BigTech and New Banking Landscape – Evolution, Benefits, Risks and Oversights

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Executive Summary

Nowadays advance in technology, coupled with huge amount of heterogeneous data being available, is boosting developments in fields as marketing, robotics, automotive, etc. In this sense, the financial sector is not any different, having already experimented substantial changes from, just to name a few, trading activities to credit lending’s. Entrance of new players, from small FinTech companies to BigTech firms, has the potential of either enhance or disrupt the status quo of the financial ecosystem. Examples are already tangible in countries like China, were Alipay, Tencent and Ant Financial are having a sensible impact on payments and credit provisioning activities. Since even more firms are attracted by the potential revenue streams coming from opportunities within the financial sector, regulators has started posing questions about how non-financial institutions should be regulated. This paper aims at providing an overview of the current FinTech and BigTech landscape, with emphasis on the main services provided, coupled with a summary of the assessments already performed by surveillance authorities (mainly BIS) on risks and opportunities the financial sector is facing.
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This article was written in collaboration with Ilaria Biondo, who at the time was working for Iason Consulting.
# Table of Content

**Introduction**
- p.5

**Banking System, a Brief Overview**
- p.5

**The BigTech Landscape**
- p.7
  - BigTech, a Brief Overview
  - p.8
  - Drivers for BigTech Entrance in the Financial Market
  - p.8
  - The BigTech Positioning in the Market
  - p.9

**Regulatory Concerns and Proposed Actions**
- p.11
  - Possible Evolution, Different Scenarios
  - p.11
  - Key Risks the Banking Sector Can Face
  - p.14
  - How New Risks Can Be Faced and Managed
  - p.15

**Conclusions**
- p.16
  - Benefits from BigTechs
  - p.16
  - Risks and Supervisors Moves
  - p.17
  - Final Remarks
  - p.17

**References**
- p.19
BigTech and New Banking Landscape – Evolution, Benefits, Risks and Oversights

Ilaria Biondo  Antonio Menegon

With this paper the authors aim at providing a general overview of the BigTech landscape and how it is impacting and how it could transform the banking system. A description of the main areas already covered by tech companies in the financial sector will be provided, along with a summary of examples which already proved effective.

Building on this premise, the authors present risks and possible benefits arising from the intersection of the two worlds, banking and tech, providing also an overview on the actions and approaches surveillance authorities are working on. In this regards, great emphasis will be put on Bank of International Settlement (BIS) publications, where both forecast scenarios and actions to be taken for the safe and soundness of the banking system’s future, are suggested.

1. Banking System, a Brief Overview

In order to present what comes next, this section is primarily aimed at providing a brief overview of the current banking system, highlighting the main business areas which the paper will focus on. Being the central financial intermediaries, banks are the pivot of a vast, complex and extremely regulated system that matches sources and use of funds across different sectors. Based on the annual banking report by McKinsey [7], in 2017 such funds totaled more than $260 trillion globally. Annual revenues from financial intermediation amount to around $5 trillion, of which banks have long commanded a substantial portion. In order now to narrow down our dissertation, we deem important starting from the different bank’s business models. According to Ayadi et al. [1] and Farne and Vouldis [8] terminologies, and as stated in Cutri and Esposito [6], we can clusters banks into four main macro typologies:

1. **Traditional Retail Funded commercial banks** *(Traditional RF)* represent the retail-oriented banks which are relatively more active in lending to customers and fund themselves mostly with deposits.

2. **Traditional Long Term Funded commercial banks** *(Traditional LTF)* represent the retail-oriented banks which are relatively more active in lending to customers and that are financed almost exclusively from issuing securities, while having a limited percentage of retail deposits.

3. **Complex commercial banks** *(Complex)* possess a significant percentage of loans on their asset side but lower compared to Traditional commercial banks because they also own a larger trading book.

4. **Investment banks** *(Investments)* which rely mostly on the trading activity.
It is now interesting considering two points:

1. How the revenues streams are split in the financial intermediation system;
2. Which business models seem to have proved be more robust in the current regulatory framework.

Based on the aforementioned banking report by McKinsey [7], the total annual revenue of financial intermediation has been roughly $5 trillion (cfr. Figure 1), mainly concentrated in the old-fashioned core business of Traditional RF/LTF and Complex banks:

- Retail banking (35%);
- Corporate & Commercial banking (30%);
- Payments (14%).

Iason’s study on the 2018 EBA Stress Testing exercise (cfr. Cutri and Esposito, [6]) seems to suggest how:

- Traditional LTF are the banks with better foundation from both the CET1 (the lowest negative impact on the Fully Loaded CET1 ratio among the business models analyzed) and P&L perspectives (they faced the highest percentage increase in ROI from 2012 to 2017).
- Many banks have converged to the Complex business model, although both historical and stress-test analyses show that this model has been over-performed by Traditional models.

Building on that, it appears that the major part of the financial revenues stream is concentrated in the banking segment which proved to be consistent from a regulatory point of view. Though, it also holds true that the same banking system considered has remained largely unchanged in the last decades. If that could have been not an issue in a time span in which banks’ leading position in its core components has gone mostly unchallenged, old fashioned business models and huge legacy systems could expose banks to more or less severe business risks in case of brand new competition from tech companies.
2. The BigTech Landscape

The banking industry is facing in the recent years different levels of competition in some previously monopolized revenues streams from new players, namely FinTech and BigTech firms. In this paper, opting for the Financial Stability Board’s (FSB) definition, we do refer to FinTech as technologically enabled financial innovation that could result in new business models, applications, processes, or products with an associated material effect on financial markets and institutions and the provision of financial services. For BigTech, we do leverage on the BIS’ definition which describes such entities as large globally active technology firms with a relative advantage in digital technology, whose core activity is in the provision of digital services, rather than mainly in financial services. In the dissertation that follows, the authors will focus primarily on BigTech firms in the comparative analysis with bank players. We do so since our belief is that the real game changers in the banking industry (either as new players or as boosters of the as-is system) are and would be BigTech firms rather than FinTech’s. Even if we are not going to dive into this assumption, our main point is that FinTechs are primarily innovators, who can actually bring new ideas and business tools for the financial ecosystem to be exploited. But BigTechs, due to mainly their dimension, technology and
financial capabilities, can really challenge the status quo of the banking system, also leveraging on FinTech’s new products and know-how (e.g. by acquiring the companies, scaling their innovations to a broader pool of users and clients, ...).

2.1 BigTech, a Brief Overview

As stated, BigTechs are large existing firms with business focused on digital and technology sectors. The main players in this landscape are tech giants from US and China, whose market capitalization has been growing in the last years up to levels far greater than the major banks around the world (see Figure 2).

As stated in this year BIS’ working paper about BigTechs (cfr. [3]), these firms have a business model distinguished by two primary features:

1. **Network Effects**: BigTechs can leverage on massive data generated by their network of services provided and platforms, ranging from e-commerce to messaging, search engines and social-media.

2. **Technology**: BigTechs do possess a true hedge when it comes to latest technologies and applied research.

Due to the combination of the two, BigTechs can and actually do exploit the huge amount of heterogeneous data (e.g. big data) they generate and collect, processing it with cutting edge technology (e.g. artificial intelligence, big data analytics, etc. - cfr. for example [5]) to extract business insights and revenues. Profits they generate are also produced by cross selling opportunities created in the firms’ networks that can be turned into revenues at close to zero marginal cost, always thanks to the BigTech digital nature.

2.2 Drivers for BigTech Entrance in the Financial Market

In order to analyze both the current presence on the market of BigTechs and their possible (future) impacts on the banking system, it is worth assessing which are the main drivers of BigTech activities in financial services. The authors here start from what BIS has analyzed (cfr. [3]) as critical in the developments so far registered, factors which easily could scale up in the next future for a broader entrance of BigTech firms in payments and credit lending (just to name a few) markets. In the April 2019 working paper (cfr. [3]), BIS identified seven key drivers - with either positive or negative leverage - distinguishing between demand and supply; Figure 3.

**Demand.** On the demand side there are two important factors to be considered:

1. **Unmet customer demand**: BigTech firms may find opportunities to grow in areas where existing companies or consumers are underserved by banks; an example is the entrance of tech firms in the credit lending markets (in not developed or emerging economies) where there is low share of the population with a bank account or credit card.

2. **Consumer preferences**: consumers and small businesses are more likely to use the financial offerings of BigTech companies when they are largely comfortable with new technologies, especially if banks do not change their provisions of financial services. This can be more clearly visible especially within the digital generation.

**Supply.** On the supply side there are more factors to be explored:

1. **Access to data**: thanks to the huge pool of daily users and new technologies, BigTechs have access to a wide range of customers’ data to be analyzed. For example, this can help them gaining superior information to assess the creditworthiness of borrowers and policyholders, boosting a more accurate credit and insurance assessments and lower costs of the intermediation process.

2. **Technological advantage**: the use of new technologies like artificial intelligence or machine learning allows BigTech to better process data with respect to traditional banks’ legacy systems. For example, in case of credit lending, this could lead to lower default rate or lower cost per loan granted.
3. **Access to funding**: in order to obtain adequate funding, BigTechs usually partner with banks or set up their own bank. Other common practices to access funding are loan syndication or an “originate-to-distribute” model.

4. **Lack of regulation**: financial activities performed by BigTechs are usually not oversight as much as banks’, since existing financial regulations do not apply outside the banking system. This may imply lower costs and a competitive advantage for BigTechs.

5. **Lack of competition**: traditional banks and non-bank lenders may be shielded from competition by regulation or by market power in the banking sector.

### 2.3 The BigTech Positioning in the Market

The analysis just presented is mainly based and, at the same time, supported by real examples of BigTech firms’ new business lines developed in areas other than the digital (cfr. Figure 4). In the present section, a few examples of BigTech/FinTech adoption is presented for different applications.

**Payments.** In payments sector, data (cfr. Figure 5) show that China is by far the largest market with the activities of Ant Financial (part of Alibaba Group) and Tencent: BigTech mobile payments for consumption reach 16% of GDP. Ant Financial’s Alipay and Tencent’s WeChat Pay have surpassed 500 and 900 million monthly active users, respectively, or 36% and 65% of the overall population, accounting together for 94% of the mobile payments market in China.

In Latin America, the e-commerce platform Mercado Libre’s payments service has 12 million active monthly users. Mercury Libre had outstanding credit over $127 million in Brazil, Argentina and Mexico as of late 2017. In the UK, Amazon has offered an insurance product for online purchases called Amazon Protect, however it is at a much lower scale than China offerings.

**FIGURE 4:** Brief overview of BigTech/FinTech main examples in the financial services. Data According to eMarketer estimates.

<table>
<thead>
<tr>
<th>Payments</th>
<th>Credit provisioning</th>
<th>Savings, insurance and investment products</th>
</tr>
</thead>
<tbody>
<tr>
<td>China</td>
<td>Alipay and WeChat Pay have surpassed 500 and 900 million monthly active users, respectively. Together they account for the 94% of mobile payments market in China.</td>
<td>Both Ant Financial and Tencent’s subsidiary WeBank provide lending to millions of small and medium firms and its customers. However, their activity is still in terms of total lending.</td>
</tr>
<tr>
<td>U.S.</td>
<td>The volume of mobile payments accounts for $112 billion. Apple Pay has 22 million users who made an in-store payment in the last 6 months, Google Pay 11.1 million and Samsung Pay 6.8 million.</td>
<td>Amazon lent over $1 billion to small and medium-sized businesses in 2017. Quicken Loans account for about B-12% of new mortgage loan originations in the US.</td>
</tr>
<tr>
<td>Latin America</td>
<td>The e-commerce platform Mercado Libre’s payments service (Mercado Page) has 12 million active monthly users.</td>
<td>Mercado Libre had outstanding credit over $127 million in Brazil, Argentina and Mexico as of late 2017.</td>
</tr>
<tr>
<td>Europe area</td>
<td>Amazon, Google and Apple are expanding also in Europe with their innovative payments services. Amazon Pay, Google Pay and Apple Pay users number is still limited compared to 0.3.</td>
<td>In the UK, Amazon has offered an insurance product for online purchases called Amazon Protect, however it is at a much lower scale than China offerings.</td>
</tr>
<tr>
<td>Other Asia</td>
<td>Kakao and Samsung Pay established in Korea, Line and NTT Docomo in Japan and the tip Go-Jek and Grab provide payments services in Indonesia, Malaysia, Singapore and elsewhere in Southeast Asia.</td>
<td>Kakao established Kakao Bank which granted $4.5 billion of loans over 2017. Ride-hailing apps Go-Jek and Grab are also providing credit services in Southeast Asia.</td>
</tr>
</tbody>
</table>
Credit Provisioning. The activities of BigTech firms in finance did start with payments, but are rapidly expanding into the provision of credit (cfr. Figure 6), insurance and even savings and investment products, although BigTech/FinTech credit activities are still small in aggregate terms compared with overall credit markets.

In China, both Ant Financial and Tencent’s subsidiary WeBank provide lending to millions of small and medium firms and to customers (e.g. for purchases of durable goods). Ant Financial has also made a partnership with an established traditional bank to better serve off-line farmers who could not provide sufficient documentation to apply for regular bank credit.

In U.S., Amazon lent over $1 billion to small and medium-sized businesses in 2017. Moreover, online lenders, like Quicken Loans, now account for 8-12% of new mortgage loan originations in the United States, becoming the largest U.S. mortgage lender in terms of originations at the end of 2017.

BigTech expansion in this field is supported, indeed, by lack of regulation in these markets on financial activities performed by non-bank firms which allows them to operate more easily with respect to regulated banks. In addition, BigTechs have found the opportunity to exploit the gaps left by banks in serving the whole population, using their technological advantage to give access to credit also to consumers who were left out, thus improving financial inclusion.

Savings, Insurance and Investment Products. Most advanced BigTech players are also becoming active in providing financial services like insurance and savings and investment.

In China, Yu’ebao, a mobile money market fund was established to allow customers to invest small cash amounts sitting in their Alipay payment account. Yu’ebao now reached $266 billion assets under management, becoming the largest MMF in the world.

In UK, Amazon has offered an insurance product for online purchases called Amazon Protect; however, it is at a much lower scale than the offerings in China.

 Mercado Libre, in Latin America, is trying to enter into asset management and insurance products, but these activities are also still limited.
3. Regulatory Concerns and Proposed Actions

In the European landscape, the Bank for International Settlement (BIS) has been maybe the most active in investigating the possible impacts BigTech firms could have in the banking systems. In this section, the authors will provide a summary of what has been analyzed and addressed so far by the surveillance authority.

3.1 Possible Evolution, Different Scenarios

In the attempt to address what the banking system could face in the future, BIS provides (cfr. BCBS-431 [4]) an overview of the key risks that traditional banks, BigTechs and banks supervisors may face now and in the future, focusing first on stylized scenarios. The authority do so in order to assess the impact of the evolution of FinTech products and services on the banking industry, with particular focus on the changing relation with final customers.

The scenarios identified by BIS in its analysis are five, their presentation follows; for a synthesis do refer to Figure 7.

**The Better Bank.** This scenario hypothesizes the modernization and digitization of incumbent players: traditional banks, thanks to their market knowledge and higher investment capacities, improve their services and products by adopting new technologies or enhancing existing ones. Banks will exploit technologies to maintain a value-added remote customer relationship, to provide innovative payment services and to digitize the lending process in order to meet consumer’s demand regarding speed, convenience and the cost of credit decision-making.

**The New Bank.** This scenario involves the replacement of traditional banks by challenger ones, the so-called “neo-banks”, or banks instituted by BigTech companies, with full service “built-for-digital” banking platforms. Traditional banks cannot survive the wave of technology-enabled disruption, since new players will provide banking services in a more cost-effective and innovative way. Neo-banks may obtain banking licenses under existing regulatory regimes and own customer relationship, or they can have traditional banks as partners.

**The Distributed Bank.** In this scenario, financial services may be provided by the incumbents or other providers, FinTechs or BigTechs, who can “plug and play” on the digital customer interface, which itself can be owned by any of the players in the market. Banks and BigTechs will operate jointly (as joint ventures, partners, ...) in the delivery of services shared across parties, without attempting to be universal or integrated retail banks and not competing for the ownership of the entire customer relationship. This, in turn, may lead to the development of a large number of
businesses specialized in providing specific services.

Some elements of this scenario are already emerging in nowadays reality, such as the increasing use of open APIs in some markets, innovative payment services created by collaborations between banks and FinTech companies or robo-advisors (automated investment advisory services) provided by FinTech firms through a bank or as part of a joint venture with a bank.

**THE RELEGATED BANK.** In this scenario, incumbent banks leave the direct customer relationship to other financial services providers, such as FinTech and BigTech companies. These firms use front-end customer platforms to offer a variety of financial services, where many data aggregators allow customers to manage different financial accounts on a single platform. In many jurisdictions, consumers become increasingly comfortable with aggregators as the customer interface. BigTechs and FinTechs may use traditional banks for their banking license to provide core banking services such as lending, deposit-taking and other banking activities.

**THE DISINTERMEDIATED BANK.** In this scenario, traditional banks are no longer a significant player in the market: they are displaced from customer financial transactions by more agile platforms and technologies, which ensure a direct matching of final consumers depending on their financial needs. This way consumers may have more freedom to choose the services and the provider, but, at the same time, they also may assume more direct responsibility in transactions, increasing the risk they are exposed to.

Currently, this scenario seems not that plausible, even though some elements may be visible, such as the development of cryptocurrencies, which allow value transfer and payments without the involvement of incumbent banks, using public Distributed Ledged Technoogy (DLT).
<table>
<thead>
<tr>
<th>Risks</th>
<th>Implications</th>
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</thead>
<tbody>
<tr>
<td>Strategic</td>
<td>More competition for incumbent banks</td>
</tr>
<tr>
<td></td>
<td>Profitability at stake</td>
</tr>
<tr>
<td></td>
<td>Market share at stake</td>
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<tr>
<td>Operational</td>
<td>Increased complexity of the system</td>
</tr>
<tr>
<td></td>
<td>Possible systemic crisis due to high market concentration</td>
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<tr>
<td></td>
<td>Payments shielded from the scrutiny of public authorities</td>
</tr>
<tr>
<td>Outsourcing</td>
<td>Increased likelihood of operational incidents</td>
</tr>
<tr>
<td></td>
<td>Third party/vendor management risk</td>
</tr>
<tr>
<td></td>
<td>Increased interconnections between financial parties</td>
</tr>
<tr>
<td>Cyber</td>
<td>Amplified security risks</td>
</tr>
<tr>
<td></td>
<td>Banking system vulnerability to cyber-threats</td>
</tr>
<tr>
<td></td>
<td>Exposition of large volumes of sensitive data to potential breaches</td>
</tr>
<tr>
<td>Compliance</td>
<td>Less transparency of end-to-end operations</td>
</tr>
<tr>
<td></td>
<td>Increasing risks related to data privacy, security, money laundering and</td>
</tr>
<tr>
<td></td>
<td>customer protection</td>
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<tr>
<td></td>
<td>More complex monitoring of financial transactions for public authorities</td>
</tr>
<tr>
<td>Liquidity</td>
<td>Increased volatility of bank deposits</td>
</tr>
<tr>
<td></td>
<td>Affected customer loyalty</td>
</tr>
</tbody>
</table>

*TABLE 1*: Main risks introduced by BigTech/FinTech players in the banking system.
3.2 Key Risks the Banking Sector Can Face

While there can be clear benefits from the development and adoption of new technologies from BigTech/ FinTech firms, bank business models could be sensibly affected giving rise to new and additional risks that must be correctly assessed and managed. BIS (cfr. BCBS-d431 [4]) identifies such risks in six different areas (see Table 1): strategic risk, operational risk, outsourcing risk, cyber-risk, compliance risk and liquidity risk.

**Strategic Risk.** BigTech developments could lead to more competition for incumbent banks from non-traditional players, in an already challenging environment. This may affect the sustainability of bank’s earnings, putting at risk the profitability of individual banks. When new entrants are able to meet customer needs unserved by banks and deliver less expensive services, existing banks may lose a significant part of their market share or profit margin.

The solution suggested by BIS to mitigate this kind of risk is to develop robust strategic and business planning processes that allow banks to adapt their business strategies to take into account the potential impact new technologies and market entrants may have on their revenues. They should adapt new product approval and change management processes to appropriately address changes not only in technology, but also in business activities.

**Operational Risk.** From the proliferation of innovative products and services may arise operational complexity and risk. The creation of IT interdependences in the market increases the complexity of the system, which could be exacerbated by the participation in the banking industries of players with no or limited expertise in managing IT risks (e.g. FinTechs). This may lead to a systemic crisis, especially when services are concentrated in one or few dominant players.

**Outsourcing Risk.** Nowadays, it is common for banks relying on third-party service providers for operational support of technology-based financial services, mainly because of cost reduction, operational flexibility and increased security and operational resilience. However, it is important to highlight that, while operations can be outsourced, risks and liabilities associated with them remain with the bank or ambiguity could arise regarding the responsibility of various actors involved in the value chain, potentially increasing the likelihood of operational incidents.

In this case, a key challenge for financial institutions lies in their ability to monitor operations and risk management activities that take place outside their organizations at third parties. Especially when FinTech companies are the service providers, traditional banks should conduct appropriate due diligence, contract management and ongoing control assurance and monitoring of operations in order to safeguard the bank and its customers.

**Cyber Risk.** Cyber-risk is the one strictly related to the use of new and advanced technologies. The latter, together with new business models, can increase cyber-risk if controls do not keep pace with tech-related changes. Although the increased interconnectivity between market players can produce benefits for both banks and consumers, it can also result in amplified security risks, especially when actors or sectors are not subject to same regulatory expectations. This may lead to vulnerability of banking system to cyber-threats and exposition of large volumes of sensitive data to potential breaches. It is of major importance for banks, FinTech firms and supervisors to emphasize and promote the need for effective management and control of cyber-risk.

**Compliance Risk.** Banks may face increased difficulties in meeting compliance requirements and especially AML/CFT obligations. The entrance of BigTechs/FinTechs in the market (as direct players or as third parties providers), the higher level of automation and distribution of the product or service among banks lead to less transparency of end-to-end operations; this increases risks related to data security, privacy, money laundering and customer protection.

Digital finance gives rise to an increasing number of financial players and eases cross-border transactions, making the monitoring of these transactions more complex for financial institutions and public authorities. New financial players may be outside the scope of banking sector regulation and subject to less stringent AML/CFT rules than banks are. The risk of not complying with data privacy rules may increase with the development of big data, more outsourcing and the associated
competition for ownership of the customer relationship.

An innovative solution to this threat may be represented by the so called RegTech companies, which could provide banks with more effective ways to improve their compliance and risk management, using innovative technologies to copy with changes in the regulatory environment and drive down the costs involved in meeting the corresponding requirements. Moreover, analytics of big data, associated with machine learning and AI, can support banks’ financial crime divisions in the monitoring and reporting of suspicious transactions.

**Liquidity Risk.** The use of new technologies and aggregators creates opportunities for customers to automatically change between different savings accounts or mutual funds to obtain a better return. On one hand, this can increase efficiency and diversification for customers; on the other hand, it could affect customer loyalty and increase the volatility of bank deposits, leading in turn to higher liquidity risk for banks.

### 3.3 How New Risks Can Be Faced and Managed

Even if specific regulations are not ready yet to be adopted in overseeing BigTechs’ activities in the financial system, general approaches should be developed at central banks and surveillance authorities. As suggested for example in BIS’ analysis, safety, soundness and financial stability can be enhanced by the implementation of supervisory programs which can ensure that banks have effective governance structures and risk management processes. These in turn could lead at appropriately identify, manage and monitor the risks previously summarized, arising from the use of FinTech technologies and new business models.

Hereafter, the authors present the aforementioned general approaches, drawing what has been analyzed, mostly, in BIS [4], [5] and EC [9]. At high level, an overall reassessment of the as-is supervisory models would be needed by central banks and relevant surveillance authorities. Such a change can be summarized in four main pillars (Figure 8).

**Adopt New Technologies.** New technologies could be helpful also to supervisors: they can investigate and explore their potential to improve their methods and processes, sharing with each other their practices and experiences.

Some agencies have set up standalone units with dedicated resourcing and reporting lines in response to FinTech issues: this phenomenon is called SupTech, which differs from RegTech as it is not focused on assisting with compliance with laws and regulations, but on supporting supervisory agencies in their assessment of that compliance, increasing efficiency and effectiveness with real-time data access and automation of supervisory processes.

The downsides of SupTech may be related to standardized internal or government-wide policies.
around IT procurement, restrictions on cross-border data movement, and a lack of transparency as to how new technology works and is being controlled.

**Training and Hiring.** Due to the transformation of traditional banking business models, structures and operations, bank supervisors may have the need to reassess their current supervisory models in order to ensure an effective oversight of the banking system: a way of doing so could be (1) assessing their current staffing and training program and (2) hiring specialized staff with the right knowledge, skills and expertise to supervise the risks arising from new technologies and innovative business models.

**Coordination among Jurisdictions.** Bank supervisors should communicate and coordinate with relevant regulators and public authorities to ensure that banks using innovative technologies are complying with the relevant laws and regulations.

In most jurisdictions, both traditional banks and non-bank organizations are subject to the same or similar laws. However, banks developing FinTech products and services tend to be under more direct supervisory oversight compared to non-bank competitors, because of their public role in holding insured deposits on behalf of customers.

Some BigTech companies, especially those engaged in payments and cross-border remittances, already operate in multiple jurisdictions and have high potential to expand their cross-border operations. In this case, further supervisory coordination and information-sharing where needed and appropriate, both between jurisdictions as well as across sectors, is of paramount importance.

**Lawfulness and Ethics of AI.** Since the high leverage on AI-based evaluation systems, it is crucial to guarantee:

- **Lawfulness** of the AI approaches, ensuring that laws and regulations apply correctly and with conformity;
- **Ethics**, being sure that all the basic and fundamental ethical principles are respected, for a human-centric AI;
- **Robustness** of the methodological and technical implementations, ensuring no biases (gender, race, ...) and unintentional harms could arise.

### 4. Conclusions

At market level, the highest number of BigTech/FinTech service providers are in the payments, clearing and settlement category. Although BigTech/FinTech credit is rapidly growing, at the global level it remains quite limited compared with other forms of financing. The total flow of FinTech credit in 2017 represents around 0.5% of total stock of private sector credit at the global level.

The rise of these players in the financial sector has already proven to be at least helpful for customers, allowing them a broader reach of services before negated. This comes along with different benefits for the overall system; nonetheless all the risks, more or less visible, must be correctly assessed, regulated and mitigated.

In the following subsection, we draw the main conclusions from the discussion.

#### 4.1 Benefits from BigTechs

The FinTech/BigTech firms’ presence in the financial sector will undoubtedly bring changes that have benefits as well as possible risks to the financial system. They may:

- Enhance competition and financial inclusion, particularly in emerging markets and developing economies;
- Put welcome pressure on traditional banks to innovate;
- Boost the overall efficiency of financial services.
Unlike banks, BigTech/FinTech firms do not have a traditional branch distribution network to interact with borrowers: their alternative is represented by proprietary data from online platforms, basing the credit decisions, in a loan origination process, on predictive algorithms and machine learning. This approach may represent an advantage over traditional banks, where it is common practice to rely mainly on loan officer judgment alone to approve or reject a potential customer. The use of new technologies may therefore improve the underwriting process and prevent human bias from entering decisions.

Another important benefit that could arise from the entering of BigTech/FinTech in the banking sector relates to the possibility that, thanks to the greater data resources, lending will be accessed also by borrowers who were previously shut out of the formal bank credit market. An example may be represented by many SMEs in emerging market and developing economies which do not meet the minimum requirements to complete a loan application, especially since they cannot provide audited financial statements to a bank and may lack other formal documentation. These limits may be overcome by BigTech/FinTech firms exploiting the information gathered from their core businesses (e.g. e-commerce), like transactions, reputation or industry-specific characteristics, with no need for additional documentation. This approach will help to expand the potential pool of borrowers who can receive credit, facilitating the financial inclusion in markets where financing opportunities are scarce or where the loan application process is onerous for the borrower.

4.2 Risks and Supervisors Moves

The entrance of BigTech/FinTech firms into the banking system, as seen in the previous section, may concentrate market power and give rise to new risks, including systemic risks due to the way these companies interact with the broader financial system. For banks and supervisors, it is indeed of paramount importance to explore and take into consideration these potential risks, understanding how BigTechs and FinTechs fit in the existing regulatory framework and under which principles regulation should be organized.

Supervisors should closely monitor changes in bank business models and the delivery of financial services. Where needed, they should adapt their regulatory frameworks and supervisory approaches. Prudential authorities, currently, may not have a remit over firms that are not banks; moreover, new business products and models that operate outside what is considered traditional banking (crowdfunding, digital currencies and other innovative products) may not necessarily be covered by bank supervisors.

Consequently, the major part of regulatory authorities is considering new regulations or guidance related to emerging FinTech services. It is also true that current regulatory frameworks and supervisory processes may create unintended barriers to FinTech innovations, which could result in the development of innovations outside regulated financial industry, creating unlevel playing-field for competitors and potentially exposing financial consumers to unwarranted risk.

Based on these principles, first examples are starting to arise. Looking at one of the earlier adopters of FinTechs/BigTechs in large scale, China, we can cite the People’s Bank in China (PBC) and the China Securities Regulatory Commission (CSRC) who recently have introduced a cap on instant redemption on MMFs and increased disclosure obligations to avoid misleading forms of advertising. PBC has also adopted reforms for BigTech in payments:

- 100% reserve requirement for BigTechs to keep in the custodial accounts, reducing firms’ ability to supply platform credit;
- Authorized clearing house through which BigTechs have to channel payments, improving transparency in the banking system.

4.3 Final Remarks

To conclude the discussion, the picture drawn tells us how:

- BigTechs can be beneficial for the banking sector, leading the evolution towards a more dynamic and cost effective financial system, where new technologies and new customer-engagement approaches are the main pivot.
- Faster, more holistic and more connected insights, coupled with technologically enhanced business models can although carry risks which may severely threat the financial intermediation actors, from banks to supervisors to final customers.

- Prompt actions by surveillance authorities must be put in place in order to guarantee fair competition, respect of ethical principles and the safe and soundness of the overall financial system.
References


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