RÉPUBLIQUE FRANÇAISE

Autorité de la concurrence

Opinion 21-A-05 of 29 April 2021 on the sector of new technologies applied to payment activities

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The *Autorité de la concurrence* (Section 1B),

Having regard to Decision 20-SOA-01 of 13 January 2020 on conducting a sector-specific inquiry, on its own initiative, on the sector of new technologies applied to financial activities, registered under No 20/0013 A;

Having regard to Book IV of the French Commercial Code (Code de commerce);

Having regard to the questionnaires sent by the *Autorité de la concurrence* to operators in the sector;

Having regard to the public consultation document published by the *Autorité de la concurrence* on 20 May 2020;

Having regard to the contributions received as of 19 June 2020;

Having regard to the other evidence in the case file;

The representatives of the 'Autorité de contrôle prudentiel et de résolution', the 'Fédération Bancaire Française', the 'Association France FinTech', the 'Association Libra' (now called 'Association Diem'), the EIG 'Cartes Bancaires' and the companies Apple, Orange, Paylib, Paypal, Qonto and Visa Europe Limited, heard at the hearings on 24 September 2020;

The rapporteurs, the Deputy General Rapporteur and the representative of the Minister of the Economy, heard at the hearing of 21 January 2021;

The representatives of the Banque de France and the representatives of the BNP Paribas Group, heard pursuant to Article L. 463-7 of the French Commercial Code (Code de commerce);

Has adopted the following opinion:

Summary

The *Autorité* decided to conduct a sector-specific inquiry on its own initiative on 13 January 2020, with a view to assessing the competitive situation in the sector of new technologies applied to financial activities, and to payments in particular. The investigation conducted in this context has led to the following findings by the *Autorité*.

In recent years, thanks to technological innovations and specific regulatory amendments made at the European level (in particular the adoption of the first and second Directives on payment services), the supply side of the payments sector has undergone significant changes, which has resulted in a new market dynamic. This dynamic, which can be seen in the entry of non-bank actors into the payments sector, is being driven by two very different categories of actors. Firstly, those that can be grouped under the "FinTech" banner, which brings together a wide range of entities with very different profiles and business models: these can be small innovative start-ups, with no pre-existing business, some of which are growing at the European or even international level (N26, for example), but also well-established players from other business sectors with a well-developed customer base, including Orange and Carrefour. The other significant element of disruption in the sector is the rapid and large-scale arrival of the major digital actors, collectively referred to as "Big Tech"[1]. This category includes both GAFAM[2], in Europe and the United States in particular, and BATX[3], which have acquired strong positions in Asia and are starting to expand in Europe and the United States. This dynamic is also reflected in the strategies implemented by the traditional banking actors to adapt to the digitisation of payment services.

The transformation of the payments sector is primarily reflected in the emergence of a range of new services, payment initiation channels and alternative payment methods in recent years. Payment initiation services and account information services were created in the wake of the second Payment Services Directive ("PSD2")[4]. New payment initiation channels have emerged, including contactless payment via bank card, mobile phone and connected smartwatch, set against the backdrop of a consolidation of remote payments on the internet. Moreover, payment via facial recognition could become a reality in Europe in the future. Finally, "alternative payment methods" are now recognised by the Banque de France, which include crypto-assets as well as stablecoins, the second generation of crypto-assets. Various initiatives to develop these stablecoins have recently been launched, including the initiative by the bank JP Morgan to launch the JPM Coin, which is pegged to the US dollar, and the initiative by Association Diem, in which Facebook participates through its subsidiary Novi, to issue a single-currency stablecoin in the initial phase, the "Diem Dollar", which could be pegged to the US dollar.

These different developments are based on recent technologies. While the sector has always been characterised by major technological breakthroughs, often intra-sectoral, such as the

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[1] The term "Big Tech" refers to "*giant digital services and data platforms based mainly in the United States and China*" (see Banque de France, "*Payments and market infrastructures in the digital era*", report, January 2021, page 4, link).

[2] Google, Amazon, Facebook, Apple and Microsoft.

[3] Baidu, Alibaba, Tencent and Xiaomi.

[4] Directive (EU) 2015/2366 of the European Parliament and of the Council of 25 November 2015 on payment services in the internal market, amending Directives 2002/65/EC, 2009/110/EC and 2013/36/EU and Regulation (EU) No 1093/2010, and repealing Directive 2007/64/EC, OJ No L 337, 23.12.2015, pages 35-127 .

automation of transaction processing in real-time or the development of smart cards as a means of payment, it is now incorporating two technologies, cloud computing and blockchain, which, although not specific to this sector, are likely to bring about profound and lasting changes to the way it operates.

Cloud services, which comprise among others outsourcing solutions for computing and data storage and transfer, are becoming an indispensable service for many actors in the sector, both new entrants and established names, due to the flexibility and performance offered by these services. Currently used primarily in the financial sector to facilitate crypto-assets transactions, blockchain is also a particularly promising technology, and is expected to drive the development of innovative services, improve the security of payments, reduce their cost and accelerate cross-border transactions.

The new market dynamic resulting from these changes are characterised not only by the arrival of FinTech and Big Tech in the sector, but also by how the traditional banking groups, which are also directly and actively involved in the current developments, have adapted.

The traditional banking actors in France are committed to the evolution of the payments sector and are implementing a range of complementary strategies: they are investing in FinTech directly, via equity stakes, in order to internalise specific functions offered by the latter, create synergies or conquer new markets; they are also entering into cooperation or partnership
agreements with new non-banking actors, in particular Big Tech; and they are continuing to invest intensively in R&D, to enhance their services.

The agreements concluded between banks and FinTech allow the former to take advantage of the agility and innovation of the latter, while FinTech can capitalise on the banks' reputation, distribution channels, customer base and capacity to handle regulatory constraints. The agreements concluded between banks and Big Tech allow banks to offer their customers specific services such as *Apple Pay*, *Google Pay* or *Samsung Pay*, for example. Finally, agreements concluded at the national level between banking groups have led to the emergence of new actors such as Paylib and Lyf Pay, which offer among others contactless payment services. An agreement at European level, the European Payment Initiative (EPI), aims to create a pan-European payment system that could connect banks to each other without using the current networks such as Visa and MasterCard.

Banks' investments in R&D include incubators for payments start-ups, to accelerate their digital transition and expand their customer base (for example, to reach younger customers or be active in new services).

The *Autorité* has analysed the impact of these developments on the competitive balance of the payments sector, by examining the competitive relationship of the products and services in question (substitutability or complementarity) and identifying barriers to entry and expansion, as well as the competitive advantages enjoyed by the different categories of actors active in the sector, before formulating specific points of attention.

First, as regards the products and services in question, the *Autorité* has observed that some markets in the payments sector are two-sided in nature. This is especially the case of card payments, which today are the leading means of payment in terms of number of transactions, and which some of the new entrants, including platforms such as Google and Apple, rely on to offer their services. The sector is also characterised by a high level of dynamism, which is reflected in the emergence of a wide variety of innovative products and services, often integrated with each other or combined with pre-existing products or services to become ancillary to them, or ceasing to exist as a stand-alone service. This dynamism can make it

difficult to precisely pinpoint, on a lasting basis, the scope of the products or services brought to market, and therefore the nature of the competitive relationship between these products and services. These two characteristics may render market definition a particularly complex task, especially in the context of prospective merger analysis.

Next, as regards barriers to entry and expansion, the *Autorité* has identified regulatory and economic barriers, as well as barriers to accessing given infrastructures and data.

The sector is indeed characterised by substantial regulation, which varies according to the services marketed and pursues multiple objectives: for example, the stability of the monetary and financial system, anti-money laundering and terrorist financing. Furthermore, certain activities fall outside the scope of the French monetary and financial code (Code monétaire et financier) and are therefore not subject to the relevant oversight (this is the case, for example, for services that are seemingly payment services but do not necessarily fall under the above-mentioned Code, such as those that allow contactless payment by mobile phone, like *Apple Pay*).

The economic barriers are reflected in the existence of direct and indirect network externalities, particularly in certain two-sided markets, as well as experience economies (high costs of gaining brand recognition and the trust of customers) and economies of scale (significant fixed costs borne by banking actors relating to physical branch networks and IT systems). The existence of these barriers helps explain the way FinTech decide to enter the sector, with some of them relying on pre-existing distribution networks (e.g. Orange Bank or Nickel) and using new technologies, including cloud services for IT needs, for instance.

The other barriers identified in the context of this opinion concern the following two situations.

Firstly, the opening or closure of effective access to the NFC (near field communication) antenna of smartphones has a real impact on the ability of the actors who have developed contactless mobile payment solutions based on NFC technology, which is the most widely used in France, to offer their services on smartphones equipped with these antennas.

Secondly, it can be seen from the statements made by certain actors during the investigation for this opinion that the various APIs developed by the account-servicing payment service providers ("ASPSPs"), including the banks in particular, in the context of the PSD2, are still not fully operational in France. According to these statements, this situation, as well as the obligatory redirection imposed by ASPSPs on their customers so as to allow their strong authentication when they use payment initiation services or account information services, would be likely to hinder the development of payment initiation service providers and account information service providers.

Finally, with regard to the competitive advantages enjoyed by the various categories of actors in the sector, banks have several advantages, on account of their historical position. They have unrivalled experience in mastering compliance with the various applicable regulations, and enjoy an excellent reputation in terms of security and protection of their clients' data, at a time when the practices of some of major digital players in this area are being called into question. In addition, thanks to their solid customer bases, their business volumes allow them to have some of the lowest unit processing costs when it comes to their payment services. They can also easily pool these services with the other services they offer. Banks also have a good knowledge of their customers' habits, thanks to the volume and quality of their historical data, on which some new entrants depend in order to offer their services. Their decades of experience in the design and operational management of payment

solutions, as well as their ability to defend their interests before governments, and their financial strength, are also significant competitive advantages.

Unlike traditional banking actors, FinTech, including neobanks, have lower fixed costs, which constitutes a competitive advantage. In effect, they bear neither the costs of maintaining interbank infrastructures, nor the costs resulting from the physical networks of banks. Nor are they bound by the legacy of old and cumbersome IT systems, built on sometimes obsolete technologies. This means FinTech can be agile, responding quickly to the specific needs in the day-to-day lives of consumers, and positioning themselves in niche markets. What is more, they have expertise in simplifying the "customer experience", which can lead to the creation of payment solutions that are easy to use and adapted to the new habits of the users of these services.

Finally, the major digital actors have significant competitive advantages, even though their entry into the payments sector is much more recent. First of all, they have a vast user community from their core businesses, on which they can draw in order to develop rapidly in the payment sector, as Apple and Amazon have done, respectively, through *Apple Pay* and *Amazon Pay*. Furthermore, they have access to reams of data on the users of their non-financial services, an advantage that they can combine with their expertise in new technologies, such as artificial intelligence and algorithmic tools, to process and analyse the said data. Thanks to these unrivalled strengths, they can develop the capacity to assess the financial health of their users more effectively and tailor their offerings to the latter's preferences or needs, including by estimating their maximum willingness to pay.

Big Tech also benefits from considerable financial strength, which allows them to make substantial investments in various new technologies that facilitate the development of innovative payment solutions. Thanks to the technical mastery of their ecosystems, structured for the most part around platforms, into which their payment solutions are integrated, the major digital actors are able to offer a highly fluid and effective "customer experience" that can be hardly replicated by their competitors. Moreover, due to economies of scope, they face lower marginal costs than, for example, traditional banking actors, which enhances their capacity to offer their payment solutions to consumers free of charge. At the same time, they can derive substantial advantages from their payment service partners or providers, including commissions, because of the unavoidable nature of their services. Finally, the major digital actors enjoy, with some individual specificities, a brand image and reputation which, in the context of their payment solutions, are likely to foster a loyalty from some users, in particular young ones, owing to the advantages offered by their ecosystem.

In light of these elements, the *Autorité* highlights the following points of attention.

Firstly, the *Autorité* identified several competition-related risks relating to certain competitive advantages enjoyed by Big Tech and the banks on the one hand, and the use of blockchain technology on the other.

The data collected by Big Tech in the context of their core business activities could give them a significant advantage in the payments industry and, conversely, the data collected via the payment services they offer could allow them to make their respective platforms more attractive. Moreover, beyond the possible barriers that may arise from the actual access to the NFC antennas of smartphones, certain practices relating to mobile contactless payment solutions, including the pre-installation of features in some phones or the introduction of ergonomic shortcuts which facilitate access to a given feature, could present risks for competition, for example if they result in consumers being excluded from a given ecosystem, or they could be considered, more generally, as abuses of a dominant position.

In the context of the implementation of the rules laid down in the PSD2 and Commission Delegated Regulation 2018/389[5], the investigation shows that a certain vigilance is advisable with regard to the conduct of ASPSPs, due to their holding of payment account data accessible online and, above all, to the conditions under which they are made available, and to ensure in particular that it does not hinder the development of activities by payment initiation service providers and account information service providers.

The competitive risks that may arise from the use of blockchain technology, which are not unique to the payments sector but may materialise within it, may fall under the rules prohibiting anti-competitive agreements and abuses of a dominant position, and may be caused by the actors controlling the access to the blockchain, the users of the blockchain or the 'miners'.

Secondly, the *Autorité* notes that while the current developments will enhance the range of products and services on offer and improve their quality and diversity, while exerting pressure on prices to the benefit of consumers, they are also likely to lead to a profound change in the way the sector currently operates, in particular by possibly calling into question the ”universal banking model”, which allows certain services to be offered, such as cheque cashing and cash deposits, which would likely be "unprofitable" if offered in isolation.

To conclude, while a scenario in which FinTech would break away completely from the banking system by creating their own infrastructure seems unlikely today, it appears that, without having the experience of banks in the payments sector, BigTech master, or even control, certain innovative technologies which could, in the future, play a decisive role in the service chain. Their presence in the payments sector could therefore be strengthened, in particular through the conclusion of new partnerships with banking actors.

There is therefore a risk that traditional banking actors will find themselves confined to operative tasks involving significant fixed costs (regulatory burdens, physical network, payment infrastructures), while being marginalised in the value distribution chain.

[5] Commission Delegated Regulation (EU) 2018/389 of 27 November 2017 supplementing Directive (EU) 2015/2366 of the European Parliament and of the Council with regard to regulatory technical standards for strong customer authentication and common and secure open standards of communication, OJ No. L 69, 13.3.2018, pages 23-43.

1. Like other sectors particularly exposed to the digital transformation, the banking and financial sector has been undergoing major changes for several years already, resulting in an upheaval in the competitive balance.

2. With regard to the payments sector in particular, which in 2019 attracted almost one third of total investment in France in start-ups specialising in new technologies applied to financial activities[6], this sector has been characterised on the demand side by the emergence of new consumer expectations, stemming from the vast possibilities offered by the development of digital technology, and on the supply side by the arrival of non-banking actors and the adaptation of traditional banking players to these developments.

3. In the context of these various structural changes, new services and new payment initiation channels have emerged in recent years, as well as "alternative payment methods" such as crypto-assets and stablecoins, the development of which has been made possible inter alia by major technological innovations.

4. In light of all these developments, the *Autorité de la concurrence* (hereinafter "the *Autorité*") decided to conduct a sector-specific inquiry an opinion on its own initiative on 13 January 2020[7], pursuant to Article L. 462-4 of the French Commercial Code (Code de commerce), to analyse the competitive dynamics of this rapidly changing sector.

5. In the context of this opinion, the concept of "FinTech" is understood to include non-banking players in the payments sector, with the exception of "Big Tech", whose profiles and business models sometimes vary significantly.

6. The term "Big Tech" refers to "*giant digital services and data platforms based mainly in the United States and China*".[8] It is therefore used in this opinion to refer to the major digital players encompassing "GAFAM" (Google, Apple, Facebook, Amazon and Microsoft) and "BATX" (Baidu, Alibaba, Tencent and Xiaomi).

[6] The Observatory for FinTech has included, in the calculation of the financing, all the companies identified as belonging to the following services, categorised as such by the Observatory: services to financial actors, payment services, investment services, InsurTech, financing services, RegTech, blockchain and crypto-assets, middle and back office and banking services 2.0 and neobanks.

[7] Decision 20-SOA-01 of the *Autorité de la concurrence* of 13 January 2020 on an opinion, on its own initiative, on the sector of new technologies applied to financial activities.

[8] Banque de France, report of January 2021, cited above, page 4.

I. The competitive landscape of the payments sector: a high pace of innovation and advances in the regulatory framework

A. THE EMERGENCE OF NEW SERVICES AND NEW PAYMENT INITIATION CHANNELS, AS WELL AS ALTERNATIVE PAYMENT METHODS, AND THE DEVELOPMENT OF NEW TECHNOLOGIES

1. RECENT DEVELOPMENTS IN THE PAYMENTS SECTOR CHARACTERISED BY HIGH LEVELS OF INNOVATION

7. In recent years, the payments sector has been characterised by the emergence of new payment services, made possible in particular by technological developments, and to a lesser extent by changes in European legislation (a), the spread of payment initiation channels and (b) the emergence of crypto-assets which, although they do not meet the definition of means of payment within the meaning of Article L. 311-3 of the French monetary and financial code (Code monétaire et financier)[9] (hereinafter "CMF"), are considered by the Banque de France to be an "alternative payment method" (c).

a) The creation of two new categories of payment services by the PSD2

8. The first Payment Services Directive[10] (hereinafter "PSD1"), adopted on 13 November 2007 , defined the concept of "payment services" at the European level for the first time.

9. The list of activities performed on a professional basis that fall under this concept and that are listed in the annex to the directive was transposed into French law in Article L. 314-1 of the CMF by Ordinance 2009-866 of 15 July 2009[11].

10. In a context marked by technological advances and the emergence of new types of payment services since the adoption of PSD1, the second Payment Services Directive[12] (hereinafter "PSD2"), adopted on 25 November 2015, created two additional types of payment service:

- payment initiation services, which enable (translated) "*an individual or legal person to order the execution of payment transactions, such as credit transfers, from an interface (website and/or mobile app) that is not necessarily that of the bank in which their account(s) is (are) held*"[13]; and

[9] According to Article L. 311-3 of the CMF (translated), "*all instruments that enable any person to transfer funds, regardless of the medium or technical process used, are regarded as means of payment*".

[10] Directive 2007/64/EC of the European Parliament and of the Council of 13 November 2007 on payment services in the internal market amending Directives 97/7/EC, 2002/65/EC, 2005/60/EC and 2006/48/EC and repealing Directive 97/5/EC, OJ No L 319, 5.12.2007, pages 1 - 36.

[11] Ordinance 2009-866 of 15 July 2009 on the conditions governing the provision of payment services and creating payment institutions.

[12] Directive (EU) 2015/2366 of the European Parliament and of the Council of 25 November 2015, cited above.

[13] See the website of Assurance Banque Epargne Info Service (link).

- account information services, which allow "*an individual or legal person to group information together on a single interface (website and/or mobile app) regarding the balances and transactions carried out on several or all of their accounts*"[14].

11. These new services may be provided by all payment service providers, i.e. "*institutions authorised to open and maintain payment accounts for their clients and to issue means of payment*"[15], but also by actors that only provide these services (payment initiation service providers and account information service providers).

12. Since the transposition of PSD2 into French law in August 2017[16], payment initiation services and account information services are included in the list of payment services provided for in Article L. 314-1 of the CMF.

13. In its current version, this article of the CMF therefore provides that:

"*Payment services are as follows:*

1° Services enabling cash to be placed on a payment account as well as all the operations required for operating a payment account;

2° Services enabling cash withdrawals from a payment account as well as all the operations required for operating a payment account;

3° Execution of payment transactions, including transfers of funds on a payment account with the user's payment service provider or with another payment service provider:

a) Execution of direct debits, including one-off direct debits;

b) Execution of payment transactions through a payment card or a similar device;

c) Execution of credit transfers, including standing orders.

4° Execution of payment transactions where the funds are covered by a credit line for a payment service user:

a) Execution of direct debits, including one-off direct debits;

b) Execution of payment transactions through a payment card or a similar device;

c) Execution of credit transfers, including standing orders.

5° Issuing of payment instruments and/or acquiring of payment transactions.

6° Money remittance.

7° Payment initiation services.

8° Account information services".

14. The table below provides, for each of the payment services listed in Article L. 341-1 of the CMF, examples of FinTech offering at least one of these services in France[17]:

[14] See the website of Assurance Banque Epargne Info Service (link).

[15] Banque de France, report of January 2021, cited above, page 20.

[16] Ordinance No. 2017-1252 of 9 August 2017 transposing Directive 2015/2366 of the European Parliament and of the Council of 25 November 2015 on payment services in the internal market.

[17] It is important to note that, with the exception of *Monisnap* and *Transaction Connect*, all the other FinTech listed in the table also offer payment services in France other than those listed in the table.

Table 1 - Examples of payment services offered by FinTech

Payment services listed in Article L. 314-1 of the CMF		FinTech offering such services
1° Services enabling cash to be placed on a payment account as well as all the operations required for operating a payment account;		vivawallet
2° Services enabling cash withdrawals from a payment account as well as all the operations required for operating a payment account;		PAYTOP
3° Execution of payment transactions, including transfers of funds on a payment account with the user's payment service provider or with another payment service provider:	a) Execution of direct debits, including one-off direct debits	easytransac
	b) Execution of payment transactions through a payment card or a similar device	libeo
	c) Execution of credit transfers, including standing orders	Limonetik
4° Execution of payment transactions where the funds are covered by a credit line for a payment service user	a) Execution of direct debits, including one-off direct debits	iBanFirst
	b) Execution of payment transactions through a payment card or a similar device	vivawallet
	c) Execution of credit transfers, including standing orders	iBanFirst
5° Issuance of payment instruments		spendesk
5° Acquiring of payment transactions		LEMONWAY
6° Money remittance		monisnap
7° Payment initiation services		Lydia
8° Account information services		Transaction connect

Source: Compilation by the Autorité de la concurrence based on the investigation file.

b) Diversification of payment initiation channels

15. As regards payment initiation (the consumer's side), channels have been multiplied and have rendered possible notably remote payment on the internet and contactless payment[18].

16. What these two methods of payment initiation have in common is that they rely on existing means of payment, such as the bank card, and that they bring together the various parties to

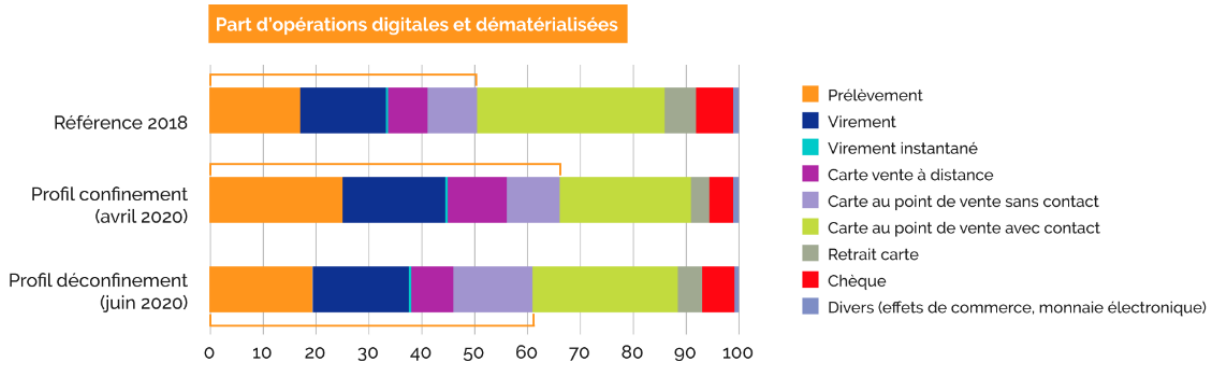
[18] Banque de France, report of January 2021, cited above, page 29.

the transaction in real time (the payer, the payee and their respective bank account providers)[19]. They also raise new issues in terms of transaction security.

Consolidation of remote payment on the Internet

17. The spread of the Internet, the multiplication of terminals connected to the Internet and the growth of e-commerce have led to a significant increase in remote payments by bank card. As stated by the Banque de France in its January 2021 report entitled "Payments and market infrastructures in the digital era", "*the volumes and amounts of remote payments by card rose nine-fold between 2006 and 2016*"[20]. In terms of volume, these payments have continued to grow, from 800 million transactions to 1,800 million transactions between 2016 and 2020[21]. With regard more specifically to the impact of the Covid-19 crisis on this payment initiation channel, it should be noted that the lockdown imposed on French citizens between 16 March 2020 and 10 May 2020 resulted in an increase in remote payments by card, reflecting the transition from proximity transactions to remote transactions due to the closure of a large number of shops[22], as illustrated in the figure below:

Figure 1 - Changes in the structure of payment flows in volume terms attributable to the crisis (%)



Source: Observatoire de la sécurité des moyens de paiement, " 2019 Annual Report", page 8.

Reference 2018 Profile lockdown (April 2020) Profile end of lockdown (June 2020)	Share of digital and computerised transactions	Direct debit Credit transfer Instant credit transfer Distance selling card Contactless card at sales outlet Contact card at sales outlet with Card withdrawal

[19] Observatoire de la sécurité des moyens de paiement (translated), "*Annual report 2018*", July 2019, report, page 41 (link).

[20] Banque de France, report of January 2021, cited above, page 29.

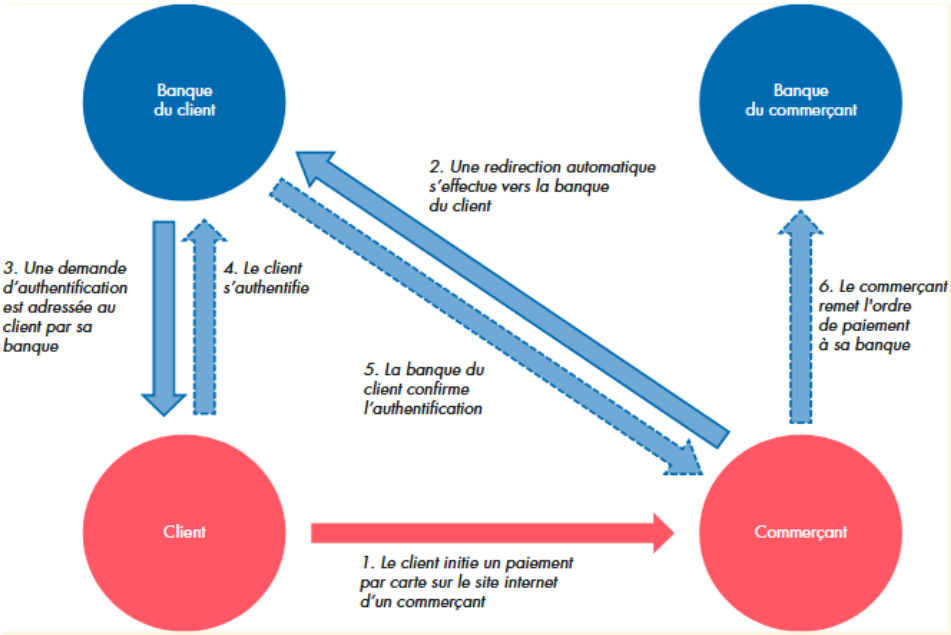
[21] See website of the Groupement des Cartes Bancaires CB (link).

[22] Observatoire de la sécurité des moyens de paiement, " *Annual report 2019*", December 2020, report, pages 7 and 8 (link).

		Cheque Miscellaneous (bills of exhange, electronic money)

18. The improved security of online purchases has undoubtedly also contributed to the increase in remote payments by bank card. In 2008, the "3D-Secure" protocol, developed by Visa and MasterCard and intended to allow the bank issuing the bank card to authenticate the payer in order to combat fraud[23], was implemented in France. The way it works can be summarised as follows:

Figure 2 - Functioning of the "3D-Secure" protocol



Source: Banque de France, "Payments and market infrastructures in the digital era", January 2021, page 51.

	English translation
Banque du client	Customer's bank
Banque du commerçant	Merchant's bank
Client	Customer
Commerçant	Merchant

1. The customer initiates a card payment on a merchant's website

[23] Banque de France, report of January 2021, cited above, page 51.

	2. An automatic redirection is made to the customer's bank 3. An authentication request is sent to the customer by their bank 4. The customer authenticates 5. The customer's bank confirms the authentication 6. The merchant gives the payment order to its bank

19. In the context of this protocol, for which there is a second version which allows the use of the authentication exemptions provided for by PSD2[24], strong customer authentication is currently based on the use of at least two of the three elements, the exact number of which will be determined by each account-servicing payment service provider (hereinafter "ASPSP")
, belonging to the following categories: "knowledge" (something the customer knows e.g., a password or numerical code), "possession" (something the customer possesses e.g., their mobile phone) and "inherence" (something the customer is e.g., fingerprints or their voice)[25].

20. It is also interesting to note that efforts to secure online transactions appear to have been successful, at least in part. As indicated by the Observatoire de la sécurité des moyens de paiements, as regards remote payments by bank card (translated), "*the fraud rate has once again fallen, for the eighth consecutive year, to 0.170%, compared to 0.173% in 2018 under the effect of the growth in remote transactions (+12% in value compared to 2018)*"[26]. Nevertheless, fraud involving this type of payment still represents, in value, the majority of fraud at the national level[27].

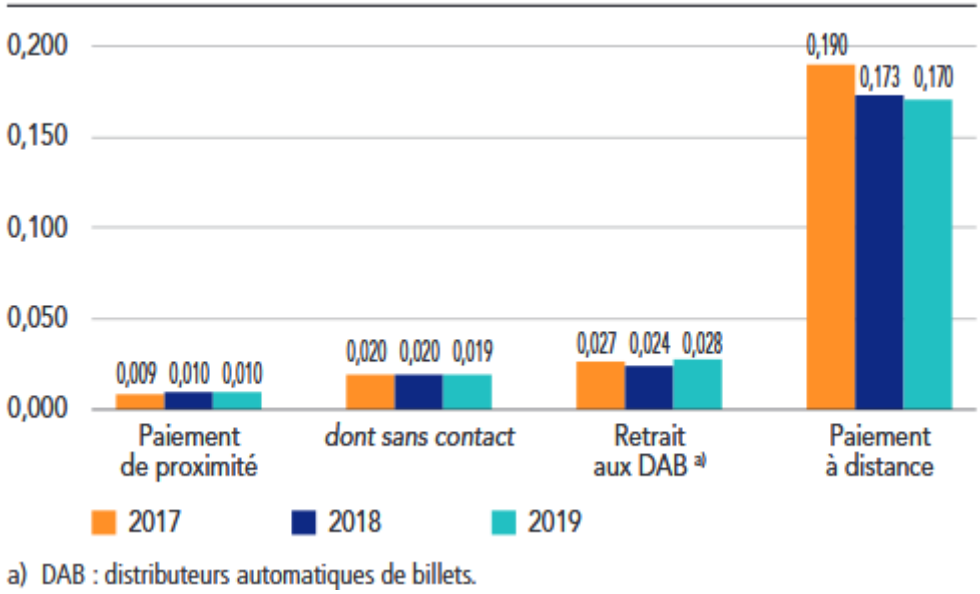
[24] Observatoire de la sécurité des moyens de paiement, report of December 2020, cited above, page 17.

[25] See the above-mentioned Directive (EU) 2015/2366 of the European Parliament and of the Council of 25 November 2015,
Article 4; the website of Assurance Banque Epargne Info Service (link) and the European Commission website (link).

[26] Observatoire de la sécurité des moyens de paiement, report of December 2020, cited above, page 22.

[27] *Idem supra*.

Figure 3 - Comparison of fraud rates on national transactions, by type of transaction (in %)



a) DAB : distributeurs automatiques de billets.

Source: Observatoire de la sécurité des moyens de paiement, " 2019 Annual Report", page 22.

Proximity payment	of which contactless	Withdrawal from ATM[a)]	Remote payment

21. Compared to the number of payments made by proximity cards (made at a merchant's terminal), those made remotely via bank card are still relatively small. In effect, in 2020, remote payments by bank card accounted for 14.1% of the volume of local card payments[28].

The rise of contactless payment

22. In the field of payment initiation, the development of contactless payment arose after the development of remote payment on the Internet[29].

23. As such, it is now possible in France to make a contactless payment using a bank card, a mobile phone or a connected smartwatch. As is the case in China, payment by facial recognition could become a reality in Europe in the future (see paragraphs 42 to 46 below).

Continued progress in contactless payment by bank card

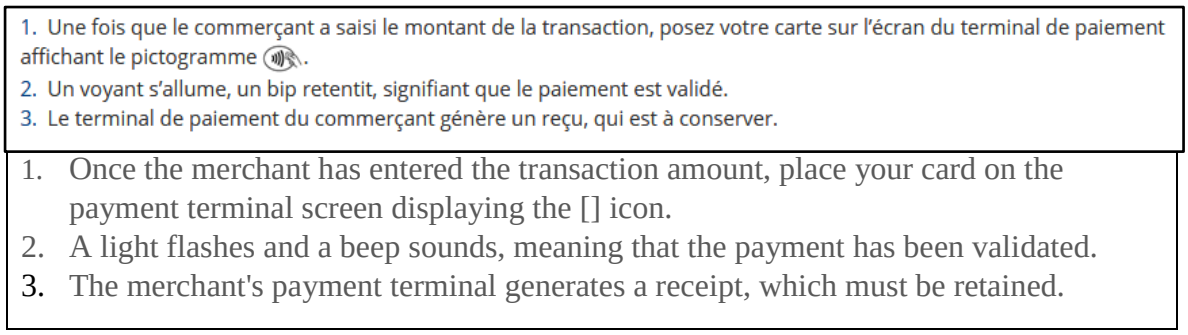
24. Any bank card which has the pictogram allows its holder, provided that the functionality is activated, to make a payment by holding the card a few centimetres away from the merchant's contactless payment terminal, without the holder having to enter their PIN code[30]:

[28] See the website of the Groupement des cartes bancaires (link).

[29] FOREL, J-Y., "Les moyens de paiement, quelle innovation ?", *Revue d'économie financière* 2015/4 (n° 120), pages 93 to 104 (link).

[30] See the website of Assurance Banque Epargne Info Service (link).

Figure 4 - How to use contactless payment by bank card? [31]



25. This payment initiation channel has grown significantly in recent years. According to the Observatoire de la sécurité des moyens de paiement, the use of bank cards is increasing, driven in particular by (translated) "*the continued development of contactless payments, which in 2019 accounted for 3.8 billion transactions (+59% compared to 2018) for a total amount of €42.9 billion (+70% compared to 2018)*"[32].

26. Originally limited to €30 per transaction for cards issued on or after 1 October 2017, the ceiling applicable to each contactless payment has been raised, following the recommendation of the European Banking Authority (hereinafter "EBA"), to €50 since 11 May 2020 in response to the Covid-19 crisis[33]. According to the Observatoire de la sécurité des moyens de paiement, this increase in the authorised payment limit, combined with the easing of the lockdown, led to an increase in the number of contactless payments, after July 2020, of more than 60% in terms of volume and 120% in terms of value, compared to 2019[34].

27. In 2020, contactless payments in France accounted for 47% of transactions by bank card made in physical stores[35].

The development of contactless payment by mobile phones

28. While relying on the contactless payment infrastructure for bank cards[36], mobile phones are increasingly used in France for contactless payment initiation[37]. Consequently, domestic transactions via mobile phones in 2019 were just over 4 times higher than in 2018, reaching 45.2 million transactions[38]. By way of comparison, in China there were more than 100 billion transactions via mobile phones in 2019[39].

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[31] See the website of Assurance Banque Epargne Info Service (link).

[32] Observatoire de la sécurité des moyens de paiement, report of December 2020, cited above, page 17.

[33] See Ordinance 2020-534 of 7 May 2020 containing various provisions relating to banking.

[34] Observatoire de la sécurité des moyens de paiement, report of December 2020, cited above, page 9.

[35] Le Figaro, (translated)" Contactless payments soared in 2020", 15 January 2021 (link).

[36] Observatoire de la sécurité des moyens de paiement, report of July 2020, cited above, page 68.

[37] Banque de France, report of January 2021, cited above, page 30.

[38] Observatoire de la sécurité des moyens de paiement, report of December 2020, cited above, page 32.

[39] See website of Statista (link).

29. In France, the share of payments made by mobile phones in proximity transactions is still limited, at 0.10% of domestic proximity transactions[40].

30. Two conditions must be met for the user of a mobile device to initiate a contactless payment via this channel. Firstly, the mobile phone must be equipped with technology that enables payment initiation, 'near field communication' (NFC) being the most widely used in France by actors in the sector[41] (for a description of NFC technology, see paragraph 82 below). Other technologies, such as the QR code[42] (quick response code) which is the basis for the contactless mobile payment solutions offered by actors such as Lydia or Lyf Pay, are also currently used. Secondly, the bank issuing the user's bank card must have established partnerships with one or more actors offering contactless payment solutions via mobile phones, so as to allow the user to add their bank card to one or more of these solutions[43].

31. These are generally "*e-wallets"*, also known as digital wallets, which allow (translated) *"a user to entrust a trusted third party with payment and personal data*"[44]. The user can therefore add one or more of their bank cards to their e-wallet, in order to initiate payments later on without having to enter, for each transaction, sensitive information such as the the bank card information[45].

32. In order to initiate a contactless mobile payment by using a solution based on NFC technology, the owners of Apple mobile phones which are compatible with *Apple Pay*[46] can only use the solution developed by Apple for mobile phones using the *iOS* operating system, called *Apple Pay*[47]. For security and fraud prevention, as well as privacy protection and performance reasons, as stated by Apple[48], they cannot use other "e-wallet" type solutions based on NFC technology.

33. The owners of mobile phones using version 5 or subsequent versions of the Android[49] operating system can choose between *Google Pay*, which is pre-installed on some of these mobile phones[50] or available for download, and any other competing NFC-based solution[51], with the exception of *Apple Pay* (which is only compatible with certain Apple mobile

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[40] Observatoire de la sécurité des moyens de paiement, report of July 2019, cited above, page 25.

[41] In this regard, see paragraphs 81 to 82.

[42] The QR code is generated on the consumer's smartphone and scanned by the retailer using the camera of another smartphone or tablet, or a dedicated scanner.

[43] See the website of Assurance Banque Epargne Info Service (link).

[44] Observatoire de la sécurité des cartes de paiement, *"Annual report 2011"*, January 2012, report, page 38 (link).

[45] *Idem supra*.

[46] The *iPhone* models with Face ID and those with Touch ID, with the exception of the *iPhone* 5s, are, at the time of writing of the present opinion, the only Apple telephone models which are compatible with *Apple Pay* (see Apple website (link)).

[47] Observatoire de la sécurité des moyens de paiement, report of July 2019, cited above, page 68.

[48] Classification mark 3,750 and 4,813.

[49] See website of Google (link).

[50] See website of Google (link).

[51] It should be noted that owners of telephones which use version 5 or subsequent versions of Android will only be able to use *Samsung Pay* if they have a Samsung telephone that is compatible with this solution.

phones), such as *Paylib*. The latter solution, developed by several French banking groups[52], must be activated in the user's online banking app before it can be used[53]. Finally, the owners of Samsung mobile phones which are compatible with *Samsung Pay*[54] and which use version 5 or subsequent versions of the *Android* operating system, will also have access to the *Samsung Pay* solution, which is either pre-installed by default on some models or available for download[55].

34. The table below summarises by model and brand of phone owned by the user, the various e-wallet solutions based on NFC technology which are available in France and can be used by the user:

[52] See *infra*, paragraph 184.

[53] See website of Paylib (link).

[54] The models Galaxy Z Flip|Z Flip 5G, Fold|Z Fold2 5G, S20 FE|S20|S20+|S20 Ultra, S10e|S10|S10+, S9|S9+, S8|S8+, S7|S7 edge, Note10|Note10+, Note9, Note8, A20e, A40|A41|A42 5G, A50|A51, A70|A71, A80, A5 2017, A6|A6+, A7, A8, and A9 intended for the French market are, at the time of writing this opinion, the only Samsung telephone models which are compatible with *Samsung Pay*.

[55] See website of Samsung (link).

Table 2 - Compatibility of NFC-based e-wallet solutions in France by telephone brand

	Apple Pay	Google Pay	Samsung Pay	Other NFC-based e-wallet solutions such as *Paylib*
Apple mobile phones	Yes[56]	No[57]	No	No
Samsung mobile phones	No	Yes[58]	Yes[59]	Yes[60]
Other mobile phones brands	No	Yes[61]	No	Yes[62]

Source: Compilation by the Autorité de la concurrence based on the investigation file.

35. According to a survey of over 800 users of e-wallet solutions conducted in France in March 2020 by Statista[63], the weighting of the main NFC technology-based solutions, from the perspective of users, are as follows:

[56] *Idem* footnote 46.

[57] In the United States, the Apple telephone models which are compatible with *Apple Pay* are also compatible with *Google Pay* (see website of Google (link)).

[58] Provided that the telephone uses version 5 or subsequent versions of the Android operating system (see website of Google (link)).

[59] *Idem* footnote 54.

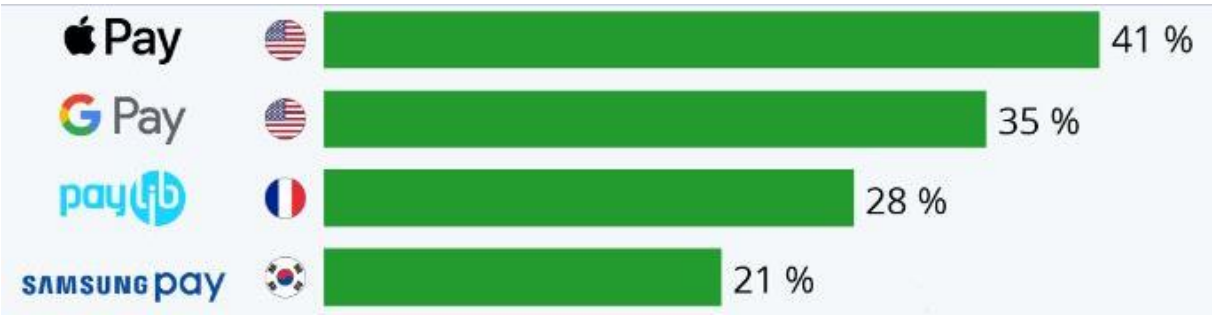
[60] Provided that the telephone uses the version of the Android operating system which is compatible with the NFC-based e-wallet solution.

[61] Provided that the telephone uses version 5 or subsequent versions of the Android operating system (see website of Google (link)).

[62] Provided that the telephone uses the version of the Android operating system which is compatible with the NFC-based e-wallet solution.

[63] A company that defines itself as (translated) "*a leading provider of market and consumer data*", see Statista website (link).

Figure 5 - Weighting of different NFC-based e-wallet solutions in France from the perspective of users



Source: Statista (link). Some users use multiple NFC-based mobile payment solutions, which is the reason why the percentages shown add up to more than 100%.

36. Whichever NFC-based e-wallet solution is used by the owner of the mobile phone, the latter needs to hold their mobile phone close to the screen of the merchant's payment terminal which displays the pictogram in order to initiate the contactless payment[64]. For transactions above a certain amount[65], they will also have to enter either the PIN code of their payment card, on the keypad of the merchant's payment terminal, or a password, different from the PIN code, on their mobile phone and hold it close to the terminal screen again to validate the payment[66]:

Figure 6 - How to use contactless payment by mobile telephone for transactions below a certain amount?

Source: *Assurance Banque Epargne Info Service (link)*

1. Once the merchant has entered the transaction amount, place your mobile phone on the payment terminal screen displaying the [] icon.

[64] See the website of Assurance Banque Epargne Info Service (link).

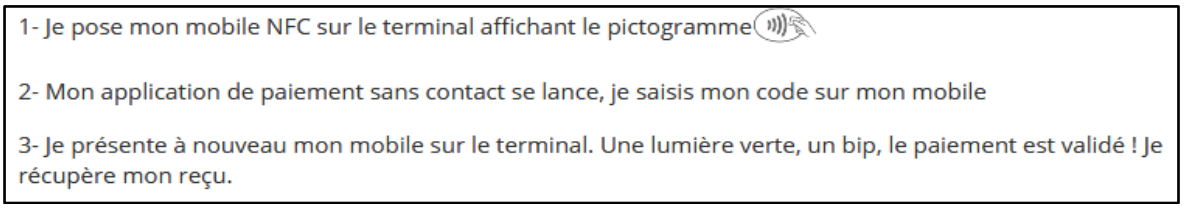
[65] See Ordinance No. 2020-534 of 7 May 2020, cited above.

[66] Observatoire de la sécurité des moyens de paiement, report of July 2019, cited above, page 69.

2. A light flashes and a beep sounds, meaning that the payment is validated.
3. The merchant's payment terminal generates a receipt, which must be retained.

Simply place your mobile phone on the payment terminal and it's done!

Figure 7 - How to use contactless payment by mobile telephone for transactions above a certain amount?



Source: Assurance Banque Epargne Info Service (link)

1 - I hold my NFC mobile over the terminal displaying the [] icon.

2 - My contactless payment app starts up, I enter my code on my mobile phone

3 - I hold my mobile phone over the terminal again. There is a green light, then a beep, the payment is validated! I get my receipt.

The emergence of contactless payment via connected smartwatch

37. Mobile phones are not the only terminals with Internet access that can be used to initiate contactless payments. In effect, connected smartwatches, which are still predominantly dependent on mobile phones[67], can also be used to initiate these kind of payments.

38. Apple, Google and Samsung account for approximately 80% of the market share in the connected smartwatches market, measured by volume[68].

39. The e-wallet solution which makes it possible to initiate contactless payment by connected smartwatches depends on the brand of the smartwatch. As such, owners of a connected Apple, Garmin, Fitbit or Samsung smartwatch can only use the payment solution developed by the manufacturer of the connected smartwatch (*Apple Pay*, for Apple watches[69], *Garmin*

[67] Autorité de régulation des communications électroniques, des postes et de la distribution de la presse [hereinafter "ARCEP"], "*Les terminaux, maillon faible de l'ouverture d'internet. Rapport sur leurs limites et sur les actions à envisager*", February 2018, report, page 23 (link).

[68] According to ARCEP (translated), "*Apple largely dominates the connected smartwatch market, controlling almost half of it, far ahead of Android Wear* [operating system developed by Google in particular for connected smartwatches, rebranded *Wear OS* in March 2018] *and Tizen* [operating system developed by Samsung in particular for connected smartwatches] *each having a little over 15% of the market*." See ARCEP, report of February 2018, cited above, page 23.

[69] See website of Apple (link).

Pay for Garmin watches[70], *Fitbit Pay* for Fitbit watches[71] and *Samsung Pay* for Samsung watches[72]). The owners of a connected smartwatch from another brand than the four mentioned above can, subject to compatibility, use the *Google Pay*[73] solution.

40. On 17 December 2020, the European Commission approved Google's acquisition of Fitbit[74], subject to commitments. The situation described in the previous paragraph does not therefore take into account any changes that may occur following the said acquisition.

41. It should be noted that the majority of French banking groups have formed partnerships with one or more Big Tech companies (see paragraphs 177 to 183 below), covering notably the field of contactless payment viaconnected smartwatches.

The future of contactless payment: payment by facial recognition

42. In recent years, facial recognition technology has been developed for a wide range of uses, including access management in buildings and unlocking smartphones or tablets.

43. As regards the specific application of this technology in the payments sector, in February 2018 American fast food chain CaliBurger was the first US business to give its customers the option of paying for their purchases using payment terminals equipped with facial recognition technology. The payment terminal took a picture of the customer, allowing them to open a loyalty account. The customer then placed their order and was photographed a second time in order to make the payment, after having entered the three-digit security code on the back of their credit card[75].

44. In China, payment via facial recognition became a reality in 2019. Various establishments, including the Chinese bakery chain Wedome or the IFuree[76] and Carrefour[77] supermarkets, have in effect adapted their payment terminals to this end. Customers shopping at Wedome or Carrefour first need to link a photo of their face to their mobile payment solution in order to make a payment via facial recognition. Once in the store and at the moment of payment, their face is scanned by the payment terminal installed for this purpose[78] :

[70] See website of Garmin (link).

[71] See website of Fitbit (link).

[72] See website of Samsung (link).

[73] See website of Google (link).

[74] See website of the European Commission (link). The situation described in paragraph 39, as regards the compatibility between the different brands of connected smartwatch and the different contactless payment solutions, is therefore the same as before the transaction.

[75] See website of CNBC (link).

[76] Huffingtonpost, (translated)"*In China, facial recognition now makes it possible to pay for purchases*", 4 September 2019, link.

[77] Le Monde, (translated)"*In China, the face as a wallet*", 5 July 2019, link.

[78] Huffingtonpost, article of 4 September 2019, cited above.

Source: Fung Business Intelligence[79]

45. Finally, in Europe, and more particularly in France, facial recognition is already used by certain actors in the banking sector, for example to allow people to open bank accounts[80]. In this regard, in 2018 Société Générale was the first French banking group to launch a solution, based in particular on biometric facial recognition via dynamic 'selfie' and allowing customers to open a bank account remotely[81], whose functioning can be described as follows[82]. After entering the necessary personal information in the *Société Générale* app and choosing their product and branch, the prospective customer sends in their supporting documents (photos/digital files) and takes a dynamic 'selfie' from several angles (profile, face, eyes open or closed). The first biometric recognition is then completed and compared with one of the two pieces of identification provided. The prospective customer then has a meeting with an advisor via video chat, either straight away or by scheduling an appointment. During this video meeting, the second facial recognition step is completed[83]. Via electronic signature, the contract is signed and within 24 hours the new customer has an account and access to his banking identity statement.

46. Taking into account the developments beyond European borders, payment by facial recognition could be one of the most important contactless payment innovations in Europe in the future.

c) The emergence of alternative payment methods

47. The financial and economic crises of recent years have had a negative impact on the image and reputation of banks and, more generally, of systems in which a central entity acts as a trusted third party by guaranteeing the technical security and legal value of a transaction[84].

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[79] Fung Business Intelligence, "*Carrefour Le Marché – The first smart store of Carrefour*", June 2018, New Retail in Action, issue 17 (link).

[80] Les Echos, (translated) "*How facial recognition is settling in France*", 15 October 2019, link.

[81] See website of Société Générale (link).

[82] *Idem supra*.

[83] As no biometric data is stored, only the results of the checks made at each biometric recognition step are stored by Société Générale.

[84] LANDAU, J-P., in collaboration with GENAIS, A., "*Crypto currencies*", July 2018, report to the French Minister of Economy and Finances, page 3 (link).

Since the early 2010s[85], a new range of digital assets has emerged, called crypto-assets, which do not rely on a trusted third party. It is based on the protection of the asset thanks to cryptography. Although they do not fall under the definition of a means of payment under Article L. 311-3 of the CMF[86], the Banque de France considers crypto-assets to be an alternative payment method[87]. Since 2019, various initiatives to develop stablecoins (sometimes spelled "stable coins") have also emerged.

[85] Banque de France, (translated)*"The emergence of bitcoin and other crypto-assets: issues, risks and prospects"*, Focus n° 16, 5 March 2018, page 1 (link).

[86] Banque de France, report of January 2021, cited above, page 22.

[87] *Idem supra*.

Means of payment within the meaning of Article L. 311-3 of the French monetary and financial code (Code monétaire et financier)

48. According to Article L. 311-3 of the CMF (translated), "*all instruments that enable any person to transfer funds, regardless of the medium or technical process used, are regarded as means of payment"*.

49. There are two main categories of means of payment: fiduciary money, i.e. banknotes and coins issued by the public authorities and having legal tender status, and scriptural means of payment, which include payment cards, cheques, credit transfers, direct debits, bills of exchange, i.e. "*negotiable instruments evidencing a claim to a sum of money for the benefit of the bearer and serving as payment*"[88], and finally, electronic money[89]. The latter means of payment, which is one of the modern forms of fiduciary money[90], can be defined as (translated) *"monetary value that is stored in electronic form, including magnetic form, representing a claim on the issuer, that is issued against the remittance of funds for the purpose of payment transactions ... and that is accepted by a natural or legal person other than the issuer of electronic money*"[91]. Anyone holding electronic money must first credit the account held by the electronic money institution before it can be debited by paying by card or through online transactions. As a result, it is impossible for the holder of electronic money to pay for purchases for an amount that would exceed the amount deposited[92].

50. Unlike fiduciary money, which allows for a direct transfer of monetary units between the payer and the payee, scriptural means of payment require the intervention of third parties, the payment service providers, who are responsible for the transfer of the monetary units[93], as illustrated in the following diagrams:

[88] *Idem supra*.

[89] *Idem supra*.

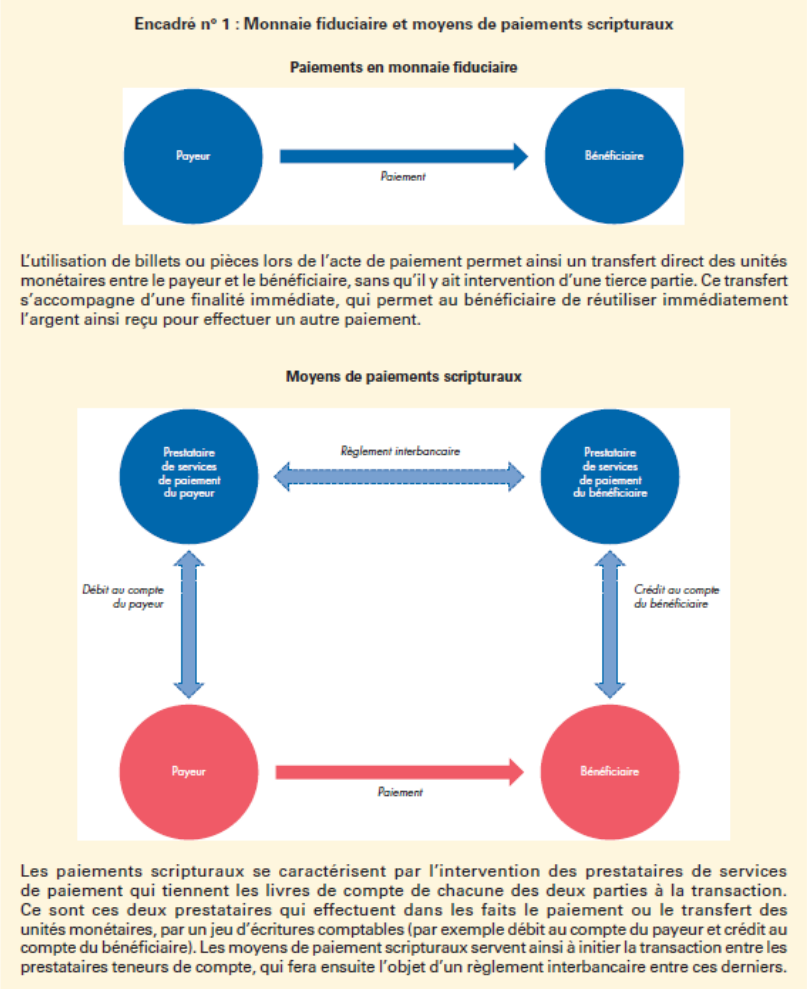
[90] LANDAU, J-P., report of July 2018, cited above, page 7.

[91] CMF, article L. 315-1 (link).

[92] Banque de France, report of January 2021, cited above, page 22.

[93] Banque de France, report of January 2021, cited above, page 20.

Figure 8 – Fiduciary money and scriptural means of payment



Source: Banque de France, "Payments and market infrastructures in the digital era", report, January 2021, page 20.

Box 1: Fiduciary money and scriptural means of payment
Payments in fiduciary money
Payer - Payment - Payee
The use of banknotes or coins during the payment therefore enables a direct transfer of monetary units between the payer and the payee, without the intervention of a third party. This transfer has an immediate purpose, which allows the payee to immediately reuse the money received to make another payment.
Scriptural means of payment
Payer's payment service provider - Interbank settlement - Payee's payment service provider
Debit from payer's account - Credit to payee's account

Payer - Payment - Payee
Scriptural payments are characterised by the intervention of payment service providers who keep the books of account of both parties to the transaction. It is these two service providers who actually make the payment or transfer of the currency units, through a set of accounting entries (e.g. debit from the payer's account and credit to the payee's account). Scriptural means of payment are therefore used to initiate the transaction between the account holders, which is then the subject of an interbank settlement between the two.

51. In 2019, the number of transactions made using scriptural means of payment grew by 7%, mainly thanks to the growth of so-called electronic payments (card, transfer, direct debit) and particularly those made via bank card, which in terms of volume has been the preferred means of payment of the French public for several years[94]:

[94] Banque de France, (translated)"*Mapping of cashless payment methods, 2020 collection report (data 2019)*", December 2020, statistical publication, page 3 (link).

Table 3 - Amount and sums of transactions via scriptural means of payment in France

(nombre de transactions en millions, montant des transactions en milliards d'euros, variation en %)

Moyens de paiement scripturaux	Nombre de transactions		Montant des transactions	
	2019	Variation 2019/2018	2019	Variation 2019/2018
Paiement carte a)	14 485	+10	598	+5
Prélèvement	4 370	+4	1 711	+4
Virement (VGM) b)	12	+26	11 557	+14
Virement (hors VGM)	4 257	+6	13 608	-3
Chèque	1 587	-9	815	-9
Effet de commerce c)	78	-4	233	-8
Monnaie électronique	62	-5	0,6	-47
Total	**24 851**	**+7**	**28 521**	**+3**
Retrait carte	**1 392**	**-3**	**137**	**-0,1**

a) Paiements par carte réalisés en France

b) Les VGM sont des virements de gros montant émis au travers de systèmes de paiement de montant élevé (TARGET2 et EURO1). Ils correspondent exclusivement à des paiements professionnels.

c) Lettres de change relevées et billets à ordre relevés.

Source: Banque de France, "Cartographie des moyens de paiement scripturaux, Bilan de la collecte 2020 (données 2019)", page 3.

(number of transactions in millions, amount of transactions in billions of euros, variation in %)

	Number of transactions		Amount of transactions	
Scriptural means of payment	2019	Variation 2019/2018	2019	Variation 2019/2018
Card payment [a)]	14485	+10	598	+5
Direct debit	4370	+4	1711	+4
Transfer (LVT) [b)]	12	+26	11557	+14
Transfer (excluding LVT)	4257	+6	13608	-3
Cheque	1587	-9	815	-9
Bills of exchange [c)]	78	-4	233	-8
Electronic money	62	-5	0.6	-47
Total	24851	+7	28521	+3
Card withdrawal	1392	-3	137	-0.1

a) Card payments made in France b) LVTs are large-value transfers and are issued through large-value payment systems (TARGET2 and EURO1). They pertain exclusively to business payments.				
c) Raised bills of exchange and promissory notes.				

The emergence of crypto-assets

52. Cryptoassets are digital assets, without legal tender[95] and created by private actors[96], which are not associated to a bank account[97] and can be held or transferred in order to purchase a good or service[98]. Unlike electronic money, crypto-assets are not issued on receipt of funds[99], do not represent a claim on an individual or legal person[100], and are digital representations of non-monetary value[101]. Moreover, as highlighted by the Banque de France in its publications, crypto-assets (translated) "*do not or only very partially fulfil the three functions assigned to money*"[102]. On the one hand, their value is not stable enough to make them units of account. On the other hand, given that they are not based on underlying assets or on confidence in a central bank, unlike, for example, currencies having legal tender status, their lack of intrinsic value means that they cannot be used as stores of value either. Finally, they are a less efficient means of exchange than legal tender, especially since they do not come with a guarantee of reimbursement in the event of fraud[103].

53. Today, there are nearly 1,600 crypto-assets globally[104]. At the end of 2018, the outstanding balance of crypto-assets in circulation was €220 billion[105]. Furthermore, at the end of 2017, an average of around 300,000 transactions were made in Bitcoin on a daily basis, compared to 330 million transactions made with scriptural means of payment in the European Union[106]. Although crypto-assets are to date accepted and used to a very limited extent[107] compared to scriptural means of payment, this alternative payment method is currently experiencing strong growth.

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[95] Banque de France, Focus No. 16 of 5 March 2018, cited above, page 2.

[96] Banque de France, (translated)*"Crypto-assets and Stable coins"*, 9 June 2020, Briefing, page 1 (link).

[97] LANDAU, J-P., report of July 2018, cited above, page 3.

[98] *Idem supra*.

[99] Banque de France, Focus No. 16 of 5 March 2018, cited above, page 2.

[100] LANDAU, J-P., report of July 2018, cited above, page 7.

[101] LANDAU, J-P., report of July 2018, cited above, page 3.

[102] Banque de France, Focus No. 16 of 5 March 2018, cited above, page 2.

[103] *Idem supra*.

[104] LANDAU, J-P., report of July 2018, cited above, page 3.

[105] Banque de France, report of January 2021, cited above, page 343.

[106] Banque de France, report of January 2021, cited above, page 23.

[107] For example (translated), "[i]n *France, no major group accepts Bitcoin transactions to date, the largest French company which authorises such transactions is Showroomprivé.com*" (see LANDAU, J-P., report of July 2018, cited above, page 11).

54. Initially conceived as means of exchange and payment, crypto-assets have gradually given rise to the appearance of services allowing them to be exchanged for currencies having legal tender status, or, since 2016[108], to be used as an investment and financing instrument[109] through fund-raising operations, Initial Coin Offerings (ICOs) or token sales, which allow Internet users to participate in the financing of a project by the injection of funds, particularly in crypto-assets, in exchange for tokens.[110] As explained by the Banque de France (translated), "[i]*n practice, these tokens represent a form of economic interest in the project. They offer their holders certain rights, such as the right to have first use of the platform or application being funded (as in conventional crowdfunding), or to receive a share of the profits generated by the company, or to exercise a voting right (like with shares)*."[111] According to Ernst & Young, the total amount of funds raised through initial coin offerings by companies based in France amounted to $12 million as of December 2017[112].

55. In France, the PACTE law has made it possible to adopt provisions which regulate initial coin offerings and the activities of crypto-asset service providers[113]. This law will cease to apply on the day the European Commission's Regulation on Markets in Crypto-assets (MiCA) comes into force, whose draft, presented in September 2020[114], aims at establishing a single, harmonized regime for crypto-asset service providers and the issuance of tokens[115].

[108] LANDAU, J-P., report of July 2018, cited above, page 4.

[109] Banque de France, Focus No. 16 of 5 March 2018, cited above, pages 3 and 4.

[110] Banque de France, Focus No. 16 of 5 March 2018, cited above, page 4.

[111] *Idem supra*.

[112] Ernst & Young, "*EY research: initial coin offerings (ICOs)* ", December 2017, study, page 7 (link).

[113] See website of the AMF (link).

[114] See website of the European Commission (link).

[115] See website of the AMF (link).

The launch of initiatives to develop stablecoins, the second generation of crypto-assets

56. Since 2019, there have also been various initiatives to develop other digital assets, stablecoins, which, according to the Banque de France (translated), "*can be seen as a second generation of crypto-assets*."[116] Unlike first-generation crypto-assets, the value of stablecoins is indexed to an underlying asset (a commodity, a currency having legal tender status or a basket of currencies having legal tender status, for example) to make it more stable[117].

57. At the meeting of G7 finance ministers and central bank governors, held on 17-18 July 2019 in Chantilly, two of these initiatives, intended to become "*faster and cheaper solutions than current systems for international money transfers*"[118] and to be able to offer "*businesses and/or consumers an alternative to existing digital payment solutions*"[119], attracted a lot of attention.

58. On the one hand, the initiative of the bank JP Morgan, announced in February 2019, to develop a stablecoin called the JPM coin, with a view to enabling instantaneous transfers of funds for large amounts, in particular international transfers, between key accounts (institutional players, financial intermediaries, banks, large companies), whose value would be pegged to the dollar (USD).

59. On the other hand, the initiative launched on 18 June 2019 by the Libra Association, initially bringing together 29 members including Facebook, with a view to originally issuing a multi-currency stablecoin known as "Libra", whose value would be pegged to a basket of several stablecoins issued by the entity in charge of administering the payment system developed by the Libra Association and each pegged to a currency having legal tender status[120], as well as the various single-currency stablecoins.

60. In the words of the association itself, the initiative was intended to "*enable a globally accessible and low-cost payment system and financial infrastructure that empowers billions of people*"[121].

61. The initiative of the Libra Association was therefore based on developing a payment system based on a permissionless blockchain[122] (see paragraph 102 below) and allowing cross-border transactions to [123] be made in Libra and in each of the single-currency stablecoins making up the basket to which the value of Libra would be pegged[124]. In addition to cross-border transactions, single-currency stablecoins could be used for domestic transactions[125].

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[116] Banque de France, Briefing of 9 June 2020, cited above, page 1.

[117] Banque de France, Briefing, 9 June 2020, cited above, page 2; G7, Meeting of Finance Ministers and Central Bank Governors, July 17-18, 2019, Chantilly, press kit, page 9 (link).

[118] Banque de France, Briefing of 9 June 2020, cited above, page 2.

[119] *Idem supra*.

[120] Classification mark 4,126 and 4,127.

[121] Classification mark 4,125.

[122] Classification marks 4,121 and 4,130.

[123] Classification mark 4,126.

[124] Classification marks 4,121 and 4,126.

[125] Classification mark 4,126.

62. Not only Libra, but also single-currency stablecoins issued by the entity responsible for administering the payment system developed by the Libra Association, could be exchanged for foreign currencies[126], similar to first-generation crypto-assets, and stored on digital wallets other than Novi[127], a wallet developed by the Facebook subsidiary of the same name and a member of the Libra Association[128].

63. On 1 December 2020, the Libra Association announced that it was rebaptised as the Diem Association[129]. Currently made up of 27 members, including Facebook subsidiary Novi and platforms such as Shopify, Spotify and Lyft, all with equal rights[130], the Diem Association is currently planning to only launch one single-currency stablecoin, the "Diem Dollar," which will be pegged to the US dollar[131]. Other single-currency stablecoins[132] and a multi-currency stablecoin[133] might be launched at a later date.

64. The G7 finance ministers and central bank governors considered, at the above-mentioned meeting of July 2019, that initiatives to develop these second-generation crypto-assets, moreover presenting themselves as intended to be operational in the near future, "*raise serious regulatory and systemic concerns, as well as wider policy issues, which both need to be addressed before such projects can be implemented*."[134]

65. Inasmuch as they could entail risks for the stability of the financial system and the protection of consumers, these initiatives must, in the opinion of the ministers and governors, meet the highest standards, particularly in terms of combating money laundering and the financing of terrorism[135]. Besides the regulatory concerns highlighted above, the ministers and governors also stressed, from the perspective of systemic concerns, that "*projects such as Libra may affect monetary sovereignty and the functioning of the international monetary system*"[136].

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[126] Classification mark 4,128.

[127] Classification mark 4,128.

[128] Classification mark 4,122.

[129] See the website of the Diem Association (link).

[130] Classification marks 4,121, 4,122 and 4,124. As of 22 December 2020, the 27 members of the Diem Association are: Anchorage, Andreessen Horowitz, Bison Trails, Blockchain Capital, Breakthrough Initiatives, Checkout.com, Coinbase, Creative Destruction Lab, Farfetch, Heifer International, Iliad SA, Kiva, Lyft, Mercy Corps, Novi (formerly Calibra), Paradigm, PayU, Ribbit Capital, Shopify, Slow Ventures, Spotify, Temasek Holdings, Thrive Capital, Uber, Union Square Ventures, Women's World Banking, and Xapo (see the website of the Diem Association (link)) The involvement of Bison Trails in the Diem Association might come to an end when its acquisition by Coinbase, also a member of the Diem Association, is finalised (classification mark 4,845).

[131] See website of Bloomberg (link).

[132] See website of Bloomberg (link).

[133] See website of Les numériques (link).

[134] G7, Meeting of Finance Ministers and central bank governors, 17-18 July 2019, Chantilly, Chair's Summary, page 2 (link).

[135] *Idem supra*.

[136] *Idem supra*.

Reflections on the possible issuance of a "central bank digital currency" at the level of the euro zone

66. In view of the announcement of the initiative launched in June 2019 by the Libra Association, the risks associated with the emergence of stablecoins, the statements made by the G7 finance ministers and central bank governors at the above-mentioned meeting in July 2019, as well as the report published in October 2019 by the G7 working group on stablecoins chaired by Mr. Benoît Cœuré[137], the reflections of many central banks, including the Banque de France, on the impact that the issuance of a central bank digital currency might have on the financial sector and, more generally, on the economy[138], have stepped up a gear.

67. The ongoing reflections indicate that a central bank digital currency, whose creation within the euro area would fall within the exclusive competence of the Eurosystem[139], the monetary authority comprising the European Central Bank (hereinafter the "ECB") and the national central banks of the Member States of the European Union that have adopted the euro[140], could be considered as an alternative to fiduciary money, which is one of the two forms in which central bank money currently circulates[141]. Issued and guaranteed as well by the central bank[142], the central bank digital currency would be (translated) "*a component of the monetary base, exchangeable for fiduciary money and reserves, (...) available permanently and in peer-to-peer transactions, and circulating on digital means at least partly different from existing ones (blockchain and other technologies*)."[143] It would therefore be "*a perfectly liquid and safe payment instrument that is adapted to technological changes*"[144].

68. It should be noted that in March 2020, the Banque de France launched a call for applications aimed at experimenting with the use of a so-called "wholesale" central bank digital currency, as opposed to a "retail" one used by the general public[145], in interbank settlements[146] and, more specifically, in the following three use cases: (i) payment in central bank money against delivery of listed or unlisted financial instruments, (ii) payment in central bank money against the digital currency of another central bank and (iii) payment in central bank money against digital assets as defined in 2° of Article L. 54-10-1 of the CMF[147]. The results of the Banque de France's analysis of the consequences of introducing a wholesale central bank

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[137] G7, "*Investigating the impact of global stablecoins*", October 2019, report (link).

[138] Banque de France, Briefing of 9 June 2020, cited above, page 2.

[139] Classification mark 4,447.

[140] See website of the ECB (link).

[141] Classification mark 4,446. The other form being "*sums placed by commercial banks in accounts they hold with the central bank,*" see Banque de France, "*Central Bank Digital Currency*," 5 June 2020, Briefing, page 1 (link).

[142] Banque de France, Briefing of 5 June 2020, cited above, page 2.

[143] Classification mark 4,446.

[144] PFISTER. Ch., "*Central Bank Digital Currency*", January 2020, report, page 2 (link).

[145] Banque de France, Briefing of 5 June 2020, cited above, page 2.

[146] See website of the Banque de France (link).

[147] According to Article L. 54-10-1, 2° of the CMF, digital assets include (translated) "*any digital representation of value that is not issued or guaranteed by a central bank or by a public authority, that is not necessarily attached to a legal tender and that does not have the legal status of a currency, but that is accepted by individuals or legal persons as a means of exchange and that can be transferred, stored or exchanged electronically*".

digital currency on financial stability, monetary policy and the regulatory environment are expected to feed into a broader analysis currently being conducted by the Eurosystem at the European level[148], on notably the issue of the risks and benefits of issuing a retail central bank digital currency[149].

2. THE PAYMENTS SECTOR AT THE HEART OF TECHNOLOGICAL CHANGE

69. Technological innovation has always been at the heart of the financial and payments sector. The following developments outline the major technological changes that have affected the payments industry (a), before going into more detail on two technologies, cloud computing and blockchain, that have played a specific role in recent and ongoing transformations of the sector (b).

a) A payments industry characterised by constant technological change

The technological evolutions underpinning retail payment systems

70. In its report entitled "Payments and market infrastructures in the digital era", cited above, the Banque de France stresses the central and historic role of technological innovation in the emergence of market infrastructures and scriptural means of payment and in their adaptation to the various demands of the market, in particular with regard to the diversification of the services offered[150].

71. As such, the 1960s to 1980s were marked by the exponential development of information technology, which made it possible, in particular in the area of market infrastructures, which ensure the processing of financial flows exchanged between the players in financial systems[151], to replace the physical holding of securities in paper format by computer records, and then the processing of transactions in real time, making it possible to "*accelerate, expand and systematise* the *traditional centralisation services, and round them out with new, post-market processing services*".[152]

72. It was also during this period that physical clearing systems[153], which dominated when paper-based means of payment, such as cheques, were the norm, were gradually replaced by automated systems[154], meaning that today retail payment systems[155] operate through multilateral clearing mechanisms in which "*the system calculates the net balance payable or*

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[148] Classification mark 4,447.

[149] See website of the ECB (link).

[150] The Banque de France states on page 340 that "*Technical innovation is salient to market infrastructures and most non-cash payment instruments (the direct result of technological innovation), enabling them to meet market requirements in terms of transaction reliability, execution speed and service diversification*".

[151] See website of the Banque de France (link).

[152] Banque de France, report of January 2021, cited above, page 340.

[153] For a definition, see glossary.

[154] Banque de France, report of January 2021, cited above, page 146-9.

[155] For a definition, see glossary.

receivable by each participant based on all the transactions processed during the period considered (usually one day)"[156].

Figure 9 - Simplified representation of the interbank payment system

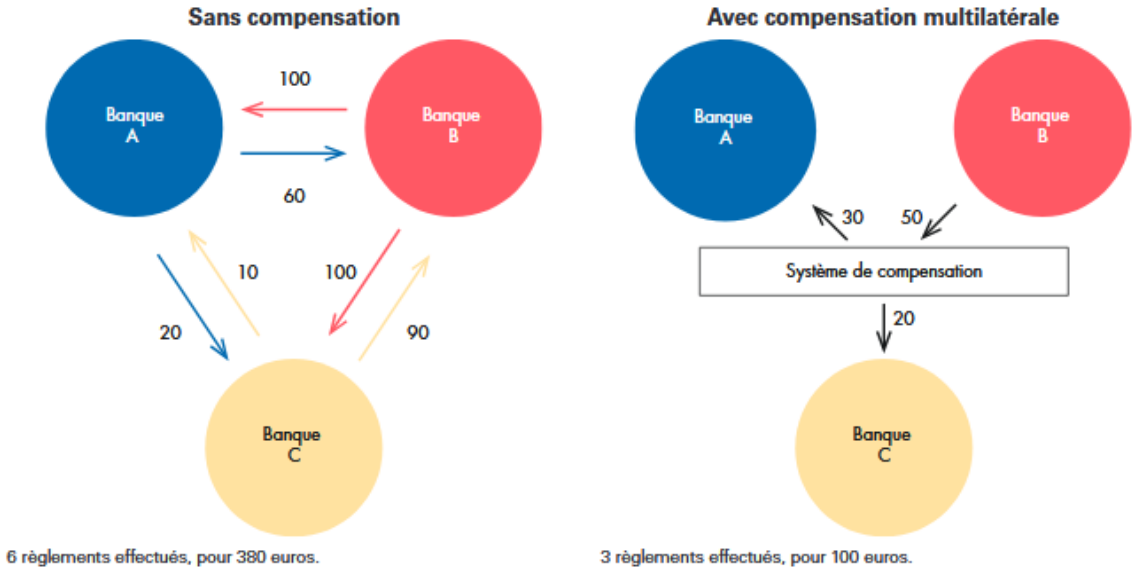

Diagram reproduced from the Banque de France report entitled "Payments and market infrastructures in the digital era", page 146.

Without clearing		With multilateral clearing
Bank A	Bank B	Bank C
6 settlements made, for 380 euros		

[156] Banque de France, report of January 2021, cited above, page 146.

Présentation synthétique des systèmes de paiement utilisés en France

Deux grands systèmes de paiement sont utilisés en France aujourd'hui : le système domestique CORE(FR), d'une part, et le système européen SEPA(EU), d'autre part, tous deux exploités par la société privée STET (Systèmes Technologiques d'Echanges et de Traitements) créée en 2004, qui est aujourd'hui détenue par les six groupes bancaires français suivants : BNP Paribas, BPCE, Crédit Agricole, Banque Fédérative du Crédit Mutuel, La Banque Postale et Société Générale (https://www.stet.eu/en/about-us/).

Le système CORE(FR), qui prend la suite du système précédent SIT (Système interbancaire de télécompensation), permet une compensation multilatérale pour tous les moyens de paiement. Il compte 10 participants « directs », dont les banques actionnaires ainsi que HSBC France, la Caisse des Dépôts et Consignations, Crédit Mutuel Arkéa et la Banque de France, reliés au système grâce à un réseau privé sécurisé et 177 participants « indirects » (voir le lien suivant pour la liste actuelle des participants : https://www.banque-france.fr/sites/default/files/media/2020/11/09/core_fr.pdf).

Le système SEPA(EU), qui a été créé par plusieurs grandes banques du Conseil européen des paiements (CEP) avec l'appui de la BCE et de la Commission européenne, visait à harmoniser les moyens de paiement en euro au sein de l'espace SEPA, composé des Etats-membres de l'Union européenne et d'Etats tiers (l'Islande, la Norvège, la Suisse, Saint-Marin ainsi que les principautés du Liechtenstein et de Monaco), afin de faciliter les paiements transfrontaliers en euro dans des conditions de sécurité et de rapidité équivalentes aux paiements domestiques. Par ailleurs, le règlement (UE) 260/2012, dit règlement SEPA, exige des opérateurs que les systèmes de paiement nationaux soient techniquement interopérables avec les autres systèmes de l'UE.

Overview of the payment systems used in France

Two main payment systems are used in France today: the domestic CORE(FR) system and the European SEPA(EU) system, both of which are operated by the private company STET (Systèmes Technologiques d'Echanges et de Traitements), which was set up in 2004 and is now owned by the following six French banking groups: BNP Paribas, BPCE, Crédit Agricole, Banque Fédérative du Crédit Mutuel, La Banque Postale and Société Générale (https://www.stet.eu/en/about-us).

The CORE(FR) system, which is the successor to the previous SIT (Système interbancaire de télécompensation) system, provides multilateral clearing for all means of payment. It has 10 "direct" participants, including the shareholder banks as well as HSBC France, Caisse des Dépôts et Consignations, Crédit Mutuel Arkéa and the Banque de France, connected to the system through a secure private network, and 177 "indirect" participants (see the following link for the current list of participants: https://www.banque-france.fr/sites/default/files/media/2020/11/09/core fr.pdf)

The SEPA(EU) system, which was set up by several major banks of the European Payments Council (EPC) with the support of the ECB and the European Commission, aimed to harmonise means of payment in euro within the SEPA area, which is made up of the Member States of the European Union and third countries (Iceland, Norway, Switzerland, San Marino and the principalities of Liechtenstein and Monaco), in order to facilitate cross-border payments in euro under conditions of security and speed equivalent to domestic payments. In addition, Regulation (EU) 260/2012, the so-called SEPA Regulation, requires operators to ensure that national payment systems are technically interoperable with other EU systems.

73. Technological advances have also made it possible to develop real-time processing, including real-time gross settlement payment systems[157]. These systems were initially reserved for processing large-value and/or urgent payments before being extended to so-called "bulk" payments, which involve a large volume of generally non-urgent, low-value transactions. As such, driven by technological development, real-time settlement has also found its place in the area of retail payment, in the form of instant transfers, in particular through the European Payments Council (EPC) "scheme"[158], which has been in operation since November 2017, and the Target Instant Payment Settlement (TIPS) system, launched by the ECB and in effect since November 2018[159].

74. Instant payments are "*electronic retail payment solutions available 24/7/365 and resulting in the immediate or close-to-immediate interbank clearing of the transaction and crediting of the payee's account with confirmation to the payer*"[160]. As such, whereas ordinary payments (by transfer, card or direct debit) are not settled until the day after the order is given, instant payments allow the beneficiary to receive the funds in his or her bank account a few seconds after the payment order has been given[161]. Instant payments are usually offered by banks for a fee.

75. The leading means of payment have also undergone major technological developments, making it possible to make payments faster, more easily, more securely and at a lower cost.

76. For example, PIN cards were developed around the same time as payment terminals and led to the gradual spread of payments by bank card. These appeared in France in the late 1960s and are based on systems, usually involving four parties and requiring the intervention of interbank networks based on common standards and protocols, which make it possible to process card payment transactions[162].

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[157] As opposed to deferred net settlement payment systems.

[158]. This is "*a set of rules and standards of use*" (see Banque de France, report of January 2021, cited above, page 153).

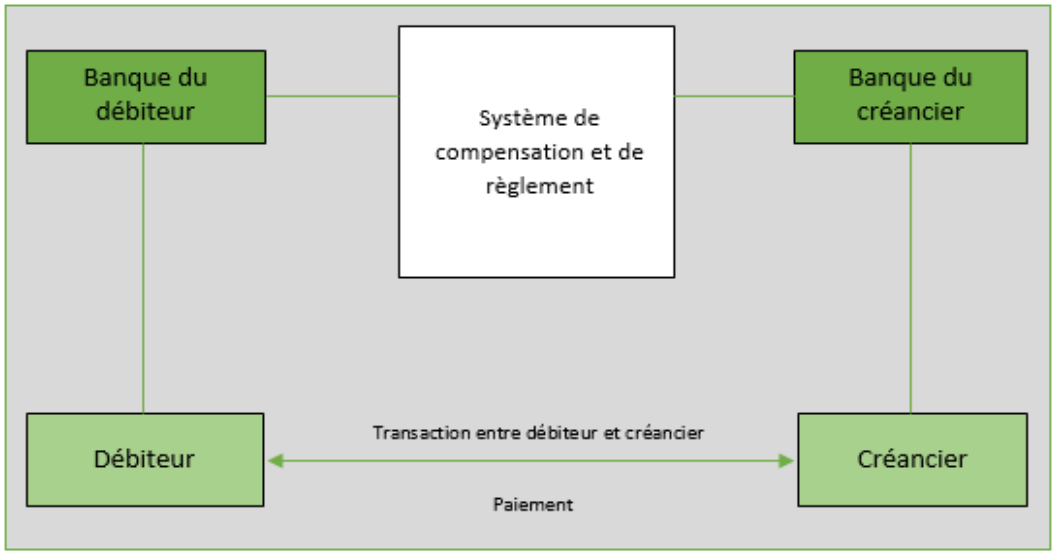
[159] Banque de France, report of January 2021, cited above, page 340.

[160] Banque de France, report of January 2021, cited above, page 153.

[161] Banque de France, report of January 2021, cited above, page 153.

[162] Decision of the *Autorité de la concurrence* 11-D-11 of 7 July 2011 regarding practices implemented by the Groupement des Cartes Bancaires, pages 6 to 8.

Figure 10 - Representation of a quadripartite (four-party) payment system



Quadripartite (four-party) payment system[163]*, illustration taken and adapted from the decision of the Autorité de la concurrence11-D-11 of 7 July 2011 relative to practices by the Groupement des Cartes Bancaires, pages 6 to 8.*

Debtor's bank	Clearing and settlement system	Creditor's bank
Debtor	Transaction between debtor and creditor/ Payment	Creditor

77. The bank card, which is still the most widely used means of payment in France in terms of number of transactions[164], has undergone significant technological evolutions, including contactless payment (see paragraphs 24 et seq.).

78. Technological innovation in the payments sector also concerns fiduciary means of payment, including banknotes, which have been the focus of continuous improvements, such as the use of watermarks and holograms, in order to combat counterfeiting.

The technological developments underpinning online and mobile payments

79. The Internet and digital technologies, such as smartphones, which spread through the payments sector from the early 2000s, in the case of the former, and 2010, in the case of the latter, led to a profound change in the payments sector in France and facilitated the emergence of the new services and media described above.

80. For example, in the early 2000s, the French banking model, hitherto based on customer relationships, was gradually overhauled and adapted to take advantage of the new possibilities offered by web interfaces, which were used to facilitate the customer

[163] A payment system involving, in addition to the payment system, four actors: the debtor, his bank (known as the "*issuing bank*"), the beneficiary and the latter's bank (known as the "*acquiring bank*"). In a "*tripartite*" system, which does not require the involvement of financial institutions, there are only three actors: the debtor, the beneficiary and the payment system that issues the payment cards and manages the transactions directly.

[164] Banque de France, statistical publication of December 2020, cited above, page 3.

relationship and offer full-fledged banking services, either alongside the services offered on the ground or exclusively online[165]. As highlighted by the Autorité de contrôle prudentiel et de résolution (hereinafter "ACPR") in its "*Study on the business models of online banks and neo-banks*", several generations of online banks have followed in succession since the advent of the Internet, the first of which focused on savings and stock brokerage before offering their customers bank account management and payment services (see paragraph 114 below).

81. More recently, from 2015 onwards, technical progress in the field of mobile internet (evolution from 3G to 4G, and soon to 5G) and with regard to the smartphone, has led some players to propose integrated mobile offerings. These are based on the new consumption patterns linked to the growing use of smartphones[166], which make it possible to carry out all types of transactions, in real time and from anywhere.

82. The smartphone offers users a wide range of banking and payment possibilities. Firstly, it enables banking transactions and remote payments via the web interface or apps. As such, it offers users the possibility of carrying out all their banking and payment transactions that it was already possible to carry out from a computer connected to the Internet, such as consulting bank accounts online and carrying out transactions such as transfers or online purchases on e-commerce sites. Secondly, it allows users to make payments in stores, via specific installed technologies such as NFC and certain apps. NFC technology allows two terminals, a smartphone and a payment terminal for example, located in proximity and equipped with this technology, to exchange data at very high speed. Besides contactless payment, which relies on information stored on the phone, this technology has two other applications: the "smart label reader" mode, which allows a mobile device equipped with the NFC chip and located within its range to receive information or trigger an action automatically[167], and the peer-to-peer mode, which can be used to exchange information, such as electronic business cards or files, between two devices equipped with this system.

b) A sector characterised by the advent of the cloud and blockchain

83. In addition to the foregoing, two technologies, cloud computing and blockchain, appear to be particularly important in terms of their impact on the payments sector, although they are not specific to this sector.

The growing importance of cloud (computing) services in the payments sector

General characteristics of cloud services

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[165] ACPR, "*Analysis and summaries, study on online banks and neobank'business models"*, October 2018, study (link).

[166] In this regard, according to CREDOC, in 2019 the penetration rate of smartphones exceeded that of computers for the first time (77% vs. 76%). Moreover, 82% of the French public stated that they use it every day. For 51% of the French public, it is even the preferred device for connecting to the internet (see CREDOC, "*Baromètre du numérique 2019 - Enquête sur la diffusion des technologies de l'information et de la communication dans la société française en 2019*", November 2019, study conducted for Conseil Général de l'Économie, de l'Industrie, de l'Énergie et des Technologies, ARCEP and Agence du numérique (link).

[167] This functionality is comparable to a QR code. As such, it allows users to read information by holding their phone near an NFC tag (an electronic label equipped with NFC technology) displayed on posters (passenger information services on public transport, access to information on a work of art in a museum, etc.) or on products (to obtain information on the traceability of a food product, for example).

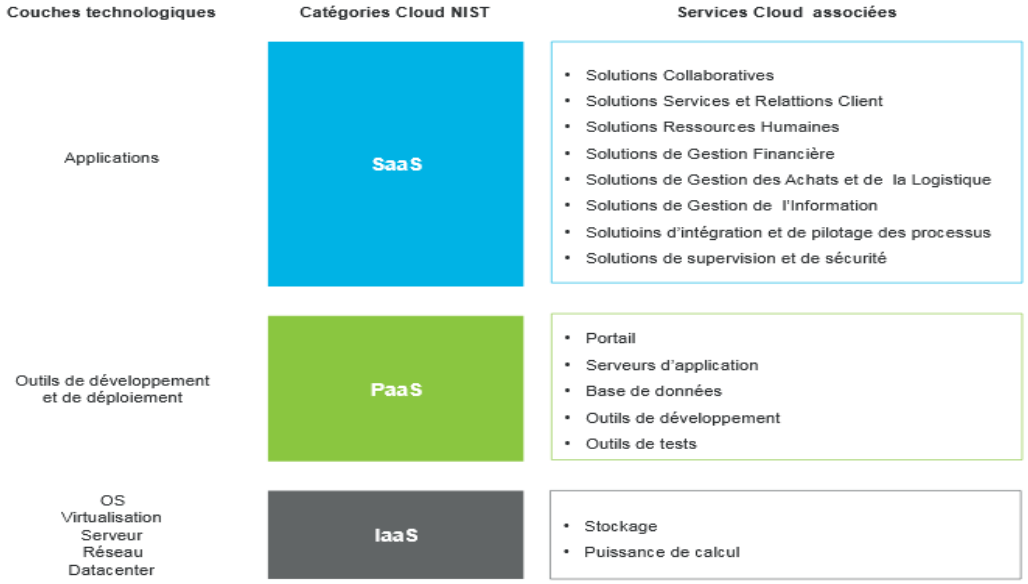
84. Cloud services refer here to all remotely operated IT solutions and services for data storage, computing and management. They essentially consist of outsourcing the management of all or part of the existing software, applications and IT services.

85. These services can be split into three broad categories, depending on the degree of outsourcing of the service(s) provided (see Figure 11)[168]:

- applications or Software as a Service, commonly referred to as "*SaaS*". They allow the user to access applications by connecting either to dedicated software pre-installed on a medium (e.g. a smartphone or a computer) or to the website created by the software developer. For example, Google's *Gmail,* Microsoft's *Outlook* or *Office 365* are *SaaS*;
- Platforms-as-a-Service (*PaaS*), which provide an environment for customers to benefit from software and tools to develop their applications, such as programming languages, automated updates and databases (e.g. Microsoft's *Azure SQL* or *Azure Cosmos DB*);
- Infrastructure-as-a-Service (*IaaS*), a model in which the cloud service provider makes servers, networks, storage and data centre space available to the user (e.g. *Amazon S3* (storage) or *Amazon EC2* (computing))

[168] See the website of IBM (link), the website of Futura-Sciences (link) and the website of Gartner (link).

Figure 11 - Overview of the different cloud services



Source: Direction générale des entreprises, "Guide sur le cloud computing et les datacenters à l'attention des collectivités locales", July 2015, page 29.

Technology layers	Categories Cloud NIST	Related Cloud Services
Applications	SaaS	Collaborative Solutions • Services and Customer Relationship Solutions • Human Resources Solutions * Financial Management Solutions • Purchasing and Logistics Management Solutions IT Management Solutions • Process integration and management solutions • Monitoring and security solutions
Development and deployment tools	PaaS	Portal • Application servers • Database • Development tools • Testing tools

OS Virtualization Server Network Datacenter	IaaS	• Storage • Computing power

86. Cloud services can be deployed via a public cloud, a private cloud, a community cloud or a hybrid cloud. Public cloud services are provided by a third party, accessible via the Internet and adaptable to customer demands. A private cloud is an infrastructure dedicated to a single organisation, which can be managed internally or externally (by a third party) and is usually hosted locally. A community cloud is an infrastructure shared by several organisations that have common interests, such as government organisations. Finally, a hybrid cloud is a cross between private and public cloud services. For example, it allows a company to store sensitive data in a private cloud and still benefit from the sharing and on-demand capabilities of the public cloud[169].

87. There is currently a concentration of cloud service offerings around a small number of very powerful suppliers, primarily the American giants Amazon, Microsoft and Google, whose combined heft, according to some public sources, would represent around 60% of the industry in question[170].

88. Beyond the concerns regarding cybersecurity and consumer protection and, in the case of EU Member States, their sovereignty, the concentration of the sector is a cause for concern in the eyes of banking and financial regulators.

89. In effect, apart from the competition-related risks usually associated with a market characterised by a limited number of players, the concentration in the cloud services sector poses risks to financial stability, as the ACPR points out[171]. The widespread use of cloud services by payment service providers, combined with the concentration of the industry, increases the systemic risk of financial and banking collapse in the event of the failure of one or more of the cloud service providers, whose customer base is worldwide[172].

90. In light of the above-mentioned risks, various initiatives are emerging, including the setting of certain limits on the use of cloud services by banks. The ACPR states that (translated) " *discussions are underway at European level to address these risks. For example, the teams of the ECB-SSM* [Single Supervisory Mechanism] *are considering introducing limits for banking institutions on the use of cloud service providers (storage, software and infrastructure) per entity (AWS, Azur, Alibaba, etc.) and per jurisdiction (third-party*

[169] See the website of Le Big Data (link) and the website of Microsoft (link).

[170] See the website of Synergy Research Group (link).

[171] Classification mark 4,438.

[172] Regarding these risks, see in particular: European Banking Authority, "*Final Report - EBA Guidelines on ICT and security risk management"*, EBA/GL/2019/04, November 2019, report (link); European Insurance and Occupational Pensions Authority, "*Guidelines on outsourcing to cloud service providers"*, EIOPA-BoS-20-002, February 2020, report (link).

jurisdictions where standards that are not equivalent to the General Data Protection Regulation apply - such as the US CLOUD Act), with a view to limiting the concentration of risks"[173].

The use of cloud services by payment service providers

91. On the demand side of cloud services, the investigation has revealed that most of the actors interviewed for this opinion use cloud service providers. This finding corroborates that of the ACPR, which sums up the situation as follows (translated): " *The use of the cloud also goes hand in hand with the development of innovative payment services. The use of cloud computing solutions, long confined to non-essential services and non-sensitive data, now extends to all data and software actors in the payment services sector*"[174].

92. Not only does this concern certain new entrants, for which the flexibility offered by cloud service providers, i.e. the possibility of transforming given fixed costs into variable costs (see paragraph 305 below) and the availability of a level of resources adapted to the volumes requested, appears to be essential for the rapid roll-out of their solutions (see below), but also the traditional banking actors.

93. However, the strategies of the actors are diverse, ranging from complete outsourcing to the development of dedicated cloud solutions[175]. Some of the actors interviewed even indicated that they use multiple cloud service providers, in order to achieve the best combination of services provided by each provider (storage, computing, etc.)[176].

94. The reasons given by the companies consulted for using cloud services generally relate to the performance of these services, both in terms of efficiency and security[177], and the flexibility of these solutions in terms of the volumes consumed[178].One of the actors interviewed illustrates this last point, stating that (translated) "*the flexibility of on-the-fly roll-out and remote management allows great agility and autonomy to internal teams in terms of infrastructure roll-out*" and, furthermore, that it allows for "*instantaneous load uptake*"[179].

95. However, the constraints imposed by the supervision and control of the regulator, which include a form of access to the data and computer servers of the supervised entities, could act as a brake on traditional banks' ability to fully outsource their IT services. In effect, the access of the banking supervisor to data which would allow the latter to carry out their audits would imply a contractual agreement between the supervised entity and its cloud service provider. The proposal for a European regulation on the digital resilience of the financial sector is intended to address this issue, among other things[180].

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[173] Classification mark 4,440.

[174] Classification mark 4,338.

[175] See for example BNP Paribas, "*BNP Paribas Signs an Agreement with IBM Services to further deploy its Cloud Strategy*", 22 January 2019, press release (link).

[176] See for example classification marks 625, 680, 759-760, 1,268 and 1,037.

[177] See for example classification marks 392, 625 and 1,307.

[178] Classification mark 620.

[179] Classification mark 625.

[180] See Proposal for a Regulation of the European Parliament and of the Council COM(2020) 595 final 2020/0266 (COD) of 24 September 2020 on digital operational resilience for the financial sector and amending

Blockchain, a technology used to carry out crypto-assets transactions

96. Blockchain technology was initially developed to facilitate crypto-assets transactions[181]. In the absence of a central control body acting as an intermediary between the parties to a transaction, blockchains, on which crypto-assets such as Bitcoin and Ether are based, reduce the transaction costs of traditional centralised systems in which a central entity acts as a trusted third party[182]. As stated in the information report submitted by the joint information mission on blockchains of the National Assembly (translated), "*the feat that the blockchain ecosystem has managed to accomplish is that of replacing - on its own scale - the vast financial system and the trust in money that took more than a hundred years to gain, by creating a purely virtual "currency", without having a legal tender status controlled by a public authority, and whose money supply evolves only by the execution of a computer protocol. It is therefore a large-scale disintermediation operation, which could very well be replicated in sectors other than the financial sector*".[183]

Regulations (EC) No 1060/2009, (EU) No 648/2012, (EU) No 600/2014 and (EU) No 909/2014, in particular Articles 1, 27-2 and 31

[181] DE LA RAUDIERE, L. and MIS, J-M., (translated)"*Information report submitted by the joint information mission of the National Assembly on* ***blockchains***", December 2018, report, page 119 (link).

[182] DE LA RAUDIERE, L. et al, information report of December 2018, cited above, page 18.

[183] DE LA RAUDIERE, L. et al, information report of December 2018, cited above, page 24.

The main characteristics of blockchain technology

97. First developed in 2008[184], blockchain can be defined as a technology for storing and transmitting information[185], recorded in blocks and relating to transactions carried out by network users, which makes it possible to create a register in which information is simultaneously distributed among all users[186]. Each user has an alphanumeric code called a "private key", which allows them to initiate and cryptographically sign a transaction, and a public key, intrinsically linked to the private key, which serves as an identifier on the network and is known to all[187]. As stated in the report of the joint information mission of the National Assembly on blockchains (translated), "*this aspect makes blockchain (...) a system where one evolves under a pseudonym but not anonymously*".[188]

Figure 12 - Diagram of a blockchain

Source: Blockchain France.

Block 46	Block 47	Block 48	Block 49
Transaction 92	Transaction 96	Transaction 99	Transaction 102
Transaction 93	Transaction 97	Transaction 100	Transaction 103
Transaction 94	Transaction 98	Transaction 101	Transaction 104
Transaction 95			Transaction 105

98. Each block in the chain, which groups together several transactions[189] and is time-stamped[190], has an identifier that can be expressed in binary code (0 and 1), called a "hash",

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[184] FAURE-MUNTIAN, V., DE GANAY, C., and LE GLEUT, R., (translated)"*Report on behalf of the Office parlementaire d'évaluation des choix scientifiques et technologiques on the technological challenges of blockchains*", June 2018, report, page 19 (link).

[185] FAURE-MUNTIAN, V. et al, report of June 2018, cited above, page 13.

[186] LANDAU, J-P., report of July 2018, cited above, page 4.

[187] DE LA RAUDIERE, L. et al, information report of December 2018, cited above, page 16. See also the website of Bitcoin (link) and the website of Blockchain in France (link).

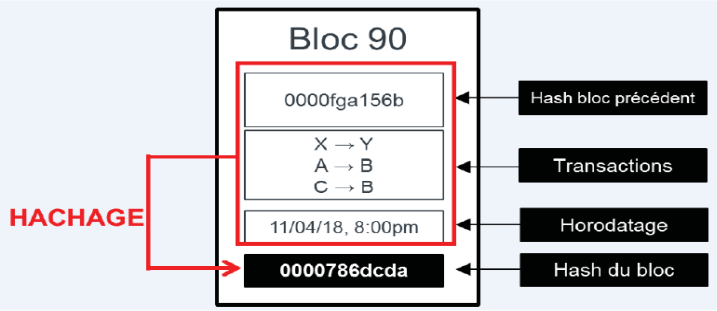
[188] DE LA RAUDIERE, L. et al, information report of December 2018, cited above, page 16.

[189] LANDAU, J-P., report of July 2018, cited above, page 80.

[190] DE LA RAUDIERE, L. et al, information report of December 2018, cited above, page 16. Moreover, as indicated by Valéria Faure-Muntian, Claude de Ganay and Ronan Le Gleut in their report of June 2018, cited above, pages 26 and 27 (translated), "*this aspect (...) is essential because it allows the relative dating of the blocks thus created, the blockchain forming in this respect a kind of chronology in which the transactions are classified one after the other*".

which makes it possible to link the blocks to each other[191]. Using a cryptographic hashing technique (i.e. conversion into binary code using cryptography), which makes the blockchain a secure technology[192], the data contained in a new block, i.e. the hash of the previous block, the information relating to a certain number of transactions carried out by the network users in a given period of time and a given timestamp, are converted into a unique hash, which is specific to it[193]. This prompted the authors of the report on behalf of the Parliamentary Office for the Evaluation of Scientific and Technological Choices on the technological challenges of blockchains, mentioned above, to state that (translated) "*while it is simple to produce a hash from data sets, it is impossible to trace a data set back to a known hash, at least with the computing power available today*"[194].

Figure 13 - Diagram of the content of a block in which the hashes are expressed in hexadecimal format



Source: "Les enjeux technologiques des blockchains (chaînes de blocs)", Report on behalf of the Parliamentary Office for the Evaluation of Scientific and Technological Choices, June 2018, cited above, page 31.

Hashing	Block 90	Hash of the previous block Transaction Timestamp Hash of the block

99. Before a block can be added to the chain, it must be validated, generally using a consensus protocol (also known as a "consensus algorithm"), by the nodes of the network[195], a set of computers owned by the users of the network[196], each of which stores a copy of the blockchain and updates it as time goes on[197].

[191] FAURE-MUNTIAN, V. et al, report of June 2018, cited above, page 27.

[192] DE LA RAUDIERE, L. et al, information report of December 2018, cited above, page 11.

[193] FAURE-MUNTIAN, V. et al, report of June 2018, cited above, pages 27 and 30.

[194] FAURE-MUNTIAN, V. et al, report of June 2018, cited above, page 28.

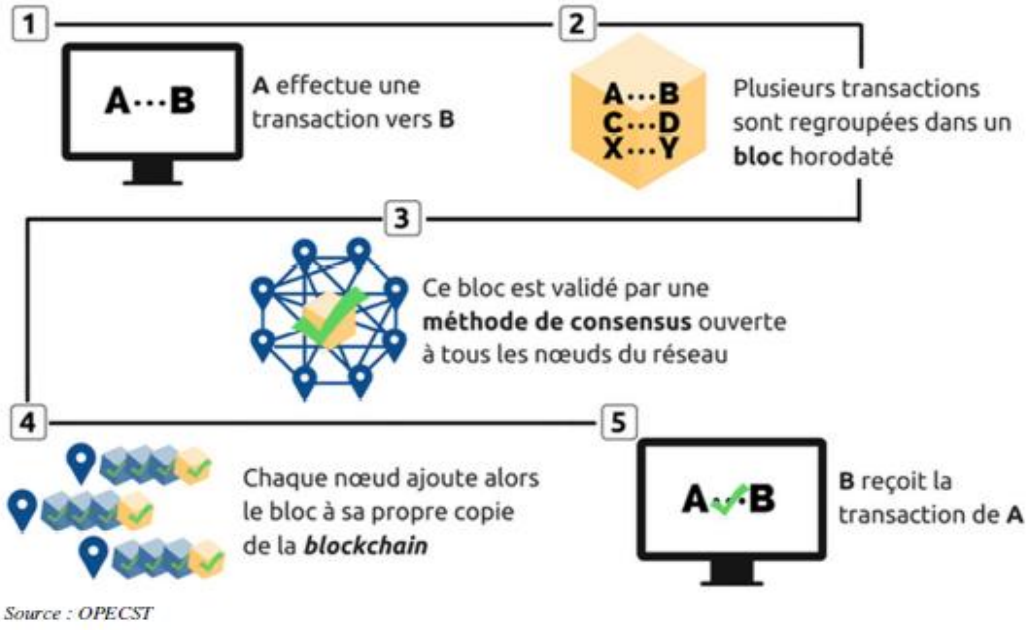
[195] DE LA RAUDIERE, L. et al, information report of December 2018, cited above, page 16.

[196] LANDAU, J-P., report of July 2018, cited above, page 81.

[197] *Idem supra*.

100. The most commonly used consensus protocols are based on *Proof of Work*, *Proof of Stake* or *Proof of Authority*. In Proof of Work systems, network users, sometimes organised in the form of groups or pools and referred to as miners, compete to create a block, bringing together the transactions that have taken place in a given period of time, and to solve, on the basis of their respective computing power and in return for a fee[198], the computer calculation that makes it possible to associate a hash with the new block created[199]. The miner who has found the solution to the problem will then forward the block to the nodes in the network who will check the accuracy of the solution, so that they can validate the block[200] and add it to their own copies of the blockchain[201]. As for Proof of Stake systems, these are characterised by the fact that the miner, who will start to create the next block, will be selected randomly among those having a certain amount of crypto-assets[202]. Finally, in Proof of Authority systems, new blocks are validated in turn by nodes, for which a list is known at the outset[203].

Figure 14 - Diagram of how a blockchain functions



Source : OPECST

[198] In addition to receiving a fee if they are successful, the miners charge fees on the transactions they include in each new block they create (see FAURE-MUNTIAN, V. et al, report of June 2018, cited above, page 37).

[199]LANDAU, J-P., report of July 2018, cited above, page 81; NASCIMENTO, S. (ed), POLVORA, A. (ed), ANDERBERG, A., ANDONOVA, E., BELLIA, M., CALES, L., INAMORATO DOS SANTOS, A., KOUNELIS, I., NAI FOVINO, I., PETRACCO GIUDICI, M., PAPANAGIOTOU, E., SOBOLEWSKI, M., ROSSETTI, F., SPIRITO, L., "*Blockchain Now And Tomorrow: Assessing Multidimensional Impacts of Distributed Ledger Technologies*", EUR 29813 EN, Publications Office of the European Union, Luxembourg, 2019, ISBN 978-92-76-08977-3, doi:10.2760/901029, JRC117255, page 24 (link).

[200] NASCIMENTO, S. et al, report of 2019, cited above, page 24; DE LA RAUDIERE, L. et al, information report of December 2018, cited above, page 16.

[201] DE LA RAUDIERE, L. et al, information report of December 2018, cited above, page 17.

[202] DE LA RAUDIERE, L. et al, information report of December 2018, cited above, page 39; LANDAU, J-P., report of July 2018, cited above, page 82.

[203] Deloitte, [translated "*Blockchain – Overview of existing technologies*", 2017, study, page 5 (link).

Source: Information report on blockchain, December 2018, page 17.

A makes a transaction to B	Multiple transactions are grouped together in a time-stamped block
This block is validated by a consensus protocol open to all nodes of the network	
Each node then adds the block to its own copy of the blockchain	B receives the transaction from A

101. Once a block is validated, it is very difficult to alter its content and the content of the previous blocks[204].

The different types of blockchain

102. Depending on how the rights to perform and validate a transaction are defined, blockchains can be classified into two categories: so-called "permissionless" blockchains and "permissioned" blockchains[205]. For blockchains belonging to the first category, all users of the network can perform and validate transactions[206]. For blockchains belonging to the second category, only certain users can perform transactions, validate transactions, or do both[207].

103. In addition, and regardless of the way in which the rights to perform and validate transactions have been defined, it is possible to distinguish between so-called "public" blockchains, in which (i) any user can access the network and (ii) the content of the different blocks in the chain is visible to all users[208], and so-called "private" blockchains, for which (i) access to the network must be authorised and (ii) the right to read, which affects the visibility of the content of the blocks, may be either public or restricted[209].

104. Private blockchains can, in turn, be subdivided into two categories: purely private blockchains, on the one hand, and so-called "consortium" blockchains, on the other. In purely private blockchains, a single actor, who owns the blockchain and manages its

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[204] As stated by Laure de la Raudière and Jean-Michel Mis in their information report on blockchain (translated), "*A very rare consensus of blockchain actors would be needed to perform a 'rollback' on validated blocks, and always for these cases of force majeure*" (see National Assembly, information report of December 2018, cited above, page 16).

[205] NASCIMENTO, S. et al, report of 2019, cited above, page 14.

[206] *Idem supra*.

[207] *Idem supra*.

[208] NASCIMENTO, S. et al, report of 2019, cited above, page 14; LANDAU, J-P., report of July 2018, cited above, page 80; CONG, L.W., and HE, Z., "*Blockchain disruption and smart contracts*", National Bureau of Economic Research, Working paper n° 24399, April 2018, page 10 (link), and DE LA RAUDIERE, L. et al, information report of December 2018, cited above, page 16.

[209] NASCIMENTO, S. et al, report of 2019, cited above, page 14; LANDAU, J-P., report of July 2018, cited above, page 80.

development according to its expected use, controls access to the network and, among other things, defines the right to read[210]. As stated in the information report submitted by the joint information mission on blockchains of the National Assembly (translated), "*purely private blockchains are more similar to an intranet application that provides service or productivity gains within the same organisation*".[211] As regards consortium blockchains, they make it possible to (translated) "*bring together a limited number of actors and facilitate the governance of their mutual interests* (...). *The best-known example of this kind of blockchain is Corda, developed by the consortium R3, which brings together financial institutions (more than 80),* [including some French institutions], *to speed up the recording of their transaction flows*."[212]

The impact of blockchain on the payments sector

105. Blockchain technology does not yet appear to have reached a sufficient degree of maturity allowing it to have a significant impact on the payments sector at the present time. Some contributors to the public consultation[213] indicated that the actual impact of this technology on payment services has been negligible to date[214]. Furthermore, the ACPR also pointed out that the limitations of this technology, including slow transaction processing[215], a limited number of transactions processed[216] and very high energy consumption[217], have so far hindered its development. Compared to cloud services, the use of blockchain by payment service providers remains significantly less widespread[218].

106. Nevertheless, other actors who contributed to the public consultation, including the Association for the development of digital assets and Coinhouse, underlined the promising future of blockchain technology in the payments industry[219]. In addition to enabling and fostering new and innovative services[220], they expect this technology to improve the security[221], cost[222] and transparency[223] of payment transactions. Moreover, the technology could speed up cross-border transactions in legal tender and make the identification and monitoring of parties in a transaction more effective in the context of the fight against money laundering and terrorist financing[224].

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[210] LANDAU, J-P., report of July 2018, cited above, page 80; DE LA RAUDIERE, L. et al, information report of December 2018, cited above, page 21.

[211] DE LA RAUDIERE, L. et al, information report of December 2018, cited above, page 21.

[212] *Idem supra*.

[213] See website of the *Autorité de la concurrence* (link).

[214] Classification marks 3,920, 3,952 and 3,981.

[215] LE MOIGN, C., "*ICO françaises: un nouveau mode de financement*", November 2018, AMF, page 3 (link).

[216] Banque de France, "*Bitcoin*", July 2018, L'éco en bref, page 3 (link).

[217] DE LA RAUDIERE, L. et al, information report of December 2018, cited above, page 33.

[218] Classification mark 4,438.

[219] Classification marks 3,952, 4,001, 4,011 and 4,033.

[220] Classification marks 3,952, 4,023 and 4,057.

[221] Classification marks 4,043 and 4,057.

[222] Classification marks 3,952 and 4,057.

[223] Classification marks 4,012 and 4,057.

[224] LANDAU, J-P., report of July 2018, cited above, pages 27 and 28.

B. A NEW MARKET DYNAMIC: THE ARRIVAL OF NEW ACTORS AND THE ADAPTATION OF TRADITIONAL BANKING GROUPS

107. The recent technological advances and regulatory changes described above have resulted in a new market dynamic, characterised in two ways: on the one hand, by the arrival of new operators in a sector traditionally falling under the "banking monopoly" and dominated by six French conglomerates[225], some of which are global in scale and among the largest in the European Union[226], and by the bank card networks (1), and on the other hand, by the adaptation of the traditional banking groups to this new reality and their direct participation in the evolution of the payment sector (2).

1. THE ARRIVAL OF NEW ACTORS

108. Up until now dominated by the traditional actors, *i.e.* banks and bank card networks, the payments sector has been marked firstly by the arrival of FinTech (a), followed by the entry and significant development of BigTech (b).

a) The emergence of FinTech offering payment services

109. As stated in paragraph 5 above, in the context of this opinion, the concept of "FinTech" is understood to include non-banking players in the payments sector, with the exception of BigTech, whose profiles and models sometimes vary significantly.

110. The Banque de France distinguishes three categories of actors under this term[227].

111. The first category is primarily present in the area of customer relations. It is made up of actors who make significant use of the possibilities offered by smartphones to offer services to users of banking services, in particular in the form of mobile apps. These include, for example, account information services, which are enshrined in the PSD2 and offered by actors such as Bankin' or Linxo, which, depending on the case, not only aggregate information on accounts held at different banks, but also manage certain transactions automatically and analyse the user's banking data with a view to providing them advice on managing their accounts and proposing suitable services.

112. The second category (translated) "*focuses on the development, in support of the banking system and without jeopardising it, of solutions aimed at facilitating exchanges by providing complementary services*". As such, it brings together actors offering new solutions intended to facilitate certain functions of the existing banking system. This includes, firstly, payment

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[225] (translated) "*At the end of 2019, assets held by the entire French banking sector, in France and abroad, stood at €8,671 billion. 81% of these assets were concentrated in the six largest French banking groups*". See ACPR, "*Les chiffres du marché français de la banque et de l'assurance 2019"*, October 2020, statistical publication, page 9 (link).

[226] (translated) "*At the global level, four French banking groups are included in the list of global systemically important institutions (GSIs) published by the Financial Stability Board, which includes around thirty institutions, eight of which are in the euro area, reflecting the significant weight of the French banking sector*". See ACPR, statistical publication of October 2020, cited above, page 9.

[227] Banque de France, report of January 2021, cited above, page 341 et seq.

initiation services[228], and secondly, technical services provided to payment service providers.

113. This may include, for example, systems that facilitate payment processing, such as those offered by Voxpay, which offers an (translated) "*omni-channel remote payment solution (voice, SMS, chat, email, etc.)*" that allows remote collection of transactions securely and confidentially, without consumers having to reveal their bank details to professionals[229], Dejamobile or Antelop, which provide white-label payment solutions (in particular to banking institutions) and which are based on technologies such as NFC, tokens or QR codes[230].

114. The third category includes neo-banks, which offer account management and other services traditionally offered by traditional banks, albeit a different version. Under the terms "online bank" or "neo-bank", used interchangeably by the ACPR[231], several generations of players cohabit:

- actors that emerged from the advent of the Internet in the late 1990s and early 2000s, including Fortuneo and Boursorama, most of which have been acquired by the traditional banks;
- actors created *ex-nihilo* by traditional banks around 2010, including BforBank, by the Crédit Agricole group, or HelloBank, by BNP Paribas;
- actors whose offerings are based primarily on remote communication tools and who rely on a pre-existing network of physical branches to reduce distribution costs and customer acquisition costs; This category includes Compte Nickel (now Nickel), which has developed its model by offering easy access to payment card services through the network of tobacconists, Carrefour Banque, which relies on Carrefour stores[232], Orange Bank, which relies on the network of Orange stores, and Ma French Bank, which allows customers to open an account at a post office[233]; and
- actors who since 2015 have been offering mobile-only products, such as Revolut and N26, who are launching their services on a European scale rather than just the domestic market.

115. In 2018, the institutions in the neo-bank category had around 4.4 million customers, or 6.5% of the French population in that year[234]. In 2019, the number of customers gained by these institutions rose by 75%, representing about two million additional customers[235].

116. FinTech cover a range of operators with significantly different profiles and business models: they range from small, innovative start-ups with no pre-existing business, to well-established actors from other sectors, such as Orange or Carrefour. The business models of the new

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[228] These services rely on the latest technology to offer users new methods of initiating payments.

[229] Classification marks 1,360 et seq.

[230] Classification marks 642, 1,687 and 1,688.

[231] See ACPR, (translated)"*Study on online banks and neobanks' business models"*, October 2018, Analyses et synthèses n° 96 (link).

[232] See website of Carrefour (link).

[233] See website of Ma French Bank (link).

[234] ACPR, study on business models of October 2018, cited above, page 13.

[235] ACPR, "*Neobanks seeking profitability*", June 2020, Analyses et synthèses n° 113-2020, page 7 (link).

actors vary between commissions charged on payments (e.g. LemonWay or Kantox), freemiums[236] (e.g. Linxo, Bankin'or N26), subscriptions (Nickel, Bankin' or N26)[237], or the sale of white label services to banks (e.g. Linxo or Budget Insight)[238].

117. The main element that all these actors have in common is that they have developed in niche business segments, relying on new technologies, especially smartphones. This positioning is intended to meet a demand that they believe is not met by traditional banking services[239], in order to improve existing services[240] or create new ones. These include, for example, peer-to-peer payment services, new automated account and savings management and aggregation services, such as those offered by Bankin' or Linxo (mentioned above), international money transfer services offered by actors such as PayTop or TransferWise for a lower price than those offered by traditional banking actors in the sector[241], or banking services for people without a bank account such as Nickel, which differs from traditional banking offerings by offering an account management service open to any person, without any conditions in terms of income, deposits or assets but, in return, without the possibility of overdrafts or loans[242].

118. It should be noted that these non-banking actors have played, and continue to play, a key role in innovation within the retail banking sector[243] and can make a significant contribution in areas of the world where traditional banking services are less accessible[244]. As highlighted by Professor Xavier Vives at the OECD Competition Committee on 5-7 June 2019, "*nonbanks such as PayPal, Apple, or Google and new entrants such as Revolut, N26 or Transferwise are often behind payment innovations. For example, mobile-based payment schemes have a considerable effect in jurisdictions where the share of the population owning a current account is low. This is often the case in African countries, where only one quarter of the population has a bank account, but many more people have access to a mobile phone. New payment systems as well as loans targeted to consumers with short credit history are often tested in such geographical areas. It is worth noting the technological leap frogging that represents for someone not having a bank account to be provided banking services through their mobile phone*".

119. Some FinTech, which have entered a niche segment of the sector, have reached a level of development that allows them to diversify their offering, to the extent that in some cases, they can propose services which are comparable to those offered by the banking actors,

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[236] A "freemium" is a business model in which a product or service is offered free of charge and intended to attract a large number of users. Companies then try to convert these users into customers for a more advanced version of the service, for which there is a fee, or for additional services that are also paid (link).

[237] For example, Nickel charges an annual fee of €30 for providing its subscribers with the *Nickel Chrome* payment card. With regard to Bankin', the user can take out a premium subscription (*Bankin' Plus* or *Bankin' Pro*) which offers additional functionalities to the basic services offered for free.

[238] See Xerfi, (translated) "*FinTechs and new entrants in banking and insurance* ", February 2017, study, pages 81 et seq.

[239] Qonto, for example, offers an accounting and expense management service to SMEs that was not offered by the traditional banking actors.

[240] See, for example, classification mark 4,058.

[241] See in particular classification marks 3,993 and 3,994.

[242] See the website of the group BNP Paribas (link).

[243] ACPR, study on business models of October 2018, cited above.

[244] VIVES, X., "*Digital disruption in financial markets*", 27 June 2019, document prepared from the 131rd Meeting of the OECD Competition Committee, page 5 (link).

sometimes outside the payments sphere (in savings or credit, for example). This is the case, for example, with the FinTech Qonto, which offers accounting and expense management services to SMEs and payment cards for their employees. Qonto started its activities as an agent providing electronic money services in France, before offering payment services not only in France but also abroad. Furthermore, Qonto may offer other banking services, such as loans, in the future[245].

120. Other FinTech are undergoing European or even international expansion. This is the case, for example, of the German company N26, founded in 2013 and active in France since 2017, whose payment services are available in 21 European countries and the United States[246]. Its global revenue exceeded €100 million in 2019[247] and it had over 1 million customers in France and over 5 million customers worldwide that same year[248].

121. To date, although these new actors are enjoying a rapid expansion of their customer base and are financing their growth by raising funds as part of a long-term strategy, like most neo-banks, they are still struggling to implement a profitable business model in the short term[249].

122. At the European level, the development of new payment services shows some common trends, but also some notable differences, as shown in the box below.

[245] Classification mark 4,670.

[246] Classification mark 3,638.

[247] The figure was around €11 million in 2017 and €48 million in 2018.

[248] Classification marks 3,638 and 3,639. See the website of N26 (link).

[249] See ACPR, study on business models of October 2018, cited above, page 13 et seq. and ACPR, study on the profitability of neobanks of June 2020, cited above.

The development of payment services in Europe

Throughout Europe, the development of new technologies and their entry into the sector has led to new uses and to the digitisation of payments. This process has been facilitated by specific developments with a pan-European dimension, including the adoption of common rules which have enabled the emergence of the EU-wide SEPA payment system. Furthermore, payment by bank card and mobile payments are on the rise throughout Europe.

However, the level of development of new services is not uniform across Europe as a whole. In 2019, contactless payments in stores, whether made by card or mobile app, accounted for 38% of all card payments in France in terms of number of transactions, the same share as in the euro area. In terms of value, this figure was 18%, well below the euro area average of 27%. As a result of the measures taken in all euro area countries to encourage contactless payment in response to the Covid-19 crisis, these proportions are expected to significantly increase.

In France, despite the launch of *Paylib* in 2013, mobile payments are primarily based on solutions offered by international actors, such as *Apple Pay* or *Google Pay*[250], whereas in other EU countries, such as the Netherlands or Sweden, these services, called *IDEAL* and *Swish* respectively, have been developed by national players.

The territorial distribution of FinTech in Europe also varies considerably: indeed, according to the European Parliament's study on competition issues in the area of financial technology, in 2018, more than half of FinTech, across all financial services, operating in the European Union were based in the UK[251].

123. While most start-ups offering new services in the payments sector have to build a customer base from scratch, some new entrants, using new technologies, rely on a pre-existing customer base and distribution network, such as Orange Bank for instance, whose services are offered to existing or potential customers via the pre-existing network of Orange stores, whose main business is selling telecom products and services. This aspect is also present among BigTech, which rely on the customer base they have already built up in their core business to offer new services, including in the payments sector.

124. The diagram below shows a representation of this sector, per category of actors offering payment solutions.

[250] See figure 5 in paragraph 35 above.

[251] European Parliament, "*Competition Issues in the Area of Financial Technology (FinTech)*", July 2018, study, page 33. Full version and summary.

Figure 15 - Illustrative representation of the sector per category of actors offering payment solutions (non-exhaustive list of operators)

Source: Compilation by the Autorité de la concurrence based on the elements from the file.

Payment specialists
Banks and credit card networks
Major digital actors
Neo-banks "pure mobile players"
Pure players in online banking
"Phygital bank" distributors

b) The entry of BigTech

125. For several years, certain companies referred to as BigTech, which in the context of this Opinion, as noted in paragraph 6 above, include GAFAM and BATX, have used their platforms to facilitate the provision of financial services, which can complement and enhance their commercial activities[252].

[252] Bank for International Settlements (BIS), "*Annual Economic Report*", June 2019, report (link).

126. Over the last ten years, GAFAM and, to a lesser extent, BATX, have gradually entered the payments sector in France. Payment services are historically among the first financial services proposed by BigTech[253].

127. Following the distinction made by the Bank for International Settlements (hereafter "BIS"), two types of payment platforms operated by BigTech may be distinguished. The first relates to systems in which the operators rely on existing third-party infrastructure, such as payment card or retail payment systems, to process and settle payments. This is the case, for example, with *Apple Pay* or *Google Pay*, which are backed by credit card payment systems. The second relates to systems in which users can make payments using payment processing and settlement infrastructure owned by BigTech, as is the case with Alibaba and Tencent in China[254].

128. The services falling under the second category are more widespread in countries where the penetration of scriptural means of payment, including payment cards, is low[255], as is the case in China, where, moreover, regulations appear to be more favourable to their development[256].

Services offered in France by GAFA[257]

Google

129. Back in 2006, Google launched a service called "*Google Checkout*", which allowed users to pay for purchases online, on the site of partner merchants, without using their bank card and using a secure process[258]. This service was then terminated and integrated into *Google Wallet* in 2011, itself integrated into *Android Pay* in 2015, which became *Google Pay* in 2018, and available in France that same year. According to Google, it is a (translated) "*umbrella brand that brings together Google's various payment or payment acceptance methods*"[259].

130. Google currently provides two categories of payment solutions in France: the first category, according to Google, falls under Article L. 314-1 of the CMF. This is a payment acquisition service, within the meaning of this article, which merchants can access on certain Google marketplaces. Under this service, Google receives the funds from the payment transaction on behalf of the merchant receiving the payment and undertakes to make them available to the merchant.

131. The second category includes a range of services linked to the *Google Pay* brand which, according to Google, do not fall under Article L. 314-1 of the CMF.

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[253] Financial Stability Board, "*BigTech in finance: market developments and potential financial stability implications*", December 2019, report, page 5 (link) ; BIS, report of June 2019, cited above, page 57.

[254] BIS, report of June 2019, cited above.

[255] *Idem supra*.

[256] The Economist, "*Big Tech takes aim at the low-profit retail-banking industry*", 21 November 2019 (link).

[257] Although Microsoft may be involved in some projects in the payments sector, the *Autorité* has no specific information in this regard. Consequently, only the services offered by Google, Apple, Amazon and Facebook are discussed in this section.

[258] Journal du Net, (translated)"*Google launches Google Checkout to compete with Paypal*", 30 June 2006 (link).

[259] Classification mark 3,787 and 3,788.

132. The solutions offered under the *Google Pay* brand allow individual users to make online and in-app purchases[260] as well as contactless payments from a mobile device. In all cases, the user will have previously registered a payment card linked to a virtual bank account or an e-wallet held with a third party company. With regard to contactless payments in particular, *Google Pay* operates using NFC technology (see above, paragraphs 81 et seq.). The transactions carried out are protected by encryption and decryption technologies, related to a "tokenisation" process, i.e. conversion of the sensitive information of the user into a token which corresponds to a unique identification number[261].

133. These solutions also allow business users (third-party merchants) to offer users who have registered a payment card in their Google Account to pay for their purchases in a simplified way[262]. It is therefore possible, via the *Google Pay* service, to pay for a purchase via your smartphone for example, without taking your bank card out of your wallet.

134. Furthermore, Google offers different features in other countries, such as "*a feature to send/request funds online quickly, for free, and securely in the US and India*."[263]

Apple

135. Apple entered the payments business later on, with its *Apple Pay* mobile payment solution, which was launched in the US in 2014 and in France in 2016. The service, which is based on NFC technology, allows iPhone users who are customers of banks that have partnered with Apple to pay for online or in-store purchases using their Apple device, for example their phone, as a physical payment device, instead of their bank card[264]. It should be noted, however, that a payment made via *Apple Pay* is actually effectuated by the user's pre-registered bank card. For each transaction, Apple charges a commission in addition to the commissions paid by merchants on credit card transactions[265].

136. For the time being, this service only appears to be used by a relatively small number of people in France. Indeed, according to a study by the CREDOC in 2019, 77% of smartphone owners used the Android system and 22% used Apple's *iOS* system[266]. Of these, only those with a compatible version of the *iPhone* have access to *Apple Pay* (see paragraph 35 above). Nonetheless, this equates to 500 million users worldwide.

137. Apple is of the opinion that it does not provide payment services in France and does not engage in activities covered by Article L. 314-1 of the CMF. It claims that its activity is limited to providing technology solutions to the banking sector[267]. As such, Apple states that it has (translated) "*developed technologies to enable banks and electronic money*

[260] It is possible to purchase additional content or services within some apps, such as a sword, a key or currencies (see Google website (link)).

[261] Classification mark 3,794.

[262] Classification mark 3,788.

[263] *Idem supra*.

[264] Les Echos, (translated)"*Apple Pay completes its web in France*", 28 January 2020 (link).

[265] Les Echos, (translated)"*How Apple Pay imposed itself on French banks*", 6 December 2019 (link).

[266] CREDOC, study of November 2019, cited above.

[267] Classification mark 1,314.

organisations to extend their existing offerings to include NFC and secure e-commerce payments"[268].

138. However, while it is not for the *Autorité* to assess whether Apple's services fall within the scope of Article L. 314-1 of the CMF, it notes nevertheless that these services are closely related to the payment services currently available. Moreover, Apple could play a more direct role in the payments sector in the future, similar to its positioning in the United States, where in 2019 it launched a payment card called "*Apple Card*" in partnership with Goldman Sachs and Mastercard[269].

Amazon

139. Amazon primarily offers two main categories of services in the payments sector. Through its subsidiary Amazon Payments Europe ("APE"), an electronic money institution, it offers payment processing services to third-party merchants who use Amazon's marketplace services to sell their products to consumers on Amazon.fr. As such, when a consumer purchases an item from a third-party seller on Amazon.fr, APE receives the funds on behalf of the seller, and then transfers them to the bank account stipulated by the latter.

140. Amazon also offers a service called *Amazon Pay*, which it claims does not fall under Article L. 314-1 of the CMF. This service offers users the possibility of paying for their online purchases from third-party merchants active on the platform, without the latter having access to their credit card information[270]. When creating an account, the user fills in their banking and delivery information with Amazon, which in return provides a login and password. Only these 2 elements are needed to pay the merchants on the platform. In addition, *Amazon Pay* can be supplied to merchants who do not sell their products on the platform and who choose to add an *Amazon Pay* option to the checkout page of their website or app, allowing their customers to use the payment methods already linked to their Amazon account to make purchases from them[271].

Facebook

141. The activities of Facebook which prompt the company to be directly involved in the payments industry are currently relatively limited. Up until June 2019, Facebook provided a person-to-person money transfer service that worked through *Messenger*, its electronic messaging service[272]. When it announced that it would discontinue this service, Facebook reportedly stated that it wanted to focus on the experiences that users find most useful[273].

142. However, this situation could rapidly change as Facebook has also hinted that it is studying the possibilities of introducing new payment services in the European Union, including in France[274], thereby demonstrating its interest in this sector.

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[268] Classification mark 1,314.

[269] Journal du Net, (translated) "*Apple Card: features, price, launch in France ...*", 31 July 2020, (link).

[270] Amazon, (translated)"*Amazon presents Amazon Pay in France*", 18 April 2017, press release (link).

[271] Classification mark 884.

[272] Classification mark 1,411.

[273] L'usine digitale, (translated)"*Why Facebook is stopping P2P payment via Messenger in Europe*", 19 April 2019 (link).

[274] Classification mark 1,412.

143. On the one hand, Facebook has announced an overhaul of its payment services under a single brand, called "*Facebook Pay*", which is already available in the United States. Among other things, *Facebook Pay* will integrate two payment services already available in France: a charitable donation and e-currency fundraising service for charities[275], and a service for purchasing digital items in the context of games[276].

144. On the other hand, Facebook has announced its intention to launch a digital wallet through its subsidiary Novi (formerly Calibra), not only for the Diem Dollar but also for other stablecoins, multi-currency or single currency, which the Diem Association may launch in the future[277].

145. Among other things, users of the Novi wallet should be able to send (and receive) the Diem Dollar, as well as other stablecoins, multi-currency or single currency, which the Diem Association may launch in the future, to other users of the Novi wallet as well as to persons using third party wallets[278] on which may be stored, subject to approval by the Diem Association or its affiliates, all stablecoins issued by the entity responsible for administering the payment system developed by the Diem Association[279]. Finally, using the Novi wallet should not be conditional on having a *Facebook*, *Messenger* or *WhatsApp*[280] account, and users of these three applications should not be automatically assigned an account to use the Novi wallet[281].

[275] A user can use this service to pay funds to the Facebook subsidiary via a third-party payment method that issues the amount in electronic money to a user's e-money account. From this account, the chosen amount is paid into the beneficiary's electronic money account.

[276] Classification marks 1,409 and 1,410.

[277] Classification mark 4,836.

[278] Classification mark 4,838.

[279] Classification mark 4,128.

[280] Classification mark 4,838.

[281] Classification mark 4,838.

Fact sheet on the stablecoins that may be issued by the entity responsible for administering the payment system developed by the Diem Association and on the digital wallet developed by Novi, a subsidiary of Facebook

1. **What are the stablecoins that could be issued by the entity responsible for administering the payment system developed by the Diem Association?**
   - Diem Dollar, a single currency stablecoin pegged to the US dollar;
   - Other single currency stablecoins, each pegged to a legal tender;
   - A multi-currency stablecoin, whose value would be pegged to a basket of several single-currency stablecoins.
2. **Where could these different stablecoins be stored?**
   - In the Novi digital wallet, developed by a Facebook subsidiary of the same name and member of the Diem Association; and
   - In digital wallets other than Novi, subject to approval by the Diem Association or its subsidiaries.
3. **What possibilities would the Novi digital wallet offer to its users?**
   - Purchase, storage and sale of the above-mentioned stablecoins.
   - Sending the above-mentioned stablecoins to other users of the Novi digital wallet and users of third-party wallets.
   - Receiving the above-mentioned stablecoins from other users of the Novi digital wallet and from users of third-party wallets.
4. **What would be the conditions of use of the Novi digital wallet?**
   - Using the Novi digital wallet should not be conditional on having a Facebook, Messenger or WhatsApp account.

Source: Compilation by the Autorité de la concurrence based on the elements from the file.

Services offered in France by BATX

146. Although already well established in China, "*[thanks to] its mobile-based connectivity ecosystem along with the scarcity of consumer-targeted bank offerings and the innovation-friendly regulatory framework*"[282], BATX do not currently have a strong presence in France. For example, in China, two companies, Alibaba and Tencent, account for 94% of the mobile payments market[283] with their respective payment platforms *Alipay* and *WeChat Pay* which operate with their own payment infrastructures and allow users to pay using a PIN or their fingerprint, after scanning the barcode or QR code of the desired product[284]. Their limited presence in France is due to the need to have a Chinese phone number and/or a Chinese bank account to use these apps[285]. However, they have entered into partnerships with several

[282] VIVES, X., Note of 27 June 2019, cited above.

[283] VIVES, X., Note of 27 June 2019, cited above.

[284] See for example the website of Adyen (for *Alipay*: link and for *WeChat Pay*: link).

[285] Les Echos, (translated)"*Mobile payments: how the Chinese Alipay and WeChat Pay have established themselves in Paris* ", 23 December 2019 (link).

major banks, including La Banque Postale, BPCE, BNP Paribas, and some major retailers, to enable Chinese tourists travelling to France to make purchases in stores, primarily in the luxury sector[286]. However, the limited presence of these players in France could change, as some of them have recently invested in the capital of French FinTech, such as Tencent, which in January 2020 invested in Lydia, as part of a €40 million fundraising round, and in Qonto[287].

A range of business models and entry strategies

147. Big Tech, and in particular GAFAM, which have a global presence and vast financial resources[288] (see paragraph 361 below), use information technology and the data they hold on their users to develop their businesses. Generally speaking, whatever form their business takes - online shopping platforms in the case of Amazon and Alibaba, social networks for Facebook and Tencent or app stores for Google, Apple and Xiaomi - their models are based, more or less centrally, depending on the operator, on the direct connection of a large number of users[289]. This is the case, for example, of Google's search engine, which creates an interface, via the display on Google services[290], between individuals using the search engine and advertising companies. The interaction data generated is retrieved and used to offer users new, targeted services, and the use of these in turn generates more data[291].

148. These shared characteristics do not necessarily make them a homogeneous group of actors. In reality, there are important differences in both their model and strategy. For example, in terms of their business models, Google's search engine and Facebook's social network, which play a key role in their respective markets, are both based on a model in which their services are free to consumers and the bulk of their revenues come from advertising linked to those services[292]. Apple and Microsoft primarily earn their income from sales of hardware and software. Amazon's revenues come not only from its own product sales (its distribution business) and subscriptions (*Amazon Prime*), but also from services provided to professionals using its e-commerce platform and cloud services, as well as from advertising[293].

Table 4 - Main sources of income of GAFAM (non-exhaustive)

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[286] Les Echos, article of 23 December 2019, cited above; L'Usine Digitale, (translated)"*Alipay sets out to conquer small European traders"*, 14 November 2019 (link).

[287] Les Echos, (translated)" *Chinese Tencent takes a stake in French mobile payment nugget Lydia"*, 16 January 2020 (link); Les Echos, (translated) "*Chinese Tencent continues its incursion into French fintech"*, 21 January 2020 (link).

[288] The capitalisation of some of the Big Tech companies is more than twice that of the bank JP Morgan (see VIVES, X., Note of 27 June 2019, cited above, page 4).

[289] BIS, report of June 2019, cited above, page 55.

[290] CREMER, J., DE MONTJOYE, Y-A., et SCHWEITZER, H., "*Competition policy for the digital era – Final report*", 2019, report for the European Commission, page 30 (link).

[291] BIS, report of June 2019, cited above.

[292] See classification mark 1,408 and *Autorité de la concurrence* Opinion 18-A-03 of 6 March 2018 on data processing in the online advertising sector.

[293] See in particular FAURE-MUNTIAN, V. and FASQUELLE, D., (translated) "*Information report of the National Assembly filed by the Economic Affairs Committee on digital platforms* ", June 2020, report (link).

	Sale of equipment	Subscriptions[294] (including *freemium*)	Commissions	Advertising	E-commerce (distribution)
Google		✓	✓	✓	
Apple	✓	✓	✓		
Facebook			✓	✓	
Amazon		✓	✓	✓	✓
Microsoft	✓	✓			

Source: Compilation by the Autorité de la concurrence based on the investigation file.
In this table, the symbol ✓ refers to the main economic model and the symbol ✓ refers to a known additional source of income.

149. Similarly, the entry of Big Tech into the financial and payments sector is not necessarily driven by the same reasons, depending on the actor. The ACPR stresses in this regard that (translated) "*the major digital actors, known as 'Big Tech', do not constitute a homogeneous group, despite certain similarities, such as between Amazon and Alibaba for example. Their strategies for entering the financial sector sometimes differ radically* [...]"[295].

150. One of the main objectives of Big Tech is to strengthen their ecosystem by expanding their presence in payment services. But other objectives are likely to explain the entry of Big Tech into the financial services sector:

- a desire to diversify their sources of income, which is particularly the case for e-commerce activities;
- a desire to access new sources of data, traditionally reserved for banks and of particular interest, on the consumption habits and financial situation of their customers; and
- a desire to complement and bolster their core business, to increase their customer base and customer loyalty[296].

151. The entry of Big Tech into the sector may be driven by one or more of these reasons. However, while the entry strategies and objectives may vary, most of them present the services they offer within their ecosystem as ancillary to their core business, with the objective of facilitating, enhancing or enriching the "*customer experience*"[297].

152. For the major digital actors, data acquisition and processing is a key factor in their business model. By entering the payments sector, they can access and valorise new sources of data that were traditionally reserved for banks and bank card networks. This data is, by nature, particularly interesting because it allows the actors to identify in real time the behaviour and consumption habits of individuals. Moreover, the major digital actors have the potential (and subject to compliance with data protection rules) to combine this payment data with their

[294] The category "subscription" includes cloud services among others.

[295] Classification mark 4,436.

[296] Financial Stability Board, report of December 2019, cited above, page 11.

[297] Classification marks 1,407 and 1,412.

own data obtained through online searches, social networks or e-commerce, which is not available to other actors. With these advantages, Big Tech are likely to implement an "enveloping" strategy if necessary[298]. The customer data collected during payments can also be useful in their core business, for example to enhance their advertising revenues. Indeed, the financial services offered by Big Tech generates data, in particular on consumer spending habits, enabling them to improve their core business, for example by better targeting the advertising they send to users of their platform[299].

2. THE ADAPTATION OF TRADITIONAL BANKING ACTORS

153. While relying on their networks of physical branches, which are still important for the time being[300], French banking groups are participating in the evolution of the payments sector, by investing directly, via equity investments in FinTech (a), by entering into cooperation or partnership agreements, particularly with new non-bank players (b) and, finally, by investing in research and development (c).

a) Equity investments in FinTech

154. Whether it is to develop their offering, enhance their processes or develop new products, the traditional banking groups are taking equity stakes in some of the FinTech, with either minority stakes or controlling stakes. This trend of equity investments is characterised by the diversity of both the FinTech involved and the strategies of the major banking groups.

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[298] "*BigTechs can use a "platform envelopment" strategy to exclude other intermediaries using their data superiority (since they have complementary sources of data about customers from other lines of business)*", see VIVES, X., Note of 27 June 2019, cited above, page 12.

[299] "*In some markets, the motivations may be mutually reinforcing. BigTech firms' offering of financial services generates data – for example on the spending and saving habits of customers using BigTechs' banking and lending services. These data can then be used to improve BigTech firms' core business lines – for example by allowing them to better target advertising on their social media platforms*", see Financial Stability Board, report of December 2019, cited above, page 12.

[300] In France, the number of bank branches per 100,000 inhabitants fell from 59.5 in 2009 to 53.5 in 2019 (source: calculations by the Fédération Bancaire Française using ECB and Eurostat data, classification mark 4,706), a decline of around 10% over 10 years (calculation by the *Autorité de la concurrence*).

Overview of the equity investments

155. Like other sectors of the economy, the payment services sector is characterised by major groups taking equity stakes in innovative actors. Table 5 below provides an overview of the main investments made by the main French banking groups in FinTech specialising in payment services.

156. We can see in particular that all the major French banking groups are involved in this trend.

Table 5 - Examples of the equity stakes of French banking groups in FinTech (percentage of ownership; examples of services offered)

Banque Fédérative du Crédit Mutuel[301]	BPCE[302]	BNP Paribas[303]	Crédit Agricole[304]	Crédit Mutuel Arkéa[305]	La Banque Postale[306]	Société Générale[307]
Paysurf (51%; Payment Flow Management Solutions) **Lyf SA** (43.75%; Peer-to-peer mobile payments) **Mojovida** (34%, IT for sales outlets)	**S-Money** (71%; Payment and collection) **Dalenys** (71%; Payment platform) **PayPlug** (71%; Online and in-store collection)	**Nickel** (>89%; Account management) **Cashforce** ([0-10]% ; Treasury management) **Token** ([0-10]%; Open banking platform) **Tink** ([0-10]%; API development) **Lyf SA** (43.8%)	**Linxo** (>85%; Budget management)	**Monext** (100%; Payment solutions) **Max** (100%, Account management and payments) **Mangopay** (98%, Payments and crowdfunding) **Pumpkin (**100%; Peer-to-peer payment, account management) **Budget Insight** (80%; API development)	**eZyness** (100%; Collection and management)	**Boursorama** (100%; Online bank) **Treezor** (100%; Banking platform) **Prisméa** (100%; Neobank for professionals) **TagPay** (19.23%; IT banking systems) **Shine** (N/A; Business account management)

Source: Compilation by the Autorité de la concurrence based on the investigation file.

[301] Classification mark 3,711.

[302] S-Money, Dalenys and Payplug are wholly owned by Natixis, itself 71% owned by BPCE. See Natixis, "*Universal registration document and financial report* 2019", 2020, p. 380 (link), and BPCE "*Universal registration document and financial report 2019*", 2020, p. 355 (link).

[303] Nickel: BNP Paribas, "*BNP Paribas announces the acquisition of Compte-Nickel*", 12 July 2017, press release (link); Lyf: BNP Paribas, "*Universal registration document and financial report 2019*", 2020, page 251 (link); Cashforce: BNP Paribas, "*BNP Paribas and Cashforce enter into a partnership to offer digital cash flow forecasting and working capital services to Corporate Treasurers"*, 26 September 2018, press release (link); Token: Token, "*Token secures $16.5 million from Opera Tech Ventures* [BNP Paribas venture capital fund] *and additional strategic investors"*, 18 June 2019, press release (link); Tink: BNP Paribas, (translated) "*BNP Paribas and the Open Banking Tink platform announce a strategic partnership in Europe*", 23 January 2020, press release (link).

[304] Linxo: Crédit Agricole, (translated)" *The Crédit Agricole group takes a majority stake in Linxo Group "*, 28 January 2020, press release (link).

[305] Classification mark 901.

[306] Classification mark 3,611.

[307] Boursorama and Treezor: Société Générale, "*Universal registration document and financial report 2019*", 2020, pages 441 and 479 (link); Prisméa: Prismea, (translated)" *The startup of the Crédit du Nord Group* [wholly owned by Société Générale, see above-mentioned universal registration document, page 441] *is revolutionising the financial management of professionals »*, 11 December 2019, press release (link); Tagpay: Société Générale and Tagpay, (translated) "

The diversity of the FinTech in question

157. The information in the table above also shows that the trend of taking equity stakes involves a wide range of FinTech, in different ways.

158. Firstly, the FinTech in which equity stakes have been taken include both companies that offer B2C and B2B services. For example, Pumpkin offers a service aimed at young customers that makes it possible to (translated) "pay back your friends, do your accounts, spend your balance everywhere, free of charge abroad and get cashback all year round![308]", while PayPlug offers online and in-store collection solutions.

159. Secondly, the FinTech in question differentiate themselves by the wide range of services they offer. In some cases, the companies are active in niche markets. This is the case, for example, for LePotCommun, a company acquired by the group BPCE[309], which offers a funding service. In other cases, they are companies proposing a complete banking offering, such as the online bank Prisméa, (translated) "*the neo-bank for professionals reinvented by bankers*"[310].

160. Finally, the FinTech differentiate themselves by the degree to which the traditional banking actors take equity stakes in them (see below).

The diverse strategies of the banking groups

161. While all the major traditional French banking actors are part of the trend of taking equity stakes in the capital of FinTech, the diversity of the FinTech concerned reflects the diversity of the strategies of these actors. The equity stakes taken in FinTech by the banking groups can therefore fall under several strategies, as the ACPR observed, which classified them as follows (translated):

"-Defensive strategy of internalising the services offered by the FinTech, in order not to propose an inferior user experience to them or to new banking players (neo-banks, digital banks);

-Distribution strategy, with the acquisition aiming to create synergies for the distribution of products offered by the bank (savings products, insurance, etc.);

-Diversification strategy by conquering new markets (sectors previously overlooked by banks, etc.)"[311].

162. Table 5 above illustrates these different strategies. This heterogeneity is particularly evident in terms of the weighting in the capital of the FinTech concerned, or the services they offer.

TagPay, leading provider of Digital Banking System™, announces new fundraising of 2.5 million euros, including 2 million from the Société Générale group

", 19 July 2018, press release (link); Shine: Société Générale and Shine, (translated) "*Société Générale announces the acquisition of Shine, the neobank of entrepreneurs"*, 30 June 2020, press release (link).

[308] See website of Pumpkin (link).

[309] See BPCE, (translated)" *S-money acquires Fintech LePotCommun.fr to become the leader in community payment in France and in Europe*

", 21 October 2015, press release (link).

[310] See website of Prisméa (link).

[311] Classification mark 4,437.

163. Firstly, with regard to the size of the equity investment, some banking groups, including BPCE, Crédit Mutuel Arkéa, La Banque Postale and, to a lesser extent, Société Générale, have opted to own the entire capital of the FinTech concerned. Conversely, other banking groups, such as Banque Fédérative du Crédit Mutuel and BNP Paribas, have opted for a strategy of limited equity investments. For example, BNP Paribas owns less than 10% of Cashforce and Token, while eZyness and Monext are wholly owned by La Banque Postale and Crédit Mutuel Arkéa respectively.

164. Secondly, FinTech, which are wholly or partly owned by a banking group, are highly diverse in terms of the services they offer.

165. Some banking groups appear to have focused on taking equity stakes in FinTech that provide a broader range of services, with the aim of consolidating their global offering through innovation.

166. This is the case, for example, for the Société Générale group, which acquired the FinTech Treezor - a BaaS (Banking-as-a-Service) platform that provides banking services and is active in the field of APIs (for a definition, see below, paragraph 322) - with the aim of "*enhanc[ing] the Group's capabilities to deliver innovative services and products to its clients with increased time to market*"[312]. The group also acquired Boursorama, which proposes online personal financial management services, among other things.

167. This is also the case for La Banque Postale, which has acquired 100% of the capital of eZyness, an authorized electronic money institution that provides third-party collection and electronic money management services in order to "*support its digital transformation*"[313] in addition to completing its service offering.

168. Similarly, Crédit Mutuel Arkéa acquired an 80% stake in the FinTech 'Budget Insight' in 2019, stating in its press release that the expertise of this small company, which specialises in account aggregation and white label payment initiation services will enable the bank to "*offer customers a simple and seamless experience by integrating financial and extra-financial services into consumer usage*"[314].

169. Furthermore, some banking actors are expanding their portfolios by acquiring stakes in FinTech that offer upstream IT services dedicated to the needs of the payments sector.

170. This is the case, for example, for the BNP Paribas group, which has acquired stakes in the companies Tink and Token, two companies providing API development services, or the Société Générale group, which has acquired stakes in the capital of the company TagPay, which also provides API development services.

b) Various cooperation agreements and partnerships

171. The information compiled in the context of this opinion shows that there are various cooperation and partnership agreements between the various actors in the payments sector. These agreements, which cover a wide range of objectives, in particular to complement downstream offerings or reinforce upstream IT processes, are concluded between banking

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[312] Société Générale, "*Société Générale announces the acquisition of Treezor and accelerates its open innovation strategy*", 27 September 2018, press release (link).

[313] Classification mark 3,611 and 3,612.

[314] Crédit Mutuel Arkéa and Budget Insight, "*Crédit Mutuel Arkéa announces the acquisition of fintech Budget Insight*", 11 July 2019, press release (link).

groups and FinTech, but also between banking groups and Big Tech and, finally, between the banking groups themselves.

Agreements between banking groups and FinTech

172. The evolution of technologies and uses in the payments sector has prompted banks to enter into specific partnerships with FinTech in some cases. As the investigation for this opinion has shown, thanks to these partnerships, the banks want to take advantage of the agility and innovation of FinTech, while the latter companies can capitalise on the banks' reputation, distribution channels[315], customer base and regulatory expertise. We can cite the following examples in this regard.

173. La Banque Postale, via its subsidiary eZyness, which offers cash collection solutions, and the French company TagPay, an API developer, have recently joined forces. The press release announcing the deal stated that (translated) "*the partnership with French FinTech TagPay coupled with La Banque Postale's expertise will enable eZyness to deploy a state-of-the-art payment services offering with comprehensive APIs*"[316]. On the one hand, La Banque Postale stipulates that this partnership will enable it to meet the expectations of its business customers, who are particularly concerned "*by the increasing digitalisation of payments*" and, on the other hand, TagPay is pleased with this partnership which constitutes "*a very important step in its development*".

174. Furthermore, on the subject of a partnership with Paytweak in 2018, BNP Paribas Group said it was (translated) "*enhancing its digital offering to merchants*" by providing a solution that allows merchants to send payment requests via email and SMS, collect these payments remotely using a secure link, digitise their invoices and set up an automatic reminder system. The President of Paytweak said that he would benefit from this partnership, declaring that "*the challenge for FinTech is to reconcile with the banks because the latter will remain the major actors in the sector. We have everything to gain by working together*"[317].

175. Similarly, the group BPCE has integrated FinTech TransferWise's solution into its mobile banking apps, to enable (translated) "*the 15.1 million active individual customers of Banques Populaires et des Caisses d'Epargne to make money transfers to more than 60 countries at the best exchange rate*".

176. In addition to the examples given above, Table 6 below provides an overview of the partnerships between FinTech specialising in payment services and the banking groups interviewed during the investigation for this opinion.

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[315] OECD, "*Digital disruption in banking and its impact on competition*", 2020 (link).

[316] La Banque Postale and eZyness, (translated)"*eZyness, La Banque Postale's payment and electronic money institution, chooses TagPay to modernise its banking service offering*", 17 January 2019, press release (link).

[317] See the website of Paytweak (link); BNP Paribas, (translated)"*BNP Paribas and FinTech Paytweak sign a partnership to support the digitization of retailers in France* ", 14 February 2018, press release (link).

Table 6 - Examples of partnerships between FinTech and banking groups

Bank	FinTech	
	Entity	Services proposed (examples)
BNP Paribas[318]	Budget Insight	Account aggregation
	Paylead	Management services for customer loyalty programmes
	Paytweak	SMS, e-mail and chat payment services(see above, paragraph 174)
BPCE	Transferwise	Currency management (see above, paragraph 175)
Crédit Mutuel Arkéa[319]	Antelop	Secure payment solutions
	Bankable	Automated transaction management
	Qonto	Business account management
	Adyen	Payment platform
	Stripe	Payment infrastructure for e-commerce
La Banque Postale	Tagpay	API development (see paragraph 173 above)
Société Générale[320]	CDLK	Transactional data processing to develop new (payment) software solutions
	L'Addition	Collection solutions
	Cash Sentinel	Contract and payment solutions
Crédit Agricole[321]	Dejamobile	Peer-to-peer money transfer
	Paygreen	Solidarity-based online payment solution
	Paytop	Money and currency transfers

Source: Compilation by the Autorité de la concurrence based on the investigation file

Agreements between banking groups and Big Tech

177. One of the major developments in the payments industry in recent years has been the raft of agreements between banking groups and Big Tech, particularly in the United States. For example, we can highlight the partnership between Apple, Goldman Sachs and MasterCard in 2019 to launch a virtual or physical credit card, integrated with *Apple*

[318] Websites of Budget Insight (link), Paylead (link), Paytweak (link) and Lemonway (link).

[319] Website of Antelop (link); Bankable: Crédit Mutuel Arkéa and Bankable, (translated)"*Bankable signs a partnership with Arkea Banking Services to expand its range of banking solutions"*, 17 May 2017, press release (link); Qonto, Adyen and Stripe: classification mark 914, and websites of Qonto (link), Ayden (link) and Stripe (link) respectively.

[320] Website of CDLK Services (link); L'Addition: L'Addition and Vérifone, (translated)"*L'Addition and Verifone join forces with Société Générale to launch an offer dedicated to restaurants"*, 23 May 2018, press release (link); Website of Cashsentinel (link); Mooncard, Trustpair and iZettle: classification mark 1,600, and websites of Mooncard (link), Trustpair (link) and iZettle (link) respectively.

[321] Website of Dejamobile (link); Paygreen: classification mark 618, and website (link); Paytop: website (link), and Paytop, "*PayTop, partner of Crédit Agricole Payment Services"*, 26 July 2017, press release(link).

Wallet, that allows the holder to manage their spending (the *Apple Card*)[322]. Another example is the 2017 partnership between Amazon and JP Morgan Chase to offer a credit card to *Amazon Prime*[323] subscribers. Finally, an agreement was made in 2019 between Google and Citigroup to launch a current account that functions with *Google Pay*[324].

178. With regard to France, according to the elements of the file, there has not yet been any initiative of this type between the banking groups and Big Tech aimed at launching a new service or a new payment method.

179. However, it should be borne in mind that various contracts have been signed between these different actors and have enabled banking groups to offer their customers certain existing services developed by Big Tech.

180. For example, Apple and the six largest French banking groups have signed agreements under which these banking groups can offer *Apple Pay* to their customers who have an *iPhone* and who wish to use it to pay for their purchases[325].The investigation of the opinion revealed that access to *Apple Pay* was often desired, or even demanded, by bank customers who also had an *iPhone*, which gave various banks a strong incentive to enter into a partnership agreement with Apple, thereby helping them, in return for various contractual and financial obligations, to satisfy a generally affluent *iPhone* customer base.

181. This is also the case for services developed by other major digital actors, such as *Google Pay* or *Samsung Pay*, which several banking groups are now offering to their customers[326].

182. As a final example, several major banks, such as BNP Paribas and Natixis (a subsidiary of the BPCE group), offer the *Alipay* and *WeChat Pay* services developed respectively by the Chinese giants Alibaba and Tencent, primarily to enable French merchants to accept mobile payments from Chinese customers[327].

183. Besides the above-mentioned contracts, it is worth noting the agreements between banking groups and Big Tech which relate to certain IT services (cloud services), which are clearly not payment services, but which make it possible to store and manage payment data flows. This is the case, for example, with the agreement between IBM and BNP Paribas, which aims to develop a private cloud dedicated solely to banking activities (see paragraph 93 above).

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[322] Apple, "*Introducing Apple Card, a new kind of credit card created by Apple*", 25 March 2019, press release (link).

[323] CNN, "*Amazon launches Chase card for Prime members*", 11 January 2017 (link).

[324] Financial Times, "*Google-Citi deal could be future of banking*", 16 November 2019 (link).

[325] Les Echos, article of 28 January 2020, cited above.

[326] Classification marks 914, 915, 1,600, 1,667 and 3,734.

[327] Les Echos, article of 23 December 2019, cited above.

Agreements between banking groups

Agreements between French banking groups

184. Created in 2013, on the initiative of the banking groups BNP Paribas, La Banque Postale and Société Générale, subsequently joined by Crédit Mutuel Arkea and Crédit Agricole in 2015[328], the BPCE group in 2017[329], the Banque Fédérative du Crédit Mutuel in 2018[330] and, finally, some of their subsidiaries, bringing the number of banking brands involved to 15, Paylib offers contactless mobile payment services, remote payment services and finally peer-to-peer payment services[331].

185. Paylib offers its users the possibility of paying for their purchases online, with friends or in stores thanks to NFC technology, for owners of smartphones equipped with the *Android* operating system, whether private individuals or professionals[332].

186. Furthermore, the Banque Fédérative du Crédit Mutuel and BNP Paribas banking groups have joined forces to develop an innovative and secure mobile payment app, *Lyf Pay*. This app emerged from the merger of two online payment solutions, *Fivory*, supported by Banque Fédérative du Crédit Mutuel, Auchan, MasterCard, Oney and Total, and *Wa*, deployed by Carrefour and BNP Paribas.

187. Unlike *Paylib*, *Lyf Pay* is a digital wallet that works with any type of smartphone. It allows users to make peer-to-peer money transfers, to pay in store with their smartphone, thanks to QR code technology, or online, while enjoying the personalised benefits offered by partner merchants[333].

An agreement between European banking groups: the European Payments Initiative (EPI)

188. Sixteen major European banks announced the launch of the "European Payments Initiative" in 2020, which aims to create a pan-European payments system[334].

189. The aim of this project, which should be operational in 2022[335], is to design a payment infrastructure that would enable banks to be directly connected to each other, regardless of

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[328] Crédit Mutuel Arkea and Paylib, (translated)"*Crédit Mutuel Arkéa joins Paylib, the new simple and secure online payment service, on computer, smartphone or tablet*", 7 July 2014, press release (link); Crédit Agricole, (translated)"*The Crédit Agricole group joins Paylib, which is now opening up internationally thanks to an agreement with MasterCard*", 25 November 2014, press release (link).

[329] BPCE, (translated)"*The Banque Populaire application is enriched with mobile payment*", 11 May 2017, news (link).

[330] Crédit Mutuel, (translated)"*The Crédit Mutuel* [Banque Fédérative du Crédit Mutuel] *joins Paylib community*", 25 September 2018, press release (link).

[331] See website of Paylib (link).

[332] See website of Paylib (link).

[333] Website of Lyf Pay (link).

[334] See, for example, Crédit Agricole, "*EPI : The European Payments Initiative - L'initiative européenne des paiements"*, 2 July 2020, press release (link).

[335] European Commission, "*The European Commission welcomes the initiative by a group of 16 banks to launch a European payments initiative (EPI)*", 2 July 2020, declaration (link); Crédit Agricole, press release of 2 July 2020, cited above.

the medium or means of payment used[336]. The banks would no longer have to go through the MasterCard and Visa networks as is currently the case. According to the Governor of the Banque de France, this would be (translated) "*a major step forward in helping European banks meet the challenges posed by Big Tech*"[337].

190. Specifically, this initiative - supported by the ECB and the European Commission - aims to create a unified pan-European payment solution that could be used in place of national systems, would include an instant transfer system and a payment card associated with a digital wallet and would cover in-store, online, mobile, peer-to-peer payments as well as cash withdrawals[338].

191. In addition to wishing to preserve the independence of European banks, this project, which aims to facilitate the execution of all payment transactions at European level, could be of major importance for the payments sector and thus contribute to the trends outlined above.

c) Investments in research and development

192. In parallel to taking equity stakes in non-banking actors other than BigTech, and entering into agreements and partnerships, banking groups are investing in research and development to help integrate innovations into their service offering.

193. As such, some banking groups are creating incubators, bringing together start-ups in the payments sector, in order to accelerate their digital transition and expand their customer base[339].

194. This is the case, for example, with the BNP Paribas Group, which, through its FinTech accelerator Boost, "*supports start-ups that develop innovative solutions to the needs of BNP Paribas functions*". The solutions developed by non-banking actors who are members of the programme, other than Big Tech, are then tested before being integrated into the banking group's offering. The BNP Paribas group is also associated with the company Plug and Play within the Station F incubator, which supports this same type of actor in the context of, in the words of the deputy Chief Operating Officer of BNP Paribas, their "open innovation strategy", which will "*enable the acceleration of* [their] *digital transformation and the evolution of the client experience*"[340].

195. This is also the case for the other leading banking groups: Société Générale founded the FinTech incubator Swave and is its only banking partner at present[341]; Crédit Agricole founded the Village by CA, "*a cooperation space dedicated to young*

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[336] Le Monde, (translated)"*The recipe of European banks against Visa or Facebook*", 19 December 2019 (link); Les Echos, (translated)" *Sixteen European banks unite to free themselves from Visa and Mastercard* ", 2 July 2020 (link).

[337] VILLEROY DE GALHAU, F., Governor of the Banque de France and President of the Autorité de contrôle prudentiel et de résolution, (translated)"*Central bank digital currency and innovative payments*", 4 December 2019, speech (link).

[338] ECB, "*ECB welcomes initiative to launch new European payment solution*", 2 July 2020, press release (link); European Commission, declaration of 2 July 2020, cited above; Les Echos, article of 2 July 2020, cited above; Crédit Agricole, press release of 2 July 2020, cited above.

[339] Option Finance, (translated)"*Banks bet on start-ups"*, 10 July 2017 (link).

[340] BNP Paribas, "*FinTech/bank collaboration: BNP Paribas among the most active in Europe*", 31 July 2018, news (link).

[341] See website of Société Générale (link).

innovative companies"[342]; La Banque Postale launched its FinTech incubator platform58 *"to support and host start-ups developing solutions in the field of banking, insurance, technologies*[..][343]"; three companies of the BPCE group are partners in the incubator Euratechnologies[344]; Finally, Crédit Mutuel du Sud-Est, which is part of the Banque Fédérative du Crédit Mutuel group, was involved in the creation of H7, a start-up incubator that was inaugurated in Lyon on 1 April 2019[345].

196. In addition to this non-exhaustive list of external incubators, there are internal incubators such as the BIG Factory, the innovation incubator of Natixis, a subsidiary of the BPCE group, whose Spark programme is based on "*a co-design approach on all* [their] *products and services by involving the client throughout each stage of the design process*". The program is founded on three pillars: *"A client-centric approach, Priority on operational efficiency, and Spreading the digital culture*"[346].

197. Although these approaches are not specific to payment services, they reflect the desire of French banking groups to participate directly in the creation and development of new services in the payment sector and, according to some FinTech, may have contributed to their emergence in France[347].

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[342] Crédit Agricole, (translated)"*The Village by CA, the first cooperation space dedicated to young innovative companies*", 15 October 2014, press release (link).

[343] La Banque Postale, (translated)"*La Banque Postale group launches platform58, its FinTech incubator and AssurTech*", 24 January 2019, press release (link).

[344] BPCE, (translated)"*Three Groupe BPCE establishments, partners of the new Euratechnologies incubator*", 15 March 2019, news (link).

[345] Crédit Mutuel, (translated)"*Crédit Mutuel du Sud-Est is a partner of H7, a new startup incubator*", 1 April 2019, press release (link).

[346] Natixis, "*The BIG Factory - Natixis' innovation incubator*", 30 January 2017, news (link).

[347] See, for example, the assessment of one of the actors interviewed who "*believes that the establishment of specialised structures to host its FinTech, such as the Village By CA or SWAVE, have enabled the emergence of FinTech in France*", classification mark 689.

II. Competitive analysis in the light of the identified trends

198. In this section, unless otherwise stated, the term payment service does not refer to that referred to in Article L. 314-1 of the CMF, but to all payment initiation services and channels whose purpose is to enable or facilitate transactions between individuals and/or legal persons.

199. In the light of the trends identified in Part I, the *Autorité* will now analyse the products and services concerned by these trends (A), the barriers to entry and expansion in the payments sector (B) and the competitive advantages enjoyed by the main categories of actors in the sector (C). Finally, it notes some points of attention for the future (D).

A. THE PRODUCTS AND SERVICES IN QUESTION

200. Market definition is the first step in the competitive analysis of past trade practices or proposed mergers. In the first instance, market definition is a tool "*to identify and define the boundaries of competition between firms*"[348] in order to assess, as a second step, firstly whether one or more undertakings hold market power[349] and, secondly, whether there are any undesirable effects on competition resulting from a given behaviour or structural change in the market concerned.

201. The purpose of a sector-specific inquiry is neither to determine whether market behaviour is unlawful under Articles 101 and 102 TFEU and Articles L. 420-1 and L. 420-2 of the French Commercial Code (Code de commerce), nor to authorise or prohibit notified mergers, but rather to study the functioning of a sector from the perspective of competition law, with a particular focus on the impact that recent or ongoing developments may have on the overall competitive balance of the sector.

202. The analysis made in this opinion is therefore not intended to provide a detailed outline of the markets in the payments sector or to establish any links that may exist between these markets. Relevant markets are indeed defined only for the purposes of the competitive analysis of each case (examination of anticompetitive practices or merger control).

203. As explained in Part I, the payments sector is characterised by the rapid emergence of a myriad of new services based on new technologies, offered by non-bank actors. These trends, as well as the diversity, number and speed of emergence and evolution of these services, are having a significant impact on the competitive balance of the payments sector.

204. The following discussion aims, firstly, to address the implications that certain characteristics of the payments sector, in particular the two-sided and/or multi-sided nature of certain activities and the dynamic nature of the sector, may have for the analysis of the relevant markets that the *Autorité* may conduct in future cases (1), and secondly, to examine, from a general perspective, the nature of any relationship that may exist between the services of the new entrants and those of the traditional banking actors (2).

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[348] Commission Notice on the definition of the relevant market for the purposes of Community competition law, 97/C 372/03, OJ No C 372/5 of 9.12.1997, point 2.

[349] *Autorité de la concurrence* merger control guidelines, paragraph 511.

1. SPECIFIC CHARACTERISTICS OF MARKETS IN THE PAYMENTS SECTOR

a) Two-sided markets and multi-sided platforms

205. The payments sector has traditionally been characterised by two-sided or multi-sided activities. This is the case in particular for card payments, which are the leading means of payment in terms of number of transactions[350], and which some of the new entrants rely on to offer their services.

206. In its Decision No. 11-D-11 of 7 July 2011 relative to practices by the Groupement des Cartes Bancaires, the *Autorité* noted that the issuing and acquiring markets (translated), "*although distinct, operate in an interdependent manner. The bankcard market is, indeed, a two-sided market, with consumers holding a payment card on the one hand and merchants or other acceptors who accept this method of payment on the other*"[351].

> **Extract from Decision 11-D-11 of 7 July 2011 relative to practices by the Groupement des Cartes Bancaires (translated).**
>
> *"90. With regard to the payment function of the card, three markets can be defined:*
>
> - *an "upstream" market in which card payment systems compete to affiliate credit or payment institutions and provide them with services, such as network services for card transactions;*
> - *two "downstream" markets:*
>   - *an issuing market in which credit or payment institutions compete to distribute payment cards and provide certain associated services;*
>   - *an acquisition market in which credit or payment institutions compete to affiliate merchants and provide them with services, in particular collection services.*
>
> *91. These two markets, although distinct, operate interdependently. The bank card market is, indeed, a two-sided market, with consumers holding a payment card on the one hand and merchants or other acceptors who accept this method of payment on the other".*

207. In general, the two-sided nature of an economic activity raises the question of whether, and if so how, this characteristic should be taken into account in defining markets. The examination of a two-sided market can therefore be made by defining a single market with two inseparable sides, or by analysing the two separate sides as two related markets.

208. In its decision on the Groupement des cartes bancaires "CB" of 17 October 2007, the European Commission stated that the fact that there may be an interdependence between the activities of issuance and acquiring "*by no means signifies that issuance and acquiring form part of a single, wider market*"[352].

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[350] See Banque de France, December 2020, statistical publication, cited above, page 3.

[351] *Autorité de la concurrence* Decision 11-D-11, cited above, paragraph 90.

[352] European Commission decision of 17 October 2007, Groupement des cartes bancaires "CB", COMP/D1/38606, paragraph 180. This analysis was upheld by the review courts (see the judgment of the Court of Justice of 11 September 2014, Groupement des cartes bancaires (CB) v. European Commission, C-67/13 P and the judgment on referral of the General Court of 30 June 2016, Groupement des cartes bancaires "CB" v. European Commission, T-491/07 RENV).

209. More recently, in Case AT.40049 - Mastercard II, the Commission found that Mastercard acts as a two-sided platform[353] through which issuing and acquiring banks interact, but held that, for the purposes of the case in question, the relevant market was the one for the acquisition of card payments[354].

210. The two-sided nature of the markets may make it more complex for competition authorities to conduct the competitive analysis at the stage of defining the relevant markets, in particular because of the network externalities generated in this type of market. As a reminder, there are primarily two types of network externalities resulting from the two-sided nature of markets[355]. When the utility - i.e. the satisfaction - of the consumer of a networked service increases with the number of consumers of that service, the network externality is said to be *direct*. On the other hand, an indirect network externality occurs when the utility of the consumer of a networked service increases not directly through the increase in the number of consumers of the service, but indirectly through the effect of this increase on the offering of complementary services.

211. In the payments sector, the *Autorité* has observed that card payments are characterised by cross network externalities. Indeed (translated), "*the more merchants accept a bank card, the more valuable it is to the cardholder. Conversely, the larger the number of cardholders, the more important it appears for merchants to accept card payments*"[356].

212. With regard to taking the interaction between the two sides of the payment systems market into account, the General Court of the EU has clarified that (translated) "[...] *in the context of a two-sided system, one side of the system may constitute the relevant market for the purpose of analysing anticompetitive effects (in this case, the issuing market) and* [...] *the other side of the system may be considered as a separate related market (in this case, the acquiring market). Any interactions between the relevant market and a separate related market are a contextual element to be taken into account in analysing anticompetitive effects on the relevant market, in this case the issuing market*"[357].

213. Alongside card payment systems, multi-sided platforms not originating from banking groups, such as those operated by Facebook or Google, have been present in the payment sector for several years (see paragraphs 125 et seq.).

214. The European Commission has indicated that social networking services, which are used to connect people with shared personal or professional interests, can be considered multi-sided. For example, social networks provide various services to consumers on the one hand (often free of charge) and to companies on the other (online advertising and recruitment services

[353] As underlined by the OECD, the use of the term "multi-sided platform" as opposed to the more traditional "two-sided market" makes it possible in particular to distinguish between the company's product (the platform) and the relevant market(s) in which the platform operates (see OECD, "*Rethinking Antitrust Tools for Multi-Sided Platforms"*, 2018, page 10 (link)).

[354] European Commission decision of 29 April 2019, Mastercard II, AT.40049, paragraph 21.

[355] See MOTTA, M., *Competition Policy: Theory and Practice*, Cambridge University Press, 2004, page 82.

[356] See *Autorité de la concurrence* Decision 11-D-11, cited above, paragraph 91.

[357] Judgment of the Court of 30 June 2016, cited above, paragraph 82.

for example)[358]. The Commission also highlighted the two-sided nature of general search engines which link separate but interconnected requests from multiple user groups[359].

215. With regard to network externalities arising from multi-sided platforms, the Commission stated in particular, with regard to search engines, that for at least one group of users, the value obtained from the platform depends on the number of users from the other group. As such, it considered that general search services and online advertising search services are two sides of a general search platform. In this system, the level of advertising revenue that a general search engine can generate is linked to the number of users that search engine has: the more users of the general search engine, the more attractive the search advertising side of that platform is to advertisers[360].

216. The trends in the payments sector are leading to the emergence of platforms that are intrinsically two-sided or multi-sided (social networks, search engines, online sales sites), with multiple interconnected activities, and other two-sided or multi-sided markets specific to the payments sector (payment card networks in particular).

b) The dynamic nature of the sector

217. As explained in Part I, the payments sector is currently undergoing significant changes, resulting in the emergence of a wide range of innovative services, often integrated with each other or combined with pre-existing products or services.

218. The resulting dynamism makes the task of market definition even more complex, particularly in the context of the prospective analysis specific to merger control, due in particular to difficulties relating to a long-term and accurate identification of the scope of the services offered on the market, which partly determines their substitutability or complementarity to another service. The definition of markets in a dynamic sector such as the payments sector can therefore present some difficulties, due to the (translated) "*fluid and rapidly changing relationships of substitutability*" between products and services[361].

219. In contrast, a market definition that makes it possible to provide a snapshot of a market at a given point in time, which is compatible with a retrospective analysis of markets and suitable for sufficiently mature and stable markets, may not be fully suitable for dynamic sectors, as the changing nature of services may render any conclusions quickly obsolete[362].

220. The digitisation of the economy and the changing nature of the markets for products and services therefore pose new challenges for market definition, in particular with regard to

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[358] See in particular European Commission decision of 6 December 2016, Microsoft / LinkedIn, M.8124, paragraph 87 and footnote 76.

[359] See in particular the European Commission's decisions of 18 February 2010, Microsoft / Yahoo! Search Business, COMP/M.5727, paragraphs 47 and 100; 27 June 2017, Google Search (Shopping), AT.39740, paragraph 159; 18 July 2018, Google Android, AT.40099, paragraph 328. See also *Autorité de la concurrence* Opinion 18-A-03, cited above, and *Autorité de la concurrence* Decision 19-D-26 of 19 December 2019 regarding practices implemented in the sector of online search advertising, paragraphs 26 and 58.

[360] See the European Commission's decisions of 10 February 2010, 27 June 2017 and 18 July 2018, as well as the *Autorité de la concurrence* opinion 18-A-03, cited above.

[361] CREMER, J., et al, report of 2019, cited above, pages 46-47.

[362] According to the authors of the above-cited CREMER report (translated), "*market boundaries are not as clear in the digital world as in the old economy. They can evolve very rapidly*", see CREMER, J., et al, report of 2019, cited above, page 3.

identifying products and services that consumers consider interchangeable[363]. Traditional tools, such as the SSNIP test[364], which makes it possible to determine, on the basis of a hypothetical increase in the price of a product, whether consumers would switch to another product, may not be suitable for new business models, such as the provision of free services, for which other criteria are taken into account, such as the quality or innovative nature of the service offered or the size of the network to which the service gives access[365].

221. In order to take account of these trends in the digital economy, the development of platforms and the speed at which these trends are taking place, the European Commission has launched a public consultation to assess whether its 1997 Notice on the definition of relevant market should be amended[366].

222. The above-mentioned issues were specifically highlighted in relation to the payments sector. As such, in its study entitled "*Competition issues in the Area of Financial Technology (FinTech)*", the European Parliament underlined that "[…] *The first step to begin analysing anticompetitive behaviours, the product market definition, is a highly complex task due to a continuously evolving landscape where boundaries between services are blurring*"[367].

223. The European Commission's recent decision-making practice in the payments sector also reflects this observation. For example, in the area of merger control, the European Commission has left open the question of defining the relevant markets for mobile payments[368].

224. The following discussion is intended to provide a general analysis, based on the responses of the actors surveyed in the course of the investigation for this opinion, of the nature of the relationship between the payment services offered by the traditional banking actors and those offered by the new entrants.

2. THE COMPETITIVE RELATIONSHIP BETWEEN THE SERVICES OF TRADITIONAL BANKING ACTORS AND THOSE OF NEW ENTRANTS

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[363] VESTAGER, M., "*Defining markets in a new age*", 9 December 2019, speech (link).

[364] *Small but Significant Non-transitory Increase in Price*

[365] See for example the following articles on this subject: CLAIRE, J., DHONDT, N., "*Rapidly Changing Online Markets: Can Competition Enforcers Keep up*", Competition Law & Policy Debate, 2016, vol. 2, no. 2, pages 17 and 18-20; OCELLO, E., SJÖDIN, C., and SUBOČS, A, "*What's Up with Merger Control in the Digital Sector? Lessons from the Facebook/WhatsApp EU merger case*", European Commission, Competition merger brief, 2015, Issue 1/2015, page 3; PODSZUN, R., "*The Arbitrariness of Market Definition and an Evolutionary Concept of Markets*", The Antitrust Bulletin, 2016, Vol. 61(1), pages 121-132; KERBER, W., "*Competition, Innovation, and Competition Law: Dissecting the Interplay*", MAGKS Joint Discussion Paper Series in Economics, 2017, 42-2017, pages 4-6 and 12-14.

[366] See website of the European Commission (link).

[367] European Parliament, study of July 2018, cited above, page 59.

[368] See in particular the following European Commission decisions: decision of 4 December 2012, Telefónica UK/ Vodafone UK/ Everything Everywhere/ JV, COMP/M.6314; decision of 14 August 2013, Telefonica/ Caixabank/ Banco Santander / JV, COMP/M.6956 ; Decision of 11 October 2013, BNP Paribas Fortis/ Belgacom/ Belgian Mobile Wallet, COMP/M.6967 final; Decision of 19 July 2017, Bite / Tele2 / Telia Lietuva / JV, M.8251; and Decision of 21 November 2017, CVC / Blackstone / Paysafe, M.8640.

225. While this opinion identifies the broad categories of services offered by banks and non-bank actors, it does not attempt to assess the degree of substitutability that may exist between them, nor consequently to define the relevant markets.

226. In general, the *Autorité* notes that, regardless of the competitive relationship that may exist between the traditional services and the new payment services, the latter are part of the existing banking system and rely on historical banking infrastructures (a); and that the innovative nature of the services and the very dynamic nature of the payment sector (see above) continually call into question the nature of the competitive relationship that may exist between traditional services and new services (b).

a) New services dependent on existing banking infrastructure

227. On the whole, the investigation revealed that the new services proposed are dependent on the historical system of banking infrastructure into which they fit, whether they complement or compete with traditional banking services.

228. In particular, the BIS pointed out that the payment platforms of Big Tech, GAFA and BATX, and their users, rely to a significant extent on banking infrastructure. GAFA rely on third-party infrastructure, such as card payment systems, to offer their services. With regard to platforms that have developed their own infrastructure, such as *Alipay*, users are still dependent on banks, insofar as they need a bank account or a payment card to move money in and out of the network. Moreover, they need the banks in order to make settlements between banks, as they cannot participate in interbank payment systems for settlement in central bank money[369]. Besides this fact, when they present their activities, the major platforms insist on the fact that they are not payment service providers within the meaning of the CMF, portraying themselves instead as mere intermediaries. To date, no major platform has chosen to vertically integrate with a bank, or has developed an activity within a bank that places it under the regime of banking institutions.

229. Today, there are few or no truly autonomous actors with their own infrastructure: almost all the services offered by FinTech depend, to varying degrees, on the existing banking system, in particular retail payment systems, such as the CORE and SEPA multilateral clearing platforms, which ensure the execution of mass payment orders made by various means (direct debits, transfers, cheques, cards, etc.)[370]. In general, the access of FinTech to these platforms is through partnerships with some or all of the banks[371].

230. In addition, some actors indicate that this dependence may also stem from the regulatory requirements to tackle money laundering, which oblige FinTech to verify that their customers have a bank account. For example, one FinTech actor interviewed said that it is (translated) "*generally dependent on banks since a relationship cannot be established with the customer by a payment service without the customer having a pre-existing relationship with a bank*"[372].

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[369] BIS, report of June 2019, cited above, page 58.

[370] See, for example, classification marks 914, 1,305, 1,333 and 1,334. With regard to retail payment systems, see the website of the Banque de France (link).

[371] Classification mark 3,694.

[372] Classification mark 1,305.

231. FinTech are also dependent on banks for issuing IBANs[373], for the isolation of funds that pass through their platform (separate accounts managed by the banks)[374] and for bank card transactions in which the banks act as acquirers, in connection with card payment systems such as Visa, MasterCard or CB.[375] According to some actors, the access of FinTech to the network of the EIG Cartes Bancaires CB, the main card payment system in France, can only be indirect, as an affiliate member of a main member, namely one of the main French banks[376].

232. As a result, as one respondent pointed out "*the banks* […] *are still essential actors in the sector*"[377].

233. There is currently a trend towards fragmentation or sequencing, which results in the payment being "divided" into a range of successive transactions, some of which remain the preserve of banks, while others are performed by Big Tech or FinTech. As such, there are different positionings within the existing system, depending on their functional contribution to the various stages of the current payment system circuit (see diagram below, taken from a study by the BIS)[378]: the pre-transaction stage, which among other things includes acquisition activities and the supply of payment instruments, the authorisation stage, which incorporates technical services relating, for example, to the security of the transactions, the clearing and settlement stages (see paragraphs 70 et seq. above) and the post-transaction stage, which involves payment receipts being generated, among other things[379].

[373] Classification mark 1,305. The IBAN (International Bank Account Number) is the bank account identifier (see the website of Assurance Banque Epargne Info Service (link)).

[374] Classification marks 1,333, 1,334 and 1,457.

[375] Classification mark 1,305.

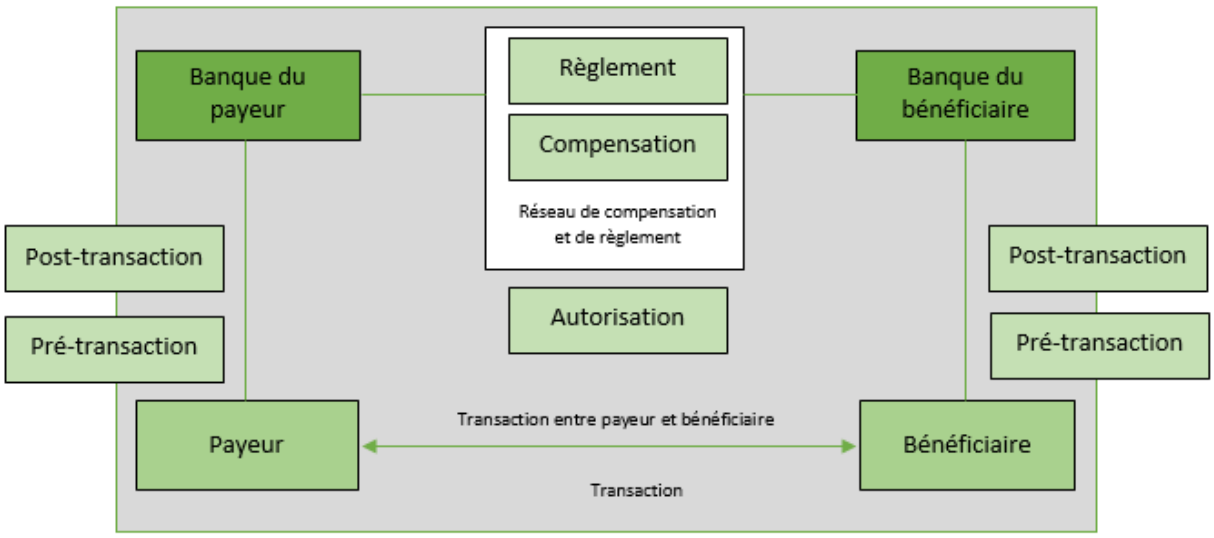
[376] Classification mark 3,692.

[377] Classification mark 625.

[378] Card payment system, 4-corner model, which is the most common.

[379] See in particular BIS, "*Non-banks in retail payments*", September 2014, report (link).

Figure 16 - Simplified representation of the payment circuit



Source: Diagram taken and adapted from the Bank for International Settlements report, page 10.

Payer's bank	Settlement Clearing Clearing and settlement network	Beneficiary's bank
Post-transaction Pre-transaction	Authorisation	
Payer	Transaction between payer and beneficiary Transaction	Beneficiary

234. According to this study, payment service providers can be divided into four broad categories[380]:

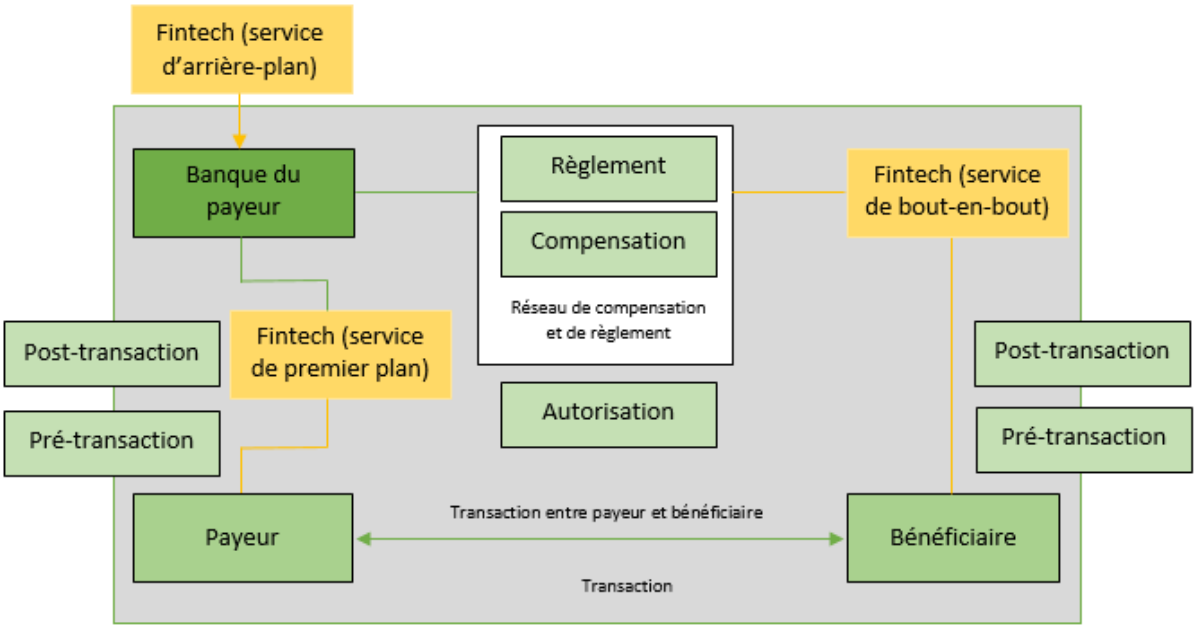
- 'front-end' service providers who are generally positioned between the end users (payer and/or beneficiary) and the clearing and settlement process. This category includes providers of mobile wallets, online electronic payments and payment service providers, etc.;
- 'back-end' service providers, which are specialised services offered to banks and which do not provide services directly to end-users. These include, for example, providers of IT, security or storage services and compliance and audit services provided in the context of tackling money laundering;
- retail payment infrastructure providers, specialising in settlement and clearing; and

[380] It should be noted that this technical classification does not correspond exactly to the one suggested by the Banque de France in paragraphs 110 et seq.

- 'end-to-end' services that offer a combination of services from the different categories listed above.

235. FinTech offer services at various stages of the payment system:

Figure 17 - Positioning of FinTech in the payment circuit



Source: Diagram, taken and adapted from the Bank for International Settlements report (page 10 et seq.) illustrating the different positionings of FinTech in a 4-corner system (see paragraph 76)[381]. In this illustration, which can be compared with Figure 16, the beneficiary's bank is substituted by a FinTech which offers a wide range of banking services (e.g. an online bank or a neo-bank).

FinTech (back-end service)		
Payer's bank	Settlement	FinTech (end-to-end service)
Fintech (front-end service)	Clearing	
Pre-transaction	Clearing and settlement network	Pre-transaction
Post-transaction	Authorisation	Post-transaction
Payer	Transaction between payer and beneficiary Transaction	Beneficiary

[381] Note that this diagram is intended to non-exhaustively illustrate the different stages of the payment system in which FinTech can be involved. Depending on the system, end-to-end service providers can access the clearing and settlement network either directly (as in this illustration) or indirectly, via a bank which is a member of the network.

b) The nature of the relationship between new and traditional services

Analysis of substitutability and/or complementarity

236. The responses to the questionnaires from the investigation services and the results of the public consultation launched by the *Autorité* in May 2020 show that traditional services and new services can be substitutable or complementary. The fact there is no complete alignment in the positions of the actors surveyed on this subject during the investigation is evidence of the difficulties, described in the previous section (see above, paragraphs 217 et seq.), in defining the markets in the payments sector.

237. This complexity is also highlighted by the BIS, which states that "*Some non-banks provide services to banks under outsourcing agreements or other types of cooperative arrangements. In other cases, banks and non-banks may compete with each other, or a non-bank may cooperate with other entities in some stages of the payment chain (eg for the clearing and settlement of transactions) while competing with other non-banks and banks at other stages (eg in providing payment services to end users). Competition might be more evident when the non-bank provides services similar to those offered by banks, or less apparent when the payment service supplied by the non-bank has no equivalent in the range of services offered by banks. Even in this case, the new services are usually close substitutes for more traditional ones, so that some degree of competition between new and traditional services arises, given that both serve the same purpose of transferring money*"[382].

238. Most of the actors surveyed, across all categories, believe that there are services offered by FinTech that are comparable to, or even substitutable for, those offered by the traditional banking actors, primarily within two broad categories of services covered by Article L. 314-1 of the CMF: (i) the execution of transactions associated with a payment account and a credit facility (direct debits, payment card transactions and credit transfers); and (ii) the issuance of payment instruments and the acquisition of payment transactions.

239. As such, for example, among the FinTech surveyed, Spendesk believes that its services, which allow its customers to make certain bank card payments, reimburse expenses, and pay invoices by wire transfer, can substitute the services offered by banks[383]. This is also the case for IbanFirst, which provides direct debit and credit transfer execution services for SMEs[384], Libeo, which offers SMEs and VSEs a solution for centralising their suppliers' invoices and paying them via a dedicated platform[385], and Afone Paiement, which provides credit card collection services in sales outlets and online, and services to receive and execute credit transfers and direct debit notices[386]. Lydia believes that several of the services it offers are substitutable for those of banks (e.g. management of payment accounts or initiation of payment transactions such as instant transfers)[387].

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[382] BIS, report of September 2014, cited above, page 8.

[383] Classification marks 1,332 and 1,334. See also classification mark 1,490.

[384] Classification mark 754.

[385] Classification mark 1,394.

[386] See in particular classification marks 3,690 and 3,692.

[387] Classification mark 1,305. See also classification mark 1,350.

240. Furthermore, some FinTech, including Lydia, Qonto and Mooncard[388], offer payment card issuing services, which are services traditionally offered by the banking groups.

241. Cash and cheque deposit and withdrawal services, either over the counter or through automated teller machines (hereinafter "ATMs"), are still primarily the preserve of traditional banks. However, the services of some non-bank players, such as Nickel, which allows cash withdrawals at ATMs but also deposits at tobacconists, or Veracash, which offers cash withdrawals at ATMs, appear to be at least partially substitutable for banking services[389].

242. To a lesser extent, the international money transfer services offered by some FinTech appear to be substitutable, in their function, for those of certain banks, but the services offered by FinTech and those offered by banks could differ significantly in the terms and conditions of the services offered[390] and in the prices charged by each respectively[391], factors that are usually decisive in the analysis of the substitutability of products or services that a competition authority might conduct using various tools, including the SSNIP test.

243. Among the new services created by PSD2, account information services, which provide users with a consolidated overview of their accounts at different banks, as well as the related analysis and advisory tools, are seen as generally complementary to traditional banking services as they allow (translated) "*individuals to bring together all their bank accounts on a single tool*"[392], a service that banks did not initially offer[393]. However, for some, the advice/analysis part of the service could be a substitute for the personal finance management services offered by banks[394].

244. Some respondents see payment initiation services as complementary to banking services, insofar as it is necessary to have at least one bank account in order to use these services[395]. On the contrary, others believe that they could eventually become an alternative to certain traditional services such as payment by card[396].

245. With regard more specifically to the services offered by online banks, almost all respondents consider that online banks, which are for the most part a digitised version of bricks-and-mortar banks and are therefore actors which resemble banks in terms of both their model and the services they offer, are direct competitors of traditional banks for most payment activities[397].

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[388] Classification marks 902 and 1,305.

[389] Classification mark 767.

[390] See classification mark 1705 (translated): "*the banking groups do not offer international money transfers with cash withdrawal for the beneficiary. These transfers are generally made to countries with little or no banking facilities, which makes this service non-competitive with traditional bank transfer services*".

[391] The prices offered by FinTech appear to be more advantageous than those of traditional banks. See Xerfi, study of February 2017, cited above, page 53.

[392] Classification mark 1,305. See also, for example, classification mark 4,024.

[393] However, it would appear that this situation has changed, with some banks, including Société Générale, now offering this type of service. See website of Société Générale (link).

[394] See, for example, classification mark 1,382.

[395] Classification mark 754.

[396] Classification mark 4,024.

[397] See for example classification marks 3,715, 3,734 and 3,642.

246. However, there is some evidence that online banks are not perceived by consumers as being a perfect substitute for traditional banks[398]. Indeed, some services offered by traditional banks, such as the possibility of visiting a branch or meeting an advisor, are not offered by online banks and may constitute differentiating factors for consumers. Online banks also need to rely on traditional banking networks in order to offer certain services, including cheque and cash deposit and withdrawal activities[399].

247. As such, in recent years, despite the proximity of the services offered by traditional banks and those offered by online banks, the latter have been used more by consumers who already have a bank[400], to complement traditional banking services rather than substitute them.

248. Finally, with regard to the services offered by Big Tech, their services are based on the banking infrastructures listed above. This is the case for mobile payment services such as *Apple Pay*, *Google Pay* or *Samsung Pay*, which are backed by payment cards and which depend on partnerships with banks in order to be proposed to users (see above, paragraphs 180 et seq.). In addition to these partnerships, contactless mobile payment is also offered through solutions developed by the banks themselves[401].

249. As previously stated, most of the Big Tech companies have insisted in the context of the investigation of this opinion that, despite the names of the services they offer (*Apple Pay*, *Google Pay*, *Amazon Pay*), they do not offer payment services in the strict sense of the term. Apple does not consider itself to be an actor in the payments sector, but describes itself as a supplier of technology to actors in the sector. All of them consider that the services they offer to their users are part of their respective "ecosystem".

250. It is interesting to note that these companies offer new services, relating to payments, to a clientele that is familiar with their ecosystem, and therefore inclined to adopt these new services. For example, the *iPhone* user for Apple products, the Market Place customers and sellers for Amazon, the Android operating system user for Google. According to the ACPR, their approach is to (translated) "*complement the core business offering with financial solutions that do not need to be innovative to 'add value'*"[402].

251. As such, we can observe partly different strategies on the part of FinTech and Big Tech. In particular, FinTech have developed new services that were not available among the traditional actors (e.g. account aggregators or financial management optimisation tools). On the other hand, Big Tech have so far focused on creating a "payment interface" offered to users in their ecosystem, by relying on banking institutions to carry out the payment itself and its back-office processing. This approach gives them various significant advantages:

- it allows them to broaden the range of services offered to customers in their ecosystem, thereby enhancing the benefits of joining it;
- the creation of such an interface allows them to acquire a strong position in certain fast-growing segments, such as contactless payment via smartphone for *Apple Pay*, as *Alipay* has succeeded in doing in Asia;

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[398] In this regard, see MAUDE, J., representative of Starling Bank, speech at the OECD Competition Day of 26 February 2020 (link) (from the 61st minute).

[399] See ACPR, study on business models of October 2018, cited above, page 9.

[400] On this subject, see ACPR, study on business models of October 2018, cited above, page 4.

[401] In particular via Paylib (NFC technology) but also actors such as Lyf Pay, a subsidiary of the Banque Fédérative du Crédit Mutuel group (QR code technology), classification mark 3,714.

[402] Classification mark 4,438.

- new sources of revenue from payment commissions and other benefits granted by banks to enable them to offer their customers "...pay" services;
- access to payment data, and the possibility, where appropriate, of using this data individually or in connection with other data held by the platforms.

252. This strategy therefore allows Big Tech to obtain considerable leverage and potentially substantial revenues, without having to bear the legal and financial burden associated with providing payment services or interbank clearing operations. It entails a risk for banks, namely that of being relegated to the rank of a simple "technical service provider", as the user has the perception that it is the platform that "operates" or carries out the payment, since it is the platform that is the front office and it is through it that the payment is initiated.

Rapidly evolving relationships

253. The evidence in the file, and in particular the responses of the various actors to the questionnaires of the investigation services, illustrates the relatively unstable nature of the competitive relationship between the traditional services and the new services.

254. As noted above, most FinTech entered niche segments of the sector[403] by using innovation to complement or enhance the existing banking offering with services that did not exist or for which there was unmet demand. As such, most of the innovative services offered by FinTech are generally not offered by banks at the time they are launched. Although, from this perspective, the new services appear to be generally complementary to traditional services when they are introduced to the market, the nature of their relationship can change rapidly, given their extremely rapid evolution in this sector.

255. As such, on the one hand, the banking groups, under pressure from the emergence of a new innovative service, may develop or acquire an equivalent service with a view to integrating it into their offering, in particular "*so as not to be put at risk by their most innovation-aware customers*"[404], who might turn to banking groups which already offer the service in question. Banks are also forging partnerships with FinTech or Big Tech, which allows them to offer their customers services enhanced with new features[405]. In this set-up, the innovative services of FinTech are therefore instigating competition between banking groups by encouraging them to improve their offering, so as not to lose their customers[406].

256. On the other hand, in some cases, FinTech that have entered the sector by meeting a demand which is not covered by banks can, if they reach a sufficient level of development, diversify their original business and propose a more complete offering, sometimes comparable to the services offered by traditional banks, provided they obtain the necessary authorisations, thereby becoming banks themselves.

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[403] For example, one actor interviewed said (translated): "*We have noticed that banking groups are efficient in handling foreign exchange transactions for their private and corporate clients, but are much less efficient in these tasks for their 'less important' clients. Our services are therefore aimed at these 'less important' clients, so that they too can have easy access to advantageous rates and to an adviser with genuine expertise in foreign exchange*" (classification mark 754).

[404] Classification mark 3,993.

[405] For example, one actor interviewed said (translated): "*a FinTech company provides us with an SDK* [software development kit] *enabling us to make contactless payments with the payment application offering the Paylib service in-stores on Android smartphones*" (classification mark 914).

[406] Classification mark 4,024.

257. As one actor put it, "*FinTech generally offer specialised vertical offerings that take a small share of the value captured by the traditional banking actors. In the first instance they complement the offerings (such as mobile payment) but very quickly they compete with the banking actors by moving up the value chain and raising more funds until they can offer credit to a large volume of customers: this is the effect of the "freemium" commercial strategy (free at first and then paying) which is shaking up the established habits in Europe*"[407].

258. In both cases, the services initially proposed may be integrated with other services and thus disappear from the market as stand-alone services. They can also be grafted on to a pre-existing banking service to become ancillary to it. For example, the offering proposed to companies by the FinTech Spendesk is a payment account management and card payment service comparable to the bank card services offered by banks. However, Spendesk believes that this service goes further than the banks' offering, as it comes with an expense management platform, a service that did not exist in the traditional banking offering[408].

259. There is therefore a high level of permeability and connections between the services offered by banks on the one hand, and FinTech and Big Tech on the other, whether they are traditional or new. The rapid evolution of the sector makes it more difficult to identify the precise scope of the services offered and therefore to analyse the relationship of substitutability or complementarity that may exist between them.

B. BARRIERS TO ENTRY AND EXPANSION

260. The information compiled in the context of this opinion suggests that there are barriers to entry and expansion in the payments sector, which are regulatory in origin (1), economic in origin (2) and, finally, linked to access to certain infrastructures and data (3).

1. REGULATORY BARRIERS

a) A highly regulated sector

261. The banking sector is characterised by extensive regulation that pursues several general interest objectives: on the one hand, objectives related to the smooth functioning of the financial system (i.e. security of transactions and stability of the monetary and financial system), and, on the other hand, objectives that pertain to other considerations in the general interest, such as the fight against organised crime and threats to national security (i.e. anti-money laundering and counter-terrorist financing, hereinafter referred to as "AML/CFT").

262. Most of the actors interviewed highlighted the considerable costs of compliance with these regulations (complexity, time, financial requirements), particularly in terms of obtaining authorisation to operate in the payments sector[409].

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[407] Classification mark 4,044.

[408] Classification mark 1,333. See also classification mark 625.

[409] Classification marks 1,367, 1,398 and 2,945.

263. Moreover, as actors in the sector assert, this regulation goes hand in hand with strict supervision and control, which entails significant costs.

264. In general, permanent compliance with regulatory and prudential requirements entails significant capital costs (for credit institutions), in addition to the costs of mobilising substantial resources, particularly in the area of IT (investments in technology, equipment, human resources, etc.)[410].

265. On the first point, one of the leading French banking actors summarised the situation as follows (translated): "*for credit institutions, the regulatory requirements represent substantial investments, often without any counterparty, which lead to trade-offs in commercial projects. In this respect, regulatory constraints of all kinds, which provide a certain security for the banking world, are a brake on research, development and innovation. For example, the requirements of Basel II or Basel III*[411] *and certain ratios that must be respected, as well as the anti-money laundering and counter terrorist financing rules, or the various different central reporting requirements have a specific impact on the flexibility of banks and the capital that has to be committed*"[412].

266. On the second point, another major French banking actor stated (translated): "*Aside from all the barriers to entry that can be identified, the barriers to the expansion of payment services for FinTech primarily lie in their ability to maintain their operational capacity with the requirement, in particular, to be in permanent compliance with the regulations (regular audits) as well as the ability to retain their human resources and to take on new ones with expertise in new technologies*"[413].

267. It is interesting to note that while the costs mentioned above may represent a barrier to entry or expansion for potential new entrants wishing to operate as a credit institution, who are confronted with the strictest constraints, they may also constitute, in the eyes of traditional banking actors, "*a brake on research, development and innovation*" and therefore a barrier to expansion, or even, when it comes to new services, a barrier to entry.

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[410] See for example classification marks 625 and 2,945.

[411] International agreements to reinforce the robustness of the banking sector, concluded in 2010. See Banque de France, *"L'accord de Bâle III",* 2 October 2020, Briefing (link).

[412] Classification mark 1,569.

[413] Classification mark 1,658.

b) Differentiated regulations according to the services offered, or even not applicable to certain actors in the sector

268. To date[414], there are 11 different types of approvals, depending on the activity carried out[415], issued by the ACPR (translated):

"*Banks and other credit institutions*

Finance companies, which cannot receive repayable funds from the public

Investment companies (note: portfolio management companies are approved by the Autorité des marchés financiers, click here)

Payment institutions

Institutions providing account information services

Electronic money institutions

Bureaux de change

Companies that benefit from an exemption from approval

Microfinance institutions

Financial companies, which have one or more financial companies as subsidiaries, but do not perform financial activities themselves

Firms authorised to carry out payment services on behalf of, and under the responsibility of, credit or payment institutions"[416].

269. The applicable regulations therefore allow the actors to carry on their activity by obtaining, where appropriate, an authorisation whereby the constraints are precisely adapted to the risks associated with the activity performed (e.g. account information service providers *vs.* credit institutions). These requirements have been redefined since the entry into force of the so-called PSD1 of 2007 and PSD2 of 2015 (see above, paragraphs 8 to 14). By way of illustration, the most stringent capital requirements apply only to credit institutions. This facilitates the entry of new actors in the other categories of financial services.

270. This observation, shared by most of the actors interviewed, whether they are major banking groups or FinTech, is summarised by one of the latter as follows (translated): "*the successive European directives in favour of the creation of payment and electronic money institutions, respectively PSD (and PSD2) and EMD, have enabled the emergence of innovative FinTech. By allowing simple, low-risk financial services to be operated more lightly than before, these regulations have opened up huge opportunities for innovation.*

Similarly, the PSD2, by adopting an open banking rationale, is opening up excellent opportunities for the development of innovative services based on banking data (instant credit, personalised financial coaching, etc.)"[417].

271. As such, some FinTech are choosing to outsource the execution of certain transactions which require authorisation, to authorised providers, rather than performing them themselves,

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[414] 12 November 2020.

[415] See the register of financial firms (REGAFI), which lists all the companies established in France whose activity requires authorisation from the ACPR (link).

[416] See website of Regafi (link).

[417] Classification mark 1,335.

because of the need to obtain authorisation, which highlights the deterrent nature of authorisation. This point was highlighted by the ACPR in its most recent study on neo-banks[418].

272. As an illustration, one of the FinTech interviewed summarised the strategic choice it faced as follows (translated): "*By relying on regulated actors (electronic money institutions), it was possible for us to launch a SaaS platform business while distributing payment services, without encountering significant barriers to entry*.

The alternative would have been to obtain authorisation to be a payment institution [which] would have been very time-consuming and capital-intensive, which could have constituted a barrier to entry, which is why we preferred not to take this risk"[419].

273. The following case illustrates an alternative strategy, that of a payment service provider, registered with the ACPR, mandated by two authorised companies to carry out certain transactions that do not require authorisation: "*for payment account management : (...) [an] electronic money issuer (...). For the provision of payment initiation and account information services: (...) [a] payment institution approved by the ACPR*"[420].

274. Moreover, some activities are simply outside the scope of the CMF and are therefore not subject to supervision.

275. This can be the case, for example, for purely technical services. One respondent stated that (translated) "*we are a technical firm and do not handle third-party collections. As such, we didn't have any regulatory or financial barriers. We connect to the PSPs of our merchants, who in turn process the transactions in the bank*"[421].

276. This may also be the case for services that are similar to payment services. For example, *Apple Pay*, which allows *iPhone* owners to make contactless and remote payments with their iPhone, does not require authorisation. In practice, it is the smartphone, and no longer the card, that *iPhone* owners and *Apple Pay* users use as a physical medium to pay for transactions at merchants that accept this solution.

277. On the basis of the evidence gathered for the opinion, it appears that the actors do not consider the type of service offered by *Apple Pay* to be a payment service in the strict sense. The development of this type of service raises questions, however, since the user may have the impression that Apple is the payment operator, and that using this service involves the intervention of the platform during the payment transaction.

[418] ACPR, study on the profitability of neo-banks of June 2020, cited above, pages 12-13.

[419] Classification mark 1,335.

[420] Classification mark 1,305.

[421] Classification mark 1,367.

c) A European regulation that favours "forum shopping" according to the supervisory means and practices of the Member States' regulators

278. Introduced in 1993 by Directive 89/646/EEC[422], the European passport allows any company approved by a Member State to operate throughout the European Union, subject to certain formalities[423]. This reduces the administrative burden on the companies concerned and, according to the ACPR (translated), "*is a means of encouraging competition between [payment and electronic money] institutions*"[424].

279. However, Member States have some leeway as regards the transposition of the directives concerned and their application, which may create distortions between them. Many actors highlight the relatively restrictive nature of the French regulations as they have been applied in France, compared to some other Member States[425].

280. While these actors generally understand the general importance of stringent regulation, they express concern that stricter prudential[426] or identity verification requirements (e.g. for account opening) related to AML/CFT[427] could have the effect of penalising companies based in France.

281. Finally, beyond the possible differences in the transposition of the directive in question between Member States, the ACPR indicates that (translated) "*the application of harmonised European regulations is all the more necessary because it may ultimately affect the conditions of competition between actors*"[428].

282. On this point, several possibilities for improvement are being studied. Among the avenues being explored by the European Banking Authority, the ACPR cites (translated): "*an improvement of the EU and national passport registers so that consumers can identify the actors that are actually authorised to operate on the national territory*" and "*the need to converge certain supervisory practices to ensure a level playing field*"[429].

2. ECONOMIC BARRIERS

283. Based on the evidence in the file, the main economic barriers to entry or expansion identified in the payments sector are the following: the existence of network externalities (a) and the existence of learning effects and economies of scale (b)[430].

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[422] Council Directive 89/646/EEC of 15 December 1989 on the coordination of laws, regulations and administrative provisions relating to the taking up and pursuit of the business of credit institutions and amending Directive 77/780/EEC, OJ L 386, 30.12.1989, pages 1-13.

[423] See the website of the ACPR (link).

[424] Classification mark 4,445.

[425] Classification mark 625, 1,458 and 2,945.

[426] Classification marks 616, 625, 689, 690, 713, 769, 1,351-1,352 and 2,959.

[427] ACPR, study on the profitability of neo-banks of June 2020, cited above, pages 14-15.

[428] Classification mark 4,445.

[429] Classification mark 4,445.

[430] See FUMAGALLI, C., MOTTA, M., and CALCAGNO, C., *Exclusionary Practices - The Economics of Monopolisation and Abuse of Dominance*, Cambridge University Press, 2018, page 3, footnote page 5.

a) The existence of network externalities, which are particularly powerful in certain two-sided markets

284. As discussed above (paragraph 210), the greater the number of users of a payment service, the more attractive it is to a given individual, which is a direct network externality. This is the case, for example, with peer-to-peer payment services and online funding.

285. Indirect network externalities characterise so-called two-sided markets (or multi-sided markets, if there are more than two sides), i.e. when the service offered, based on the connection of two (or more) different groups of consumers, derives its value, in the eyes of the latter, from both the quantity and the characteristics of the participants present *on each side*.

286. The bank card is a prime example (see above, paragraphs 206-209): this card allows the holder (first side) to pay for goods and services at all merchants that accept the cards (second side). The more cardholders there are, the more attractive it is for a merchant to accept them; conversely, the more merchants that accept cards, the more attractive it is for an end consumer to hold a card. Beyond bank cards, this is also the case for cards used for certain special payment vouchers, such as meal vouchers[431].

287. Many of the payment services created by FinTech are also two-sided, especially when it comes to services intended for the final consumer. This is the case in particular for payment initiation services as defined by PSD2 (see paragraph 10 above).

288. According to the terms of the above-mentioned directive, payment initiation services "*play a part in e-commerce payments by establishing a software bridge between the website of the merchant and the online banking platform of the payer's account servicing payment service provider in order to initiate internet payments on the basis of a credit transfer*"[432]: on one side of the two-sided market, consumers use the medium (e.g. an app on a smartphone) that allows them to initiate the payment; on the other side, merchants accept that payment service. The consumers want to be on the network where they can connect with the maximum number of merchants. Conversely, the more consumers who are members, the more merchants will accept this service.

289. More generally, services that aim to make payment transactions easier, more ergonomic or even faster constitute an interface between customers who wish to pay on the one hand (i.e. consumers) and, on the other hand, customers who accept payment (i.e. merchants).

290. With regard to account information services, it can be observed that they can act as an interface between the users of their services on the one hand and companies offering banking, financial or insurance products on the other. By way of example, in addition to management advice and the possibility of making transfers, the aggregator Bankin' offers users advice on renegotiating their credit insurance[433].

291. To the extent that a company active in the payments sector needs to build up and expand its network on each side quickly in order to achieve critical mass and be sufficiently attractive,

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[431] See respectively *Autorité de la concurrence* Opinion 11-D-11, cited above, and *Autorité de la concurrence* Decision 19-D-25 of 17 December 2019 regarding practices implemented in the meal vouchers sector.

[432] Directive (EU) 2015/2366 of the European Parliament and of the Council of 25 November 2015, cited above,
recital 27.

[433] See website of Bankin' (link).

so as to avoid failure[434], the two-sided nature of the business can therefore be an inherent barrier to expansion in a market. This is largely corroborated by the information in the file, in particular submitted by the FinTech, which highlight the difficulty of increasing their scale of operations and the need to contract with established actors, but also by the [435]observation of the ACPR that (translated) "*the viability of neo-banks depends crucially on their ability to acquire new customers and retain them*"[436].

292. On this point, many new services or solutions use existing payment infrastructures (i.e. card payment systems, credit transfer systems, etc.), which allows them to reduce the cost of building their network. For example, account information service providers use information on transactions made by their customers via existing payment systems and held by the bank account operator(s).

293. In any event, while the two-sided nature of payment services may constitute a barrier to entry, it should be noted that this barrier has already been overcome, as evidenced by the success of certain FinTech[437], particularly French ones, and the emergence and development of new banking players such as Nickel, N26 and Revolut. On the other hand, the as yet marginal position of the new players compared with that of the traditional banks[438], and their financial fragility, as noted by the ACPR, suggest that this assertion should be qualified in terms of barriers to expansion. The latter states in effect that (translated) "*while the emergence of neo-banks may have been seen as a harbinger of major upheavals in the banking and financial sector, their difficulty in generating positive net results since being set up may, on the contrary, raise questions about their viability*"[439].

294. Finally, with regard to network externalities, it should be noted that the unrivalled size of the networks of the large digital players makes them difficult to compete with, especially given the tendency of users to *single-home*, i.e. to use only one operator for a given type of service (e.g. internet searches via the search engine Google, internet purchases via Amazon marketplace) for reasons of efficiency (e.g. avoiding duplicating actions such as creating accounts and entering personal information).

295. These network externalities are further amplified by the interwoven nature of the range of services offered by the major digital players, as each of these services further enhances the attractiveness of their platform and, conversely, any new service joining the platform has access to a particularly extensive network. These effects were highlighted by the experts commissioned by the European Commission (Crémer, de Montjoye and Schweitzer) in their

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[434] EVANS, D.S., and SCHMALENSEE, R., *Matchmakers: The New Economics of Multisided Platform*s, Harvard University Press, 2016, chap. 5, *Ignite or fizzle*, pages 70-83.

[435] See for example classification marks 625, 644, 712 and 1,306.

[436] ACPR, study on the profitability of neo-banks of June 2020, cited above, page 21.

[437] See, for example, for an overview of the fundraising activities realised, which testify to the confidence of investors, the website of Planet-Fintech (link), or on the commercial growth of certain neobanks , Les Echos Start, (translated)*"Neobanks are booming and on the way to becoming "real banks""* , 30 January 2020 (link).

[438] In 2019, the total number of active customers of neo-banks stood at 3.5 million, compared to the tens of millions of the largest French banking groups. ACPR, study on the profitability of neo-banks of June 2020, cited above, page 7.

[439] ACPR, study on the profitability of neo-banks of June 2020, cited above, page 18.

report "*Competition Policy for the digital era*"[440]. In this regard, the study underlined the competitive advantages of digital companies (see below, paragraphs 350-365).

b) The existence of learning effects and economies of scale

The existence of learning effects

296. The evidence in the file highlights the importance of the reputation that companies in the sector need to develop and then maintain in order to make their business a success, especially since the French market is characterised, as observed by the ACPR, by (translated) "*the presence of long-established banks with a firm foothold, offering some of the most secure payment solutions available worldwide*"[441]. For the new entrants, it is a question of gaining the confidence of potential customers, both in terms of the interest of the service proposed and the security with which it is provided.

297. Building a reputation entails significant costs for new businesses in the sector, such as the (usually sunk) investments to raise awareness and reinforce their image. One of the actors interviewed stated that (translated) "*the main challenge has been to make* [our] *services known and to build strong relationships with other providers in France*"[442]. Another actor stated that new entrants have to "*implement costly marketing actions in an increasingly competitive environment*"[443]. The same applies to the security of the services offered, all the more so since all new entrants are largely, if not exclusively, dependent on digital technologies[444].

298. As such, we also observe that, rather than keeping all support functions in-house, many FinTech rely on specialist IT security providers (i.e. cloud providers, see paragraph 91 above), and many outsource certain payment-related operations to authorised providers to have them executed[445], or they stress the need to be backed by a banking group in order to grow[446].

299. The above shows that the incumbent actors have a clear advantage: although they of course need to maintain their reputation, they do not have to build it (see below, paragraphs 338 and 339).

The existence of economies of scale

300. The traditional banking industry is also characterised by significant fixed costs, among other things due to setting up a physical network of branches, and acquiring, managing and developing vast IT equipment and complex IT programmes. These investments are necessary to secure the network and ensure the speed of data flows, which is crucial for transactions and financial operations.

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[440] CREMER, J., et al, report of 2019, cited above.

[441] Classification mark 4,438.

[442] Classification mark 3,798.

[443] See classification mark 644.

[444] Classification marks 643, 1,335, 1,491 and 4,112.

[445] Classification marks 643, 1,335, 1,491, 3,798 and 4,112.

[446] Classification mark 4,122.

301. As BNP Paribas (the largest banking group in the European Union since Brexit) summarises (translated), "*credit institutions generally have complex IT infrastructures and sophisticated organisations based on networks of hundreds of branches*"[447].

302. The banking model has been and still is based on making large-scale investments to create, maintain and develop an extensive, dense and secure distribution network. This leads to very high costs and, in turn, economies of scale as the customer base expands. According to the ACPR (translated), "*reliance on a pre-existing physical network generally reduces customer acquisition and distribution costs*" *(emphasis added)*[448]. As such, in order to enter the market, various new players have relied on an existing distribution network of physical branches, which happen to be dense and capillary. This is the case, for example, with Nickel, Ma French Bank and Orange Bank, which piggyback networks of tobacconists, post offices and Orange stores, respectively. By way of illustration, Nickel's network in metropolitan France is made up of approximately 5,700 sales outlets[449], which is more than three times the number of BNP Paribas' network (i.e. nearly 1,800)[450].

303. That being said, several recent developments actually allow new players, FinTech in particular, but also Big Tech, to avoid some of the above-mentioned costs by pursuing certain strategies or business models based on a selective service offering or an intermediary or "storefront" positioning, which helps put the above-mentioned observation into perspective.

304. In the first instance, the possibility of offering online banking services effectively eliminates the need for a physical branch network. Beyond online banks, this applies more generally to all new operators offering digital payment services, either directly or as intermediaries, i.e. non-bank actors, including Big Tech.

305. Secondly, the availability of secure and efficient cloud services (see paragraph 94 above) allows fixed IT costs to be transformed into variable costs. Moreover, as the cloud services sector is characterised by a small number of large operators at the global level (see paragraph 87 above), these fixed costs can potentially be spread over huge scales. As indicated by the ACPR (translated), "*the use of the cloud* [goes] *hand in hand with the development of innovative payment services*"[451].

306. While the above-mentioned trends are favourable to the entry of FinTech into the payments sector, it is worth noting the huge size of the customer base of the major digital actors, which is in the hundreds of millions, if not billions.

307. This allows them to amortise certain fixed costs over large customer bases, thereby generating unparalleled economies of scale. The existence of such economies of scale clearly constitutes a competitive advantage for the actors in question (see below, paragraphs 351 and 364) and, being difficult to replicate, they increase the possibilities of excluding equally efficient firms, i.e. firms that would otherwise be able to compete with them, in the markets in which they operate[452].

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[447] Classification mark 1,568.

[448] ACPR, study on the profitability of neo-banks of June 2020, cited above, page 11.

[449] See website of Nickel (link).

[450] See website of BNP Paribas (link).

[451] Classification mark 4,438.

[452] See FUMAGALLI, C., et al, document from 2018, cited above, page 3.

3. BARRIERS RELATING TO ACCESS TO CERTAIN TECHNOLOGICAL INFRASTRUCTURES AND DATA

308. Besides the barriers relating to the development of interbank infrastructures that are costly to maintain, which have always existed in the payments sector[453], the investigation for this opinion identified barriers relating to effective access to new technological infrastructures, particularly the NFC antenna on smartphones (a), as well as barriers relating to access to data which allow certain FinTech to offer their payment services in the context of the application of the PSD2 (b).

a) Effective access to the NFC antenna of smartphones

309. The conditions of access to the NFC antenna of smartphones can create barriers to entry in some markets.

310. Indeed, some of the findings in the first part of this opinion suggest that the smartphone is becoming increasingly important in payment services in general. It makes it possible to perform all conventional banking operations (consulting a balance, transfers, etc.) at any time and in any place, in particular contactless payments, a fast-growing payment method (see paragraph 22 above).

311. As such, the major actors in the production and distribution of smartphones and/or operating systems have developed solutions that enable mobile payments, either remotely in the case of online orders, or contactless when making purchases in stores. This is the case in particular for Apple and Samsung, producers of smartphones, and Apple and Google, developers of operating systems (*iOS* and *Android* respectively).

312. At the same time, the major French banking groups offer mobile payment solutions developed by one or more of the above-mentioned actors, i.e. *Apple Pay*, *Google Pay* and *Samsung Pay*.

313. On a technical level, in order to offer contactless mobile payment services, a smartphone must firstly be equipped with technology that makes it possible to initiate the payment, NFC technology being the most widely used in France by the actors in the sector. Furthermore, any operator wishing to develop a contactless mobile payment solution on an NFC-based smartphone must have access to the device's NFC antenna, if the device is equipped with one[454].

314. On the first point, the information compiled during the investigation shows that (translated) "*almost all of the electronic payment terminals making up the acceptance network in France are technically equipped with the sole contactless function based on NFC technology*"[455].

315. On the second point, however, there are a wide range of strategies of smartphone manufacturers regarding the opening or closure of effective access to the NFC antennas of their devices, as recalled in paragraph 33 *above*.

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[453] Classification marks 3,720 and 3,724.

[454] In this regard, see the website of the Senate (link).

[455] Classification mark 3,964.

316. For example, Apple has chosen a closed ecosystem, i.e. *Apple Pay* is the only NFC-based contactless mobile payment solution available on *iPhone*[456] and, conversely, *Apple Pay* is only available on *iPhone*. On this point, the *Autorité de la concurrence* notes that a procedure is underway before the European Commission, which concerns "*terms, conditions and other measures for integrating Apple Pay in merchant apps and websites on iPhones and iPads, Apple's limitation of access to the Near Field Communication (NFC) functionality ("tap and go") on iPhones for payments in stores, and alleged refusals of access to Apple Pay*"[457].

317. Alternatively, the owners of mobile phones using version 5 or subsequent versions of the *Android* operating system can choose between *Google Pay*, which is pre-installed on some of these mobile phones but can also be downloaded, and any other competing NFC-based solution[458], with the exception of *Apple Pay*, such as *Paylib*. Finally, the owners of Samsung mobile phones which are compatible with *Samsung Pay*[459] and which use version 5 or subsequent versions of the Android operating system, will also have access to the *Samsung Pay* solution, which is either pre-installed by default on some models or available for download.

318. As such, the opening or closure of effective access to the NFC antenna on smartphones has a real impact on the ability of the actors who have developed contactless mobile payment solutions based on NFC technology to offer their services on devices equipped with these antennas.

319. In this respect, it is worth noting that Germany has recently adopted a legislative provision on opening up effective access to the NFC antenna of smartphones to providers offering NFC[460]-based payment solutions, and that in France, a draft law was presented in November 2020 to regulate contactless mobile payment so that, in particular (translated), "*any operating system provider shall ensure that the products and services it offers enable any consumer located in France to exercise freely and without hindrance his or her freedom of choice between any service provider enabling or facilitating contactless mobile payment*"[461]. At the European Union level, the European Commission recently presented the "Digital Markets Act", which should make it possible, in addition to Articles 101 and 102 of the TFEU, to address the problems of interoperability and "self-preferencing", as referred to in Article 6 of the draft regulation[462].

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[456] At the time of writing and as indicated in the footnote on page 46, the *iPhone* models with Face ID and those with Touch ID, with the exception of the *iPhone* 5s, are the only Apple telephone models which are compatible with *Apple Pay* (link).

[457] See European Commission, "*Antitrust: Commission opens investigation into Apple practices regarding Apple Pay*", 16 June 2020, press release n° IP/20/1075, (link).

[458] As stated in the footnote on page 51, it should be noted that owners of telephones which use version 5 or subsequent versions of Android will only be able to use *Samsung Pay* if they have a Samsung telephone that is compatible with this solution.

[459] See footnote on page 54.

[460] *Bundesministerium des Justiz und fûr Verbraucherschutz* [German Ministry of Justice and Consumer Protection], *Gesetz über die Beaufsichtigung von Zahlungsdiensten* [Law on the Supervision of Payment Services], as amended on 9 December 2020, article 58a (link).

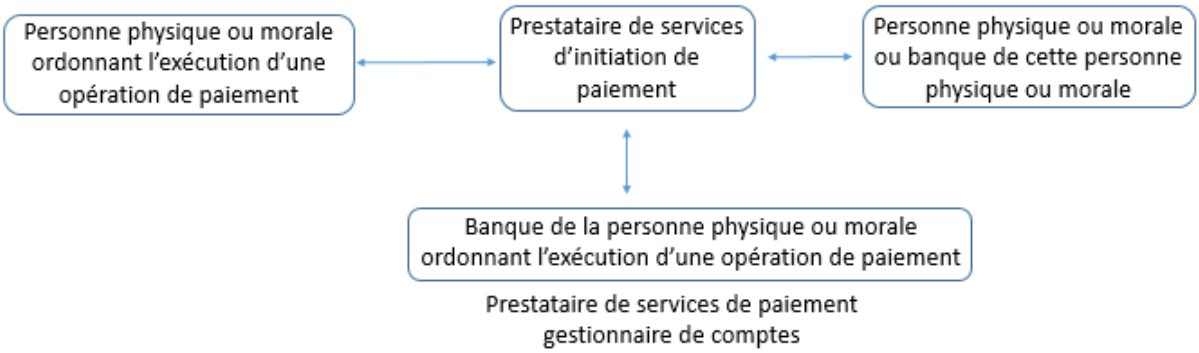
[461] RAPHAN, P-A., (translated)"*Draft law of 17 November 2020 to regulate contactless mobile payment*", article 3 (link).

[462] Proposal for a Regulation of the European Parliament and of the Council COM(2020) 842 final 2020/0374 (COD) of 15 December 2020 on contestable and fair markets in the digital sector (Digital Markets Act), art. 6 (d) and (h).

b) Access to data that allow certain FinTech to offer their payment services under the PSD2

320. As recalled in paragraph 10 above, PSD2 created two new payment services: payment initiation services and account information services.

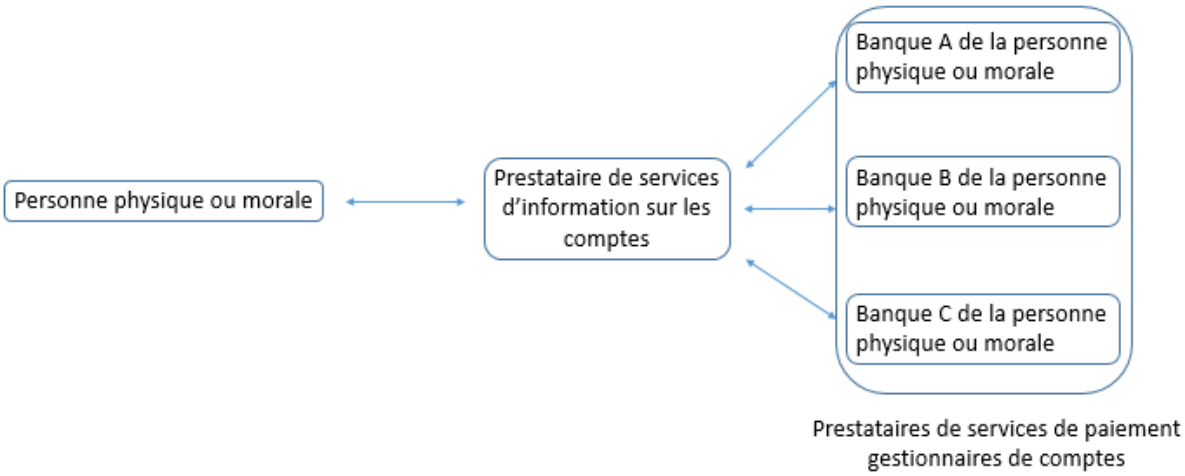
Figure 18 - Diagram showing the services provided by a payment initiation service provider



Source: Compiled by the Autorité de la concurrence on the basis of publicly available information.

Individual or legal person ordering the execution of a payment
Payment initiation service provider
Individual or legal person or bank of this individual or legal person
Bank of the individual or legal person ordering the execution of a payment
Account servicing payment service provider
An individual or legal person orders a payment initiation service provider to execute a payment.

Figure 19 - Diagram showing the services provided by an account information service provider



Source: Compiled by the Autorité de la concurrence on the basis of publicly available information.

Individual or legal person	Account information service provider	Bank A of the individual or legal person Bank B of the individual or legal person Bank C of the individual or legal person Account servicing payment service providers

The account information service provider offers the individual or legal person a single interface where information on balances and transactions concerning several or all of their accounts held by account servicing payment service providers is grouped.

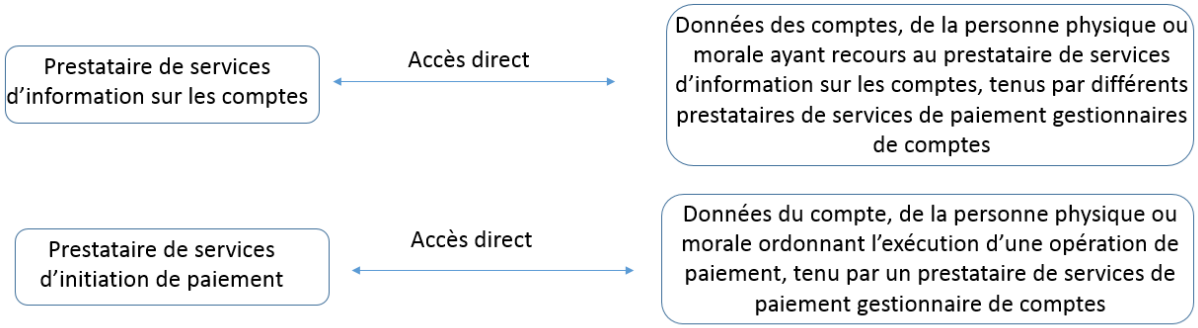
321. In order to facilitate the provision of these services within a clear and harmonised regulatory framework, PSD2 also created a right of secured access for the providers of these services, to the online payment account data held by the ASPSPs, which they need to rely on in order to offer their services[463].

[463] See Directive (EU) 2015/2366 of the European Parliament and of the Council of 25 November 2015, cited above,
articles 66 and 67.

322. Articles 30 and 31 of Commission Delegated Regulation 2018/389[464], which supplements PSD2, therefore requires ASPSPs to make this access possible, either by allowing payment initiation service providers (hereinafter "PISPs") and account information service providers (hereinafter "AISPs") to use ASPSPs' existing e-banking interfaces for their customers, a technical solution referred to as *screen scraping*, or by creating a dedicated application programming interface (API), which is a technical communication channel specially designed to facilitate interaction between the respective information systems of the ASPSPs on the one hand, and the PISPs and AISPs on the other.

323. The two figures below illustrate the two methods of accessing online payment account data held by the ASPSPs, as described in the previous paragraph.

Figure 20 - Technical solution for direct access to online payment account data held by account servicing payment service providers



Via l'interface existante de services bancaires en ligne destinée au client du PSPGC, le PSIP et le PSIC accèdent aux données disponibles sur son espace de banque en ligne. Pour cela, le PSIP et le PSIC doivent recueillir, avec son consentement, les données de sécurité personnalisées du client du PSPGC.

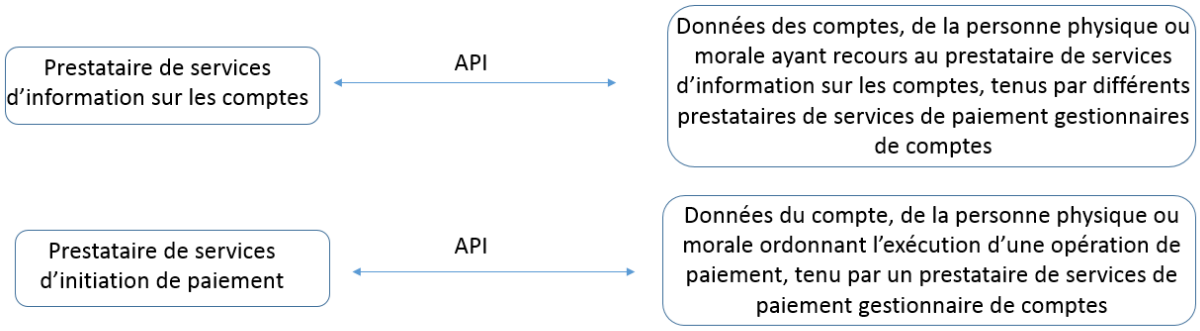
Source: Compiled by the Autorité de la concurrence on the basis of publicly available information.

Account information service provider	Direct access	Account data, of the individual or legal person relying on an account information service provider, held by different account servicing payment service providers
Payment initiation service provider	Direct access	Account data, of the individual or legal person ordering the execution of a payment, held by an account servicing payment service provider

[464] Commission Delegated Regulation (EU) 2018/389 of 27 November 2018, cited above.

Through the existing e-banking interface for the customer of the ASPSP, the PISP and AISP access the data available in the customer's online banking platform. This requires the PISP and AISP to collect, with the consent of the customer, the personalised security data of the customer of the ASPSP.

Figure 21 - Access, via APIs, to online payment account data held by account servicing payment service providers



L' API constitue un canal de communication spécialement conçu pour faciliter l'accès des PSIP et des PSIC aux données des comptes de paiement accessibles en ligne tenus par les PSPGC.

Source: Compiled by the Autorité de la concurrence on the basis of publicly available information.

Account information service provider	API	Account data, of the individual or legal person relying on the account information service provider, held by different account servicing payment service providers
Payment initiation service provider	API	Account data, of the individual or legal person ordering the execution of a payment, held by an account servicing payment service provider

The API is a communication channel specifically designed to facilitate access by PISPs and AISPs to online payment account data held by ASPSPs.

324. When the ASPSP opts to create an API, it must ensure, pursuant to Article 32(1) and (3) of the above-mentioned Delegated Regulation 2018/389, that the API offers at all times the same level of availability and performance, including support, as the interfaces made available to the payment service user for directly accessing its payment account online and that it does not create obstacles to the provision of payment initiation and account

information services. Only if the API functions in accordance with these rules will the PISPs and AISPs be required to use it in order to provide their services[465].

325. In cases where the API does not perform in compliance with Article 32 of the above-mentioned Delegated Regulation 2018/389, or there is unplanned unavailability of the interface or there is a systems breakdown[466], the PISPs and AISPs shall be allowed to access, via the direct access technical solution, the payment account data they need to rely on, which is held by the ASPSPs and accessible online, until the API regains the level of availability and performance provided for in Article 32 of the above-mentioned Delegated Regulation 2018/389[467].

326. As highlighted by the Observatoire de la sécurité des moyens de paiement in its 2019 annual report, the direct access technical solution, which requires PISPs and AISPs to collect, with their consent, the personalised security data from the customers of ASPSPs in order to access the data available in their online banking platforms (translated)[468], "*although functional, poses security problems insofar as it implies that the user entrusts their authentication data - deemed personal, to third-party providers*"[469]. From this perspective, it is therefore expected that APIs will help enhance the security of the services offered by PISPs and AISPs[470].

327. Regardless of the access solution proposed by the ASPSPs, PSD2 also obliges them to apply, as a general rule, strong authentication of their customers, i.e. to put in place an authentication procedure that makes it possible to verify the identity of the customer or the validity of the payment transaction, and which is based on the use of two or more elements belonging to the categories of "knowledge", "possession" and "inherence" (see paragraph 19 above)[471], when they use the services provided by the PISPs or the AISPs[472]. However, the requirement for strong customer authentication is subject to a number of derogations set out in Articles 10 to 18 of the above-mentioned Delegated Regulation 2018/389.

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[465] Classification marks 4,710, 4,711 and 4,718.

[466] According to Article 33(1) of the above-mentioned Commission Delegated Regulation (EU) 2018/389 of 27 November 2018, "*Unplanned unavailability or a systems breakdown may be presumed to have arisen when five consecutive requests for access to information for the provision of payment initiation services or account information services are not replied to within 30 seconds*."

[467] Commission Delegated Regulation (EU) 2018/389 of 27 November 2018, cited above, article 33, paragraph 4.

[468] Observatoire de la sécurité des moyens de paiement, report of December 2020, cited above, pages 37 and 43.

[469] Observatoire de la sécurité des moyens de paiement, report of December 2020, cited above, page 43.

[470] Observatoire de la sécurité des moyens de paiement, report of December 2020, cited above, page 37.

[471] See Directive (EU) 2015/2366 of the European Parliament and of the Council of 25 November 2015, cited above.

[472] See Articles 97 and 98 of Directive (EU) 2015/2366 of the European Parliament and of the Council of 25 November 2015, cited above, Article 4. See also Commission Delegated Regulation (EU) 2018/389 of 27 November 2018, cited above, Article 30(2), and Observatoire de la sécurité des moyens de paiement, report of December 2020, cited above, page 44.

328. While the EBA acknowledged in its opinion of 13 June 2018 that ASPSPs have the option to delegate the application of strong customer authentication to the PISPs and AISPs[473], it emphasised in its opinion of 4 June 2020 that ASPSPs are under no obligation to do so[474].

329. In this context, it can be seen from the statements made by certain actors during the investigation for this opinion that, on the one hand, the various APIs developed by the ASPSPs are still not fully operational in France[475]. As stated by these actors but also by the Observatoire de la sécurité des moyens de paiement in its 2019 annual report, the vast majority of PISPs and AISPs continue to use the direct access technical solution in order to offer their services, a solution they already relied on before the adoption of PSD2[476].

330. However, according to the same actors, the direct access solution is, from the perspective of PISPs and AISPs, more expensive[477] and technically more complex to use[478], since the interfaces through which access to the payment account data is made possible under this solution were designed to meet the needs of the customers of the ASPSPs only, and are therefore not adapted to the needs of PISPs and AISP[479]. From this perspective, and in contrast to the direct access technical solution, once they are fully operational, APIs should make access to payment account data much easier and more fluid and adapted, as they have been specifically designed by the ASPSPs to enable the PISPs and AISPs to provide their services[480].

331. On the other hand, with regard to the strong customer authentication of ASPSPs' customers, when these customers use the services provided by PISPs or AISPs, several actors also indicated that, according to the information available to them, ASPSPs have not delegated strong customer authentication to a PISP or AISP in France[481]. Moreover, these same actors stressed that, in order to allow the said authentication, all ASPSPs in France require PISPs and AISPs to redirect customers from the interface of the PISP or AISP to their own interfaces[482].

332. According to these actors, this redirection has a negative impact on the activities of the PISPs and AISPs, in particular for the reasons set out below.

333. Firstly, by redirecting the customer from the interface of the PISP or AISP to the ASPSP interface and then again, once strong authentication is carried out, to the interface of the PISP or AISP, it complicates and impairs the customer experience[483], even though the know-

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[473] Opinion of the European Banking Authority on the implementation of the RTS on SCA and CSC, EBA-Op-2018-04, 13 June 2018, page 8.

[474] Opinion of the European Banking Authority on obstacles under Article 32(3) of the RTS on SCA and CSC, EBA/OP/2020/10, 4 June 2020, page 7.

[475] Classification marks 4,021, 4,117 and 4,725.

[476] Observatoire de la sécurité des moyens de paiement, report of December 2020, cited above, pages 37 and 44, and classification marks 4,711, 4,719, 4,725 and 4,726.

[477] Classification marks 4,711, 4,718 and 4,725.

[478] Classification marks 4,711, 4,718 and 4,719.

[479] *Idem supra*.

[480] Classification marks 4,724 and 4,725.

[481] Classification marks 4,714, 4,720 and 4,728.

[482] Classification marks 4,714, 4,721 and 4,729.

[483] Classification marks 4,714, 4,721 and 4,730.

how in simplifying this experience is one of the competitive advantages of PISPs and AISPs, and more generally of FinTech, vis-à-vis traditional banking players. As such, it prevents PISPs and AISPs from defining their own customer experience[484] and leads to a significant proportion of customers cancelling the transaction[485].

334. Secondly, obligatory redirection is apparently sometimes used by certain ASPSPs to target their customers and promote their own services[486], which are likely to be substitutable with those offered by PISPs and AISPs[487].

335. In this regard, it is important to recall that the EBA had the opportunity to clarify in its opinion of 4 June 2020 that while the obligatory redirection, discussed in the previous paragraphs, does not in itself constitute an obstacle to the provision of services by PISPs and AISPs[488], it may nevertheless negatively affect the experience of customers using the services offered by PISPs and AISPs[489].

336. It is therefore clear from paragraphs 329 to 335 that, according to the statements made by certain actors during the investigation for this opinion, the conduct of ASPSPs, in the context of implementing the various obligations, recalled in paragraphs 321 to 328, stemming from the PSD2 and the above-mentioned Delegated Regulation 2018/389, would be likely to constitute an obstacle to the development of the activities of PISPs and AISPs.

C. COMPETITIVE ADVANTAGES

337. Below is a presentation of the competitive advantages enjoyed by the main categories of actors in the payments sector, namely the traditional banking actors (1), FinTech (2), and finally Big Tech (3).

1. COMPETITIVE ADVANTAGES HELD BY THE TRADITIONAL BANKING ACTORS

338. Over many decades, banks have accumulated unrivalled experience in the area of payment services, in terms of compliance with the various regulations in the sector[490], which is a major advantage in the face of new entrants.

339. Moreover, even though the financial and economic crisis of the late 2000s may have eroded the traditional trust in banks on the part of the general public[491], they continue to enjoy a

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[484] Classification mark 4,721.

[485] Classification mark 4,730.

[486] Classification marks 4,714, 4,721 and 4,729.

[487] Classification marks 4,022, 4,721 and 4,729.

[488] Opinion of the European Banking Authority on obstacles under Article 32(3) of the RTS on SCA and CSC, cited above, page 2.

[489] *Idem supra*.

[490] Classification marks 646, 4,024 and 4,439.

[491] See in particular: VILLEROY DE GALHAU, F., (translated)"*Building the digital finance compatibility triangle: innovations, stability, regulation*", Revue de la stabilité financière, April 2016, page 7 (link); VIVES, X., Note of 27 June 2019, cited above, page 4; classification mark 4,045.

high level of recognition and a good reputation[492] in terms of security and protection of their customers' data[493], at a time when the practices of certain major digital actors in this respect are often the subject of debate. Indeed, according to a survey by the IFOP on the habits and expectations of banking customers in France, conducted at the end of 2018 and published in May 2019, 68% of respondents said they trusted banks, when it comes to securing personal data, compared to 48%, 47% and 40%, regarding Apple, Amazon and Google respectively[494].

340. In addition, given their strong customer bases[495], which are much larger than those of FinTech offering payment services, the volume of activity of banks allows them to have some of the lowest unit processing costs of transactions related to their payment services in the market[496]. Moreover, these costs can be more easily pooled, as can the risks associated with conducting these type of activities, thanks to their universal banking model[497].

341. Furthermore, banks have an excellent knowledge of the users of their payment services and their habits, thanks to the volume and quality of the historical data they hold[498]. This is a competitive advantage for these traditional actors, especially as some FinTech, specifically PISPs and AISPs, need access to data held by banks in order to offer their services, making them dependent on the banks[499].

342. Finally, the experience acquired by banks over several decades in the design and operational management of payment solutions[500], their capacity to defend their interests before the public authorities[501] and their financial strength[502], which is certainly not comparable in terms of turnover to that of Big Tech[503] but nevertheless remains very significant, are also considered by a number of actors as competitive advantages.

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[492] Classification marks 625, 1,643, 1,662 and 4,439.

[493] See in particular: ACPR, (translated)"*Study on the digital revolution in the French banking sector*", March 2018, Analyses et synthèses n° 88, page 13 (link); European Parliament, study of July 2018, cited above, page 32.

[494] See website of the IFOP (link).

[495] Classification marks 390, 758, 1,268, 1,662 and 4,045.

[496] Classification mark 1,662.

[497] See in particular ACPR, study (translated)"*digital revolution*" of March 2018, cited above, page 13, and *Comisión Nacional de los Mercados y la Competencia*, "*Estudio sobre el impacto en la competencia de las nuevas tecnologías en el sector financiero (Fintech)*", September 2018, page 53 (link).

[498] See in particular *Comisión Nacional de los Mercados y la Competencia*, study of September 2018, cited above, page 51, and classification marks 1,370, 1,601, 1,643 and 4,439.

[499] It should be noted that, as regards account information services, there is also a dependency between the different traditional banking actors insofar as, if a given bank wishes to offer its customers such a service, it will need access to the data held by the other banks in which its customers also have one or more accounts.

[500] Classification marks 691, 916 and 3,800.

[501] Classification marks 646, 1,306, 1,705, 4,022 and 4,115.

[502] See in particular Banque de France, "*FinTech*", 6 September 2019, Briefing (link), and classification marks 646, 680, 1,493, 1,662 and 4,439.

[503] At the end of December 2017, the net banking income, which indicates the revenue a bank generates from its operations, of the six main French banking groups amounted to €136.3 billion (see ACPR, (translated)"*Figures for the French banking and insurance market 2017*", October 2018, statistical publication (link)).

2. COMPETITIVE ADVANTAGES OF FINTECH OFFERING PAYMENT SERVICES

343. FinTech do not enjoy the same financial strength as Big Tech and the traditional banking actors[504]. Moreover, they have not yet reached the same level of maturity as banks in terms of data security and confidentiality[505], nor the same volume of transactions[506]. However, they have a number of competitive advantages in the payments sector.

344. Firstly, not having to maintain costly interbank and physical infrastructures reduces fixed costs[507].

345. This competitive advantage is due to a number of factors. Firstly, unlike banks, FinTech are not bound by the legacy of old and cumbersome IT systems, sometimes built on obsolete technologies[508]. Secondly, the rise of cloud services, on which they rely to operate their payment services, has led to a decrease in their data storage costs[509]. Furthermore, they rely on relatively small teams, are usually positioned in niche markets, and unlike traditional banking actors, they do not have to bear the costs of maintaining banks' physical distribution network[510].

346. Secondly, the evidence compiled in the course of the investigation shows that their agility also constitutes a competitive advantage[511], in that they have a greater capacity, compared with traditional banking actors, not only to respond quickly to specific needs in the day-to-day lives of consumers or to changes in their preferences[512], but also to adapt to technological developments in order to offer innovative services[513] and accelerate their growth once they are no longer start-ups.

347. This agility also allows them to position themselves in niche markets and to focus on one or a small number of payment services, which also gives them a competitive advantage[514] to the extent that, given their universal banking model, traditional banking actors cannot quickly position themselves in these niche markets[515], which are sometimes highly

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[504] See in particular ACPR, study "*digital revolution*" of March 2018, cited above, page 12 and classification mark 4,439.

[505] See in particular ACPR, study "*digital revolution*" of March 2018, cited above, page 12, and *Comisión Nacional de los Mercados y la Competencia*, study of September 2018, page 50.

[506] Classification marks 1,339 and 1,573.

[507] Classification mark 3,720.

[508] See in particular European Parliament, study of July 2018, cited above, page 18; VIVES, X., Note of 27 June 2019, cited above, page 8, and classification marks 390, 702, 1,338, 1,693, 3,620 and 3,720.

[509] *Comisión Nacional de los Mercados y la Competencia*, study of September 2018, cited above, page 34, and classification marks 3,648 and 3,719.

[510] See Banque de France, Briefing of 6 September 2019, cited above.

[511] Classification marks 618, 691, 714, 915, 1,369, 1,400, 2,961, 3,720, 4,045 and 4,439.

[512] See in particular classification marks 618, 1,353 and 1,661.

[513] See, in particular, European Parliament, study of July 2018, cited above, page 18 and classification marks 714, 758, 625, 646, 1,338, 1,369 and 3,801 and 3,954.

[514] See in particular *Comisión Nacional de los Mercados y la Competencia*, study of September 2018, page 34, and classification marks 1,661, 3,620 and 3,720.

[515] Classification mark 1,661.

profitable[516], and are moreover subject to a much more restrictive regulatory framework, particularly in terms of operational risk management obligations and capital allocation[517].

348. Thirdly, FinTech have expertise in simplifying the "customer experience", which can lead to the creation of payment solutions that are easy to use and adapted to the new habits of the users of these services[518].

349. Finally, as noted in paragraphs 114 and 123 above, the models of some of these FinTech, such as Orange Bank, are based on pre-existing distribution networks that allow them to reduce their customer acquisition costs (see paragraph 302 above).

[516] Classification mark 3,720.

[517] Classification marks 1,573, 3,620 and 3,720.

[518] See in particular classification marks 714, 1,492, 1,661, 1,700 and 3,620.

3. COMPETITIVE ADVANTAGES OF BIG TECH

350. According to the ranking of the 50 groups with the highest "Total Internet Audience[519]" in France, drawn up by Médiamétrie, in April 2020 Google was in the first place in terms of Internet audience with 52.1 million unique visitors (Internet users) per month, followed by Facebook (49 million) and Microsoft (42.7 million). Amazon is in the eleventh place, with 31.7 million unique visitors per month[520].

351. In a sector such as payment services, where profitability is closely linked to the volume of transactions[521], the fact that Big Tech already have, in their core business, not only a very large user community but also existing infrastructure and solutions that can generate economies of scope, gives them a very significant competitive advantage[522]. Indeed, if a payment service is launched that is favourably welcomed by all or some of these users and becomes part of the existing ecosystem, Big Tech could count on a significant volume of business fairly rapidly.

352. Moreover, it should be recalled that the business models of some of these actors are based on the processing, for advertising purposes, of very large volumes of data generated by the users of their non-financial services[523]. Admittedly, some actors, such as Apple, apply a specific approach in this regard, which does not appear to put the processing of personal data at the heart of their strategy to generate revenue. During its hearing on digital platforms before the Economic Affairs Committee of the French National Assembly, Apple stated that (translated) "*unlike Facebook or Google, it does not monetise its users' personal data: the data it collects must be used solely to improve its own products*"[524]. In this regard, Tim Cook pointed out in a speech at the CPDP "Computers, Privacy & Data Protection" conference on 28 January 2021, that "*if we accept as normal and unavoidable that everything in our lives can be aggregated and sold, then we lose so much more than data. We lose the freedom to be human.*"[525]

353. Data generated by users of the non-financial services of Big Tech may first be voluntarily provided by those users once they have identified themselves in order to access the relevant service[526]. For example, in the context of the opinion of the *Autorité* on data processing in the online advertising sector[527], Google stated that when users of its services access them via a Google account, they provide Google with a set of socio-demographic and

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[519] According to Médiamétrie, "*The Total Internet Audience measurement is based on a unique panel of more than*
25,000 individuals aged 2 years and over, of whom 6,200 are web users with two or three screens (computer and/or mobile phone and/or tablet)" (see website of Médiamétrie (link)).

[520] *Idem supra.*

[521] Classification mark 625.

[522] See in particular Financial Stability Board, report of December 2019, cited above, page 3 and classification marks 390, 646, 714, 758, 771, 1,339, 1,370, 1,493 and 1,662.

[523] See in particular *Autorité de la concurrence* opinion 18-A-03 of 6 March 2018, cited above, paragraph 85, and FAURE-MUNTIAN, V. et al, information report of June 2020, cited above, pages 29 and 30.

[524] FAURE-MUNTIAN, V. et al, information report of June 2018, cited above, page 25.

[525]. (clip available on Youtube).

[526] See *Autorité de la concurrence* opinion 18-A-03 of 6 March 2018, cited above, paragraphs 43 and 44.

[527] See *Autorité de la concurrence* opinion 18-A-03 of 6 March 2018, cited above, paragraph 129.

personal data[528]. Facebook stated that it collects socio-demographic data on users' profiles and activity, as well as data on users' engagement with ads[529]. Finally, many actors considered that purchase data generated on e-commerce services offered by Amazon, which sells advertising space on its proprietary sites and apps[530], is of interest to advertisers and benefits from the quality of data generated in logged environments[531], i.e. following an identification process via log-in, in particular by filling in a form with an username and a password.

354. Furthermore, as stated by the *Autorité* in its opinion on data processing in the online advertising sector, the data are (translated) "*also collected on third-party sites. As such, many actors process data from websites where they are not the publishers, but which are partner websites that have accepted the use of tracking devices such as third-party cookies, ad tags and website tags*"[532]. In this regard, it is also stated in the same opinion that Google and Facebook collect data on a massive scale, which are generated on third-party sites and which can also be used for advertising campaigns[533].

355. Finally, data can also be deduced from the behaviour of users of the services that constitute the core business of Big Tech[534], via statistical or algorithmic reprocessing[535].

356. The cross-cutting and historical access, in the context of their core business activities, to this precise and varied, frequently updated and unrivalled set of data, coupled with their mastery of new technologies, such as artificial intelligence, and of the algorithmic tools for processing and analysing such data[536], constitutes a considerable competitive advantage for Big Tech[537], which allows them to exploit information on the characteristics, preferences, behaviour and needs of their users[538].

357. By complementing this advantage with access to financial data in the context of development of payment solutions, Big Tech are likely to be able not only to better assess the financial

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[528] These are data such as contact information (name, email address, phone number), account authentication data (username and password), demographic data (gender and date of birth), ID documents, credit card or bank account numbers, incoming and outgoing mail, contacts, events, imported photos and videos, etc.

[529] See *Autorité de la concurrence* opinion of 6 March 2018, cited above, paragraph 129.

[530] See *Autorité de la concurrence* opinion of 6 March 2018, cited above, paragraph 76.

[531] See *Autorité de la concurrence* opinion of 6 March 2018, cited above, paragraph 234.

[532] See *Autorité de la concurrence* opinion of 6 March 2018, cited above, paragraph 45. As indicated in the information report on digital platforms submitted by the Economic Affairs Committee of the National Assembly, this data is obtained "*not because of the activity of consumers on the platform in question, but because of their activity elsewhere on the Internet*" (FAURE-MUNTIAN, V. and FASQUELLE, D., et al, information report of June 2020, cited above, page 30).

[533] See *Autorité de la concurrence* opinion of 6 March 2018, cited above, paragraph 130.

[534] See CREMER, J., et al, report of 2019, cited above, page 25.

[535] See FAURE-MUNTIAN, V. et al, information report of June 2018, cited above, page 30.

[536] See in particular Financial Stability Board, report of December 2019, cited above, page 3; Financial Stability Board, "*FinTech and market structure in financial services: Market developments and potential financial stability implications*", February 2019, report, page 15, link, and classification marks 646, 1,662, 2,948 and 4,045.

[537] See in particular *Comisión Nacional de los Mercados y la Competencia*, study of September 2018, cited above, page 29 and classification marks 758, 916, 1,306, 1,339, 1,400, 1,644 and 4,114.

[538] See in particular COMBE, E., "Vers des prix personnalisés à l'heure du numérique", *Fondation pour l'innovation politique*, October 2019, page 24, link, and classification mark 1,601.

health of their users[539], but also to tailor their offerings to their users' preferences and, where appropriate, needs[540], including by estimating their maximum willingness to pay[541].

358. Similarly, the data collected by some Big Tech, in the context of their core business activities, can also be used to improve the financial services that can be provided by those actors[542].

359. Having a very strong community of users of their non-financial services, as well as a large volume of historical data on these users, and the technological tools to process and analyse these data, give Big Tech unprecedented market power that could be leveraged into adjacent markets, such as the market for the provision of payment solutions[543].

360. However, these are not the only factors that give them a competitive advantage in the payments sector.

361. In effect, these actors also benefit from considerable financial strength[544] (see Table 7 below) which allows them to make substantial investments in various new technologies that facilitate the development of innovative payment solutions[545], or new activities, and, if need be, to bear losses if their new initiatives fail.

362. The table below shows the main financial indicators of GAFAM as well as, by way of comparison, those of the BNP Paribas Group, the leading banking group in the EU-27.

[539] See in particular *Comisión Nacional de los Mercados y la Competencia*, study of September 2018, cited above, page 29.

[540] See Financial Stability Board, report of February 2019, cited above, pages 1 and 2.

[541] See in particular COMBE, E., article of October 2019, cited above, page 27.

[542] This point was highlighted in 2019 by the Financial Stability Board, an association of finance ministries, central banks and other financial authorities from 24 countries, including France. See Financial Stability Board, report of December 2019, cited above, page 12.

[543] See in particular *Autorité de la concurrence* "*Contribution of the Autorité de la concurrence to the debate on competition policy and digital issues"*, 19 February 2020, link.

[544] See classification marks 646, 714, 1,339, 1,400, 1,493, 1,700, 2,948, 3,648, 3,932 and 4,439.

[545] Classification marks 714, 916, 1,493 and 1,662.

Table 7 – Financial indicators of GAFAM, US$ billions

	Global turnover 2019	Net accounting result 2019	Market Capitalisation(1)
Apple	260.2	22.2	2,000
Alphabet(2)	161.9	34.4	1,700
Amazon	280.5	11.6	1,600
Facebook	70.7	18.5	750
Microsoft	125.0	39.2	1,600
BNP Paribas(3)	53.5	9.8	65

Source: Compiled by the Autorité de la concurrence from Annual Reports, NASDAQ and EURONEXT[546].

(1) This is an order of magnitude, for illustrative purposes, given the very large variations that can occur, even over the course of a year. Data as of 23 November 2020 for GAFAM and 30 November 2020 for BNP Paribas.

(2) Parent company of Google.

(3) With an exchange rate of €1 for 1.2 USD.

363. In addition, thanks to their technical mastery of the ecosystems, most often structured around platforms, in which their payment solutions are integrated, Big Tech have the capacity to offer a very smooth and efficient "customer experience", which can be hardly replicated by their competitors[547].

364. Moreover, in the context of their core business activities, while bearing very high fixed costs, Big Tech, as they are not constrained by the legacy of old and cumbersome IT systems sometimes built on obsolete technologies, face lower marginal costs than those borne, for example, by traditional banking actors[548], due to economies of scope, which enhances their ability to offer consumers their payment solutions for free[549]. Although users do not pay, they authorise the actor offering the payment solution in question to collect data that can be used to improve either the non-financial services that it otherwise provides, which constitute its core business, or other financial services that it may also offer[550].

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[546] Sources:

For the global turnover and net result: Apple, "*2019 Annual Report and form 10K*", page 19 (link); Alphabet, "2019 *Annual Report*", page 21 (link); Amazon, "2019 A*nnual Report*", page 18 (link); Facebook, "*Annual report 2019*", page 42; Microsoft, "*Shareholder letter*", 16 October 2019 (link); BNP Paribas, Universal Registration Document 2019, cited above, page 4.

For the market capitalisation: website of NASDAQ for Apple (link), Google (link), Amazon (link), Facebook (link), Microsoft (link), and website of EURONEXT for BNP Paribas (link).

[547] Classification marks 916, 1,573, 1,574, 1,662 and 3,621.

[548] See in particular Financial Stability Board, report of December 2019, cited above, page 14.

[549] See in particular *Comisión Nacional de los Mercados y la Competencia*, study of September 2018, cited above, page 49 and classification mark 3,620.

[550] See in particular *Comisión Nacional de los Mercados y la Competencia*, study of September 2018, cited above, page 49.

365. Finally, Big Tech enjoy, with some individual specificities, a brand image and reputation[551] which in the context of their payment solutions are likely to foster a loyalty from some users, in particular young ones, owing to the advantages offered by their ecosystem.

D. POINTS OF ATTENTION AND OUTLOOK FOR THE FUTURE

1. POINTS OF ATTENTION ON THE COMPETITION-RELATED RISKS THAT COULD ARISE IN THE PAYMENTS SECTOR

a) On the competition-related risks related to the competitive advantages enjoyed by the various actors in the payments sector

With regard to the competition-related risks related to the competitive advantages enjoyed by Big Tech

366. The elements in the present file call for vigilance on the part of the *Autorité*, particularly with regard to the collection and use of data by Big Tech, especially relating to payments, and also with regard to the methods of access to contactless payment solutions by mobile phone.

367. As we have seen, the data collected and accumulated by Big Tech on individuals or legal persons in the context of their different core business activities (which can be varied: social networks, e-commerce, search engines, video sharing, etc.) allow them to gain knowledge of these persons so that they are in a position, in particular, to (i) offer payment services, whether existing or new, that are more attractive in the eyes of their customers and (ii) better target their pricing offerings for payment services. This may improve consumer welfare, but it could also allow Big Tech to further strengthen the position of their respective platforms.

368. Conversely, the data collected by Big Tech via the payment services they offer, by adding to an increasingly detailed knowledge of their customers, could enable them to improve their service offerings in general, by increasing the attractiveness and targeting of existing services or by creating new services, and again enhance their attractiveness.

369. For example, on their respective websites, Facebook states that "(…) *the actions you take on Facebook and Instagram, including with Facebook Pay, can be used for purposes such as to deliver you more relevant content and ads* (…)"[552] while Amazon states that "*The information we learn from you helps us provide, personalize, and continually improve the Services. We use the information to process payments, communicate with you about orders, products, services and promotional offers, update our records and maintain your accounts with us, display content, and recommend merchandise and services that might be of interest to you*"[553].

370. Thanks to the network externalities already mentioned, the above-mentioned effects are mutually reinforcing, which helps make the platforms even stronger.

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[551] See in particular Financial Stability Board, report of December 2019, cited above, page 13 and classification marks 390, 625, 646 and 3,721.

[552] See website of Facebook (link).

[553] See website of Amazon (link).

371. Nonetheless, payment data can potentially give access to a large amount of information, depending on the position of the actors in the payment chain: bank authentication data (e.g. IBAN, bank card number, etc.), transaction data (amount, date, debtor, creditor, etc.), contextual data relating to the terminal used, or even the place of payment or the e-mail and delivery addresses[554].

372. Therefore, by revealing a lot of "*highly personal" information, according to the terminology used by the European Data Protection Board*"[555], which moreover may concern third parties, which "*is one of the specificities of the [payment] sector*"[556], and by giving Big Tech a historical knowledge of the habits of the persons in question, payment data could, combined with the data collected in the context of their other activities, give these actors an unrivalled knowledge of the market and, consequently, an unparalleled competitive advantage that would be very difficult for a competitor to replicate.

373. The *Autorité* does not take a position on the application of the rules on the protection of the privacy of data subjects to data relating to payment transactions, which raises separate issues. For example, in the context of a merger, in view of the limits set by the General Data Protection Regulation[557], the ability of the companies concerned to combine different sets of data previously held separately raises questions[558].

374. Furthermore, it can be seen from the file that, in addition to access to NFC antennas, which are widely used for contactless payments, in particular via smartphones (see paragraphs 28 and 30 above), and any barriers that may arise from the actual methods of access to these antennas (see paragraphs 310 to 319 above), access to certain mobile payment solutions may be facilitated in other ways. For example, it may be the pre-installation of solutions in certain telephones, the implementation of ergonomic shortcuts facilitating access to a given solution[559], or more generally anything which, from a technical perspective, facilitates the effective use of one solution rather than another and therefore promotes the expansion and reinforcement of the ecosystem within which that payment solution is developed. This type of practice, as well as that related to "self-preferencing" (see decision on Google Shopping cited in the following paragraph) in the case of dominant companies, may present risks for competition if they result in consumers being locked into a given ecosystem.

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[554] Classification marks 4,739 and 4,740.

[555] Classification mark 4,733.

[556] Classification mark 4,734.

[557] In effect (translated), "*The question of the qualifications of controller (the body which determines the essential means and purposes of the processing) and processor (the body processing data on behalf of and on the basis of documented instructions) within the meaning of the GDPR is essential in this respect. For example, the fact that an actor has access to a large amount of data will not necessarily allow it to process them on its own behalf if it is qualified as a processor"*, see classification marks 4,740 and 4,741.

[558] See classification mark 4,743, and the Statements of the EDPB of 27 August 2018 and 19 February 2020 *Statement of the EDPB on the data protection impacts of economic concentration* (link) and *Statement on privacy implications of mergers* (link).

[559] In this respect, in response to the public consultation launched by the *Autorité* in May 2020, one actor stated that: "*For example, to our knowledge, Samsung already reserves the use of ergonomic tools on its mobile phones, or functionalities that facilitate practical and rapid access to an app ("swipe"), for the benefit of its own payment solution (Samsung Pay), which creates a distortion of competition. Similarly, Apple reserves the use of the "double-click" function on the side button of iPhones for its Apple Pay payment solution*" (classification mark 3,967).

375. While these competition-related questions are neither new nor specific to the payments sector, the *Autorité* notes that the abuse of a dominant position on a market by the entity enjoying such a position, in order to promote its own products or services on other markets via technical processes that may be complex (e.g. algorithms, pre-installation of solutions, etc.) has already given rise to heavy sanctions at European Union level[560]. For example, in June 2017 the European Commission fined Google €2.42 billion for abusing its dominant position, in each of the national markets for general internet search across the European Economic Area, by giving its own price comparison service an illegal advantage.

376. The *Autorité* also notes that the above-mentioned competition-related questions relating to the strengthening of the position of certain large digital actors that could become major players in the payments sector are at the heart of various legislative initiatives within the European Union.

377. As such, aware of the growing influence of large platforms in the economy, the Commission has recently presented, as we saw above (see paragraph 319), the draft EU "Digital Markets Act", whose purpose among other things is to address issues of entry and contestability in certain digital and related markets[561]. As the scope of this regulation does not exclude payment services[562], it could be a useful complementary tool to prevent, where appropriate, certain market-distorting practices in the payment sector.

378. This is also illustrated, as we have seen (see above, paragraph 319), by the recent French parliamentary bill whose purpose is to (translated) "*restore the consumer's freedom of choice with regard to contactless mobile payments*" and which aims, inter alia, to ensure that "*every operating system provider guarantees a level playing field between its own payment services business and competing businesses (...)*"[563] and the law in force in Germany reinforcing, inter alia, the obligations of the companies concerned with regard to interoperability and 'self-preferencing'.

With regard to the competition-related risks related to the competitive advantages enjoyed by the traditional banking actors

379. It is not only the practices of Big Tech that may present competition-related risks in the payments sector, on account of their holding and using of data.

380. As reiterated in paragraphs 320 to 326 above, PISPs and AISPs need access to the payment account data accessible online which is held by ASPSPs, including banks, in order to offer their services.

381. As highlighted in paragraph 336 above, it can be seen from the statements made by certain actors during the investigation for this opinion that the conduct of ASPSPs, in the context of the implementation of the various obligations stemming from the PSD2 and the above-mentioned Delegated Regulation 2018/389, would be likely to constitute an obstacle to the development of the activities of PISPs and AISPs.

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[560] See for example the above-mentioned decisions of the European Commission of 27 June 2017 and 18 July 2018.

[561] European Commission, above-mentioned proposal for a regulation, page 1.

[562] European Commission, above-mentioned proposal for a regulation, page 35, art. 2(14) and page 40, art. 6-1(f).

[563] RAPHAN, P-A., Parliamentary bill of 17 November 2020, cited above, explanatory statement, §1, and article 3, II.

382. On the one hand, the fact that the various APIs developed by the ASPSPs are still not, according to these statements, fully operational in France[564] would make access to payment account data accessible online much less fluid and adapted (see above, paragraph 330).

383. On the other hand, in the context of the strong authentication of ASPSPs' customers when the latter use services provided by PISPs or AISPs, the obligatory redirection, imposed in France by all ASPSPs[565], to the interfaces of the ASPSPs would complicate and impair the customer experience[566], to such an extent that, according to one of the actors interviewed, it would result in a significant proportion of customers cancelling the transaction[567] (see above, paragraph 333). Furthermore, this obligatory redirection is apparently sometimes used by certain ASPSPs to target their customers and promote their own services[568], which are likely to be substitutable with those offered by PISPs and AISPs[569].

384. It can therefore be seen from the above that the fact that ASPSPs have payment account data which are accessible online could give them a significant advantage over new players in the payments sector, some of whom are dependent to a significant extent on access to these data in order to operate in the market.

385. Besides the competition-related risks due to ASPSPs having payment account data which are accessible online and, above all, the conditions under which access is granted to the said data, some of the actors interviewed drew the *Autorité*'s attention to the risks associated with the capacity of French banking groups to intervene in the decision-making processes of public institutions[570], which could contribute, in some cases, to the adoption of standards likely to create barriers to entry or development in the payments sector[571].

386. However, lobbying actions carried out by traditional banking actors vis-à-vis regulators in particular, which occur in most regulated sectors and not only the payments sector, are, within the meaning of European case law, legitimate and do not in themselves fall within the scope of competition law, provided that they do not go beyond awareness-raising and/or pressure activities[572] and do not constitute anticompetitive agreements or abuses of a dominant position.

387. Finally, it can be seen from the information gathered during the investigation for this opinion that some operators in the payments sector believe that the acquisitions of FinTech by French banking groups, made possible in particular by the latter's financial strength, would result in a weakening of competition[573].

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[564] Classification marks 4,021, 4,117 and 4,725.

[565] Classification marks 4,714, 4,721 and 4,729.

[566] Classification marks 4,714, 4,721 and 4,730.

[567] Classification mark 4,730.

[568] Classification marks 4,714, 4,721 and 4,729.

[569] Classification marks 4,022, 4,721 and 4,729.

[570] Classification marks 1,306, 4,023, 4,112 and 4,114.

[571] Classification mark 4,114.

[572] See in particular the judgment of the Court of First Instance of 15 March 2000, Cimenteries CBR and Others v. Commission of the European Communities, T-25/95, ECN 2000, p. II-00491, point 417 and European Commission decision of 30 November 1994, Ciment, IV/33.126 and 33.322, footnote on page 115.

[573] See for example classification marks 3,941, 4,023 and 4,042.

388. Some FinTech highlight the risks that these acquisitions may pose for competition, in particular by slowing down innovation or the development of the acquired FinTech, or even, in some cases, by driving them out of the market[574].

389. However, various factors prompt the *Autorité* to put these claims into perspective.

390. Firstly, some actors stated that the impact of these acquisitions was not yet conclusive, or that they represented neither a threat nor an opportunity but simply a basic trend that is not unique to the banking sector[575].

391. Other actors interviewed went further and consider that these acquisitions are part of a positive and encouraging process, allowing new services to be offered to consumers[576], and that it is even "*a trend that venture capitalists and most of the founders and managers of FinTech prefer in any case* "[577].

392. Secondly, the majority of FinTech interviewed during the investigation for this opinion see the acquisition of FinTech by banking groups, on the one hand, as an opportunity for the latter to integrate the innovation they need in order to remain competitive and, on the other hand, as an opportunity for the acquired FinTech to benefit from the banks' financial means and distribution channels[578]. These acquisitions also make it possible to spread innovative services more widely, which benefits consumers.

393. Finally, the sector regulator (*i.e.* the ACPR) notes, firstly, that the acquisition of innovative companies by large groups occurs in all sectors and, secondly, that "*in general, the acquisition of numerous FinTech that offer payment services does not in itself necessarily entail a risk of concentration, as many of them are unlikely to grow in isolation: profitability is organically difficult to achieve in this sector and the French payment landscape is already rather saturated, with banking groups offering robust and accessible solutions*"[579].

394. In line with the findings of a working paper published by the Direction Générale du Trésor in February 2021[580], the investigation conducted did not confirm that the acquisitions of FinTech by French banking groups, which have taken place in recent years, would fall under the notion of killer acquisitions. The shareholdings observed do not appear, at the stage of the analyses carried out for this opinion, to have had the sole objective of preventing the emergence of potential competitors or to have neutralised innovation driven by FinTech.

b) On the competition-related risks that may arise from the use of blockchain technology

395. The investigation conducted in the context of this opinion did not identify any competition-related risks specific to the use of blockchain technology in the payments sector.

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[574] See for example classification marks 770, 1,306, 1,337, and 1,705.

[575] See for example classification marks 701, 1,267, and 1,385.

[576] See for example classification marks 3,926, 4,000 and 4,001 and 4,056.

[577] See for example classification marks 3,951 and 3,952.

[578] See for example classification marks 389, 617, 645, 678, 690, 713, 757, 1,352, 1,368, 1,459, 1,492, 1,692, 1,700, 2,946, 3,587 and 3,588.

[579] Classification mark 4,437.

[580] Direction générale du Trésor, (translated)"*Acquisition of a stake in French start-ups. Predation or development*?", February 2021, Working documents 2021/1 (link).

396. As a result, the competition-related risks presented below could arise regardless of the sector in which the relevant actors use blockchain technology.

397. A distinction should be made between the competition-related risks associated with the use of blockchain as a technological infrastructure and those associated with the software solutions that may be developed on top of the blockchain[581].

With regard to the competition-related risks associated with the use of blockchain as a technological infrastructure

398. Various actors interviewed for this opinion, as well as institutions such as the Organisation for Economic Co-operation and Development (OECD) and, finally, the literature, point to a range of situations and practices that may arise when blockchain is used as a technological infrastructure.

399. The competition-related risks arising from these different situations and practices may be caused by the actor(s) controlling the access to the network, or stem from the behaviour of network users or from the behaviour of the 'miners'[582].

The competition-related risks associated with practices that may be implemented by the actor(s) controlling access to the network

400. As reiterated in paragraph 103 above, access to so-called private blockchains, whether purely private or consortium blockchains, requires authorisation.

401. In this regard, some actors highlight the fact that the conditions of access to private blockchains could be defined in such a way as to prevent, or make more difficult, third party access to the network[583].

402. According to settled decision-making practice and case law, a refusal to grant access to a private blockchain by either a company holding an individual dominant position or by a group of companies holding a collective dominant position could be abusive if:

(i) access to such a blockchain is essential for a competitor to carry out their activities, and the refusal is likely to eliminate all competition and cannot be objectively justified[584], or;

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[581] SCHREPEL, T., "Is blockchain the death of antitrust law? The blockchain antitrust paradox", *Georgetown Law Technology Review*, June 2018, pages 295, 304 and 306.

[582] As indicated in paragraph 100, in Proof of Work systems, miners are network users, sometimes organised in the form of groups or pools, who compete to create a block, bringing together the transactions that have taken place in a given period of time, and to solve, on the basis of their respective computing power and in return for a fee, the computer calculation that makes it possible to associate a hash with the new block created.100

[583] Classification marks 917, 1,323 and 4,143.

[584] See in particular *Autorité de la concurrence* Decision 17-D-11 of 25 July 2017 on practices implemented in the television advertising sector, paragraph 126; Conseil de la concurrence Decision 05-D-72 of 20 December 2005 on practices by various laboratories in the sector of medicines parallel trade, paragraphs 253 and 254; and Conseil de la concurrence Decision 04-D-77 of 22 December 2004 on a referral from the company Productiv against the laboratory GlaxoSmithKline, paragraphs 17 and 18.

(ii) in the absence of a blockchain that is essential for a competitor to carry out their activities, access is denied in a discriminatory manner and in a way that significantly distorts competition[585].

403. Furthermore, it should be noted that the refusal to grant access to a consortium blockchain could also fall under the rules prohibiting anticompetitive agreements if the members of the consortium, controlling the access to the network, agree, without legitimate reasons, to deliberately refuse to grant access to the network to a third party.

404. In addition to the foregoing, and without ruling out the possibility of the existence of other potential competition-related issues, the control of the access to so-called private blockchains could also go hand in hand with tying or bundling practices, or even with exclusivities[586]. With regard to the first type of practice, the actor(s) controlling access to the network could, for example, make access conditional on opening an account on a platform which they also own[587]. With regard to the second type of practice, the same actor(s) may also have an interest in formally obliging network users not to use other networks only in order to increase its attractiveness[588].

405. As the *Autorité de la concurrence* has already highlighted on several occasions, with regard to tying or bundling strategies, leverage between the tying product and the tied product can primarily be achieved in three different ways. The company (or companies) enjoying an individual (or collective) dominant position may therefore (i) impose a contractual obligation to purchase the tying product and the tied product together ('pure bundling'), (ii) make the purchase of the tying product conditional on the purchase of the tied product through technical measures ('technical bundling'), or (iii) sell the tying product and the tied product together on better terms than would be the case if they were purchased separately ('mixed bundling')[589]. In the first two cases, the products cannot be sold separately. In the third case, bundling is not imposed on the buyer, although there may be particularly strong incentives to buy the tying product and the tied product together.

406. It is considered that mixed bundling, even stemming from a company (or companies) holding an individual (or collective) dominant position, is in principle less harmful to competition than pure or technical bundling[590].

407. In any event, be it pure or technical, bundling can only be considered to be abusive if the following five cumulative conditions are met: (i) the company (or companies) concerned has/have an individual (or collective) dominant position in the market for the tying product, (ii) the tying product and the tied product are two separate products (iii) the company (or companies) concerned does/do not give customers a choice to obtain the tying product

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[585] See in particular *Autorité de la concurrence* Decision 14-D-06 of 8 July 2014 on practices implemented by the company Cegedim in the sector of medical information databases, paragraph 192.

[586] SCHREPEL, T., June 2018, cited above, pages 312 to 313 and 317 to 318.

[587] *Idem supra*, page 313.

[588] *Idem supra*, page 317.

[589] See in particular *Autorité de la concurrence* Opinion 14-A-07 of 18 June 2014 on a request for an opinion from the CSA on the basis of Article 41-4 of the Act of 30 September 1986 on the request for the channels LCI, Paris Première and Planète + to move to the free DTT platform, paragraph 152, and *Autorité de la concurrence* Opinion 10-A-13 of 14 June 2010 on crossed usage of client databases in the telecommunication sector, paragraph 8.

[590] See in particular *Autorité de la concurrence* Opinion 14-A-07, cited above, paragraph 153.

without the tied product, (iv) the practice is capable of restricting competition in the market for the tied product and, finally, (v) the practice lacks any objective justification[591].

408. As regards contractual exclusivities, these may fall under the rules prohibiting abuses of a dominant position when they "*are designed to deprive the purchaser of or restrict his possible choices of sources of supply and to deny other producers access to the market*"[592].

The competitive risks associated with the information exchanged by network users

409. Whether the right to read is public or restricted, i.e. whether the content of the different blocks of the chain, including the information on transactions carried out by network users, is visible to all network users or only to some of them, blockchains increase in any case the degree of transparency between users who have a right to read and, consequently, the degree of knowledge that these different users have of each other's behaviour.

410. Depending on the characteristics of the market in which users with a right to read use the blockchain and the characteristics of the information exchanged through the blockchain in the context of the transactions carried out by those users, the increased transparency made possible by the use of the blockchain could have restrictive effects on competition, in that it could facilitate coordination among those users and/or enhance the internal stability of an on-going cartel[593].

411. The more strategic, individualised, non-public and future related the information exchanged is, the more significant the restrictive effects on competition will be[594]. Similarly, exchanges of information taking place in concentrated, non-complex and stable markets are more likely to have restrictive effects on competition than those taking place in markets without these characteristics[595].

The competition-related risks associated with the activities of miners in blockchains using proof-of-work as the consensus protocol

412. As mentioned in paragraph 100 above, when it comes to blockchains using proof of work as the consensus protocol, miners are network users who compete with each other to create a new block, gathering transactions taking place within a certain period of time, and to solve, on the basis of their respective computing power and in return for a fee[596], the computer calculation that makes it possible to associate a hash to the new block created.

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[591] See in particular the judgment of the Court of First Instance of 17 September 2007, Microsoft Corp. v. Commission of the European Communities, T-201/04, ECN 2007, p. II-03601, paragraphs 842, 867 and 869.

[592] See ruling of the Court of Justice of 13 February 1979, Hoffmann-La Roche & Co. Ag v. Commission of the European Communities, 85/16, paragraph 90.

[593] See in particular OECD, "*Blockchain technology and competition policy*", June 2018, page 6; NAZZINI, R., "*The blockchain (r)evolution and the role of antitrust*", Revue Concurrences n° 1-2019, page 31; BALISAGAR, K., DUQUESNE, G. and DE LA MANO, M., "*Blockchain, fintech and competition: Is blockchain the next coordination device in the banking sector*", Revue Concurrences n° 1-2019, pages 41 and 42 and classification marks 4,064 and 4,143.

[594] European Commission Guidelines on the applicability of Article 101 of the Treaty on the Functioning of the European Union to horizontal cooperation agreements, 2011/C 11/01, 14.1.2011, paragraphs 86 to 94.

[595] European Commission Guidelines of 14 January 2011, cited above, paragraphs 77 to 85.

[596] In addition to receiving a fee if they are successful, the miners charge fees on the transactions they include in each new block they create (FAURE-MUNTIAN, V. et al, report of June 2018, cited above, page 37).

413. In addition to receiving a fee if they are successful, miners levy charges, the amount of which is theoretically freely determined by the users making transactions, on the transactions they include in each new block created[597].

414. In order to pool their computing power and costs, miners sometimes organize themselves into groups or "pools" and share the profits from their activities[598]. Although the creation of these pools may allow miners, who cannot reach a critical mass on their own, to continue to operate in the market, it may nevertheless prove problematic if it leads to a concentration of market power in the hands of one or more of these pools, thereby raising barriers to entry. According to the report submitted in 2018 by Mr. Jean-Pierre Landau to the Minister of Economy and Finance (translated), "*a very significant proportion of mining is now done by these pools*"[599]. For example, four pools, including three Chinese ones, now account for more than 60% of the computing power needed for the blockchain on which Bitcoin is based[600].

With regard to the competition-related risks associated with software solutions that may be developed on blockchain

415. Among the software solutions that can be developed on top of the blockchain are "smart contracts", which can be defined as computer programs that automatically verify or execute the terms of a contract, at the negotiation or implementation stage, when the required conditions are met[601].

416. Typically based on conditional instructions, which may sometimes require the intervention of a trusted third party to confirm that the conditions required for the execution of the terms of the contract are met[602], these smart contracts benefit from the features offered by blockchain technology in that, once written developed on top of the blockchain, they become indelible and transparent[603].

417. In view of the possibilities offered by these computer programmes, the literature and the OECD consider that they could help enhance the internal stability of an on-going cartel, by allowing its members to control deviant behaviour and to apply retaliatory measures[604].

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[597] FAURE-MUNTIAN, V. et al, report of June 2018, cited above, page 37.

[598] LANDAU, J-P., report of July 2018, cited above, page 19.

[599] *Idem supra*.

[600] Office parlementaire d'évaluation des choix scientifiques et technologiques, (translated)"*Understanding blockchains (chaînes de blocs)*", April 2018, Scientific note n° 4, page 2 (link).

[601] LANDAU, J-P., report of July 2018, cited above, page 81; DE LA RAUDIÈRE, L., et al, information report of December 2018, cited above, page 35; FAURE-MUNTIAN, V. et al, report of June 2018, cited above, page 68; NASCIMENTO S. et al, report of 2019 cited above, page 19.

[602] DE LA RAUDIÈRE, L., et al, information report of December 2018, cited above, pages 37 and 62; FAURE-MUNTIAN, V. et al, report of June 2018, cited above, page 68; NASCIMENTO, S. et al, report of 2019 cited above, pages 19 and 20; FAURE-MUNTIAN, V. et al, report of June 2018, cited above, page 69.

[603] DE LA RAUDIÈRE, L., et al, information report of December 2018, cited above, page 35; FAURE-MUNTIAN, V. et al, report of June 2018, cited above, page 170.

[604] NAZZINI, R., 2019, cited above, page 31; BALISAGAR, K., et al, 2019, cited above, page 42; SCHREPEL, T., (translated)"*Algorithmic and blockchain agreements*", Recueil Dalloz, June 2020, page 1246; OECD, "*Blockchain technology and competition policy*", June 2018, page 6.

2. OUTLOOK ON POSSIBLE DEVELOPMENTS IN THE SECTOR

418. During the investigation for this opinion, the *Autorité* ascertained that the payments sector has undergone significant changes over the past few years, particularly in terms of the entry of new players and the creation of new services. Although their potential is considerable, these trends are currently part of the payment infrastructures developed and controlled by the existing traditional banking actors, without fundamentally modifying their operations and using them to a significant extent, often indirectly.

419. However, these trends have the potential to profoundly change the competitive balance of the sector on a lasting basis. They are, first and foremost, pro-competitive, since they lead to an increase in supply and an improvement in the quality and diversity of the products and services offered, while at the same time exerting pressure on prices for the consumer. Through their innovative models, and thanks to their innovative services, new non-bank players are instilling competition in the markets in various forms; In particular, they help to increase price competition by offering certain services at lower prices (sometimes free of charge) than the equivalent services of banking players. They also stimulate a race for innovation in which all players in the sector, including the banks, seek to integrate as many new functions as possible into their respective offers.

420. Alongside FinTech, banks are therefore playing a driving role in the ongoing developments, not only by innovating directly but also in the process of integrating these innovations into the existing banking system. Given their position in the payments industry and their vast resources and industry knowledge, banks are likely to continue to play a key role in future developments in the sector.

421. However, some banks have raised concerns about the economic balance of the sector and the scope of services offered to consumers. Indeed, they point out that, in order to offer their services, the new non-bank actors use existing payment systems, but do not bear the high costs of operating and maintaining the underlying banking infrastructures, which remain the responsibility of the traditional actors.

422. In addition, certain services which are deemed unprofitable, such as the possibility of talking to an advisor and depositing and withdrawing cheques and cash in a branch or via an ATM, are not provided by the new entrants. In this regard, one bank stressed that, through their local physical presence throughout the country, banks (translated) "[...] *also provide a number of services to their customers (face-to-face contact with an adviser, depositing/cashing cheques, depositing/withdrawing/recycling cash through their ATM/ARLS network). These services, considered as "utilities" and which represent a significant part of the bank's costs, are not provided by the major digital* players"[605]. Another bank also raised the issue of cash management, stating that (translation) "*banks that are exclusively online cannot provide cash management and rely on traditional banks in this regard, which must therefore bear costs for the entire market in order to provide a service for which there is little or no reward*".[606]

423. However, the importance of the cheque and cash management business must be seen in the context of current and future developments in the sector. For several years now, card payments and, to a lesser extent, credit transfers, on which most of the new payment services are based, have been growing significantly, while at the same time cheques and, to a lesser

[605] Classification mark 3,715.

[606] Classification mark 1,535.

extent, cash, have been declining[607]. As such, cheques, which accounted for around 18% of total transactions in 2010[608], accounted for only 6% in 2019[609], and the number of cheque transactions fell by almost 50% between 2010 and 2019. With regard to cash, the number of cash transactions fell by about 15% between 2010 and 2019.

424. Although the bank card has been the most widely used means of payment in recent years, it has also faced the arrival of new services, such as mobile payment, which allows payments to be made in stores using the phone as a payment medium instead of a physical payment card. Some actors interviewed during the investigation for the opinion also pointed out that some new payment initiation services using credit transfers could become a direct alternative to payment by bank card[610].

425. The business model of FinTech may require more fundamental changes from banks in the future. The "one-stop shop" banking model, which offers customers a single point of contact for all banking transactions and is based on customer relations and physical branch networks, may have to be overhauled. A banking actor interviewed stressed in this respect that (translated) "*regulatory changes* [that have facilitated the emergence of FinTech in France] *have had the effect of accelerating the fragmentation of banking services (payments, loans, savings, etc.) by "breaking" the principle of the banks' "one-stop shop" (all services to all types of customers), leaving the latter with the management and cost of "utilities" (cheques, fiduciary, local physical presence, etc.) and the risks (e.g. immediate reimbursement of customers in the event of payment errors by payment initiators)*"[611]. As regards the physical presence of banks in France, the number of bank branches has been gradually falling since 2008. It should be noted, however, that France, where the number of bank branches has fallen by around 7% over the past decade, is much less affected by this trend than its European neighbours, including countries of comparable size such as Germany, the United Kingdom and Spain, where the number of branches has fallen by 30%, 27% and 40% respectively, and smaller countries such as Finland and the Netherlands, where the decline has reached almost 60%[612].

426. A growing trend towards the positioning of many new operators as the direct interlocutors of consumers could also contribute to challenging the position of the traditional actors in the value chain. As owners of the underlying banking infrastructures on which these services are based, banks would continue to play an essential role in the system, as they do today, but their position could potentially evolve towards a more pronounced role as technical service providers, performing back office activities. Any redefining of the positioning of the actors concerned and, consequently, of the structure and level of income generated by their business could, among other things, entail the risk for the consumer, in the absence of rules obliging banks to maintain services such as cheques, of losing some of those which would not be profitable and which are currently provided by the banks thanks to their integrated model.

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[607] See Banque de France, report of January 2021, cited above, page 31, and Banque de France, statistical publication of December 2020, page 3.

[608] Banque de France, (translated)"*Mapping of cashless payment methods, 2011 collection report (2010 data)*", December 2011, statistical publication, page 3 (link).

[609] Banque de France, statistical publication of December 2020, cited above, page 3.

[610] Classification mark 4,024.

[611] Classification mark 3,716.

[612] ACPR, study on the profitability of neo-banks of June 2020, cited above, page 24.

427. Historically, payments were not a profitable business, but rather a necessity for banks to cultivate a customer base for a range of services. Today, the loss of the customer relationship in the payments segment alone could lead to similar developments in other business areas, which are even more fundamental to the banking model, such as credit and insurance.

428. However, it seems unlikely today to envisage, even in the distant future, a scenario in which FinTech would break away entirely from the current banking system by creating their own infrastructures, as may be the case in China. The significant historical differences in the development of the sector in Europe and China make it unlikely that digital actors will replace banks in the field of payment infrastructures. Indeed, in China, thanks to a combination of factors, including the low penetration of non-cash means of payment[613], non-banking actors such as Alibaba and Tencent have been able to benefit from the evolution of smartphones and a favourable regulatory framework to rapidly make their mark[614]. In this respect, the development of significant European projects, such as the *European Payments Initiative*, which is currently ongoing and aims to create a pan-European interbank network, demonstrates the desire of European banks to innovate in the area of payments and to retain control of the underlying banking infrastructures (see paragraphs 188 et seq. above).

429. However, while the presence of significant non-bank actors, such as Big Tech, in the French payments sector is currently at a relatively nascent stage[615], this situation could change rapidly. These players could bolster their presence in the sector, in particular through new partnerships with banking actors, such as the partnerships that have been concluded abroad, particularly in the United States, between Amazon and JP Morgan or Apple and Goldman Sachs for the creation of bank cards[616] and, more recently, between Citigroup and Google for the creation of a new digital bank account called "*Citi Plex Account*" available via *Google Pay*[617]. Although they do not have the experience of banks in the payments sector, Big Tech have mastered and even controlled certain innovative technologies that could play a decisive role in the service chain in the future.

430. It follows from the above that recent developments in the payments sector call for continued vigilance by the *Autorité*. While the evidence presented in this section points to the possibility of certain risks to competition *in* the market, or at least conditions conducive to their occurrence, it is appropriate, in a sector where innovation is so important and dynamic, to foster healthy competition for the market and, as such, ensure that the incentive for companies to innovate is safeguarded.

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[613] BIS, report of June 2019, cited above, page 58.

[614] VIVES, X., Note of 27 June 2019, cited above, pages 9 and 10.

[615]The ACPR notes that, unlike in other countries (translated), "*the French market does not appear to be as "permeable" to the entry of major digital actors, whether American or Chinese. The presence of long-established banks with a firm foothold, offering some of the most secure payment solutions available in the world, is undoubtedly one of the reasons behind this phenomenon*" (classification mark 4,438).

[616] Classification mark 4,436.

[617] See the website of Citigroup (link).

Deliberated on the oral report by Mr Pablo González Pérez, Mr Laurent Meunier and Mr Benjamin Record, Rapporteurs, and the intervention of Ms Lauriane Lépine-Sarandi, Deputy General Rapporteur, by Ms Isabelle de Silva, President, Ms Irène Luc, Ms Fabienne Siredey-Garnier, Mr Emmanuel Combe, Mr Henri Piffaut, Vice-Presidents, Mr Christophe Strassel and Mr Jean-Yves Mano, Members.

Hearing Secretary,	The Chairperson,
Claire Villeval	Isabelle de Silva

Glossary

The following terms used in the opinion have the following meanings:

Algorithm: a series of rules to be applied in a specific order to accomplish a particular task: a logical sequence for obtaining a certain result from a given input[618]. Algorithms can be represented by a language, code or programme that can be read and executed by a machine. Thanks to advances in IT, they are now used to automatically perform repetitive tasks involving data processing and complex calculations[619].

API (application programming interface): in general, a programming interface that allows two programmes or software to interact with each other in order to exchange data. In the context of PSD2, a technical communication channel specifically designed to allow payment initiation service providers and account information service providers to access the data of online payment accounts held by the account servicing payment service providers.

Strong authentication: a procedure enabling the payment service provider to verify the identity of a payment service user or the validity of the use of a specific payment instrument, including the use of the user's personalised security credentials, and based on the use of two or more independent elements[620] categorised as "knowledge" (something that only the user knows), "possession" (something that only the user possesses) and "inherence" (something that the user is).This procedure is designed in such a way as to protect the confidentiality of the authentication data[621].

Big Tech: giant digital services and data platforms based mainly in the United States and China[622]. This term therefore refers to the major digital players which encompass "GAFAM" (Google, Apple, Facebook, Amazon and Microsoft) and "BATX" (Baidu, Alibaba, Tencent and Xiaomi).

BtoBtoC or "Business to Business to Consumer": an area of business in which a product or service is first sold to companies before being resold by the latter to individual customers as part of a service. A company evolving in a BtoBtoC sector has two types of customers: companies buying the product and end-users with whom it is not necessarily in direct relation but who are the customers of its customers.

Payment channel: a method of initiating a payment such as, for example, remote payment over the Internet or contactless payment.

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[618] OECD, "*Executive Summary of the Roundtable on Algorithms and Collusion*", 21-23 June 2017, pages 6 and 7 (link).

[619] *Idem*.

[620] In the sense that the compromise of one does not call into question the reliability of the others.

[621] See Directive (EU) 2015/2366 of the European Parliament and of the Council of 25 November 2015, cited above,
article 4.

[622] Banque de France, report of January 2021, cited above, page 4.

Blockchain: technology for storing and transmitting information[623], recorded in blocks[624] and relating to transactions carried out by network users[625], which makes it possible to create a register in which information is simultaneously distributed among all users.

Permissionless blockchain: A blockchain in which all network users can perform and validate transactions[626].

Permissioned blockchain: A blockchain in which only certain users can carry out transactions, validate them or do both[627].

Public blockchain: A blockchain in which (i) any user can access the network and (ii) the content of individual blocks is visible to all users[628].

Private blockchain: a blockchain for which (i) access to the network must be authorised and (ii) the right to read, which affects the visibility of the content of the blocks in the chain, may be either public or restricted[629].

Purely private blockchain: private blockchain in which a single actor owns and manages its development according to its expected use, controls access to the network and, among other things, defines the right to read[630].

Consortium blockchain: A private blockchain in which consortium members control access to the network.

Clearing: a mechanism by which banks and financial institutions can conduct transactions. A transaction always has a debtor and a creditor. The clearing is materialised by the accounting entry set that materialises the transaction. The credit to the creditor's account is said to clear the debit to the debtor's account[631].

Smart contracts: Computer programs that automatically verify or execute the terms of a contract, at the negotiation or implementation stage, when the required conditions are met[632].

Cookie: a text file installed on the hard disk or terminal of an Internet user either by the server of the site he or she is visiting (so-called proprietary or First Party cookies) or by a third-party server,

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[623] FAURE-MUNTIAN, V. et al, report of June 2018, cited above, page 13.

[624] DE LA RAUDIERE, L. et al, information report of December 2018, cited above, page 16.

[625] LANDAU, J-P., report of July 2018, cited above, page 5.

[626] NASCIMENTO, S. et al, report of 2019, cited above, page 14.

[627] *Idem supra.*

[628] NASCIMENTO, S. et al, report of 2019, cited above, page 14; LANDAU, J-P., report of July 2018, cited above, page 80; CONG, L.W., and HE, Z., cited above, page 10; DE LA RAUDIÈRE, L., et al, information report of December 2018, cited above, page 16.

[629] NASCIMENTO, S. et al, report of 2019, cited above, page 14; LANDAU, J-P., report of July 2018, cited above, page 80.

[630] LANDAU, J-P., report of July 2018, cited above, page 80; DE LA RAUDIERE, L. et al, information report of December 2018, cited above, page 21.

[631] See the website of the ACPR (link).

[632] DE LA RAUDIÈRE, L., et al, information report of December 2018, cited above, page 16; LANDAU, J-P., report of July 2018, cited above, page 81; DE LA RAUDIÈRE, L., et al, information report of December 2018, cited above, page 35; FAURE-MUNTIAN, V. et al, report of June 2018, cited above, page 68; NASCIMENTO S. et al, report of 2019 cited above, page 19.

i.e. from a separate domain (so-called Third Party cookies). It contains various pieces of data: the name of the server that installed it, an identifier in the form of a unique number and, usually, an expiration date. Cookies are used to store information about the user's browsing habits (e.g. shopping cart) and to make it easier for the user.

CORE (COmpensation REtail) (FR): a French interbank retail payment system based on an infrastructure operating on the basis of multilateral clearing with deferred settlement once a day in central bank money[633].

Crypto-assets: digital assets, without legal tender[634] and created by private actors[635], which are not associated to a bank account and can be held or transferred in order to purchase a good or service[636]. Unlike electronic money, crypto-assets are not issued against receipt of funds[637], do not represent a claim on an individual or legal person[638], and are digital representations of non-monetary value[639].

Bills of exchange: negotiable instruments evidencing a claim to a sum of money for the bearer and serving to pay it[640].

FinTech: non-banking actors in the payments sector, with the exception of Big Tech, whose profiles and models sometimes vary significantly.

Freemium: business model in which a product or service is offered free of charge and intended to attract a large number of users. Companies then try to convert these users into customers for a more advanced version of the service, for which there is a fee, or for additional services that are also paid.

Market infrastructures: infrastructures that ensure the processing of financial flows exchanged between actors in the financial system[641].

Miners: In the context of consensus protocols based on Proof of Work, network users, sometimes organised in the form of groups or pools, who compete to create a block, bringing together the transactions that have taken place in a given period of time, and to solve, on the basis of their respective computing power and in return for a fee[642], the computer calculation that makes it possible to associate a hash, an identifier that can be expressed in binary code (0 and 1) to the new block created[643].

Central bank money: money issued directly by a central bank in the form of coins and banknotes (fiduciary money) and money deposited by commercial banks in their accounts

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633 See website of the Banque de France (link).

634 Banque de France, Focus No. 16 of 5 March 2018, cited above, page 2.

635 Banque de France, Briefing of 9 June 2020, cited above, page 1.

636 LANDAU, J-P., report of July 2018, cited above, page 3.

637 Banque de France, Focus No. 16 of 5 March 2018, cited above, page 2.

638 LANDAU, J-P., report of July 2018, cited above, page 7.

639 LANDAU, J-P., report of July 2018, cited above, page 3.

640 Banque de France, report of January 2021, cited above, page 24.

641 See website of the Banque de France (link).

642 In addition to receiving a fee if they are successful, the miners charge fees on the transactions they include in each new block they create (FAURE-MUNTIAN, V. et al, report of June 2018, cited above, page 37).

643 LANDAU, J-P., report of July 2018, cited above, page 81; NASCIMENTO, S. et al, report of 2019, cited above, page 24.

held by the central bank, enabling them not only to obtain supplies of banknotes, but also to maintain reserve assets ("reserve requirements")[644].

Central bank digital currency: issued and guaranteed as well by the central bank[645], the central bank digital currency would be a component of the monetary base, exchangeable at par with fiduciary money and reserves, available permanently and in peer-to-peer transactions, and circulating on digital means at least partly different from the existing ones (blockchain and other technologies)[646].

Wholesale central bank digital currency: central bank digital currency used for interbank settlements.

Retail central bank digital currency: central bank digital currency used by the general public.

Electronic money: monetary value that is stored in electronic form, including magnetic form, representing a claim on the issuer, issued against the remittance of funds for the purpose of payment transactions and accepted by a natural or legal person other than the issuer of electronic money[647].

Fiduciary money: banknotes and coins issued by public authorities and having legal tender status.

Means of payment: all instruments that enable any person to transfer funds, regardless of the medium or technical process used[648].

Scriptural means of payment: payment cards, cheques, credit transfers, direct debits, bills of exchange and electronic money.

Network nodes: a set of computers, owned by network users[649], that each store a copy of the blockchain and update it as time goes on[650].

Initial Coin Offerings: fundraising operations that allow Internet users to participate in the financing of a project through the provision of funds, particularly in crypto-assets, in exchange for tokens.[651] These tokens offer their holders certain rights, such as the right to have first use of the platform or application being funded (as in conventional crowdfunding), or to receive a share of the profits generated by the company, or to exercise a voting right (like shares)[652].

Instant payments: electronic retail payment solutions available 24/7/365 and resulting in the immediate or close-to-immediate interbank clearing of the transaction and crediting of the payee's account with confirmation to the payer[653].

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644 See website of the Banque de France (link).

645 Banque de France, Briefing of 5 June 2020, cited above, page 2.

646 Classification mark 4,446.

647 See Article L. 315-1 of the French monetary and financial code (Code monétaire et financier).

648 See Article L. 311-3 of the French monetary and financial code (Code monétaire et financier).

649 LANDAU, J-P., report of July 2018, cited above, page 81.

650 *Idem supra*.

651 Banque de France, Focus No. 16 of 5 March 2018, cited above, page 4.

652 Banque de France, Focus No. 16 of 5 March 2018, cited above, page 4.

653 Banque de France, report of January 2021, cited above, page 167.

Account servicing payment service provider: a payment service provider providing and maintaining payment account for a payer[654].

Consensus protocol (or consensus algorithm): a protocol by which a block is validated before being added to the blockchain. The most commonly used consensus protocols are based on *Proof of Work, Proof of Stake* or *Proof of Authority*.

3D-Secure protocol: protocol that connects the payer with the bank that issued the credit card in order to authenticate the payer[655].

SEPA(EU): French interbank retail payment system with pan-European ambitions based on an infrastructure operating on the basis of multilateral clearing with deferred settlement once a day in central bank money[656].

Cloud services: all remotely operated IT solutions and services for data storage, computing and management.These services can be classified into three broad categories: (i) applications or "Software-as-a-Service", (ii) "Platforms-as-a-Service", which provide an environment for customers to benefit from software and tools to develop their applications, such as programming languages and automated updates, and (iii) "Infrastructure-as-a-Service", in which the cloud service provider provides servers, networks, storage and data centre space, among other things.

Payment initiation services: services which enable an individual or legal person to order the execution of payment transactions, such as credit transfers, from an interface (website and/or mobile app) that is not necessarily that of the bank in which their account(s) is (are) held[657].

Account information services: services which allow an individual or legal person to group information together on a single interface (website and/or mobile app) regarding the balances and transactions carried out on several or all of their accounts[658].

Payment services: the list of activities carried out on a professional basis that fall under this concept is provided for in Article L. 341-1 of the French monetary and financial code (Code monétaire et financier).

"Direct access" technical solution: a technical solution enabling payment initiation service providers and account information service providers to use the existing e-banking interfaces of the account servicing payment service providers in order to access the online payment account data held by the latter.

Stablecoins: digital assets whose value, indexed to an underlying asset (e.g. a commodity, a legal tender or a basket of legal tender currencies), is expected to remain more stable than that of a crypto-asset.

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[654] See Directive (EU) 2015/2366 of the European Parliament and of the Council of 25 November 2015, cited above,
article 4.

[655] Banque de France, January 2021 report, cited above, page 56.

[656] See website of the Banque de France (link).

[657] See the website of the ABE (link).

[658] *Idem supra*.

Payment system: a type of market infrastructure that provides interbank settlement for retail payments by bank customers or for large-value payments between financial institutions[659].

Four-corner or quadripartite payment system: payment system involving, in addition to the payment system, four actors: the debtor, his bank (known as the "*issuing bank*"), the beneficiary and the latter's bank (known as the "*acquiring bank*"). In a "*tripartite*" system, which does not require the involvement of financial institutions, there are only three actors: the debtor, the beneficiary and the payment system that issues the payment cards and manages the transactions directly[660].

E-wallet or digital wallet solution: a solution that allows a user to entrust a trusted third party with payment and personal data[661].

Near field communication (NFC) contactless communication technology: technology that makes it possible to initiate a contactless payment via a mobile phone. It allows two terminals in proximity, equipped with this technology, a smartphone and a payment terminal for example, to exchange data very rapidly.

QR code contactless communication technology: technology that makes it possible to initiate a contactless payment via a mobile phone. It is based on the generation of two-dimensional barcodes, consisting of black modules arranged in a square with a white background, on the consumer's smartphone which is scanned by the retailer using the camera of a smartphone or tablet.

[659] See website of the Banque de France (link).

[660] *Autorité de la concurrence* Decision 13-D-18 of 20 September 2013 on Visa's practices in the payment cards sector, paragraphs 12 and 27.

[661] Observatoire de la sécurité des cartes de paiement, report of January 2012, cited above, page 38.