OLIVER WYMAN | ibfed International Banking Federation

BIG BANKS, BIGGER TECHS?

How policy-makers could respond to a probable discontinuity

DISCLAIMER

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IBFED FOREWORD

In recent years, technology has fundamentally reshaped our economy and the way all companies interact with their customers. This wave of digitization has touched nearly every industry, and banking is no exception.

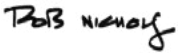
Banks have embraced this change and are investing in new technologies to bring their customers the latest innovations. In addition, a crop of nimble startups (often known as fintechs) have entered the market, often partnering with banks or connecting directly with customers.

More recently, large diversified technology companies have increasingly moved into financial services. These big-tech companies are building financial products that closely resemble traditional offerings, but often offer different protections. Moreover, they are not driven by the same incentives as financial institutions. These big-technology companies create value by establishing, cultivating, and cementing relationships with customers and collecting data on these customers across a broad set of services. They then analyze and apply that data to predict a customer's needs and preferences and offer them targeted products and services. Because of financial data's value, big-technology platforms persistently are looking for ways to obtain consumer financial data by offering financial services products.

These new business models raise questions for banks as they consider how best to serve their customers in an increasingly digital economy. More importantly, they also raise serious questions for regulators as they seek to ensure that financial services are delivered in a safe, secure, and fair manner.

Today, banks are partnering with technology companies of all sizes to deliver the latest innovations to their customers. These partnerships give customers access to new technologies delivered by a trusted partner. This trust is backed up by robust regulation and proactive oversight. However, when a consumer builds a direct relationship with a technology company, they often unknowingly forfeit many of these protections.

The following report explores how these new business models are developing and identifies areas where existing financial regulation may not have considered the way technology is being used to offer financial services today.



Rob Nichols
IBFed Chairman

IBFED FOREWORD

There is no doubt that big tech has changed how many of us live our lives. The way we work, shop, socialise, find and share information has been transformed by these technological powerhouses.

In banking, the advance of technology is altering the sector's landscape, helping firms to reshape their customer offering and drive efficiency. While major fintech operators have emerged, so far, in the West at least, big tech has yet to expand its dominance into financial systems on a considerable scale. But it's only a matter of time before they do.

As this report, IBFed's first, demonstrates, while the rise of big tech creates new opportunities, it also brings new risks. The challenge of a concentration of market power, the diffusing of accountabilities and financial activities outside of the traditional regulatory framework.

The banking system is built on stability, resilience and trust. It works within strict rules on issues such as consumer protection, anti-money laundering and governance. If financial products move outside of this sphere — how do we maintain these high standards?

With thanks to Oliver Wyman for their work with IBFed, this report explores how these challenges can be met and the reforms required to regulate the next evolution of the market. It's clear that finance and big tech is set to increasingly converge, it's important the actions are taken now to prepare. That way we can realise the benefits for banks, technology firms and, most importantly, the customers we serve.

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OLIVER WYMAN FOREWORD

The banking system has experienced disruptive change constantly through history. Comparatively ancient history gives us the word “credit” (from Latin “credo”, meaning I believe) that became a recognizable “business” in Renaissance Italy. Banking constantly re-invented itself with the central banking and public funding innovations of the seventeenth century (Netherlands and Britain), systems anchored on precious metals (Spanish empire and subsequently the gold standard) and of course the waxing and waning of great banking dynasties (Medici, Fugger, Rotshchild, JPMorgan, Warburgs). Great crises were almost always the catalyst of major banking reform and restructuring, perhaps as far back at the Latin American crisis of 1825 and of course more recently in the Great Financial Crisis of 2008/9.

Entering the 2020s, the banking sector is facing the formidable challenge of responding to COVID-related changes to customer behavior and the adverse impact of economic weakness. In parallel, there is the presence of a potential new class of competitors with powerful networks and deep investment pockets (the so-called big techs). This combination of factors will most likely drive significant discontinuity in the banking sector.

This report analyses the competitive dynamics in major markets. The status quo is defined by continued dominance of traditional banking players, and a niche penetration by big techs and specialist fintech in most major markets. However, in a few major markets, the analysis highlights how the unique scale and “ecosystem” model of big techs has the potential to fundamentally change competitive dynamics in banking. We have spoken with a broad range of industry participants and policymakers across most major markets to gauge current views and challenges for the future.

This report raises important questions for policy-makers, banks and society in general. Big tech technology capabilities can bring benefits in customer outcomes and efficiency that can be put to good use for society — to serve inclusion, to fight financial crime, to improve the cyber and operational resilience of our financial system, to name a few. But they also raise new types of risks and challenge the traditional “vertical” (sector-oriented) model of regulation and supervision, which may no longer serve society’s best interest today.

The main question for banks is how to prepare for the possibility of a major incursion of the big techs

into their core markets, where this has not happened already. It is possible that big techs choose not to engage in core banking markets, but the general sense from our interviews it is not a question of if but when. Banks may therefore need to rewrite their past formula of success, and transform the way they serve customers, interact with third-parties and make the very fundamental strategic choices of whether they wish to compete as a "network" business model or compete in specific businesses serving others' network.

Financial services policy-makers — quite rightly — have prioritized COVID response and forebearance in the banking sector. However, there is a clear need to get on the front foot to support and shape an orderly modernization of the financial sector that will be required in the post-COVID economic and financial regeneration. The two extremes of policymaker response are unattractive: 1. unfettered, open competition with a blanket relaxation of participation rules will pole-axe weak banking business models and create financial stability risks and probably consumer protection issues; 2. high barriers to entry for non-banking players will slow down innovation and protract the existence of non-viable banking models. There is an optimal policy response somewhere in between the two extremes: this will require policy-makers to think differently with respect to competitive boundaries, accept higher uncertainty and faster responses and possibly re-think the institutional architecture that governs the intersection of financial services and technology sectors.

In a world that is understandably concerned with COVID response, we hope these insights highlight the risks of a disruptive change that could result from banking sector weakness and restructuring, and encourage policy-makers and the banking sector to invest time in shaping successful future business models and the orderly transition required.

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GAFAM now account for
5 of the 6 largest companies
in the world and represent
18% of S&P 500 market cap.
Apple alone is 3x larger than
JP Morgan Chase in market cap.

How will financial services markets look with their entry?

EXECUTIVE SUMMARY

BIGTECHS ON THE RISE

Technology and regulation are fundamentally changing the nature of financial services. One effect is the rapid growth of fintechs, which offer enhanced customer experiences, cheaper services, and more operationally efficient businesses.

Now, big techs[1] are gaining ground. In many ways they amplify the fintech proposition with their global scale, large customer bases, and cutting-edge technology. Big techs' sharp focus on customers' needs and experiences allows them to monetize core businesses easily. They create ecosystems to serve customers in all aspects of life, including finance, increasing their "stickiness" to their core platforms. Hence, their entry in financial services is largely in the retail and small- and medium-sized enterprise segments, and is very limited in corporate and investment banking. Much of what they offer charts new territory untapped by traditional banks, either with novel services or by addressing underserved or unbanked customer segments. In some markets, this "grows the pie," or increases the size of the market, for all players. Big techs in such markets operate mostly in customer-facing functions, analytics, and in providing infrastructure and digital capabilities such as cloud computing and artificial intelligence, with limited interest in more regulated activities such as deposit-taking. Nonetheless, many of these services are overlays on existing bank infrastructures and can, over time, substitute for traditional financial products and services.

Big techs' presence in finance is still nascent in absolute terms, other than in China and in specific niches in financial systems such as the United Kingdom and the United States (mostly payments and front-end functions). But in a new world in which data, digital, and customer-centric capabilities are key to winning, it is reasonable to posit that big techs can transform the economics and power relationships within traditional financial value chains permanently. To be sure, over the next six months, the economic downturn resulting from Covid-19 pandemic could disrupt the rise of big techs within financial services, even if the lockdowns encourage more people to switch to digital interfaces. Over the next decade, however, it is likely the role of big techs in financial services will increase, and that this trend will reshape the industry.

QUESTIONS FOR POLICYMAKERS

This possible reshaping of financial markets requires careful consideration by policymakers globally. Technology driven change and new competition from big techs and fintechs brings benefits to the system in customer outcomes, financial inclusion, innovation, and efficiency. However, it also creates new types of risks, diffuses accountability, and shifts risks outside

1 Big techs are defined by the Financial Stability Board as "large companies with established technology platforms and extensive established customer networks." (FSB — big tech in Finance — Market Developments and Potential Financial Stability Implications). In this report this is extended to classify the big techs' business model as one that aims to create (and concentrate) an ecosystem covering as many areas of customers' lives as possible.

the regulatory perimeter. Big techs' global scale also raises additional challenges related to market power concentration and consumer data protection, and possibly financial stability risks.

In most jurisdictions, big techs entering financial activities require the same licenses as any other market participant. For example, providing an online payment service requires a payments license and compliance with the associated regulatory requirements. These requirements typically have proportionality — that is, they are set according to an activity's risks, so that requirements for activities under a payments license are less stringent than those for a full-bank license that enables deposit-taking.

Two key issues arise, however, in analyzing how and where big techs position themselves in traditional financial value chains.

The first issue is that big techs frequently offer innovative products and delivery mechanisms that resemble regular financial activities but are not yet fully classified as such within the existing regulatory framework. Or, they offer services for which existing regulation is entity-based, making it unclear which requirements should apply if the activity is performed by different types of entities. For example, is peer-to-peer lending only intermediating payment transactions? Are the money balances in e-wallets and from online payments equivalent to cash or deposits for consumers? This influences the licenses, and hence the requirements, being applied to these activities.

The second issue is that a significant part of big tech activities may draw on data and dominant positions outside the financial sector, which are governed by cross-sectoral regulations (such as data or competition). These may still be under development or are still being enhanced by authorities to adapt to new market circumstances. Financial regulators have some established powers, rules, and supervisory practices on many of these areas, such as data, corporate governance, conduct, consumer protection, and anti-money-laundering (AML) and counter-terrorism financing (CFT). But they cannot be legally enforced outside a specific financial license.

The combination of these issues drives significant differences in how big techs, fintechs, and banks experience the regulatory landscape, both in the intensity of standards being applied to given activities as well as in the enforcement or oversight model. These areas of regulatory asymmetry, absent policy reform, could quickly, even if unintentionally, drive rapid changes in market structures and associated risk profiles.

POSSIBLE REFORMS TO REGULATE THE NEXT EVOLUTION OF THE MARKET

The legacy of the financial crisis of 2008 is that most of the regulatory focus to date has been on financial resources and the resilience of the financial system. It has also left well-established structures to harmonize and coordinate across countries on differences within the financial regulation remit. But new products, new operations, new business models, and new players are again testing the boundaries of existing regulatory frameworks and regulators' speed of response.

Regulation needs are increasingly cross-sectoral (including data, AML and CFT, cyber, and competition), for which supervision requires collaboration across countries' authorities as well as internationally. The unbundling of value chains across multiple players puts the traditional entity-based regulation under pressure, because it isn't always clear who should be accountable for which risk or activity. This is particularly acute with big techs given their cross-country, cross-sector (regulated and unregulated) activities and their tendency to partner with multiple parties. And there are few industry or supranational structures to start the discussion.

Authorities worldwide thus face the difficult challenge of ensuring that regulation and supervision protect consumers and systemic stability while also preserving the benefits of innovation and competition. Society's interests will be best served if the authorities can get on the front foot to support — and, where possible, shape — an orderly modernization and digitization of the financial sector. They need to adopt a forward-looking mindset to ensure new and complex risks are quickly identified and understood, that there are clearly defined criteria to determine which risks and activities need inclusion in the financial regulation remit, and that the regulatory framework enables flexibility and innovation for all market participants in line with countries' objectives and the risks that require mitigation.

To regulate the next evolution of the market, action could be considered in three areas:

Revise measures within financial regulation: Authorities need to update or expand the rulebook by defining the criteria used to assess which new products and services need inclusion in the regulated perimeter or agreeing on a common taxonomy. They also must decide on the regulatory format for new technologies and distribution mechanisms, such as strictly rules based vs. guidance. They should improve the proportionality in rulebooks across entities and activities, such as identifying and isolating activities and their risks, including systemic risks, and defining criteria to judge the appropriate sets of rules to apply to each activity. And authorities should aim to enhance consumer awareness on the levels of protection across products and players, such as increasing obligations on all customer-facing providers and embedding in product delivery such as in-app alerts.

Strengthen policy response on themes that cut across industries: This requires closer cooperation and coherence of the rulebooks enforced in finance and other key economic sectors. These include competition, such as revising how "market dominance" is defined beyond size and market share, ensuring fair access to infrastructures, and better regulating monopolistic practices. They also include financial stability (such as redefining threats and systemic activities to encompass critical infrastructure provision from banks and non-banks alike), data protection and exchange (for example, fostering common principles and standards across industries, defining specific rules for "financial data"), taxation, cybersecurity, and AML and CFT (ensuring clearer mandates, minimum requirements or regulations in non-financial sectors).

Extend finance-specific regulations to other industries where inconsistencies in regulation and enforcement have emerged: These include areas such as consumer protection and

corporate governance — for example, expanding good practices from financial conduct regulations to commerce, advertising, and other technology-based services. Likewise, minimum requirements for firm resilience and business continuity are necessary as well, for non-bank deposit-takers, availability of internet or cloud services, and so on. Standards imposed for publicly listed companies, market infrastructure providers, or entities performing activities in other regulated industries (such as energy) in part already have these. However, there may still be asymmetries in the level of regulatory standards given that the financial sector has had to define these in more detail (not least with the 2008 financial crisis), and in enforcing these on non-banks performing specific banking activities. This may also be the case when big tech enter markets as service providers to existing market players.

Most countries worldwide have developed sector-specific regulatory and supervisory models. Given the emerging technology-driven disruption in financial services, which big tech business models only amplify, this traditional approach may not serve society's interests. The actions discussed earlier will require a substantial rethink of institutional arrangements and policymaking frameworks (such as defining new mandates or new regulators, whilst avoiding increased complexity and overlaps), increasing cross-border and cross-sector cooperation arrangements (to enable exchange of data, best practices, and global principles), and strengthening capabilities within regulators (including analytics, tools, skills, organizational structures). For many authorities, reflection will be also warranted on the effects of technology-led disruption on the structure of financial markets and their functioning — and the extent to which they should deliberately have a vision for this and for their role.

BIGTECH AND BANKS FOR THE FUTURE

The global financial services industry is reaching a crossroads. The coming years are expected to bring disruptive market dynamics across the globe as banks and tech-led entities compete in various business activities previously typical to the financial sector. It will also bring benefits in customer outcomes and the digitization of the financial sector. It is possible that the Covid-19 crisis will accelerate the changes and put more emphasis on the need to clarify the relationship between big tech, banks, and other financial market participants as the regulatory spotlight — rightly — shifts toward crisis mitigation.

Banks still hold advantages in customers' trust, brand, capabilities in regulated parts of the value chain, and some historical data that could be leveraged. As fintech and big tech companies occupy their place in the market, it is important for banks to maintain these advantages — to keep making progress on their digitalization and innovation efforts, make targeted strategic choices on where to position in the market, and improve the ability to measure progress and profitability continuously for more agile actions. This will also enable developing a better customer-centric view that is at present a strong point of big techs.

Big techs also have the potential to become key contributors to the ongoing Covid-19 crisis response and post-crisis recovery, especially since rapid digital adoption is likely to drive

structural changes in the delivery of financial and non-financial services. This could include contributing to major functions in finance (such as operational resilience, access to internet or data, and fighting economic crime) and becoming partners to incumbents in some market segments. However, gaining trust from the public and governments will likely imply strengthening their own risk and compliance, culture, and accountability where required for the provision of financial services, and pro-actively engaging in the debate with regulators. If regulatory and supervisory reforms to adapt and manage this market transformation demonstrate good progress, the result will be financial services that better meet the needs of consumers and society.

01

BIG TECH IN BANKING

Over the last 10 years, technology has come to play a much greater role in financial services, both in the underlying operations and in the delivery of services to customers. One effect is the rapid growth of fintechs[1], primarily in the retail domain, offering enhanced customer experiences, cheaper services, and agile businesses that have attracted customers and allowed them to gain a space in finance value chains.

Now the big techs are gaining ground — developing financial offerings in-house, creating their own fintechs, or buying existing ones. The Financial Stability Board defines big techs as "large companies with established technology platforms and extensive established customer networks[2]." In this report this is extended to classify the big tech business model as one that aims to create an ecosystem covering as many areas of a customer's life as possible, becoming the customer's go-to platform for financial and non-financial services. They do so with a strong customer-first mentality, focusing on customer needs over and above specific products and providing unique customer experiences.

Consensual big tech definitions include Google, Apple, Facebook, Amazon, and Microsoft (coined "GAFAM") from the United States, as well as Chinese players such as Alibaba, Tencent, Baidu, JD, and Xiaomi (i.e. the "BATJX"). But other tech and telecom players are also showing a tendency to enter financial services with the same philosophy, typically with some regulated industry knowledge and a greater regional focus (such as PayPal, Uber, and Square in United States and Europe; Docomo, Rakuten, and Naver in Japan and Korea; and Vodafone and Orange in Africa). They are known collectively as the "regional players."

In many ways, these big techs amplify the fintech proposition already underway (see Exhibit 1).

First, they bring astonishing scale and growth. GAFAM now accounts for five of the six largest companies in the world and represents 18 percent of the S&P 500's market capitalization. To put this into perspective, Apple is three times larger than JPMorgan Chase, and is larger than the top 20 global fintechs combined by market capitalization[3]. And despite their massive scale, these big techs still achieve double-digit growth year-on-year.

Second, big techs enter financial services already with large and loyal customer bases, which reduces costs in sales and in customer acquisition. This enables big tech to collect and use large quantities of data cheaply for customized product offerings. For example, Facebook currently has 2.3 billion monthly active users, and Alibaba's Ant Financial has 28 million small- and medium-size enterprise (SME) users.

Third, big techs increasingly concentrate cutting-edge technology through huge research and development spending, aggressive mergers and acquisitions, and talent acquisition. GAFAM (except Facebook) now accounts for four of the global top 10 companies by research and

1 Fintech broadly refers to companies that "employ newly developed digital and online technologies in the banking and financial services industries," based on Merriam-Webster.

2 FSB — Big Tech in Finance — Market Developments and Potential Financial Stability Implications.

3 Both S&P Market Intelligence, consulted on 6th February 2020.

Exhibit 1. Comparison between Banks, fintechs and big techs (selected examples)

		Banks		Fintechs		big techs	
Overall scale and market power	Market cap of global top 20 players (USD BN), 2018		**~3,300**		**~360**		**~5,900**
	Annual avg. R&D spending[A] (USD BN) Selected top player, 2017–19	J.P. Morgan	**~11**	Monzo	**~0.03**	Amazon	**~20**
Current presence in financial services	# of users (MM)[B] Selected top player, 2019	ICBC	**600**	Klarna	**85**	Alipay	**~1,200**
	Payment value (USD TN)[C] Selected top player, 2018	J.P. Morgan	**~1-2**	Adyen	**0.2**	Alipay	**~15**
	Global new credit volume (USD BN) 2017		**~8,000**		**~400**		**~200**

Source: Company websites and annual reports, news articles, research paper, PBoC, Statista, iResearch, BIS, Dealogic, Oliver Wyman analysis

A JPM: technology investment per year (from company release); Monzo: R&D expenditure (OW estimate); Amazon: technology and content expense (from income statement).

B Metrics used: number of accounts for ICBC; number of end customers for Klarna; annual active user for Alipay.

C Merchant acquiring value for JP Morgan for comparability (i.e. excluding FX trading, cheques, etc).

development spend. Together they completed more than 100 M&A deals since 2012, worth more than $10 billion — Microsoft with LinkedIn, Amazon with Whole Foods, and so on. This enables big techs to offer unique customer experiences and digital interfaces that gained wide customer acceptance.

At the same time, in some jurisdictions they also seek to leverage or challenge (as appropriate) the market-making innovations of incumbents (such as technology standards set by the financial sector) and socialize their infrastructure costs by accessing central bank/government platforms such as public real-time payments networks.

But big techs differ from fintechs in at least three ways. Big techs' entry in finance is primarily driven by a strong focus on customers' needs and experiences. This makes the motivation more about monetizing existing core businesses and serving customers holistically than the financial service itself. For example, offering financial services enables big techs to reduce friction in e-commerce platforms (Amazon Pay, Alipay), increase the level of engagement in social platforms, and ultimately capture data to improve existing and new offerings. Rakuten's vision is to create a virtual marketplace of products and services that empower the lives of its members, and financial service is only one of the elements contributing to this ecosystem. Most have no interest in becoming a bank as of today, and financial services revenues account for a small part of GAFAM total revenues[4]. On average, return on equity for GAFAM and BAT are about 20 percent, compared with less than 8 percent for global systemically important banks[5], or GSIBs.

4 For example, according to annual reports, Amazon's non-core business accounted for only 4 percent of global net sales in 2018; Apple's services revenue (mainly iCloud and Apple Music) was 20 percent of the total in 2019, of which finance is likely a small part.

5 FSB — Big Tech in Finance — Market Developments and Potential Financial Stability Implications.

CASE STUDY

AMAZON'S CREDIT BUSINESS

Amazon began its lending business in 2015 with credit cards and the Amazon Credit Builder program in partnership with Synchrony Bank. In 2011, it entered merchant lending by launching Amazon Lending in the United States, offering revolving credit for small and medium sellers in the Amazon e-commerce platform using Amazon's own capital or bank partners' funding (for example, BAML). It scaled its activities to $1 billion in loan origination in 2018, the equivalent to a midsized national SME lender in the United States.

Amazon Lending uses SME transaction records on the platform to assess credit worthiness and to set optimal interest rates and credit limits. More transactions enable better understanding of risks and scoring in the future in a virtuous cycle, opening the opportunity for other targeted products and services such as cash management or factoring. Merchant SMEs, in turn, see their sales facilitated via the platform, encouraging higher volumes, more products, and higher retention. This facilitates growth for both parties. A similar principle applies to private consumers with credit cards. Despite this, it should be noted that Amazon Lending is not open to any customer; rather, merchants need to be offered a loan.

Comparison between traditional SME bank loan and Amazon Lending

	Bank SME loans	**Amazon SME lending**
APR/Fees	4 — 13% APR origination fee applies	10 — 14% APR no origination fees
Distribution channel	Mostly offline	Amazon seller platform (invite-only)
Approval time	Typically three to five weeks	five days
Credit assessment data	Credit bureau, financial statements, and so on	Business data (transactions, etc.) in the Amazon marketplace
Collateral	Typically required unsecured loan also available	Inventory to act as collateral
Prepayment	Penalty typically applies	No prepayment penalty

Source: CB Insights (2019), PayPal, bank websites, Oliver Wyman research

Nonetheless, this motivation is reinforced by high investor expectations for continuous rewards for outsized growth. This will necessarily drive big techs' businesses into adjacencies to their core businesses through their privileged data and share of attention for the most important customer needs.

In addition, big techs' sheer scale and power in the daily activities of consumers enables them to quickly deploy digital capabilities to new use cases in a test-and-learn fashion, quickly surpassing any fintech or incumbent in doing so. Not to mention that they are too big to be acquired by incumbents.

WHAT IS THE REAL NATURE AND SCALE OF OPERATIONS?

Given their ecosystem mindset for entering financial services, big techs have focused on retail and SME products that entail frequent customer contact and facilitate their core businesses, such as payments, e-wallets, and e-commerce consumer finance.

This targeted approach has allowed them to enter the market with specific, activity-based licenses such as e-money and small lending licenses. In general, there has been limited appetite from big techs to focus on activities or parts of financial value chains with high regulatory costs, in particular in activities related to deposit-taking that require full banking licenses. This implies that most financial services provided by big techs are "overlays" on top of incumbents' products and infrastructure, while big techs focus on the customer-facing layer. Payments is a good example here: Most mobile payment apps run on existing payment rails from traditional providers, and money balances are linked to traditional current accounts provided by banks. Apple Pay, for example, enables contactless payments via Apple devices but builds on participating banks' infrastructure and customers' current accounts with those banks, from which amounts paid are debited. Apple Pay is now available in more than 40 countries across numerous restaurants, shops, and online apps.

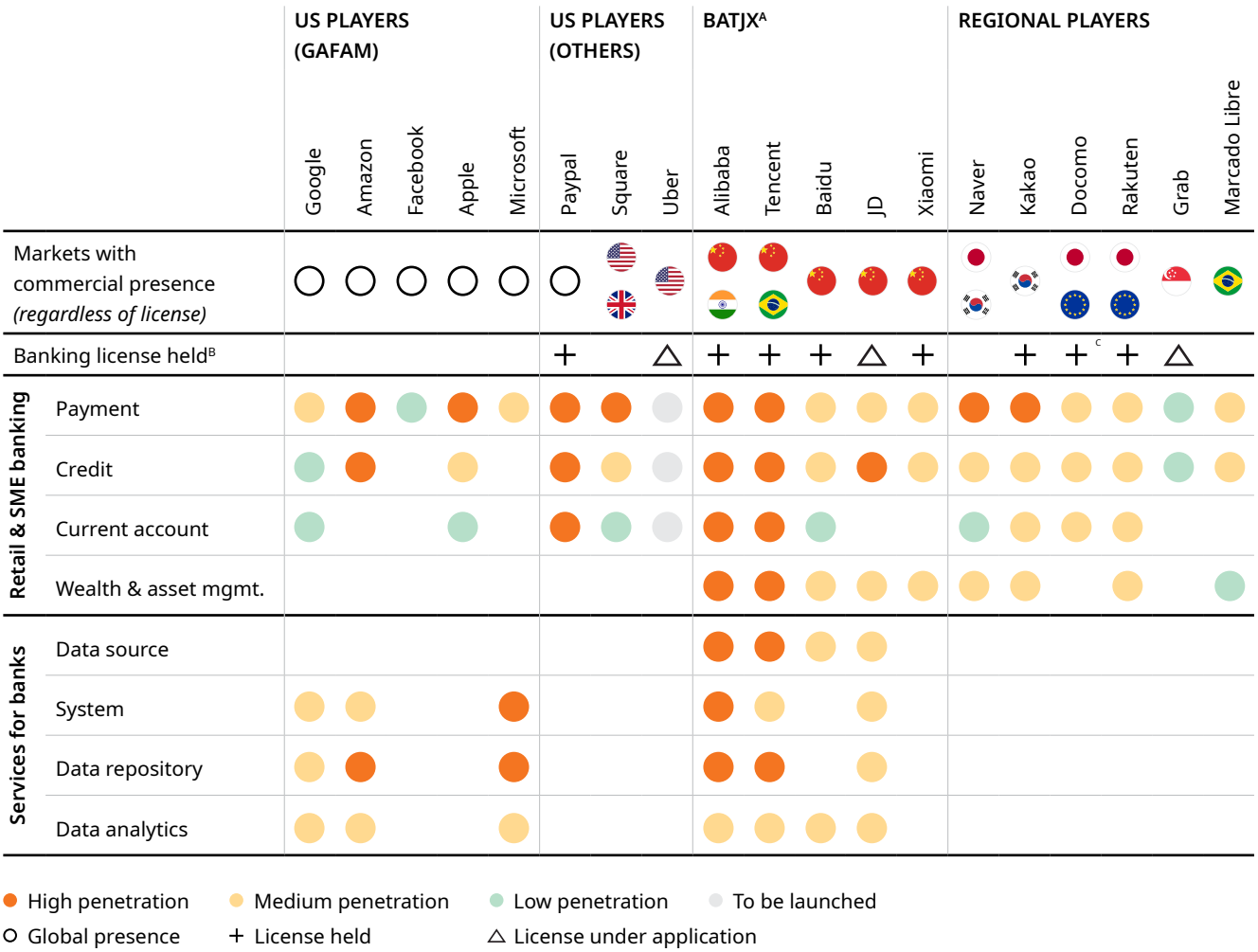
In turn, front-end activity in corporate banking, investment banking, and long-term lending has also so far been limited, due to the requirement of more complex and specialized financial expertise, larger balance sheets, as well as more sophisticated and customized needs. Although many fintechs support wholesale markets with targeted technology capabilities (as seen in foreign exchange and algorithmic trading), there is still a lack of interest from the big techs given the low level of adjacency to their core ecosystems. In China, big techs have some presence in asset management, but the main purpose is still supporting their retail financial services offerings. For example, Ant Financial owns 51 percent of Tianhong Asset Management, which manages the money market fund for Alipay, targeting mainly retail customers.

More broadly, big techs are also increasingly supporting banks via infrastructure and analytics services. Amazon's AWS is likely the dominant cloud provider serving financial institutions, in areas such as risk management, core banking systems, and AI/analytics[6].

6 Source: AWS

In practice, however, the highest penetration of big techs is in China and specific niches such as mobile payments in the United Kingdom and United States. There are still significant differences across regions and across all other product segments, and no globally dominant model has emerged. The exhibits below illustrate the big tech landscape.

Exhibit 2. Estimated big tech and regional player penetration along product segments



Note: Penetration rated qualitatively according to overall scale across the major operating markets of each player, with based on to user penetration, transaction volume, credit balance, and so on.

Source: Company disclosures, news and articles, Oliver Wyman analysis

A Including Paytm in India (owned by Alibaba) and Nubank in Brazil (invested by Tencent).

B PayPal holding regular bank license in EU; Square applying for bank license in US; Alibaba, Tencent, Xiaomi indirectly holding privately-owned bank licenses in China via JVs; JD applying private-owned bank license in China via a JV; Baidu indirectly holding regular bank license in China via a JV; Kakao indirectly holding virtual bank license in Korea via a JV; Docomo owning regular bank license in EU; Rakuten indirectly owning digital-only bank license in Japan via Rakuten Bank; Grab applying virtual bank license in Singapore via a JV.

C Docomo owns Privat Bank 1891 in EU with full banking license, offering online and mobile transaction banking services; but it does not have banking license in Japan.

Exhibit 3. Estimated big tech penetration along value chain functions

		PRODUCT DESIGN *Initial product idea* *Decision on loan terms and pricing*	**FINANCIAL RESOURCES** *Payment settlement* *Balance sheet for loans* *Deposit fund, asset management*	**INFRASTRUCTURE & FULFILMENT** *Payment clearing* *Credit risk management* *Operation & trading* *IT infrastructure*	**PRODUCT DELIVERY** *Payment authentication and approval* *Loan disbursement* *Deposit fund transfer processing*	**CUSTOMER ANALYTICS** *Providing data* *Analytics engine (e.g. artificial intelligence)*	**CUSTOMER INTERFACE** *Customer aggregation platform/portal* *Payment tokenization ("X-pay")*
PAYMENT	GAFAM	Medium	Low	Low	Low	High	High
	BATJX	High	Medium	Medium	Medium	High	High
	Regionals	Medium	Medium	Low	Medium	High	High
CREDIT	GAFAM	Low	Low	High	Medium	High	High
	BATJX	High	Medium	High	High	High	High
	Regionals	Low	Low	Medium	Medium	Medium	Medium
CURRENT ACCOUNT	GAFAM	Low		High	Low	Low	Low
	BATJX	High	Medium	High	Medium	High	High
	Regionals	Medium	Medium	Medium	Medium	Medium	Medium
WEALTH AND ASSET MGMT.	GAFAM						
	BATJX	Medium	Medium	Medium	Medium	High	High
	Regionals	Low	Low		Low	Medium	Medium

● High penetration ● Medium penetration ● Low penetration

□ Areas where big techs have competitive advantages showing higher penetration on average

Note: Penetration rated qualitatively according to overall scale across the major operating markets of all players in the category, with reference to user penetration, transaction volume, credit balance, and so on.

Source: Company disclosures, news and articles, Oliver Wyman analysis

MODES OF INTERACTION WITH INCUMBENTS

Finally, it's worth highlighting that the differences observed across regions, market structures, and product segments make for a diverse mix of models of how big techs interact with incumbents.

Most often, big techs offer financial services in unchartered territory — that is, in segments of the market with low penetration of incumbents, in some cases growing the pie, or market size, for all participants. This can be seen as a "blue ocean" market entry, which can be via:

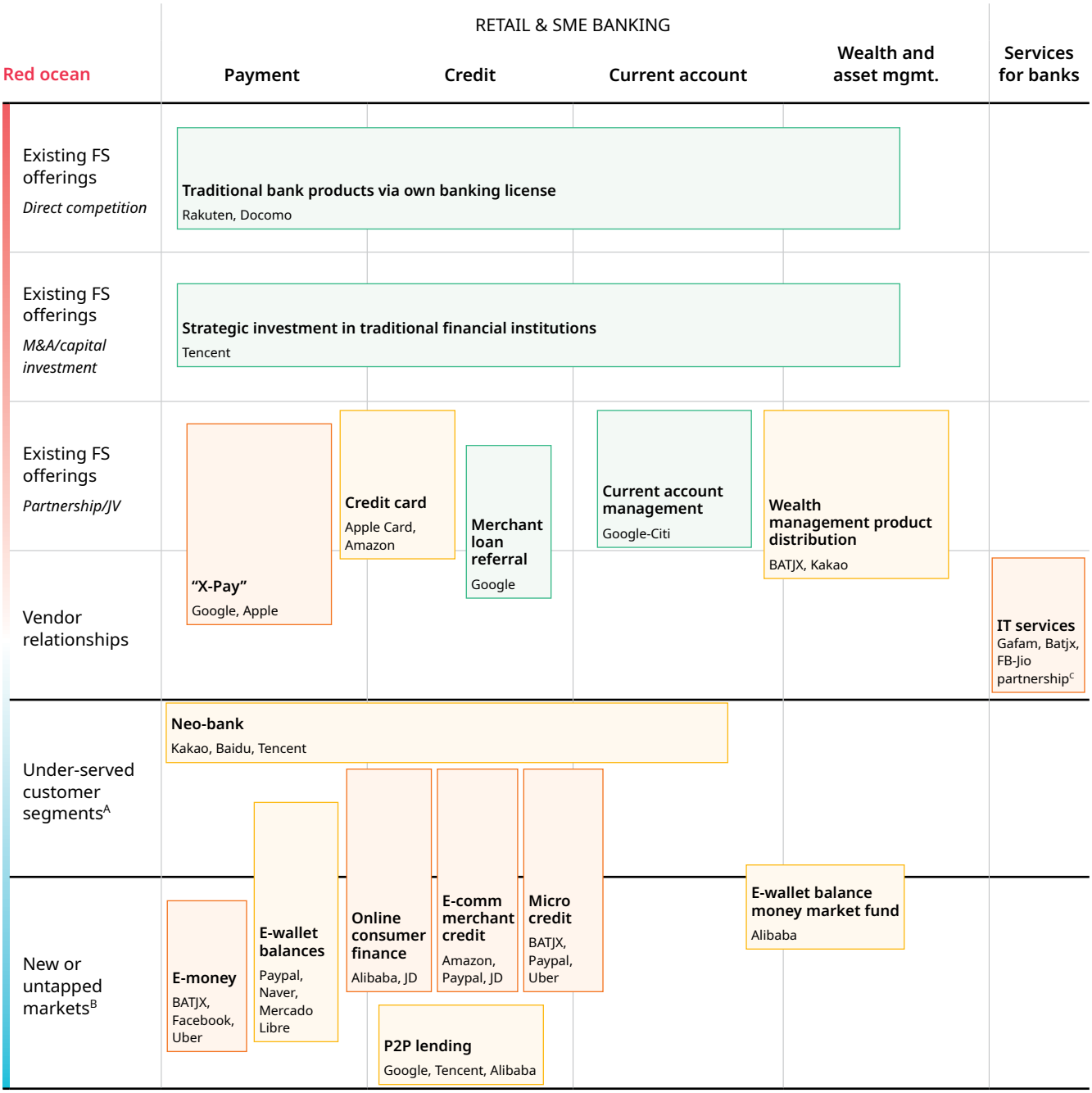
Creating new markets and new segments: With new innovative products and technology, which have a limited substitution effect to the traditional banking services, at least in a first stage (e-wallets, peer-to-peer, cryptos, and so on), big techs can gain entry into markets. For example, when Alibaba introduced Alipay in China, it substituted small cash transactions and did not have direct competitors because Chinese banks at that time did not offer e-wallets services or provide similar services. This may change over time as customers get used to substituting existing products with new ones.

Entering underserved or untapped customer segments: Big techs have filled demand gaps in products traditionally not served by incumbents. For example, Amazon offers merchant lending to small sellers in its marketplace platform who might not have accessed a bank loan due to insufficient accounting records. In China, big techs offer microcredit for unbanked rural populations and financing for small merchants with no formal accounting records[7].

Less often, big techs enter financial services to compete directly with incumbents, in market segments where they already have significant penetration — which can be seen as a "red ocean" market entry. For example, Alipay and WeChat Pay are competing for banks' market share in merchant acquiring business. Big techs also can act as investors in financial firms, sometimes acquiring them outright, as with Alibaba's purchase of the traditional property insurer Cathay Insurance. More common are partnerships or joint ventures. As noted earlier, big techs typically seek to provide the customer-facing parts of the value chain, leaving banks with the more heavily regulated functions. This relationship is exemplified by the Google-Citibank and Apple-Goldman Sachs partnerships. In some cases, banks could also act as the funding partner — for example, banks in China fund microloans to individual consumers and SMEs via WeBank, a digital bank partly owned by Tencent (see case study). Finally, big techs act as suppliers (vendors) for incumbents, providing them with specialized services such as cloud computing, data analytics, cyber security, and disaster recovery. These observed modes of interaction were mapped in the exhibit below along key product lines.

7 For example, according to their annual reports, Alibaba's MyBank provided digital banking services and micro-loans to 12 million SMEs, and Tencent's WeBank has loaned out RMB50BN to 29 poverty municipalities in 2018.

Exhibit 4. Estimated big tech mapping per mode of interaction



Note: This charts aims to show the aggregated overview of big tech's presence and penetration globally across all markets (not only the country of license); Penetration rated qualitatively according to overall scale across the major operating markets of all players in the category, based on user penetration, transaction volume, credit balance, and so on.

Source: Company disclosures, news and articles, Oliver Wyman analysis

A Refers to segments that were previously not reached by banks (e.g. unbanked population, online scenario-based financial services.
B Refers to new product or services which were not offered by banks before and have low substitutability to existing bank offerings.
C Partnership is broader than financial services and only recently announced, but could be reflected for instance in Payments via JioPay.

CASE STUDY

Partnership model in payments

APPLE CARD

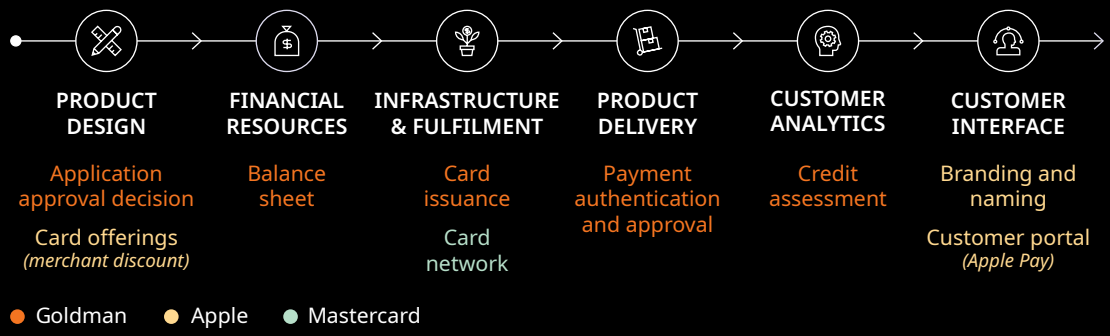
"A future in which every payment is made this way" — Tim Cook, CEO of Apple

Apple launched its credit card, Apple Card, in partnership with Goldman Sachs and Mastercard in August 2019. While not totally new, Apple Card is generating excitement with customers especially given deep linkages with Apple's ecosystem. According to Bloomberg, Apple Card lent out about $10 billion and reached a credit balance of $736 million by the end of September 2019[1].

According to Apple's website, customers can apply via their iPhones and receive a virtual Apple Card in minutes. The card has zero fees, provides daily cash back and monthly installment options for Apple product purchases, and enables real-time interest and spending analytics to consumers on the Wallet app. Customer inquiries are handled by Siri's AI 24/7, and Apple Pay's proprietary technologies such as Face ID or Touch ID are layered on card-brand specified (EMVCo) payment tokens to enable a high level of security and privacy.

Apple focuses on customer facing activities, expanding user retention with a new offering. Goldman Sachs provides the core banking services, including the balance sheet, application approvals based on real-time algorithmic credit assessment, and payment settlement and authentication. This allows Goldman Sachs to tap Apple's customer base and branding for marketing, growing in the retail banking market. Moreover, the partnership with Mastercard can ensure wide acceptance of Apple Card across different merchants.

Illustration of value chain for Apple Card



1 Source: Bloomberg — Goldman Hands Out $10 Billion in Credit Lines for Apple Card

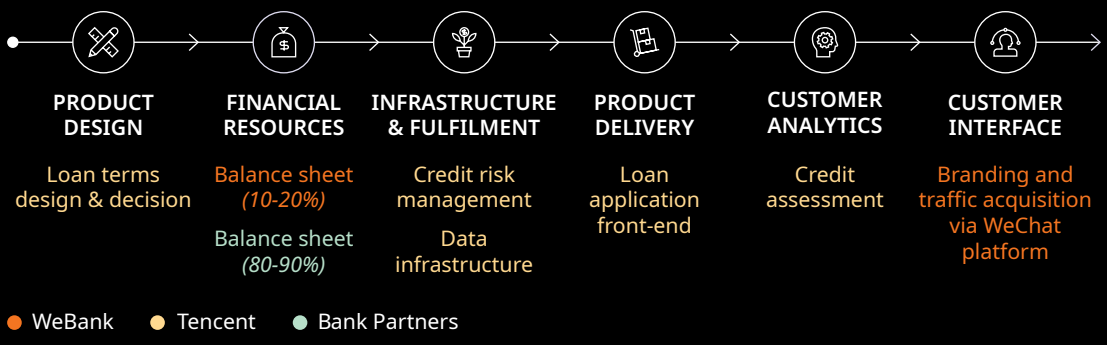
Partnership for distribution

CHINA'S WEBANK

WeBank is the first digital-only bank to obtain a banking license in China. It was co-founded by Tencent together with other companies. Tencent provides the automated credit assessment and loan decision algorithm, its cloud-based data warehouses, and its WeChat platform for traffic acquisition. WeBank has no physical branches and is fully integrated in the WeChat platform, providing online current accounts, micro loans, SME loans, and auto loans. The loans are funded by WeBank and by a panel of more than 10 traditional banks, which thereby reach hundreds of millions of users nationwide.

WeBank scaled rapidly and reached RMB120 billion worth of loans and RMB155 billion in deposits by the end of 2018, thanks to WeChat's huge user base. Also, WeBank managed to achieve 24 percent return on equity in 2018[1], given the favorable agreement with funding banks. (WeBank contributes 10 percent to 20 percent to the funding of loans, and receives 15 percent to 30 percent of total interest income, according to analysts.)

Illustration of value chain for WeBank's consumer small loan



1 Source: WeBank's annual report

02

THE GLOBAL REGULATORY LANDSCAPE

The financial crisis dominated the regulatory agenda for much of the past decade, with financial stability and prudential soundness concerns ruling the day. But recent trends on technology, an economic boom, and new customer demands have pushed the agenda to cross-cutting risks such as cyber, fraud, and money laundering.

In most jurisdictions, finance is now shaped by a combination of regulations specific to the financial industry (that is, clearly within the mandate of financial regulators) and cross-sectoral regulations whose mandate is determined partly by other regulators in society. The main categories can be broken down into finance specific and cross-sectoral or "horizontal" regulations.

FINANCE-SPECIFIC REGULATIONS	
Financial stability	frameworks around systemic institutions, recovery and resolution, and operational resilience (to minimize contagion and systemic impact from institution failures)
Prudential	requirements on capital and liquidity to ensure firms' resilience to shocks in economy, prudent risk-taking behavior, and robust risk management
Conduct and customer protection	standards on firms' and employees' internal and external conduct, selling practices, pricing, fair treatment of customers, and market integrity

CROSS-SECTOR OR HORIZONTAL REGULATIONS	
Competition and antitrust	frameworks around collusion and cartels, market dominance and monopoly, control and reporting over merger and acquisitions, and use of intellectual property
Data privacy and management	standards on data security, data sovereignty, data management (collection, retention, use), and cross-sector or cross-border exchange or interoperability
Corporate governance	standards on roles and responsibilities of boards of directors and management, employee accountability, and rules to monitor and prevent conflict of interests
Economic and financial crime	including standards to perform adequate due diligence and know-your-customer processes, manage AML and CFT risks, and prevent fraud and other economic crimes
Cyber security and resilience	frameworks and standards for minimum security requirements in critical infrastructures

Across regions there are, of course, already wide differences in how these regulations are applied that are independent of big tech entry, such as differences in legal perimeter, stringency, and strength of enforcement. Rather, they reflect local markets' specificities and maturity (such as penetration of financial services), policy objectives (competition, innovation), and proportionality (such as where requirements are applied to different licenses, activities, or entities commensurate with their risks). An obvious result of this landscape is that financial institutions themselves experience different, sometimes overlapping, regulatory frameworks across the countries in which they operate, often for similar business offers.

In addition, banks and non-banks also experience differences in regulation, both across and within countries. This is largely driven by choices in market positioning and activity mix within finance, which requires different licenses (in the case of financial regulations), as well as by the diversity and importance of their non-financial activities (in the case of cross-sector regulations). Table 1 below provides some examples.

Table 1. Some examples of differences in regulatory frameworks

	BANKS	NON-BANKS IN FINANCE (INCL. BIGTECHS)
CROSS SECTOR REGULATION		
Competition and antitrust	Subject to general competition laws per jurisdiction of operation (largely based on legal entity established per jurisdiction, covering full range of activities); supervised by jurisdiction-specific competition authority. Differences exist in legal regimes (for example, in the US and EU, laws cover merger activities control, but not the case in Hong Kong[1]).	Subject to general competition laws per jurisdiction of operation, equal to other financial and non-financial firms (see text at left); supervised by jurisdiction-specific competition authority. In the EU, there have been recent high-profile competition cases against big tech[2]. However, market power tends to be assessed by size or market share and per "vertical" industry or product, and not by activities or customer needs. For example, providing free services and monetizing non-financial data for financial products may not be regarded as anti-competitive in US law.
Data privacy and management	Subject to cross-sector data regulations defined per jurisdiction of operation. Some regulations may be applicable per entity to all activities (such as the EU's GDPR), while some may have a narrower scope (California's CCPA). The enforcement model varies across proactive supervision (such as by data authorities) vs. enabling individuals to take legal action only for data breaches. Differences are significant across jurisdictions as this is a rapidly evolving area. (For example, the EU's GDPR has a greater focus on consent for data collection, vs. the US's CCPA with a sharper focus on transparency and opt-out mechanisms[3]; Open banking type of data sharing is reciprocal in Australia's CDR framework, but not in the EU's PSD2, UK's Open Banking, or Japan's Open API). Another example is cross-border data exchange, such as EU countries promoting cross-border free flow of data while China and India limit storage of financial data within domestic borders. In addition, entities under financial sector licenses may be subject to specific or stricter requirements on data from financial regulators, which are typically applied with proportionality to each type of license. These relate to data quality, governance, usage in modelling, and other use cases (e.g. BCBS239 in Europe, AIRB modelling requirements, Gramm-Leach-Bliley in US). In addition, banks operating across countries abide by different local regulations, but "home" supervisors tend to hold the full group to the same standards as the home jurisdiction (or whichever stricter).	Subject to cross-sector data regulations defined per jurisdiction of operation, equal to other financial and non-financial firms (see text at left) for scope of regulation and enforcement model. Where non-banks are operating under financial sector licenses, they would be subject to the same specific or stricter requirements on data applicable to those licenses, as defined by the local financial regulators. However, differences in country regulations and for financial and non-financial sectors may drive inconsistencies where big techs are operating across different types of activities (for example, the Gramm-Leach-Bliley Act in the US demands customer authorization for sharing financial data outside a given company. If, however, financial data is shared from banks to non-banks, or produced by non-banks operating across different sectors, it could be used by non-banks for non-financial activities such as advertising, which may not be desired by customers). Non-banks operating across different jurisdictions may abide by different local regulations, with a choice to uniformize standards across group activities. Some big techs have in fact stated in public media that they could extend the (stricter) GDPR requirements they are subject to in the European markets to their global operations (Facebook, Apple, Microsoft).
Corporate governance	Subject to cross-sector corporate governance standards and codes defined per jurisdiction of operation, often reflecting cross-border principles (OECD BCBS). In addition, listed banks would be subject to additional requirements and supervision as per local securities or exchange regulations. The enforcement model varies, as securities regulators may not have the same resources as bank regulators[4] and some codes may be self-enforced. Entities under financial sector licenses would also be subject to specific or stricter requirements and supervision from financial regulators, applied with proportionality (such as the UK's senior manager regime).	Subject to cross-sector corporate governance standards and codes, as well as listed company governance requirements as bank entities (see text at left). Where non-banks are operating under financial sector licenses, they are subject to the same corporate governance requirements and supervision applicable to that license, as defined by financial regulators. However, the set of requirements would be confined to the activities performed under the license held and would not extend to other non-financial activities the entity may conduct.
Economic and financial crime	Subject to AML and CFT regulations and supervision as defined per jurisdiction of operation. National legislation reflects common global standards as defined by the FATF, but differences exist in legislation as regards implementation and enforcement, as highlighted by FATF peer reviews. Global FATF standards and national legislation entail AML and CFT requirements for financial and non-financial sectors, defining a set of entities that have specific obligations for AML and CFT under national law. In line with a risk-based approach as recommended by FATF, financial sector regulators typically impose on banks stricter regulation and supervision for AML and CFT given their higher exposure to ML and TF risks. Requirements typically apply with proportionality per type of license held or financial activity performed, and most if not, all financial firms are deemed "obliged entities" under AML and CFT laws.	Most technology and pure retail companies are not formal "obliged entities" under national laws, with specific AML and CFT requirements and supervision (though they can still be legally prosecuted for ML and TF as any other economic agent), and also because typically activities performed have lower or limited exposure to ML and TF risks. As such, AML and CFT requirements and supervision would apply to non-banks depending on the specific activities they perform, but not to the legal entity as a whole. Where non-banks are operating under financial sector licenses, they are subject to the same AML and CFT requirements and supervision applicable to that license, as defined by financial regulators (lending, payments, and so on). However, the set of requirements would be confined to the activities performed under the license held, and would not extend to other non-financial activities the entity may conduct. Equally, if non-banks are listed, requirements from the securities regulator may apply to the listed entity.

FINANCIAL REGULATION		
Financial stability	Subject to financial stability requirements as defined by financial regulators per jurisdiction, and these reflect globally agreed standards and often coordinated actions via supra-national bodies such as the FSB. These define a framework for assessing systemic institutions at a domestic and global level; where banks are deemed systemic, additional requirements and enhanced supervision applies. Systemic institutions are typically defined based on potential contagion risks to the financial system in case of failure (for example, size, interconnectedness, and critical services provided to economy), but less so on infrastructure or IT. Note these exclude non-bank financial entities (such as payments entities).	No specific financial stability requirements applied on entity (no equivalent definition of systemic institutions for non-financial companies).
Prudential / firm resilience	Subject to prudential requirements as defined by financial regulators per jurisdiction, which also reflect globally agreed standards such as Basel III. Differences exist in specificities and speed of implementation of local laws (such as capital requirements for equity investments in funds not implemented in Australia and the US)[5]. Prudential requirements are typically applied with proportionality, stricter and applicable to the full range of activities conducted by the entity for full-bank license holders (i.e. deposit-takers) vs. holders of lending-only licenses.	No specific prudential requirements applied on entity, though non-banks are subject to any prudential requirements applicable to the financial sector licenses held (such as for lending activities, or full-bank license).
Conduct / customer protection	Subject to conduct and consumer protection requirements and supervision as defined by financial regulators per jurisdiction, which can be supplemented by cross-sector consumer protection standards (such as, in the US, the Consumer Financial Protection Bureau). Differences exist across countries in the extent and applicability of regulations per entity (for example, in US, strict separation of commercial and banking activities for consumer protection).	No specific consumer protection requirements are applied on the entity, though non-banks are subject to any consumer protection requirements applicable to financial sector licenses held (payments, lending, and so on). These can be supplemented — and where so, applicable to the range of activities conducted by non-banks — by possible jurisdiction-specific cross-sector requirements (for example, from a consumer protection agency, connected to e-commerce and advertising) or by listed companies' requirements.
TECH REGULATION		
Areas of tech-only regulations	Subject to the same regulations as non-banks if conducting such activities.	Subject to cross-sector regulations such as on content or misinformation, advertising, and e-commerce per jurisdiction of operation (China has regulation on false advertising and fake news; the EU banned geo-blocking; India has rules on e-commerce platform neutrality).

1 Source: OECD — Competition Law in Asia-Pacific

2 For example, in the European Union, Google has been found guilty of antitrust behavior related to Google Shopping and the Android operating system, with fines of more than €8 billion since 2010. See European Commission website.

3 Source: Future of Privacy Forum — Comparing Privacy Laws: GDPR vs. CCPA

4 See for example OECD's Corporate governance peer review.

5 Source: BIS — Seventeenth progress report on adoption of the Basel regulatory framework

Source: Interviews and interactions with IBFed members, regulator websites, Oliver Wyman analysis

CASE STUDY

DIFFERENCES IN DATA REGULATIONS

Recent news about data misuse has exposed vulnerabilities created by differences in data regulations across players, sectors, and regions. Policymakers are working to improve data regulation but converging on common international principles remains difficult. The key issues are:

Ensuring data sovereignty — that is, individuals' ability to understand and control the location, sharing, and use of data about them. Not all jurisdictions have legally binding standards for data consent, allowing businesses to collect and monetize customers' data (for example, through advertising or product design) without their explicit consent or disclosure.

Appropriate collection, retention, and use of data to avoid immoral, anti-competitive, or discriminatory practices from individual and business users of data. While these matters are at least partly supervised in financial firms under existing regulations (such as for consumer protection), technology firms may lack similar oversight. For example, the US Gramm-Leach-Bliley Act restricts data usage to applications within the financial institution that collects them.

However, financial data collected by non-banks (such as via bilateral partnerships) could in theory be used freely within their organization for other purposes, such as advertising or price discrimination.

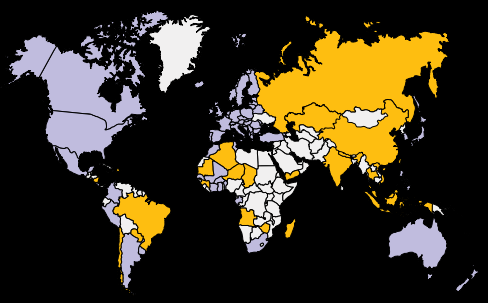
Appropriate data availability, portability, and interoperability as access to banks' financial data is opened up to different parties to promote competition, innovation, and cost savings. In some "open banking" jurisdictions, such as the United Kingdom and European Union, banks are required to share the data of consenting customers with third-party providers, but these non-bank parties have no similar obligation. This may create an advantage for non-banks, including big techs, using customers' financial data to compete with bank offerings.

In addition, differences also exist in oversight in practical terms, given that some "vertical" or industry sectors created specific data-related requirements for their supervised entities, which they enforce on top of standards defined by data protection authorities. This is the case for the financial sector, and may be tied to capital requirements.

Global data protection regulations (non-exhaustive)

- Data protection laws and authority in place
- Data protection laws in place, but no dedicated authority
- No specific law

Level of data protection



Selected examples of data regulations

- General Data Protection Regulation (GDPR)
- Data Protection Act
- Act on Protection of Personal Information (APPI)
- California Consumer Protection Act (CCPA)
- Personal Info. Protection and Electronic Docs. (PIPEDA)
- Consumer Data Right (CDR)
- Personal Data Protection Act (PDPA)
- Personal Data Protection Act

Source: CNIL, Oliver Wyman analysis

Regulatory frameworks do evolve with market developments, albeit with a time lag. The financial crisis of 2008-09 is an example of efforts to reduce these differences — in particular, prudential regulation, which was only stabilizing recently up to the Covid-19 crisis. Within financial regulation, the crisis legacy has in fact left well-established structures to harmonize these differences and cooperate across regions, via supranational bodies as such as the Financial Stability Board and the Basel Committee on Banking Supervision.

But new products such as peer-to-peer loans; new operations such as AI and the cloud; new players like fintechs, big techs, and telecoms; and growing cross-sector and cross-border businesses are again testing the boundaries of regulatory frameworks and regulators' speed of response.

In some cross-sectoral areas, such as data, attempts to define common principles are underway. However, the lack of national and international bodies, especially relating to technology, could promote a convergence of dialogue and standards of the kind that occurred in financial services after 2008. Nevertheless, many regulators are independently responding to these challenges, and some common initiatives are emerging (see Table 2 for some examples).

HOW THIS LANDSCAPE EXPLAINS BIG TECH'S ENTRY IN FINANCIAL SERVICES

As noted in the previous section, big techs' entry into financial services is motivated by a desire to make the most of their vast customer bases and their competitive strengths in data, analytics, and providing hassle-free user experiences. This explains the range of products they offer and the part of the value chain in which they operate, rarely in more heavily regulated activities such as deposit-taking. Their primary motivation does not seem to be regulatory arbitrage, or exploiting differences across regions or types of activities.

In theory, such differences exist only to a limited extent. In most jurisdictions, banks and non-banks are subject to the same licenses and associated regulatory requirements when performing the same activities. For example, a non-bank providing online payment to consumers must do so under a payment license and comply with the license requirements. These requirements typically have proportionality — that is, they are set according to an activity's risks, so that requirements for activities under a payment license are less stringent than those for a full bank license that enables deposit-taking.

In practice, however, non-banks such as big techs offering financial services may find themselves facing different regulatory requirements, for two main reasons.

The first is that big techs frequently offer innovative products and delivery mechanisms that may fall outside the scope of existing financial regulations. This may be because they resemble existing financial services but are not yet fully classified as such within the existing regulatory framework. Or it may be because some regulation is entity-based, making it unclear which requirements apply if the entity providing them has a different license than that traditionally used to perform that activity. For example, is peer-to-peer lending actual "lending" or just intermediating payment transactions? Are e-wallet and online payments money balances

Table 2. Example of common recent initiatives by regulators

Sandbox / innovation hub	Most markets are operating, launching, or have announced plans to set-up regulatory sandboxes such as the FCA's regulatory sandbox, US CFPB's plans to form a regulatory sandbox, Canada's OSC Launchpad, China's fintech Application Pilot Area, India's announced regulatory sandbox framework, Japan's Regulatory Sandbox Framework[1] and fintech Proof-of-Concept Hub[2], and Brazil's Lab of Financial and Tech Innovation, among others.
Dedicated support for fintechs	Most markets are launching dedicated support services or "hubs" to support fintechs, such as the FCA's innovation hub, US's Lab CFTC and OCC Office of Innovation, Japan's fintech Support Desk, Korea's Centre for Creative Economy and Innovation, India's IFWG, and South Africa's fintech programme, among others.
Open Banking	Only selected markets formally have open banking-types of frameworks in place, but many report it as a key topic under consideration or with established plans to launch. Examples include the EU's PSD2 and UK's Open Banking launched in 2018, followed by Australia, Hong Kong, Japan, and India. Brazil is planning to launch Open Banking in 2020. In addition, the UK is exploring additional developments for a broader "open finance" framework covering a wide range of financial data, such as savings, pensions, and investments[3]; the EU is also exploring such possibility under the Digital Finance consultation.
Payments systems participants	Some mature markets are opening interbank payment systems to non-bank players. For example, the UK is allowing non-banks to participate in RTGS System, and Korea is opening up interbank payment system to fintechs. Other authorities are actively developing instant payment systems. Examples include Australia's New Payments Platform, India's UPI, Brazil's Instant Payment, Japan's More Time System of Zengin System[4], South Africa's National Payment System Framework, and Canada's plan to set up a new real-time rail that would be opened up to support regulated non-bank payment service providers. Authorities are also strengthening supervision over third-party payment. For example, Canada proposed new retail payments oversight framework to cover non-bank payment service providers, while China established NetsUnion as a clearinghouse for online payment.
Data protection and privacy	Most markets are carefully analyzing needs for adaptation to data regulations. The US is considering a Data Protection Act on federal level; many already have launched cross-sector data protection laws (such as EU's GDPR, India's PDPB, Brazil's LGPD, Japan's APPI, and South Africa's POPIA).
New or changed licenses for new entrants	Singapore, Hong Kong and Korea introduced virtual banking licenses specifically targeted at new, digital-enabled players (which may be bank or non-bank players) — see also case study in last section of report. Other markets are introducing changes to existing licenses, such as the US OCC accepting non-bank applicants for bank charter, and India's Payment Bank license.
Competition	Some authorities increasingly are taking digital economy elements into consideration. For example, the European Commission's DG Competition conducted work on competition in the era of digitalization, Germany revised criteria in assessing market power, and India introduced an e-commerce platform neutrality regulation.
Tax	Some authorities increasingly are taking digital economy elements into consideration. For example, the European Commission's DG Competition conducted work on competition in the era of digitalization, Germany revised criteria in assessing market power, and India introduced an e-commerce platform neutrality regulation.
AML/CTF	Many countries are already strengthening their AML and CFT regulation and supervision for non-financial sectors and entities as well as new financial products. For example, the EU and Japan introduced legislation on cryptocurrencies, and China increased requirements on third-party payment companies to report large transactions. Others are enhancing information sharing beyond banking, such as the US FinCEN Exchange.
DLT, virtual currencies, central bank digital currencies	Most authorities reporting internal studies ongoing to analyze use of DLT technology and virtual currencies, issue legislation, or consider establishing central bank digital currencies. For example, China set up the National Standardization Technical Committee for Blockchain and DLT, while banning all private ICOs; the ECB formed a group with other central banks and the BIS to assess the case for developing national digital currencies.
Digital operational resilience and cybersecurity	The importance of resilience is gaining ground in international dialogue, for example with the G7 recognizing that the interconnectedness of the global financial system requires a strategically aligned approach to cybersecurity at international level. The EU has also recently taken the initiative to design a comprehensive legislative framework for the resilience of financial services that will cover different sectors.

1 www.jetro.go.jp/ext_images/en/invest/incentive_programs/pdf/Detailed_overview.pdf
2 Japan FSA newsletter.
3 FCA — Call for Input: Open finance.
4 Bank of Japan announcement.

Source: Interviews and interactions with IBFed members, regulator websites, Oliver Wyman analysis

CASE STUDY

OPEN BANKING — LESSONS LEARNED

In 2018, the European Union and United Kingdom were the first jurisdictions to implement open banking regimes under which banks are required to share the data of consenting customers with third-party providers. Australia and Hong Kong have launched similar regimes, and other countries have announced plans or are studying options. Despite differences in scope, rules, and legal applicability (see exhibit below), the overarching aim is to increase market competition and innovation of products and services.

Two years since the launch in the United Kingdom and European Union, a range of fintech players have entered the market with new services. Incumbents have also taken advantage of the regime. In the United Kingdom, for example, HSBC and Lloyds Bank have launched account aggregation solutions in their mobile apps. However, banks typically incur significant costs to implement the required IT infrastructure to enable data-sharing and to take advantage of the regime themselves. This has caused implementation to fall behind schedule in the United Kingdom[1], [2]. Other markets, such as Australia, have also experienced delays due to technical or security issues. And consumers are not yet fully aware of the initiatives. A 2019 survey revealed that only a third of UK consumers knew about open banking[3].

Promoting competition through open banking or similar initiatives is likely to remain a regulatory priority. But many challenges will need to be addressed — for example, concerning reciprocity in data sharing from third parties back to banks, supervising the misuse of data (especially if shared outside the perimeter of financial regulation), and security risks including on cross-border flows. In many markets, the practical implementation of Open Banking regimes has raised additional questions in terms of consumer protection and control — for example, relating to the security of the technologies used for data sharing (such as screen scraping vs. APIs) or the permissioning systems those technologies entail, including to revoke sharing at any time. This has led many to question whether customers are as empowered and in control of their data as they think.

1 The nine mandated banks in the UK have spent £1.5bn on the preparation of Open Banking, according to UK Finance. In the EU, more than 40 percent of the banks failed to get ready for the implementation by the original deadline stipulated by regulators.

2 In the UK, six of the nine mandated banks have missed the original Jan. 2018 rollout deadline.

3 CREALOGiX — UK Consumer Survey Report 2019.

Open Banking initiatives around the world

Initiative	Status	Mandatory?	Data provider	Scope of data shared	Mode of data sharing
CMA's Open Banking	Launched	Mandatory for 9 largest banks	Banks	Current account	Shared to third-party from financial institutions unilaterally
PSD2	Launched	Mandatory	Banks Online payment providers	Current account Flexible saving account Credit card	Shared to third-party from financial institutions unilaterally
Consumer Data Right (CDR)	Launched (in phases)	Mandatory	Banks Energy companies Telcos	Current account Credit card Loan and mortgage	Shared between all sectors
CFPB Principles	Launched	Mandatory	Financial institutions	As decided by the consumer	Shared to third-party from financial institutions unilaterally
HKMA open API framework	Launched (in phases)	Voluntary	Banks	Information Product and service Account info. (future)	Shared to third-party from financial institutions
UPI & DEPA	Piloted	Voluntary	Regulated financial institutions	Bank account Mutual/pension fund Insurance	Shared between regulated financial institutions only
BCB's Open Banking	Launching in Q3 2020	Mandatory for 10 largest banks	Banks Third-party provider	Deposit, loan, credit card, Insurance Information Account & customer	Reciprocal sharing between parties
FSA's open API policy	Launched	On a best effort basis	Banks	Bank account	Shared to third-party from financial institutions unilaterally
FSC's Open Banking	Launched	Mandatory	Current stage: no data sharing yet (only allowed fintechs to access banks' payment system)		

Source: Regulator websites, news articles, Oliver Wyman analysis

classified as pure cash or deposits for consumers? Should they be given different requirements if provided by a full-bank license holder as opposed to a payments license holder?

The second reason is that a significant part of big tech activities may draw on data and dominant positions outside the financial sector, which is governed by cross-sectoral regulations such as data or competition. In many cases, such regulations are still being developed or at least enhanced by authorities to adapt to new market circumstances. Given the legacy from the financial crisis, these are areas where financial regulators have to some extent established powers, rules, and supervisory practices for the financial sector (for example, on usage of financial data). But outside the scope of a specific financial license, these rules do not apply to non-financial entities. For example, the data protection requirement stipulated by the Gramm-Leach-Bliley Act in the United States is primarily targeting financial institutions. Similarly, in the European Union, BCBS 239 is a specific regulation on data for financial institutions.

Big techs have in effect demonstrated a strong ability to position themselves strategically (and flexibly) in specific activities or parts of the value chain that exhibit these characteristics. They are also quick to do so once an opportunity is identified — using their wide range of data, and less constrained by legacy systems, organizational structures, and risk appetites. This combination drives significant differences in how big techs, fintechs, and banks experience the regulatory landscape. These areas of regulatory asymmetry, absent policy reform, could drive rapid changes in market structures and associated risk profiles.

AREAS OF REGULATORY ASYMMETRY ACROSS BANK AND NON-BANK PLAYERS

They will be experienced differently across countries, but the research in this report identified four main areas of regulatory asymmetry driven by the two issues outlined above (see the illustration in the figure below):

Gaps within financial regulation itself include new products and services (such as peer-to-peer lending, cryptocurrencies, e-wallet money balances, and so on) and new delivery mechanisms (such as use of new technologies) that are not yet fully integrated in the existing rulebook. For example, regulators worldwide are still assessing how to classify new products (an asset vs. a security), new services (within or outside the scope of existing licenses), and new technologies (such as to allow usage for credit scoring and other applications).

Imbalances across entities and activities include new products and services for which it is yet unclear how to apply proportionality as value chains unbundle across multiple players. From a plain entity perspective, unbundling diffuses accountability — for example, if for SME lending a big tech is at the front end (for example, selling short-term credit in its commerce platform), a fintech is providing credit scoring analysis (say, joining customer data from its platform, external databases, and bank) and the bank is signing-off the underwriting and providing the funds, who do we make accountable if a customer does not understand the risks, defaults, or is revealed to be a fraudster?

Exhibit 7. Areas of regulatory asymmetry (global view)

	Regulatory Area	Traditional FS firms	FS subsidiary of big techs or Fintechs *(under FS license)*	big tech with material FS business *(may not be under FS license)*
Areas of cross-sector regulations	Competition/Anti-trust	Competition standards are cross-industry but entity-focused, and not adapted to network externalities *(e.g. dominance in specific parts of value chain; "closed" platform environments; "data" monopolies)*		
	Data privacy/ management	Standards existing and enforced in FS; but new, enhanced regulations becoming cross-industry		
	Corporate governance	High standards applied and enforced to financial institutions *(with proportionality)*		Limited standards applied and enforced outside FS licenses
	Economic/financial crime	AML standards applied and enforced to financial institutions *(with proportionality)*		Limited AML supervision and enforcement
Areas of FS regulations	Financial systemic stability	Global principles and national frameworks applied for financial stability		Traditional framework excludes non-FI entities (companies, techs)
	Prudential/firm resilience	Stringent capital and liquidity requirements applied and enforced to financial institutions (with proportionality)		Traditional framework excludes non-FI entities (companies, techs)
	Conduct/customer protection	High standards applied and enforced to financial institutions *(with proportionality)*		Lower standards applied and enforced outside FS license
Areas of tech-only regulations		Standards not clearly applicable to traditional financial services activities *(e.g. e-commerce, advertising, geo-blocking, fake news)*		Regulations targeted and applied to tech platforms

Areas of regulatory asymmetries

- Areas of gaps within financial regulation itself
- Areas of differences in monitoring and enforcement
- Areas of imbalance across entities and activities
- Areas of inconsistency across countries and industries

Source: Oliver Wyman analysis

Unbundling also creates confusion over the risks entailed by a specific activity. For example, does the activity of selling personal loans entail the same risks if done by a fintech specializing in personal credit, a big tech (which may have broader commercial interests with the consumer), or a bank (which also captures deposits from the consumer)? Does the difference in risk justify the different prudential requirements between an independent fintech and a subsidiary of a banking group, even if they engage in the same activity?

Differences in monitoring and enforcement over some common standards include matters such as AML and CFT, corporate governance, and e-commerce, where standards exist but rely on self-enforcement or do not have clearly attributed mandates for enforcement across all sectors. For example, AML and CFT are areas where global standards are defined by the Financial Action Task Force and agreed by its signatories across financial and non-financial sectors. However, practical implementation varies widely across countries and across sectors within a given country, with the financial sector typically being the most developed (with dedicated regulations, on-site inspections, sanctions, and ongoing supervision by the respective financial supervisors). A customer opening a current account is subject to strict due diligence checks conducted by

the bank and supervised by its competent authority. On the other hand, a customer opening an online payments account or opening a trust fund with his or her lawyer may not be subject to the same level of due diligence checks as a bank — at least, absent an authority to strictly enforce it. This nonetheless also reflects the "overlay" feature of many services by big tech, which operate on top of, and hence rely on, processes and infrastructure from incumbent banks, such as know-your-customer processes. As big tech grows in importance, this may create disproportionate costs of doing business across both sets of players.

Finally, **inconsistency across countries and industries** is increasingly an issue as activity becomes global. Today, regulations are still largely jurisdiction-specific and industry-specific, while business and financial activity is increasingly cross-border, cross-industry, and cross-entity, demanding more cross-sectoral or horizontal regulation, such as data privacy and protection, cyber security and resilience, AML and CFT, competition, tax-free zones, business continuity of vital services, and new public goods. This challenges the very definition of "entity" and "activity" on which to apply existing rulebooks. Coordination and collaboration are required, but are a significant challenge given multiple different policy objectives.

HOW SHOULD WE THINK ABOUT BIG TECH IN FINANCIAL SERVICES?

From the market analysis it is clear that technology disruption, including the entry of big techs, can bring consumer benefits. These include better customer experiences with new products and services such as faster payment processing and loan approval[1], financial inclusion[2], and cheaper services both in lower prices and better customer returns, such as higher yields in e-wallet balances than in bank deposits[3]. And as highlighted before, much of the big tech entry is in uncharted territory or "blue ocean" spaces that promise to expand the market and increase volumes (the size of the pie) for all market participants — even if, over time, these may come to substitute traditional financial products and services.

System-wide, these may add up to improved efficiency across markets and incumbents from network effects[4], automation, and digital offerings that reduce operating costs. It may also result in digital capabilities being used for enhancing the system robustness in key areas such as cyber risk management, data security, operational resilience, and fraud management.

Reaping these benefits in full might also require big techs to improve their own risk culture, transparency over data practices, and contribution to key policy debates and issues in the industry, such as economic crime and cyber security. That would likely help society manage the associated risks from technology disruption in financial services that big techs could amplify.

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1 For example, PayPal can approve an online SME loan application within 10 minutes, while banks may typically take three to five weeks; Source: PayPal website.

2 For example, Ant Financial's mission is to help global consumers and SMEs gain access to inclusive financial services that are secure, green, and sustainable.

3 For example, Yuebao (the money market fund where the e-wallet balance in Alipay is invested in) generally offers 1 percent to 2 percent higher yields than the bank deposits in China; Source: banks and Ant Financial websites.

4 Refers to the externality effect that a good or service becomes more valuable as the number of users increases.

First and foremost among them are cyber risks, data privacy, AML and CFT, especially given the new players are still having early stage experience in managing these. But there are other risks as well. Another is a blurring regulatory perimeter, with growing cross-border, cross-industry, and cross-entity activity, reducing transparency over risks and fragmenting accountability across players. Consumer protection will also be an issue, as consumers may not fully understand the different levels of protection and risk across bank vs. non-bank products, such as e-money balances vs. deposits, and any regulated entity in the chain may see recourse obligations aggregate to them.

Market power concentration could pose a risk in large platform providers, reducing price discovery for products and services, concentrating digital talent and research and development, and possibly creating conflicts of interest across financial and non-financial activities such as providing loans in advantageous terms if shopping in a given platform, or discriminatory pricing on platform products or customers. Finally, new business models could also amplify anticompetitive or "monopolizing" practices, such as using financial data for predatory pricing or restricting services from other platforms[5]. This is especially challenging as large platforms benefit from network effects and economies of scale.

Big techs may also pose risks to financial stability, given their global scale, natural network effects, and dominant positions in specific parts of the value chain, such as risk surrounding a bank's cloud platform operation resilience, as discussed by the FSB[6]. For example, large platforms have the ability to quickly spread viral content, implying a risk of amplifying panic and runs on liquidity in case of shocks. Entangling of financial and commercial activities could raise questions of whether or how to govern and prevent unethical and risk-taking behavior, such as targeting advertising for purchases on days after a paycheck is received. And it is not yet certain how the big tech model holds in an economic downturn, given significant cyclical revenue and the potential for lower appetite to support customers in difficult periods — running the risk of amplifying credit contraction during economic downturn, as suggested by the Bank for International Settlements[7]. The recent Covid-19 pandemic crisis, which could result in significant and prolonged macroeconomic impacts, could be a test case, though it is not yet fully clear how this will affect big techs and their entry in finance (see Box 2 further below).

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5 For example, Google was fined €4.3 billion by the European Commission for using Android to illegally "cement its dominant position" in search; Source: European Commission

6 Source: FSB — Third party dependencies in cloud services

7 Source: BIS — Fintech credit markets around the world

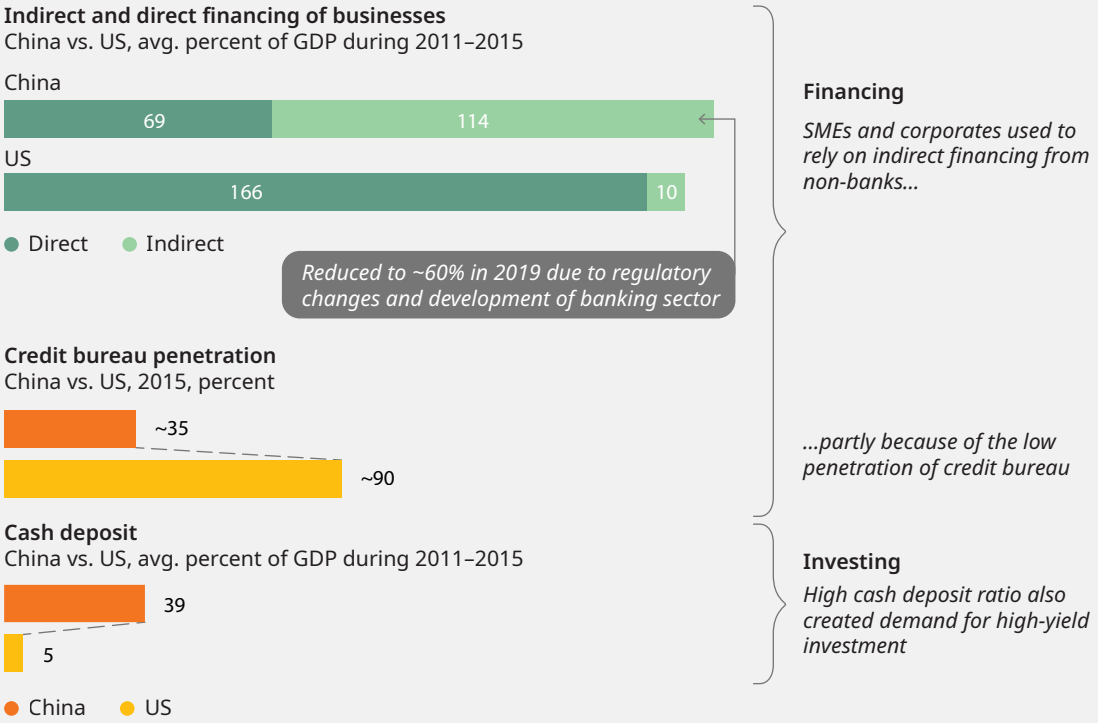
BOX 1

WHY IS CHINA SO UNIQUE?

Chinese big tech firms have been extraordinarily successful in building ecosystems that satisfy a wide range of daily needs, including financial services. For example, Alibaba began as an e-commerce platform and is running a mobile payment app (Alipay) with 1.2 billion annual active users worldwide (900 million in China[1]) and set up the largest money market fund in the world (Yuebao). Tencent's WeChat, which started as a messaging app, has developed into the most-used "super-app" in China, covering not only finance but also food delivery, healthcare, travel booking, and other services. This success will be difficult to replicate in other countries because it depends on distinctive features of the Chinese market.

First, China has a huge and dispersed population with high mobile-phone penetration. Digital service providers can

Financing and investing in China vs US (early 2010s)



Source: CBRC, annual reports, S&P Global Market Intelligence, Economist Intelligence Unit, Oanda, BvD Orbis, Oliver Wyman analysis

1 Source: Ant Financial — 2019 Investor Day Presentation

thus reach a large number of customers quickly, including in rural areas. The physical presence-based model of traditional banks, retailers, and so on missed significant segments of the population; for example, 37 percent of the population was still unbanked in 2011, before the tech players entered the market.

Second, this is assisted by the welcoming attitude of the public to digital technology and their willingness to share their data with big techs. In a survey[2]. 91 percent of China respondents said they would exchange their data in return for more personalized products and better customer experiences. In the same study, China respondents showed higher level trust in technology players than banks (77 percent vs. 74 percent).

Third, there was significant "whitespace" in addressing financial needs of consumers and SMEs. The banking sector in China was traditionally represented by state-owned banks, which primarily focused on corporate and institutional banking, with more limited services, lower returns, and lower risk appetite for retail and SME customers.

Chinese big tech firms have also been helped by a regulatory environment allowing Chinese firms to incubate and gain scale in an environment with some barriers to entry to foreign players, where regulators also had policy objectives around financial inclusion and technological innovation. Big tech firms also benefit from the legal requirement to link consumer digital accounts with national IDs. This allows big techs to aggregate the data from different channels and services to build a "360 degree data profile" of each individual, from which they can customize offerings and develop one-stop-shop super-apps satisfying all customer needs. Such data aggregation is in line with national policies such as the social credit score system and national security objectives. For consumers, acceptance is high as it enables a convenient, seamless, customized digital experiences.

2 Source: KPMG — Me, my Life, my Wallet report

CASE STUDY

BIGTECHS AND ECONOMIC CRIME

An often cited concern is that digital financial services, including that provided by big tech, increase the risk of economic crimes, such as fraud, money laundering, terrorist financing, and cyber-crime[1]. These risks might arise from users storing multiple bank and card details in online payment accounts, personal data being obtained from social media or e-commerce attacks, or the use of virtual currencies[2]. Lower know-your-customer checks and transaction monitoring in products such as e-wallets and online payments accounts by technology players — or rather, reliance that these will be done by the financial system — could amplify these risks, as with the Apple Pay fraud in 2015-16[3]. And the concentration of bank financial data in large cloud providers could also increase systemic risks.

However, the advanced technology capabilities of big tech players could also help to fight economic crime. In developing their own financial services, some big techs even show better results than traditional players. For example, Alipay has used advanced AI to reduce fraud rates to 0.00005 percent, compared to an average rate of 0.2 percent for global payment providers[4]. Ant Financial employs machine-learning capabilities in insurance products and achieves a 95 percent accuracy rate in preventing insurance fraud[5].

Tech players are increasingly using their capabilities in these areas to offer solutions to banks and other businesses. In 2018, PayPal acquired a fraud prevention startup, Simility, to offer fraud control services to merchants[6]. Microsoft also launched a financial crime compliance platform in 2018, in partnership with EY. This uses robotic process automation, machine learning, and AI technologies to help banks deal with issues such as fraud, AML and CFT, and market misconduct. And some big techs indirectly support financial crime solutions by providing back-end cloud infrastructure to the fintechs that operate them (for example, hawk:AI runs on AWS cloud). It is easy to imagine such support being extended to broader industry solutions for economic crime, including regulation, supervision, and government policy — and big techs contributing this knowhow to industry-wide organizations (such as the United Kingdom's Dedicated Care and Payment Crime Unit)[7].

1 For example, BIS stated that peer-to-peer lending platforms have increased risks of inappropriate market practices and fraud (such as Ponzi schemes) in China; Source: BIS — Fintech credit markets around the world.

2 See for instance FATF concerns over Facebook's Libra announcement in Reuters — Global money-laundering watchdog closely monitoring Facebook's Libra, official says.

3 Forbes — Millions Are Being Lost To Apple Pay Fraud — Will Apple Card Come To The Rescue?

4 Xinhuanet (Chinese only)..

5 Alibaba Cloud — Ant Financial Applies AI in Financial Sector

6 Reuters — PayPal to acquire fraud prevention company Simility for $120 million.

7 The Dedicated Card and Payment Crime Unit (DCPCU) is a police unit formed as a partnership between UK Finance, the City of London Police, the Metropolitan Police, and the Home Office, with the purpose to investigate, target and, where appropriate, arrest and seek successful prosecution of offenders responsible for card, cheque and payment fraud crimes.

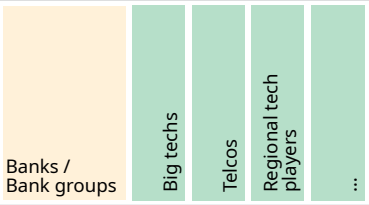
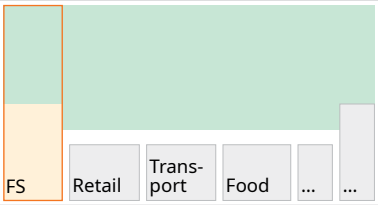
03

OUTLOOK

There was broad consensus among our interviewees that big tech participation in financial services is likely to intensify, and that this could reshape the industry. Big techs have already proven their disruptive ability by transforming numerous comparatively unregulated industries in the world, most notably in mail and messaging, music, television, news, and so on. Most interviewees also agreed that in finance this trend will be more likely and more significant in the retail and SME segments, while corporate banking services would likely remain owned by vertically integrated financial institutions.

However, within this consensus there is a range of opinion about how profoundly big tech will change the industry. Broadly speaking, there are three visions of the future of the financial services industry and big tech's role within it (see Exhibit 12). Whichever turns out to be closest to the truth, it is likely to play out differently across regions, products, and market segments, influenced by local regulatory environment, customer preferences, player appetite, and incumbents' responses.

Exhibit 8. How big techs could transform financial services

	MODEL 1 **Finance in vertical structures**	MODEL 2 **Finance in modular structures**	MODEL 3 **Finance in tech-led ecosystem**
Core features	Finance as "independent" service and provided mainly by "vertically integrated" players who own the majority of the value chain. Most financial services provided outside tech ecosystems.	Finance remains "independent" service for customers, but under intense competition as players position in different parts of (an unbundling) value chain. Some financial services in, some outside tech ecosystems.	Finance as sub-component of big tech's ecosystem offering; incumbents retain regulated parts of the value chain. Most financial services provided within tech ecosystems.
Value chain ownership	Finance-player-led	Hybrid	Tech-led
	Products & services	Products & services	Products & services
Front-end **Value chain functions** Back-end			
Likely products and services	Corporate banking, investment banking, mortgages	Retail segments (current account, wealth management)	Retail segments (payments, SME lending)
Likely market	Significant whitespace that allows a diverse set of players to grow Strong response from incumbents	Mature markets with high initial penetration of incumbents Mature and stable regulations esp. in core banking activities	High technology adoption Significant unmet needs by consumers Slow response of incumbent banks

Incumbent banks New entrants

Source: Oliver Wyman analysis

Model #1

Finance in vertical structures

Financial services are still largely independent services and provided predominantly by vertically integrated players outside of big tech ecosystems. These vertically integrated players have more market power than big tech rivals and capture most of the margin from the supply of financial services. However, these vertically integrated players might not necessarily be incumbent banks, or even financial ones.

This model will be more likely, especially with vertical financial players, in markets where incumbents respond quickly and provide some of the innovation tech players would bring. The Netherlands and Sweden, for example, have developed national, joint-bank payment systems that have defined a new market standard for consumers and kept tech players at bay. The Dutch system iDEAL accounts for 59 percent of online payment in the country, compared with only 5 percent by PayPal[1].

But this model can also emerge in markets where there is significant "whitespace" that allows a diverse set of players to grow and take market share independently, spreading the market across multiple players — incumbents, tech players, telecoms, or others. Emerging markets in Africa and Southeast Asia, with large unbanked or underserved populations, may experience this. For example, the telecom operator Orange has launched its mobile money solution in 17 African countries and gained 48 million users. Latin America may follow a similar course, though there are significant maturity differences across local markets.

In addition, product types such as corporate and institutional banking would be likelier to exemplify this model, given the level of financial expertise required along the entire value chain. Banks and fintechs are better positioned than big techs to develop and deliver sophisticated financial solutions to corporate clients, and thereby to maintain ownership of their corporate customers.

Model #2

Finance in modular structure

Finance remains an independent service but under intense competition from different players that take on different parts of the value chain in a modular structure. The relative ability of incumbents and challengers to capture margin varies, depending on whether services are provided inside or outside technology ecosystems.

This will be more likely in mature financial markets where penetration of financial services and financial literacy is already high, regulatory frameworks are mature and stable, and incumbents are changing in response to challengers — markets such as the United States and United Kingdom. Big techs are rapidly expanding their financial services offering in these markets, focusing entry on segments of high interaction with consumers and adjacencies with existing platforms, such as payments and SME lending. However, regulatory barriers and strategic

1 Source: eCommerce Payment Monitor

responses from incumbents are intensifying competitive pressure and creating incentives for increased partnerships, such as the Google-Citi partnership and Apple Card[2], [3].

We would likely see big techs and banks adopting this model in product segments where each partner's value chain activities are more specialized, and the core financial activities require high capital and regulatory requirement, such as wealth management.

Model #3
Finance in tech-led ecosystem

The distribution of financial services becomes a sub-component of broader big tech ecosystem offerings. Traditional finance players, at most, concentrate on regulated parts of the value chain, such as holding deposits and providing credit. Market power lies with the big techs, who "own the customer" and can therefore capture most of the total margin on the supply of financial services.

This will be more likely in markets where technology adoption is high, significant consumer needs remain unmet, and incumbents are uncompetitive or slow to respond to changes. China may be the closest market to this model, as local big techs have already managed to establish deep-rooted ecosystems providing a full suite of services including broad financial offerings (see case study below). Whether or when the entire Chinese market becomes part of the tech-led ecosystem will depend on how quickly Chinese banks can catch up and build their own competitive technology platforms.

Retail and SME financial services that involve frequent interaction and high level of integration into the tech-led platforms are the most likely candidates for this model. Some big techs are already providing financial services with this philosophy, such as payment and consumer finance solutions embedded in e-commerce platforms.

2 Source: The Wall Street Journal — Next in Google's Quest for Consumer Dominance: Banking

3 Source: Apple Card official website

CASE STUDY

EXPERIENCES IN DIFFERENT MODELS

In China, customers theoretically can spend their entire day in Alibaba's ecosystem. Alibaba first began as an online marketplace, expanding next to payments (Alipay) to reduce frictions between vendors and customers.
It continued to expand into other businesses that involve frequent interactions with customers, such as online entertainment, transportation, healthcare, and others. In parallel, it also started to offer a wider range of financial services derived from Alipay, allowing further enhancement of customer and merchant loyalty. This led to a deep-rooted ecosystem providing a full suite of digital services to consumers, including finance, which plays an enabling role. This is illustrated in the exhibit on the right, 1st column.

By contrast, in most other financial markets big techs are not yet able to fully encapsulate consumers' daily digital lives like Alibaba. Instead, consumers use products and services from different providers. Financial services remain a standalone service but under intense dispute in some segments of the value chain or specific products. This is illustrated on the right, second column.

A TYPICAL DAY OF CUSTOMER JOURNEY

TUESDAY IN CHINA	TUESDAY IN UK
7:00 Alarm clock	
Upon awakening, Mr. X. goes to Weibo (social network), notices a friend's shirt, saves the photo and buys it on Tmall thanks to visual recognition	*Upon awakening, Mr. Y.takes his iPhone and goes to Facebook (social network), is notified that a friend's birthday is approaching and orders a gift from Amazon*
8:00 Journey to the office	
Mr. X reserves a bike on Mobike (bike sharing) and goes to the office listening to music on Xiami (online music)	*Mr. Y picks up a Lime bike (bike sharing) and goes to the office listening to music on Spotify (online music)*
08:30 Arrival at work	
When he arrived at work, Mr. X opened his box and professional messaging on DingTalk (professional messaging) and ordered a breakfast on Ele.me (food delivery service)	*When he arrived at work, Mr. Y opened his mailbox on Outlook. Mr. Y is preparing a presentation this morning and doing a lot of research on Google*
12:00 Lunch preparation	
Mr. X looks at his options for lunch on Koubei (review forum)	
12:30 Lunch and reserve a trip	
During his lunch break with a colleague, Mr. X pays the bill and receives a transfer from his colleague via Alipay	*During his lunch break, Mr. Y pays the bill with Apple Pay*
Soon on holiday, Mr. X finds a destination through Fliggy (online travel) and is offered a microloan solution to finance it (AntFinancial) his scoring credit being very good (Sesame/Zhima)	*Soon on vacation, Mr. Y finds a destination through Booking.com (online travel)*
13:30 Audit of accounts and investments	
At work, Mr. X quickly checks his accounts (MYbank) and his investments on an MMF (Yu'e Bao)	*At work, Mr. Y quickly checks his accounts on his banking application*
18:00 Departure from work	
Mr. X goes to a doctor he has booked through Alihealth (online medical services) who recommends that he do more sports (via LeDongLi)	*Mr. Y goes to a doctor he booked via Push Doctor*
19:00 Arrival at home	
Mr. X reserves a Didi taxi (driver) via his App to go home and orders food on Ele.me (home delivery service)	*Mr. Y booked a Uber taxi to go home and ordered food on the Deliveroo app*
21:00 Evening	
Mr. X eats his meal while watching his favorite series on Tmall Box Office (online streaming)	*Mr. X eats his meal while watching his favorite series on Netflix (online streaming)*

BOX 2

BIGTECH AND COVID-19

Challenges & opportunities

The Covid-19 pandemic will most likely accelerate the "big tech in finance" question for public debate, given the simultaneous increases in customers switching to digital interfaces across all sectors and the prominent role banks are taking to support the policy response. The net effect over the next six to 12 months, however, remains unclear.

On the downside, lower demand in big techs' core commercial platforms during an economic downturn might negatively impact revenue, including that from financial services. While many customers are switching to online purchases, this may be at least partially offset by knock-on impacts of confinement measures and disrupted supply chains, as well as by the lower available income and business activity that is now expected to follow in a recessionary period. For example, merchants on Amazon have found it more difficult to repay their Amazon loans as their sales are strangled by the e-commerce operator's decision to deprioritize non-essential inventory[1]. Most countries now expect GDP to drop by unprecedented amounts, which will impact overall available income for households and businesses. In addition, operational resilience and cybersecurity of big techs' platforms are being tested, given the internet disruption and exponential increase in cyber-attacks during the outbreak. Stakes have also never been higher for big techs to prevent viral misinformation, with failure increasing the risks of fraud or even of public panic, which could result in liquidity runs.

However, the pandemic could also change the public perception of big techs. Some were quick to deploy their technology capabilities to benefit governments and consumers, for example, to provide high-quality live information on the pandemic through their respective platforms, feeds, and search results; to help to trace patients' contacts[2]; to identify fraudulent behavior in e-commerce and on social media; and even to provide customized support to the vulnerable, such as targeted news and medical advice via a WhatsApp bot.

In financial services big techs could use their agility and extensive reach to supplement the traditional banking system in providing emergency financial support to needy individuals and SMEs. For example, Ant Financial's blockchain-powered supply chain finance platform has allowed SMEs to get instant credit from banks during the pandemic[3]. The payment services provided by Alipay and WeChat Pay have helped the Chinese government monitor and manage the movement of people, and hence to stop the spread of infection. Facebook announced $100 million in cash grants and ad credits to

1 Source: Reuters – Sellers' Amazon loans at risk as company limits warehouses to essential goods

2 For example, Facebook and Microsoft announced a partnership with the WHO to find software solutions for some of the coronavírus challenges.

3 Source: United Nations – Harnessing Digital Finance to Respond to the Crisis

small businesses[4]. And with significant staff working from home, people may be more willing to try out and embrace financial digital services from big tech.

In turn, banks are playing a key role as partners to public authorities during the pandemic, implementing government measures such as moratoria and using their significant liquidity to support emergency credit flows to the economy, often backed by public guarantees. In many ways, their trust position with the general public, wide reach to the entire population — including the digitally illiterate — and vast experience cooperating with authorities in crisis responses have put them in a good position to support this public response. Many have gone beyond government measures and are providing their own support via by providing struggling customers with "rescue plans," restructuring financing, and granting mortgage holidays. Indeed, because banks remain the primary suppliers of credit to business, they are likely to play a more significant role than big tech in both the private sector and public sector responses to the crisis.

4 Source: Facebook www.facebook.com/business/boost/grants

04

IMPACT ON BANKING

Challenges & Opportunities

As big techs intensify their participation in financial services, they can bring benefits to the market such as improved customer experiences and outcomes as well as operational efficiencies. But incumbents will face increased competition from firms with significantly more investment capacity than traditional competitors to gain market share. This will have major implications on profitability, business models, and the type of demand and expectations customers will have from banks.

In response, many incumbents have already invested significantly in driving their own innovations, enhancing business offerings and digitalizing internal processes. Online banking apps, contactless payment, and branchless credit applications are now common in most developed banking systems. More will come as many banks emulate big tech methods and value propositions to improve their own competitive positions. As these advances reduce transaction costs, the volume of financial services activity is increasing. However, as outlined in Oliver Wyman's recent State of Financial Services report, incumbents face the challenge of creating the business of the future from the legacy and short-term return pressures they have today — on profitability, market capitalization, and investment capacity — all while the outside threat is growing (see also Box 3 below).

CHALLENGES FOR INCUMBENTS

In a way, big tech's entry is exposing vulnerabilities in bank business models, profitability, and competitiveness. This is particularly acute as the traditional banking model relied to a large extent on cross-subsidization of products and services. New business models can capture significant value and profitability from incumbents with their low-cost operations, network and scale effects, and owning, or disintermediating, the customer relationship. Investments in new technologies and digital talent are rising to respond to this, but are challenged by legacy infrastructure and systems, investor skepticism, and constrained budgets. Digitalization will furthermore raise demands on third-party management and cybersecurity. Capital requirements and accounting rules, often differing across countries, may also influence banks' incentives to develop their own software and digitalize.

OPPORTUNITIES FOR INCUMBENTS

Across our many interviews, banks, challengers, and other stakeholders still widely recognize incumbents' competitive strengths — they benefit from trust, physical presence, customers' financial data, established processes (with well-defined standards that enable easier collaboration among banks), "stickiness" of core banking relationships, and historical knowhow on financial behavior. Even if some of these are being challenged, such as the stickiness of customer deposits with e-wallets, they can still be leveraged.

Consumer trust is particularly relevant for longer-term and complex services such as life savings, mortgages, and project finance, and for many customers physical presence and relationships are still a part of that. Comparative trust in banks may also be reinforced by the recent public

GOING-IN REGULATORY DISADVANTAGES FOR INCUMBENTS[1]

New business models such as those from big tech can pose a challenge on the economics of once traditional product segments for incumbents, subject to regulatory mandates on pricing and operational latitude, especially as consumers may increasingly accept to substitute new for "older" ones. In the long—term this may impair the ability of banks to compete in core financial services, which can expand the ability of non-banks to allege a lack of adequate options from banks.

An example is the Durbin Amendment in the United States, which was included as a peripheral addition to the Dodd-Frank Wall Street Reform Act. The Durbin Amendment capped interchange fees due to midsize and larger debit card-issuing banks and also mandated that banks of all sizes offer merchants at least two debit card networks. By placing the U.S. central bank in charge of payments pricing and network conduct, the economics of card payments used by 80% of the populations became captive to merchant's ability to lobby for lower fees. The result, found by the Federal Reserve and academics at Georgetown University, is that Durbin-covered banks increased fees, raised the minimum deposits required to avoid fees, reduced access to free core transaction accounts, and effectively ended debit card rewards. In recent years, Durbin has decreased community bank interchange revenue by 26%, reducing their ability to support core offerings and adopt new technology. In turn, big tech have exploited the resulting gaps in services offered by banks, enabling faster growth.

1 Source: ABA, public websites

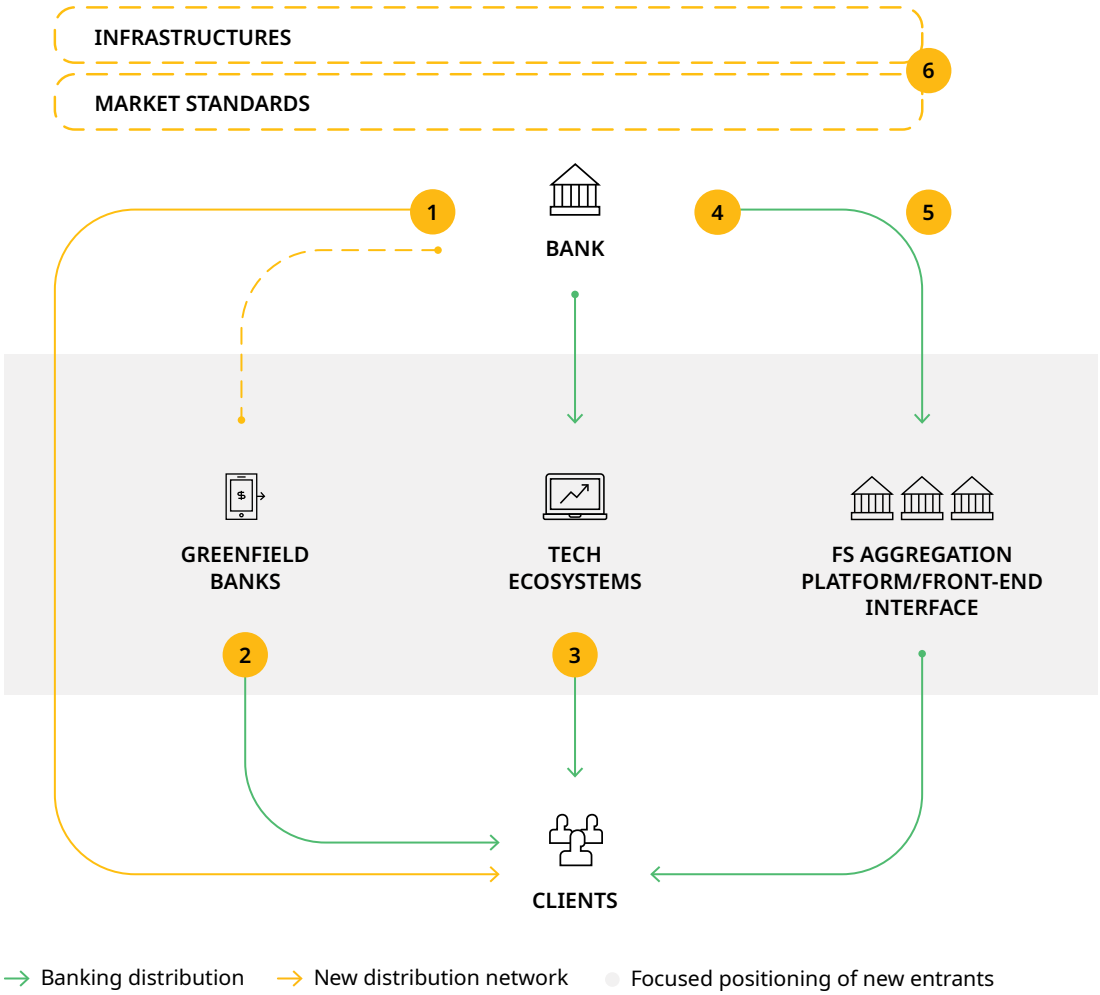
backlash against misuses of data by big tech. A strong track-record in regulatory compliance may provide an advantage in applying for new licenses, expanding activities, and capturing economies of scale in functions other than retail distribution — for example, in credit risk, know-your-customer, transaction monitoring, and wholesale and corporate banking. And digital capabilities can turn accumulated data and knowhow of customers' financial behavior into new competitive advantages, such as interoperable digital systems built with open banking standards, enabling banks to connect with various third-parties to enrich their offerings.

In addition, regulation can act as a barrier to entry in many market segments, including lower cost of funding via deposits and central bank funding (that can be closely tied to origination practices).

These competitive strengths give banks a range of opportunities. Our interviewees showed most banks around the globe are pursuing or considering:

1. **Continued investment in digitization** to improve consumer offerings and efficiency. Almost all banks have some sort of digital strategy or plan — the project portfolio ranging from piecemeal efficiency gains via automation to full back-end or IT revamps or front-end upgrades such as online banking apps, online payments, expense categorization features, and so on. How much these have delivered for incumbents is not yet clear, since market capitalization and return on equity remain largely stagnant and significantly below that of big techs, and investment budgets remain constrained for many.
2. **Developing "digital banks"** that allow banks to more rapidly compete with new offerings in the market and address customers' new demands, leveraging their knowledge and track record in customer data. Some have started to do this, such as Standard Chartered applying for a virtual bank license in Hong Kong to develop a specific (digital) bank legal entity.

Exhibit 9. Possible business models for banks



Source: Oliver Wyman analysis

3. **Partnering with technology players** to improve customer offerings and efficiency, for example to use data, business-to-business-to-consumer platforms, analytics, and new digital sales channels. Examples are plentiful across small and large players, the latter including Apple-Goldman, Google-Citi, and WeBank.
4. **Making selected acquisitions**, especially targeting players with complementary capabilities, such as fintechs with advanced AI and analytics expertise, or smaller banks with specialized digital platforms and product focuses. This is already happening, with notable cases including Goldman Sachs acquiring multiple fintechs (Clarity Money, Final, Bond Street) to build digital retail banking capabilities for Marcus, its online bank, and Citigroup actively buying blockchain fintechs (Symbiont, Axoni) to develop its open banking infrastructure[1].
5. **Taking strategic choices to position in specific market segments, products or value chain functions**, where banks enjoy competitive strengths and are less vulnerable to disruption. In many ways, the dominant "universal banking model" relying on cross-subsidization is under pressure. Different models may emerge. For some, this may mean betting on being a front-end champion (for example, by investing in customer experience); for others, it will mean being a platform player for consumers (for example, by developing offers for existing commerce and other platforms).
6. **Promoting inter-bank cooperation or consortia** to share costs and risks in areas of competitive strength, such as establishing "market driven" infrastructure for payments and digital ID and know-your-customer-related services. While many examples are emerging between banks, some have expanded consortia to integrate technology and other industry players to collectively contribute to solutions on key issues such as economic crime, fraud, or market infrastructure (see the case studies to follow).

Naturally, the choice and ability of a given bank to pursue these options will be determined by a range of factors such as size, financial resources, product specialization, and market characteristics. These possible models are illustrated in the Exhibit 9.

To remain viable and competitive, banks will need to be selective in the capabilities in which they invest (see Box 3 below from Oliver Wyman's State of Financial Services report 2020). But, wherever they choose to compete, such investments will include using technology to enhance productivity, such as more automation and AI for customer analytics and risk management. They will also seek to make internal systems more flexible (such as using cloud-based systems with higher interoperability to enable integration of new propositions, fintech acquisitions, or responding to market or regulatory changes), and improve the ability to measure the progress and profitability of digital investments[2]. Many will need to better understand their particular areas of strength and profitability across products, services, and value chain functions to inform the strategic decision-making required.

Digital talent will need to be hired for whichever strategy is pursued. And many banks will benefit from improving external communication to investors, the public, and policymakers — being clear about the return of digital investments, on the value of bank propositions for consumers, and the positive contribution to society in credit intermediation and other policy objectives such as inclusion, climate risks, and economic crime.

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1 Source: CB Insights — Where Top US Banks Are Betting On Fintech

2 For details, please refer to Oliver Wyman's 2020 State of Financial Services report.

CASE STUDY

IDEAL IN THE NETHERLANDS

National interbank responses

iDEAL is an online real-time payment system, set-up in 2005 by Currence, a company formed by eight Dutch banks with the aim of coordinating payment methods between banks and payment providers. iDEAL began as one of the payment options that consumers can select when they shop, pay bills, or make donations online. In 2016, it extended its services to facilitate offline sales through the introduction of an iDEAL QR code, which consumers can use with mobile phones. It runs on existing bank infrastructure (all data kept within banking system) and improves convenience and efficiency for both consumers and merchants, keeping their current banks as the point of contact. iDEAL is currently the most popular online payment method in the Netherlands, with 59 percent of online payments made through its platform (Paypal has only 5 percent market share[1]). Similar examples include Swish in Sweden and Zelle in the United States.

DIGITAL IDS

Taking advantage of banks' strengths

A digital ID provides the credentials necessary to authenticate an individual's identity. In 2003, Sweden became the first country where a consortium of banks issued their e-ID — BankID. This was achieved by pooling existing personal customer data across banks, which participants could then use for different use cases.

While other service providers and even the government (2010) in Sweden tried to launch their own e-ID systems, none have gained the same traction as BankID. Being heavily regulated, with trust and track-record in managing consumers' data, the bank-led e-ID scheme has so far shown to be both scalable and sustainable. It positions itself as "comparable" to a passport or driving license and is accessible for 3rd-party ID verification for a fee[2]. Since then, Finland, Norway and Denmark subsequently launched their own e-IDs and all have gained high penetration (>70%)[3]. Other countries have also promoted similar initiatives, some with big techs[4].

Digital IDs created numerous opportunities for banks, including new integrated solutions, ranging from payment, e-signature and KYC services, as well as to 3rd parties[5]. For example, Swish in Sweden, a mobile P2P payment solution, is built on BankID's infrastructures and has now become the number two point-of-sale payment method of choice for Swedes.

1 Source: eCommerce Payment Monitor data

2 BankID website — BankID Security & My Services

3 BankID in Sweden: 78% penetration; Tupas ID in Finland: 87% penetration; BankID in Norway: 74% penetration; Nem ID in Denmark: 85% penetration. Source: Arkwright — Federated e-IDs as a value driver in the banking sector based on experience from Nordic markets

4 Source: Cointelegraph — South Korea's NH Bank Debuts Samsung-Backed Blockchain ID System

5 see for example BankID website — This is BankID; The NEWBIE GUIDE to Sweden — Swedish student aid

BOX 3

OLIVER WYMAN'S STATE OF FINANCIAL SERVICES REPORT 2020[1]

The 2020 edition of our State Of The Financial Services Industry report explores how pressure is building to deliver on investment programs and how winning firms will manage the collision between vision and value. Financial institutions face a big challenge: creating the business of the future from the legacy they have today. This is revealing a major tension between two opposing mindsets: the vision mindset wants to reimagine the business for the long-term; the value mindset needs to remain disciplined and profitable in the short-term. When the value mindset dominates within firms, the result is a myriad of small changes with known but low-impact outcomes. And when the vision mindset dominates, aggressive amounts of spending can go into transformation efforts that don't yield results.

THE VALUE CHALLENGE

There is considerable investment and change activity underway across the industry. The average transformation program being announced calls for spending of 5 percent of revenue per year. The report was based on a survey of investors to find out what they think about the financial services industry, its response to digital, and current investment programs. This showed that only a quarter of investors are confident digital transformation strategies will be effective, and hardly any believe plans are well articulated. Investors do not feel they understand what firms are investing in, or why, and are distrustful of the cost-benefit case of significant technology investments. As a result, they heavily discount investment initiatives. Concerns around implementation costs and the likelihood of transfer of most benefits to customers are also common themes among investors.

THE VISION CHALLENGE

The external threat is growing, not receding. A three-way wrestling match is underway between financial services firms, fintechs, and technology companies. Scale and marketing cost challenges have limited the inroads of fintechs into core businesses. Nonetheless, newcomers continue to cherry-pick profitable activity and erode margins. All the big technology companies are positioning themselves in financial services, with financial services firms caught between seeking partnerships and making defensive moves. Significant spending and shared industry approaches are going to be needed to avoid firms becoming "dumb utilities".

Managing the collision between vision and value does not mean picking sides between the two. Instead, it means bringing the mindsets together to agree on the change

1 Source: Oliver Wyman, www.oliverwyman.com/our-expertise/insights/2020/jan/state-of-the-financial-services-industry-2020.html

portfolio, growth plays, productivity objectives, and metrics used. It means communicating a clear narrative and consistent, authentic messages internally and externally.

The winners will be the firms that most successfully unite the vision and value mindsets, agree on what is critical to thrive long-term, and invest with discipline.

Embracing this creative tension will lead to balance, reinvention, and growth. The timing and magnitude of the reckoning depend on segment and region. For European banks facing negative interest rates, smaller US banks getting squeezed, and some asset managers, the collision could be pretty significant. Consolidation in these segments is likely to be part of the outcome.

Our findings, which come from discussions with industry leaders, analysis of investment levels and progress, and gauging of investor sentiment, point to several key attributes that winning financial services firms will share:

A SURGICAL APPROACH TO INVESTMENT PORTFOLIOS: Successful firms will exhibit great discipline, with investment in me-too functionality, capability building, and regulatory reform managed quickly and tech investment becoming much more modular.

FEWER, BIGGER, GROWTH PLAYS: Many firms have spread growth investment across numerous small initiatives. The report anticipates this will change, with emphasis on a smaller number of well-funded, CEO backed initiatives.

CLARITY ON PRODUCTIVITY GAINS FROM INVESTMENT IN TECHNOLOGY: Winners will be clearer on the use of technology as a route to drive net headcount costs down significantly, drive up productivity, and thus increase returns.

BETTER SCIENCE ON HOW TO MEASURE AND MANAGE CHANGE: This is one of the industry's greatest challenges: new metrics and management techniques are needed that can steer progress in large scale initiatives, uniting the objectives of both the vision and value mindsets.

BETTER EXTERNAL COMMUNICATION: Investors will reward firms that provide clarity on what drives performance and allow progress on long-term change to be tracked.

05

REGULATION AND SUPERVISION

Policymakers worldwide face the difficult challenge of ensuring — and where possible, shaping — an orderly modernization of the financial sector. It is important to preserve the benefits of competition and innovation while upholding consumer protection, compliance standards, and operational resilience in the system. While it is recognized that in theory big techs are subject to many of the same requirements as incumbent financial services firms such as corporate governance codes and anti-financial-crime requirements, the absence of an intensive supervision and enforcement oversight model results in varied application of the rules and requirements. To regulate the next evolution of the market, authorities should adopt a forward-looking mindset to ensure that:

- New and complex risks are quickly understood and brought within the regulated perimeter as they develop, where appropriate
- Activities by different players along the same value chain stay within the same regulated perimeter, where appropriate
- Activities are subject to a regulatory and supervisory framework commensurate with their risks
- There is a level playing field for all market participants, in line with countries' policy objectives — acknowledging this requires some adaptations, rather than a "blanket application" of all regulatory requirements across all entities and activities

Action could be considered to reform regulatory frameworks in three areas.

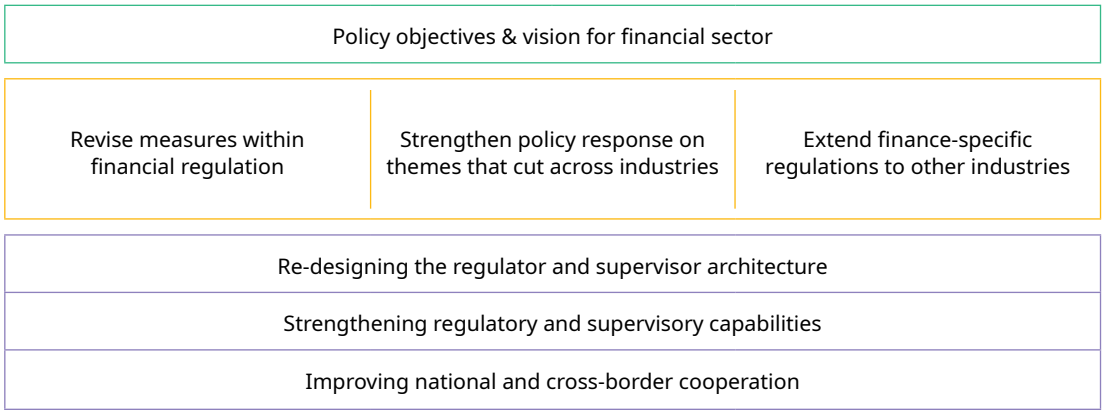
1	Revise measures within financial regulation, that is, within financial regulators' remit
2	Strengthen policy responses on themes that cut across industries, requiring closer cooperation and coherence of rulebooks enforced in finance and other key economic sectors
3	Extend finance-specific regulations to other industries where inconsistencies in regulation and enforcement have emerged, as appropriate

This is inherently complex, and will require some key "enablers," such as re-designing the regulatory and supervisory architecture within jurisdictions, including redefining mandates or setting up new regulatory agencies; strengthening regulatory and supervisory capabilities, to better address the new challenges; and improving national and cross-border cooperation.

Reflection is also warranted on the effects of tech-led disruption on the structure of financial markets and their functioning (such as along the three possible future models identified in the "Outlook" section) — and the extent to which policymakers should deliberately build a vision for this and their role, aligned with their policy objectives.

The figure below summarizes the challenging body of work facing authorities today.

Exhibit 10. Considerations for policymakers to respond to changes in the market



Source: Oliver Wyman analysis

VISION

Policy objectives & vision-setting

Build awareness and expertise regarding technology impacts by allocating resources internally to produce analyses and evidence to inform policy decisions, engaging with the private sector (such as in public-private partnerships), and increasing information sharing across regulatory innovation experts (such as BIS' Innovation Hub).

Decide on a vision for market structure and the role of regulation and regulators, or at least the extent to which there is the appetite to build one. Big tech entry may have profound impacts on market structures and business dynamics, including on profitability, that may call for decisions on how much to intervene. And while some areas seem consensual across global authorities — such as fostering competition — others are less clear, such as the mix of players desired across market segments.

Prioritize and harmonize across policy objectives. As regulatory needs become increasingly cross-sectoral, pressure will rise to harmonize across competition, financial stability, data privacy, and convenience for consumers. In practice such objectives are delivered via different mandates and authorities, requiring concerted action at least at the level of each jurisdiction.

Define the appetite for promoting "public goods" in industry. In line with the earlier discussion on vision, some regulators may choose to be active in promoting concerted initiatives across market players or sponsor specific ones, which can act as "market utilities" or public goods. As examples, Hong Kong SAR, India, and Singapore have put in place centralized platforms for unique resident keys to verify their identities in transactions, while India has promoted a joint payments platform ("NPCI") across banks and a centralized system to facilitate exchange of customer financial data (see also the case study that follows).

CASE STUDY

RESERVE BANK OF INDIA

trade-offs on strong vision and promoting public goods?

National Payments Corporation of India (NPCI), established in 2008, is an initiative by the Reserve Bank of India and the Indian Banks' Association under the provisions of the Payment and Settlement Systems Act of 2007. NPCI is a non-profit company with the aim to drive technological innovation in the retail payment systems for greater efficiency and financial inclusion, and is currently running most of the digital payment systems in the country. It has launched multiple projects, including RuPay and UPI.

RuPay is a card payment solution launched in 2013 that provides services such as issuance of debit cards and real-time payments processing, essentially acting as direct competitor to players like Visa and Mastercard. As of 2019, the solution was reported to have made 1 billion transactions and issued more than 600 million cards, targeting a lot of unbanked households[1], [2].

Unified Payments Interface (UPI) launched in 2016 as an overlay to facilitate secure and real-time transactions on mobile phones. UPI provides an interoperable API interface for the initiation and collection of payments and serves both banks and new players such as Google Pay. UPI also enabled cheaper transaction processing, benefiting consumers and market players. Since August 2016, UPI has processed at least 1.3 billion transactions with 146 banks[3].

NPCI has made a significant impact, effectively establishing the market standard for digital payments, serving new and existing players. Having a nominee director on the Board of NPCI, the regulator can steer policy objectives and have better visibility over risks and benefits for supervision. Still, trade-offs with financial stability start to arise from having a single payment organization, and the RBI has recently released a framework to authorize a new NPCI-like entity.

1 India Times — RuPay clocks 1 billion transactions, surpasses debit cards in usage

2 Department of Financial Services — Financial Inclusion Annual Report Material

3 NPCI — UPI Product Statistics

ACTIONS ON REGULATORY FRAMEWORK

Revise measures within financial regulation, that is, within financial regulators' remit

Update or expand rulebook for new products and services. Authorities need to conduct an analysis of new products' and services' risks and benefits, the implications for consumers and market structures, and cost-benefit analyses of regulations. This is particularly important because prudential rules have an impact on the level playing field. This analysis should inform the definition of a set of criteria for what new products and services should be included within the regulated perimeter. Decisions will then follow on how to do this in practice within existing rulebooks. For example, one option will be to classify new products as existing categories, like "securities" or "commodities," to apply the existing rules as-is. Another option will be to amend or draft new regulations. In doing so, authorities should issue accompanying guidance and expectations on the specificities of new products to help players navigate the rulebook. For some new activities requiring broader regulatory adaptations, authorities might consider issuing specific new licenses with a complete set of requirements, such as for digital banks, robo-advice, or peer-to-peer.

Decide on a regulatory format for new technologies and distribution mechanisms. In principle, regulation should be technology-neutral, but some new technologies such as AI, biometrics, and the cloud may drive new risks for consumer protection or operational resilience, regardless of the entity using it. In addition, entities may require legal certainty over using these in specific applications such as credit scoring. Authorities will need to assess the risks of new technologies and distribution mechanisms (and whether differentiation is needed by application) and define those that may require guidance to safeguard their correct usage and the authority's desired conduct-of-business and outcomes — for example, to avoid discrimination of underserved segments in algorithmic-driven credit scoring. It is likely authorities will then need to allocate resources to better monitor the outcomes, rather than the construct, of such technology applications (for example, monitoring credit scores and disbursements alongside credit models themselves).

Improve the proportionality of the rulebook across entities and activities. As value chains unbundle across different players, different activities reveal themselves to be subject to different rules. The principle of "same activity, same risks, same regulation" has been cited often in policymaking deliberations. Practical application is challenged, however, by specific entities possibly driving different risks, and some entity-based application — even if only within a specific license — being required for legal enforcement. For example, some authorities might consider SME lending to have a different risk profile if provided by a deposit-taking institution, a collective fund, or a tech player.

While in part this is already done with proportionality and principles-based rules, authorities will need to develop more ability to identify and isolate activities and their risks along a given value chain and define criteria to apply the relevant sets of rules on these activities. This will imply defining criteria to judge which activities may be systemic and which players entail which types of risks, including systemic risks (a "matrix" form for the rulebook, along a given entity-activity pair).

Often risks won't be easily segregated and authorities will need to make trade-offs as well as use or establish new national processes to examine implications outside the financial sector. For example, some activities may be deemed as not posing risks to deposits, while others do. Likewise, some activities might pose high non-financial risks when performed by players active outside the financial sector, while others drive higher risks in the financial realm.

Improve consumer awareness on levels of protection across products and players. Consumers are often not fully aware of the different levels of protection of new products, such as if e-wallet balances are not considered deposits, and may take on risks they do not fully understand or cannot afford to bear. Authorities should consider increasing consumer protection and conduct obligations as new, technology-heavy products and services grow in the market. These could be done with better communication and disclosures, better training of staff, or embedding these in product delivery, such as with pop-up alerts in specific online services or apps. Obligations may also be adapted by activity — for example, having additional obligations for customer-facing functions. Controlling such practices may also be reinforced via better guidance, reporting, inspections, or penalties.

Strengthen policy responses on themes that cut across industries, requiring closer cooperation and coherence of rulebooks enforced in finance and other key economic sectors

Competition: Recent initiatives such as innovation hubs and regulatory sandboxes are opening more competition in the financial services industry, but the entry of big tech is raising new questions on market power concentration. Policymakers will need to consider broadening the definition of market dominance or changing the definition of the market itself from size and market share toward parts of the value chain — for example, in segments such as payments and SME lending, where market share is small, but dominance exists in customer-facing and infrastructure functions.

At the same time, anticompetitive or monopolistic practices need to be disentangled from entities performing them, so that these can be regulated and enforced regardless of a given entity's being considered, and especially before it becomes, market-dominant. For example, authorities would act to prevent players from charging below the cost of capital to gain customer share, or from leveraging dominance in non-financial activities such as commerce or data to gain unfair advantage in providing financial services. In particular, cross-sectoral regulations on data access and sharing could complement competition policies and ensure level playing field in digital markets.

And some infrastructures in financial markets, such as technology infrastructures supporting payments services, are becoming essential for the provision of services and development of offers to any market player. This will raise new questions for competition policy in terms of ensuring fair access and fair conditions for new and existing players.

Antitrust legal mandates may require adjustment to integrate these new realities, as well as supervisors' monitoring frameworks, resources, and governance arrangements. Joint action and

CASE STUDY

VIRTUAL BANK LICENSE

Influencing market entry in entity and activity mix

A virtual bank can be defined as one without physical branches, delivering services in digital channels. While these generally have similar prudential requirements to those of other deposit-taking banks, some authorities have issued specific licenses targeted at these types of players. Different license models are emerging — for instance, differentiating on the level of requirements compared with traditional banks, or the scope of activities allowed. These models reflect different appetites and policy objectives on competition, innovation, and financial inclusion — for instance, Singapore's virtual banking license requires target customers to be underserved segments (see the exhibit that follows).

So far, virtual bank licenses seem to have encouraged competition. In markets with the supplementary model, applicants are more diverse and have included big tech, especially Chinese players. Markets closer to the incubation and open models saw new digital banks, including from incumbents, that have experienced rapid growth and scope of services, despite profitability challenges (for example, Monzo Bank in the United Kingdom and Kakaobank in Korea)[1].

Different virtual bank license models by jurisdictions

Model	License requirement	Allowed business scope	Example markets	Example tech/bank players or applicants
Supplementary model	Same capital requirement Ring-fence from parent's commercial businesses Extra commercial requirements	Full banking services		Standard Chartered Grab; Sintel; Mi; Tencent-ICBC Tencent; Mi; Xiaomi
Incubation model	Lower liquidity and capital requirement in first 3 — 5 years	Restricted scope in grace period Full services after granting full license		Volt; Tyro; me Monzo; Starling Bank
Open model	Lower capital requirement • Grace period in complying Basel III • Less restrictive ownership % by non-financial company	Full banking services		Kakao; Kt
Niche model	Lower capital requirement	Deposit (restricted cap) Debit cards Loan/credit cards not allowed		PayTM, Jio Payments Bank Ltd

● High requirement ● Low requirement ● Wide scope ● Narrow scope

Source: HKMA, MAS, China State Council, APRA, FCA, news articles, Oliver Wyman analysis

1 E.g. Kakaobank barely broke-even in 1Q2019; Monzo recorded GBP47MM net loss in 2019 (~600% cost-income ratio); Revolut recorded GBP33M net loss in 2018 (~160% cost-income ratio)

coordination will be required across competition and sector-specific authorities, such as financial ones, for some areas, focusing on new and existing players as well as the sector as a whole — for example, monitoring indicators on concentration or market liquidity for the sector.

Financial and economic stability: Traditionally, financial stability mandates and regulation have been closely tied to prudential requirements. More recently, traditional techniques have evolved to consider non-financial specific threats such as cyber. The increased profile of big tech may challenge financial stability processes even further, given the comparatively unknown nature of the risks that new business models may present to the overall system and its interdependencies.

Authorities may consider defining financial stability threats and "systemically important" or "essential" financial activities more broadly, to encompass critical infrastructure provision and the strength of non-bank players where appropriate. This may imply defining criteria to assess whether non-banks such as big techs, large payment infrastructure providers, or global companies should have some additional "systemic" considerations when performing specific financial activities or providing technical infrastructures that are essential for financial activities. Or it may imply defining criteria to determine essential financial activities (such as deposits) that require enhanced protection.

This does not necessarily imply imposing capital requirements to all players, but rather assessing whether new regulatory requirements should be considered (such as operational resilience assessments) for when these large players are operating under specific financial sector license, such as providing lending or current account services. In addition, requirements and guidance on outsourcing arrangements, business continuity, and protection of vital systems may need to be strengthened to ensure operational resilience across all industries, to manage contagion effects in crises across both financial and non-financial sectors — for instance, for cloud platforms.

Data protection and exchange: Policymakers across jurisdictions are striving to strike a balance across sometimes conflicting policy objectives on data ownership, access, usage rights, competition, privacy, and exchange. This is particularly important for finance given the sensitivity of financial data and special characteristics of the sector. In addition to its sensitivity, access to data is increasingly important as it is being used as a competitive element.

Authorities will face a long list of decisions on data regulation. For the financial sector it will be particularly important to have clarity over common principles and standards across industries, such as on privacy, access, exchange mechanisms, technical standards, and allowed technologies, and to define the perimeter of and specific rules for financial data, such as application of rules per type of entity and activity, or permissioning rules for customers. It will be equally important to regulate the exchange and usage of financial data for conduct issues, such as across e-commerce and advertising, to prevent financial data from being misused to target products and pricing on commerce, or vice-versa, as well as giving legal certainty over how data is accessed and protected across different types of entities.

This will be particularly challenging because the importance of data across many economic sectors makes it increasingly entangled with other policy issues such as privacy, competition,

cybersecurity, and national security, to name only a few. Enforcing such rules in specific sectors, like finance, will likely require additional capabilities by financial supervisors and governance frameworks with data and competition authorities — for example, to supervise data-sharing arrangements in big tech-bank partnerships to prevent abuse, or to determine and regulate possible differences across non-bank data aggregators and other service providers.

Taxation: Digital players may provide financial services without physical presence in certain markets, blurring to whom they become accountable for taxation. Policymakers are already pursuing analysis in this area, in particular via the Organization for Economic Cooperation and Development. Authorities will need to consider new supranational arrangements to ensure fair taxation over global digital players (for example, agreeing on common principles and taxing rights across jurisdictions), to transfer pricing rules and profit reallocation, and to enable global data sharing and knowledge exchange. In particular, the OECD is proposing the introduction of a digital services tax that would target non brick-and-mortar companies[1], though the specifics are still under debate[2], namely on the overall approach (global vs. local rate, scope of application, and enforcement mechanisms). International cooperation will be required to ensure unilateral actions do not shift digital activity and create imbalances across markets. For instance, France, Spain, and the United Kingdom have already announced a digital tax that would apply to big techs.

AML and CFT: Given the asymmetries in the implementation of global standards, policymakers should consider strengthening the regulatory framework in particular for non-financial sectors in line with Financial Action Task Force guidelines, such as establishing clearer mandates and powers for AML and CFT regulation and supervision. For all sectors, including the financial sector, improvements are also required in the risk-based approach to ensure effective understanding of risks, controls, data, and reporting, and better monitoring and enforcement by supervisors.

Extend finance-specific regulations to other industries where inconsistencies in regulation and enforcement have emerged, as appropriate

Consumer protection: Increasing activity online and cross-border will put pressure on consumer protection rules across a variety of sectors, including finance, commerce, advertising, and other technology-based services. Since the financial crisis, the financial sector strengthened standards and enforcement in consumer protection, such as ensuring adequate disclosures, avoiding discriminatory pricing, and establishing suitability assessments per type of consumer for selling practices. These are areas in which standards may exist in non-financial sectors, for example in advertising, retail, or for listed companies. But differences in the intensity of supervision and the enforcement oversight model may result in different applications, or at least how financial and non-financial firms experience these rules and requirements.

1 Source: OECD — Secretariat Proposal for a "Unified Approach" under Pillar One

2 See details in submissions by SIFMA and IBFed to OECD consultation

Policymakers might therefore consider assessing and selecting the appropriate rules to be applied consistently across sectors for consumer protection — for example, identifying areas where common principles can be established (such as ethics and conduct in online channels) or areas where best practices observed in one sector can be extended to others in society. Where required, it will also be important to define consumer protection requirements for specific products and services that are independent of the entity providing them.

Corporate governance: Decision-making standards, ethics, and governance will be increasingly required as regulation requirements and business opportunities become "horizontal" across industries. Different sets of corporate governance exist across sectors, and are particularly strict in banking and markets activities (covering financial and non-financial firms, for example, on financial disclosures for listed companies), including for any listed company.

Policymakers might consider whether to embed – and enforce – corporate governance standards of banking and markets for institutions or activities outside finance, such as those regulating conflicts of interest (for instance, if a company runs financial and non-financial businesses simultaneously), accountability of key personnel and management (for example, for sales teams) or disclosure and reporting requirements (such as for private companies if there are risks to financial stability).

Operational resilience: Continued digital innovation, by both incumbents and non-bank players, will further increase the importance of cyber and operational resilience frameworks. In recent years financial regulation has increased requirements on information and communication technology, cyber, security management, testing, and incident reporting, at the national and global levels.

Because the financial system is increasingly interconnected with digital infrastructures, policymakers should consider setting minimum requirements for firm resilience and business continuity (that is, for non-bank deposit-takers, third-party providers, or cloud service providers) across sectors as appropriate, and allocate oversight responsibilities to the respective sector supervisors.

ENABLERS

Redesigning the regulatory and supervisory architecture:
Often it is easier to define the rules that would be needed than to decide who would write or enforce them. The actions suggested earlier will require policymakers to consider which legal mandates and powers to adjust, and whether some require shared mandates, for instance to define new competition frameworks across competition and industry authorities. Consideration will need to be given to the existing institutional landscape and available capabilities, budgets, and resources in existing authorities, as well as the overall vision for the sector and policy objectives. Revising the landscape may justify assessing the potential for reducing the institutional fragmentation or setting up new regulators, if deemed appropriate within a country's specific policy objectives, such as a new authority for technology or payments. Budgets and resources

would then need to be aligned to the new setup to deliver on mandates and ensure there are a coherent set of objectives across different regulatory agencies, regardless of the fundamental institutional setup.

Strengthening regulator and supervisor capabilities:
Authorities in financial services are under pressure to change to address technology-led disruption and changing market structures. At the same time, new technologies provide opportunities to better equip regulators and supervisors, enable a more intelligence-led approach to supervision, and improve overall effectiveness. Supervisors should consider changes in their organizational structures and allocation of resources (for instance, with teams focused on activities and technologies, diversifying the skills mix and establishing new ways of working), improving their risk identification and monitoring (for instance, making better use of data and tools for dashboards, early warning indicators, and monitoring outcomes) and increasing their internal use of analytics for automation and efficiency

Improving international, cross-border cooperation frameworks:
As financial activity moves cross-border and cross-industry, pressure will build to ensure coordinated action across industry-specific regulators as well as international authorities. New institutional arrangements are required to enable more cooperation and policy harmonization across industries, such as data commissions joining different competent authorities, or coordinating councils across sector regulators (much like financial stability councils), and to establish global standards for systemically important topics like data and IT security. In some markets, the legal basis for cooperation could be strengthened, such as for data sharing and crisis management, and some issues that cut across sectors could have a common legislative framework even if not common supervisors, or at least common principles across sectors even if the respective sector regulators would then differ in their detailed regulations. In addition, cooperation and knowledge sharing across public and private sector, including cross-border, could help exchange expertise and feed knowledge into individual authorities such as cyber or crypto expert groups as well as fora to enable better and more practical exchange of good practices across sectoral and national authorities, such as the Global Financial Innovation Network and the BIS Innovation Hub.

CASE STUDY

IMPROVING CROSS-BORDER COOPERATION WITH BIS INNOVATION HUB

As part of its medium-term strategy, Innovation 2025, the Bank of International Settlements in June 2019 announced the creation of the BIS Innovation Hub. It aims to foster cooperation between central banks on driving technological innovation in finance, with three key mandates: to identify and develop in-depth insights into critical trends in financial technology; to develop public goods in the technology space geared toward improving the functioning of the global financial system; and to serve as a focal point for a network of central bank experts on innovation.

Local financial regulators in Hong Kong, Switzerland, and Singapore have established three centers that are working on different topics, including big techs' impact on financial markets, developing public infrastructure for digital identities, and exploring regulatory technology, supervisory technology, and asset-tokenization technologies. Topics are expected to evolve over time to keep pace with global developments, and additional innovation centers will be set up in the Americas and Europe as part of the next phase of the project.

GLOSSARY

Acronym	Full name
AI	Artificial intelligence
AIRB	Advanced Internal Rating-Based
AML / CFT	Anti-money laundering / combating the financing of terrorism
API	Application programming interface
APPI	Act on Protection of Personal Information (Japan)
APR	Annual percentage rate
APRA	Australian Prudential Regulation Authority
AWS	Amazon Web Services
BAML	Bank of America Merrill Lynch
BASEL III	Third Basel Accord
BATJX	Baidu, Alibaba, Tencent, JD.com (as known as Jingdong), Xiaomi
BCB	Central Bank of Brazil
BCBS	Basel Committee on Banking Supervision
BCBS239	Basel Committee on Banking Supervision's standard number 239, titled “Principles for effective risk data aggregation and risk reporting”
BIG TECH	Big technology companies
BIS	Bank for International Settlements
BOE	Bank of England
CBDC	Central bank digital currency
CCPA	California Consumer Privacy Act
CDR	Consumer Data Right (Australia)
CEO	Chief Executive Officer
CFPB	Consumer Financial Protection Bureau (US)
CFTC	Commodity Futures Trading Commission (US)
CMA	Competition and Markets Authority (UK)
COVID-19	Coronavirus disease 2019
DEPA	Data Empowerment And Protection Architecture (India)
DLT	Distributed ledger technology
ECB	European Central Bank
EU	European Union
FATF	Financial Action Task Force
FCA	Financial Conduct Authority (UK)
FI	Financial institution
FINCEN	Financial Crimes Enforcement Network (US)
FINTECH	Financial technology (companies)
FS	Financial services
FSB	Financial Stability Board
FSC	Financial Services Commission (Korea)
FX	Foreign exchange

GLOSSARY

GAFAM	Google, Amazon, Facebook, Apple, Microsoft
GBP	Great Britain Pound
GDP	Gross domestic product
GDPR	General Data Protection Regulation (EU)
GFIN	Global Financial Innovation Network
HKMA	Hong Kong Monetary Authority
IFWG	Intergovernmental Fintech Working Group (South Africa)
KYC	Know your customer
LGPD	Lei Geral de Proteção de Dados, i.e. the General Data Protection Law (Brazil)
MAS	Monetary Authority of Singapore
MAU	Monthly active user
MDR	Merchant discount rate
ML/TF	Money laundering / terrorism financing
MMF	Money market fund
NPCI	National Payments Corporation of India
OCC	Office of the Comptroller of the Currency (US)
OECD	Organisation for Economic Co-operation and Development
OSC	Ontario Securities Commission (Canada)
P2P	Peer-to-peer
PBOC	People's Bank of China
PDPA	Personal Data Protection Act (Singapore)
PDPB	Personal Data Protection Bill (India)
PDPO	Personal Data Privacy Ordinance (Hong Kong)
PIPEDA	Personal Information Protection and Electronic Documents Act (Canada)
POC	Proof of concept
POPIA	Protection of Personal Information Act (South Africa)
PSD2	The revised Payment Services Directive (EU)
R&D	Research and development
RBS	Royal Bank of Scotland
ROE	Return on equity
RTGS	Real-time gross settlement
SME	Small and medium enterprises
SWIFT	Society for Worldwide Interbank Financial Telecommunication
TELCO	Telecommunications (companies)
UK	United Kingdom
UPI	Unified Payments Interface (India)
US	United States of America

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