

BIG TECH BANKING

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Abstract:

In this paper we explore the likely implications of the entry of Big Tech platforms into retail banking and the appropriate response of regulators and policy makers to this new industry development. We find that the entry of Big Tech platforms may transform the banking industry in radical ways: while it may possibly increase competition to the benefit of consumers in the short term, within a few years Big Tech companies may succeed in monopolizing the origination and distribution of loans to consumers and SMEs, forcing traditional banks to become “low cost manufacturers,” which merely fund the loans intermediated by the Big Techs. This may harm competition, reduce consumer welfare and bring about an increase in financial instability in the medium or long term. We discuss alternative policy responses aimed at maximising the positive impact on consumer welfare of Big Tech entry, while limiting the risk of monopolization as well as the potential adverse implications of such entry on market integrity and financial stability.

Keywords: Banks, Big Tech, Competition Policy, Consumer Lending, Consumer Welfare, Data Sharing and Portability, Financial Stability, FinTech, Market Integrity, Platforms, Privacy, Regulation, Retail Banking, SME Lending.

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I. INTRODUCTION

Ten years after the collapse of Lehman Brothers and the start of the Great Recession, many economists, policy makers and industry commentators remain seriously concerned about the state of the banking industry.² On the one hand, competition in banking, and in particular in traditional retail lending and payment systems markets, is widely considered to be weak.³ This state of affairs, it is argued, explains why the cost of financial intermediation remains high and has only declined marginally since the 2008 crisis.⁴ The negative implications for consumer welfare and economic growth are said to be significant.⁵ On the other hand, and despite a substantial increase in industry concentration during the last decade, especially in the US and to a lesser extent in the EU, the stability of the banking system remains in question. Banks' return on equity (ROE) remains low due to *inter alia* very low interest rates and limited demand for credit. In Europe, in particular, banks' ROEs are still insufficient to cover their cost⁶ of capital.⁷

Entry by traditional players is unlikely to strengthen competition because incumbent banks enjoy considerable competitive advantages *vis-à-vis* new entrants using the same business model: a large and partly captive customer base, proven experience and reputation, superior knowledge of existing regulations, etc. Also, the largest established banks have access to cheaper capital funding due to their "too big to fail" (or TBTF) status.⁸ In any event, governments and industry regulators, often in opposition to the national competition authorities, have often discouraged the entry of traditional banks, even when such entry could have fostered competition and efficiency. Instead, their response to the financial crisis following Lehman's collapse has been to promote the increase of concentration by facilitating, when not orchestrating, within-border mergers and acquisitions. Their goal was to increase the charter value of banks and diversify their risks. They believed that in a less competitive

² See Vives, X. (2016): *Competition and Stability in Banking: The Role of Regulation and Competition Policy*, Princeton University Press.

³ See UK Competition & Markets Authority, (2016): *Making Banks Work Harder for You*.

⁴ See Bazot, G. (2014): "Financial consumption and the cost of finance: measuring financial efficiency in Europe." Working Paper, Paris School of Economics; Philippon, T. (2015): "Has the Financial Industry Become Less Efficient? On the Theory and Measurement of Financial Intermediation," *American Economic Review*, 105(4), pp. 1408 – 1438; and Philippon, T. (2018): "The FinTech Opportunity." Working Paper, Stern School of Business at New York University.

⁵ See Philippon, T. (2018).

⁶ Note, however, that there have been recent initiatives aimed at facilitating the entry of new banking players. See, for instance, the UK's Bank Start-up Unit – a joint initiative of the Prudential Regulation Authority (PRA) and the Financial Conduct Authority (FCA) – and the guides on license applications for banks and FinTech of the European Central Bank (ECB).

⁷ See McKinsey, (2017): *Remaking the bank for an ecosystem world*.

⁸ While the competitive advantage conferred on large banks by the TBTF status has decreased over time due to the adoption of resolution plans and enhanced monitoring and supervision, it has not yet fully disappeared. We note that this is a controversial point for which there is no consensus among industry participants or academics.

environment moral hazard problems would be reduced and banks would have a greater incentive to control risk taking.⁹

This may explain why for some time several industry analysts and commentators considered that incumbent banks could perhaps only be disciplined by the entry of FinTech start-ups, such as Prosper or the Lending Club.¹⁰ FinTech companies operate leaner businesses; benefit from state-of-the-art technologies; focus on those banking businesses (payments, advice and distribution) with higher ROEs; and, being funded with much more equity than traditional banks, possess a regulatory advantage. However, FinTech companies may not deliver the disruption of competition that some had anticipated, largely because FinTech companies face some non-trivial competitive disadvantages *vis-à-vis* incumbent banks: the absence of an installed, loyal customer base; limited access to *soft* information¹¹ about potential customers; lack of reputation and brand recognition, and a relatively high cost of capital.¹²

While their competitive impact may still be significant in payment solutions and in the provision of advisory services in capital markets, their ability to effectively compete in other retail banking markets, in particular in the origination and distribution of consumer and SME lending, is unclear, to say the least. As stated in a recent report by the World Economic Forum (WEF), “customer willingness to switch away from incumbents has been overestimated. Customer switching costs are high, and new innovations are often not sufficiently material to warrant the shift to a new provider, especially as incumbents adapt.”¹³ Thus, the impact of FinTech firms has mainly materialised through collaboration and cooperation agreements with established retail banks. These partnerships tend to mitigate any risks associated with asymmetric regulation, whilst facilitating the development and diffusion of technological solutions that improve retail financial products and services.

The entry of Big Tech players, such as Google, Facebook and Amazon, into online banking may have a much more significant impact on competition in

⁹ See Vives, X. (2016).

¹⁰ See Carney, M. (2017): “The Promise of Fin Tech – Something New Under the Sun”, Deutsche Bundesbank G20 Conference on “Digitising finance, financial inclusion and financial literacy,” Wiesbaden.

¹¹ As noted by Liberti and Petersen (2017), “Hard information is quantitative, easy to store and transmit in impersonal ways, and its information content is independent of the collection process.” Instead, “Information that is difficult to completely summarise in a numeric score is what we call soft information.” See Liberti, J.M and Petersen, M.A. (2017): “Information: Hard and Soft,” Working Paper, Northwestern University. See also Thakor, R. T. and Merton, R. C. (2108): “Trust In Lending,” Working Paper, MIT Sloan School of Management.

¹² See Vives, X. (2016) and Buchak, G., Matvos, G., Piskorski, T. and Seru, A. (2017): “Fintech, Regulatory Arbitrage, and the Rise of Shadow Banks,” Working Paper, University of Chicago.

¹³ See World Economic Forum (2017): *Beyond FinTech: A Pragmatic Assessment of Disruptive Potential in Financial Systems*.

retail banking. Unlike the FinTech start-ups discussed above, these platforms have large installed customer bases, established reputations, powerful brands, considerable earnings and unfettered access to capital markets. In addition, and importantly, they can leverage superior information about consumer preferences, habits and conduct—i.e. soft information. They do control the shopping experiences of many consumers and recently the distribution and commercialization of many suppliers. In the words of Mark Carney, Governor of the Bank of England, in a recent speech: “Traditional universal banking begins with the *customer* relationship ... This historic preserve of established financial institutions is now being opened up.”¹⁴ Big Tech platforms are also best placed to leverage the explosion of big data on individuals and firms, advances in artificial intelligence, computing power, cryptography, and the reach of the Internet. The strong complementarities among these technologies give rise to new applications touching on services from payments to financing, asset management, insurance, and financial advice. Their users may thus benefit through better functionality and quality as well as innovative financial products and services.

This is not just a theoretical possibility. The impact of Big Tech on retail banking has already been felt in Asia.¹⁵ For example, China’s most prominent online commerce company, Alibaba, launched in 1999, started Taobao in 2003 as a consumer e-commerce platform and added Alipay to Taobao in 2004 as a third-party online payment platform. Since then, Alipay (renamed Ant Financial in 2014) has played a vital role in Alibaba’s success and has successfully built its standalone presence with a wide range of financial offerings, including: payments,¹⁶ wealth management,¹⁷ lending,¹⁸ insurance,¹⁹

¹⁴ See Carney, M. (2017).

¹⁵ Why not yet in the EU or the US? We believe the answer is threefold. First, incumbent banks in China and other Asian countries (except Japan) were much less developed and sophisticated: their product portfolios were narrower, and the granularity and depth of their customer relationships were less significant. Second, possibly as a result, regulators have been much more open to experimentation and have facilitated the entry of shadow banks and other non-bank financial institutions. Third, for cultural and demographic reasons, Asian populations have been much more open to bank with the large digital platforms than Western populations.

¹⁶ Ant Financial provides payments services in the name of Alipay. Ant Financial has around 112 million partners across 15 countries. Globally, it serves 520 million users directly.

¹⁷ Ant Financial established Yu’e Bao, a money-market fund that invests left-over monies from Alipay digital wallets. Just four years from its inception, it manages assets of USD 211 billion. Wealth management app, Ant Fortune, acts as a retailer that sells selected financial products from its sister companies or third-party financial institutions. As of FY2017, Ant Fortune had 330 million cumulative users with 17% year-over-year growth.

¹⁸ Ant Financial’s online bank, MYbank, provides micro loans to small- and mid-sized businesses. MYbank’s outstanding loans had reached USD 17.31 billion through the first half of 2017. Ant Financial’s Zhao Cai Bao marketplace allows third-party financial institutions to offer loans to small and medium enterprises, individuals, universal insurance and structured funds. Ant Credit Pay (Alipay’s consumer credit product) has 100 million active users.

¹⁹ Ant Financial’s open platform hosts around 80 insurance companies selling more than 2,000 products. Ant Insurance Service has 392 million users and is growing premiums at 43% year over year (as of FY 2017).

and credit scoring.²⁰ In short, Big Tech giants like Ant Financial, have become systemically important. The amount of money managed by Ant Financial is at the same level as that held by China's big four traditional lenders. The safety and soundness of Ant Financial has therefore a significant impact on overall financial stability. But Ant Financial lacks experience and expertise in terms of operating financial businesses. Whether it can manage to handle such a large amount of money in a safe manner and control relevant risks remains uncertain.²¹

In this paper we explore in detail the likely implications of the entry of Big Tech platforms into banking and the appropriate response of regulators and policy makers to this new development. Among others, we consider the following questions: Will the entry of Big Tech platforms into banking spur competition in the short-run? Will that be true in the medium-run and long-run as well? Is there a risk of monopolization of retail banking? Or will Big Tech and traditional banks co-exist and, possibly, cooperate? Which banking businesses, if any, could be monopolized by the Big Tech platforms? What will be the impact of these changes on traditional banks' business models and on overall financial stability? Should governments, competition authorities and banking regulators change their policies to ensure a level playing field between traditional banks and Big Tech entrants? How? What are the pros and cons of alternative policies?

In a nutshell, we find that the entry of Big Tech platforms may transform the retail banking industry, and in particular consumer and SME lending, in radical ways. It may increase competition to the benefit of consumers in the short term. However, within a few years Big Tech companies may succeed in monopolizing the origination and distribution of loans to consumers and SMEs, forcing traditional banks to become "low cost manufacturers," which merely fund the loans intermediated by the Big Techs. This may harm competition, reduce consumer welfare and bring about an increase in financial instability in the medium term. We also find that Big Tech entry into banking may be facilitated by the more limited regulation applying to non-banks: asymmetric financial regulation could allow Big Tech platforms to engage in conduct that can have serious detrimental impact on consumer welfare, market integrity and ultimately financial stability. We conclude by discussing alternative policy responses aimed at maximising the positive impact on consumer welfare of Big

²⁰ Zhima Credit is a social credit system that generates credit scores based on five dimensions of information: personal information, payment ability, credit history, social networks, and behaviours. It had 257 million annual active users and achieved 95% year-over-year growth for the financial year ending on March 31, 2017.

²¹ In response to Chinese regulators uneasiness with the systemic risk it poses, Ant Financial has recently added other third-party money market funds to its platform. This has reduced the assets under its management by about 20% in a few months. See *Financial Times*, "China's Monster Money Fund Shrinks and Rivals Reap Rewards, 31 October 2018.

Tech entry, while limiting the risk of monopolization as well as the potential adverse implications of such entry on financial stability.

This risk assessment is not unduly alarmist or exaggerated. As stated in the recent McKinsey Global Banking Review 2018, “investors appear to lack confidence in the future of banks” due “in part to doubts about whether banks can maintain their historical leadership of the financial intermediation system.”²² In McKinsey’s view, banks are under threat from other financial services firms, non-bank attackers, and technology companies and risk being “disintermediated from their customers, disaggregated, commoditized and made invisible.”²³ If that risk materializes only banks “with strong balance sheets, deep access to low cost funds, and strong financing abilities” may be able to compete effectively.²⁴ Of course, what is bad for traditional banks need not be bad for society at large but, as we explain in detail below, the marginalization of traditional banks may harm competition, financial stability and ultimately consumer welfare.

The balance of this paper is structured as follows. In Section II, we discuss the implications for competition of the entry into banking of the Big Tech platforms. In Section III, we explain the reasons why their entry is facilitated by the extant asymmetric regulatory framework, which constrains traditional banks but does not apply equally to FinTech and Big Tech companies. In Section IV, we assess the risk of monopolization of certain traditional banking businesses, e.g. the origination and distribution of loans to consumers and SMEs, by the Big Tech hegemony. In Section V, we consider the potential implications of these developments for financial stability and market integrity. Then, in Section VI we evaluate alternative ways to address Big Tech’s (data) advantages, and conclude in Section VII with a discussion of other appropriate policy measures. While at points our discussion may be focused on EU regulation and policy, the broad implications of our analysis extend to other jurisdictions, including the US and the UK.

II. IMPLICATIONS FOR BANKING COMPETITION

As noted by Liberti and Petersen (2017), “In the case of financial institutions, the critical resource or asset is intangible in nature: the access of information, especially soft information.”²⁵ Big Tech platforms can compete head-to-head

²² McKinsey (2018): *New rules for an old game: Banks in the changing world of financial intermediation*. McKinsey Global Banking Annual Review, page 5.

²³ Id., page 32.

²⁴ Id., page 43.

²⁵ See Iyer, Khwaja, Luttmer and Shue (2015) show that soft information is relatively more important when evaluating the credit decisions of lower quality borrowers. In other words, it is bound to be of special importance in consumer and SME lending markets. See Iyer, R., Khwaja,

with incumbent banks because, like them, possess valuable “hard” and, especially, “soft” information. Unlike FinTech start-ups, these platforms have access to exceptionally rich data sources and the ability to monetize such data effectively. Moreover, Big Tech platforms play a central role in relation to many consumer decisions impacting on their financial choices. Big Tech platforms entry is also facilitated by “the decline in trust in the established banks, by the increasing digital literacy of the population, and by the attraction of the technology sector of bright graduates from the mighty financials.”²⁶

Big Tech platforms not only have lots of valuable customer and transaction data, they also have the analytical tools (e.g. AI algorithms) needed to process and interpret such data to anticipate their customers’ needs and influence their conduct. Furthermore, they have the scale and capital required to profitably invest in the development of new tools. This should allow them to offer better targeted banking products, reach out to consumers that may not be served otherwise, and control a large portion of the customer relationship.²⁷

Big Tech platforms may act as “intermediaries,” in direct competition with incumbents raising funds and lending them to consumers and firms, or as “multi-sided platforms” or “marketplaces,” offering customers the ability to engage with many financial institutions (banks and non-banks) using a single distribution channel.²⁸ As intermediaries, they may be able to offer new services by bundling their existing offerings (e.g. online advertising, e-commerce, etc.) with traditional banking products; e.g. offering cheap credit to customers who subscribe to their online services or purchases in their e-commerce sites. They may thus outbid incumbents, unable to replicate those bundles and benefit from associated demand and supply economies of scope due to their narrower product portfolios.²⁹

As marketplaces, they may benefit from network effects by bringing together banks and borrowers. Banks may need join these platforms in order to reach out to borrowers. Borrowers will patronize them to obtain cheaper credit. Each of these marketplaces likely will auction the loans it originates amongst all, or at very least a significant fraction, of the banks participating in its platforms. Banks, having received soft and hard information about borrowers from the

A.I., Luttmer, E.F.P. and Shue, K. (2015): “Screening Peers Softly: Inferring the Quality of Small Borrowers,” *Management Science*, 62(6), pp. 1554-1577. See also Duarte, J., Siegel, S., and Young, L., 2012): “Trust and Credit: The Role of Appearance in Peer-to-peer Lending,” *Review of Financial Studies*, 25(8), pp. 2455–2484. See also Jagtiani, J. and Lemieux, C. (2017): “Fintech Lending, Risk Pricing and Alternative Information,” Working Paper, Federal Reserve Board of Philadelphia.

²⁶ See Vives, X. (2016).

²⁷ See Moody’s. (2018): *Big Tech – a real threat to financial firms in retail services*.

²⁸ See Hagiu, A. and Wright, J. (2015): “Marketplace or Reseller?” *Management Science*, 61(1), pp. 84–203.

²⁹ See Klemperer, P. and Padilla, J. (1997): “Do Firms’ Product Lines Include Too Many Varieties?” *Rand Journal of Economics*, 28(3), pp. 472-488.

platform, will bid aggressively to succeed in these auctions. Relative to the *status quo*, where each borrower is *de facto* locked into the bank with which it has a relationship, borrowers joining a marketplace that is participated by many banks likely will benefit from increased banking competition.

For all these reasons, these platforms are likely to threaten the most profitable lines of business of incumbents. They will attract the most profitable banking customers, since those are the ones that stand to win more from increased banking competition. According to a recent McKinsey report, Big Tech platforms likely will target the distribution business of banks, which represents 47% of their revenues but 65% of their profits and has an ROE of 20% (compared with an average ROE of 7-8%).³⁰

The entry of large tech companies in retail banking will therefore have significant implications for incumbents. According to Moody's, banks will likely "cede a portion of their distribution of retail financial services despite efforts to increase their presence in digital platforms."³¹ Furthermore, some of the rents banks generate on the portion of the distribution business they retain will in any event be appropriated by the Big Tech platforms. The reason is that, to the extent that borrowers concentrate their banking business within a single tech platform (i.e. "single home"), banks will be forced to be present in each and every of the Big Tech platforms (i.e. "multi home").³² But this means that each of these platforms will become a "gatekeeper" to a fraction of the borrowers' population and, therefore, possess market power relative to the banks.³³ Banks will have to pay significant membership fees and/or transaction fees to do business within these pivotal platforms. At best, a significant fraction of the rents banks now generate by originating and distributing financial products will be shifted to the Big Tech platforms. But not even that is guaranteed since many banks may find themselves forced to exit if tech platforms integrated in the provision of banking services and engaging a gatekeeper role decide to keep shut the doors to their customers.

³⁰ See McKinsey, (2017). See also Farkas, A. (2018): "EU Banks' Business Models – Adapt to Thrive", Speech at the Deutsche Bundesbank Conference, *Bank Business Models – Structural Changes and their Systemic Implications*. Thus, for example, Rakuten issues credit cards and offers financial services, e.g. mortgages and securities brokerage, and Amazon provides lending and factoring services for small and medium enterprises.

³¹ See Moody's, (2018).

³² While borrowers single-home in the future is uncertain; it may depend on market structure. It may not occur if e.g. digital assistants become primary gatekeepers forcing different platforms to compete and therefore inducing borrowers to multihome.

³³ See Armstrong, M. (2006): "Competition in Two-sided Markets," *Rand Journal of Economics*, 37(3), pp.668-691; Hagiu, A. and Wright, J. (2015): "Multi-sided platforms," *International Journal of Industrial Organization*, 43, pp. 162-174; Belleflamme, P. and Peitz, M. (2015): *Industrial Organization: Markets and Strategies*, 2nd Edition, Cambridge University Press; and Belleflamme, P. and Peitz, M. (2017): "Platform Competition: Who Benefits from Multi-homing?" Working Paper, University of Mannheim.

Banks will have to compete fiercely downstream, including for the demand of their hitherto most loyal customers, but also upstream, for talent, which will drive up the cost of recruiting the needed financial and technological skills. In fact they may have no option but to target FinTech companies in order to acquire much needed technology talent.³⁴ Crucially, some incumbent banks may be unable to compete technologically unless they partner with the Big Tech platforms. Banks may have to choose between falling behind technologically by giving up collaboration with the tech companies, or sacrificing some of their competitive advantages, losing some control over costs and customer data, if they choose to partner with them.

III. ASYMMETRIC REGULATION

The precise regulatory framework applied to Big Tech companies operating in banking will have a significant impact on the dynamics of competition in retail financial services. In particular, it is likely to influence the choice of business model of both Big Tech platforms and traditional banks. Whether banks and Big Techs end up being head-to-head competitors or partners (albeit with very different bargaining powers) likely will depend on the regulatory framework in place. Head-to-head competition will be more likely if regulation facilitates a true level-playing field.

Some authors consider that FinTech companies have not been able to compete effectively because incumbents *de facto* enjoy too-big-to-fail subsidies and FinTech players have been forced to rely excessively on hard information and short-term leverage. In their opinion, the banks' demands for a level-playing field principle can be a hindrance for effective competition. Symmetric regulation, for instance, may prevent entrants to compete doing the same things that incumbents do but cheaper and/or better. This is why they advocate for the use of *asymmetric* regulation. Capital requirements and mandated open data are seen as a way to reduce barriers to entry and foster a true level-playing field, for example.³⁵

Economists studying competition in retail lending have emphasised the role of information as a barrier to entry.³⁶ Entrants may not be able to compete effectively for borrowers unless they have access to their credit history and, possibly other hard and soft information, as incumbents do. Otherwise, the risk of adverse selection will force them to price less aggressively. Information sharing amongst banks has therefore been widely regarded as procompetitive

³⁴ See World Economic Forum (2017).

³⁵ See Philippon, T. (2018).

³⁶ See Hauswald, R. and Marquez, R. (2003): "Information Technology and Financial Services," *Review of Financial Studies*, 16(3), pp. 921-948.

and efficient.³⁷ Yet existing information sharing schemes tend to be limited in scope (including only default information and credit exposure) and membership (available only to traditional banks). Their actual competitive impact may have been limited as a result.

The European Union's revised Payment Services Directive (PSD2)³⁸ has dramatically changed the *status quo* in this respect. Banks now have to allow authorized Third Party Providers (TPPs) access to their customers' account information and make payments from customers' accounts. Banks are obliged to provide access to customer data to all authorized competitors in digital form and free of charge. TPPs will be able to compete with banks by offering payment initiation services (PIS) and account information services (AIS), thus threatening incumbents' profitable distribution services. Instead, under the General Data Protection Regulation (GDPR),³⁹ TPPs, including Big Tech platforms, are obliged to facilitate data portability *only where it is technically feasible*.⁴⁰ As stated in a recent EY report, under GDPR, Big Tech platforms will *de facto* retain economic sovereignty over the data of their customers.⁴¹

The UK Open Banking initiative also requires the nine largest banks in the UK to allow their customers to provide access to their own bank data securely with third parties, using an open banking standard. The UK Competition & Markets Authority (CMA) expects that this "will help customers to find and access better value services and enable them to take more control of their finances ... [and] will also enable new entrants and smaller providers to compete on a more level playing field and increase the opportunities for new business models to develop."⁴² The CMA requires banks to adopt and maintain a common and open Application Programming Interface (API)⁴³ standard that permits authorized intermediaries to access information about banks services, prices and service quality. When it comes to customer data, open APIs will give customers control over what data is shared and with whom.

The big question which we seek to address in the remainder of this paper is whether the regulatory pendulum, which may have favoured banks in the past,

³⁷ See Padilla, J. and Pagano, M. (2000): "Sharing default information as a borrower discipline device," *European Economic Review*, 44 (10), pp. 1951-1980.

³⁸ Directive (EU) 2015/2366 of The European Parliament and of the Council of 25 November 2015 on payment services in the internal market, amending Directives 2002/65/EC, 2009/110/EC and 2013/36/EU and Regulation (EU) No 1093/2010, and repealing Directive 2007/64/EC.

³⁹ Regulation (EU) 2016/679 of the European Parliament and of the Council of 27 April 2016 on the protection of natural persons with regard to the processing of personal data and on the free movement of such data, and repealing Directive 95/46/EC (General Data Protection Regulation).

⁴⁰ Strictly speaking, data portability requires direct transmission between companies (i.e. controllers) and such transmission is only compelled where technically feasible.

⁴¹ See EY, (2018): *The revised Payment Services Directive (PSD2)*.

⁴² See UK Competition & Markets Authority, (2016): *Making Banks Work Harder for You*.

⁴³ Application Program Interfaces (APIs) are methods of standardised data exchange that are widely used both within and between firms.

may have swung too far against them this time. While it is early to say, there are reasons to believe that this may be the case. PSD2, for example, aggravates peculiar weakness of traditional banks. It places additional pressure on banks' margins through increased competition in the financial services industry as well as due to stricter regulatory standards. It also increases banks' dependence on technology solutions that require additional investment in in-house IT infrastructure and/or demand closer cooperation with financial technology developers.

Moreover, the new regulatory framework on payments systems also brings with it potential threats, including (a) increased *operational risks* due to necessity to allow access to customer payment account information; (b) *security risks* in sharing data with third-party payment providers; (c) *risk of fraud* in case of dishonourable third-party payment providers; and (d) the need for continued increased investment in core IT systems to minimize *ICT-related and data protection risks*.⁴⁴ Ultimately, it is the traditional banks, via investments, that must address these risks and ensure regulatory compliance. All this places banks at an artificial disadvantage relative to Big Tech platforms because, on the one hand, Big Tech platforms are direct and/or indirect beneficiaries⁴⁵ of the non-reciprocal access to valuable raw data on potential consumers and, on the other hand, it is banks, not Big Tech platforms, which have to invest in the maintenance of the IT infrastructure as well as identify and resolve the unintended risks and consequences that result from compliance with the regulation.

Beyond payment systems there are multiple other examples of asymmetric regulation to the benefit of Big Tech. Established thresholds for the imposition of financial regulation, such as the solicitation of customers, deposit-taking, pooling of assets, or discretion over client assets directly constrain and in fact limit the traditional model of relationship banking. However, these thresholds often fail to subject Big Tech firms to the relevant financial regulation. In turn, regulators are unable to enforce customer protection measures and monitor and mitigate systemic risk. As a result, Big Tech platforms benefit from an “uneven” playing field in competition with established licensed intermediaries. They are unrestricted by risk and compliance considerations in the build-up phase of their business models as they enter retail banking. Last, but not least, they do not bear the minimum costs of a regulated entity in terms of compliance and capital requirements.

In light of these findings, we consider next the following questions: Will banks be able to compete with the Big Tech platforms given the latter's

⁴⁴ See Institute of International Finance (2018): *Liability and Consumer Protection in Open Banking* and references therein.

⁴⁵ Depending on whether they become e.g. payment initiators or lenders or, rather, limit themselves to aggregate the services of third-party providers.

insurmountable data superiority? Or will they be reduced to play a funding role, channelling their deposits to fund the loans originated and distributed by the platforms? What are the implications of this last scenario for financial stability? Is there any justification for adopting and/or maintaining asymmetric regulations favouring Big Tech platforms (and other technological companies)? What would need to happen to ensure that banks can compete with Big Tech platforms on a true level playing field?

IV. MONOPOLIZATION RISKS

Big Tech companies typically operate multiple platforms. They can cross subsidise business in one of the platforms because they can monetise their increased footprint in that platform on their other platforms. For example, Google operates, among others, a search advertising platform and a mobile operating systems platform. It managed to out-compete mobile operating system providers such as Microsoft (Windows) and Nokia (Symbian) by *inter alia* offering its Android operating system for free. It did so in order to secure a leading position in mobile search and acquire location data and app usage data from Android users. Google thus “enveloped”⁴⁶ competing mobile operating system platforms and monetised this strategy by selling paid search ads and display ad intermediation services.

Platform envelopment is a common and widespread phenomenon with significant implications for the evolution of platform and intermediation markets.⁴⁷ As noted by Eisenmann, Parker and Van Alstyne (2011), “Dominant firms that are otherwise sheltered from entry by standalone rivals due to network effects and high switching costs can be vulnerable to an adjacent platform provider’s envelopment attack.”⁴⁸ Platform envelopment can lead to market tipping or monopolization. The enveloping platform may be able to exclude other platforms as well as intermediaries operating one-sided businesses. An entrant that bundles two or more platforms is most likely to succeed when the platforms’ users overlap significantly and when economies of scope are high.⁴⁹

⁴⁶ “Envelopment entails entry by one platform provider into another’s market by bundling its own platform’s functionality with that of the target’s so as to leverage shared user relationships and common components.” Eisenmann, T., Parker, G. and Van Alstyne, M. (2011): “Platform Envelopment,” *Strategic Management Journal*, 32, pp. 1270-1285.

⁴⁷ “We note that some firms have become serial envelopers. Microsoft, Apple, and Google, for example, each have attacked many adjacent platforms. We speculate that such firms are building strategic routines ... that they can leverage when they target additional platform markets for envelopment.” Eisenmann, T., Parker, G., and Van Alstyne, M. (2011).

⁴⁸ Id.

⁴⁹ Id.

Platforms have the incentive and ability to expand onto other businesses, especially other intermediation and platform markets, in order to acquire the data generated in those markets. They typically succeed because they can combine the data generated on their various platforms in order to create customer “super-profiles” with which to target consumers when and where they are likely to need their services. Their data superiority is not driven by the sheer amount of data in their possession. Instead, it is the result of being able to tap into many complementary sources of data to create databases which, as a result, are not (easily) replicable.

Google, Facebook and Amazon have accumulated vast amounts of data about consumer preferences and habits which they are able to combine with payments data and account information data in order to deliver products which traditional banks will not be able to replicate.^{50 51} Google, for example, can offer its financial services, or to intermediate to offer the services of affiliated banks, when a consumer uses its search engine to shop for appliances, cars, schools, etc., or when an Android user visits a car dealer or any other supplier. Banks will not be able to match those offerings in *real time* and, what is more, they may not be able to replicate them profitably if those services are monetised through other platforms, e.g. online advertising. A bank trying to achieve data parity with Google, for example, would need to enter successfully the markets for online advertising, mobile operating systems, mobile app distribution, browsers, email and online video distribution. Not a realistic option, in our opinion.

More generally, banks run the risk of being “enveloped” by the Big Tech platforms, as other businesses were enveloped in the past, because Big Tech firms can relatively quickly assemble much of the information the customer’s bank or asset manager possesses, and supplement it with their very detailed knowledge of many other aspects of the customer’s choices and preferences.

⁵⁰ For the value of data on consumer habits, see e.g. Björkegren, D. and Grissen, D. (2018): “Behaviour Revealed in Mobile Phone Usage Predicts Loan Repayment,” Working Paper, Brown University. The authors develop “a method to predict default without formal financial histories, using behavioural patterns revealed by mobile phone usage.” They extract 5,500 behavioural indicators associated with mobile phone usage with an intuitive link to repayment. For example, an individual whose calls to others are returned may have stronger social connections that better allows him to follow through on entrepreneurial opportunities. Likewise, a responsible debtor is more likely to keep his topped up to a minimum threshold than one more prone to default. Their method outperforms models using credit bureau information.

⁵¹ Some authors maintain that the collection and possession of big data does not grant a competitive advantage since data is *imitable* and *non-rivalrous* and hence the databases possessed by incumbent platforms can be easily replicated by others. See Lambrecht, A. and Tucker, C.E. (2017): “Can Big Data Protect a Firm from Competitors”, *Competition Policy International*. See Stucke, M.E. and Grunes, A.P. (2016): *Big Data and Competition Policy*, Cambridge University Press, for a rebuttal of such claims. In our opinion, while some data is indeed imitable and non-rivalrous, this is not generally the case. First, some of the data generated within the Big Tech platforms will not be easy to replicate in real time. Secondly, the real advantage of Big Tech platforms is that they can combine data from many different sources seamlessly in order to create unique consumer “super-profiles.”

These preferences can then be processed through algorithms that have established correlations between certain preferences and credit-worthiness to provide a much more nuanced assessment of credit-worthiness than traditional banks may be able to do in many circumstances. The provider with the most accurate detailed and extensive digitalised information about a customer's credit-worthiness is best placed to analyse that information and data to price credit and insurance services for that customer. Traditionally that provider was the customer's bank, initially armed with a detailed questionnaire completed by the customer as to income, expenses, objectives, experience and risk tolerance, and fortified by the bank's knowledge over time of the customer's financial history. However, banks may no longer enjoy this advantage, or at least not for long.

Experience shows that when Big Tech platforms enter industries with complex vertical value chains, as the banking industry, they first succeed in dominating the layer or layers where they operate, then entrench their dominant positions by taking advantage of network effects, and finally extract most of the value generated in all other layers by vertically integrating upstream and/or downstream,⁵² discriminating in favour of their own upstream/downstream businesses in their core platforms, and leveraging their data superiority. Thus, for example, Microsoft managed to dominate the client operating systems (OS) market with MSDOS and then Windows due to a combination of foresight, skill and luck. It then entrench its dominant position taking advantage of powerful network effects and the so-called "applications barrier to entry."⁵³ In order to protect this monopoly, it enveloped other platforms in an attempt to monopolize the server OS market, the browser market and the media player market. It also leveraged its client OS market power to extract rents from hardware manufacturers. A significant fraction of the rents of the PC and laptop vertical chains was thus appropriated by Microsoft.

Enveloping strategies such as those just described may or may not be anticompetitive depending on the circumstances. They cannot be presumed anticompetitive in our opinion, since (a) they may exclude only relatively inefficient competitors, thus failing to distort effective competition, and/or (b) give rise to efficiencies, thus benefiting consumers on balance. But in any event they are likely to evict established competitors and lead to more concentrated and less competitive markets in the long term. This negative outcome is much

⁵² While Big Tech platforms may not be willing to fully integrate into banking, due to the regulatory implication of such a move, they will nonetheless be able to profitably disintermediate banks, as we explain in detail below.

⁵³ A client OS is a multi-sided platform. Users want to use an OS whose APIs are used by many application developers. Application developers will develop their applications for those OS with a sufficient number of users. Windows was ubiquitous and hence it attracted many application developers. The sheer number of applications developed for Windows only was so large that no other client OS had a chance of entering the market to compete with Microsoft profitably.

more likely to materialize when consumers do not “multi-home”, i.e. when they concentrate their business on a single platform (that is, when they “single home”), and/or competitors are unable to offer differentiated products.⁵⁴

We believe this could happen in many banking markets, and certainly in consumer and SME lending. First, while borrowers could in principle make use of the Big Tech platforms to identify and compare the terms and conditions offered by alternative intermediaries and then visit, say, a bank’s offline or online direct distribution channel to transact, “showrooming” (i.e. free-riding) of this sort is not that common.⁵⁵ In other words, borrowers will likely transact (i.e. purchase the products or services in question) through the very same platform used to identify the right alternative. Secondly, multi-homing is much less likely when consumers are locked into a given ecosystem and, we conjecture, it will be even less common if purchasing decisions are delegated to “digital assistants,” such as Google Home, Siri, Alexa or Cortana. Thus, we believe consumers patronizing a given platform – say Android or iOS – are likely to concentrate their banking business on that platform. Thirdly, banks may find it difficult to offer differentiated services given that open data regulations limit, if not completely eliminate, any informational advantage they might have enjoyed regarding their customers. While their extensive experience may protect them for a while, allowing them to offer better products at a more reasonable cost, Big Tech competitors will have the incentive and ability to recruit financial talent and thus we expect them to bridge that gap relatively soon. In addition, we believe that digital assistants, assuming their penetration is high, may dampen the effect of product differentiation unless they operate on a neutral basis.⁵⁶

Eisenmann, Parker and Van Alstyne (2011) explain that “firms that are vulnerable to envelopment can pursue two defensive strategies.”⁵⁷ One option

⁵⁴ See e.g. Choi, J.P (2010): “Tying in Two-Sided Markets with Multi-Homing,” *Journal of Industrial Economics*, 58(3), pp. 607-626.

⁵⁵ See Columbia Business School (2013): *Showrooming and the Rise of the Mobile Assisted Shopper*.

⁵⁶ Platforms may steer business away from some sellers (e.g. banks) to favour others who are either part of the same business group or may pay for prominence. Sellers’ efforts to differentiate their offerings may prove useless unless they can reach out to consumers to promote their products and services on a level playing field. Consumers using digital assistants delegate shopping decisions to them. Their choices are prescribed by the assistants. Investments in quality, etc. will only be profitable if those devices rank sellers neutrally, i.e. according to their characteristics and the preferences of the consumer using them. Sellers will not be able to obtain a return on those investments if the assistants’ selection criteria are not driven by quality and consumer preferences.

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is to match the attacker's bundling strategy. This is not an option for banks: the dominant positions held by Big Tech companies in the products and services that could be bundled with banking products and services are likely to be unassailable. The alternative strategy is to cooperate with other third parties. Banks would have to transform their proprietary business into an open platform, shared with other banks and financial intermediaries (and possibly with players from other sectors), to benefit from the co-investments of all platform participants. While this strategy may be more realistic, its success is most uncertain since the new, scaled up platform is unlikely to assemble a comparable bundle to those offered by Big Tech firms and, therefore, is still vulnerable to envelopment.

So, in our opinion, there is a significant probability that traditional banks may have no realistic commercial option but to cooperate with Big Tech platforms. We believe that the latter could win control of the loan origination and distribution business,⁵⁸ in which case incumbents will be transformed into "low cost manufacturers" or "narrow banks,"⁵⁹ accepting deposits from the public⁶⁰ and investing them in products originated and distributed by others, including the Big Techs.⁶¹ In this world, Big Tech platforms will contract with a bank to help the bank acquire borrowers and service those borrowers. Of course, those narrow banks will see a decline in profit margins due to the commoditization

a return on those investments if the assistants' selection criteria are not driven by quality and consumer preferences.

⁵⁸ We do not expect Big Tech platforms to engage in deposit taking, since that would impose on them the same regulatory obligations that constrain the ability of the incumbents to innovate. This opinion is in line with the views expressed in a recent Moody's report: "While well-known Big Tech firms are potential sources of competition in retail financial services, they are likely to avoid manufacturing financial products due to regulatory burdens." Moody's, (2018). See also Vives, X. (2016, p. 21): "The new competitors will stay clear of asking for a banking license and try to skim profitable business from banks." Note, however, that developments in China point into another direction. According to Quartz, an industry magazine, "Baidu, China's biggest search engine, has just become the latest Chinese tech giant to get into the finance business. Yesterday it launched a new "wealth management product" (WMP), a high-interest deposit account, called Baifa (Chinese). It has already attracted more than 1 billion yuan (\$164.3 million) in deposits. Earlier this year, China's titan of e-commerce, Alibaba, launched Yu E Bao, a WMP for users of Alibaba's PayPal-like escrow service. Tencent does something similar with its chat app, WeChat." Quartz (2013): *The Biggest Tech Firms In China Are Battling Banks For Deposits*.

⁵⁹ *Strictu sensu* they would be pseudo-narrow banks, since true narrow banks hold liquid and safe government bonds only. The loans funded by the pseudo-narrow banks would be originated and distributed by the Big Tech platforms. They are narrow banks insofar as deposit taking would be separated from key financial intermediation activities such as distribution.

⁶⁰ Though, of course, the deposit-taking action would also become intermediated by the Big Tech companies.

⁶¹ "Some banks have told us we could also start to see a model in which large banks provide the back office infrastructure and challengers, perhaps trusted technology giants, provide the consumer interface". Speech by Christopher Woolard, Executive Director of Strategy and Competition at the UK Financial Conduct Authority, (2017): "The Future of Competition and Regulation in Retail Banking", London.

of their businesses or may be forced to repurpose their distribution businesses to address the needs of special customer niches.

Furthermore, traditional banks may be vulnerable to discrimination. Insofar as Big Tech platforms may dominate the front-end customer relationship, their fee driven business models incentivises them to display financial products using ‘pay for display’ criteria rather than quality or price. For instance, one can imagine a search engine presenting an investment fund ranking selection based on the fees funds pay to the platform rather than on merits or customer demand (as determined by big data analytics). This selection may bias the investment decisions of less educated and financially savvy investors, who may end up paying high commissions and/or acquiring unsuitably risky financial products. Traditional banks may be forced to pay for display in order to reach out to final customers, which will further dilute their margins.

V. IMPLICATIONS FOR FINANCIAL STABILITY

These changes could hurt financial stability due to potential moral hazard and adverse selection problems. Moral hazard may be increased relative to the *status quo* for several reasons. Big Tech platforms may have little or no stake in the loans they help to originate and distribute and may, therefore, have incentives to reduce the quality of the loan pool to maximize loan origination volume and, in parallel, the volume of other products or services sold to borrowers through their (bundled) platforms.⁶² They may also invest less in screening projects and borrowers.⁶³ Limited screening results in the origination of loans with poor soft information and high default rates.⁶⁴ For these reasons, the risks faced by banks after the entry of the Big Tech platforms into their traditional origination and distribution markets will increase relative to the current scenario where they are active in loan evaluation and fund only high-quality loans.

Importantly, moral hazard may also increase even when the platforms fund the loans they originate, since they will have incentives to expand credit in order to bolster their other platform businesses – i.e. to sell additional products or services on their e-commerce platforms or to acquire complementary data to

⁶² See Vallee, B. and Zeng, Y (2018): “Marketplace Lending: A New Banking Paradigm?” Working Paper, Harvard Business School.

⁶³ See Purnanandam, A. (2011): “Originate-to-Distribute Model and the Subprime Mortgage Crisis”, *Review of Financial Studies*, 24(6), pp. 1881-1915. Purnanandam shows evidence that the screening incentives of lenders to collect soft information decrease under an originate-to-distribute model.

⁶⁴ See Balyuk, T. and Davydenko, S. (2018): “Re-intermediation in FinTech: Evidence from Online Lending,” Working Paper, Joseph L. Rotman School of Management at the University of Toronto. Balyuk and Davydenko show that default rates on loans handled by FinTech firms are higher than on other credits to consumers with similar credit scores.

monetize through their advertising platforms. As a result, relative to traditional banks, Big Tech platforms have less incentives to minimize downside risk, as they may profit by lending even when the risk of default is relatively large.

Adverse selection is also likely to become a more serious concern for traditional banks following the entry of the large tech companies. Big Tech platforms may typically enter retail banking adopting an “agency model,” whereby they do not retain the risk of the loan they originate. Digital platforms make money on fees, charging both lenders and borrowers. Since they need both sides on board, profit maximizing fees must factor in the elasticity of demand for their intermediation services of each side. This requires charging comparatively more on the less elastic side of the market – typically borrowers – and even subsidizing the most elastic side – typically lenders. The combination of fee-based profitability, the need for a stable and possibly increasing source of lending, and network externalities, likely will push lending platforms to broker as many deals as possible. But this is bound to result in adverse selection on both sides of the market, lenders and borrowers. Moreover, as platforms will charge comparatively higher fees to the borrowers, the problem of adverse selection will be especially serious for that side of the market.

In addition, given their rich data sets and superior technology, the new entrants may be able to screen out bad loans more effectively than the traditional banks (and the FinTech start-ups). If that were the case, then credit risk would be shifted to traditional banks, their investors and their depositors and lending may prove less efficient.⁶⁵ This last effect is independent of the business model adopted by the Big Tech entrants – i.e. independent of whether they focus on the production or funding of new loans.

The severity of these problems may be increased by asymmetric regulation. The exchange of transactional information between banks and Big Tech companies (and other non-financial companies) may affect negatively the efficiency of credit markets when consumers and firms can borrow from both of them but only banks are required to exchange information about their customers. Banks may end up lending to customers which they should have not banked with (and would have not if there were information parity), and may become a refuge for poorly performing borrowers.⁶⁶ Furthermore, traditional banks will have less of an incentive to engage in credit screening if the information they generate is shared with third-party providers such as Big Tech platforms which control the customer shopping experience.⁶⁷ And if the

⁶⁵ See Berndt, A. and Gupta, A. (2009): “Moral hazard and adverse selection in the originate-to-distribute model of bank credit”, *Journal of Monetary Economics*, 56(2), pp. 725-743.

⁶⁶ See Bar-Isaac, H. and Cuñat, V. (2014): “Long-Term Debt and Hidden Borrowing,” *Journal of Corporate Finance Studies*, 2(1-2), pp. 87-122.

⁶⁷ See Hauswald, R. and Marquez, R. (2006): “Competition and Strategic Information Acquisition in Credit Markets,” *Review of Financial Studies*, 19(3), pp. 967-1000.

return to screening falls, then banks may be less willing to lend unless borrowers can offer significant collateral.⁶⁸

For all these reasons, in a new market scenario where Big Tech platforms originate and distribute loans and banks simply fund the loans originated elsewhere, the proportion of bad projects, including those based on overly optimistic expectations of commercial success,⁶⁹ being funded may increase. Default rates may also increase in that scenario. These developments may prove particularly problematic in downturns, when the value of collateral is reduced, as they may place some banks at risk and cause a credit crunch.

Whether or not the entry of the large tech companies produces the change in banks' business model we conjecture, the increased competition resulting from their entry "may also intensify risk taking by eroding the franchise value of the bank and diminishing incentives to monitor loans and maintain long-term relationships with clients."⁷⁰ Some consider that economies can avoid these negative effects by "enhancing bank governance and tightening leverage requirements."⁷¹ We are very sceptical in this regard because bank shareholders are as interested as banks' executives in exploiting the limited-liability charter of banks and the implicit and explicit insurance mechanisms provided by central banks and deposit insurance institutions.⁷²

VI. ADDRESSING BIG TECH'S DATA ADVANTAGES

The entry of Big Tech platforms into banking may prove highly beneficial. It may foster competition and innovation and facilitate access to credit to consumers and small firms who would otherwise be excluded for lack of a credit record. Whether this is so likely will depend on the way these platforms are treated by regulation.

Traditional banks enjoy several competitive advantages *vis-à-vis* entrants, including Big Tech firms, but are also burdened with layers of regulation and encumbered with all sorts of obligations. Regulators may be tempted to bias regulation in favour of the new entrants in order to offset incumbency advantages and achieve the structural changes that have proved so elusive in the past. In fact, they are already doing so, imposing data sharing obligations

⁶⁸ See Manove, M., Padilla, J. and Pagano, M. (2001): "Collateral versus Project Screening: A Model of Lazy Banks," *Rand Journal of Economics*, 32 (4), pp. 726-744.

⁶⁹ See Manove, M. and Padilla, J. (1999): "Banking (conservatively) with optimists," *Rand Journal of Economics*, 30 (2), pp. 324-350.

⁷⁰ See Vives, X. (2016).

⁷¹ See Corbae, D. and Levine, R. (2018): "Competition, Stability and Efficiency in Financial Markets," NBER Working Paper.

⁷² See Vives, X. (2016).

on banks only.⁷³ The goal is to ease entry and increase contestability by lowering switching costs and improve market transparency. As competition becomes fiercer the risk of financial instability also increases and, hence, the need for tougher prudential requirements on traditional banks. This risks generating a “vicious circle,” whereby asymmetric regulation increases competition from non-banks, including Big Tech firms, raising new prudential concerns about traditional banks and leading to further regulatory requirements on deposit institutions, and so on and so forth.

Big Tech firms are entering specific segments of the multi-product financial industry with a business model that, to some extent, is the opposite of universal banking. They operate in single and almost unregulated segments of the industry and try to stay far away from the cost and burdens of banking regulation and compliance (e.g., by avoiding taking deposits from the public directly). The risk for traditional banks is that these segments – lending to borrowers with limited bargaining power and providing payment services and financial advice – may also be the most profitable ones. Traditional banks may become commoditized; limiting themselves to place the deposits from the public in loans originated and distributed by large tech companies, and/or forced to concentrate their operations in market niches not covered by the platforms.⁷⁴ Moreover, Big Tech’s unbundling of banking services may damage the charter value of traditional banks if they end up being limited to offering an essential, basic facility, very much like the utility industries of water supply, gas and electricity, while the more profitable segments and customers instead go to Big Tech firms with few or no layers of intermediation.⁷⁵

Some may think that there is no reason for concern. Big Tech platforms have already disrupted many other markets and industries – transport, book retailing, online advertising, travel, etc. – often to the benefit of consumers. Why should banking be different? Others will see Big Tech’s entry into banking as dangerous to competition and innovation in many other markets, since the platforms may leverage the data obtained as lenders to entrench their market power in those markets which they already dominate and expand it onto others. Finally, a third group may want to ensure that their entry has a positive impact on competition and innovation *not only* in the short-term but also in the medium-term and the long-term, by ensuring that they compete with established banks on a *true* level playing field. We belong to this third group. We are equally opposed to (a) erecting barriers to entry preventing Big Tech firms from offering banking products in competition with traditional banks,

⁷³ See Section III above for an explanation of this asymmetry.

⁷⁴ See McKinsey (2018): *New rules for an old game: Banks in the changing world of financial intermediation*. McKinsey Global Banking Annual Review, pages 38 and ff.

⁷⁵ Note, in particular, that banks’ most basic service (current accounts) is nowadays provided (almost) for free due to fierce competition amongst banks and because regulation obliges banks to offer a “basic account” to those that do not have one for free.

and (b) discriminating against traditional banks, tying their hands at a point in time in which they may have to fight an existential battle.

Favouring a level-playing field is meaningless unless one specifies what that means precisely, though. In our opinion, data portability obligations such as those imposed on banks in the EU (PSD2) or in the UK (Open Banking) do contribute to level the playing field. Likewise, capital requirements, enhanced supervision and resolution plans can help offset the too-big-to-fail advantages hitherto enjoyed by large incumbents. They also contribute to a level-playing field. Yet, we believe that these asymmetric regulations are insufficient and are likely to prove detrimental unless they are complemented with other measures targeted at addressing the data power of Big Tech firms. On their own, existing asymmetric rules cannot constitute appropriate public policy.

According to the Institute of International Finance, this “asymmetry [in regulation] or lack of reciprocity [concerning data sharing] means that a regulation intended to facilitate the entrance of new players and promote competition and end-user choice in the payments market has created a competitive disadvantage for banks and other financial services firms *vis-à-vis* players from other industries. This risks contributing to the existing trend in digital markets towards the concentration of power in the hands of a few big technological players.”⁷⁶

In short, Big Tech platforms’ data superiority needs to be checked in order to preserve rivalry in banking. This can be done in different ways, as we discuss in the remainder of this section. As the Governor of the Bank of England, Mark Carney, stated recently “Just because something is new doesn’t necessarily mean it should be treated differently.”⁷⁷

A. Data Sharing

The most obvious option to foster market diversity and rivalry is to mandate data sharing conditional on customer consent. Platforms above a certain size would have to grant access to others, including traditional banks, to access a subset of their data, including personal data if the individual or business in question decides so. Of course, implementing this option involves challenges, though not more, and possibly less, than those associated with the implementation of PSD2 or Open Banking. In any event, we believe that it can be done and that it would not only enhance competition but also increase

⁷⁶ Institute of International Finance, (2018): *Reciprocity in Customer Data Sharing Frameworks*.

⁷⁷ See Carney, M. (2017). He also added “Similarly, just because it is outside the regulatory perimeter doesn’t necessarily mean it needs to be brought inside.”

financial stability by addressing the potential moral hazard and adverse selection problems identified in Section V above.

Any mandated data sharing scheme ought to respect the following principles. First, customers (whether individuals or businesses) should be able to exercise control over the data about them and their transactions that is shared with third parties. Their *consent* must be required prior to any data transmission.⁷⁸ Or, perhaps, they should be the ones to choose whether such data should be provided to another company. Secondly, the nature and scope of the data exchange should be *transparent* to customers. They should be able to readily understand the purpose of that exchange and the terms and conditions under which it takes place.⁷⁹ Thirdly, the information exchange must happen through *secure* methods. The parties to the exchange should take the necessary steps to prevent data leaks that may compromise the privacy and security of their customers.⁸⁰ Fourthly, the data should be accessible through standardized APIs, following the example of PSD2, so that the exchange takes place efficiently and without undue delay. Finally, the sharing scheme must provide *incentives* so that the party in control of the data actually shares the data and the party which receives it builds value added propositions with such data. In this regard, we believe that “open APIs” represent one of the best-practice ways of implementing mandatory data sharing frameworks.⁸¹ These are the principles that appear to underlie the new “Consumer Data Right” (CDR) proposed by the Australian government: a policy reform that is meant to drive both competition and innovation in a digital economy, facilitating data portability and transfer so that consumers can switch between product and service providers while giving businesses greater incentives and capacity to compete.⁸²

Some may worry about the impact on competition of imposing regulations on new entrants, even when they are not more onerous than those faced by the

⁷⁸ “Companies should, where appropriate, allow customers to access, download, transfer and/or permit third parties to manage data about them.” World Economic Forum (2018): *The Appropriate Use of Customer Data in Financial Services*.

⁷⁹ “Customer data are critical to innovation and growth, but data misuse risks a loss of trust that could destabilize the financial services system.” “Companies should be able to comprehensively test, validate and explain their use of data analytics to customers.” World Economic Forum (2018).

⁸⁰ “Companies should be held responsible and accountable for data security.” World Economic Forum (2018).

⁸¹ The success of the sharing scheme will depend *inter alia* on the price to be paid for the data. Regulators may want to allow Big Tech platforms to charge a positive price in order to encourage data collection. This may prove problematic; since information providers may prefer supplying imprecise information to competitors even if the precision of information can be increased at no cost in order to relax price competition in the downstream markets where that information is relevant. See Kastl, J., Pagnozzi, M. and Piccolo, S. (2018): “Selling Information to Competitive Firms,” *Rand Journal of Economics*, 49(1), pp. 254-282.

⁸² See Beaton-Wells, C. (2018): “Platform Power and Privacy Protection: A Case for Policy Innovation,” *Competition Policy International*.

incumbents. For example, Andrea Enria, Chairperson of the European Banking Authority (EBA), recently stated: “An excessive extension of the regulatory perimeter, attracting most FinTech firms under the scope of bank-like supervision just because they compete with banks in some market segment, is likely to be a sub-optimal solution. It would risk excessively constrain financial innovation, as the compliance burden placed on banks is not sustainable for small innovative start-ups.”⁸³ But, of course, what may be true for “small” start-ups does not necessarily apply to Big Tech platforms, which possess market capitalizations in excess of those of the major EU banks, generate cash flows way larger than those of banks, and are able to invest as much capital as they wish without having to be concerned about capital adequacy ratios.

Others may say that generalising the obligation to share data in the EU (PSD2) or the UK (Open Banking) to platforms will harm privacy. That may be true, though not necessarily if the sharing is initiated by the customer. And yet, as shown once and again by economic theorists and repeatedly corroborated by empirical evidence, borrowers are made worse off when their information sharing is monopolised. Bad borrowers may prefer a world without information but the efficiency of credit markets and the well-being of good borrowers will be best served if their information is released and not monopolized.⁸⁴ That is why we agree with the conclusions of Mayer-Schönberger and Ramge, in a very recent paper in *Foreign Affairs*,⁸⁵ “preventing a small number of digital superstars from monopolising data would better distribute the power that flows from exclusive access to information.” We would add that this will contribute to the efficiency of credit markets and will unambiguously benefit consumers and firms.

If data sharing of this sort, which we see as mere reciprocity given the existing banks’ data sharing obligations, is regarded as too intrusive, there may be other regulatory and policy options. We are however concerned that they may prove ineffective. One option is reliance on “data banks.” These would act as data repositories controlled by end users, not Big Tech platforms. This solution would support the current move towards data sovereignty and digital identity: the user would grant various access rights to her data depending on products or services sought. However, this model may not provide the right incentives for initial data collection and certification. By separating data ownership and control this policy option may give rise to agency problems and other inefficiencies.

⁸³ See Enria, A. (2018): “Designing a Regulatory and Supervisory Roadmap for FinTech”, Copenhagen Business School.

⁸⁴ See Padilla, J. and Pagano, M. (1997): “Endogenous communication among lenders and entrepreneurial incentives”, *Review of Financial Studies*, 10 (1), pp. 205-236.

⁸⁵ See Mayer-Schönberger, V. and Ramge, T. (2018): “A Big Choice for Big Tech. Share Data or Suffer the Consequences”, *Foreign Affairs*, 97(5), pp. 48-54.

In addition, the reprivatisation of data, which is underlying this concept, likely will require a cross-border data access regime, requiring years of coordination among regulators across the globe. Finally, users may not be able to exercise their control rights over their own personal data in practice, since the option of not sharing their data may make them *de facto* second-class digital citizens: the best financial investments, credit opportunities or insurance premiums will only be available to users consenting to share their data with the predictive algorithms of the Big Tech platforms.

B. Antitrust Intervention

Another option to ensure that banking markets remain vibrantly competitive years after the entry of Big Tech platforms, complementary to mandated data sharing, is antitrust law enforcement. Antitrust agencies will have to continue overseeing the commercial activities of platforms to deter anticompetitive behaviour. We are however pessimistic about the effectiveness of this policy option, especially if operating in isolation. Antitrust intervention has proved only successful in connection with the most egregious abuses: the monopolization of multi-billion euro businesses, such as the client PC and server OS markets,⁸⁶ the browser market,⁸⁷ online search and paid search markets,⁸⁸ and some mobile app and OS markets.⁸⁹ Furthermore, antitrust intervention takes time, which means that it may fail to achieve its structural goals altogether. By the time an infringement is condemned, and remedies imposed, the target market or markets may be monopolized and no remedies may be reasonably available to restore the conditions of competition existing prior to the infringement. Moreover, many of the concerns expressed in previous sections are about behaviour that, while not necessarily infringing the competition laws, may result in more concentrated and less dynamic banking markets. These are the sort of problems which are best dealt with using *ex-ante* regulation or, in the alternative, *ex-post* market investigations of a regulatory (rather than quasi-criminal) nature.^{90 91}

⁸⁶ European Commission. Case AT.37792, Microsoft.

⁸⁷ European Commission. Case AT.39530, Microsoft (Tying).

⁸⁸ European Commission. Case AT.39740, Google Search (Shopping).

⁸⁹ European Commission. Case AT.40099, Google Android.

⁹⁰ See e.g. UK Competition and Markets Authority, (2017): *Market Studies and Market Investigations: Supplemental guidance to the CMA's Approach*.

⁹¹ The German Federal Ministry for Economic Affairs and Energy has recently proposed modernising the law on abuse of market power to address some of the limitations of *ex-post* antitrust intervention. For example, it recommends amending the competition statutes in order to introduce the notion of “intermediation power.” Importantly, it notes that “[t]here are good reasons to think that, depending on the exact setting, the threshold for finding that a refusal to supply data constitutes an abuse may be somewhat lower than the threshold for finding that a refusal to grant access to infrastructures or to intellectual property rights. This is true in particular if and to the extent that the refusal to grant access relates to data which is generated

For the avoidance of doubt, we do not claim here that antitrust interventions may not be justified, nor we aver that they will always prove ineffective. Competition agencies should remain vigilant to deter unilateral or collective actions that distort the competitive process and harm consumers. They should also stop mergers and acquisitions that impede actual or potential competition, especially those which may have the objective of eliminating the threat posed by disruptive innovators (i.e. the so-called “killer acquisitions”).⁹²

Our position is more nuanced. We believe that competition cases, especially abuse of dominance cases or monopolization cases, due to their quasi-criminal nature face procedural and substantive hurdles that may limit their effectiveness in cases where delayed intervention may not be better than denied intervention. Moreover, given the novel character of the conducts which they likely will have to assess and the fact that some of them may be privately profitable even in the absence of exclusion (thus failing the profit sacrifice test⁹³), it is our opinion that it would be preferable to approach them using a quasi-regulatory framework (like the UK market investigation regime) than a deterrence mechanism (such as Article 102 TFEU or Section 2 of the Sherman Act).⁹⁴ Finally, it is likely that the sort of remedies that are commonly used in antitrust cases, which are tailored to constrain the conduct of the infringer and limit themselves to redress harm done in the past, may prove utterly insufficient. Antitrust law is proscriptive, not prescriptive.⁹⁵ In contrast, market reviews like those we advocate in this paper may give rise to forward-looking solutions applying horizontally to all market participants.

C. Enforcing Privacy Protection

Another alternative to mandatory data sharing would be to enhance privacy protection, limiting the ability of large tech platforms to gather and combine personal and transaction data and, therefore, setting a limit to their data superiority.⁹⁶ This may be sufficient to allay our abovementioned concerns, but

virtually incidentally and without special investment.” See German Federal Ministry for Economic Affairs and Energy (2018): *Modernising the Law on Abuse of Market Power*.

⁹² See Cunningham, C., Ederer, F., and Ma, S. (2018): “Killer Acquisitions,” Yale School of Management. See also Aranze, J. (2018): “DG Comp Chief Economist: Reverse burden of proof to catch killer acquisitions,” *Global Competition Review*.

⁹³ See Salop, S.C. (2006): “Exclusionary Conduct, Effect on Consumers and the Flawed Profit Sacrifice Test,” *Antitrust Law Journal*, 73, pages 311-374.

⁹⁴ Our position should be contrasted with that of authors, such as Lina Khan, which propose a form of “no fault” antitrust where firms may be found infringing the antitrust laws if their actions increase concentration, regardless of their consumer welfare implications. See Khan, L. (2017): “Amazon’s Antitrust Paradox,” *Yale Law Journal*.

⁹⁵ See Melamed, A.D. and Petit, N. (2018): “The Misguided Assault on the Consumer Welfare Standard in an Age of Platform Markets,” Stanford Law School.

⁹⁶ Of course, a potential drawback of this policy is that it may limit efficiency by preventing the creation of large and rich databases that could be mined in the interest of consumers and business users.

need not be easy to implement in practice. “Should all businesses have a data charter? Should these be developed through voluntary codes of practice? Will the industry take the lead or should they be a regulatory requirement?”⁹⁷ We believe that regulation will be needed.

While consumers do care about privacy,⁹⁸ they seem to be resigned about having to surrender their personal data in order to be able to make use of the largest and most popular tech platforms. Turow *et al.* (2015) investigate the reasons why people claiming to be concerned about the ways companies access and use their private data nonetheless release lots information about themselves in ways that suggest much less concern about disclosure and collection of their personal data than they claim. The authors present the results of a survey of US customers aimed at testing whether the explanation for this apparent paradox is that the benefits of personal data disclosure, in the form of better targeted advertising are large, or instead the explanation is that people are “resigned” about the lack of privacy and believe it is futile to try to manage what companies can learn about them. They find that a majority of respondents reject the logic that people trade their data for better targeted advertising. They also find that a majority of respondents consider having no control over what online marketers can learn about them and, therefore, have come to accept that their data is no longer private.⁹⁹ As a result, they spend little or no time checking the privacy policies of online platforms and, even when they do so, they seem unable to understand their implications.

For that reason, we believe that self-regulation is bound to fail,¹⁰⁰ and are also sceptical about the potential benefits of competition in privacy policies.

⁹⁷ See Brown, T. P. and Swartz, M. E. (2017): “Can Big Data Protect a Firm from Competitors”, *Competition Policy International*.

⁹⁸ See e.g. Jai, T.-M. and King, N. J. (2016): “Privacy versus Reward: Do Loyalty Programs Increase Consumers’ Willingness to Share Personal Information with Third-Party Advertisers and Data Brokers?” *Journal of Retailing and Consumer Services*, 28, pp. 296-303; Grossklags, J. and Acquisti, A. (2007): “When 25 cents is too much: An experiment on willingness-to-sell and willingness-to-protect personal information,” in *Workshop on Economics of Information Security*, Pittsburgh; Acquisti, A., John, L. K. and Loewenstein, G. (2013): “What Is Privacy Worth?” *Journal of Legal Studies*, 42, pp. 249-74; and Regner, T. and Riener, G. (2017): “Privacy is Precious: On the Attempt to Lift Anonymity on the Internet to Increase Revenue,” *Journal of Economics and Management Strategy*, 26(2), pp. 318-336.

⁹⁹ In particular, they find that most adult US consumers (66%) do not want marketers to tailor advertisements to their interests. When they are informed of three common ways that marketers gather data about people in order to tailor ads, even higher percentages - between 73% and 86% - say they would not want such advertising. Even among young adults (18-24 years-old), whom advertisers often portray as caring little about information privacy, more than half do not want tailored advertising and are as averse to being followed across websites and offline as do older adults. Turow, J., Hennessy, M. and Draper, N. A. (2015): “The Trade-off Fallacy – How Marketers Are Misrepresenting American Consumers and Opening Them up to Exploitation,” Working Paper, University of Pennsylvania - Annenberg School for Communication.

¹⁰⁰ “Policies claiming compliance with third-party or co-regulatory privacy standards are, on close reading of the text of the policies, usually far from complaint. ... It appears that firms can and do often do put official-looking budes on their websites or privacy policies that have the potential to falsely reassure consumers into thinking that their privacy policies conform to a

Competition in privacy policies will work only if users of the Big Tech platforms devote sufficient time and effort to compare and contrast their relative merits. But they will not do so if the platforms they patronize face no competition. In that case, they have no option but to accept whatever privacy terms are presented to them.

It follows from the above that the only way to constrain the Big Tech platform's accumulation of data originating from the different markets in which they have market power is to regulate their privacy policies. In our opinion, and as stated by Giovanni Buttarelli, the current European Data Protection Supervisor, that may require the establishment of a "digital clearinghouse,"¹⁰¹ which could bring together agencies from the areas of competition as well as consumer and data protection to develop "theories of harm relevant to merger control cases and to cases of exploitative abuse" that take into account the principles of data and consumer protection. Yet, setting up a digital clearing house will prove ineffective unless the agencies that join have the powers to intervene promptly and effectively to ensure that the positive competitive impact of Big Tech's entry persists over time.

VII. CONCLUDING REMARKS

We have explained that the entry of Big Tech platforms into banking may initially have a significant positive effect on the strength of competition, allaying some of the concerns expressed by competition authorities and academics over the years.¹⁰² It also represents an existential challenge for traditional banks. Competition and financial stability may be placed at risk if Big Tech platforms, using their by now well-known envelopment strategies, manage to marginalize traditional banks and monopolize the origination and distribution of lending and the other relatively more profitable banking businesses. Whether or not Big Tech entry ends up fostering competition in retail banking and increasing consumer welfare in the medium and long term will likely depend on how regulation treats these new entities in absolute terms but also in relation to existing banks.

While "[b]anks have a vested interest in preserving the regulatory *status quo*"¹⁰³ that has protected them against entry thus far, recent regulatory

vetted external standard." Marota-Wurgler, F. (2016): "Self-Regulation and Competition in Privacy Policies," *Journal of Legal Studies*, 45, pp. 513-539.

¹⁰¹ See European Data Protection Supervisor, (2017): *Big Data and the Digital Clearinghouse*.

¹⁰² See OECD, (2009): *Competition and Financial Markets*. OECD Policy Roundtables Competition Law and Policy.

¹⁰³ See Randell, C. (2018): "How Can We Ensure that Big Data Does Not Make Us Prisoners of Technology", Reuters Newsmaker event, London. See also Rajan, R. and Zingales, L. (2004): *Saving Capitalism from the Capitalists: Unleashing the Power of Financial Markets to Create Wealth and Spread Opportunity*, Princeton University Press.

developments have eroded their traditional advantages, especially in the EU (and the UK) where “the opening up of the customer interface, could, in time, signal the end of universal banking as we know it.”¹⁰⁴ Banks’ challenge is therefore to remain competitive in a world “where the funding advantage of banks with cheap deposits fades away at the same time that new market-based and digital-based competitors attack the core deposit taking, transaction services, and lending functions of banks.”¹⁰⁵

It is in society’s interest that banks find a way to compete with their digital-based competitors, but that may prove hard given the data advantages enjoyed by the Big Tech companies which in addition can, and are likely to, cross-subsidize their banking operations with the high profits obtained in the adjacent platforms where they exert market power. In a recent editorial, the *Financial Times* stated: “As technology continues to change the world of investment and finance, innovators such as peer-to-peer lenders should be celebrated, not feared. As they enter the next stage of growth, however, they must accept rules and standards, as a level of scrutiny similar to that applied to traditional market players. The need for stronger regulation is apparent.”¹⁰⁶ What is true for peer-to-peer lending start-ups is also true, arguably even more so, for the large tech companies.

As banking business models and their underlying technologies evolve dynamically, the choice of the appropriate regulatory framework is hard. On the one hand, the wrong choice may unduly stifle beneficial innovation.¹⁰⁷ On the other, banking markets may end up more concentrated than today and new and increased moral hazard and adverse selection problems may threaten financial stability. In this paper we have discussed alternative ways of maximising the benefits of Big Tech entry while limiting the risk of monopolization, fostering market diversity and rivalry. In particular, we have considered ways to limit the data superiority of Big Tech platforms in order to create an informational level playing field. Our preferred option is to mandate data sharing: platforms above a certain size will have to grant access to others, including traditional banks, to access their transactional data, including personal data following the customers’ instructions. While other alternatives, such as antitrust intervention and privacy regulation, are available and could be useful complements to data sharing, they may prove insufficient on their own.

¹⁰⁴ See Carney, M. (2017). He also added “Similarly, just because it is outside the regulatory perimeter doesn’t necessarily mean it needs to be brought inside.”

¹⁰⁵ See Vives, X. (2016).

¹⁰⁶ See Financial Times, *Peer-to-peer lending needs tighter regulation*, 12 September 2018.

¹⁰⁷ See Bamberger, K.A. and Lobel, O. (2018): “Platform Market Power,” *Berkeley Technology Law Journal*, 32, pp. 1051-1092.

We cannot ignore the risk that mandated and reciprocal data sharing may prove *de facto* insufficient to prevent the monopolization of the most profitable banking markets. Big Tech platforms, free from capital requirements and the many other regulations constraining the ability of traditional banks to experiment with new products and business models, may out-invest and thence out-compete banks. Banks may become dependent on the Big Tech platforms, which may become “gatekeepers” to markets and consumers. Competition authorities should therefore be vigilant to avoid that borrowers are systematically “steered” towards the Big Tech proprietary (or affiliated) services,^{108 109} especially if they are more expensive and of less quality. They should also be prepared to entertain the possibility that mergers and acquisitions, within and across Member states, may be needed for banks to achieve the scale needed to remain competitive in the technological race that has just started.

Importantly, competition law may not be able to address the risk of monopolization on its own. And, what is more, as noted by Carlton and Picker, antitrust policy is “not good at formulating specific rules for particular industries.”¹¹⁰ Other policies should complement the rules of competition (and consumer protection). Banking regulators may have to modify the *status quo*, reconsidering existing regulatory constraints, especially those that impact asymmetrically on established banks; and facilitating innovation and business model experimentation by traditional banks, using e.g. “regulatory sandboxes.” Banking regulators may also have to consider whether Big Tech firms should be brought into the financial regulation perimeter.

As Big Tech platforms enter the market they often do so remaining outside the scope of the existing regulatory framework: functioning as a mere conduit between clients and financial institutions, they are not subject to the laws applicable to financial institutions, even if those institutions come to depend upon the conduit and the collapse of the latter may imperil the former. Big Tech firms may not be subject to client/customer/investor protection rules that maintain market integrity nor subject to measures that limit or control the

¹⁰⁸ See de Cornière, A. and Taylor, G. (2014): “Integration and Search Engine Bias,” *Rand Journal of Economics*, 45(3), pp. 576-597; and Teh, T.H. and Wright, J. (2018): “Steering by Information Intermediaries,” Working Paper, National University of Singapore. See also Ibañez-Colomo, P. (2014): “Exclusionary Discrimination under Article 102 TFEU,” *Common Market Law Review*, 51, pp. 141-164; and O’Donoghue, R. and Padilla, J. (2013): *The Law and Economics of Article 102 TFEU*, 2nd edition, Hart Publishing.

¹⁰⁹ Competition law may not address the steering problem effectively, which calls for the adoption of more intrusive regulatory measures. See European Commission, (2018): *Proposal for Regulation of the European Parliament and of the Council on promoting fairness and transparency for business services of online intermediation services*.

¹¹⁰ Carlton, D. and Picker, R. (2014): “Antitrust and Regulation,” in Rose, N.L., (ed.) *Economic Regulation and Its Reform: What Have We Learned?*, University of Chicago Press.

level of interconnectedness between financial intermediaries thereby preventing the build-up of systemic risk.

In principle, existing financial regulation is designed to mitigate those risks. For instance, issues associated with shelf fees for mutual funds in the US are well known and have prompted regulatory responses including mandatory disclosure and outright bans, while in the EU, following adoption of MiFID II, financial services firms must disclose whether their preselection of financial products is independent and neutral (or dependent and potentially biased by kickbacks paid from third parties). Fees received by the investment firms must not impair compliance with the investment firm's duty to act honestly, fairly and professionally in accordance with the best interests of its clients. As to predatory lending, financial regulation often imposes fair lending policies, and charges supervisors with enforcing these duties against lenders. However, once again, Big Tech platforms operate outside the perimeter of these regulations or at best there is limited legal certainty as to whether these regulations apply to platforms that rely, for instance, on algorithmic preferencing.

The conceptual legal question of to whom Big Tech platforms owe duties also matters. US and EU law assign to financial advisers, asset and fund managers the status of a fiduciary, which means all their business activities must be aligned with the interests of their clients. Similar safeguards may typically be missing for customers, clients and investors when dealing with Big Tech platforms, at least in the initial stage after entry into the provision of retail banking products and services to end consumers or SMEs. And yet Big Tech platforms' data-driven micro-segmentation could generate profits by exploiting customer weaknesses. For instance, they could adjust prices upward for customers insensitive to price or unwilling to switch products and providers. While exploitation of brand loyalty, inertia or ability and willingness to pay more would violate typical financial law requirements to treat customers fairly, honestly and in a non-discriminatory manner, the inapplicability of financial regulation in this respect grants Big Tech platforms undesirable incentives and opportunities.

For this and other related reasons we believe it is time to consider closing the "regulatory gap" between incumbents and Big Tech entrants. For example, if a Big Tech platform has discretion in selecting potential borrowers or portfolios of borrowers for their clients, then they should be regulated as portfolio managers. And when the platform provides payment services without resorting to a third-party payment service provider, it should be subject to payment service regulation. Finally, if platforms develop secondary markets for their products, and issue tradable and non-tradable securities, they should be subject to security regulation.

Experience shows that regulatory decisions can have long-lasting impact on an industry when it is young, and are difficult to reverse. It is thus important to identify the right regulatory framework to address early the potential adverse impact of the entry of Big Tech platforms on retail financial markets in order to maximise its otherwise positive effect on innovation and competition. If we do nothing, potential systemic risk may build up unobserved, unmitigated and uncontrolled, and, looking longer-term, the next global financial crisis may well come from Big Tech platforms rather than authorised financial institutions.

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