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Fintech in Europe: Promises and Threats

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Anna Shabunina, Rachel van Elkan, Xin Cindy Xu

***IMF Working Papers* describe research in progress by the author(s) and are published to elicit comments and to encourage debate.** The views expressed in IMF Working Papers are those of the author(s) and do not necessarily represent the views of the IMF, its Executive Board, or IMF management.

I N T E R N A T I O N A L M O N E T A R Y F U N D

IMF Working Paper

European Department

Fintech in Europe: Promises and Threats

Prepared by Chikako Baba, Cristina Batog, Enrique Flores, Borja Gracia, Izabela Karpowicz, Piotr Kopyrski, James Roaf, Anna Shabunina, Rachel van Elkan, Xin Cindy Xu

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Abstract

Europe's high pre-existing level of financial development can partly account for the relatively smaller reach of fintech payment and lending activities compared to some other regions. But fintech activity is growing rapidly. Digital payment schemes are expanding within countries, although cross-border and pan-euro area instruments are not yet widespread, notwithstanding important enabling EU level regulation and the establishment of instant payments by the ECB. Automated lending models are developing but remain limited mainly to unsecured consumer lending. While start-ups are pursuing platform-based approaches under minimal regulation, there is a clear trend for fintech companies to acquire balance sheets and, relatedly, banking licenses as they expand. Meanwhile, competition is pushing many traditional banks to adopt fintech instruments, either in-house or by acquisition, thereby causing them to increasingly resemble balanced sheet-based fintech companies. These developments could improve the efficiency and reach of financial intermediation while also adding to profitability pressures for some banks. Although the COVID-19 pandemic could call into question the viability of platform-based lending fintechs funding models given that investors could face much higher delinquencies, it may also offer growth opportunities to those fintechs that are positioned to take advantage of the ongoing structural shift in demand toward virtual finance.

JEL Classification Numbers: G20, G21, G23, G28, E42, O30

Keywords: Fintech, lending, payment system, European Union, Payments Directive, PSD2

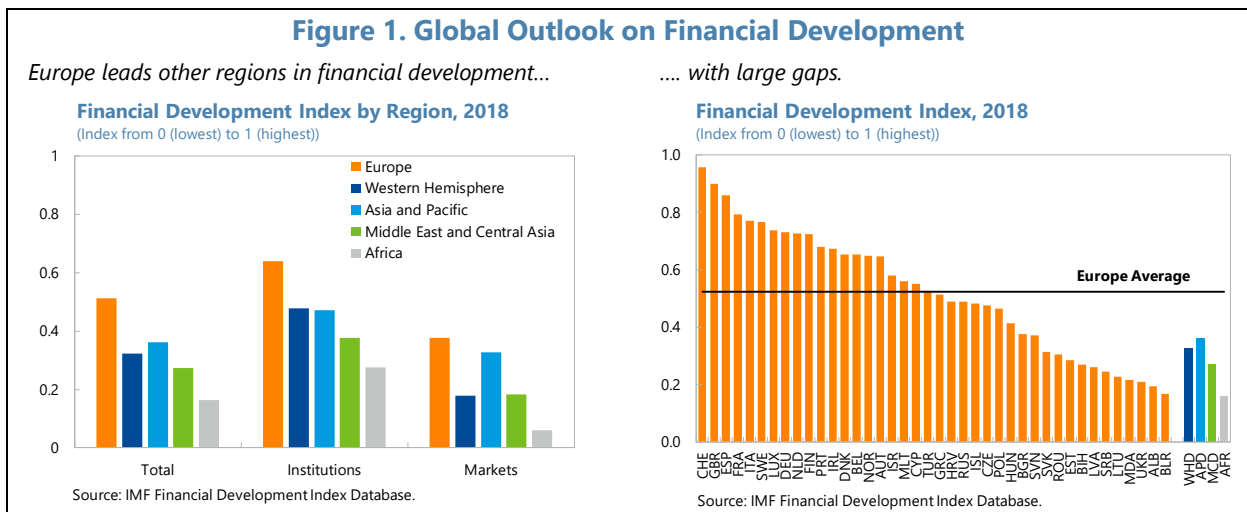
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I. OVERVIEW

1. What aspects of fintech does this paper cover? While there are numerous definitions of fintech, the IMF/World Bank Bali Fintech Agenda defines it as advances in technology that have the potential to transform the provision of financial services spurring new business models, applications, processes and products.¹ Thus fintech covers a broad range of activities, including new areas such as crypto-currencies and the use of artificial intelligence (AI) for fraud detection, as well as innovation in more traditional financial services. This paper looks at fintech payment and lending activities, their regulation and their potential impact on existing banks within the European context. Digital currencies and other types of fintech activities, such as insurance and asset management, are not considered.

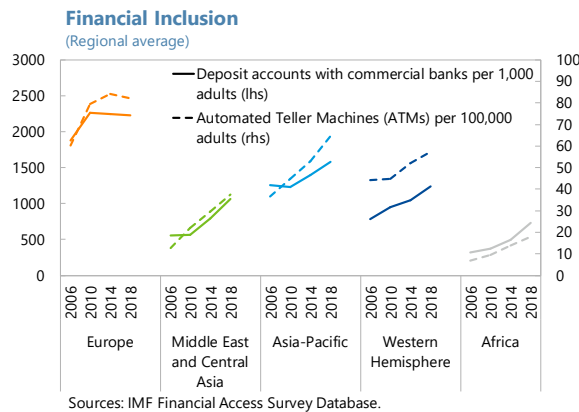
2. The emergence of fintech in Europe comes against a backdrop of already high levels of financial development compared to other regions (Figure 1). The financial development index, which ranks countries along several dimensions including depth, access and efficiency of financial institutions and markets, shows that Europe is a global leader in the development of both financial institutions and financial markets.² The average country in Europe has a similar level of financial development as the best performers in Latin America and the Middle East, while the least developed country in Europe is at par with the average country in Africa. Similarly, the level of financial inclusion, measured by the availability of automated teller machines and bank deposit accounts, is notably higher in Europe than elsewhere.



¹ In this paper we also refer to “fintechs” as shorthand for companies that implement these solutions. For a broader discussion of the definition of fintech see Schueffel (2016).

² The index, developed by Sahay and others (2015), measures the development of financial institutions and financial markets in terms of their depth (size and liquidity), access (ability of individuals and companies to access financial services), and efficiency (ability of institutions to provide financial services at low cost and with sustainable revenues and the level of activity of capital markets).

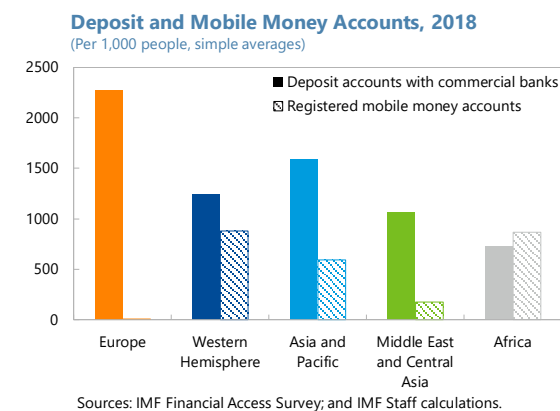
The financial system is dominated by banks.



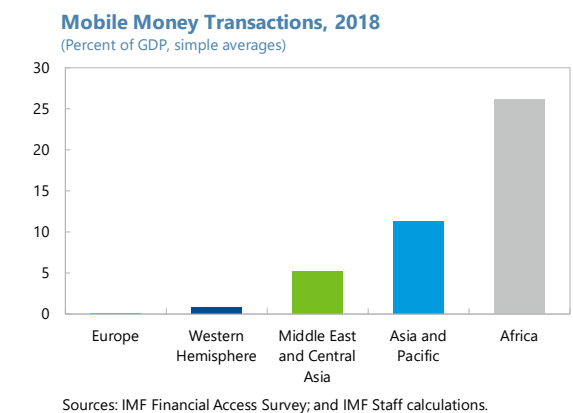
Access to financial services is not a major concern.



Mobile money accounts are not widely used...



....and their transactions value is low.



3. Overall, fintech activities are less developed in Europe than in other regions

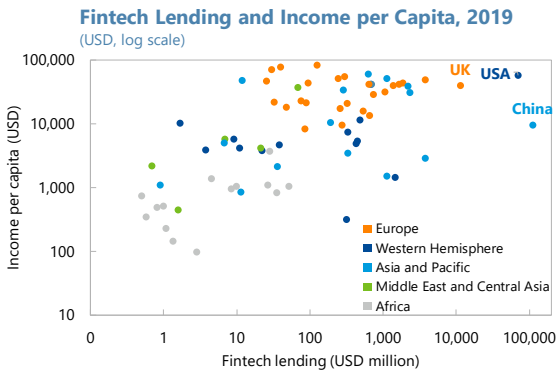
(Figure 2).³ Europe is among the least developed regions in terms of mobile money penetration and significantly lags Asia-Pacific and North America in fintech lending. None of the Big-tech companies, which currently dominate the global fintech landscape, originated in Europe, and Bigtech lending lags far behind the global front-runners— even though Europe leads in internet coverage.⁴ Until the COVID-19 pandemic, new venture capital fintech investments in Europe have been growing rapidly, but the gap with the frontier region of North America remains very large.

³ As with all studies on fintech, availability of comprehensive and cross-country and region comparable data is a severe constraint. No comprehensive source for fintech data is available reflecting numerous technical and legal impediments to compilation. Data is fragmented and must be gathered from multiple providers. In Europe, localization laws prevent granular dissemination, while official statistical data compilers do not collect or report comprehensive information on fintech activities.

⁴ See Financial Stability Board (2019). China's most successful fintechs are under the umbrella of BigTech companies (JD, Alibaba, Tencent), in contrast to North America and Europe.

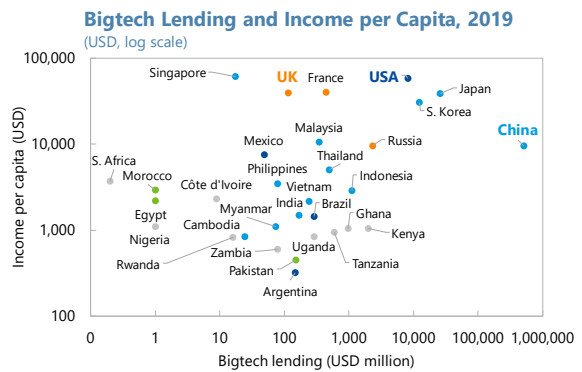
Figure 2. Fintech-Enabling Environment

Fintech lending in Europe is less developed...



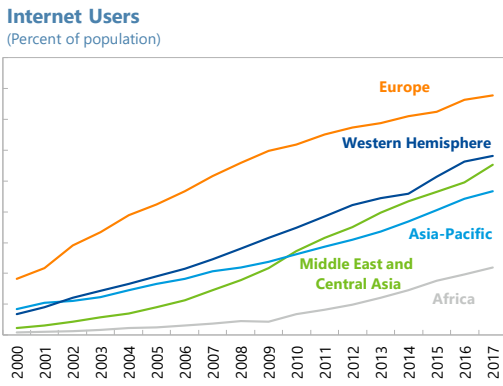
Sources: G. Cornelli, J. Frost, L. Gambacorta, R. Rau, R. Wardrop and T. Ziegler (2020), "Fintech and big tech credit: a new database"; and IMF WEO database.

...and Bigtech lending lags far behind global frontrunners.



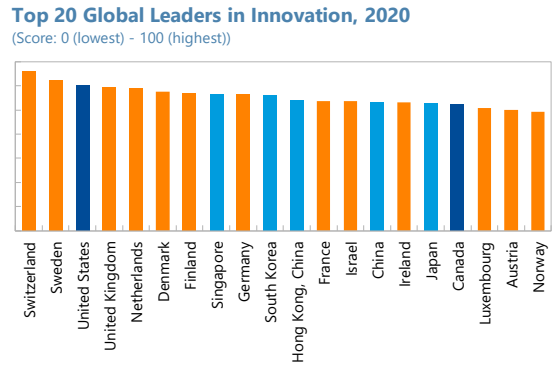
Sources: G. Cornelli, J. Frost, L. Gambacorta, R. Rau, R. Wardrop and T. Ziegler (2020), "Fintech and big tech credit: a new database"; and IMF WEO database.

Despite that, Europe leads the rest of the world in internet coverage...



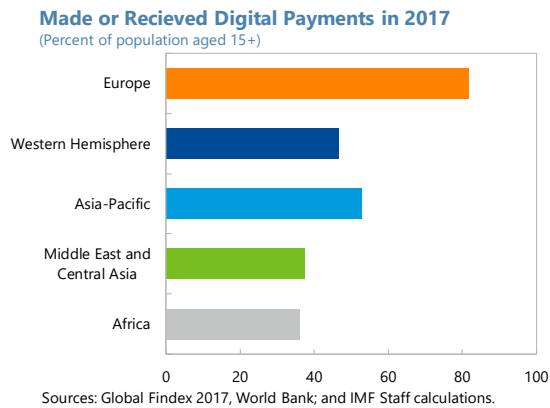
Sources: World Bank WDI database; and IMF Staff calculations.

...and is among the leaders in the global innovation index.



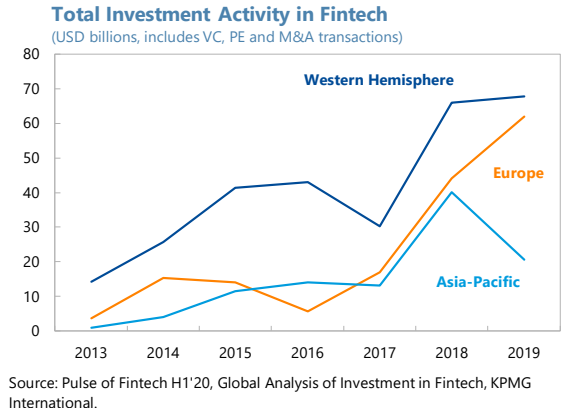
Source: *The Global Innovation Index 2020: Who Will Finance Innovation?*, Cornell University, INSEAD, and WIPO (2020).

Digital payments in Europe are much higher than other regions.



Sources: Global Findex 2017, World Bank; and IMF Staff calculations.

while new Fintech investment is also catching up.



Source: Pulse of Fintech H1'20, Global Analysis of Investment in Fintech, KPMG International.

4. The extensive network of formal financial service providers in Europe helps account for the lower penetration of certain fintech services. In parts of the world where a large share of the population is excluded from the formal financial sector, fintech services such as mobile money accounts have proliferated, possibly reflecting lower infrastructure and

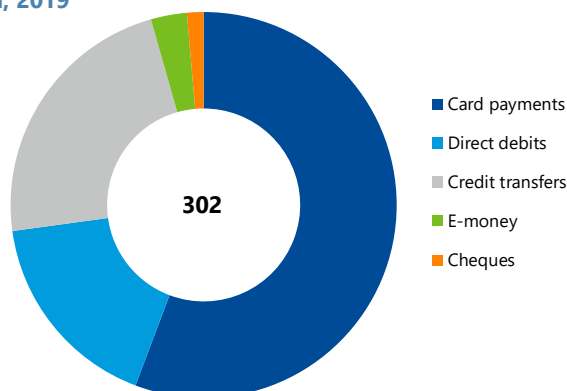
transaction costs. But according to the IMF's Financial Access Survey (FAS), less than 15 percent of surveyed participants in Europe cite either service costs or distance to financial institutions as the main reasons for not having financial accounts, whereas in other regions, at least 25 percent of respondents refer to one or both of these factors. Furthermore, the bank-dominated financial system in Europe (with the exception of the UK) is not suited to providing high-risk financing, unlike the capital market-dominated systems in the US, as fintech companies rely mainly on venture capital and private equity funds for their funding. Other factors bearing on the lower penetration of fintech in Europe include the heterogeneity of regulation across jurisdictions and, in certain countries, a cultural or institutional preference for cash. The latter factor is particularly strong in some advanced countries like Germany, reflecting historical concerns about protecting personal data. However, it may also be the case that privacy and anonymity are more-highly valued in Europe than elsewhere (Morey, Forbath and Schoop, 2015), as reflected in the EU's General Data Protection Regulation (GDPR)⁵. On the other hand, PSD II may foster fintech presence over time by granting third-parties access to bank data (see discussion on regulatory issues below).

5. Europe accounts for about one third of global non-cash

payment transactions. Advanced economies in Europe account for the largest share of non-cash payment transactions, although adoption of debit and credit cards is growing at a faster pace in developing countries. Within Europe, Northern countries lead volume of non-cash transactions per capita. The case of the Netherlands illustrates how a centralized infrastructure,

coordinated stakeholders' actions, and an extensive public information campaign over the past decade can cause a rapid transition away from cash toward electronic (card) payments (Box 1). Card payments remain dominant in cashless transactions, providing an opportunity for fintech firms to partner with card companies on data security and anti-fraud efforts. However, opportunities may be even greater for fintech firms to compete directly with card payment companies in the areas of credit transfers and direct debit, both of which are catching up to card payments. In fact, some developing countries—notably in Latin America—are leapfrogging into in-app wallets and real-time payments, bypassing the more traditional route of greater use of card transactions (World Payment Report 2018).

Number of Cashless Payment Transactions in Europe per Capita, 2019

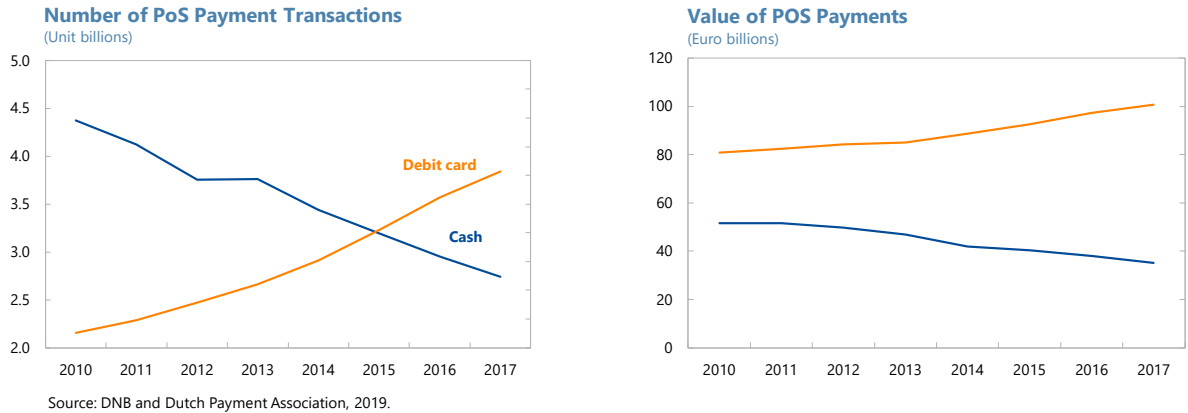


Sources: ECB Statistical Data Warehouse.

⁵ The GDPR is an EU regulation that protects personal data privacy by giving individuals control over processing of data in financial transactions. The regulation applies to any enterprise processing data in the European Economic Area regardless of its location. Other regions do not have such levels of data privacy protection, enabling bigtechs to use consumer data for a range of purposes.

Box 1. From Cash to Cards: The Case of the Netherlands ^{1/}

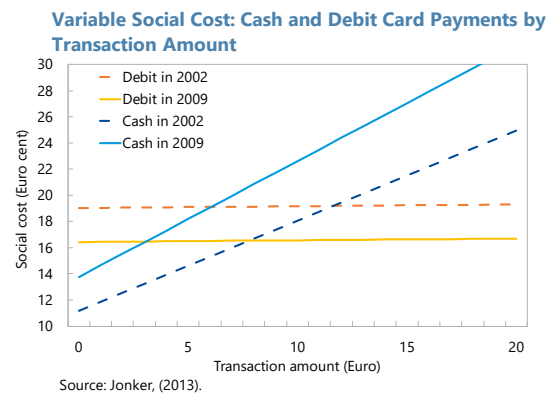
Alongside several other northern European countries, the Netherlands is one of the most “cashless” societies in the Euro Area. Cash usage by consumers at the point-of-sale (PoS) declined from 85 percent of payments in 2002 to 45 percent in 2016 (Esselink and Hernandez, 2017). Debit cards are now the most frequently used instrument of payment, having grown 9 per cent per year on average since 2010. What have been the main drivers behind these developments?



In 1988, the Netherlands introduced a single national debit card scheme—the “PIN”—to promote replacement of checks, the main alternative to cash at the time. The single PIN scheme covered all card holders from all banks, to all retailers that accepted cards. This increased convenience and reduced learning costs. To encourage card holders to use debit cards, issuing banks did not levy transaction fees. The merchant transaction fees were relatively low (at 6–7 eurocents per transaction), below the banks’ cost (McKinsey, 2006), and much less than the European average of around 2.5 percent of transaction value (European Commission, 2006).

Another important factor driving debit card usage was increased cost transparency and awareness among banks, retailers and consumer organizations. The Dutch retail payment system was efficient, with relatively advanced automation for processing retail payments. Nonetheless, the social cost—the capital and labor used—of the commonly used PoS payments was estimated at 0.65 percent of GDP (Brits and Winder, 2005). Cash was found to be more cost effective for purchases below 11.63 euros. By 2009 the break-even point had dropped to 3.06 euros due to scale effects and technological

developments. Those studies made everyone realize that major cost savings could be achieved if consumers were to use their debit card rather than cash more often. The Payment Covenant of 2005 (offering merchants a 1 eurocent discount on card payments) and the information campaign agreed upon by banks and retail organizations provided a further push in favour of greater acceptance of debit cards.



^{1/} This box was prepared by Nicole Jonker and Wieger Kastelein from De Nederlandsche Bank.

5. Europe lags other areas of the world in fintech lending (Figure 3). Europe's share of global fintech lending is small at only 3 percent in 2017. However, a few countries dominate global fintech lending, with the UK accounting for about two-thirds of total volume in Europe, and China and the US supplying virtually all fintech lending in their respective regions. Excluding the activities of these dominant countries from their respective regions, fintech lending in Europe is larger than in Asia-Pacific and the Western Hemisphere. However, fintech's share in the global lending landscape is still very small, accounting for less than 1 percent of total bank credit.

6. Fintech lending in Europe is growing fast, from a low base. Total transaction volume of online alternative finance platforms reached 10.4 billion euros in 2017, 20 times higher than in 2012.⁶ In 2017, fintech lending in the UK grew by 25 percent and in the rest of Europe it grew at an even faster 43 percent. New equity investment in fintech by institutional investors is also growing fast, and the gap with frontier regions (China and the US) is shrinking. Additionally, the number and complexity of business models in fintech lending is increasing.

7. Cross-country variation in fintech lending is significant. A few major advanced economies dominate the market, with the UK taking the lion's share, accounting for two-thirds of total volume in 2017, followed by France and Germany. However, in per capita terms, the UK still retains top ranking, followed—by a wide margin—by Estonia and Monaco in second and third place, respectively.

8. Europe's infrastructure and innovative environment are conducive to further growth of fintech services. Europe leads the rest of the world in internet coverage, including electricity and internet coverage. It also has business environment that is supportive of innovation and technology development, with several European countries (e.g. Switzerland, Netherlands and the Nordic countries) leading the 2020 Global Innovation Index. Making good use of these favorable conditions could boost fintech prospects in Europe.

9. In some fintech segments, Europe is already catching up to the frontier. Although mobile money transfers are less popular in Europe, total digital payments (including both mobile and internet transfers) are high thanks to the widespread internet usage.⁷ New equity investment in fintech from institutional investors (venture capital, private equity, and mergers and acquisitions) is growing fast, and the gap with Asia and the Americas is shrinking.

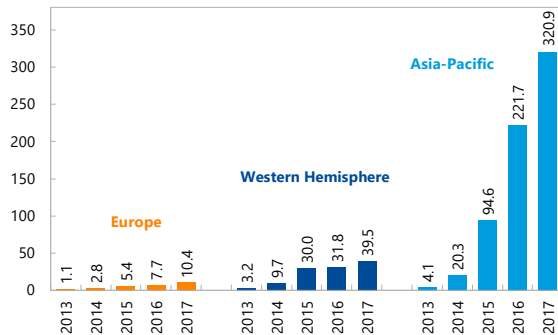
⁶ "The 4th European Alternative Finance Industry Report," Cambridge Center for Alternative Finance. This study gathers data from 269 alternative finance platforms across 45 countries in Europe.

⁷ Digital payments include the use of mobile money, debit or credit cards, or mobile phones to make a payment from an account, or the internet to pay bills or purchase online. They also include payments of bills, remittances, agricultural products, government transfers, wages, or public sector pension directly from or into a financial institution account or through a mobile money account (Findex, The World Bank).

Figure 3. Financial Ecosystem Enabling Fintech

Fintech lending volumes in Europe lag other regions...

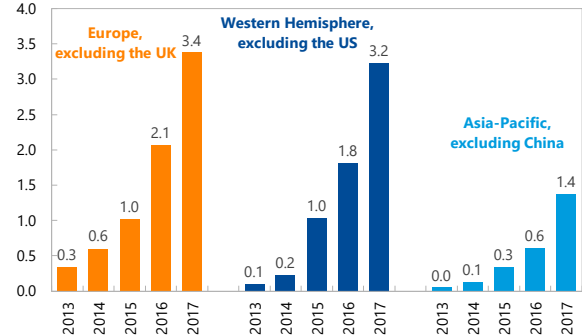
Global Fintech Lending Market Volumes
(Euro billions)



Source: Cambridge Center for Alternative Finance.

...due to large gaps among the biggest players.

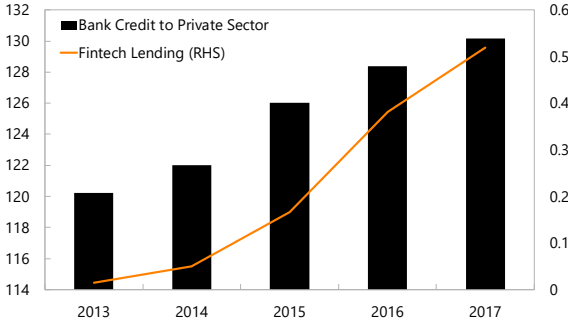
Global Fintech Lending Market Volumes
(Euro billions)



Source: Cambridge Center for Alternative Finance.

The volume of Fintech lending remains small...

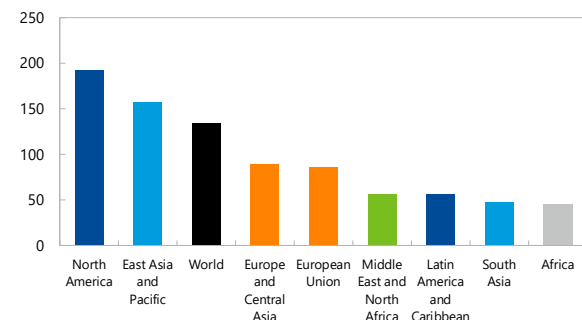
Global Bank Credit and Fintech Lending
(Percent of GDP)



Sources: World Bank WDI database; and Cambridge Center for Alternative Finance.

... compared with bank credit.

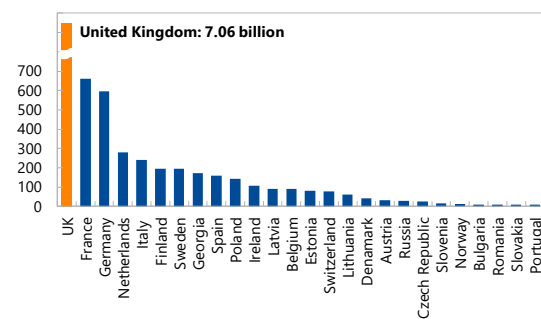
Bank Credit to Private Sector, 2019
(Percent of GDP)



"Middle East and North Africa" and "Africa" data as of 2018.
Source: World Bank WDI database.

Cross-country heterogeneity is large in absolute size

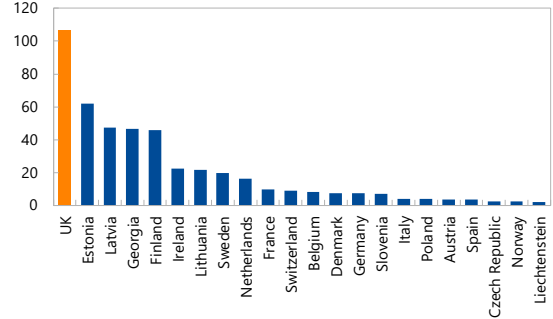
Alternative Finance Volume by Country, 2017
(Euro Millions)



Source: The 4th European Alternative Finance Industry Report, Cambridge Center for Alternative Finance, 2019.

...and in terms of per capita volume.

Market Volume Per Capita by Country, 2017
(Euro)



Source: The 4th European Alternative Finance Industry Report, Cambridge Center for Alternative Finance, 2019.

10. Bigtechs are also expanding in Europe. Bigtechs, the leading IT companies in the world, have many competitive advantages in fintech services, including deep financial pockets, a vast customer base with valuable associated data, advanced technological capability and recognized branding. Most of the world’s leading fintech companies are often associated with bigtech groups (Table 1). Alibaba, Baidu and Tencent have become dominant operators in China’s digital payments industry, while Amazon is providing payment services and loans to merchants on its platform. Although none of these bigtechs originated in Europe,

they have already entered the European markets. Amazon (since 2010, Luxembourg), Facebook (since 2016, Ireland), Google (since 2018, Lithuania), and Alipay (since 2018, Luxembourg) are operating under both payment and electronic money licenses.

Table 1. Top 10 Fintech Companies in the World Based on Total Funding

Fintech company	Country of Incorporation	Associated Bigtech Group
Ant Financial	China	Alibaba
JD Digits	China	JD
Du Xiaoman Financial	China	Baidu
One97	India	Alibaba
QNB Group	Qatar	n.a.
Lu.com	China	n.a.
SoFi	United States	n.a.
Kabbage	United States	n.a.
Robinhood	United States	n.a.
Greensill Capital	United Kingdom	n.a.
Source: CrunchBase, as of September 11, 2020. Note: Ranking based on amount of funding raised.		

11. The COVID-19 pandemic and ensuing behavioral changes pose challenges and opportunities for the fintech sector. The pandemic has rapidly accelerated the structural shift toward fully digital solutions, thereby boosting demand for virtual financial services. Social distancing means more goods are being purchased on-line paid for with digital payment instruments. Demand for digital lending services has been boosted by pandemic-induced liquidity pressures among firms and households and the widespread use of government guaranteed lending programs. Fintechs operating in the payment area may be well placed to take advantage of these changes as consumer habits rotate away from cash and brick-and-mortar PoS. At the same time, platform-based fintech companies that rely on secondary markets to fund their lending and which do not have direct access to central bank liquidity lines may face pressures, especially if risk aversion and delinquencies were to increase. On the other hand, however, increased risk aversion by traditional banks could open more space for fintechs to boost small- and micro-enterprise lending. On balance, fintech business models are better suited to meet the new requirements of social distancing and remote work, giving an important advantage to those financial intermediaries with good ICT infrastructure and a higher share of IT-skilled employees.

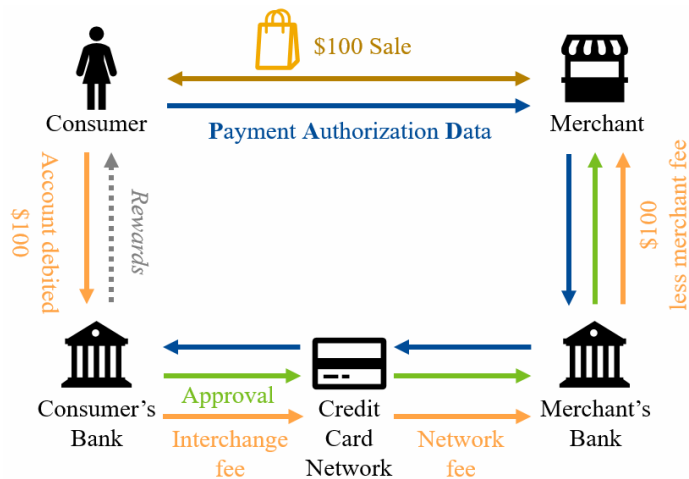
II. PAYMENTS

12. Fintech companies can impact the payment services market through innovations that reduce costs, enhance the customer experience and increase competition. Fintech companies are developing tools to reduce costs and increase convenience of payments. To detect and prevent fraudulent transactions, customers' payment data is analyzed using artificial intelligence, biometrics are used to improve authentication and enhance convenience, and the security of payment communications is enhanced through tokenization. Fintechs are also using payment data to identify cross-selling opportunities. The ease of scalability of some of these solutions also generates incentives to integrate domestic and cross-border payments services. The entrance of new players creates more competition, challenging banks' dominance in payments—including their traditional card schemes—which are also moving towards adopting fintech solutions.

A. Traditional Card Schemes

13. Traditional card payment transactions require multiple participants and steps. They involve the separate exchange of information—the payment authorization and approval—and payment, across several actors.

- The participants:** key actors in card transactions are the consumer, the merchant, the “acquirer bank” (the merchant’s bank), the “issuer bank” (the consumer’s bank, which issues the card) and the payment card network. It is important to notice that this is a two-sided market with network externalities. The consumers want cards that are accepted by the merchants they patronize, while merchants want to accept cards that are widely hold by their customers.⁸



- The data exchange:** a typical transaction starts with the consumer providing the payment authorization data (PAD) to the merchant. This could be a PoS transaction or a remote one via the internet or telephone. The merchant submits the PAD to the merchant’s bank, which passes it to the card network, which in turn routes it to the customer’s bank. The customer’s bank gives the authorization which works its way

⁸ For a discussion of two-sided markets see Rochet and Tirole (2003).

back to the merchant. The approval process takes only a few seconds. This is key for transactions that are time sensitive, as is usually the case for PoS transactions.

- **The settlement:** The final step is to settle the transaction. This usually takes one or two days. Because of the approval process, a network can facilitate the transaction without requiring instant settlement.

14. Participants are remunerated through fees. Fees are charged to the merchant (the “merchant discount fee”) by the merchant’s bank, while typically transaction fees charged directly to the consumer are either zero or negative (via rewards programs). The merchant’s bank in turn passes on fees to the customer’s bank (the interchange fee) and to the card network (the network fee). Interchange fees typically vary by type of card (credit transactions are charged more than debit), by business size or industry (e.g., gas stations have lower fees), and by the type of transaction (e.g., PoS transactions face lower fees). Regulations also play a role (see Annex I)

15. The prevailing payment infrastructure influences whether and how fintech companies enter the different segments of the payment process. It can affect their decision to collaborate with the incumbents or disrupt the market.

- **Access infrastructure.** On-line sales are growing with increasing internet access and wider acceptance of on-line shopping experience. Fintech companies are particularly well-placed to provide a gateway through the card network or directly through credit transfers or direct debit. However, PoS transactions remain large and the development of a widespread PoS physical infrastructure (outside the existing card networks) is still a challenge.
- **Clearing infrastructure.** The infrastructure for large-value payment is well integrated, with two pan-European real-time gross settlement (RTGS) systems. TARGET2 is owned and operated by the Eurosystem, while EURO1 is privately owned and operated by the Euro Banking Association. Retail payment systems are more fragmented, with several domestic automated clearing houses (ACH). This market fragmentation is being addressed by the setting of Single Euro Payment Area (SEPA) standards. Moreover, STEP2 is a pan-European ACH that provides SEPA credit transfers and direct debit. These transfers however are same day, rather than instantaneous and available at any time. Efforts to standardize instant payments lead to the SEPA Credit Transfer (SCT) and pan-European instant payment settlement services (see Box 2). Instant payments are needed to be able to compete with the card network instant authorization.

Box 2. Instant Payment Clearing in Europe

Initiatives aimed at harmonizing electronic euro transactions include new criteria for speed of transactions under the Single Euro Payments Area (SEPA). The European Payment Council (EPC) launched the SEPA Credit Transfer (SCT) in 2008, requiring that payments (if made before the daily cut-off time) be credited within one working day. In November 2017, to address the demand for instant payments and ameliorate the risk that national solutions would reintroduce fragmentation in the retail payments market, the EPC launched SCT Inst, a SEPA credit transfer that requires the clearing and settlement to take place within 10 seconds, at any time, and sets a maximum amount of 15,000 euros for the transaction. Moreover, the regulation provides participants with the flexibility to agree to shorter execution times and higher maximum amounts.¹

The EU infrastructure for instant payments relies on two pan-European schemes along with several national automatic clearing houses (ACH). Payment service providers (PSPs) offer instant fund transfers based on SCT Inst standards through two pan-European schemes, Target Instant Settlement Service (TIPS) and RT1. TIPS was launched in 2018 and is an extension of TARGET2—the real-time gross settlement system operated by the Eurosystem—which settles in central bank money. It seeks to operate on a full-cost recovery basis, with no entry or maintenance fees and a fixed charge per instant payment transaction—currently 0.002 euro. RT1 was launched in 2017 by EBA Clearing (owned by 53 major banks operating in Europe). There are also several domestic ACHs that offer instant payments. Bankgirot, owned by Swedish banks, launched instant payments in 2012 and is the infrastructure behind Swish—the most popular mobile payment system in Sweden with about 7½ million private users. Finance Denmark, a Danish financial industry association, established Straksclearing in 2014.

Instant payments are gaining ground in EU. Over half of European PSPs participate in SCT Inst, covering 22 countries. SCT Inst volumes grew to about 4.4 percent of total credit transfers by the third quarter of 2019. A year into its launch, TIPS counts 30 participants which include the central banks of Germany and Latvia, and some major European Banks. It also has about 1,000 reachable parties which access TIPS through the account of a participant.

¹For a detailed discussion of the Swish see the [link](#).

16. Card fees in Europe are generally subject to legal caps. In Europe, regulation on interchange fees for card-based payment transactions entered into force in June 2015. It caps the fees for consumer cards and imposes transparency obligations on banks and retailers. In the US, the regulation caps interchange fees but only for debit cards. Since reward programs are financed from interchange fees, the difference in regulation is a reason why US-issued credit cards usually offer rewards, while cards issued in Europe generally do not. To the extent that the regulation manages to reduce excess profits from acquirers, fintech companies might have less incentives to compete with them, and rather focus on the front-end of the market.

B. Fintech Payment Innovations

17. Fintech companies provide a wide array of solutions, inside or outside the card network. Large fintech companies like Adyen or Klarna offer a full suite of payment solutions for PoS and online payments. They offer a gateway for online payments, which handles authentication and security, and processes payments through several means such as cards, e-wallets, and SEPA direct debit. While payment services offering P2P transfers are common, payments to retailers that circumvent card schemes are more limited, and usually involve small retailers in domestic markets. Fintech companies like iDEAL or BLIK rely on domestic ACHs to avoid card schemes (see Box 3).

18. Other companies focus on specific issues, such as fraud detection or cross-border integration. For instance, German Fraugsters provides payment companies and merchants with an AI platform to detect and prevent fraud. U.K.'s Rapyd provides a platform for e-commerce companies and financial institutions to embed local payment methods into their applications, so that they can easily access foreign markets.

19. Banks are also adopting or developing fintech solutions. European banks have embraced solutions which improve data security and authentication. Instead of card numbers they use one-time dynamic security codes, and fingerprint or face recognition technology. Apple Pay is one such popular solution. They have also developed their own solutions, including to strengthen authentication. For example, NatWest/RBS have issued biometric fingerprint credit cards, while Barclays offers finger vein reader technology to its corporate customers.

Box 3. Fintech Payments in Poland: The Experience of BLIK

Instant payment clearing was available in Poland prior to the development of pan-European schemes.

A Polish ACH, Express Elixir, was launched in 2012 and it has since allowed for direct clearing of transactions between banks from payers' accounts. The system guarantees nonstop clearings within seconds, bears no credit risk and doesn't incur non-bank intermediary costs thanks to designated accounts at the national central bank. Transaction fees for instant transfers are determined at the discretion of the participating banking institutions.

BLIK uses the domestic ACH to offer instant payments and mobile transfers. BLIK's platform uses mobile apps for authentication and operates through the digital interface of participating institutions.

Launched in 2015 as a joint venture of the six largest Polish banks, the platform has since expanded to cover all major banks and payment institutions in the country. During the second quarter of 2020, BLIK executed over 1 million transactions per day and was available to 13.1 million registered users.

BLIK offers a wide domestic payment network.

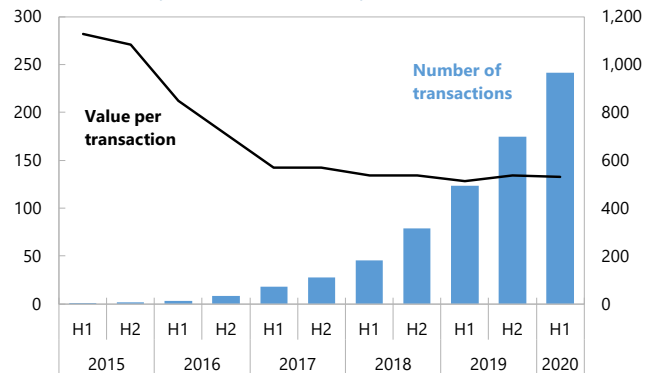
Users can pay at about 110,000 online stores, make instant P2P money transfers (thanks to Express Elixir ACH), use 540,000 PoS terminals at brick-and-mortar stores, withdraw cash from about 90 percent of ATMs in Poland, and initiate direct debit payments. Over three quarters of BLIK transactions take place online, followed by transactions using ATMs, offline PoSs, and P2P transfers. Adoption of the platform led to an exponential increase in the number of average daily transactions, while simultaneously decreasing the average transaction value.

BLIK supports strong authentication and security. The banks' app generates a one-time dynamic security code valid for two minutes, which is validated by the payment system (using the mobile app, PoS terminal or ATM) and authenticated with a PIN code in the bank's app. The vendor receives a confirmation of the transfer within a few seconds.

Card networks recognize the potential of instant payment schemes. By late 2019, BLIK's parent company agreed to provide a seventh of its shares to MasterCard. In exchange, MasterCard will enable contactless payments to BLIK users globally through integration with MasterCard Digital Enablement Service.

BLIK: Daily Transactions and Average Value

(LHS: Polish zloty per transaction; RHS: Daily number of transactions, thousands)



Source: Polish Payment Standard.

C. Payment Regulations

20. Regulations have multiple objectives, including fostering competition. The EU directives described below have multiple objectives, spanning from increasing transparency and strengthening consumer protection, to stimulating innovation and improving the level playing field for existing and new players in the payment service industry through the

emergence of common technical standards and interoperability.⁹ The objective of fostering competition, within and across borders, is key to support the operation of the single market and lower prices for consumers.

21. The 2007 Payment Service Directive (PSD I) established a legal framework within which all EU payment service providers must operate. Previously, payment service regulation was based on national rules applying to domestic banks' debit schemes. These teamed up over time with international schemes to coordinate cross-border payments. However, fragmentation persisted, resulting in inefficiencies and differing interchange fees for the same type of service. The objective of PSD I was to enable the creation of the Single Euro Payments Area (SEPA), a unique cross-border market for electronic payments—credit transfers, debit and credit – much like the single market for goods, capital, people and services. PSD I would provide a level playing field to businesses, by standardizing rights and obligations of service providers, and strengthening consumer protection by introducing more transparency and guaranteeing faster execution of payments.

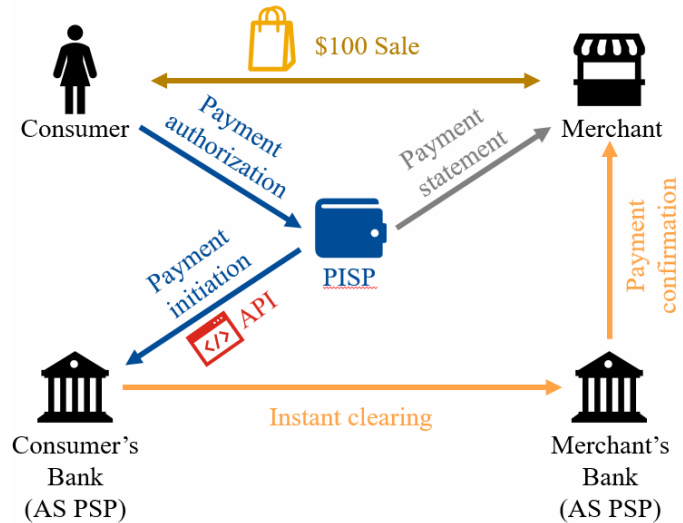
22. PSD I introduced several definitions and rules clarifying institutional roles and regulating business conduct for payment services. The directive introduced a definition of “payment institutions” that can obtain authorization to provide payment services in any country of the EU subject to capital and risk management criteria. The directive also established business conduct rules that specify transparency requirements (including on fees), mandated the maximum execution time for payments, and specified complaint procedures. Moreover, the directive regulated (i) modalities for authorization and execution of transactions; (ii) liabilities in case of unauthorized use of payment instruments or incorrect execution of transactions; and (iii) rules for refunds, payment order revocation, and value dating of payments. Under the directive, member states were allowed to establish less stringent rules if they could guarantee the same level of consumer protection and promote trust in electronic payment services.¹⁰ While PSD I was successful in integrating retail payments in the EU, regulatory gaps and cross-border fragmentation persisted. Thus, as technology evolved with new forms of payment emerging in the market, the existing framework was challenged.¹¹ Specific concerns focused on legal uncertainty, cyber security, and consumer protection.

⁹ As with any financial institution, fintechs are subject to compliance, operational and reputational risk. The case of Wirecard highlights the need for strong internal risk management practices and vigilant supervisory oversight.

¹⁰ The PSD I was further complemented in 2009 (EC Regulation 924/2009) and in 2012 (EU Regulation 260/2012).

¹¹ Regulation of electronic money was updated in 2009 in order to foster competition, while also bringing the prudential regime for e-money institutions in line with the requirements for payment institutions.

23. The 2015 Payment Service Directive (PSD II) opened the market to a new set of players by enabling bank customers to use third-party providers to manage their payments. PSD II extended the scope of payment services by including third party providers, the application of rules to transaction in all currencies, and one-leg-out transactions (transactions with parties outside the European Economic Area). PSD II transfers personal data ownership from banks to their



customers, by enabling them to grant third-party providers (Account Information Service Providers—AISPs) permission to access their account data stored by banks—which become Account Servicing Payment Service Providers (ASPSP). The directive also regulates initiation of payments, internal dispute resolution procedures and customer authentication. Third parties would thus be able to make payments to merchants directly from consumers’ accounts, circumventing card schemes. Third parties would also be permitted to consolidate multiple accounts or financial services in one place. Moreover, PSD II contains enhanced security requirements (see Annex II).

24. Implementation of PSD II, including transposition into national law across the EU, has spanned several years, but some gaps in legislation are still present. The Directive mandated the European Banking Association (EBA) to develop technical standards and guidelines in relation to payments security, authorization, passporting, and supervision. However, the PSD II regulation was intended not to be prescriptive, but to facilitate innovation and adaptation to member states’ circumstances. While PSD2 requires financial institutions to share customer data with regulated third parties—if the customer provides consent—it doesn’t mandate a specific technology. There are initiatives to create a common application programming interface (API) standard, including NextGenPSD2 and Open banking standards.¹² Banks have therefore adopted a mixed approach to implementation and seeking to achieve minimum compliance with PSD II, while being lukewarm to customer-led solutions and innovation that provide access to third parties.¹³ The lack of a common framework across the UK and the EU markets has tended to stall innovation, going against

¹² NextGenPSD2 are the API standards developed by the Berlin Group—a group of banks, bank association and payment service providers. Open Banking standards are the ones developed by U.K.’s Open Banking Implementation Entity (OBIE).

¹³ Third party companies have pursued alternative like “screen scraping” in which a customer shares their account credentials with them and uses these credentials to log into the relevant accounts and collect the data or initiate a payment—circumventing the need to have an operational API.

the intended spirit of the law. Legislative issues also arise from overlapping requirements in PSD II, GDPR, Interchange Fee Regulation (IFR), and the AML 5th Directive. For instance, whereas GDPR requires banks to protect customer data, under PSD II banks are required to provide customer accounts and transaction data to third party providers.

III. Lending

A. Business Models in Fintech Lending

25. A few important characteristics distinguish lending services provided by fintechs from those of traditional banks. Fintech firms use integrated digital platforms and interact with customers fully or largely online and without human involvement in individual transactions. While commercial banks are increasing their online services, most credit applications still require some interaction in person. Another distinctive feature is the use of innovative methods to process large amounts of customer information and evaluate creditworthiness (e.g. artificial intelligence/machine learning algorithms based on big data and unconventional information, including digital footprints). Moreover, fintech lenders generally do not take deposits, and thus cannot create money through lending. Consequently, their investors do not have any recourse to public guarantees. In most countries this allows fintech companies to bypass the strict prudential regulations, supervision and reporting requirements that apply to traditional banks. At the same time, they do not have access to a convenient and cost-effective funding source. As a result, fintech business models share a number of similarities: a high degree of automation; a low share of fixed assets; low capital requirements; low regulatory and compliance costs; focus on convenience and simplicity in customer experience; digitally active and younger customer base; large shares of seed or venture capital in funding; and a large share of IT specialists among employees.

26. The main lending business models used by fintech companies are (Table 2 and Box 4):

- **Peer-to-peer lending** is the most common business model in Europe. The online platform provides a standardized loan application process and facilitates direct matching of borrowers and investors (lenders). The company usually verifies the borrowers' information and assigns a credit rating, which can then be used to set a loan interest rate. The fintech company usually earns money via origination fees applied on borrowers and servicing fees on investors. In a pure peer-to-peer lending model the fintech platform does not take any risk on its balance sheet and there is no maturity or liquidity transformation. Once a borrower and investor are matched, the loan contract is signed directly between them. Investors can be individuals or institutions. Some peer-to-peer platforms have secondary markets for transferring creditors' rights. Lending platforms typically encourage investors to spread risks across (portions of) multiple loans, and often offer automatic exposure to a portfolio of loans based on the risk category and terms that investors select.

- **Crowdfunding.** In many aspects crowdfunding platforms are similar to peer-to-peer lending: they provide a digital marketplace for matching investors and entrepreneurs. Unlike the debt-based peer-to-peer lending, crowdfunding facilitates several different types of investment products. As opposed to crowdfunding models for charitable appeals, three of these are for-profit:
 - i. rewards crowdfunding: entrepreneurs presell a product or service (at a discount to the projected ultimate sale price) to launch a business concept without incurring debt or sacrificing equity;
 - ii. equity crowdfunding: the backer receives shares of a company, usually in its early stages, and the financial gain comes in the form of a dividend;
 - iii. real estate crowdfunding: investors can acquire ownership of a property/asset via the purchase of shares in a single property or a number of properties.

From the investors' perspective, equity-based crowdfunding is typically the riskiest model.

- **Balance sheet model.** Under the balance sheet model, the fintech company originates the loan and assumes the credit risk associated with it. In terms of credit intermediation, this business model is the closest to bank lending: the fintech platform obtains debt or equity funding and records the loans on its balance sheet. Depending on the way the company structures the funding from individual investors or institutions, there could be significant maturity and liquidity mismatches. The key difference between this model and traditional bank lending remains the absence of deposit funding.
- **Mixed business models.** Numerous platforms combine various business models, and very few run an exclusively balance-sheet model. Reliance on balance sheet funding has been on the rise, with one third of platforms using their own balance sheet together with retail and/or institutional investors. For instance, in the UK, 40 percent of lending done by peer-to-peer platforms involves some sort of balance sheet funding (Cambridge Center for Alternative Finance, 2017). Some platforms adopt a balance sheet model initially (funding a proportion of every loan), to grow and build trust, but plan to abandon it once they are established.
- **Invoice trading.** Invoice trading platforms are similar to peer-to-peer lending with individual invoices used as collateral for loans. The platform will typically verify invoices to make sure they are real and not fraudulent. Once verified, the invoice is sold on the platform, where multiple investors can buy slices of the invoice to diversify the risk. The business selling the invoice (usually an SME) can set the auction minimum pricing or parameters for the advance rate (percentage of cash over the invoice value) and discount rate (basically the interest rate). Later when the invoice is paid the platform makes the remaining balance, minus fees, available to the business.

27. Peer-to-Peer (P2P) lending is the leading business model, followed by invoice trading and crowdfunding. In 2016, P2P consumer and business lending together accounted for about two-thirds of total volume in Europe, followed by crowdfunding (17 percent) and invoice trading (13 percent). Prolonged low interest rates prompt investors to search for higher yields investment products, spurring P2P lending. Other forms, including the balance sheet model, are quite small in Europe. All models reported growth in recent years, albeit at different rates.

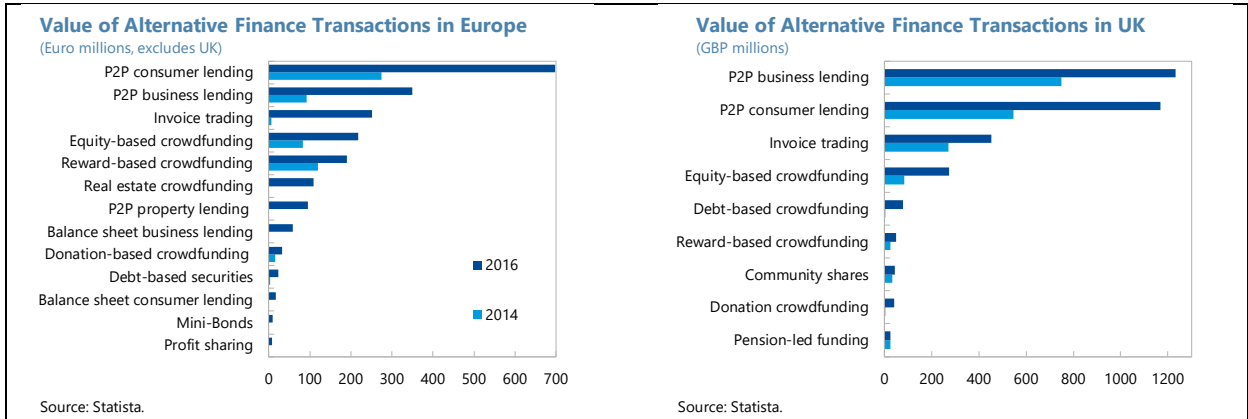


Table 2. Fintech Lending Models

Finance model	Funding Source	Borrowers	Risk taking	Liquidity Transf.	Maturity Transf.	Description	
P2P Lending	P2P Consumer Lending	Individuals or institutional investors	Individuals	Investors	No	No	Individuals or institutional funders provide a loan to a consumer borrower.
	P2P Business Lending	Individuals or institutional investors	Business	Investors	No	No	Individuals or institutional funders provide a loan to a business borrower.
	P2P Property Lending	Individuals or institutional investors	Individuals or business (property owner)	Investors, property may serve as collateral	No	No	Individuals or institutional funders provide a loan secured against a property to a consumer or business borrower.
Crowdfunding	Equity-based Crowdfunding	Individuals or institutional investors	Business (equity issuer)	Investors	Yes	Yes	Individuals or institutional funders purchase equity issued by a company
	Real Estate Crowdfunding	Individuals or institutional investors	Business (real estate developer)	Investors	Yes	Yes	Individuals or institutional funders provide equity or subordinated-debt financing for real estate.
	Reward-based Crowdfunding	Backers	Individuals or business	Investors	Yes	Yes	Backers provide finance to individuals, projects or companies in exchange for non-monetary rewards or products
	Donation-based Crowdfunding	Donors	Individuals or business	Investors	No	No	Donors provide funding to individuals, projects or companies based on philanthropic or civic motivations with no expectation of monetary or material return.
Balance Sheet Model	Balance Sheet Consumer Lending	Fintech platform	Individuals	Fintech platform	Yes	Yes	The platform entity provides a loan directly to a consumer borrower.
	Balance Sheet Business Lending	Fintech platform	Individuals	Fintech platform	Yes	Yes	The platform entity provides a loan directly to a business borrower.
	Balance Sheet Property Lending	Fintech platform	Individuals or business (property owner)	Fintech platform, property may serve as collateral	Yes	Yes	The platform entity provides a loan secured against a property directly to a consumer or business borrower.
Other models	Invoice trading	Individuals or institutional investors	Business (invoice owner)	Investors or mixed	Yes	Yes	Individuals or institutional funders purchase invoices or receivable notes from a business at a discount.
	Debt-based Securities	Individuals or institutional investors	Business (issuer of debt-based securities)	Investors or mixed	Yes	Yes	Individuals or institutional funders purchase debt-based securities, typically a bond or debenture at a fixed interest rate.
	Mini-Bonds	Individuals or institutional investors	Business (unsecured retail bond issuer)	Investors or mixed	Yes	Yes	Individuals or institutions purchase securities from companies in the form of an unsecured retail bonds.
	Profit-Sharing	Individuals or institutional investors	Business	Investors or mixed	Yes	Yes	Individuals or institutions purchase securities from a company, such as shares or bonds, and share in the profits or royalties of the business.

Box 4. Mintos—A P2P Lending Platform

Mintos was, as of early 2020 before COVID-19, the biggest lending platform in continental Europe with over 260,000 investors from 90 countries, 350,000 loans in the primary market and over 485,000 in the secondary market. It is a marketplace for pre-funded loans by 63 originators (i.e. the original lenders of the loans) from 29 countries. The platform has funded €5.7 billion in loans since its creation in 2015 with €709 million in loans outstanding. Mintos started making profits in 2017.

It provides access to finance to borrowers and investors that are not currently covered by banks. It allows small investors to diversify risk by participating very small amounts of money on a large number of loans from different sectors and countries. Thus, the average investment of around 4,300 euros is spread across 260 loans with an average participation of 17 euros per loan. The higher risk and shorter maturity of these loans is reflected in the average interest rate of 11.9 percent.

Becoming an investor takes less than 10 minutes. Identity is confirmed using a webcam and an official identification document. Investors are required to have a bank account in the SEPA region or in countries with AML/CFT regulation similar to the EU. Of all outstanding loans, 9 percent are late more than 30 days. Most loans offer a buyback guarantee by which the originator will pay the principal and sometimes the interest of loans that are more than 60 days late. The platform does not make a risk assessment of borrowers, which is instead carried out by the originators. The risk to investors is therefore that of originators defaulting on their obligations. So far only one originator—from Poland, concentrated in business and invoice financing—has gone bankrupt, defaulting on €550,000 in loans. The recovery process is proceeding in Poland. The secondary market is very important to investors as it provides liquidity and the opportunity to sell loans. Less than a third of the loans sold in the secondary market are sold with a discount.

Originators are required to keep at least 5 percent of any loan in their portfolio on their balance sheet. Of the eight type of loans available to investors: the leading categories are consumer, consumer short-term and car loans, with business, mortgage, agricultural, pawnbroking and invoice financing taking up small shares. Mintos rates originators from A (low risk) to D (defaulted) based on several criteria, notably ability to service and originate loans. Only 30 percent of originators provide audited financial statement, 45 percent are not profitable, and 80 percent are less than ten years old.

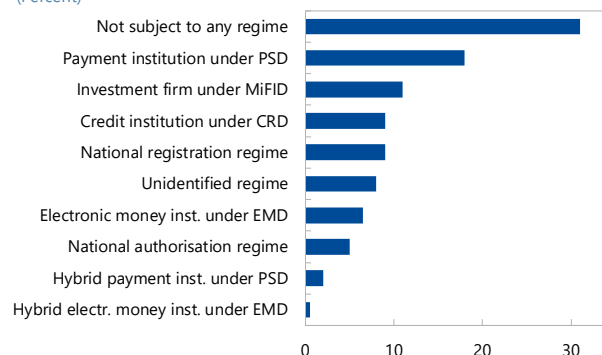
The platform does not charge fees to investors except for forex conversions. Instead, they charge originators fees usually of 3–5 percent of the loan values. The platform provides auto-investment tools to investors which have proven useful given the large volume of small loans available. Investors can set multiple portfolios in the primary and secondary market, with predetermined strategies including currency, country, originator, reinvestment profits, and minimum and maximum amount to invest in one loan.

B. Lending Regulation

28. Fintech lending services are regulated at the EU or national level, or unregulated.

While there are no common fintech-specific regulations in Europe yet, a general license is required to conduct certain financial activities regulated by EU law. These activities include, among others, banking services, payment, clearing and settlement services, and financial market services.¹⁴ If a fintech company is licensed in any EU or European Economic Area (EEA) country, it can provide financial services across the EEA member states under the passporting framework by establishing a branch or on a cross-border basis. Activities that fall outside EU law, and hence are not eligible for passporting, may still be subject to national regulations. A survey by the EBA finds that 14 percent of 282 sampled fintech firms are subject to national authorization or registration regime, while 31 percent are not subject to a regulatory regime under EU or national law (EBA, 2017). Outside the EU or EEA, passporting of activities regulated by a foreign country is rare, while some financial centers accept foreign financial services without a requirement to establish local presence (e.g. Switzerland).

Breakdown of FinTech Firms Sample by Regulatory Status (Percent)



Source: Discussion Paper on the EBA's Approach to Fintech, European Banking Authority, 2017.

29. Fintech lending companies are typically not subject to bank licensing requirements.

The EU Capital Requirement Regulation (CRR) defines a “credit institution” as “an undertaking the business of which is to take deposits or other repayable funds from the public and to grant credits for its own account.”¹⁵ Fintech companies that undertake bank-like activities usually do not qualify as a credit institution according to the EU definition, mainly because they are structured as non-deposit taking.¹⁶ The survey shows that less than 10 percent of fintech companies are regulated as credit institutions under the CRR, while fintech firms that possess customer funds are much more likely (62 percent) to be subject to an EU regulatory regime (EBA, 2017).

¹⁴ These are regulated by the Capital Requirements Directive IV (CRD IV), Banking Consolidation Directive, Solvency II, Payment Services Directives 1 and 2 (PSD/PSD2), Electronic Money Directive (EMD), the Markets in Financial Instruments Directive 2 (MiFID2), Insurance Mediation Directive, and Mortgage Directive.

¹⁵ The actual scope of regulations differs across countries, because the CRR does not provide detailed definitions of key terms (such as ‘deposits’, ‘other repayable funds’, ‘grant credits’, ‘from the public’) (EBA, 2014). However, the EBA notes that it is not clear whether variations in the interpretation are material in terms of the number and types of “credit institutions” for the purpose of CRDIV/CRR.

¹⁶ As an alternative, in 2017, Switzerland allowed fintech companies to take deposits up to a total value of 1 million Swiss francs, or unlimited amount of deposits in their settlement accounts for up to 60 days without a banking license.

30. The operation of a lending platform may still be subject to certain license and regulatory requirements, depending on its structure and activities. Even though a fintech company does not need a full banking license, lending to consumers is usually a licensable activity and is subject to regulations. Conditions triggering a license requirement and license types differ across countries depending on the design of platforms. For example, in Germany, lending or deposit businesses exceeding a certain scale require a license for lending to individuals on a P2P platform. In addition, a platform operator may need to obtain a loan broker license or investment firm license. Licensable activities also include provision of investment advice or payment services. Public offering of investment products may trigger a requirement to publish a prospectus too.

31. Some countries have developed national rules specific to fintech lending companies. As of 2019, about a third of European countries have developed dedicated rules for crowdfunding or P2P lending (Annex III). These regulations provide regulatory certainty for these activities and platforms. For example, regulations in Belgium and in the UK define activities subject to an authorization requirement and rules of conduct for crowdfunding firms. Many of the crowdfunding regulations set limits on the amount of investment offered in the platform or the amount of investment by an individual investor. In many other countries where no specific rules have been adopted, regulatory requirements for fintechs are determined by the authorities on a case-by-case basis based on general financial and company legislation. Some countries have issued guidance to clarify applicable regulations or best practices for lenders, borrowers, and platform operators (e.g. Germany and Estonia).

32. EU-wide regulation on crowdfunding and peer-to-peer lending is under discussion. The European Parliament and the European Council have proposed a single set of rules that will apply to European Crowdfunding Service Providers (ECSPs), covering both lending- and investment-based crowdfunding. Prospective ECSPs would need to request authorization from the national competent authority (NCA) of the member state in which they are established. Supervision would be carried out by NCAs with the help of the European Securities and Markets Authority (ESMA), and to a lesser extent the EBA, to facilitate coordination between member states, data collection to produce aggregated statistics, and development of technical standards. The rules will focus mainly on investor protection and increased transparency. Through a notification procedure in a member state, ECSPs would also be able to provide their services cross-border.

33. Innovation offices and regulatory sandboxes are commonly used to reduce regulatory uncertainties. Innovation offices are established to provide regulatory clarification to financial service providers that seek to offer innovative products and services (UNSGSA, 2019). Most countries in Europe¹⁷ have established some type of innovation offices at the regulatory authorities. In addition, some countries have set up a regulatory

¹⁷ The list includes Austria, Belgium, Cyprus, Denmark, Estonia, Finland, France, Germany, Hungary, Iceland, Ireland, Italy, Latvia, Liechtenstein, Lithuania, Netherlands, Norway, Poland, Romania, Spain, Sweden, Switzerland, and UK.

sandbox for fintechs. Regulatory sandboxes allow market participants to test new financial services or business models with live customers, subject to certain safeguards and oversight (UNSGSA, 2019). They can also be used as a mechanism to evaluate rules or regulations. The UK is a frontrunner in the use of regulatory sandboxes, but they have also been established in other European countries, including Austria, Denmark, Hungary, Lithuania, Netherlands, Poland, and Russia.

34. Given that the fintech lending sector is still in a nascent stage, policies in some countries are more focused on developing new businesses. In many countries, the authorities provide tax or other incentives to encourage innovation and investment in fintech (Annex III). These incentives are often not explicitly targeted at fintech companies but provided through policies to promote the financing of SMEs or small startups. Examples include: withholding tax exemption on interest under P2P or crowdfunding loans (Belgium, UK); tax credit for R&D expenditure or for innovative enterprises (Ireland, Malta, Netherlands, Norway, Russia, Spain, UK); tax incentives for SMEs (Germany); and tax relief for startups or investments in startups (Belgium, Ireland, Norway, Spain, UK).

35. National regulations focus on consumer protection and AML/CFT issues (Annex III). Given the small scale of lending, financial stability concerns do not appear dominant at this time. However, conduct regulation and disclosure requirements are often applied to fintech companies. Likewise, national AML/CFT rules based on EU directives often require fintech lending companies to conduct customer due diligence. The applicability of stringent AML rules for fintechs appears to depend on whether the company is licensed as a financial institution (Belgium, Malta) or explicitly listed by the AML regulator as an institution subject to AML rules (Netherlands). Otherwise, they face general AML obligations or recommendations that apply to most financial or non-financial companies.

IV. Effects of Fintech Innovation on Incumbent Financial Firms

36. Fintech companies are developing innovative tools that are re-shaping the financial services landscape. Customer data is a highly valued commodity that can be “mined” inexpensively using artificial intelligence and machine learning. This offers opportunities to fintech companies, as well as traditional financial institutions, for reducing costs, providing new types of services and increasing competition. Of course, these potential efficiency gains should be weighed against the risks of misuse and breach of customer privacy, requiring strict cyber security and privacy safeguards and regulation of data ownership and handling practices. These developments may also have important implications for the adequacy of existing consumer and investor protections.

37. Fintechs appear poised to poach traditional banks’ payment and retail business, which are a key source of banks’ profits.¹⁸ Retail banking in Europe is generally subject to

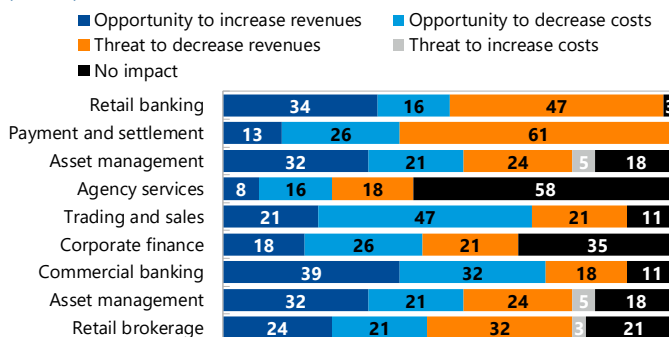
¹⁸ According to New Financial’s *Global Capital Markets Growth Index* (New Financial, 2019) and cited in

costly fees and transactions tend to be slow to clear (providing banks interest on the “floating balance”), thereby attracting competition from faster and more cost-effective fintechs. Moreover, payment services require little regulatory capital, thereby lowering entry hurdles for fintechs. On the lending side, fintechs have tended to focus on higher risk segments, which are relatively costly for banks in terms of capital requirements and where

new data analytics may support more efficient pricing of risk. Many banks use profits from payment services and retail lending to cross-subsidize other activities that are often provided free-of-charge (e.g., account management services), thereby raising the prospect of unbundling banking services. By eroding banks’ proprietary access to data and payment initiation privileges, open banking increases competition, which could reduce bank revenues and lead to changes in pricing strategies. Fintechs may also put pressure on smaller regional banks’ local monopolistic positions.

How Do You See FinTech Affecting the Current Business Model of Your Bank?

(Percent)



Source: *Risk Assessment of the European Banking System*, European Banking Authority, 2019.

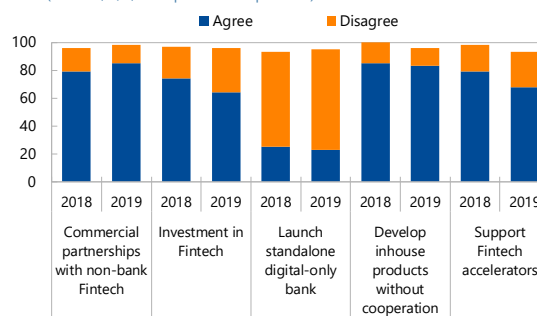
38. Could European banks lose their dominant position? In their attempt to democratize finance, capture customers and lower transaction costs, fintech companies could contribute to bank disintermediation and disrupt markets. Many scenarios are feasible. One option is for banks to maintain control of business decisions and customer data, with fintechs performing back-office banking functions and data analytics. At the other end of the spectrum, banks could be relegated to the role of balance sheet providers who interface with customers, while fintechs exercise control of critical proprietary data and business decision-making. An unknown at this stage is whether standalone fintechs could earn the full trust of customers. While payment fintechs have been quite successful in gaining market share in e-commerce, it remains to be seen if they will be as successful in PoS payments at brick-and-mortar stores.

39. EU banks have adopted multiple strategies in response to advancing competition from fintechs. More than 80 percent have developed proprietary in-house technologies, with a similar share engaged in commercial partnerships with external fintechs. Other common approaches include investing in fintech companies and supporting fintech accelerators with a view to buying fintech startups that prove successful. Large banks appear better placed to adapt to the new challenges given scale economies and their generally stronger financial

“Review on the Outlook for the UK Financial System: What it means for the Bank of England” (June 2019) about 45 percent of lending to UK companies is market-based finance, while PwC (*Global Fintech Survey, 2017*) finds that standalone fintech companies are contesting nearly a quarter of banking revenues, mainly in the areas of payments, funds transfer and personal finance.

positions. Consistent with this, investment in IT and digital innovation is concentrated in G-SIBs in a handful of European countries. On the other hand, smaller banks risk falling further behind. Overall, IT-related expenses absorbed about a third of EU banks' administrative expenses in 2018, however, less than one-fifth was spent on digital innovation and new technologies, reflecting in part the high cost of maintaining legacy technologies (European Banking Authority, 2019). Nonetheless, large EU banks have made considerable technology inroads, with most having adopted cloud computing, mobile wallets, biometrics and/or artificial intelligence.

Current Form of Engagement with Fintech, 2018
(Percent, Y/Y, multiple answers possible)



Source: *Risk Assessment of the European Banking System*, European Banking Authority, 2019.

40. Will the cost of complying with regulations and policies create an uneven playing field between banks and fintech companies? Due to their different business model, banks face higher capital requirements than do peer-to-peer lenders. Banks also face the additional expense of investing in new technologies and the operational risk of transitioning to new systems even as their revenue is coming under pressure and they may be required to share with incumbent and new competitors their previously-proprietary customer data (as required under PSD II). In addition, any administrative cost savings arising from near-term spending on new digital technologies are likely to arrive several years in the future. Many European banks are still contending with the vestiges of the global financial and European debt crises—viz., weak economies, compressed interest margins (partly due to negative policy rates in some instances) and legacy NPLs.¹⁹ Even before COVID-19, the share of EU banks whose equity price exceeds book value has continued to decline, standing at only one third in 2019. Moreover, the post-GFC tightening of capital and liquidity requirements has created significant arbitrage opportunities for fintechs while banks have deleveraged, generating entry opportunities for fintechs.²⁰ Nonetheless, several lending fintechs are evaluating whether the benefits of deposit taking (ease of funding and access to centralized payment systems) outweigh the additional regulatory costs of transforming into a bank, even if a digital-only one.

Share of Banks with Price-to-book Ratio > 1
(Percent, values as of September of respective years)



Source: *Risk Assessment of the European Banking System*, European Banking Authority, 2019.

¹⁹ See Detragiache et. al. (2018).

²⁰ Pending regulatory approval, minimum risk weights, minimum requirements for own funds and eligible liabilities (MREL) and the ongoing introduction of forward-looking provisioning could further increase banks' capital costs.

41. Will cross-border integration be achieved? Europe, even within the euro area, is far from a unified market, and prices of similar consumer services—such as car insurance, credit cards, mortgages or car loans—vary greatly from one country to the next. Despite this, consumers have been slow to venture into cross-border bank relationships. Regulatory efforts to create a harmonized payments system and a single payments market within the EU may therefore not generate a large increase in cross-border linkages. On the one hand, increasing transparency on offers and prices could motivate consumers to consider foreign financial services. On the other hand, technology may become the “great leveler,” causing suppliers across all markets to offer uniformly priced services. In the latter case, home-country bias in banking could even increase.

42. Will consumers pay less? It is evident that the ongoing changes in lending and payment systems will increase competition by reducing entry barriers and by allowing broader access among competing financial institutions to customer data that was previously proprietary to the customer’s bank. While the entry of new players will affect the value chain profoundly, it is less clear what the impact on the final customer—whether an individual or business—will be. Lower costs or greater competition in one part of the value chain need not reduce prices for the consumer. For example, caps on interchange fees for card payment services led some banks to raise customers’ banking fees and curtail non-monetary benefits (e.g., loyalty points). There is also some evidence that reduced merchant fees have not been passed on to consumers. Pricing-to-market may also persist. There is already evidence that some European providers are setting higher prices for services delivered within the euro area than their non-European counterparts charge for similar services delivered outside the euro area.²¹ This might suggest that space for profit making remains ample and doors are open for fintechs to exploit these margins.

43. Will weaker banks be forced out? The intensity of competition will depend on several factors. The successful implementation of open banking will be key to increase competition in the payment service segment, while the relative cost of balance sheet and non-balance sheet funding will largely determine the intensity of competition that banks will face from fintech companies. The higher the regulatory cost of balance sheet funding, particularly for high-risk segments, the more likely that fintech will be able to challenge incumbents in those segments. However, the lower cost of deposit funding may make regulatory costs manageable, as evidenced by the recent trend of some big fintech companies applying for banking licenses to become neobanks—offering only digital or mobile financial services. Regarding medium and small banks, the cost of adopting new technologies adds to the challenges of low profitability. Thus, there is still significant uncertainty regarding the future financial landscape. In contrast to many predictions not long ago about disruption from fintechs, there is now a significant amount of collaboration with banks. On the other hand, concerns have shifted to the impact of bigtechs that, given their extensive data networks and

²¹ Speech by Yves Mersch, Member of the Executive Board of the ECB, at the TIPS launch event, Frascati (Rome), 30 November 2018.

vast financial and technological resources, may have greater potential for financial disruption.

V. Conclusions

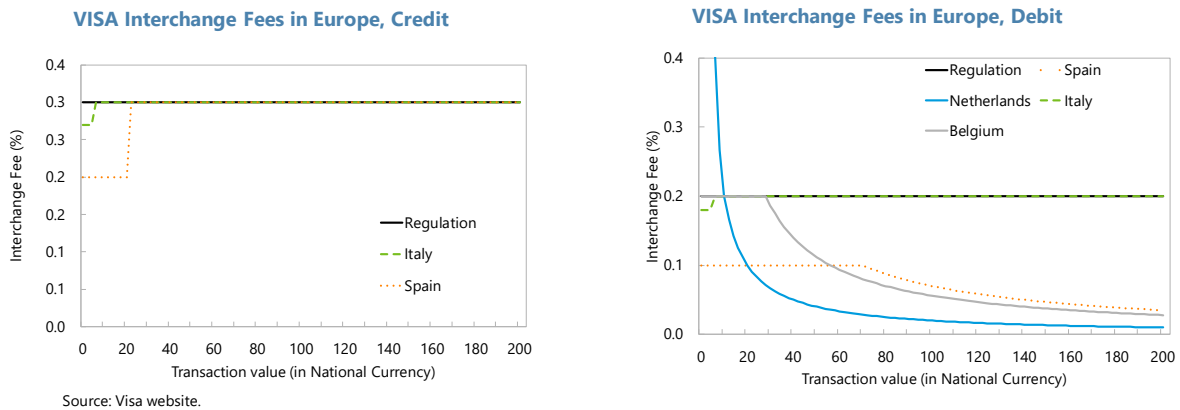
44. Fintech companies' reach and development in Europe are lower than in other regions but are on the rise. The low penetration can be partly explained by the high pre-existing banking presence and financial inclusion, strict regulation and, in some countries, a strong preference for cash-based transactions. But fintech lending and payment tools are growing rapidly. While transaction volumes and number of customers are expanding within countries, new regulations and standards are expected to level the playing field for new entrants and facilitate cross-border growth of activities.

45. Technological progress in financial services across Europe is growing and fintech companies are enjoying increasing public and regulatory support. Automated lending models and platform-based approaches are currently confined to unsecured consumer lending. A trend for fintech companies to expand by developing a balance sheet and obtaining a banking license has emerged. In the area of payment services, fintech companies can count on the existing highly developed infrastructure through which previously proprietary data is becoming accessible for services that hitherto were captured by bank and credit card networks. Although government support through regulatory sandboxes, tax facilitation and R&D financing provides an enabling environment, success and survival ultimately depend on companies' innovative capacity. By focusing on payments and lending, fintech companies are encroaching on traditional banks' core profit centers where they compete through lower costs, including due to weaker capital and regulatory requirements, "leaner" balance sheets and through higher risk-taking.

46. Whether fintech companies can significantly grow their market shares and how traditional banks will be reshaped by fintech competition remain open questions. Technological progress is set to make financial services more agile and cheaper for customers but the balance between winners and losers among service providers and the impact on the structure of the financial sector are yet to be seen. It is possible that European customers' preference for secure and private financial transactions will help preserve banks' dominant positions. Even then, however, traditional banks would need to further embrace fintech tools, either in-house or by acquisition, to remain globally competitive, including with bigtechs. Further concentration and consolidation within the banking sector therefore appear inevitable. Moreover, pandemic-related financial volatility and the ongoing recession could test the resilience of fintech companies and the durability of their funding sources, potentially leading to increased concentration in that sector. At the same time, accelerated digitalization of financial services due to COVID-19 represents an opportunity for those banks and fintech firms able to pass the digital test.

Annex I. Interchange Fee Regulation: EU vs US

The Interchange Fee Regulation (IFR) that entered into force in 2015 seeks to harmonize costs in the EU payment market by lowering fees and simplifying their structure. The IFR imposes caps on the level of interchange fees for consumer card payments, excluding commercial cards—issued for business use—and three-party schemes. The caps are 0.2 percent and 0.3 percent of the transaction value for debit and credit, respectively, on cross-border payments; and, since 2017, on domestic payments. Merchants are no longer obliged to accept all cards but must accept those cards that are subject to the interchange fee. Moreover, a merchant can select a default card it prefers, but consumers must be given the option to override it. The regulation imposes also transparency obligations on banks and retailers. The hope is that IFR will introduce a level playing field for new entrants into the industry and benefit both consumers and retailers by lowering fees where they are high. As these affect profits, a related concern is that costs could be shifted to card holders through higher fees, however, as these are more directly observable consumers are more likely to change providers. Based on the VISA network in Europe, most countries’ interchange fees on credit bunch around the caps today with Spain and Italy charging lower rates on smaller transactions. Spain, Italy, Netherlands and Belgium stand out as exceptions with charges on debit cards below the cap.

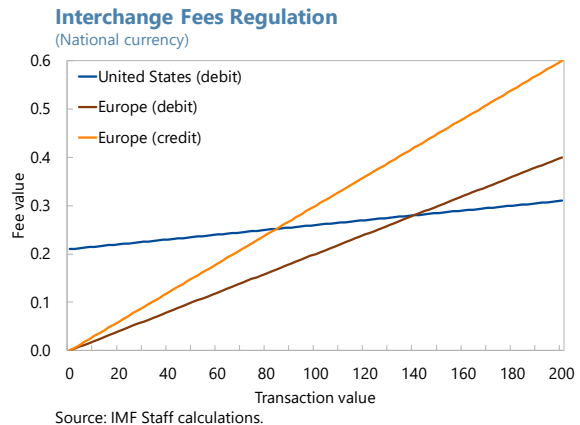


Interchange fee regulation in the [U.S.](#) dates back to 2011 and establishes standard fees for debit cards only with the aim to making them proportional to the costs incurred by issuers for electronic transactions. The maximum interchange fee that an issuer may receive is 21 cents per transaction plus 0.05 percent of transaction value. Compared to the EU regulation, the US debit card cap is “looser” for small-value transactions, but “tighter” for larger values. Small issuers (those with assets below US\$10 billion) are exempted from the interchange fees regulation. There are no caps on credit card interchange fees.

Annex II. Security Requirements Under PSD II

The security requirements are underpinned by the Regulatory Technical Standards (RTS) on strong customer authentication (SCA) and common and secure communications (SCS) to be implemented by end-2020.

- SCA.** The regulation is a response to fraud in on-line transactions. It requires card-not-present authentication based on two or more elements categorized as knowledge (i.e., a PIN), possession (i.e., a smartphone), and inherence (i.e., fingerprint); while allowing exemptions for low-risk transactions. Card networks authentication have an optional additional security layer for on-line transactions (3D secure). To comply with SCA this industry standard is replacing a static password with tokens and biometrics, while introducing risk-based authentication with improved datasets. Fintech solutions could exploit big data to identify and prevent fraud (reducing chargebacks), and tailor authentication to reduce fraud while enhancing the customer's experience.
- SCS.** The RTS envisage two possible secure communication channels provided by the ASPSP to the AISP or PISP. The first is a dedicated communication interface with the same availability and performance as the customer's interface. This is an Application Programming Interface (API) which takes a request from a third-party provider (TPP) and provides an answer. The second is by adapting the customer on-line banking interface, with the TPP accessing the customer's account using their personalized security credentials with a secure authentication of the TPP.



Annex III. National Regulation for Crowdfunding and Selected Features of Dedicated Fintech Credit Policy Frameworks

Table 1. National Laws and Regulations for Crowdfunding or Peer-to-Peer Lending

Regulation	Country (year the regulation came into force)
New regulation in place	Austria (2015), Belgium (2017), Finland (2016), France (2014), Greece (2016), Lithuania (2016), Portugal (2015), Spain (2015), United Kingdom (2014), Turkey (2017)
New regulation under preparation	Latvia, Sweden
Amendments to existing regulations	Italy, Israel
Guidance, best practice	Estonia, Germany
Not specifically regulated	Cyprus, Ireland, Luxembourg, Malta, Netherlands, Slovak Republic, Slovenia, Denmark, Iceland, Norway, Czech Republic, San Marino, Switzerland, Hungary, Poland, Bulgaria, Croatia, Romania, Albania, Bosnia and Herzegovina, Kosovo, Macedonia, Montenegro, Serbia, Belarus, Moldova, Russia, Ukraine

Sources: European Crowdfunding Network (2017), McLean and Miller (2018), and various websites.

Table 2. Selected Features of Dedicated Fintech Credit Policy Framework

Jurisdiction	Regulations - P2P lending or lending-based crowdfunding 1/ 1/	Regulations - equity-based crowdfunding 1/ 2/	License or registration requirement 3/	Investor protections 3/	Tax incentives 4/
Austria	X	X	-	X	X
Belgium	X	X	X	X	X
Finland	X	X	X	X	-
France	X	X	-	X	X
Greece	-	X	X	X	-
Israel	X	X	X	X	X
Italy	X	X	X	X	X
Lithuania	X	X	X	X	-
Portugal	X	X	X	X	X
Spain	X	X	X	X	X
Turkey	-	X	X	X	X
United Kingdom	X	-	X	X	X

Sources: CGFS-FSB (2017), European Crowdfunding Network (2017), Getting the Deal Through (2018), and various websites.

Notes:

1/ Covers both lending-based crowdfunding and peer-to-peer lending. Definition of the activity may differ across countries.

2/ In some countries, other types of crowdfunding activities (real estate, reward-based, or donation-based) are also covered by the same regulation.

3/ Specific rules for fintech lending that are separate from pre-existing rules for other financial intermediaries.

4/ Includes incentives for small and medium-sized enterprises and startups.

References

- Beaumont, C., Mancini-Griffoli, T., Martinez Peria, M.S., Misch, F. and B. Segendorf, The Diffusion of Payment Innovations: Insights from the Stellar Rise of Swish.
- Bolt, W., N. Jonker and C. van Renselaar, 2010, Incentives at the counter: An empirical analysis of surcharging card payments and payment behavior in the Netherlands, *Journal of Banking and Finance* 34, 1738–1744.
- Brits, J.H. and C.C.A. Winder, 2005, Payments are no free lunch, *DNB Occasional Studies* 3(2). De Nederlandsche Bank n.v.
- Cambridge Centre for Alternative Finance (2017): Entrenching Innovation: the 4th UK Alternative Finance Industry Report.
- Cambridge Centre for Alternative Finance (2018): Expanding Horizons: the 3rd European Alternative Finance Industry Report.
- Claessens, S., Frost, J., Turner, G. and Zhu, F., 2018. Fintech credit markets around the world: size, drivers and policy issues. *BIS Quarterly Review* September.
- Detraghiache, E. Thierry Tressel, Rima Turk Ariss, 2018. Where Have all the Profits Gone? European Bank Profitability Over the Financial Cycle. *IMF Working paper* No. 18/99.
- European Banking Authority (EBA), 2014, Report to the European Commission on the perimeter of credit institutions established in the Member States.
- EBA, 2017, Discussion Paper on the EBA's approach to financial technology (fintech), EBA/DP/2017/02.
- European Commission, 2006, Interim report I Payment cards, Sectoral Inquiry under Article 17 Regulation 1/2003 on retail banking, European Commission: Brussels.
- European Crowdfunding Network, 2017, Review of Crowdfunding Regulation 2017.
- Esselink, H. and L. Hernandez, 2017, The use of cash by households in the euro area, *ECB Occasional Studies* no. 201/November 2017. ECB: Frankfurt am Main.
- Jonker, N., 2007, Payment instruments as perceived by consumers: Results from a household survey, *De Economist* 155(3), 271–303.
- Financial Stability Board, 2019, BigTech in finance, December.
- Jonker, N., 2013, Social costs of POS payments in the Netherlands 2002–2012: Efficiency gains from increased debit card usage, *DNB Occasional Study* 11(2).

- Jonker, N. Plooi, M and J. Verburg, 2017, Did a public campaign influence debit card usage? Evidence from the Netherlands, *Journal of Financial Services Research* 52(1–2), 89–121.
- McKinsey, 2006, *Payment Services in the Netherlands: an Analysis of the Costs and Revenues for Banks*, McKinsey: Amsterdam.
- Morey, T., T. Forbath, A. Schoop, 2015, “Customer Data: Designing for Transparency and Trust”, *Harvard Business Review*.
- McLean, A. and P. Miller, 2018, *Getting the Deal Through—fintech 2018*.
- Schueffel, P., 2016, Taming the Beast: A scientific definition of fintech, *Journal of Innovation Management* 4(4), 32-54.
- United Nations Secretary-General’s Special Advocate for Inclusive Finance for Development (UNSGSA) and Cambridge Centre for Alternative Finance (CCAF), 2019, *Early Lessons on Regulatory Innovations to Enable Inclusive Fintech: Innovation Offices, Regulatory Sandboxes, and RegTech*.