FSB FINANCIAL STABILITY BOARD

BigTech in finance

Market developments and potential financial stability implications

9 December 2019

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Executive summary

BigTech firms[1] – large companies with established technology platforms – are playing an increasingly prominent role in the financial system and have begun to provide financial services. Some BigTech firms have grown rapidly in the past decade and, on some measures, are comparable in size or even bigger than some of the world's largest financial institutions. BigTech firms benefit from having large existing customer bases and from collecting and analysing their customers' data. They can use this to achieve scale rapidly across different business lines, including in financial services. They also tend to have significant financial resources and are often able to access capital and funding at lower cost than some large financial groups.

BigTech firms differ in both the breadth of financial services they offer and in the nature of their interaction with incumbent financial institutions. In advanced economies (AEs), BigTech firms' financial activities are generally more narrow (e.g. focussed on payments), and tend to complement the activities of existing financial institutions. In emerging markets and developing economies (EMDEs), BigTech firms provide a broader range of financial services such as lending, insurance and asset management. This variation may be due to differences in financial development, approaches to financial regulation, and the penetration of financial services across different geographies.

Various modes of interaction are emerging between BigTech firms and financial institutions. Some involve partnerships, for example where BigTech firms provide technology infrastructure to financial institutions. In some markets, BigTech firms also compete directly with existing financial firms. The overall response of incumbent financial institutions to BigTech firms' entry in financial services and its effect on their business models is likely to vary across institutions and markets.

The activities of BigTech firms in the financial services sector have numerous benefits. These include the potential for innovation, diversification and efficiency in the provision of financial services. BigTech firms can also contribute to financial inclusion, particularly in EMDEs where they have the potential to increase access to financial services by previously unbanked populations. BigTech firms may also improve financial inclusion and facilitate access to markets that were previously untapped, a particularly important benefit for small and medium-sized enterprises (SMEs) competing with incumbents in financial services. The third-party services offered by BigTech firms also may provide access to technologies like artificial intelligence and data analytics capabilities previously unavailable to the wider marketplace.

BigTech firms' activities may also pose risks to financial stability. Some risks are similar to those from financial firms more broadly (including FinTech firms), and have been the subject of previous work by the FSB.[2] These include financial risks that stem from leverage, maturity transformation and liquidity mismatches, as well as operational risks including those that might arise from potential shortcomings in governance, risk and process controls.

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[1] A non-exhaustive list of selected BigTech firms: Alibaba, Amazon, Apple, Baidu, eBay, Facebook, Google, Microsoft, Tencent.

[2] FSB (2019a), "*FinTech and market structure in finance: Market developments and potential financial stability implications*", February.

BigTech firms engaging in financial services may also pose risks to financial stability that are different to, or more prominent than, those from FinTech firms more generally. These risks to financial stability might be greater in countries where BigTech firms become significant providers of financial services. Such risks are, by their nature, uncertain and forward looking, given that BigTechs' provision of financial services is relatively nascent in most jurisdictions.

Some potential risks stem from how BigTech firms could use their network and infrastructure to achieve scale in financial services very rapidly. Competition from BigTech firms might reduce the resilience of financial institutions, either by affecting their profitability or by reducing the stability of their funding. BigTech firms' widespread access to valuable customer data could also be self-reinforcing via network effects.

The scale and complexity of linkages between BigTech and financial firms could also act as channels for the propagation of risk. Such linkages arise from financial institutions' dependence on third-party services provided by some BigTech firms. Other linkages arise through BigTech firms' partnerships with financial institutions to originate and/or distribute financial products. These risks may be particularly significant if such financial services are not readily substitutable, and if BigTech firms' risk management and controls are less effective than those required of regulated financial institutions.

A further overarching consideration is that a small number of BigTech firms may in the future come to dominate, rather than diversify, the provision of certain financial services in some jurisdictions. If this were to occur, the failure of these firms could lead to widespread disruption. In particular, this might be a risk if BigTech firms' activities in financial services were not accompanied by appropriate risk management and regulatory monitoring, or if BigTech firms' customers were not able to readily switch to other providers of financial services.

These developments raise a range of issues for policymakers. The activities of BigTech firms in financial services may be subject to regulation in most jurisdictions. There is a question, however, of whether additional regulation and/or financial oversight may be warranted. Regulators and supervisors might also be mindful of the degree to which the resilience of incumbent financial institutions and the viability of their business models might be affected by their interlinkages with and competition from BigTech firms.

Finally, BigTech firms' ability to leverage wide-ranging customer data raises considerations for authorities regarding policies governing data ownership, access and portability.

1. Introduction

This report examines recent developments in the provision of financial services by BigTech firms, and the resulting benefits and risks to financial stability.

BigTech firms are large technology companies with extensive established customer networks. Some BigTech firms use their platforms to facilitate provision of financial services. Those that do so can be seen as a subset of FinTech firms – a broader class of technology firms (many of which are smaller than BigTech firms) that offer financial services.[3] FinTech firms, and their more general implications for the structure of the financial system, have also been subject of past FSB work, on which this report builds.[4]

As noted in previous FSB reports,[5] BigTech firms can achieve scale very quickly in financial services by leveraging several comparative advantages. These include their large established customer networks, brand recognition, proprietary customer data and state-of-the-art technology. The pace of expansion of BigTech firms into financial services has, in some cases, been rapid. This is particularly the case in China and other EMDEs, but also in specific financial services (e.g. payments) in AEs. For example, mobile payment platforms, including those that are integrated into social networking platforms, have seen rapid uptake by hundreds of millions of users across dozens of jurisdictions.

This report analyses the provision of financial services by BigTech firms, its drivers and its implications for financial stability. In doing so, it draws on examples from specific private firms. It also touches upon the potential development of so-called stablecoins. This, and other similar future developments, are not the main focus of the report, however.

This report proceeds as follows. The next section describes the nature and scale of BigTech firms' activities in different financial services, jurisdictions and financial sectors. The business models of BigTech firms – including some potential drivers of their expansion into financial services, as well as their modes of interaction with incumbent financial institutions – are discussed in Section 3. Section 4 examines the potential future response of incumbents in the face of BigTech firms' expansion. Section 5 makes a qualitative assessment of benefits and risks of BigTech activities in finance. Possible policy implications are discussed in Section 6.

[3] Other FinTech firms are generally smaller than BigTech firms. Some are also 'start-ups' that were founded more recently than BigTech firms. One exception are "TechFin" firms, a term sometimes used to refer to FinTech firms that have achieved large scale and whose activities remain largely focussed on financial services. For further discussion, see BIS (2019), "*Big tech in finance: opportunities and risks*", *Annual Economic Report*, 23 June.

[4] FSB (2019a); FSB (2017), "*Financial stability implications from FinTech: regulatory and supervisory issues that merit authorities' attention*", June.

[5] FSB (2019a).

2. Nature and scale of BigTech activities in financial services

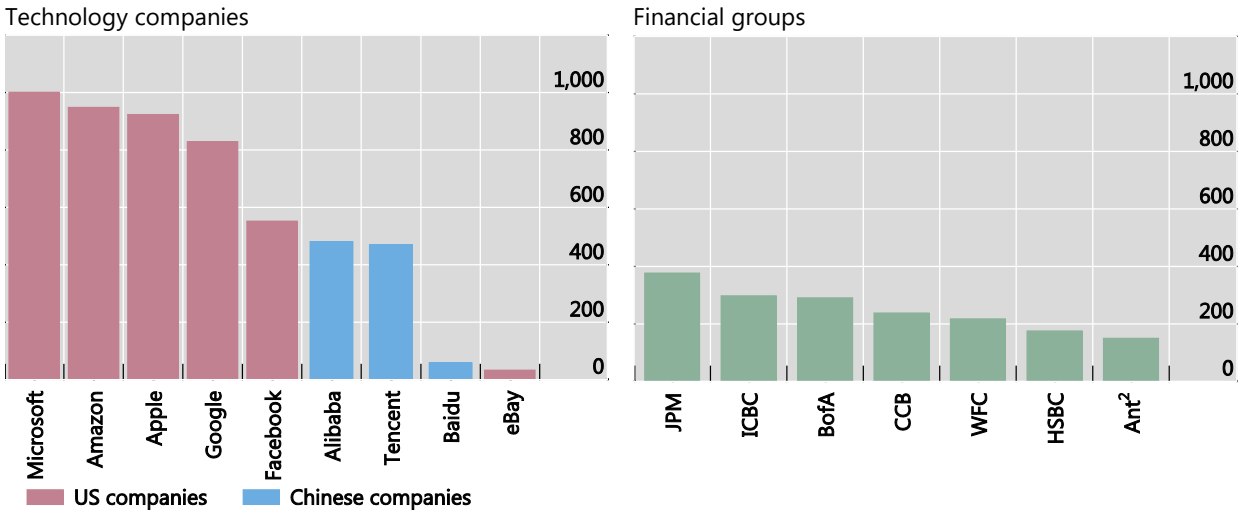
BigTech firms are already engaged in a wide range of financial activities. This is particularly the case in China, where BigTech firms have market capitalisations comparable to those of the world's largest financial groups (Graph 1), and offer a wide range of financial services through subsidiaries.

BigTech firms have also been expanding their provision of financial service in other EMDEs, notably in South East Asia, East Africa and Latin America.[6] Such firms have achieved scale in financial services very rapidly, in part due to the large customer bases and high degree of brand recognition associated with their existing core technology businesses.

Graph 2 shows the rapid recent growth in, and breadth of, financial services offered by ten BigTech firms. In total, these firms currently offer around 50 financial services, which are split across nine financial sectors. The majority of BigTech firms offer payment services, many offer loans and some also offer insurance and wealth management products.

Market capitalisation of major financial groups and BigTech firms[1]

In billions of US dollars — Graph 1



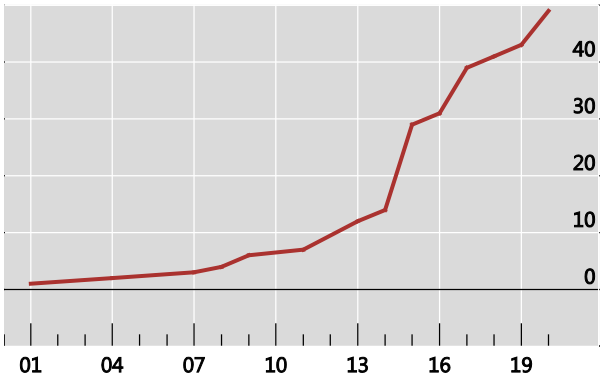
Ant = Ant Financial; BofA = Bank of America; CCB = China Construction Bank; ICBC = Industrial and Commercial Bank of China; JPM = JPMorgan Chase; WF = Wells Fargo. [1] Stock market capitalisation, 30 April 2019. [2] The estimated value of Ant Financial was derived from the amount raised in the company's recent funding rounds. Sources: Thomson Reuters Eikon; hurun.net; company reports.

[6] See BIS (2019).

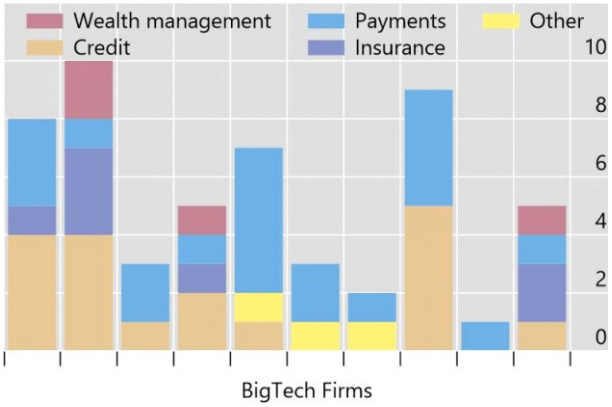
Financial services offered by ten large BigTech firms

Number of services Graph 2

Change in total financial services over time



Current financial services offered by selected large BigTech firms[1]



[1] The category "Other" includes services such as messaging services and venture capital providers.

Sources: Banque de France, based on public sources.

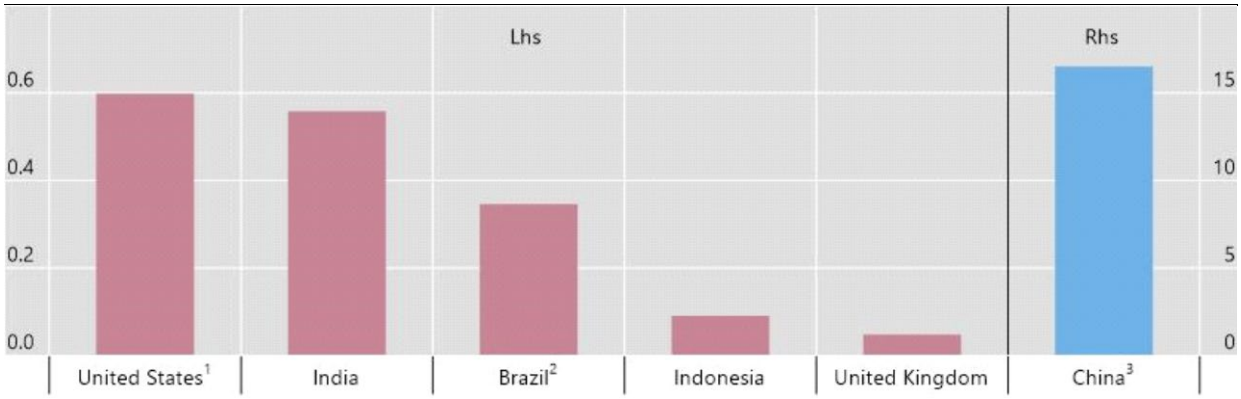
BigTech activity in payments

Payment services have historically been one of the first financial services offered by BigTech firms. Some payment services were developed as part of BigTech firms' online retail platforms, and sought to overcome a lack of trust between merchants and customers that received and paid for goods online.

Growth in BigTech firms' provision of payment services has been most pronounced in China, where mobile payments are now equivalent to 16% of GDP, far more than in any other

BigTech mobile payment services around the world

Yearly volume/GDP, in per cent; 2017 data Graph 3



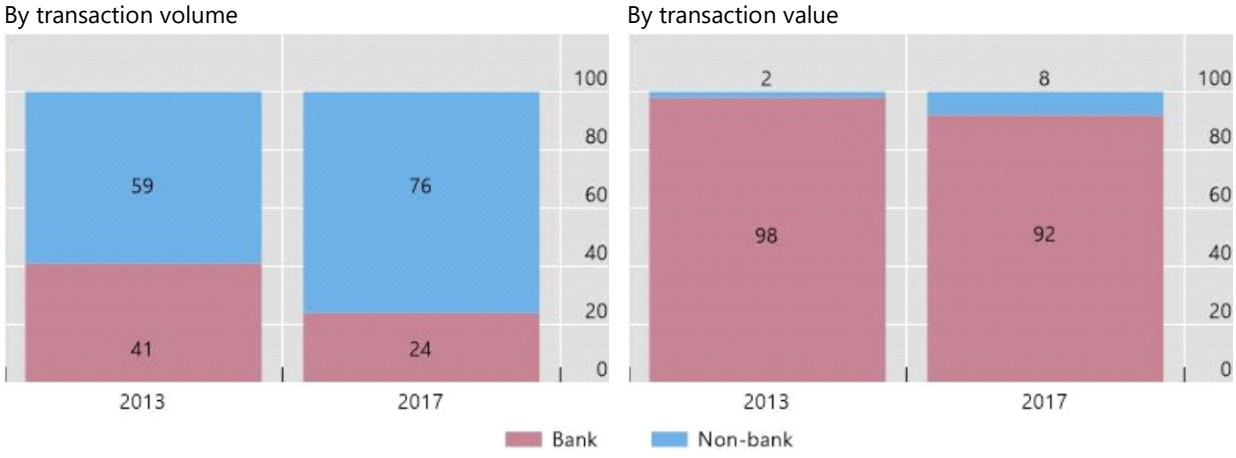
[1] 2016 data are used for US. [2] Estimate based on the public data. [3] Mobile payment data.

Sources: Forrester Research; GlobalData; iResearch; Mercado Libre; Nikkei; Worldpay; BIS.

jurisdiction (Graph 3).[7] BigTech firms are particularly active in the market for lower-value payments, including those associated with retail transactions: the share of transactions processed by non-bank payment institutions in China has increased from 59% of the total number of payments made in 2013 to 76% in 2017, even though these account for a much lower share of payments value (Graph 4). This may in part be due to the high penetration of Chinese e-commerce, coupled with the relatively limited availability of other means of electronic payment and high ownership of mobile phones in this jurisdiction.[8]

Electronic payments facilitated by banks and non-banks in China

In per cent — Graph 4



Source: People's Bank of China.

BigTech firms have filled similar niches in other EMDEs. These include payment systems that were developed by mobile phone operators, particularly in geographies where existing retail payment systems were less developed. In East Africa, Egypt and India, one large BigTech firm has 32 million active users of its payment service. In Latin America, a large e-commerce firm offers payment services in eight markets. That said, the growth in BigTech payments in Latin America remains relatively modest compared to that in China. This may be due to the lower penetration of e-commerce platforms in Latin America (according to Statista, the share of trading conducted via e-commerce platforms stood at around 1.9% of total sales in 2016, compared to 12.1% in Asia Pacific and 8.1% in North America).

In contrast to the situation in China, BigTech firms account for a much smaller proportion of payments in most other economies (Graph 3). This in part reflects that other means of electronic payment, such as credit and debit cards, were already widespread in some AEs when e-commerce came to prominence. Payments provided by BigTech firms in AEs tend to be overlaid on existing payment networks. Furthermore, they are primarily designed to improve the ease with which customers can make and receive payments via existing infrastructure (e.g.

[7] Frost, J, L Gambacorta, Y Huang, H S Shin and P Zbinden (2019), "*BigTech and the changing structure of financial intermediation*", BIS working paper No. 779, April.

[8] See BIS (2019).

credit cards),[9] and/or to integrate payment features into their own services. Several US BigTech firms now offer front-end payment services, and are rapidly growing their user bases. In places, they also offer mobile wallets that store customer funds, thereby potentially disintermediating these existing payment providers to some degree.

BigTechs' subsidiaries have been authorised as payments or electronic money institutions in some AEs.[10] This may have been catalysed, in part, by the introduction of open banking reforms in some geographies, which could provide BigTech firms with an opportunity to expand and deepen their footprints. In the European Economic Area (EEA), one specific example is the introduction of the second Payment Services Directive (PSD2), which (subject to customer consent) enables BigTech firms, if they hold a licence, to access payments-related data previously only available to banks.[11] Since PSD2 entered into force in 2018, the number of BigTech firms with a licensed payment subsidiary in the EEA has grown significantly (see Table 1).[12] Most of these firms have not yet fully launched their PSD2-enabled payment services, but have indicated a desire to provide services that enhance their own platforms and services.[13]

Table 1: BigTech licences for payment subsidiaries in the EEA

Firm	Year payment-related licence acquired	EEA National Competent Authority
PayPal (Europe) S. à.r.l	2007 (Banking Licence)	CSSF (Luxembourg)
Amazon Payment Europe S.C.A	2010	CSSF (Luxembourg)
eBay S. à.r.l	2014	CSSF (Luxembourg)
Rakuten Europe Bank	2016 (Banking Licence)	CSSF (Luxembourg)
Implementation of PSD2		
Facebook Payments Intl Ltd	2018	Central Bank of Ireland (Ireland)
Alipay (Europe) Limited S.A.	2018	CSSF (Luxembourg)
Airbnb Payments UK Ltd	2018	FCA (United Kingdom)[14]
Google Payment Lithuania UAB	2018	Lietuvos Bankas (Lithuania)
Uber Payments B.V.	2019	De Nederlandsche Bank (Netherlands)

Source: EBA register of payment and electronic money institutions under PSD2. Available at https://eba.europa.eu/risk-analysis-and-data/register-of-payment-and-e-money-institutions-under-psd2

Going forward, BigTech firms may begin to offer new forms of payment that may not rely on existing payment rails. For example, on 18 June 2019 Facebook announced plans for Libra, a so-called stablecoin to be issued by an association of members that would enable domestic and

[9] For a taxonomy of different types of payment service see CPMI (2014), "*Non-banks in Retail Payments*".

[10] See European Banking Authority, "*Payment Institutions Register*".

[11] For more information about Directive (EU) 2015/2366 including date of entry into force and a link to its summary, see European Commission (2015), "*Directive (EU) 2015/2366*".

[12] See DNB (2019), "*BigTech companies increasingly active in European payment markets*", June.

[13] Open banking generally allows for the sharing of bank data with customer consent, but may not involve the same degree of sharing of non-bank customer data by BigTech firms with banks; see de la Mano, M and J Padilla (2018), "*BigTech Banking*", December.

[14] This firm has restrictions or requirements places on the financial services it can operate.

international peer-to-peer payment transactions.[15, 16] Such potential developments, and any other wider use of new types of crypto-assets for payment purposes, would warrant close scrutiny by authorities to ensure that they are subject to rigorous and appropriate regulatory standards.[17]

BigTech activity in credit extension

Some BigTech firms offer lending, a service that – like payments – has in part been developed to enhance their e-commerce platforms. Firms in some jurisdictions offer loans to merchants and small business that transact via their retail platforms.

A number of factors provide BigTech firms with a potential advantage over banks, or at least reduce some of the advantages that incumbent financial institutions have typically had over new entrants. By harnessing their large existing customer bases and technological infrastructure, BigTechs are able to distribute loans without the costs associated with operating a branch network. New technology has allowed them to acquire customers, open user accounts and facilitate secure transactions without the need for face-to-face interaction with their customers. Furthermore, advanced data analytics allows BigTech firms to leverage large amounts of data from e-commerce and social networks to compensate for a lack of credit history, collateral, and other factors that typically limit the provision of consumer loans.

The volume of credit extended by BigTech firms varies considerably by geography. Total credit extended per capita by FinTech firms (including BigTech) is highest in China (Graph 5), where, for example, internet-only banks lend to underserved individuals and small businesses, including those in rural areas who faced difficulty in terms of access to financial services.

Despite its recent growth, total credit extended by BigTech firms accounts for a small proportion of overall credit. In China, new credit extended by BigTech firms in 2017 amounted to around 1.5% of the stock of total non-bank credit. This may in part be due to regulatory requirements associated with lending services that raise the costs associated with such business.[18] In the US, there are also regulatory requirements that separate banking and commerce. Specifically, the US legal framework prohibits deposit-taking banks, or their corporate affiliates, from engaging in commercial activities (albeit with limited exceptions; see Section 3 and Box B).

BigTech activity in asset management

BigTech firms have also expanded into asset management, most notably in China, but also to some extent in other jurisdictions. In some cases, this has been driven by the growth in BigTechs' payment platforms, where customers leave balances in their accounts which can

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15 See Libra (2019), "*White paper*".

16 "Stablecoins" is a term used in the market to denote crypto-assets whose value is meant to be kept stable against specific fiat currencies, commodities, etc. These can include asset-backed tokens or algorithmic tokens. It is important to note that there is no agreed definition of the term, and caution should be applied in implying that they are stable.

17 See FSB (2019b), "*FSB Chair's letter to G20 Leaders meeting in Osaka*", June.

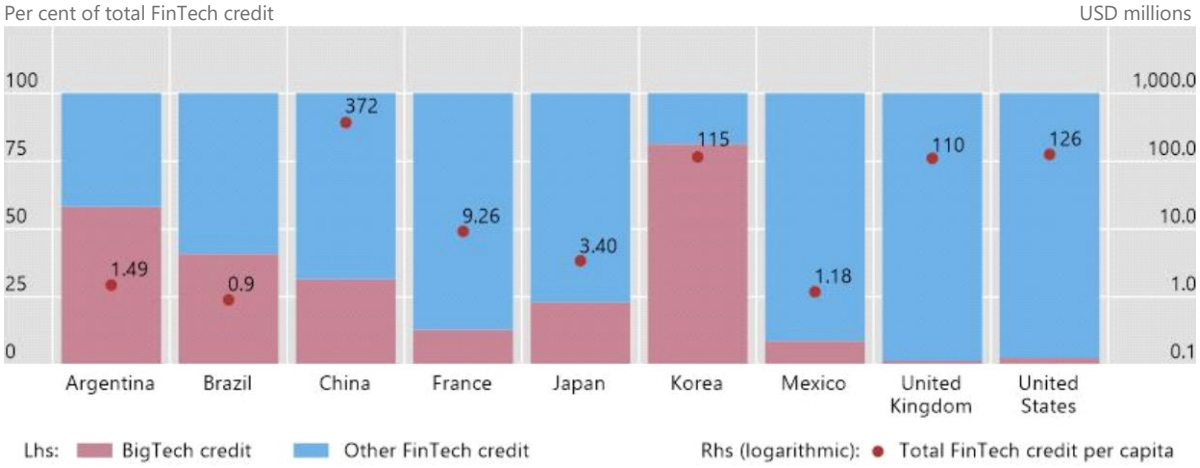
18 There is also empirical evidence that tighter regulation limits BigTech firms provision of credit more generally; see Claessens, S, J Frost, G Turner and F Zhu (2018), "*FinTech Credit Markets around the World*", BIS Quarterly Review, September.

then be invested in money market funds (MMFs) as short-term investments.[19] By analysing their customers' investment and withdrawal patterns, such BigTech firms are able to closely manage their customers' cash balances and allow them to withdraw funds at short notice.

For example, a Chinese technology firm operates a MMF that, in 2018, was the world's largest. Another Chinese firm offers online fund management services aimed at customers of its mobile messenger service.

Credit extension by BigTech and FinTech firms

2017 Data — Graph 5



Sources: Cambridge Centre for Alternative Finance and research partners; Frost et al. (2019).

BigTech activity in insurance

BigTech firms in several jurisdictions also offer third-party insurance products through their platforms. These range from healthcare and aviation accident insurance to car insurance products, and may provide synergies with other products and services offered on the firms' platforms (e.g., personal accident insurance for mobile ride app service users and drivers).

[19] Some payment platforms also enforce a delay between the transfer of money from buyer to the seller until the buyer confirms they have received goods or services. Such funds are held in an escrow account and can be invested.

Table 2: Financial activities of selected BigTech firms

Entities and operations shown in red have been introduced outside traditional financial and banking networks.
Entities and operations in green provide overlays on top of, or work in collaboration with, existing financial institutions (most notably banks).

	Companies whose financial service offerings target EMDEs						Companies headquartered in the United States				
	Alibaba/Ant Financial	**Tencent**	**Baidu/Du Xiaoman**	**Samsung**	**Vodafone**	**Mercado Libre**	**Apple**	**Amazon**	**Facebook**	**Google**	**Microsoft**
Main business	Buyer /sellers matching fees	Gaming	Search advertising	Selling electronic hardware	Mobile communi-cations	E-commerce platform	Selling electronic hardware	Goods retailer	Advertising from social media	Search advertising	Software, services & hardware
Share of profit from main business[1]	88%	65%	86%	n/a	90%	60%	84%	70%	95%	86%	100%
Revenue (US$)[1]	23.0 bn	36.6 bn	13 bn	211.8 bn	57.1 bn	1.4 bn	229.2 bn	177.7 bn	40.7 bn	110.9 bn	89.9 bn
Payments	Alipay	Tenpay	Baidu Wallet	Samsung Pay	M-Pesa	Mercado Pago	Apple Pay	Amazon Pay	Messenger Pay	Google Pay	Microsoft Pay
Credit extension	MYBank	WeBank	Baixin Bank		M-Pesa	Mercado Crédito		Amazon Lending	Pilot	Google Tez (India only)	
Current accounts	MYBank	WeBank	Baixin Bank		M-Shwari						
Asset management	Yu'e Bao	LiCaiTong			Pilots ongoing	Mercado Fondo					
Insurance	Xiang Hu Bao	Shuidihuzhu						Amazon Protect			

[1] Figures as of 2017.

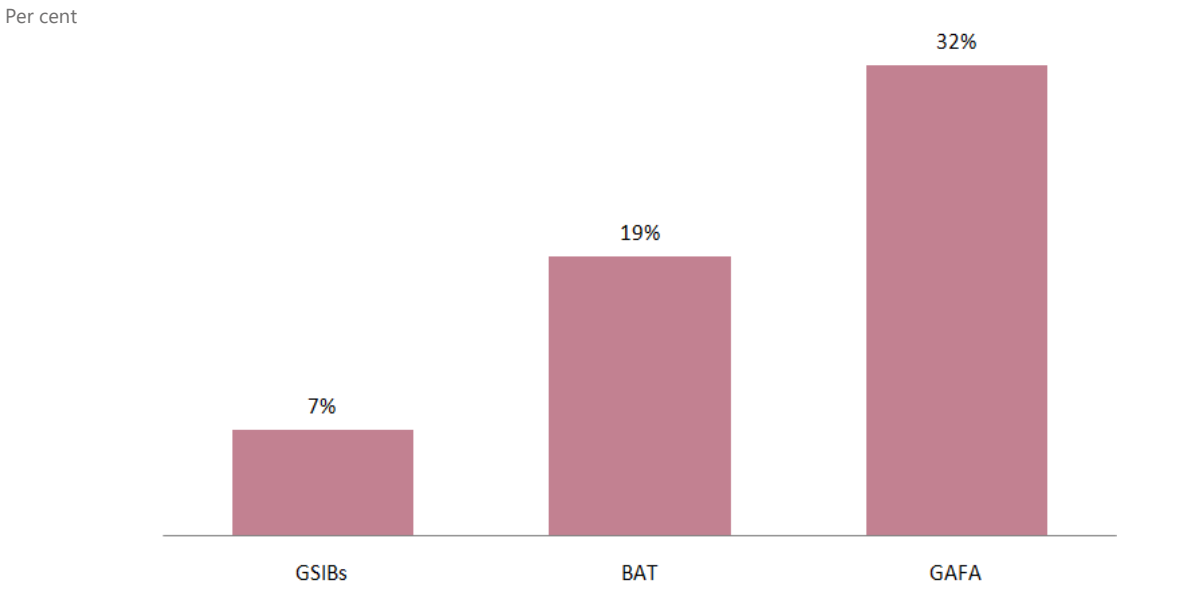
3. Business model of BigTech firms

The drivers of BigTech firms' entry into financial services

BigTech firms have expanded into financial services, despite this sector being significantly less profitable than BigTech firms' core technology businesses (as measured by return on equity) (Graph 6).

Return on equity of major BigTech firms versus global systemically important banks (G-SIBs)

2018 Data — Graph 6



Sources: Bloomberg, Reuters, Gurufocus.

1 'GAFA' is an average across Google, Amazon, Facebook and Apple; 'BAT' is Baidu, Alibaba and Tencent.

BigTech firms' entry into financial services is generally driven by a desire to:

- **Diversify revenue streams.** Offering access to new financial services is a method of diversifying revenue streams, particularly through BigTech firms' e-commerce business.
- **Access new sources of data.** Provision of financial services allows BigTech firms to collect additional data on the spending habits and financial positions of their clients. Such information – which has traditionally been the preserve of banks – could now be combined with that gathered from customers' other activities, for example from users' online searches, social media accounts, or e-commerce activity.[20]

  There have also been instances of BigTech firms offering some financial services for free in order to gain access to customer data, from which they can then extract value in

[20] Financial data on individuals and corporates are historically stored in banks where they are used for risk management and compliance purposes, and not as a source of revenue.

their technology business (i.e. through better targeted advertising).[21] Some BigTech firms allow their customers to use payment services at no monetary cost in return for providing data on their purchases.[22] Other examples include BigTech firms offering their users explicit rewards (including monetary compensation) in exchange for voluntarily signing up for initiatives that grant BigTechs access to a range of additional personal information.

- **Complement and reinforce their core commercial activities, increasing their customer base and loyalty.** BigTech firms can offer higher levels of convenience and speed of service to their customers by integrating financial services into their existing platforms, thereby increasing revenues from their core businesses. For example, some BigTech firms integrated payment systems into their platforms. Others introduced a range of additional financial services both for the merchants on their retail platform[23] and for consumers.

In some markets, the motivations may be mutually reinforcing.[24] BigTech firms' offering of financial services generates data – for example on the spending and saving habits of customers using BigTechs' banking and lending services. These data can then be used to improve BigTech firms' core business lines – for example by allowing them to better target advertising on their social media platforms.

Furthermore, data gathered from some BigTech firms' core business can complement and enhance BigTech firms' financial services activities. Data from e-commerce platforms can assist with credit scoring, enhancing the pricing and risk management of lending activity. BigTech firms with large social media or internet search businesses could use information gathered from users' social media presence or search history to market, distribute and (more precisely) price financial services to these users.

[21] For instance, one Chinese provider discussed the use of such data for advertising targeted insurance products.

[22] See Klein, A (2019), "*Is China's new payment system the future?*", Brookings, June.

[23] Running commercial platforms and providing payment services have allowed BigTech firms to accumulate information on the merchants' turnover and scale of business as well as make some judgment on their financial soundness. This has led to BigTech firms stepping into the lending business, providing lending to merchants, mostly to small and medium-sized firms that lack funds to secure necessary inventory or finance growth. By doing so, BigTech firms keep their partnerships with the most stable and profitable merchants and cut deeper into their revenues.

[24] For further discussion, see "*The DNA of BigTechs*" in BIS (2019).

Box A: Big Tech firms' value-added in the area of lending

BigTech firms' access to large volumes of customer data give them particular advantages in the area of lending. Traditional lending activity involves both the evaluation (and pricing) of borrower credit risk (ex ante screening), and efforts to monitor borrower behaviour and/or take collateral (ex post). BigTech firms' access to data may – particularly in EMDEs – allow them to perform both of these functions at a lower cost than with traditional methods. This may also have benefits for financial inclusion.[25]

The screening of borrowers, and pricing of loans

By obtaining information through their online platforms, BigTech firms could build an understanding of potential borrowers' creditworthiness more cheaply and accurately than can traditional financial institutions. This may enable BigTechs to extend credit at a lower cost, or reaching different types of borrowers, than incumbent financial institutions might be able to.[26] Furthermore, BigTechs could also extend credit to borrowers not served by traditional financial institutions – either because incumbent firms have insufficient information on the borrowers' creditworthiness (e.g. because of insufficient documentation) or because they find it too costly to obtain (e.g. because customers are too geographically remote).

Monitoring loans and collateral

After credit is extended, lenders typically monitor the performance of the loan to ensure that borrowers' risk characteristics do not vary too greatly from those agreed upon at the point of origination. Some borrowers are also required to pledge assets in the form of collateral, to assist the lender in recovering funds in the event of borrower default.

The coexistence of BigTech customers across several of their lines of business – combined with firms' ready access to data on borrowers' credit worthiness – can substantially reduce the costs they encounter in monitoring loans. For example, when a BigTech firm's borrower is also active on their e-commerce platform, the BigTech firm might deduct payments on a credit line from revenues that are processed in its account. Any deterioration in borrower behaviour can also be spotted in real time, through other data on customer behaviour or customer reviews.[27]

Some BigTech firms may also be able to incentivise less creditworthy borrowers to repay loans through potentially withholding the provision of some services. For instance, one platform that offers auto loans can remotely lock out borrowers that don't repay.[28] This could reduce the costs, information and incentive problems that are associated with taking collateral, but may also have implications for consumer protection.

[25] Preliminary evidence suggests that small and typically unbanked firms in Argentina and China that received BigTech credit expanded their product offerings more than firms that did not; see Frost et al (2019).

[26] See Huang, Y, C Lin, Z Sheng and L Wei (2018), "*Fintech credit and service quality*", mimeo and Hau, H, Y Huang, H Shan and Z Sheng (2018), "*Fintech credit, financial inclusion and entrepreneurial growth*", mimeo.

[27] Gambacorta, L, Huang Y, Qiu H and Wang J (2019), "*How do machine learning and non-traditional data affect credit scoring? Evidence from a Chinese FinTech firm*", mimeo.

[28] Frost et al. (2019), pp. 17.

Modes of interaction between BigTech firms and incumbents

Various modes of interaction are emerging between BigTech firms and incumbent financial institutions. Broadly, these can be categorised as:

- Direct competition, where BigTech firms directly compete with the offering of incumbents, for example by creating their own online banks, insurance or asset management firms (see Section 2).
- Partnership, where BigTech firms partner with financial institutions in offering financial services. Such partnerships take numerous forms: BigTech firms provide technology services and infrastructure (e.g. cloud computing and data analytics) to financial institutions; and vice versa, i.e. incumbent financial institutions provide their infrastructure and funding to operationalise BigTech firms' offering of financial services.

  Such partnerships can also take the form of 'interfacing', where BigTech firms act as intermediaries between financial institutions and their customers.

These modes of interaction are examined in turn below. The activities of BigTech firms' in AEs generally complement established market players, whereas in EMDEs they tend to serve as competitors. This may be due to the differences in financial market structures and penetration of financial services, which is generally far greater in AEs than in EMDEs.[29]

Direct competition between BigTech firms and incumbent financial institutions

The economics that drives BigTech firms' competition with incumbent financial institutions typically differs to that of traditional financial firms or FinTech firms more broadly. Whilst BigTech firms typically incur large fixed costs of business (such as investment in technology), the marginal cost of providing services to their customers may be lower than that of financial institutions that tend to operate legacy systems that are more costly to maintain. Network effects can also lead to positive externalities as they gain additional customers: that is, the benefits users incur from participating in their platforms(s) increases with the number of other users.[30] The benefit their users gain from participating in their platform(s) increases with the number of other users.

This combination of falling average costs of meeting the demands of new customers, and increasing marginal gains from their acquisition, may be one reason for the relative concentration of BigTech firms, particularly in geographies where their service provision is most advanced (see Section 2). BigTech firms have, in certain jurisdictions, come to dominate specific markets and raise questions related to competition.[31] Such network effects are, of course, not unique to BigTech firms and are often regarded to be a feature of payments services more generally.

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[29] In 2017 the bank account penetration rate was 92% in advanced economies compared to 48% across the rest of the world. See World Bank (2018), "*The Global Findex Database 2017*", April.

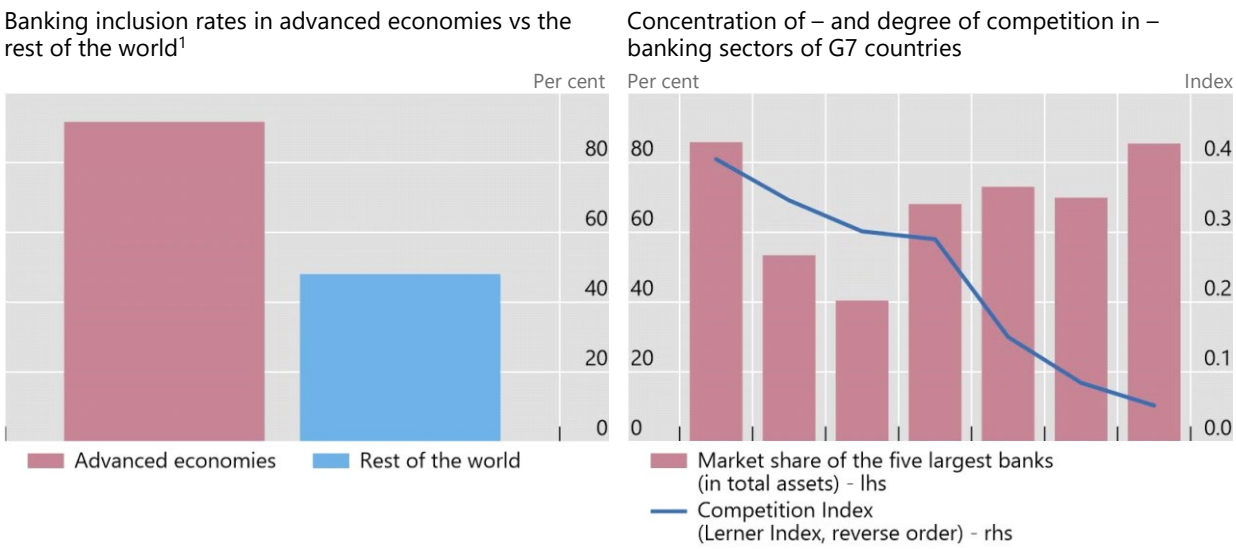
[30] Tongia, R and E Wilson III (2018), "*The Dark Side of Metcalfe's Law: Multiple and Growing Costs of Network Exclusion*".

[31] de la Mano and Padilla (2018) and Khan, L (2016), "*Amazon's antitrust paradox*", The Yale Law Journal, vol 126, no 3.

Direct competition by BigTech firms is generally more prevalent in emerging market economies where financial systems are at an earlier stage of development. This may be due to the lower existing penetration of financial services in emerging markets. In EMDEs around 48% of the eligible population has a bank account (Graph 7), yet nearly two-thirds of those *without* a bank account own a mobile phone.[32] In China, 82% of the unbanked population owns a smartphone. This presents an opportunity for BigTech firms (and FinTech firms more generally) to provide financial services directly.

Factors driving the mode of BigTech interaction with incumbent Financial institutions

Graph 7



The Lerner index measures market competition: the weaker it is, the higher the competition.

[1] Percentage of respondents who report having a bank account (by themselves or jointly with someone else).

Sources: 2017 Global Findex, World Bank

Partnership between BigTech firms and incumbent financial institutions

In AEs BigTech firms generally provide financial services in partnership with financial institutions (green text in Table 1). In some jurisdictions this may in part be due to regulatory considerations, including a legal separation between banking and commercial activities in the US (see Box B). It may also be due to the greater existing penetration of financial services in AEs (Graph 7), which could make it harder for BigTech firms to challenge traditional financial institutions.[33]

Partnerships between BigTech firms and incumbent financial institutions take a number of forms.

One form of partnership for BigTech firms is as a service provider to incumbent financial institutions. Technological partnerships with BigTech firms can allow incumbents to streamline their infrastructure thereby reducing costs and increasing speed of service. For

[32] World Bank (2018).

[33] For example, there is evidence that BigTech firms lend more in jurisdictions with more concentrated banking sectors; see Frost et al. (2019).

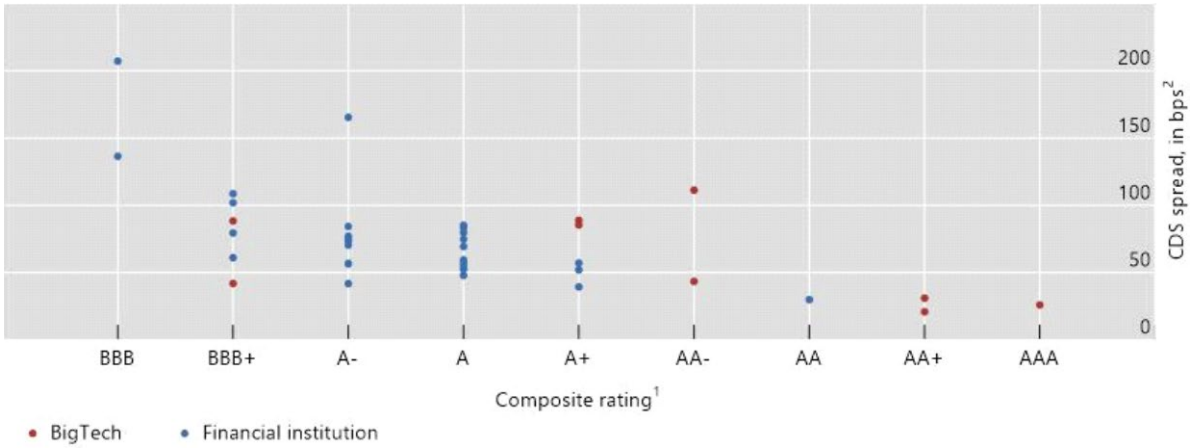
example, financial institutions make use of cloud services provided by BigTech firms. These BigTech firms offer other services alongside cloud computing, such as data analytics, processing, security and compliance and disaster recovery.[34] Risk management, data management and infrastructure services are also provided by BigTech firms to financial institutions. BigTech firms also assist with the management of client relationship by traditional financial intermediaries to whom they also offer services such as credit scoring.[35]

A second form of partnership is BigTech firms working with incumbent financial institutions to enable their own direct provision of financial services. For example, some BigTech firms partner with licensed banks, to gain funding for loans that they themselves initiate and distribute. Doing so allows BigTech firms to offer financial services to their customers without having to accept deposits and become subject to bank regulation. BigTech firms also collaborate with banks to issue branded credit cards.

Third, in some instances, BigTech firms fund themselves by borrowing from financial markets and institutions. Interbank funding comprises the majority of some digital bank's total liabilities rather than deposits. A number of BigTech firms have higher credit ratings – and enjoy a lower cost of funding – than the largest financial groups (Graph 8).[36] Digital banks can syndicate the majority of their loans to local banks that are not able to provide convenient online lending services to customers. Some BigTech firms are also well capitalised, and have significant cash reserves, which they are able to use to acquire other firms.

Funding costs of BigTech firms and incumbent financial institutions

Credit rating vs credit default swap (CDS) spread — Graph 8



[1] Simple average of Fitch, Moody's and S&P long-term issuer rating where available. The alphanumeric rating scale has been converted using a linear approach. Data as of November 2018. [2] Average CDS spread in November 2018.

Sources: IHS Markit; Thomson Reuters Eikon; authors' calculations.

Fourth, in the insurance market, BigTech firms open joint ventures with, make investments into or acquire incumbent insurance companies. This allows BigTech firms to offer insurance

[34] That said, there is also evidence that traditional financial institutions prefer to keep core functions in-house rather than outsource them. See FSB (2019c), "*Third-party dependencies in cloud services*".

[35] See FSB (2019c).

[36] At the same time, such capital market financing may be more expensive than deposit funding by banks. Moreover, given their higher proportion of equity financing, BigTech firms often still have a higher weighted average cost of capital than banks.

services without having to acquire a separate insurance licence, and for insurers it provides access to BigTech firms' wide client base and customer loyalty.

The development of partnerships is giving rise to a network of connections between BigTech firms and broader financial institutions (Graph 9). Some BigTech firms are dealing with several financial institutions (e.g. banks and credit card networks) in order to manufacture and operationalise financial services. Some financial institutions are also dealing with more than one BigTech firm as in the case of payments and credit provisions. Although public information is quite scarce, this network remains small at present but has the potential to grow.

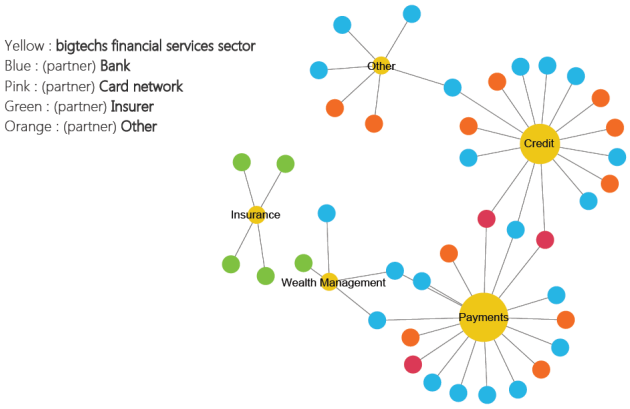
'Interfacing' by BigTech firms between financial institutions and their clients

Another form of interaction involves BigTech firms enabling distribution of financial services provided by incumbent financial institutions. For example, some BigTech firms provide a customer interface that allows users to make payments with their existing, bank-issued, credit and debit cards via their electronic devices. Others provide a customer interface that allows customers to apply for loans that, if approved, are then handed to a bank that can then be left to raise funds and manage the loan independently of the BigTech firm.

Some BigTech firms also use their platforms as a marketplace for financial services offered by their competitors. For instance, BigTech firms may house MMFs operated by external parties.

Network of connections between a sample of 10 BigTech firms and financial institutions for the manufacturing and production of selected BigTechs' financial services

Graph 9



Sources: Market intelligence based on public and private information. The category "other" includes blockchain services and venture capital activities. The size of the yellow bubble depends on the number of selected services being provided by the BigTech firms in the sample.

Box B: Separation of banking and commerce in the US

In the US, the existing legislative framework prohibits deposit-taking banks, or their corporate affiliates, from engaging in commercial activities (albeit with limited exceptions). In particular, entities that want to engage in deposit taking must first obtain a banking charter. A proposed bank must first receive approval for a federal or state charter. The Office of the Comptroller of the Currency (OCC) has exclusive authority to issue a national bank or federal thrift charter, while any state may issue a state charter. Before granting a charter, the OCC or state must be able to determine that the applicant bank has a reasonable chance for success and will operate in a safe and sound manner. In addition, in most cases, the proposed bank must obtain approval for deposit insurance from the Federal Deposit Insurance Corporation (FDIC). Additional approvals are required from the Federal Reserve if, at formation, a company would control the new bank and thereby become a bank holding company (BHC) or if a state-chartered bank wishes to become a member of the Federal Reserve. Each depository institution in the US is primarily supervised by one of the following three federal banking regulators:

• The Federal Reserve supervises state-chartered banks that are members of the Federal Reserve System, bank and savings and loan holding companies, Edge Act and agreement corporations, and the US operations of foreign banks.

• FDIC supervises insured state-chartered banks that are not members of the Federal Reserve System, state-chartered savings associations, and insured state-chartered branches of foreign banks.

• OCC supervises federally-chartered national banks and savings associations and federally-chartered branches and agencies of foreign banks.

These federal banking regulators have broad authority to examine depository institutions subject to their jurisdiction. Any non-bank activity conducted by any of these entities, or their subsidiaries, must be permissible under applicable law, including, for BHCs, section 4 of the Bank Holding Company Act of 1956 (BHC Act),[37] and, for SLHCs, section 10 of the Home Owners' Loan Act (HOLA).[38] As a general matter, permissible activities for BHCs and SLHCs must be closely related to banking or financial in nature.[39] Commercial activities are not permitted except for limited exceptions.[40]

The federal banking regulations are responsible for ensuring the safety and soundness of the entities they supervise. For example, under section 5 of the BHC Act[41] and under section 10 of HOLA,[42] the Federal Reserve has the authority to order an entity to terminate activities for safety and soundness reasons. In addition, the Federal Reserve has the authority to issue cease and desist orders if a BHC, SLHC, or state member bank is engaged in unsafe and unsound practices or violates a law, rule or regulation, and may enter into written agreements, which are enforceable as orders issued under section 8 of the FDI Act.[43]

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37 12 U.S.C. § 1843.

38 12 U.S.C. § 1467a.

39 Activities that have been determined to be closely related banking are listed here: e-CFR, "Title 12 Part 225 Subpart C". Activities that have been determined to be financial in nature are listed here: https://ecfr.io//Title-12/pt12.3.225#se12.3.225_186.

4. Possible behavioural responses of incumbent financial institutions to the entry by BigTech firms in finance

In a previous report, the FSB considered that the entry into finance of BigTech may have a significantly higher impact than that of other FinTech firms in terms of competition and concentration in the financial sector.[44] By some estimates, the banking industry's return on equity (RoE) could fall by around four percentage points to an "unsustainable 5.2 percent" by 2025,[45] absent of any mitigating actions taken by banks to respond to the effects of a heightened competition by BigTech firms.

The response of financial institutions to the entry of BigTech firms into finance might in part depend on their capacity to adapt to the digital world through IT investment, changes in business model and mergers and acquisitions. The response could also vary between institutions depending (amongst other things) on their size and business model:

- The largest financial institutions might aim to develop their own platforms rather than offer services through BigTechs' marketplaces.[46] Incumbents may also start to cooperate through consortia in order to share their high fixed costs and extend the reach of their combined network.[47]
- Small and medium-sized financial institutions might, on the other hand, elect to partner with BigTech platforms to benefit from the first mover advantage associated with the scale of these platforms (i.e. higher volumes). Others may seek to focus their activity on niche financial services[48] or more complex banking activities, which might be less appealing to BigTechs.
- Financial institutions, large or small, might also try to limit their partnership with BigTech firms to certain product lines (i.e. mobile payments), while continuing to invest in their digital transformation in order to maintain and enhance their customer relationships.

With regards to the latter approach, financial institutions have already tested a number of options which continue to coexist today, including:

- The development of a "mobile and internet branch", complementary to the physical branch network, to distribute traditional in-house products through digital channels.

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40 See Shull, B (1999), "*The Separation of Banking and Commerce in the United States*", OCC Economics Working Paper.

41 12 U.S.C. § 1844(e).

42 12 U.S.C. § 1467a.

43 12 U.S.C. § 1818(b).

44 FSB (2019a).

45 Dietz, M, M Lemerle, A Mehta, J Sengupta and N Zhou (2017), "*Remaking the bank for an ecosystem world*", McKinsey, October.

46 Dietz et al. (2017).

47 For instance, in France, the seven biggest banks have together developed a mobile payment and peer-to-peer payment service, named Paylib.

48 Moody's (2018), "*Threat of big tech disruption is real*", September.

Box C: Do Banks + FinTechs = BigTechs?

Potential synergies between banks and FinTech firms may make them objective allies.[49] BigTech firms have comparative advantages compared to banks or FinTech firms, but cooperation between banks and FinTech firms can help strengthen their respective positions, especially when it comes to the performance of their business. However, obtaining these synergies could be a complex process: vertical integration of a FinTech start-up within a bank can reduce the FinTech's agility, while keeping it outside the incumbent parent company[50] limits the bank's ability to meaningfully transform itself. Even under the assumption of perfect synergies between banks and FinTech firms, BigTech firms may still have a comparative advantage when it comes to network effects, global customer base and regulatory burden. However, the long-standing loyalty customers have for their financial institutions (through which they store, save and access their money) remains one of the main assets incumbent firms have when they compete with BigTech firms in the short to medium term.

Comparative advantages: Banks, BigTech firms, FinTechs & Banks+FinTechs

	Benefits	Banks	BigTech firms	FinTech firms	Banks + FinTech
Trust	Size	✓	✓	×	✓
	Brand recognition	✓	✓	×	✓
	Customer loyalty	✓	-*	-*	✓
Leverage	Investment capacity	✓	✓	×	✓
	Low-cost funding	✓	✓	×	✓
	Global Customer Base	×**	✓	×	×**
	Network effects	×	✓	***	***
Performance	Cutting-edge technologies	×	✓	✓	✓
	Cross-subsidisation	✓	✓	×	✓
	Limited regulatory burden	×	✓	✓	×

** Many surveys and polls have reported considerable customer loyalty to financial institutions.[51] Habits may be changing with the entry of BigTech firms into finance, though data on this trend are still very nascent.*

*** For the majority of banks, except the largest international banks.*

**** FinTech firms' business model may also be based on network effects but their customer base may not be sufficient to reach them.*

[49] World Economic Forum (2017), "*Beyond Fintech: a pragmatic assessment of disruptive potential in financial services*", August.

[50] 'Outside the parent company' may be true in operational terms, but both the FinTech subsidiary and the parent company may need to be consolidated for accounting and prudential purposes.

[51] For instance, see Pymnts (2019), "*Where will we bank next? Consumer choice and banking services in the digital age*", April.

- Redesigning internal organisational arrangements and processes to achieve greater efficiency and shorter time-to-market development and potential deployment of innovative products.[52]
- New digital-only offerings, built on new IT infrastructure that could appeal to a new customer base (generally younger generations).
- The acquisition of a "satellite" digital offer, through the buyout of a FinTech company that retains its own branding identity and IT infrastructure, in view of cross-selling products to the incumbent parent company's customer base.
- Partnerships with technology companies to increase incumbents' technology capabilities, improve their data management as well as enhance the efficiency of their back-office and compliance tasks through the use of cloud services and Big Data technologies. Another step in that direction includes organisational change to make the process of manufacturing and distributing financial services more agile and connected with customers' preferences.

The digital transformation of incumbent financial institutions could offset the impact of a heightened competition on their profitability by as much as 2.5 percentage points of RoE by 2025, limiting the drop to 1.5 percentage point, according to a study mentioned above.[53] However, that digital transformation also means high initial investment and high execution risk with uncertain competitive results. By some estimates, IT expenses are already higher in the banking industry than any other (ca. 9% of revenues) and almost two to three times those of other major industries.[54]

Two important questions emerge: (i) are all financial institutions able to afford the substantial IT capital expenditures required to be competitive in the digital age, and (ii) will their customers be retained during the process of digital transformation. Some analysts believe that the digital transformation process is likely to include further consolidation of financial institutions in order for the benefits resulting from the high initial investments to scale up.[55]

Eventually, the pace and size of IT investments, changes in business models and consolidation in the financial sector required to cope with the increased competition from BigTech firms' may be influenced by the regulatory framework governing financial and commercial activities in different jurisdictions. As noted by the Bank for International Settlements (BIS), BigTechs' entry presents new and complex trade-offs between financial stability, competition and data protection.[56] For instance, the opening up of banks' data promoted by initiatives such as PSD2,

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52 Daniel Fasnacht (2009), "*Open innovation in financial services: growing through openness, flexibility and customer integration*".

53 Dietz et al. (2017).

54 Citi (2018), "*The bank of the future. The ABCs of digital disruption in finance*", March.

55 Moody's (2018).

56 BIS (2019).

which are designed to increase competition in financial services, have led some to question whether BigTech firms should also open up their data to banks.[57]

5. Qualitative assessment of benefits and risks

Previous work by the FSB has identified a range of benefits and potential risks to financial stability arising from FinTech.[58] Benefits include the potential for greater diversification, efficiency, and transparency in the provision of financial services, as well as the potential for greater access to those services. Potential risks include those common to other financial activities – such as leverage, maturity transformation and liquidity mismatch – operational risks, such as cyber vulnerabilities as well as poor governance and process control.

This section focuses on whether and how the implications of BigTech firms further entering financial services might differ or be more prominent than those of FinTech firms more generally. In particular, it focuses on implications of developments in countries such as China, where BigTech firms have become prominent providers of financial services. However, such effects remain uncertain and necessarily forward-looking, particularly given that BigTech firms' provision of financial services is at a relatively early stage in most jurisdictions.

Nonetheless, due to their network effects, BigTech firms have the potential to become large providers of financial services and have already demonstrated (in some jurisdictions) their ability to expand into new product lines and to achieve scale rapidly. Where they are able to do so in financial services, this could increase the potential risks to financial stability (as detailed below). This could particularly be the case if they were to grow at a speed that challenged regulators' ability to monitor and respond to developments appropriately.

In considering financial stability implications of the provision of financial services by BigTech firms, potential differences across jurisdictions should be borne in mind. Generally speaking, BigTech firms in EMDEs are involved in a broader range of financial services, often with limited collaboration with incumbent financial institutions and infrastructures. They might be less bound by financial regulation and have less experience in offering financial products. On the other hand, BigTech firms in AEs tend to be involved in fewer types of financial services and they often partner with existing regulated financial institutions (e.g., payment systems for payment processing or banks to perform lending). Consequently, the BigTech impact on financial stability might be different in different types of economies.

The benefits of BigTech firms' entry into financial services

The entry of technology-focused firms, like FinTech and BigTech, into financial services offers many potential benefits. These include possible reductions in the cost of financial services for consumers, both at the retail and institutional level, through improved efficiencies; these impacts could also improve capital allocation. Competitive pressures from BigTechs use of technology can also provide positive impetus for innovation in and wider access to financial services.

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[57] de la Mano and Padilla (2018); and Institute of International Finance (2018), "*Reciprocity in Customer Data Sharing Frameworks*", July.

[58] FSB (2017).

Customers may be able to access financial products that are cheaper, more convenient, tailored and accessible. BigTech firms may be particularly well-placed to provide these benefits because products are typically delivered through a platform already used extensively by the customer, while scale means that these services can be provided relatively efficiently.

Moreover, deployment of BigTech cloud computing based services could be beneficial to financial services providers. As described in the FSB paper on third-party dependencies in cloud services, these benefits can include cost reductions, flexibility, scalability, standardisation, as well as improved security and resilience.[59]

As a consequence, competition for those financial services is likely to increase, eliciting similar responses from incumbent financial institutions. This could have the benefit of increasing competition and contestability, as well as financial inclusion. BigTech firms have demonstrated a capacity to facilitate access to financial services for unbanked populations. This has already enabled individuals and businesses to make electronic payments as well as save and borrow more efficiently. This has been most evident in EMDEs, including in Asia, Africa and Latin America, where the potential benefits are largest.

Developments in China have also illustrated that BigTech firms can increase financial inclusion, for instance by enabling underserved rural communities to access financial services. Billions of users in China have opened e-wallets, including hundreds of millions in rural areas. Ownership of financial accounts in China has increased from 63.8% of the population over the age of 15 in 2011 to 80.2% in 2017 – driven by the poorest 40% of the population.[60]

Potential risks from BigTech's entry into financial services

The expansion of BigTech into financial services to date suggests potential financial stability risks could emerge from a number of areas: the effects of increased competition on the viability of incumbents' business models; operational linkages between BigTech firms and financial institutions; risks associated with expansion of BigTech into credit provision; and issues arising from BigTech firms' scale and potential anti-competitive behaviour. The remainder of this section deals with each of these issues in turn.

Issues arising from competition with incumbent financial institutions

Increased competition – either directly from BigTech entrants or indirectly from their displacement of customer relationships – could affect the profitability of financial institutions. It is not the role of authorities to protect financial institutions from competition, but regulators and supervisors should pay close attention to the impact of competition on viability of business models and the nature of the competitive response from incumbents.

Competition for deposit-like products has been a key example in some countries. Where stored value payment products (e.g. mobile wallets) become prominent, a relatively large and potentially mobile pool of funds may be controlled outside the banking system (though often these funds are ultimately deposited with banks). As an example, in China significant funds are held in MMFs associated with digital wallets. As a result, Chinese banks increased the interest rates offered on deposits in order to retain customers,[61] which has increased banks' funding

[59] See FSB (2019c).

[60] World Bank (2018).

[61] See FSB (2019a).

costs (at the expense of borrowers). Furthermore, the greater mobility of this pool of funds compared with the customer deposits may also reduce the stability of bank funding. To the extent funds remain outside the banking system, the transparency of linkages and risks in the financial system is also reduced. As a result, Chinese authorities have recently adopted new rules designed to reduce risks associated with the use of stored payment products for Chinese money market funds.[62]

Even where BigTech firms provide an interface between providers of financial services and their customers, rather than competing directly with them, there remains some potential to further disrupt business models. Customer loyalty may be weakened where customers interact with the BigTech firms that initiate financial services supplied by other institutions. BigTech firms may also, over time, use open banking initiatives to develop aggregation or payment initiation services. This could increase competition in financial services and benefit consumers, as it would increase transparency in the market. However it could also reduce the 'stickiness' of bank deposits, and could have implications for incumbent banks' cost of funding and stability.

More generally, heightened competition brought about by BigTech has implications for incumbent financial institutions. Some of these effects may be positive. Competition might, for example, encourage existing financial institutions to embrace technology and decrease their costs, improving their products and profitability. But increased competition might also affect institutions' ability to generate capital internally through retained profits. It could also lead to a potential mispricing of risk, for instance if aggressive pricing were to cause interest rates on loans to be set too low and encourage excessive borrowing. Estimates suggest that the areas where BigTech firms seek to interface with bank customers to distribute bank products tend to be the more profitable areas of banks operations, meaning that this is the area where BigTech firms' entry could have the most significant effect on incumbents' profitability and business model viability.[63]

Issues arising from operational links between BigTech and incumbents

BigTech firms' partnerships with incumbent banks could potentially create new operational/financial links and dependencies. The scale of these linkages can increase the complexity of the financial system and provide new channels for the propagation of risks.[64] In turn, this might accentuate the risk of contagion from an operational failure or a financial shock – for example, if a BigTech firm that was partnered with a financial institution experienced an operational or financial failure that prevented its customers accessing financial institutions' services.

Linkages between financial institutions and BigTech are increasingly occurring due to the use of cloud services. This gives rise to a significant dependency and concerns may arise over the concentration of these services, particularly if such service provision can be not readily

[62] For example the People's Bank of China has required Chinese mobile payment providers to deposit funds in the accounts designated by the central bank. Other Chinese BigTech firms are also required to obtain certain licences and to meet capital requirements

[63] BigTech firms are likely to target the distribution business of banks only (i.e. slightly less than 50% of the banking revenues), whose return on equity amounts to 20% (compared with an average ROE of 7%-8%). See Dietz et al. (2017).

[64] See European Banking Authority (2018), "*EBA report on the prudential risks and opportunities arising for institutions from FinTech*", July.

substituted by that of other suppliers. These issues are discussed in the FSB paper on third-party dependencies in cloud services. [65]

Financial interlinkages might also present risks. For instance, Chinese BigTech firms' provision of MMFs links them and their payment products to the financial system through deposits and investments in other financial assets. As discussed above, this is already affecting banks' operations to some degree. It also means that a financial problem with a BigTech firm (such as a sudden loss of customer trust and the need to redeem deposits or quickly sell assets) could be disruptive for financial institutions, particularly given the potential implications for interbank funding.

The degree of risk associated with these interlinkages – and the degree of substitutability between BigTech firms and incumbent financial institutions – is unclear. In contrast to smaller FinTech firms, BigTech firms typically have established governance structures and risk management functions, with a strong focus on resilience. That said, BigTech firms may lack experience and expertise in operating within the financial sector, and have difficulty adapting their risk management culture to the stringent requirements in the financial services industry. To the extent that BigTech firms operating financial businesses seek to partner with incumbent financial institutions, ownership and governance could become less transparent and the risks to financial stability could increase.[66]

Issues arising from BigTech expansion into credit

A rapid expansion of credit provision by BigTech firms would make the risks that have previously been identified in relation to FinTech lending more prominent.[67] In particular, the performance of new forms of credit assessment have not been tested through an entire financial cycle. Furthermore, the ability of BigTech firms to maintain credit supply during a downturn is not clear. BigTech firms might be better able to fund lending than other Fintech credit providers, given their more diverse funding options. However, their data-driven, rather than relationship-based, approach to lending might see a sharper contraction of credit during a downturn than for financial institutions.[68]

Issues arising from scale

To the extent that BigTech firms are – or may in future become – direct providers of financial services, they could reach a scale and concentration such that their failure could cause widespread disruption to other parts of the financial system or the economy more broadly. Arguably, this is more likely to happen in EMDEs than in AEs. This remains an important area for further consideration for relevant authorities.

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65 FSB (2019c).

66 See de la Mano and Padilla (2018).

67 FSB and CGFS (2017), "*Fintech Credit: Market Structure, Business Models and Financial Stability Implications*", May.

68 See Carstens, A (2018), "*Big tech in finance and new challenges for public policy*", Keynote Address at FT Banking Summit, December.

Issues arising from competition

While not in itself a risk to financial stability, BigTech firms' widespread access to customer data – and the degree to which this is self-reinforcing via network effects – may mean that they dominate the market for certain technological (and potentially financial) services.

There is no evidence to date of BigTech firms hindering their competitors' provision of financial services. Moreover, as described above, competition can support financial innovation, and improve consumer welfare. Competition authorities have affirmed that competition law is flexible and can adapt to the challenges of the digital economy, including financial innovation and the entrance of BigTech firms into financial services.[69]

Nonetheless, firms could potentially seek to consolidate their positions in the future by raising barriers to entry or increasing the costs users incur in switching to other platforms. Large firms might seek to engage in a range of other activities aimed at reducing the impact of competition, such as cross-subsidisation of their businesses, product bundling, or by purchasing potential competitors. By calculating consumers' willingness to pay and adjusting prices accordingly, they could also undertake price discrimination.

These behaviours could, in turn, amplify some of the risks to financial stability discussed above. These include risks arising from BigTech firms' scale, their potential effects on the profitability and behaviour of incumbent institutions and concentration in the provision of certain important financial services.

6. Policy implications

The entry of BigTech firms into financial services raises a range of issues for policymakers. The potential for BigTech firms to achieve scale in financial services very rapidly highlights an overarching need for policymakers to stay abreast of developments, and their implications for systemic risk. It also underscores the importance of cooperation and communication between regulatory and supervisory authorities, including those charged with overseeing the bank and non-bank sectors. Such international cooperation – including via fora such as the FSB – is important given such firms are typically global in nature.

Three particular issues may be worthy of further consideration by policymakers.

The first relates to the scope for BigTech firms to provide financial services from outside the traditional financial sector. Financial intermediation by non-bank firms is not a new phenomenon and is generally performed by institutions already subject to regulatory oversight. In some jurisdictions, there may arise questions of which financial regulation is applicable to BigTech firms carrying out financial activities, and the degree to which such firms are bound by financial regulation. The presence of BigTech firms in financial services may also highlight the need to complement an entity-based approach with an activity-based approach to regulation, in order to ensure appropriate and consistent coverage of activities that have implications for financial stability. Authorities may wish to consider the relative size and risk of both large BigTech and smaller FinTech firms. The issue of the appropriate regulatory

[69] Common Understanding of G7 Competition Authorities on "Competition and the Digital Economy" Paris, 5th June, 2019 https://www.ftc.gov/system/files/attachments/press-releases/ftc-chairman-supports-common-understanding-g7-competition-authorities-competition-digital-economy/g7_common_understanding_7-5-19.pdf

treatment and response may be complicated in the case where BigTech firms distribute financial services supplied by, and provide ancillary services to, existing traditional financial institutions. It will also be appropriate to ensure that regulation is proportionate to the relative size and risk of both large BigTech and smaller FinTech firms.

Second, the diverse business lines of BigTech firms, coupled with their complex and varied interlinkages with traditional financial institutions, may be a source of risk and prompt vigilant monitoring. Financial sector regulators and supervisors might be mindful of – and should continue to monitor – these linkages, including the effect of BigTech firms' activities on incumbent financial institutions' ability to generate capital via retained profits. In some jurisdictions there may also be a need to coordinate supervision of the financial activities of BigTech firms with the supervision of financial institutions' use of third-party services from the same firms.[70]

Third, BigTech firms' ability to leverage customer data may raise the question of how financial authorities should approach data rights, particularly in the wider context of data protection regulations. Regulatory obligations for banks to share relevant data with new entrants (such as that embodied in open banking regulations) may enhance competition but may also pose new risks. BigTech firms' ability to leverage customer data raises the question of whether – and the degree to which – authorities could consider the potential to promote the mobility of data between the various actors that are involved in the provision of financial services. Doing so may help encourage competition and help ensure a level playing field amongst market participants. Financial authorities may also benefit from close engagement with other regulatory agencies (e.g. competition authorities and those involved with data protection).

[70] See FSB (2019c).

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