

Regulating for competition with BigTechs: banking-as-a-service and “beyond banking”

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Resumen

En este artículo se analizan dos estrategias novedosas de competencia en el sector bancario: la banca como servicio (*banking-as-a-service*) y la prestación de servicios más allá de la banca (*beyond banking*). Se argumenta que estos modelos de negocio emulan la penetración de las *BigTech* en la prestación de servicios financieros con el trasfondo de su actividad comercial. Pero estos modelos conllevan nuevos riesgos, que requieren respuestas regulatorias adecuadas en una doble vía. En primer lugar, se afirma que la regulación del modelo de competencia disruptivo de las *BigTech* —en la confluencia de los servicios financieros y la tecnología— precisa de instrumentos de coordinación novedosos entre las distintas áreas de política regulatoria involucradas (banca, pagos, competencia, tecnología digital y datos), así como de una nueva perspectiva sobre el tratamiento de los conglomerados mixtos que consolidan múltiples líneas de negocio y riesgos. En segundo lugar, el hecho de que la «banca como servicio» se base en un *pseudo-leasing* de la licencia bancaria a empresas no financieras, al objeto de ganar una base transaccional, plantea riesgos morales y de modelo que exigen tratamientos específicos, no muy diferentes de los aplicados al modelo de «originar para distribuir». Las perspectivas de éxito del modelo *beyond banking* son poco alentadoras en su versión extrema, en la que las entidades de crédito pasan a ser patrocinadoras de plataformas en toda regla, mientras que las versiones híbridas siguen conllevando nuevos riesgos.

Palabras clave: *BigTech*, *open banking*, regulación bancaria, banca como servicio, *beyond banking*, política de competencia, datos.

Abstract

This paper analyses “banking-as-a-service” and “beyond banking”, two emerging bank competition strategies. These business models are argued to emulate the transaction-based inroads that BigTechs have made into finance. But they entail new risks that call for adequate regulatory responses along a dual track. First, it is argued that regulation of the disruptive competition model of BigTechs at the confluence of finance and technology requires new tools to coordinate the different regulatory policies involved (banking, payments, competition, data, digital) and a new approach to the treatment of mixed business conglomerates that consolidate multiple business lines and risks. Second, the reliance of “banking-as-a-service” on a quasi-renting-out of the banking licence to non-financial companies as a way of obtaining a transactional base poses moral hazard and model risks that require specific treatments not unlike the originate-to-distribute business model did. The prospects for success of the pure version of the “beyond banking” model, where banks become sponsors of full-fledged platforms, are assessed as dim, but hybrid versions still entail new risks.

Keywords: BigTechs, open banking, bank regulation, banking-as-a-service, beyond banking, competition policy, data.

1 Introduction

The intent of this article is to highlight and analyse a selected number of banking and general regulation issues raised by the increasing digitalisation of the financial sector and, more specifically, by the prevalence of the economic platform model of distribution in a part of the market. Digitalisation has shaken up the competition space for retail banks [Siciliani (2018) and Vives (2019)]. New players taking either the form of nimble specialised operators (FinTechs) or big technology companies (BigTechs) are challenging bank incumbents.¹

The contest at the intersection of technology and banking can be roughly described as a race for innovation and customers. In addition to gaining efficiency in ancillary processes, banks need to adapt their core services to the new technologies rapidly unless they want to risk losing customers. The challenge for banks is twofold: mastering the experience-enhancing features of fintech solutions that permit the customisation of products and services for customers as well as being capable of sponsoring

¹ In this article, small letters and capital letters are used to distinguish between services and actors, i.e. fintech is an activity and FinTechs and BigTechs are categories of providers.

economic platform distribution models or participating in those largely sponsored by BigTechs. Some of the alternatives they face seem daunting, like facing more intense competition in the short-term and risking being cornered by some BigTech oligopoly in the long term [De la Mano and Padilla (2018)]. Admittedly, customers' trust in banks may prove to be a sufficient protection against such scenarios.

But such defence ultimately hinges on the ability of regulation to reconcile stability and innovation. The dynamics of competition and market structure at the confluence of finance and technology is proving to be instrumental for such reconciliation. European authorities are tracking the issue closely, as evidenced by the European Banking Authority (2018 and 2021) where the focus is placed on the open banking arrangements that implement the linkages between banks' infrastructure and the new external actors (FinTechs and BigTechs). The distinction between integration platforms where multiple side effects prevail (economic platforms) and technical platforms that target mainly local integration proves crucial to tell apart two versions of the regulatory reconciliation challenges: a demanding one that deals largely with fintech issues and a formidable one that confronts the agglomeration economics deployed by BigTechs.

Against this general backdrop, this article focuses on two emerging bank business models ("beyond banking" and banking-as-a-service) and their specific ways of addressing the challenges of competition with BigTechs. The "beyond banking" strategy contemplates an extension of the range of products and services offered by banks in the new digital environment as a way to compete on an equal footing with BigTechs. In turn, the "banking-as-a-service" strategy seeks to expand the universe of new digital customers through "white-labelling" arrangements.

Technology adaptation is a must in both cases, but banks attempt to compete as economic platforms in the first case while acting cooperatively in the second one. The reasons for the selection of these business models as topics of research from the broader universe of open banking arrangements are threefold. First, there are arguably distinct regimes of coexistence between BigTechs and banks in the long run, i.e. structural market outcomes of the end-game of the "innovation vs customers" race that avoid the specialisation profile of most open banking arrangements. The second and third sections of this article build the argument that banking-as-a-service (BaaS) offers an adaptive way of doing banking while "beyond banking" emerges as a sort of tit-for-tat strategy against competition by BigTechs. Second, these business models highlight the relevance of the scale and agglomeration effects typical of digital competition in the BigTech part of the market. Third, they have received little attention and present specific regulatory challenges.

In particular, under BaaS banks may exhibit a profile of dependency on BigTechs that requires specific regulatory and supervisory measures. This dependency can be expressed economically in terms of moral hazard and model risks, especially if the banks' partners are not accessible to the scrutiny of supervisors. Moreover, as a

“white-label” business model, where banks rent out their bank licences to non-financial partners, BaaS is argued to need some standardisation in order to be properly understood and treated by regulation. On the other hand, the “beyond banking” model will be argued to be largely unfeasible in its purest version, despite some attempts to implement it, and prone to raise challenges for both banks and regulators. This result follows largely from the entrenched nature of competition between economic platforms as a result of their propensity to entail lock-in and agglomeration effects, in contrast to the less sticky competition forms relying on technical platforms only.

The analysis of these new emerging business models also lays bare the broader challenges involved in reshaping the regulatory framework for the banking and payment system in the new world. The multiplicity of public goals at stake in the digital space complicates coordination between authorities. The dynamic tension between the preservation of financial stability objectives and the promotion of innovations that enhance customer service has endowed authorities with a complex role as arbiters of the process. Moreover, competition, data, digital and financial policies become less separable, which raises issues related to their respective ranking and associated institutionalisation and international coordination. Initial high-level principles to deal with some facets of these regulatory challenges, like the asymmetries between entity and activities-based licensing and regulation, have already been identified as being inconsistent and need to be reviewed. The policy challenges posed by BigTechs would require specific entity-based rules to be developed to complement insufficient activities-based requirements [Carstens et al. (2021)]. In this context, which invites BigTechs to be particularly cautious, the analysis of partnership arrangements like banking-as-a-service is important because they may allow direct regulation to be circumvented.

The concrete and systematic way to regulate the inroads made by BigTechs into finance is less clear, although some policy initiatives with cross-sectoral scope, particularly in Europe, may end up striking the right balance. In any case, the number of relevant authorities and public goals at stake will increase to such an extent that a “Sawteeth” model of banking regulation will be needed, a term that graphically extends “Twin Peaks” to a situation with multiple authorities.² Antitrust and data authorities have a significant role to play now. The usual high-level principles defining the institutional perimeter of action for regulation and supervision have already been called into question [Restoy (2021)]. A sound way to start is by mapping the dependencies created by digital interlinkages, as planned by the European Banking Authority (2021).

The systematic exposition and discussion of all these ideas is structured as follows. The second section identifies the main innovations at stake and their

² Unlike “Twin Peaks”, which is based on inspiration from fiction, a Sawteeth model has real mountains as the counterpart of its graphical message.

economic significance. The third section explains the motives for “beyond banking” and “banking-as-a-service” within the overall open banking landscape and highlights their connection with the so far mainly transactional motives leading the incursion of BigTechs into finance. The final section on regulatory issues addresses the regulatory side of the discussion, both in relation to general issues and the specific challenges raised by “banking-as-a-service” and “beyond banking”.

2 Key transformations

Three major IT innovations stand behind the transformation that the business model of multiple industries is undergoing and, in particular, the one under way in the banking sector, despite its traditionally strong IT background: namely, (i) the perfection of an effective digital technology for communication between machines (APIs); (ii) the ability to store and process information with a relational focus on a large scale; and (iii) the development of distributed database technologies (DLT) that can even out the right of access to information and threaten its intermediaries. The resulting boost to digitisation has shaken banking and the ability of regulation to ensure fair and sound financial intermediation.

2.1 APIs: “datification” of economic interactions

Application program interfaces (APIs) represent a milestone in the ability to configure digital communication links with a disruptive economic impact. The ability to remotely emulate with APIs the architecture of various traditional business models (e-commerce, telecommunications, remote banking, etc.) or to create new ones (social media, for example) has increased steadily since the time they mainly underpinned internet interactions through browsers [Zachariadis and Ozcan (2017)]. APIs can be defined as an expanded case of use of internet technology to facilitate communication between machines, i.e. a software intermediary that allows other applications to communicate, allowing them to share data. This fundamental capacity enabled early on the configuration of web pages as technical platforms, i.e. as a base for two-way business/social interaction between users and sponsors. The web was no longer just a static window onto the world but a configurable platform for interaction between buyers, sellers and sponsors. The dynamic data-oriented design of APIs (hence “datification”) forms the backbone of new business models, even if data are just ancillary components of the ultimate exchange. But it turns out that in banking information and data are instrumental.

APIs are no substitute for sound business models, but the economic impact of both their ability to emulate traditional models flexibly and to build new business opportunities based on data have proved to be transformative. In particular, the digital transformation surrounding API deployment has entailed a gradual

convergence between industries closely related in terms of their technological underpinnings. In particular, e-commerce, telecommunications and finance have increased their area of overlap. This general process has ended up exposing the often asymmetric sectoral regulatory frameworks for the traditional and the digital economy as the main determinant of switching costs for users. In any case, deepening contestability in a broad range of industries has expanded the duality between incumbents and new players across multiple data-intense industries.

The strong reliance of banks on information has long made banking a natural ground for the operation of the transformative effects of digital technology. The largely immaterial nature of the inputs and the financial services provided by banks led to anticipation of an earlier adoption of APIs as a remote business emulation technology. But the first APIs were deployed much later in banking than in, for example, e-commerce. The close link between subsequent API adoption in banking and the deepening of e-commerce with heterogeneous applications across products indicates that technology is not the only factor to consider in banking (see the section below on natural market domains). Philippon (2015) even argues that advances in financial technology have failed to reduce intermediation costs, possibly for oligopolistic competition reasons. In any case, this observation does not detract from the power of technology to transform the market structure by allowing competition on a remote basis and the entry of new players. But an alternative transformation of market structure leading to an intensification of oligopolistic competition in the long run is also possible in the presence of network effects (see the section below on the industrialisation of data-based interactions).

The profile of the new players empowered in banking by their expertise in API-related technology obviously exhibits a particular strength in the software techniques underlying API deployment. But this characterisation is not sufficiently specific from the structural and regulatory perspective of this article. The breadth of the characterisation leads to inclusion in the same bag of both nimble players capable of providing a data-financial services mix to a bounded range of customers (FinTechs) and the big technology operators that can run data and financial business at scale (BigTechs). BigTechs may be characterised as evolved and highly successful forms of FinTechs as regards their technology orientation. The ultimate differentiating feature between FinTechs and BigTechs proves to be the economic and managerial drivers for their expansion into finance. A broadly held consensus taken on board here is the differential role of data in the business operations of FinTechs and BigTechs. The Bank for International Settlements (BIS) has coined the acronym DNA loop to characterise the distinct identity of BigTechs where “D” stands for data, “N” for network and “A” for activities [Bank for International Settlements (2020)].

The dichotomic characterisation of the new players based on their scale of expertise in API technology is only a useful approximation. It turns out that, in some emerging market (EM) countries, it is not uncommon to witness telecom companies, such as

M-Pesa in Kenya, that have ventured into financial services on the basis of a comparative advantage afforded by their competences in the network hardware layer rather than the software one [Jack and Suri (2011)]. Also the meaning of the scale of the financial operations and the use of APIs requires qualifications. Neo-banks, i.e. fully digital banks that operate only online, also seek scale in their operations, albeit in a production function sense, based on the use of basic software modules. The next subsection clarifies the more transformative meaning of scale that shapes the regulatory challenges posed by BigTechs.

2.2 Industrialisation of data-based interactions

The ability to source, process and store data at large scale imparts a multiplicative effect to the transformations unleashed by API-based service delivery models. The magnitude of the disruptions under those conditions is summarised by the winner-takes-all proposition regarding the nature of BigTechs' power.

The disruptive economics of industrialised data-based interactions is fundamentally grounded in the presence of strong direct and, especially, indirect network effects, i.e. the “N” of the BIS acronym “DNA”. Direct network effects result from the economies of scale associated with the per-participant surplus of a larger coalition of buyers and sellers. In turn, indirect network effects arise through the improved opportunities to interact as a result of the depth made possible by thick connectivity [Farrell and Klemperer (2007)].

Enhanced processing power and connectivity capabilities have enabled cloud computing, a technological breakthrough that underpins the role of direct network effects as the economic driver of new business models, as well as “software as a service”, an approach to exploit IT resources that seeks economies of scale by sharing investment and maintenance costs across a large number of users. This has proved to be a powerful source of economies of scale for BigTechs. Moreover, cloud computing facilitates the economy of data agglomeration and its ensuing multiplicative effects, all of them under the control of the same small group of large technological firms. The ability to apply and deepen AI or machine learning techniques in such an integrated environment is a fundamental mechanism that sustains actionable models of data monetisation [Ciuriak (2018)]. Data gluttony proves also to be self-reinforcing and reserved to the big operators.

The comparative advantage of these “industrial” new players is thus twofold. First, the agglomeration processes that they can sustain on the basis of their ability to exploit data and data processing technology at scale. Second, the dependence of incumbents in other sectors on these technological firms in their transition from their legacy technology [Baker et al. (2020)]. The threat of a squeeze on the business model of incumbents shapes the fundamental step of regulating BigTechs' entry into finance (see the section below on general policy issues and tools).

In banking, the role of data and information has traditionally departed from the model applied by BigTechs. The “internal” monetisation of information in the former contrasts with the “external” or relational approach in the latter. The term “internal” here is intended to mean the use of information as an input for cross-selling or risk mitigation. In contrast, the meaning of “external” refers to the recourse to the working of actual markets for information as a mechanism to boost revenues [Bergemann and Bonatti (2019)]. This information market in principle faces no limitations as regards the goods and services markets that it may support. Monetisation of data based on the social data model by BigTechs exploits the mark-up resulting from the difference between the value of the information provided by users of BigTech services and the (usually free) services provided to them [Bergemann and Bonatti (2019)].

Importantly, leaving aside the handicap for banks posed by legacy IT systems and the potential inertia of regulatory regimes to adapt to the new conditions, a fundamental asymmetry prevails as regards their data monetisation abilities. BigTechs can exploit data either way. The different business models for data imply different intrinsic growth dynamics, competitive threats and risks. BigTechs’ ability to capture supply and demand in some business or social ecosystem online tends to be rewarded by a more than proportional expansion of their revenues through a “data multiplier”. In turn, banks’ growth dynamics largely reflect the working of the credit and payment mechanisms. Their ability to access markets for information is more difficult and riskier. Large scale entry of banks into informational markets may be very difficult because their current scale might be insufficient to obtain sufficient benefits from data aggregation. Only a challenging expansion of banks to a “beyond banking” business model could result in some parallels with the use of data by BigTechs.

The asymmetric access to data of BigTechs and bank incumbents impinges also on their lending technology and ability to compete across the spectrum of financial services. The screening of credit by banks balances soft information with hard data, like financial statements, credit scores and collateral, depending on intrinsic features of the portfolios, such as borrowers’ opacity and the transactional character of the deals. The monitoring may also include significant variables like deposit account flows and repayment patterns. In turn, in the absence of bank-type relationships with their customers, FinTechs and BigTechs can simply exploit alternative data and customised algorithmic scores when considering entry into credit intermediation. The competitive advantage across products of bank incumbents and new players should not be expected to be homogeneous. Rather it should correlate both with the relative intensity of the hard vs soft information sources necessary to service the different products and the convenience of the quantitative tools employed, if any [Balyuk et al. (2020)].

All in all, data-based competition between BigTechs and bank incumbents is not entirely determined by the agglomeration advantages of the former, as the advantages of data specificity enjoyed by incumbents can also be exploited. Portfolios better served with soft and relational information are thus a natural space for banks to occupy. In turn,

transactional portfolios are the natural battleground for competition. Regulation should be expected to be crucial in the protection of a competitive balance that hinges on information, especially in hybrid business models like BaaS where screening may follow an intermediate bank-BigTech logic (see the section below on BaaS and regulation). Also, data regulators are already examining the different customer protection issues associated with big data and bank scoring tools [Hurley and Adebayo (2017)].

2.3 Distributed Ledger Technology (DLT)

The representation of information through chains of blocks of it (“blockchain”) is another noteworthy and disruptive innovation. Its impact on payments intermediation could be deeply transformative. The ability to create physically distributed databases subject to secure collective validation mechanisms gives rise to scenarios where the structures of collaboration between economic agents may change radically. In particular, the feasibility of collective certification of the integrity of databases representative of information on economic or financial transactions might undermine the logic of financial intermediation and even external enforcement if the DLT allows smart-contracting

Unsurprisingly, DLT technology³ features prominently in the main building blocks of the strategic initiatives of some of the new financial services players. The diversity of services envisaged to benefit from DLT use is broad. Fully decentralised arrangements (DeFi) seek to replace bank intermediation entirely. But the thrust of DLT has proved to be especially strong in the field of payment and money-like instruments replacing classical chains of value with tokens. In particular, “stablecoins” stand out as another potential disruptor of value storage and transfer mechanisms due to a hybrid profile that seeks DLT-based innovation and asset-backed stability.

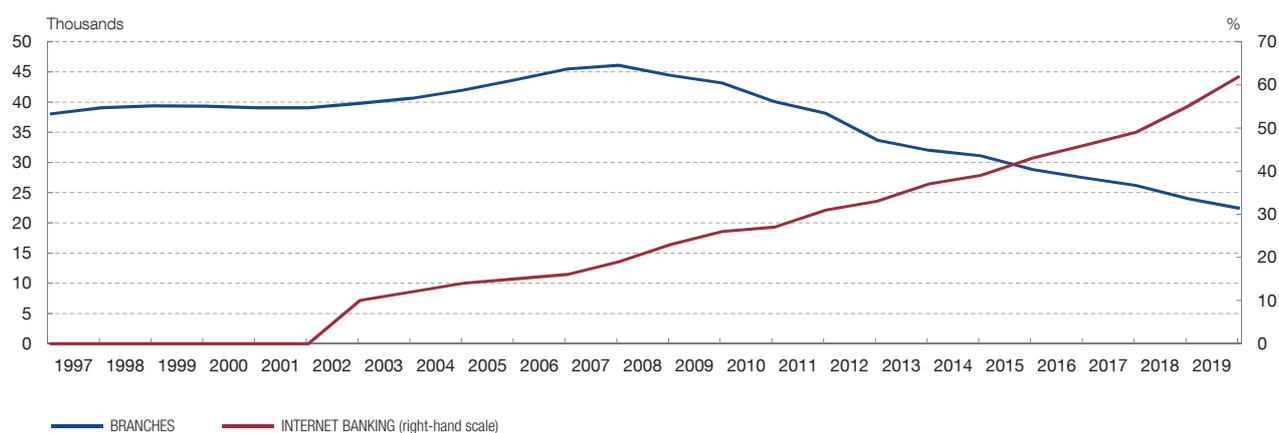
The delivery of services in economic platforms endowed with proprietary tokens or capable of entering into smart contracts proves to be particularly sticky. The barriers to entry to the platform and the switching costs out of it are magnified both when tokens create value local to the platform and when the smart contracting ability reduces monitoring/enforcement costs.

3 Competition between incumbents and newcomers. From branches to BaaS or platforms?

The IT innovations described above are already leaving a footprint on banking competition and market structure. Some of the symptoms of the transformations under way in banking are well known. Chart 1 displays for the specific case of Spain

³ DLT refers to the technology that allows the operation of a decentralized distributed database, in particular validation and immutable record updating at the different sites of the computer network.

Chart 1

NUMBER OF BANK BRANCHES AND INTERNET BANKING PENETRATION IN SPAIN

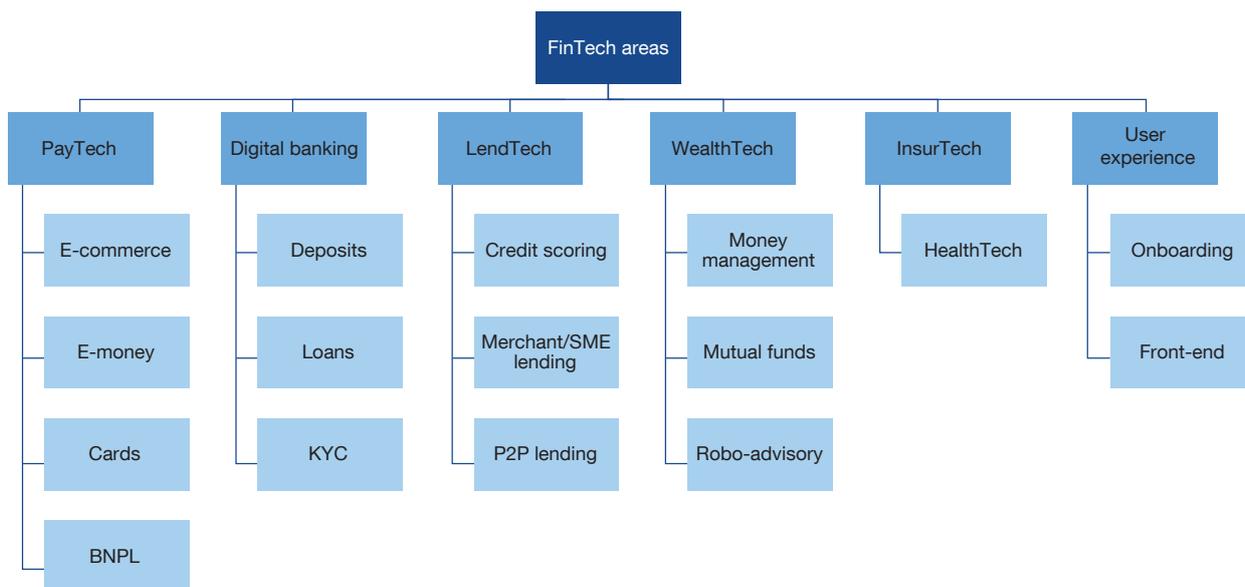
SOURCES: Number of bank branches, Banco de España and Eurostat.

the substitution of distribution channels in banking as internet penetration has deepened.

Understanding the nature of competition and market structure proves to be crucial for any regulatory initiative. This section attempts to identify some of the salient features of changes in market structure resulting from the technological innovations described, in order to frame the specific regulatory questions addressed in the final section. Analytical evidence on the matter is only very partial, both from a geographic and sectoral perspective. Surveys conducted by authorities [European Banking Authority (2019)] and consultants highlight the increasing engagement of banks in partnerships with a diversity of FinTechs and the fears raised both by BigTechs and the possibility of intense competition with peers. Market reports highlight the strong specialisation and corporate dynamism around fintech activity across the world. Chart 2 conveys a sense of the FinTech-related specialisation in multiple niches.

The specialisation and diversity of FinTech-related activities indicate the operation of mechanisms of unbundling. APIs naturally strengthen the ability to undertake targeted improvements of customers' experience and to compete accordingly. The vertical integration traditional in the provision or retail banking services is thus naturally undermined by the value creation incentives generated by technical innovation, unless banks can achieve it organically in time to confront new competitors. Importantly, the market structure determined by technological forces may interact with other unbundling mechanisms, possibly rooted in regulation, to reinforce fragmentation and shadow banking. For example, the ability of some non-banks in the United States to originate mortgages that feed agencies' issuance of mortgage-backed securities is further reinforced by the new screening technologies brought by FinTechs [Buchak et al. (2018)].

OVERVIEW OF FIELDS OF FINTECH ACTIVITY



SOURCE: Own elaboration.

3.1 The strategic race activated by IT innovations

The race between banking incumbents and new players entails straightforward strategic challenges for both. The former must adapt their technology and/or business model in accordance with the requirements posed by the relevant technological innovations. The latter have to attract bank customers and build their own franchises. Regulation can be a friction, an arbiter or an enabler in this race.

The specific strategies of the different parties should be shaped by their respective vision of the transformation at stake. A vision on the bank incumbent side that emphasises the need for piecemeal productivity and customer experience improvements can be satisfied by a correspondingly targeted technology adaptation based on APIs operating on a standalone basis. Traditional banks which have to fight on several innovation fronts at once can seldom avoid having to cooperate with a relevant set of FinTechs or hiring their services. In any case, they must be ready to open up their infrastructure and customer base to partnerships that enhance the delivery of services or improve ancillary processes. This strategy of opening up the bank infrastructure (open banking) to outsiders reaches out to both FinTechs and BigTechs, although its effect is modulated by their different business models.

The strategic risks for banks associated with open banking may lead to tepid IT adaptations in which open banking is complemented or entirely substituted by an internal technology update of the bank in question [Bahri and Lobo (2020)].

Interestingly, the success of FinTechs in the open banking “co-opetition” landscape often leads to re-bundling through their incorporation as banks. Banking would thus still be a safe harbour in the rough waters shaken by innovation [Lantery et al. (2021)]. Customers’ trust in regulated banking provides a backstop.

In turn, an open banking vision that recognises the strong network effects present in digital economic platforms requires bank incumbents to move beyond partial adaptations and change their business model in a way that also seeks network effects or an expanded transactional base. This is the general economic logic that differentiates “beyond banking” and “banking-as-a-service” from other restricted open banking models.

The strategies available to the new potential players mirror those of bank incumbents. When their innovations merely bring productivity gains, they may be tempted to either seek partnerships with incumbents to leverage their customer base or to license their technology. Their operation on a standalone basis faces the drawbacks of having to build their customer base. When their innovative abilities include the provision of services generating strong network effects (BigTechs), they can aspire to build their own customer base. But even in this case the scope for success in banking depends on the overlap between the natural customer base of these non-financial companies and the community of bank customers.

Importantly, the strategic game should be expected to operate heterogeneously across banking services. As discussed above, access to data does not grant a uniform comparative advantage to BigTechs or to banks across products. Moreover, entry into the different banking segments is just an option for newcomers. The contribution to the value of their overall franchise may not justify moving into every segment if that compromises more valuable segments. BigTechs have in fact evidenced a cautious pace of entry in banking lines of activity other than those related to transactional services and payments. All in all, the trust link may both selectively bind bank customers to banks and keep BigTechs at bay from them other than in the case of products aligned with their strengths.

3.2 Natural market domains

The distribution of competitive advantage in a sector tends to shape its natural market structure. The strategic need to innovate or lose clients in banking has led to intrinsic diversity to cope with those challenges and reactions [Bahri and Lobo (2020)]. Some of the salient features of a rebalanced distribution of competitive advantage are widespread unbundling and operational fragmentation. But this conclusion taken from a granular perspective is consistent with a larger scale segmentation into domains where either the distribution of competitive advantage is scattered (banks partnering with FinTechs) or concentrated, as a result of the

operation of agglomeration processes as described in 2.1.2. The overall picture is thus consistent with the dynamic coexistence of a diversity of business models like broad open banking and other open banking arrangements like platform-based competition and BaaS, i.e. banks partnering with NFCs.

In the words of Gambacorta et al. (2020) regulators must deal with a barbell-like market structure. The rapid growth dynamics of ventures that systematically exploit e-commerce-based network externalities determine the bulky domain held by BigTechs. In contrast, productivity enhancing innovations typical of plain open banking tend to exhibit a high critical mass for agglomeration [Economides and Himmelberg (1995)]. BaaS emerges as a bridge arrangement to reconcile traditional and emerging business models.

The breakdown by products of the fintech-related activity of the different segments is an important question as it shapes the regulatory hot spots. However, a systematic statistical description is hampered by the fragmentation and unregulated nature of the markets. Payment services, including consumer credit, represent the largest chunk of the open banking and platform segments. But credit provision increasingly plays a role in the open banking segment, especially in countries where non-bank institutional investors play a major role in the financial system [Ziegler et al. (2021)]. Chart 3 provides an overview up to 2019 of the role of FinTechs and BigTechs in the granting of credit. In terms of geographical quota, existing surveys suggest that the broad regulatory crackdown on BigTech activity in China in 2020 and 2021 has brought the United States to the top in terms of overall volume of activity. The chart also highlights the cautious approach of BigTechs to credit discussed later.

3.2.1 Open banking

There is no standard definition for open banking. Originally, the term was shaped by the regulatory and payment services connotations in PSD2.⁴ But PSD2 has accelerated the digital transformation of banks in Europe [Cortet et al. (2016)], while the term has taken an autonomous market-led path in the United States and Asia.⁵ Open banking has thus surpassed the constrained meaning of opening a bank's own infrastructure to payment initiations or account aggregators (as in PSD2) to a broader one centred around the use of API technology as a strategic tool for the delivery of banking services in general. This meaning of open banking in a broad sense includes the different variants of IT driven competition and can be also called platformisation [European Banking Authority (2021)], given the reliance on technical platforms to implement the new forms of interconnection between entities via APIs. Note that

4 Directive (EU) 2015/2366, which regulates payment services and payment service providers in the European Union and the European Economic Area.

5 In the United States the standardisation of APIs undertaken by the National Automated Clearing House Association (NACHA) has been an enabler for the adoption.

Chart 3

CREDIT GRANTED BY FINTECHS AND BIGTECHS IN DIFFERENT REGIONS (2013-2019)



SOURCE: Cornelli et al. (2020).

platformisation should not be confused with operations based on economic platforms, as argued in the following section.

The economic roots of open banking lie in the attempt to unbundle banking services to create value through inter-connection, specialisation and partnership. The fact that value creation can no longer be attributed to a unique organisational frontier in the open banking paradigm naturally shapes its strategic and regulatory challenges. Complexity and fragmentation are general attributes of open banking. The European Banking Authority (2021) provides a taxonomy of broad open banking arrangements following a perspective based on the type of interconnected players. BaaS and “beyond banking” represent specific economic arrangements of particular interest as will become clear.

Unsurprisingly, the challenge for bank incumbents to adapt to open banking consists mainly in the how and where. The taxonomy of options available is broad. A blanket

adoption of open banking across instruments entails an adaptive strategy that stresses uniformity in the impact of technological innovation across markets. Under this view, the replacement of the old products and distributional channels with new digital “rails” and instruments becomes a competitive imperative on its own. Innovation is warranted even if it just emulates existing business models with lower costs and higher customer satisfaction. Neobanks, i.e. entirely virtual and digitally native banks, follow an extreme version of this approach. Banking incumbents typically face significant adaptation costs to a blanket overhaul of their technology [Ramdani et al. (2020)] and most adapt gradually.

The retooling of traditional banks with APIs follows a restricted open banking paradigm that prioritises the range of services adapted. In other words, the deployment of APIs tends to be targeted in scope and launched in partnership with a diverse set of FinTechs in accordance with their specialisation.⁶ The business priorities leading to the deployment of each API reflect either regulatory priorities or its relevance to the business model of the bank in question. Payments processing and transactional services count as natural areas for deployment of APIs by banks.

The priorities in terms of products served through APIs result from the basic principle of financial services value. That is to say, the financial service often does not address a primary client need, but it is a solution to the problem that arises when the genuine primary need must be satisfied. Two powerful implications in terms of deployment of APIs are the relevance of (i) a logic of unfilled primary needs, or (ii) the presence of strong complementarity relations.

The relevance of the first implication is confirmed by the increasing role of “vertical banking”, i.e. the arrangement of digital services delivery with a community in mind that is dispersed, but united by some specific feature (gender, demographic, geographic, profession, risk profile, etc.) and whose needs have been traditionally underserved. As regards the second implication, the spread of digital consumer finance and payment processing solutions matches the fundamental complementarity that exists between trade and settlement. In a similar vein, open banking APIs should be expected to be deployed with an ecosystem perspective. The life-cycle of customers’ experience of products in it should dictate the range of complementary services offered with an API. This scenario may apply to car loans or business loans as well. Onboarding, KYC and AML APIs⁷ also thrive among banks as they determine customer experience at the very basic point of the initial relationship.

Open banking solutions typically create value within the limits of the complementarity chain excluding the satisfaction of the final need of the customer. In other words, the

6 CapGemini (2021) estimates that around 89% of banks partner with FinTechs as opposed to organic innovation.

7 Onboarding APIs facilitate customers becoming familiar with the bank, its products or services. KYC (Know Your Customer) APIs implement standards designed to protect financial institutions against fraud and corruption based on digital identification and additional processes. AML APIs facilitate the control of anti-money laundering rules.

provision of financial services to acquire a good at a point of sale (contextual finance) typically predominates over the alternative of arranging both the provision of the good and the financing of its sale to the customer. However, this business model is not entirely alien to traditional retail banking (leasing or a certain range of shopping). Ultimately, financing and buying a product may be naturally separate processes but their combination may create customer value under some circumstances. The potential application of these ideas in the digital banking world defines some of the features of a strategy that goes beyond traditional banking (as discussed below).

The range of applications of APIs by banks is broader. APIs can be also applied by banks to deliver corporate services. Trade finance can be significantly facilitated, especially through the recourse to DLT techniques. The delivery of corporate services through APIs to large companies and SMEs is also possible but tends to be less straightforward due to the heterogeneity of requirements, including IT integration at the premises of the customer. The recourse of banks to APIs that score the credit quality of customers looks counterintuitive, but is increasingly necessary for small ticket business in a disintegrated banking market. Credit scoring APIs entail rating customers based on big data rather than soft or bank hard data and, thus, assuming the trade-off between data availability and quality.

All in all, open banking in a restricted sense is a strategy of targeted customisation of value that shifts banking organisations from a silo culture to collaborative arrangements with innovators. Technically it requires an inter-operable and actionable exchange of data in accordance with the business models covered. But it also poses the governance challenges associated with the joint delivery of services. Financial transaction or account data needs to be shared in a secure way, which banks can provide.

Restricted open banking paves the way for the two other modalities of competition highlighted. First, restricted open banking faces an implicit trade-off. Innovation that does not generate external effects tends to scale up only with difficulty due to the handicaps of competition and imitation. It may still entail success, i.e. a cycle of growth and transformation into licensed banks for successful FinTechs or transformation for an incumbent bank. But the activation of agglomeration effects by BigTechs alter qualitatively the competitive challenges. Second, restricted open banking lacks a strategic foundation if it entails merely a focus on the implementation of use cases. BaaS emerges as a dedicated strategy to leverage the potential of systematic open banking.

3.2.2 Platforms and banking

The meaning of the term platform is not uniform across contexts. Technical platforms facilitate interaction, broadly speaking, and accord with the meaning in European

Banking Authority (2021). From this perspective, open banking environments that operate financial service market places and connect customers to a diversity of potential providers qualify as platforms. Similarly, platform also refers to one-stop shops in a multi-seller setting. The classical paradigm of platforms are medieval portals (another denomination for platforms these days) where buyers and sellers gathered in a shared environment. Retail banks have also exploited the multi-party and multi-product logic of platforms by setting the location of their branches in shopping areas in proximity to other retail businesses. The modern economic notion of platforms emerges when these portals become economic actors competing “for the market” as opposed to providers of some specific product in some market [Geroski (2003)].

Economic platforms supplement the facilitation of interaction of technical platforms with additional functionalities aimed at actively creating synergies. The relevance of platforms as an economic concept has grown over the last twenty years in parallel with the advances in digital technology that have facilitated that process. In general terms, the disruptive character of platforms emerges from the synergies enabled by an optimised matching of buyers and sellers in a way that triggers circuits of customer satisfaction and platform growth. Platform sponsors provide the economic intelligence that sustains the operation of these transactional growth-oriented environments.

BigTechs tend to be successful operators of such economic platforms. Digital technology has empowered them to optimise market matching processes in disruptive ways. The economic intelligence deployed tends to rely on different forms of monetising data and/or cross-subsidising their services. The disruptive force of platforms operated by BigTechs follows from the intelligence deployed in their management to achieve transaction multiplier effects. The result is a market with a qualitatively new set of pricing and behavioural features that significantly affect the nature of competition with traditional operators and the ability of competition regulators to ensure fair markets. Their scale of operations needs to be extremely large as it has to match the need to remotely congregate and steer buyers and sellers. As a matter of fact, their scale is not only large but also elastic, because platform sponsors tend to also engage in the provision of external cloud computing services. Thus, their IT enabling business seems to be strongly complementary to their transactional one in a way that boosts their total franchise value.

The economic principles exploited in the “intelligent” management of platforms are well known and differ from those for plain market places. Rochet and Tirole (2003) characterised platforms as a two-sided market environment where the end-users (both buyers and sellers) do not internalise the welfare impact of their use of the platform on their counterparts. This paves the way for platform sponsors to manage the overall effect of the externalities typically in a way that optimises sponsors’ market value. The peculiar features of economic platforms stem directly

from the ability of sponsors to manage the non-linear effects of demand and supply externalities. The asymmetrical patterns of platform pricing for suppliers and customers characterised by Rochet and Tirole (2003) include free services and ultimately reflect the willingness of sponsors to devote resources to gain benefits from the different elasticities of demand and supply. Bergemann et al. (2019) identify the data externality generated by transaction initiators that sustains the working of BigTechs' economic platforms. Moreover, they argue that the scale of their operations creates barriers to entry due to the ability to exploit huge amounts of data with AI techniques. Rietveld et al. (2019) highlight the selective promotion of complement products listed on platforms to indicate the general approach to platform management.

The scope rather than the role of BigTechs in banking is the relevant open question. A full-scope platform cannot operate properly without built-in financial services that improve customers' experience. BigTech companies thus develop quite naturally the profile of some financial services in the area of payment services provision, consumer credit and insurance. The strong complementarity of these services with the underlying e-commerce business is well known to lead to bundling practices, which underpin the competitive advantage of BigTechs as regards access to data.

But the complementarity argument does not necessarily imply a strong involvement of general purpose e-commerce platforms in the provision of financial services like term loans, investment products etc. unconnected with their transactional business. This would require a broadening of their business model from one based on flow of income sourced from transactional fees to one that also includes financial intermediation income. Certainly, this transformation was happening in China until the crackdown by the authorities in 2020. Such rapid evolution and involution in China can be accounted for by a range of local factors like pre-existing conditions of development in the financial sector [Gorjon (2018)], the access of BigTechs to central bank infrastructure and ensuing exponential growth. Elsewhere, BigTechs have been very cautious to venture uncooperatively into financial intermediation. Table 1 borrows from Crisanto et al. (2020) to highlight the e-commerce/internet driver of their involvement in finance services and its focus on payments.

The significance of payments for platforms correlates with the incentive for GAFAs⁸ to obtain particular types of licences. They are licensed as e-transfer service providers in the United States, and as payment service providers in the EU (with the exception of Apple), whilst none of them have a banking licence. Embedding financial products in the platform typically requires either the inclusion of a financial company as a platform provider, a partnership with such a company or the possession of a licence. Significantly, the first model has been more common in Chinese BigTechs, while American players rely on partnerships when they do not use their own licences.

8 Acronym stemming from Google, Apple, Facebook and Amazon.

Table 1

OVERVIEW OF BIGTECH ACTIVITY AND INVOLVEMENT IN FINANCE

BigTech	Business	Banking	Credit	Payments	Investment
Google	Internet	X		X	
Apple	Tech		X	X	
Facebook	Social media			X	
Amazon	E-commerce		X	X	X
Alibaba	E-commerce	X	X	X	X
Baidu	Internet	X	X	X	X
Tencent	Social media	X	X	X	X

SOURCE: Crisanto et al. (2021).

Furthermore, financial services in platforms can be provided either under arrangements of exclusivity or that allow the entry of different banks.

The still constrained range of financial services offered by digital platforms, focused so far on consumer transaction banking, does not detract from their systemic relevance and expansion potential. The expanded open banking space that results from the inclusion of these digital platforms within its realm leaves an unbalanced size profile. The agglomeration economics of platforms stemming from the multi-product multi-party matching offering and the industrial exploitation of data determine the “bulge bracket” profile of digital platforms in an expanded open banking. Moreover, the expanded open banking world amounts effectively to an enlargement of shadow banking.

The basis for a further expansion across bank instruments beyond transactional services is still unsettled. The degree of comparative advantage provided by data agglomeration may hold the key. On the one hand, screening models based on big data may be inferior to the ones combining soft and hard data in banks on non-transactional products. Hardening soft information through credit scoring technology seems to have its limits [Filomeni et al. (2016)]. On the other hand, Gambacorta et al. (2020) argue that the use of massive amounts of data by BigTechs to assess firms’ creditworthiness could reduce the need for collateral to resolve asymmetric information problems in credit markets. The significance of digital platforms as non-bank competitors thus raises many questions as to the reactions of banks and regulators and the soundness of the new financial market despite their currently restricted range of operations.

The recourse by banks to a “beyond banking” model has been proposed as a potential defensive strategy. The “beyond banking” model amounts to an attempt to organise banking services provision under a platform model. Traditionally, universal banks have been loosely called platforms due to their one-stop shop multi-product

nature. The “beyond banking” model expands the range of products covered by bank platforms to bring transactional depth to their global offer. Not unlike what happens in the BigTech space, proponents of this nowadays fringe strategy also highlight the multiplier effects that deepening the recourse to data sources could have for banking when combined with advanced analytics services [Ernst and Young (2021)]. A weaker form of the “beyond banking” model renounces the benefits of two-sided platforms to promote instead “digital ecosystems”, i.e. conglomerates of several distinct services accessible digitally.

The “beyond banking” model can be said to emerge ultimately through an apparent data mirage as a way of competing with BigTechs. The agglomeration dynamics of BigTechs’ portals sustained by smart data management are grounded on their ability to satisfy the transactional needs of customers in the first place. Absent such capacity on the side of incumbents, better data management on their part can have an impact that, albeit weaker, is still significant. For example, a focus by incumbents on supporting the satisfaction of the primary needs of customers would lead naturally to arrangements that permit the identification of the need, in the right context and at the right time. “Contextual finance” solutions can be a natural strategy for incumbents to counteract their lack of a transactional base. But they are typically only possible under partnership arrangements with non-bank companies that lead to BaaS (as discussed below).

Ultimately, effective imitation of the BigTech model by banks would seem to entail the construction of an entire transactional business platform. Such a “beyond banking” model of banking amounts to the creation of one-stop shops for the purchase of both banking products and goods. The closest arrangement to such an ecosystem has been developed in Asia by BigTechs rather than banks. The difficulties for banks to become sponsors of new portals, going beyond their traditional role can be substantial [Jacobides (2019)].

Nonetheless, “beyond banking” can mean something less ambitious than a fully-fledged portal. A restricted form of platform banking means a limited extension of the ecosystem notion of products to include final needs close to the bank financial services actually provided. For example, in the field of mortgage banking, platform complementarity would dictate that banks not only provide loans, but also facilitate homeowner’s insurance, house maintenance services, or even furniture.

Nonetheless, a “beyond banking” model of banking has already made inroads in some jurisdictions like Russia. The section below on platforms and banks summarises some of the regulatory concerns with this model. A fundamental reason for those concerns is the sustainability of such a strategy in the light of the disparity of IT capacity between banks and BigTechs. In this regard, it is worth remembering that the stock market capitalisation of GAFAs hovers around two times that of the world’s 30 largest banks.

3.2.3 Banking-as-a-service (BaaS)

The lack of a transactional base to implement a pure economic platform model has led banks to seek partnerships and associations with non-banks. The result is BaaS, a “white-label” form of banking. The distribution of “white-label” goods is a consolidated practice outside the financial services market. The logic is typically grounded in the desire of retailers to enhance their share of profits in the vertical product chain [Berges-Sennou et al. (2004)]. Private label banking, in contrast, follows a supply side logic. The API revolution has made possible a diversity of collaborative arrangements with non-banks or FinTechs that break with the traditional model of distributing banking services.

Like in software-as-a-service (SaaS) and similar composites, the delivery of BaaS consists in replacing the business capital that would normally underpin the provision of banking services with a contract that grants the right to have direct access to the flow of those services. More specifically, the capital at stake under BaaS is the banking licence and the services of a bank with their associated balance of rights and duties. The non-financial company in the position of buyer under a BaaS contract acquires the right to outsource the provision of banking services to a licensed bank that finances the transactions of the former with its clients.

BaaS makes it possible for non-banks to “provide” banking services to their customers by drawing on the services of the bank acting in a “white-label” capacity. For the bank itself, BaaS widens the network of customers accessible via such a context-based model of distribution. The working of the arrangement resembles legally the combination of bank agency and outsourcing contracts that substitutes for the network of branches. Ideally, BaaS offers scalability, something that distinguishes it from strategic partnerships with FinTechs. Multiple non-bank partners may access a BaaS platform that replaces customised arrangements more typical of partnerships with FinTechs in the pure open banking model with some degree of standardisation.

The potential for seamless deployment of BaaS via APIs makes it a unique form of bank competition. BaaS apparently allows the competition from BigTechs to be confronted by accessing external transactional pools of goods. Furthermore, their scope is potentially broader than the expected pool of goods in e-commerce platforms, which is generally limited to personal items. In other words, the overall bank balance sheet could notionally feed BaaS business if the technical platform for consistent deployment of multiple APIs is functional. In that scenario, the main constraint would be the risk appetite for such a model of distribution.

However, cursory evidence suggests that BaaS still covers mainly the money ecosystem of bank offerings, i.e. debit and credit card processing, BNPL instruments and current account services [CapGemini (2021)]. Credit screening or underwriting that falls outside the credit consumer perimeter appears to be less frequent although

Table 2

PROMINENT EXAMPLES OF BAAS DEALS

BigTech	BaaS bank	Partnership	Notes
Google	Citi + 11 community banks	PLEX deposit account	Checking account and services integrated in Google Play with access to Citi ATMs
Apple	Goldman Sachs	4x1 Card	Credit, Debit, Wallet and P2P payments in one. Incentives to acquire Apple
Amazon	Goldman Sachs	SME credit lines	Credit line for SMEs vendors in Amazon Access to data included
Uber	BBVA	Deposit accounts for drivers	Deposit and debit card for Uber drivers in Mexico

SOURCE: Own elaboration from press sources.

increasingly present. The outcome should be determined by a mix of complementarity, risk appetite and customer convenience determinants. Interestingly, the indirect access to a transactional base ideally permits BaaS banks to monetise data in ways that traditional banks have never succeeded in doing. Although banks have had lots of information, the absence of a transactional base as a strategic lever has led to entrenched silos of information within the organisation.

Non-bank partners in BaaS contracts are not constrained to be technological companies thanks to the flexibility of APIs. Retailers, providers of hospitality or healthcare services and even providers of mobility services are reported to have associated with banks in BaaS arrangements. These partnerships are primarily perceived to deepen the recognition of trademarks, in addition to the service provided to the customers. Even banks can be partners of payments-as-a-service arrangements that implement in a plug-and-play way cards, payments clearing, cross-border payments, etc., that can moreover be distributed to end-customers. FinTechs also count as potential partners.

However, BigTechs stand out as the most significant partners in BaaS arrangements (see Table 2). The advance of BaaS arrangements with BigTechs is especially noticeable in the United States. The biggest e-commerce and internet companies (GAFA) have consolidated partnerships with either major banks or even networks of banks. The inclusion of a chequing account within the offering of a BigTech app in 2021 (PLEX) and its swift removal soon afterwards despite signs of its good reception by customers, constitute a case that raises questions as to the limits of BigTech involvement in the provision of regulated financial services provision.

But, as mentioned before, BigTechs are also important actors in the provision of inputs for BaaS. The ability of banks to smoothly provide bank services in a distributed way across a broad range of products hinges on computer applications running in the cloud. Banks need to transform their traditional IT infrastructure into a Lego-like

architecture to deliver the functionalities required by the different APIs. This is more easily done de novo on virtual machines in the cloud. BaaS banks thus need to enter into service agreements with the cloud subsidiaries of BigTechs. But the market share of the three largest cloud infrastructure providers hovers around 60% and software services exhibit significant vertical integration. The dependency can become both economic and technological.

BigTechs can thus squeeze the business model of BaaS banks through two simultaneous relationships. A strong reliance on BigTechs can constrain the revenues of these banks at the same time as their IT costs are shaped by them. Moreover, the capital expenditure required to update the overall technological model means that BaaS is only accessible to banks of a certain size. Ultimately, BaaS may end up becoming a “utility trap” if the banks adopting this strategy fail to diversify or differentiate their BaaS offering. The risk of a market place developing that concentrates the supply of BaaS “commodities” would be a doom outcome for banks. Banks therefore need to taint their “white-offering” with some traces of “grey” to be recognisable. Additionally, the diversification of BaaS partners is a fundamental strategy to avoid these perils. If economic dependency on BigTechs is to be avoided then the technical platforms need to be exploited under multiple BaaS contracts. The regulatory challenges posed by BaaS are covered in Section 4.2.

4 Regulatory issues

This section covers selected policy implications of the “beyond banking” and banking-as-a-service models of competition. A systematic analysis of regulatory fintech issues is beyond the scope of this work. The Basel Committee has included in its work programme for 2021-2022 the analysis of the impact of ongoing digitalisation and financial disintermediation on banks’ business models and the banking system more generally [Basel Committee on Banking Supervision (2021)].

The selection of topics addressed here corresponds to some of the salient issues highlighted in the previous section, namely, the challenges posed by competition with BigTechs’ platforms and banks “lending” their licences under BaaS contracts. The first topic is addressed in two parts: (1) the general issue of coordinating a more diverse set of relevant policies to address open banking and BigTechs’ entry into financial services; (2) the specific challenges of a banking model where banks develop their own platforms.

4.1 General policy issues and tools

The territory in which competition, regulatory and supervisory policies have traditionally operated has been altered by the structural and behavioural effects of

digital technology. Some relevant features of broad open banking environments are fragmentation of the value chain, dependencies and concentration risks, especially in the space covered by BigTechs.

Fragmentation raises a diversity of new risks and concerns like operational risks, data integrity, enhanced competition or regulatory/supervisory instruments. Fragmentation issues have a broader scope than considered in the current article, and the policy-oriented literature on different aspects is blossoming. Ehrentraud et al. (2021) provide a review of cross-country policies adopted to deal with a diversity of cases of use of fintech. Krahen and Langenbucher (2020) and Langenbucher et al. (2020) highlight regulatory and supervisory lessons from the default of Wirecard and the need to lift the veil created by the complex mix of financial and technology activities of FinTechs. Restoy (2021) goes further by outlining an adjustment to the “same activities, same regulation” principle to also include a holistic notion of risks in the determination of the regulatory/supervisory perimeter in the complex world of fintech services. Siciliani (2018) uncovers the pattern of the strategic reactions of banks to the enhanced competition prompted by fintech and highlights the game-changing effect of public policies regarding access to public infrastructure like central bank books.

The various risks posed by dependencies resulting from unbundling have also been highlighted by the European Banking Authority (2021). It highlights both the importance of visibility regarding the complex pattern of digital interrelations to start with, as well as their measurement with indicators that track the risk of dependencies.

BigTechs expand the range of policy issues. Fragmentation-related issues are still relevant. But the relevance of competition, data and complexity issues acquires a new dimension corresponding to the role of those issues in shaping their singular business models. All in all, the integrated coverage of the new broad range of challenges posed by BigTechs makes the coordination of policies a first order question. Drawing on the mountains-based analogy that underpins the so called “Twin Peaks” model of organising banks’ supervision,⁹ it is tempting to say that BigTech regulation requires a “Sawteeth” model of institutional arrangements, as well as new holistic tools to grasp the multi-dimensional mix of externalities posed by the scale, diversity and complexity of BigTech operations .

To start with, the challenge to coordinate competition and data policies with financial regulation as regards BigTech activity reflects the ongoing struggle to find a balanced fit of digital platforms in society as a whole in Asia, the United States and Europe. The quest for a ranking of, or a way of ranking, multiple public policy goals around

9 In the “Twin Peaks” supervisory model, consumer protection and prudential regulation are carried out by two separate regulatory agencies. The name of the “Sawteeth” model is simply intended to highlight, also graphically, the additional number of authorities need. The Sawteeth mountains lie in the state of New York whereas “Twin Peaks” are fictional.

BigTechs, including in the areas of competition, financial stability and rights to data protection, is still open.

In the past arrangements for the coordination of policies relevant to banking have seldom been explicit. The trade-off identified between competition and stability [Martínez-Miera and Repullo (2010)], together with less-than-ideal regulatory instruments, means that some form of implicit coordination is unavoidable [Vives (2011)]. In Europe, such coordination has effectively been implicit and top-down, drawing on inquiries undertaken by competition authorities that have prompted legislative amendments and ultimately the adaptation of bank regulation [Maudos and Vives (2019)]. For example, it was a competition investigation of retail personal accounts that led to the open banking legislative remedy that has shaken banking. Banks were mandated to disclose data on individual consumer transactions, with consumer consent, to third-party service providers via a common open application interface.

But the dimension of the competition issues raised by BigTechs has also shaken the understanding across the world of the orientation of competition and structural measures themselves. The strength of the forces driving the success of BigTechs is leading to extensive reviews of the role of digital platforms in the economy and society as a whole in China, Europe and the United States. The different principles and methods adopted in this ongoing review in different jurisdictions is, at this stage, hindering the emergence of a unified model of policy coordination. The risks of cross-border fragmentation in platform regulation cannot be countered nowadays by international principles and best practice. Even an international agenda on the matter is absent today.

The disparities in the competition reviews undertaken across regions reveal cultural and political priorities. China has been implementing a broad range of measures to curtail both the role of digital platforms in the economy as a whole and their financial operations. On the antitrust front, the publication of Antitrust Guidelines for the Platform Economy has targeted the entrenched market power of digital platforms and has enabled enforcement actions. On the data front, the legal establishment of data rights has been supplemented by obligations to feed information into the public scoring system Baihang. The significance of payment management for platforms has led to a diverse set of measures to limit the financial return obtained from holdings of customer balances (quantitative limits and zero-rate remuneration) and to reinforce the role of clearers in the management of customer transfers in order to eliminate direct interactions between BigTechs and commercial banks. In addition, authorities have imposed tougher anti-monopoly measures on companies in the non-bank payments market.

The US leadership in digital platforms markets has not hindered an increasingly far-reaching review of the need for checks and balances. But the application of

competition policy instruments based on long-standing theories of harm dating back to the Chicago School of Antitrust Law faces hurdles as a result of the subtle economics of platforms that allows for the provision of apparently free services [Wu (2018) and De la Mano and Padilla (2018)]. Against this backdrop, insights from the data policy camp are gaining weight in the debate despite the lack of a uniform law on personal data. Radical formulations of principles on data policy emphasise the absence of any allocation of property rights over data in the internet economy and the continuous appropriation of them by BigTechs [Zuboff (2019)]. Rebalancing the working of digital markets would require, from this viewpoint, an allocation of rights that would limit data free-riding by BigTechs. The intensity of the debate has increased to the point that the threat of splitting up BigTechs' franchises has been raised [United States Congress (2020)].

In Europe, the Digital Markets Act (DMA) regulates on a cross-sectoral basis the delivery of services to customers by platforms. This framework will pave the way for administrative antitrust-like procedures adapted to the economics of platforms. As a result, the experience of the EU with lengthy antitrust procedures has led to the introduction of a new administrative screening mechanism that should facilitate prompt intervention and remedies to contain the distortions caused by systemic platforms (gatekeepers). A tool envisaged in the DMA responds to a long-standing demand for access to data gathered by gatekeepers and contributed by their customers through search engines to be opened up to third parties on fair terms. But the effectiveness of this remedy may be limited unless the beneficiary third parties have a business model with a transactional dimension.

Against this general backdrop of platform policy initiatives, the emerging financial regulatory debate on platforms is informed by the consideration that the benefits of technological innovation should not come at the cost of higher risks for bank customers, investors and society as a whole. The evolving state of affairs has made it difficult to devise a blueprint for the "Sawteeth" model of multiple regulators. A basic impediment relates to the difficulty of ranking policy goals that fall into different silos of the legitimacy pyramid. This problem is aggravated when the broader challenge is considered, i.e. how to coordinate international policies on global players like BigTechs. But even proposals for a "Digital Stability Board", modelled on the FSB, to carry out the coordination of data policies fail to address the full range of policies to be aligned.

Still, some have seen the "advisory councils for the digital economy" created in a number of countries as providing a starting point. A common agenda would have to be worked out based on topics at the intersection of technology, competition and regulation, like the ones covered below. This inter-disciplinary approach, based on heterogeneous colleges, might facilitate the task of selectively expanding the reach of notions like consolidated regulation and supervision to the different sorts of partnerships witnessed in the confluence of finance and technology.

A more direct alternative, taking into account the urgency of the matter, would be for bank regulators to lead the regulatory process straight away by redefining the perimeter of regulation. Under this vision, implicit in Restoy (2021), fair recognition of the externalities posed by BigTechs would require activity-based rules to be adjusted in accordance with entity risk considerations, including scale, complexity and IT resilience. But putting these ideas into practice would be far from immediate. A potential route in that direction in Europe could be via the overhaul of the financial conglomerates directive, as suggested by Noble (2020).

4.2 Banking-as-a-service and regulation

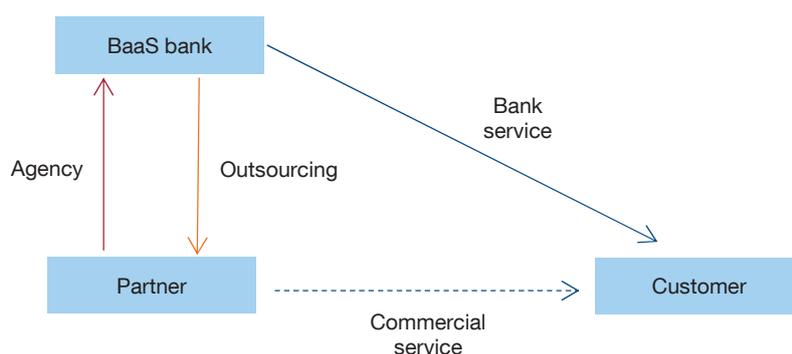
BaaS has been presented as a middle ground strategy for banks in the digital transformation landscape. But the hope it offers as a way of countering competition from BigTechs by cooperating with them comes not only with IT intricacies, but also legal and regulatory ones.

BaaS requires specific regulation that allocates rights and risks in an intrinsically commingled way of doing banking. Acting as a “white-label” bank serving non-bank players entails contractual and regulatory intricacies. Although the arrangement does not need to be driven by regulatory arbitrage goals, it could end up having such a goal if it is the non-bank partner who effectively has a dominant position and makes the due diligence, funding or underwriting decisions in the lending business. The market power of BigTechs as BaaS partners of banks with a limited ability to negotiate elevates the practical significance of this risk because the former might avoid having to request a licence. The outcome of this scenario would be a line of business plagued by moral hazard issues similar in nature to those arising under the originate-to-distribute model.

The mitigation of the moral hazard risks resulting from a potential control of the arrangement by BigTechs could eventually have to rely on sectoral macro-prudential policies if the problem acquires systemic dimensions. The adaptation of techniques used to deal with the distortions of securitisation markets stemming from the originate-to-distribute model comes immediately to mind. The consolidation of externally originated exposures onto the books of the party that truly exerts control over the trade has made strides since Enron and after the Great Financial Crisis risk retention policies enhanced incentives by compelling skin to be put in the game. Admittedly, the application of consolidation techniques and risk-retention policies in the context of BaaS contracts with BigTechs would require the institution of a perimeter of financial regulation and supervision of these players. The use of economic and technological indicators of dependency can provide a basis for that institution.

BaaS with non-BigTech partners may also give rise to credit underwriting issues. BaaS entails a potential departure from ordinary risk segmentation systems simply because the data quality available from the non-financial partner may not match the

STYLISTED DECOMPOSITION OF A BAAS CONTRACT



SOURCE: Own elaboration.

modelling practices of the BaaS bank. In particular, the integration of soft and hard information may not be feasible with normal in-house procedures. The problem grows with the size of the palette of non-financial partners. BaaS thus requires specific guidance on model risk to be consistent with sound banking practice.¹⁰ The adopted governance framework should have an end-to-end perspective, i.e. from implementation to use. But the lasting impact of partners' on-boarding decisions means that their contribution is particularly important.

The intricacies of BaaS contracts extend to customer protection and data property issues. The fact that the bank and its partner reciprocally exchange services with the ultimate aim that they both serve the customer of the former departs from conventional agency or outsourcing arrangements. Chart 4 portrays the nature of the commitments in a BaaS contract. The ultimate customer proves to be both a customer of the bank in a regulatory sense, as it provides its banking licence as an input in the transaction, and of the BaaS partner in a commercial sense.

Customer protection issues may emerge as a result of such commingled allocation of responsibilities under the various service agreements to serve the needs of the customer. The "ownership" of the customer itself may raise conflicts between the parties as regards access to customer data. The more integrated the arrangement in the non-bank partner platform, the bigger the risk of confusion of transactional data with banking data. The protection of ownership or confidentiality rights over data may lead to confrontations between bank and partner or to contractual restrictions. Data issues may be especially relevant when the partner is a FinTech trying to establish itself via stickiness based on data.

¹⁰ For a discussion of several issues need to be taken into account to integrate alternative credit scoring models into the traditional Basel Framework, see Alonso and Carbó (2020).

BaaS could benefit from several regulatory initiatives. The complexity and risks of BaaS arrangements suggest that some standardisation of its main terms could be useful. A template that highlights the main contractual events and options to deal with them would not only facilitate contracting but also the understanding by regulators and supervisors of a complex arrangement. In particular, from an outsourcing analysis perspective it would be challenging to map these contracts onto a third-party risks analysis breakdown. Embedding these arrangements into third-party service or outsourcing rules would contribute towards more balanced relationships between banks and their non-bank partners. In particular, when the latter are BigTechs, it should lead to the requirement that technology providers involved in the conduct of financial services activities are held to similar standards of governance, risk management and resilience as financial institutions.

4.3 Platforms and banks

The sponsorship of platforms by banks themselves has been argued to be a possible strategic response to BigTech competition. This still fringe strategy, deservedly known as “beyond banking” could be challenging for regulators if its importance increases in the future. Although this strategy would only be accessible to large banks or to consortia of banks, the amount of resources required to be diverted for a bank to also operate as a quasi-BigTech potentially entails prudential risks.

But these risks may not be entirely confined to the future. “Beyond banking” can be an evolved form of ecosystem-based banking, a strategy that is already widespread. This evolution has run more quickly in countries that have maintained some independence in their internet technology, like Russia. The state-owned bank Sberbank has registered with its regulator its plan to become a leader in technology and financial technologies, rather than solely in banking. A similar set of less advanced initiatives aimed at launching ecosystems of financial and non-financial services has led the Russian authorities to examine regulatory measures [Bank of Russia (2021)] to deal with the new risks.

The need to regulate the transformation of banks into economic platform ventures arises from a twofold rationale. First, the ability to venture into a “beyond banking” strategy depends on the toughness of regulation as regards the provision of non-financial services. Jurisdictions where a separation of commerce and banking prevails, like the United States, only permit the provision of services ancillary to the financial activities. This may restrain the ability to compete in a market where network externalities based on transactional data may be crucial. Second, the authorisation of a non-cooperative strategy to counter BigTechs’ forays into finance, such as “beyond banking”, entails new risks that may affect the banking franchise itself.

“Beyond banking” exhibits major strategic, governance and IT risks. This model may only be feasible when the critical mass needed to replicate the digital platforms of BigTechs is low thanks to some sort of national shield like the ones that have allowed the internet industry in Russia to remain autonomous. Moreover, although the immobilisation of resources to achieve the critical mass may be within the financing capabilities of a bank, it may significantly alter the bank’s liquidity and solvency if funded with deposits. Prudential bank policy will thus play a role in determining the economic incentives and capacity to expand into the creation of technological platforms. The dispersion of governance efforts to manage a multiplicity of both financial and non-financial ventures is also an important source of execution risk. The margin for conflicts of interest with suppliers of products on the platform who are also bank borrowers is one example of trade-offs between the platform and the banking business. Willingness to engage in cross-subsidisation also puts bank solvency at risk. The presence of IT risks in this list of execution challenges should not be a surprise at a time when banks increasingly have to resort to outsourcing a large chunk of their IT operations to BigTechs due to their magnitude and sophistication.

Enabling the “beyond banking” model by lifting rules that separate commerce and banking can be both a cultural and legal problem. The separation of commerce and banking is a high-level principle unevenly applied across countries that is intended to contain the moral hazard risks of running both banking and commercial ventures under a common roof and prevent the safety net spreading across the commercial sector. Whereas the United States has preserved structural separation rules in banking rooted in that principle, Europe and Japan have embraced universal banking, but generally denied banks the possibility of venturing into commerce. The issue is not just of intellectual or historical importance, as demonstrated by the refusal in 2005 of Walmart’s application for a bank charter and its aftermath and the interest of BigTechs [Barth and Sou (2014)]. In the less restricted universal banking jurisdictions the cultural debate has not yet begun.

In dealing with the strategic, governance and IT risks of the “beyond banking” model the Bank of Russia adopts a flexible approach based on specific regulation of banks’ investments in assets with limited liquidity and uncertain potential for earnings generation, the application of internal capital assessment procedures and capital add-ons when the platform acquires an unduly large size. The proposals are flexible to the extent that they allow banks to offer platform services, but also reflect prudential concerns. In an attempt to limit contagion risks, the weight of capital in the funding of the platform is required to be higher than that of deposits. The incorporation of platform ventures into the internal capital assessment process paves the way for a closer understanding of the risks by supervisors.

Regulation of bank sponsored platforms may be susceptible to conflicts between competition and financial regulators. The choice between open or proprietary

platforms exposes the conflicts between competition and stability highlighted above. Open platforms not only have to allow consumers and providers to move quickly to different ecosystems but should also provide options for financing transactions by different banks with the ensuing effect in terms of excess competition.

5 Conclusions

Regulating the forays of BigTechs into finance is a daunting task. Regulation needs structural pivots to act, but the mix of global commerce, technology and finance of BigTechs without local attachment points defies conventional models of public action. Regulatory authorities thus need to be arbiters of innovation and financial stability pressures with only incipient tools. In the meantime, risks of different sorts may accumulate, especially in the transactional segments less subject to more holistic risk-based regulations where BigTechs venture more confidently.

An initial difficulty finding the right tools is the size and dynamic nature of the problem. As a matter of fact, the agglomeration model of business followed by BigTechs across the world has exposed broader economic and social concerns than the ones relating to their incursions into finance. The broad set of authorities affected by this range of concerns (data, competition, banking and securities, AML, digital economy, etc.) needs to work out a structured agenda on the matter that builds a consistent policy space. In the past, structural regulation, such as rules separating commerce and banking, would have sufficed to differentiate and regulate activities. However, surgical actions may be more difficult to implement now in a world with integrated markets, while antitrust measures are still blunt tools. Moreover, the challenge for national authorities is compounded by the lack of an international agenda that identifies acceptable sound principles for consistent action across their respective concerns.

Against this backdrop, the characterisation in this article of the main competition modalities of banks in an era shaped by FinTech innovation and BigTech muscle is intended to enhance the understanding by authorities of the relevant business models that require regulation. Traditional and evolved forms of banking, like bank partnerships with FinTechs and neo-banks, are well known and will continue to be a widespread reality in the dynamic world of open banking.

But the banking-as-a-service and “beyond banking” models covered in this article are emerging new modalities that deserve the attention of regulators in future. The inherent feature of banking-as-a-service or “white-label” banking of providing the banking licence involves new risks and challenges. Banking-as-a-service is a biting reality in which commercial, banking and outsourcing relationships are comingled without proper standardisation or regulatory treatment. Banks are squeezed as suppliers of banking services, recipients of cloud service inputs and partners of

BigTechs. A consolidated view of the overall input-output relationship highlights the risk of moral hazard and the potential role of remedies like risk retention and incisive third-part risks and I service rules.

In turn, the “beyond banking” model is currently only an emerging and fringe outcome that may also require specific regulation in future possibly based on refinements of that applied to mixed conglomerates. The diversion of resources and managerial capacity from banking to a broad ecosystem of products entails strategic and execution risks that might have negative consequences for banks.

REFERENCES

- Alonso, A., and J. M. Carbó (2020). *Machine learning in credit risk: measuring the dilemma between prediction and supervisory cost*, Banco de España, Working Paper No. 2032.
- Bahri, G., and T. Lobo (2020). "The seven highly effective strategies to survive in the open banking world", *Journal of Digital Banking*, 5(2), pp. 102-109.
- Baker, C., D. Fratto and L. Reiners (2020). *Banking on the Cloud*, Tenn. J. Bus. L., Vol 21(2).
- Balyuk, T., A. N. Berger and J. Hackney (2020). "What is Fueling FinTech Lending? The Role of Banking Market Structure", *Empirical Studies of Firms & Markets eJournal*.
- Bank for International Settlements (2020). *Annual Economic Report 2020*, June.
- Bank of Russia (2021). *Ecosystems: regulatory approaches*, Consultative report.
- Barth, J. R., and M. Sou (2014). *Walmart: The New 'Go-To' Bank?*, Available at SSRN 2530010.
- Basel Committee on Banking Supervision (2021). *Basel Committee work programme and strategic priorities for 2021/22*, 16 April.
- Bergemann, D., and A. Bonatti (2019). "Markets for information: An introduction", *Annual Review of Economics*, Vol. 11, pp. 85-107.
- Bergemann, D., A. Bonatti and T. Gan (2019). *The economics of social data*, Mimeo.
- Bergemann, D., A. Bonatti and A. Smolin (2018). "The design and price of information", *American Economic Review*, Vol. 108(1), pp. 1-48.
- Berges-Sennou, F., P. Bontems and V. Réquillart (2004). "Economics of private labels: A survey of literature", *Journal of Agricultural & Food Industrial Organization*, Vol. 2(1), pp. 1-25.
- Buchak, G., G. Matvos, T. Piskorski and A. Seru (2018). "Fintech, regulatory arbitrage, and the rise of shadow banks", *Journal of Financial Economics*, Vol. 130(3), pp. 453-483.
- CapGemini (2021). *World Retail Banking Report 2021*.
- Carstens, A., S. Claessens, F. Restoy and H. S. Shin (2021). "Regulating big techs in finance", *BIS Bulletin*, No. 45, 2 August.
- Ciuriak, D. (2018). "The economics of data: implications for the data-driven economy", Chapter 2, in *Data Governance in the Digital Age*, Centre for International Governance Innovation.
- Cornelli, G., J. Frost, L. Gambacorta, R. Rau, R. Wardrop and T. Ziegler (2020). *Fintech and big tech credit: a new database*, BIS Working Paper, No. 887, 22 September.
- Cortet, M., T. Rijks and S. Nijland (2016). "PSD2: The digital transformation accelerator for banks", *Journal of Payments Strategy & Systems*, Vol. 10(1), pp.13-27.
- Crisanto, J. C., J. Ehrentraud and M. Fabian (2021). "Big techs in finance: regulatory approaches and policy options", *FSI Briefs*, No. 12, March.
- De la Mano, M., and J. Padilla (2018). "Big tech banking", *Journal of Competition Law and Economics*, Vol. 14(4), pp. 494-526.
- Economides, N., and C. Himmelberg (1995). *Critical mass and network size with application to the US fax market*, NYU Stern School of Business Working Paper.
- Ehrentraud, J., D. García Ocampo, L. Garzoni and M. Piccolo (2020). "Policy responses to fintech: a cross-country overview", *FSI Insights*, No. 23.
- Ernst and Young (2021). *Global banking outlook 2021*.
- European Banking Authority (2018). *The EBA's fintech roadmap*, March.
- European Banking Authority (2019). *EBA Report on the impact of FinTech on payment institutions' and e-money institutions' business models*, July.
- European Banking Authority (2021). *Report on the use of digital platforms in the EU banking and payments sector*, September.

- Farrell, J., and P. Klemperer (2007). "Coordination and lock-in: Competition with switching costs and network effects", *Handbook of industrial organization*, Vol. 3. pp. 1967-2072.
- Filomeni, S., G. Udell and A. Zazzaro (2016). *Hardening soft information: How far has technology taken us?*, Money & Finance Research Group Working Paper.
- Financial Stability Board (2019). *BigTech in finance: Market developments and potential financial stability implications*, 9 December.
- Gambacorta, L., Y. Huang, Z. Li, H. Qiu and S. Chen (2020). *Data vs collateral*, BIS Working Paper, No. 881, September.
- Geroski, P. A. (2003). "Competition in markets and competition for markets", *Journal of Industry, Competition and Trade*, Vol. 3(3), pp. 151-166.
- Gorjón, S. (2018). "The growth of the FinTech industry in China: a singular case", Analytical Articles, *Economic Bulletin*, 4/2018, Banco de España.
- Hurley, M., and J. Adebayo (2017). "Credit scoring in the era of big data", *Yale JL & Tech.*, Vol. 18(1).
- Jack, W., and T. Suri (2011). *Mobile money: The economics of M-PESA*, National Bureau of Economic Research Working Paper No. 16721, January.
- Jacobides, M. G. (2019). "In the ecosystem economy, what's your strategy?", *Harvard Business Review*, Vol. 97(5), pp. 128-137.
- Krahnen, J. P., and K. Langenbucher (2020). "The Wirecard lessons: A reform proposal for the supervision of securities markets in Europe", *SAFE Policy Letter*, No. 88, July.
- Langenbucher, K., C. Leuz, J. P. Krahnen and L. Pelizzon (2020). *What are the wider supervisory implications of the Wirecard case?*, Study requested by the ECON Committee of the European Parliament, October.
- Lanteri, A., M. Esposito and T. Tse (2021). "From fintechs to banking as a service: global trends", *London School of Economics Business Review* (blog).
- Martínez-Miera, D., and R. Repullo (2010). "Does competition reduce the risk of bank failure?", *Review of Financial Studies*, pp. 3638-3664.
- Maudos, J., and X. Vives (2019). "Competition policy in banking in the European Union", *Review of Industrial Organization*, Vol. 55, pp. 27-46.
- Noble, E. (2020). "The Next Generation of Financial Conglomerates: BigTech and Beyond", *Butterworths Journal of International Banking and Financial Law*, forthcoming.
- Philippon, T. (2015). "Has the US finance industry become less efficient? On the theory and measurement of financial intermediation", *American Economic Review*, Vol. 105(4), pp.1408-1438.
- Ramdani, B., B. Rothwell and E. Boukrami (2020). "Open banking: The emergence of new digital business models", *International Journal of Innovation and Technology Management*, Vol. 17(5), 2050033.
- Restoy, F. (2021). "Regulating fintech: is an activity-based approach the solution?", Speech delivered virtually to the fintech working group at the European Parliament, 16 June.
- Rietveld, J., and M. A. Schilling (2021). "Platform competition: A systematic and interdisciplinary review of the literature", *Journal of Management*, Vol. 47(6), pp. 1528-1563.
- Rietveld, J., M. A. Schilling and C. Bellavitis (2019). "Platform strategy: Managing ecosystem value through selective promotion of complements", *Organization Science*, Vol. 30(6), pp. 1232-1251.
- Rochet, J.-C., and J. Tirole (2003). "Platform competition in two-sided markets", *Journal of the European Economic Association*, Vol. 1, Issue 4(1), pp. 990-1029.
- Siciliani, P. (2018). "The Disruption of Retail Banking: A Competition Analysis of the Implications for Financial Stability and Monetary Policy", *Journal of Financial Regulation*, Vol. 4(2), pp. 167-189.
- Tarullo, D. (2008). *Banking on Basel: the future of international financial regulation*, Peterson Institute for International Economics.
- United States Congress (2020). *Investigation of competition in digital markets*, Majority staff report and recommendations by the Subcommittee on Antitrust, Commercial and Administrative Law of the Committee of the Judiciary, 6 October.
- Vives, X. (2011). "Competition policy in banking", *Oxford Review of Economic Policy*, Vol. 27(3), pp. 479-497.

- Vives, X. (2019). "Digital disruption in banking", *Annual Review of Financial Economics*, Vol. 11, pp. 243-272.
- Volcker, P. (2009). *The Wall Street Journal Future of Finance Initiative*.
- Wu, T. (2018). *The curse of bigness. Antitrust in the new gilded age*, Columbia Law School.
- Zachariadis, M., and P. Ozcan (2017). "The API economy and digital transformation in financial services: The case of open banking", *Comparative Political Economy: Regulation eJournal*.
- Ziegler, T., et al. (2021). *The 2nd Global Alternative Finance Market Benchmarking Report*, Cambridge Centre for Alternative Finance.
- Zuboff, S. (2019). *The age of surveillance capitalism: The fight for a human future at the new frontier of power*, Profile books.