for banking services. This hypothesis has been explored recently in the Basel Committee on Banking Supervision's investigation of the implications of Fin-tech developments for the banking sector^[3].

Five potential scenario outcomes were put forward (Figure 5), ranging from the survival of incumbent institutions in the guise of the "better bank", achieved through the successful digital transformation of established players, to the fully "disintermediated bank", which has been replaced by peer-to-peer systems. Intermediate outcomes include, toward the negative side for incumbents, the "relegated bank", which continues to exist and supply products, but for which the customer relationship has been ceded to new players. This outcome contrasts with the "open bank" scenario, whereby the bank retains the customer relationship, but in an open architecture characterized by the pass-through of products from third-party providers and partners. A fifth scenario reflects the entry of new players.

Figure 5. Understanding the challenges of the digital revolution -- five scenarios



Source: Basel Committee on Banking Supervision^[3].

5.4.2 Scale and Scope Without Mass

Finance has been digitalising for some decades now and while the pace of change has certainly quickened of late the impact has thus far been less pronounced than in some other sectors of the economy, such as media and retail shopping venues. It seems highly unlikely that finance will avoid some upheaval, given that the digital transformation is pervading all sectors of the economy and encompasses all customer types (i.e. individuals, professionals, small enterprises, corporate businesses, and investors). It is thus not surprising that surveys of senior bank officials suggest that bank managers take the competitive threat coming from the ongoing digital transformation of

banking seriously. Abstracting from the hype that often accompanies periods of rapid innovation, there are several practical reasons why.

The conversion of information from analogue to digital forms, along with the development of application systems and platforms, is changing the nature of assets that generate value, how ownership is imparted and where value is generated. This development fosters changes in the structure and operation of markets, allows mini-economies or ecosystems to be formed and, built on the connectivity of the Internet, ultimately encourages changes in the nature of relationships, both social and economic. In particular, the ability to code and store information in standardised form lowers a broad range of transactions costs and provides a common framework for interaction and the development of customised relationships. There are direct parallels to banking.

Recall from the discussion above that the defining characteristic of the retail financial services segment has been the importance of the long-term relationship between the bank and the retail customer/client. The historically face-to-face nature of the relationship helped to explain the effort and investment incumbent banks devoted to developing or acquiring direct distribution channels. The problem with retail distribution infrastructure such as the branch-based network of commercial banks is that they tend to be very costly to establish and maintain. To make them cost-effective requires distributing a high enough volume or value of products and services through them to cover all costs, including the staff and branch costs of mobilising and administering the products.

The benefits are that branch networks can support many different product lines. The retail financial services segment encompasses transactions services (e.g. payments), lending, savings and safekeeping, investments, insurance, and financial advice. Commercial banks have traditionally offered a bundle of these products and services.

Scope economies could exist in these arrangements if, for example, consumers perceived the all-in costs of purchasing multiple products from a single supplier to be less than the costs of purchasing them from multiple sellers. Lower search costs could be a factor in this regard. There could be a positive reputation effect as well if customers associate additional products and services from a known provider with a certain measure of quality. For the bank, the ability to cross-sell new products to a given customer over time is a core aspect of the profitability of the relationship.

The digital transformation of finance introduces new dimensions to the concepts of scale and scope. In contrast to physical products and distribution channels, which can entail high fixed costs and significant marginal costs that

decline with scale, digital financial products may have high initial fixed costs associated with software and application development, but little if any marginal costs. This feature, combined with global distribution potential via the Internet, can enable digital providers and platforms to achieve scale without mass; that is, with very few employees or tangible assets, the same as for other sectors that have undergone the digital transformation.

The potential for scope economies also exists in the digital environment. Just as high switching costs can cause retail customers of traditional banks to become locked-in with their existing service provider, digital applications and data can be managed to reduce the cognitive costs to users, which can help to attract, engage, and maintain relationships over time. These practices also produce “lock in” effects to the extent users become accustomed to the look and feel of particular applications and the portability across them. The applications can then be used to provide additional products and services, once the necessary conform level has been reached.

For banks, products and services on the asset side need to be priced to cover all operating costs, including staff and branch costs, costs of loan-loss provisions, and the cost of capital. Under normal circumstances, the total revenues from the cluster of financial products offered by banks exceed total costs and banks are profitable on a portfolio-wide basis. But on a component basis, the results can be quite different. Importantly, revenues from products and services for which the bank has some pricing power may be used to subsidise those from more competitive market segments where margins are lower. A prime example comes from credit card users. Customers who maintain outstanding account balances over multiple billing cycles are charged high fees and constitute a major source of profits for providers. Payments have been called the proverbial “cash cow” for banks, which no doubt explains why this source of revenues is the primary target of digital alternatives, in several cases with the explicit support of policymakers.

In addition to the open banking initiatives noted above are other measures directed at the cost of retail payments. They include measures in jurisdictions such as Australia, Canada and Europe that aim to limit the fees charged on transactions. EU interchange fee regulation is designed explicitly to cap interchange fees and weaken so-called “honour all cards” rules, which prevent merchants from refusing any cards bearing the same logo as other cards they already accept. The rule changes seek to enable merchants to refuse high-fee cards.

The lower operating costs of digital initiatives and innovative use of digital technologies allow for new

business models and revenue propositions. Some arrangements are a straightforward pass-through of lower costs. For example, in the payment card area, new digital-based lenders target the most profitable customers of traditional card providers, those who carry balances forward, but offer them much lower interest rates. The payments area also features low-fee and even no-fee business models.

5.4.3 New Digital Banking Initiatives

Apart from more favourable pricing, many digital financial initiatives seek to provide greater customisation of the products and services they offer. For some types of financial products and services, customers have similar demands, which allow for standardisation of products and widespread distribution. Where that is the case, providers have sought to build or acquire economies of scale in production or in distribution. Money market mutual funds and similar types of *pro rata* asset management products are one example. Armed with new digital technologies and applications, new banking initiatives have moved in the opposite direction, toward greater customisation but with simpler propositions (Table 10).

Table 10. New digital banking initiatives

Type of entity	Product offerings
Digital banks	Deposits, savings, payments, foreign exchange
Digital wallets	Retail payments, transactions accounts
Marketplace lenders	Lending
APIs	Payments, foreign exchange, cash management, trade finance

Source: Authors’ assessments.

Many new digital banking initiatives appear to have ample start-up and venture capital funding and seem to be engaged in a quest to win market share. The digital transformation of other sectors has featured this core strategy, whereby ample digital capacity and the perceived advantages of scale encourage and justify bearing short-term losses while scaling up to gain market share and future profitability. Customers clearly benefit in the expansion phase from greater convenience and choice, and low prices. For some digital banking initiatives, especially in the payments area, low pricing takes the form of the “no fee” model. Customers become conditioned to expect low prices as more start-ups enter and adopt the new pricing model, which forces incumbents to follow suit.¹⁶

In the case of lending platforms, many are still making losses, as they have not yet achieved a sufficient scale to cover their fixed costs. Achieving scale is thus a key aim for many platforms. For some, scale seems to require the

¹⁶ See, for example, Beaudemoulin et al. ^[4].

involvement of institutional investors. For example, one solution has been to arrange partnerships whereby institutional investors automatically finance the project if retail funding is insufficient. Concerns have been expressed that, given the interest in institutional investor investments, the latter might be given preferential or exclusive access to certain loans or information or the option to opt out from certain segments of the market^[15].

In the longer term, a no-fee model for an entity offering a limited product range is a questionable revenue proposition, which means new initiatives must eventually develop and deploy priced services, adopt a different revenue model, or be absorbed into the ecosystem of a multi-product entity. Consolidation has been a common outcome in markets subject to excess capacity and some new digital banking initiatives have been acquired by incumbent providers or by other entities seeking to expand their scale or make their own inroads. Other initiatives attempt to remain independent by relying on new revenue streams, obtained for example from exploiting their data or earning commissions on customer referrals. The long-term success of these approaches is not yet clear.

It is likely that increasing competition, induced by the entry of digital alternatives into the payments ecosystem, will put downward pressure on margins from payments services. This outcome is one of the main intended consequences of new regulatory initiatives. The pressure on margins will apply to all intermediaries that provide such services. What it implies for profitability depends on the structure of costs for individual service providers and the role payments services play in their overall business model.¹⁷

Under increasing pressure from competitors, banks do expect to see a continued reduction in fees – and even an expansion of the no-cost model – on payment means (cash, bank cards, checks, transfers and direct debits), brokerage services for unit-linked contracts or collective investment scheme units, and more generally, on everyday banking services where customers feel autonomous. There are many client segments in retail banking, not all of which are especially price sensitive. Most savers who select a liquid account are more interested in greater access to their savings and the safety of their funds than in higher interest earnings.

Hence, while some financial products may, at a basic level, be recognised as the same sort of product – that is, a retail deposit account is a retail deposit account – they are not generally speaking treated as perfect substitutes by the typical retail customer. There must also be appropriate

¹⁷ The potential impact on profitability is one of the difficult challenges regulators face in designing measures to protect consumers – how to do so without unduly limiting institutions' profitability and thereby their safety.

levels of customer protection, privacy and above all security, and for some products, these concerns appear to dominate price considerations. These considerations may limit the ability of some stand-alone digital banking initiatives to reach critical size. The entry of other already trusted entities into the field, such as large online platforms or tech firms, could be a different story, however.

6. Preliminary Conclusions

Banks' performance of core economic functions is challenged to some extent by new and developing digital banking initiatives. The degree to which the latter pose a serious competitive threat differs from one specific function to another, and banks are increasingly part of these developments. In any case, the specific combination of different financial functions performed by banks remains unique and, thus, these entities continue to be at the core of the financial safety net.

Such an argument does not, however, preclude the separable availability of selected safety net components, such as deposit insurance, to a broader list of service providers. But this would come with the likely exclusion of access to the central bank balance sheet and the lender-of-last-resort function. Thus, while new digital Fintech initiatives can offer some banking services, those entities unaffiliated with incumbent banks and lacking a banking charter will not have formal access to the lender-of-last resort function and, as they are currently not sufficiently important systemically or otherwise, they would also not be expected to have access to the (non-explicit) guarantor-of-last-resort function, which was provided during the recent episode of systemic financial distress.

Digital banking initiatives serve as a reminder of the limits of an entity-based approach to regulation. The need for regulatory and supervisory approaches to Fintech to be in principle more activities-based rather than entity-based has been acknowledged for some time now, but in practice, the entry point for regulators and supervisors remains an entity. The unbundling and re-bundling of financial services implies that financial services are partly provided by incumbent banks and partly by new and more lightly (or un-) regulated digital initiatives.

Some safety net provisions are made available to (lightly) regulated Fintech initiatives, although it is not always clear whether they pay an adequate price in exchange. In particular, while newly formed digital banks benefit from and pay a price for deposit insurance, they also undertake activities that are certainly beyond the current perimeter of the financial safety net, such as providing e-wallets to hold, exchange and transfer private cryptocurrencies.

The outcome of the current wave of innovation will be

shaped by the regulatory response. There exists no widely agreed preferred approach in this regard, however. Both the environments for digital financial innovation and existing financial regulatory frameworks differ across countries.

References

- [1] ACPR. Survey on the Digital Revolution in the French Banking Sector. Analyses et synthèses, No. 88, Autorité de contrôle prudentiel et de résolution (ACPR), Banque de France, March 2018.
- [2] Adrian, T. and A.B. Ashcraft. Shadow Banking: A Review of the Literature. In *Banking Crises*, Palgrave Macmillan UK, 2016: 282-315.
- [3] Basel Committee on Banking Supervision. Sound Practices: Implications of Fintech Developments for Banks and Bank Supervisors. Basel Committee on Banking Supervision, February, 2018.
- [4] Beaudemoulin, N., P. Bienvenu, and D. Warzee. Survey on the digital revolution in the French banking sector. Analyses et synthèses, No. 88, Autorité de contrôle prudentiel et de résolution (ACPR), Banque de France, March 2018.
- [5] Boot, A. and A.V. Thakor. Commercial Banking and Shadow Banking: The Accelerating Integration of Banks and Markets and its Implications for Regulation”, SSRN Electronic Journal, January 2018. DOI: 10.2139/ssrn.3099114
- [6] Calomiris, C.W.. The Postmodern Bank Safety Net – Lessons from Developed and Developing Economies, The AEI Press, Publisher for the American Enterprise Institute, 1997.
- [7] Calomiris, C.W.. Building an Incentive-Compatible Safety Net: Special Problems for Developing Countries. *Journal of Banking and Finance*, 1999, 23 (10): 1499-1519.
- [8] Calomiris, C.W. and D.C. Wheelock. Was the Great Depression a Watershed in American Monetary History. In *The Defining Moment*, Michael Bordo, Claudia Goldin, and Eugene White (eds.), University of Chicago Press, Chicago, 1997.
- [9] CBInsights. The Challenger Bank Playbook: How 6 Digital Banking Startups are Taking on Retail Banking. Research Briefs, CBInsights Portal, 8 March 2018.
- [10] Cecchetti, S. and K. Schoenholtz. *Money, Banking and Financial Markets*, Third Edition, McGraw-Hill Irwin, Boston, 2010.
- [11] Cipriani, M. and G. La Spada. The Premium for Money-Like Assets. Federal Reserve Bank of New York, Liberty Street Economics (blog), 18 July 2018. <http://libertystreeteconomics.newyorkfed.org/2018/07/the-premium-for-money-like-assets.html>
- [12] Corrigan, E.G.. Are Banks Special?. Federal Reserve Bank of Minneapolis, Annual Report, 1982: 1-12.
- [13] Corrigan, E.G.. Are Banks Special: A Re-visitation. Federal Reserve Bank of Minneapolis, The Region, Special Issue, 2000: 1-4.
- [14] ESMA. Advice – Initial coin offerings and crypto-assets. European Securities and Markets Authority, ESMA50-157-1391, 9 January 2019.
- [15] Financial Conduct Authority. Interim feedback to the call for input to the post-implementation review of the FCA’s crowdfunding rules, Feedback statement FS16/13, Financial Conduct Authority, 2016.
- [16] FSB/CGFS (Financial Stability Board and Committee on the Global Financial System). FinTech Credit – Market Structure, Business Models and Financial Stability Implications. Report prepared by a Working Group established by the Committee on the Global Financial System and the Financial Stability Board, 22 May 2017.
- [17] Gande, A. and A. Saunders. Are Banks Still Special When There is a Secondary Market for Loans?”, *Journal of Finance*, 2012, 67: 1649-1684.
- [18] Havrylychuk, O.. Regulatory framework for the loan-based crowdfunding platforms. OECD Economics Department Working Papers, No. 1513, OECD Publishing, Paris, 2018. <https://doi.org/10.1787/24ad924a-en>
- [19] Huertas, T.F.. Are Banks Still Special. *Journal of Financial Perspectives*, 2018, 5(1). https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3000194
- [20] Latimore, D. and S. Greer. Fidor: Celent Model Bank of the Year 2015 – Case Studies of Effective Technology Use in Banking. Oliver Wyman, Celent, March 2015.
- [21] Merton, R.C.. A Functional Perspective of Financial Intermediation. *Financial Management*, Silver Anniversary Commemoration, Summer 1995, 24(2): 23-41. <http://www.jstor.org/stable/3665532>
- [22] OECD. Vectors of digital transformation. OECD Digital Economy Papers, OECD Publishing, Paris, 2019, 273. <https://doi.org/10.1787/5ade2bba-en>
- [23] Olson, M.O.. Are banks still special. Remarks by Mr Mark W. Olson, Member of the Board of Governors of the US Federal Reserve System at the Annual Washington Conference of the Institute of International Bankers, Washington DC, 13 March 2006.

- [24] Pierrakis, Y. and L. Collins. Banking on Each Other: Peer-to-peer Lending to Business: Evidence from Funding Circle. Nesta, United Kingdom, 2013.
- [25] Schich, S.. How to reduce implicit bank debt guarantees? A framework for discussing bank regulatory reform. *Journal of Financial Regulation and Compliance*, 2013, 21(4): 308-318.
<https://www.emerald.com/insight/content/doi/10.1108/JFRC-03-2013-0006/full/html>
- [26] Schich, S.. Implicit bank debt guarantees: Costs, benefits and risks”, *Journal of Economic Surveys*, 2018.
<https://doi.org/10.1111/joes.12287>
- [27] Schwartz, Anna J.. The Misuse of the Fed’s Discount Window. *Federal Reserve Bank of St. Louis Review* (September/October), 1992: 58-69.
- [28] Techfoliance. The state of Fintech in France. Invyo Insights, 2018.
<https://insights.invyo.io/europe/fintech-corner/insights/video-the-state-of-fintech-in-france/>
- [29] Werner, R.A.. Can Banks Individually Create Money Out of Nothing? – The Theories and the Empirical Evidence”, *International Review of Financial Analysis*, 2014, 36: 1-19.
- [30] West, M.. The FDIC’s supervision of industrial loan companies: A historical perspective. *FDIC Supervisory Insights*, 2004, 1: 5-13.