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PROGRAMA INTERNACIONAL DEL DOBLE GRADO EN ADMINISTRACIÓN Y DIRECCIÓN DE EMPRESAS Y DERECHO

THE FINTECH PHENOMENON: THE OPEN BANKING REVOLUTION

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Abstract

This study delves into the Fintech phenomenon in Europe, aiming to comprehensively analyse the main factors behind the development of Fintech companies. The main focus will lie on the regulatory changes that over the past decades have shaped the financial landscape. Therefore, three main topics will be thoroughly analysed in the European Union framework: the licensing system, Open Banking and Regulatory Sandboxes.

The licensing regime poses the first entry barrier for those companies which desire to provide certain services that are protected. Secondly, Open Banking sets the whole regulation in one of the main activities in the financial system: payments. The revolution that Open Banking has brought is worth a detailed analysis of its cornerstone norm, the Second Payment Service Directive (PSD2). A great part of the study will be devoted to the regulatory changes and challenges that this policy has meant to the financial system, with specific attention to the transposition of this Directive in the Spanish legal framework. Finally, this study will explore the concept of regulatory experimentation embodied in the figure of Regulatory Sandboxes as a regulatory catalyst for companies, regulators and supervisors.

By examining these legal dimensions, the study provides a holistic understanding of the Fintech landscape within the European Union, showing the interplay between the evolution of financial technology and regulatory frameworks.

Keywords: Fintech, Open Banking, PSD2

Resumen

Este estudio profundiza en el fenómeno Fintech en Europa, con el objetivo de analizar los principales factores que impulsan el desarrollo de empresas Fintech. El enfoque principal se centrará en los cambios regulatorios que, a lo largo de las últimas décadas, han dado forma al panorama financiero. Por lo tanto, se analizarán minuciosamente tres temas principales en el marco jurídico de la Unión Europea: el sistema de licencias, el Open Banking y los Regulatory Sandboxes.

El régimen de licencias se erige como la primera barrera de entrada para aquellas empresas que desean ofrecer ciertos servicios. En segundo lugar, el Open Banking establece la regulación de una de las principales actividades del sistema financiero: los pagos. La revolución que el Open Banking ha traído merece un análisis detallado de su norma fundamental, la Segunda Directiva de Servicios de Pago (PSD2). Gran parte del estudio se dedicará a los cambios y desafíos regulatorios que esta política ha supuesto para el sistema financiero, prestando especial atención a la transposición de esta Directiva en el marco legal español. Finalmente, este estudio explorará el concepto de experimentación regulatoria encarnado en la figura de Regulatory Sandboxes como un catalizador regulatorio para empresas, reguladores y supervisores.

Mediante el examen de estas dimensiones legales, el estudio intenta proporcionar una comprensión integral del panorama Fintech en la Unión Europea, mostrando la interacción entre la evolución de la tecnología financiera y los marcos regulatorios.

Palabras clave: Fintech, Open Banking, PSD2

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INTRODUCTION TO FINTECH

In recent years the phenomenon of FinTech has arrived to our everyday life. We see it on the news, we talk about them and we use them maybe without being aware. Grammatically, the term FinTech does not need a deep explanation, it is just the contraction of "Financial Technology". However, the concept FinTech does not seem to be clear, and a proper definition may be needed.

FinTech refers to the "novel processes and products that become available for financial services thanks to digital technological advancements"[1]. Other institutions, such as the Financial Stability Board[2] defines the term as "technologically enabled financial innovation that could result in new business models, applications, processes or products with an associated material effect on financial markets and institutions and the provision of financial services".

With this definitions we could argue that FinTech has been around for some time. ATMs or credit cards are great examples of the introduction of new technology in the financial sector. In fact, we could say that this kind of innovation is organic to any sector, even more when we are talking about financial services. So what is different this time?

FinTech evolution

Several writers argue that the emergence of FinTech is not a recent development, emphasizing that the integration of technology in finance has been present for some time. Following this line of thought, three stages can be drawn[3].

- The first wave (FinTech 1.0) goes from 1866 to 1967, this stage is characterized by the start of globalisation, with greater communication across the world. Some technology that determined this wave are the telegraph, railroads and steamships that allowed financial interlinkages across frontiers. This was the first step in the development of financial information, payments and transactions across the globe.
- The second wave (FinTech 2.0) takes place between 1967 and 2008. The innovations that explain the transition to a new wave are very important. In 1966

[1] BARBA, G., CALZOLARI, G., & FRANCO, A., "FinTech and Banks: Friends or Foes?" in *European Economy*, 2017, p.12
[2] The Financial Stability Board (FSB) is an international body that monitors and makes recommendations about the global financial system
[3] ARNER , D., BARBERIS, J., & BUCLEY, R., "The evolution of FinTech, a new post-crisis paradigm?", University of Hong Kong Faculty of Law, 2015, p.6-12

the Interbank Card Association (currently Mastercard) was established. In addition, a global telex network was created, which allowed the introduction of the fax machine. On top of that, in 1967 the first ATM was deployed by Barclays in the UK, marking the start of the FinTech 2.0. In this period the whole financial industry shifted from analogue to digital. The appearance of the Internet marks the evolution of this wave.

- The third wave (FinTech 3.0) goes from 2008 to the present. The Global Financial Crisis of 2008 is considered a turning point in this matter. This event generated the factors that explain the current situation, which will be later illustrated in this chapter.

Nevertheless, this paper will follow the common understanding that the term FinTech refers to this latest wave (the FinTech 3.0). In fact, although the occurrence can be traced back to the XIX century, the term has been created and become popular recently as seen in Figure 1.

Figure 1: Evolution of the appearance of the term FinTech in Google search 2004-2023

Source: Google Trends, 2023

In this figure the evolution of the Google searches about the term FinTech is shown. It is in 2015 when the term starts to experience significant growth, reaching its peak in 2022. It can be seen how the presence of FinTech has evolved from just being used in very particular financial environments. Currently, the term can be found in newspapers and academic environments, although it has not reached yet a situation in which the majority of the society is familiarised with the concept.

Factors behind FinTech development

As said previously, the factors that explain the development of FinTech are found in the consequences of the Financial Crisis of 2008, some of which are directly related to the regulatory response from the institutions. I would like to reflect on those elements to better understand the blooming of FinTech activity in the recent years.

The first factor to consider is the public perception of banks, as it severely deteriorated. Their image suffered as it was shown that their risk management was not optimal. The banking sector showed an image of instability, both with the risk measurement of the products commercialised and their own financial structure. For example, a 2015 survey conducted in the United States of America showed that Americans trusted more technology firms than banks to handle their finances[4].

In Spain, this situation was worsened by the need of restructuring in the banking sector. This can be seen in the reduction of banks (by mergers and acquisitions) and the reduction of overall banking branches. In this situation, the perception of banks and financial institutions was severely damaged, so there was an opportunity for the appearance of new actors with a new way of approaching the customers. Therefore, the marketing strategy of some of this new entrants is focused on presenting themselves as an opportunity or way to avoid traditional banks.

The second factor to consider is the increase in regulatory scrutiny by the public institutions. As the 2008 Financial Crisis showed, the lack of legal measures in the sector regarding some financial products led to the subprime mortgage bubble burst. Additionally, regulators aimed to reinforce the banking system in order to avoid bankruptcy. These regulations affected heavily the banks, having to focus on complying with the new norms and constraints. Parallelly, this allowed some technological players to enter a market in which the traditional banks had some limitations.

The central pillar of the regulations approved after the 2008 Financial Crisis to control the banking sector is Basel III. Basel III is a framework that sets international standards to regulate banking institutions. It was developed as a response of the subprime bubble burst which led to the 2008 Financial Crisis. It was promoted by the FSB (Financial Stability Board) and the G-20, in order to give an international solution to the

[4] FORBES, "Americans Trust Tech Firms More Than Banks for Finance", 2015, June 24. Retrieved from: https://www.forbes.com/sites/niallmccarthy/2015/06/24/americans-trust-tech-firms-more-than-banks-for-finance-infographic/. In this study banking entities (Wells Fargo, JPMorgan Chase, Citibank and Bank of America) were rated as positive by a percentage of respondents ranging from 36% to 44%. In contrast, Tech Firms (PayPal, Amazon, Google and Apple) were rated higher with the values representing the positive opinion of respondents ranging from 73% (PayPal) to 57% (in the case of Apple).

problem. The challenge was to set a system to overcome some financial regulatory deficiencies that allowed the banks to reach a situation which could not be controlled.

The Basel III agreement were transposed in the European Union by the Capital Requirements Directive IV[5] and the Capital Requirements Regulation[6].

The main points of Basel III are increasing minimum capital requirements, holdings of high quality liquid assets and decreasing bank leverage. It tries to prevent the former situation in which the financial balances of banks were flooded with risky assets (like derivative instruments) while having less quality equity for risk management. Consequently the requirements dealt with the maintenance of sufficient capital, loss-absorbing liabilities and liquid assets. As an example, some assets like cash that are considered safe do not attract strict capital requirements whereas loans to other banks, consumers or businesses are perceived as riskier and are subject to capital requirements.

Under that logic, Basel III set liquidity requirements based on certain financial figures, the most important ones being the liquidity coverage ratio and the net stable funding. The liquidity coverage ratio aims to ensure the presence of enough liquid assets in the short term, while the net stable funding aims to ensure that banks do not rely too much on short-term funding. The reason behind that is to give stability to the banking sector after the weakness shown worldwide with many financial institutions being rescued by governments and central banks.

Similarly, banks were obliged to increase the transparency in their financial balances. The banking industry has been characterized by their opacity and usage of very complex financial instruments. Basel III imposed certain rules to enhance transparency such as the disclosure of certain information on a country-by-country basis, including figures like profits, taxes and public subsidies perceived.

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[5] *Directive 2013/36/EU of the European Parliament and of the Council of 26 June 2013 on access to the activity of credit institutions and the prudential supervision of credit institutions and investment firms*. This directive establishes the rules and regulations for access to the activity of credit institutions and the supervision of those entities and investment firms in the EU. It delineates the criteria for obtaining and maintaining the authorization of credit institutions and investment firms, therefore ensuring alignment in national regulatory practices across member states. The cohesive approach that it sets creates a common levelled playing-field across the European Union.

[6] *Regulation (EU) No 575/2013 of the European Parliament and of the Council of 26 June 2013 on prudential requirements for credit institutions and investment firms*. This Regulation establishes requirements (such as risk-based capital requirements, liquidity standards and leverage ratios) with the objective of ensuring stability and integrity of the financial system. It reflects the EU commitment to fostering a resilient banking sector capable of withstanding economic shocks while promoting transparency and accountability within the financial industry.

By creating a subsystem of compliance regulation by banks, the competent authorities supervise the banking institutions. With Basel III some aspects that were more intensely regulated were the access to the business of banks, the conditions for freedom of establishment, the freedom to provide services and the prudential supervision by the relevant national authorities of banks and investment firms.

However, other companies which were not under the banking spectrum could have a competitive advantage due to the lack of requirements in certain operations. Hence, this was a boost for FinTech services which were not under the regulatory umbrella of Basel III.

On top of that, as will be seen later, there has been a strategic shift in the regulatory framework of banking and payments. This norms, in the form of European Directives have change the banking paradigm creating a new concept known as Open Banking. Not to spoil the following chapters, the result of this Directives aimed to provide a levelled playing field for all financial institutions, hence increasing the competitiveness of the sector and making possible the entrance of FinTech companies.

The third factor that explains the appearance of FinTech are the economic conditions that enabled a beneficial environment for these companies to be competitive. Among these factors, the exceptionally low interest rates should be highlighted. The attractive conditions for financing allowed not only the FinTech, but also Venture Capital and other investors, to fund projects very capital intensive, as the technological ones.

It is also worth mentioning among the economic factors that after the 2008 Financial Crisis, a large number of employees from financial institutions were dismissed due to the restructuring. This allowed some of them to create projects with the know-how of the sector. FinTech companies had a great opportunity to recruit valuable workers. Additionally, a new generation of graduates with technological skills faced a difficult job market in which FinTech companies could hire the best talents.

On top of that, the demographic response should be noted, as the democratization of internet services and smartphone penetration increased in the general population. This trend has been significantly accelerated by COVID-19, as the circumstances imposed the general public to embrace the digital services. This situation benefited FinTech companies which aim mainly for clients that are technology savvy, but with a focus on creating an effortless experience for the user.

Those elements, complemented by the technological innovations seen in recent years, created a breeding ground for the blossoming of the FinTech sector. In fact, one of the global technological hubs and fintech centres has been United Kingdom, due to the common factors listed previously and specific measures and players. To give some perspective of the size of the British market, just in the United Kingdom in 2019 there were over 1,600 FinTech firms[7]. However, this trend is not located just in the UK or Europe, the presence of FinTech services must be considered as an already materialised trend. Estimations in 2019 indicated that 6 out of 10 people worldwide used actively FinTech services[8]. That figure is likely obsolete and probably has increased, moreover after the COVID-19 pandemic.

FinTech classification

After the definitions reviewed, the concept of FinTech can be seen as an umbrella term as it may include the financial sector as a whole. Indeed, it is true, as the technological solutions can be applied to various aspects of finance. However, that does not mean that the implementation of the technology can be applicable to all FinTech services.

Classifying the areas that currently comprise FinTech allows to better understand its potential and fields of development. Nevertheless, there is not a single classification and every author suggests slight differences.

I find that the categorization that Arner Douglas and his colleagues do in its paper[9] is simple yet clear. I'm going to follow that classification and explain each category with an example to translate the abstraction of some concepts into real representations.

1. Finance and investment

This area refers to the alternative financing mechanisms that have been created or have found a better approach with the development of FinTech.

[7] BOWDEN , J., KING, T., KOTMOS, D., LONCAN, T., & STENTELLA, F., *A taxonomy of FinTech Innovation*, 2021, p.54

[8] ERNST&YOUNG, *Global FinTech Adoption Index.*, 2019, p.5. In this report, conducted by the consulting firm, the global consumer adoption was reported to be 64% of FinTech, whereas the same figure for SMEs was set at 25% globally

[9] ARNER , D., BARBERIS, J., & BUCLEY, R., *The evolution of FinTech, a new post-crisis paradigm?*, cit, p.18-20. Despite being a very complete classification, this taxonomy did not include an important area of FinTech, which is currencies, and will be addressed after the explanation of the categories included by the authors.

There are numerous examples, but the most representative is the Crowdfunding, which is a way of funding projects and businesses by collecting money from a large number of small investors via an online platform. Crowdfunding is usually used by entrepreneurial startups that face financial constraints when asking for funds.

One of the reasons behind the popularity of this source of finance can be found in the regulations imposed to the banking sector after the 2008 Financial Crisis. The Basel III, as said previously introduced higher capital requirements which later translated into less funding to the high-risk projects or individuals. Therefore, this market opportunity was fulfilled with Crowdfunding. So crowdfunding is just the offer of loans to finance a project via internet. It is a direct canalisation mechanism between the savings (normally of individuals) and productive investment that is complementary to the traditional ones[10].

There are four types of Crowdfunding depending on the compensation obtained by the investor.

- The donation-based, in which the investor funds the project altruistically, is the rarest as investors does not receive any financial nor material return.
- The reward-based is funded on the promise of a reward, which can take any form, but is usually the product or service that the financed project aims to commercialise.
- The lending-based is the most similar to a traditional loan, in which they investor not only receives the principal but also some interest on the amounts invested.
- The equity-based provides the investors with a stake of the business in return of the investment. It can be compared with a traditional IPO in the concept, but the mechanism is different, as the company is not listed on a stock exchange and does not need to fulfil the requirements associated with it.

[10] ZUNZUNEGUI, F., *"Shadow banking, crowdfunding y seguridad jurídica"* in *Papeles de economía española*, 2015, p.146. As said in the article, the role that Crowdfunding displays is similar to traditional intermediaries, but in a more efficient way. Crowdfunding has found a positive environment in markets with a developed banking infrastructure in which bank credit has been deteriorated as a consequence of the Financial Crisis (as Spain). This statement is specially true in cases of SMEs as they needed to find alternative funding sources. Therefore, both systems can be complementary as they can target different risk profiles.

This mechanisms allow the entrepreneur to access financing, at the same time that gives the opportunity to individuals to invest in big projects. The lending platform usually has not a direct exposure to the risk of the operations and its business model is based on servicing fees.

As it is reflected on a recent article[11], with the development of Crowdfunding, entrepreneurs not only choose this financing method to raise capital, but also to validate a business idea and to create brand awareness, becoming a marketing tool to some extent.

However, the market opportunity that alternative investment business models found because of Basel III has been reduced. As Crowdfunding grew in acceptance and capital, the risk it posed to the financial system also increased. Consequently, in recent years the European Union has introduced specific legislation for these FinTech companies in the form of a Crowdfunding Service Provider License. This topic will be further discussed in the chapter regarding the licensing in the financial sector.

2. Financial operations and risk management

As seen previously, the 2008 Financial Crisis revealed some flaws in risk management in the financial sector. In order to strengthen the system and deal with the compliance of the regulatory changes, a lot of investment in this area has been made.

Big Data, which is the process of analysing great amounts of data to extract quality information and create data-driven decisions, has been an important tool for the development of this area. It has allowed, alongside with the improvement of algorithms, to access much deeper information of the clients and operations. The quality of that information is translated into more risk control and tailoring of the financial products.

For example, by using Big Data and Machine Learning the lending institution can detect probable fraudulent behaviours before they take place.

[11] BECH, L., CLEVELAND, I., & ROED, K. “Choosing crowdfunding: Why do entrepreneurs choose to engage in crowdfunding?”, Technovation, 2022, p.5. Due to the distinct characteristics of Crowdfunding, it becomes a quick and effective tool to validate a business idea, elicit feedback and identify core customers. As the article reflects, by doing a Crowdfunding campaign, the benefactor is also adhering thousands of ambassadors of the brand or idea, gathering insights from the potential customers at the same time.

Additionally, the institution can identify hidden patterns and important KPIs (Key Performance Indicator).

In the case of insurance, by monitoring the data, insurers can have a more effective protection for operational risks and insurance fraud.

By better representing the risks of the operations, the financial institutions can be more efficient, avoiding certain losses and offering more attractive conditions for the clients.

Therefore, this area has been developed not only for the regulatory requirements set by the regulatory and supervisory institutions but also because it translated into a better understanding of its business and the profitability of its operations.

3. Payments and infrastructure

This area has been one of the main focus of the FinTech companies in recent years, mainly due to the revolutionary regulations affecting Open Banking, specially through the Second Payment Service Directive (PSD2). This topic (and the PSD2 regulation) will be deeply covered in later chapters.

Electronic fund transfers, the remittance of funds between different bank accounts without human intervention, has seen its development on the areas of security, information transfer and efficiency in international money transfers[12].

Furthermore, the penetration of smartphones in the population and online shopping has allowed to introduce new payment methods that are replacing traditional alternatives such as cash or bank transfers.

With the latest technology there was room for improvement in traditional money transfer services, specially in the case of inter-bank and international operations. The instantaneous payment methods such as Immediate Funds Transfers (IFTs) and Real Time Payments (RTP) have been the objective of FinTech and banks. This area has been developed both in B2C and P2P payments.

As a quick example, currently in Spain a wire transfer between accounts of different banks take a couple of days whereas by using Bizum the transfer is

[12] KING, T., STENTELLA, F., SRIVASTAV, A., & WILLIAMS, J., *Disruptive Technology in Banking and Finance,* 2021, p.259. Parallelly, the international institutions (such as the International Organization of Securities Commissions, the Basel Committee on Banking Supervision, the Committee on Payments and Market Infrastructures and the Financial Stability Board) are monitoring the effects on financial stability, market integrity, efficiency and investor protection.

immediate. It is worth mentioning the story of Bizum, as it is a joint venture of 23 Spanish commercial banks. It may seem contradictory to offer a free and immediate service for P2P payments when each bank has its own wire transfer services from which they usually receive a fee. Nevertheless, other FinTech actors should be considered (for example PayPal) which offered a similar free service for P2P payments and threatened to de-intermediate the banking P2P transactions.

A similar situation occurs in the case of B2C Contactless Payments, in which the main innovation comes from the ability of paying with the NFC technology of the smartphone without needing a physical credit or debit card. In this case the Big Tech companies like Apple and Google offered a wallet service to link the credit cards to your Google or Apple account. Parallelly the banks offer the same service with their own apps. To market size this payment method, a research conducted by Juniper[13] estimates that the e-wallet users in 2026 will be 5.2 billion globally, up from 3.4 billion in 2022.

Some of these FinTech payment platforms offer not only paying with external bank-linked accounts or cards, but also with internal payment options (PayPal for example has PayPal Balance, PayPal Savings or PayPal Credit)[14]. By using those internal payment methods the FinTech is circumventing banks, cutting them off from a valuable informational synergy. In relation with the previous FinTech area, banks use the data provided by the operations to optimize their risk management, thus, loosing that information by third parties harm their position.

4. Data security

Although data security may not seem clearly a FinTech area, it attracts a lot effort from the various parties of the sector. At the end, the implementation of new technologies and the coexistence of various standards increases the risk of a data breach.

The importance of the data that financial institutions gather of companies and individuals is a key aspect. The vulnerability of the private data could be translated in a trust crisis that could paralyze the system. That is the reason why

[13] Juniper Research is a company that specialises in identifying and appraising high growth market sectors within the digital ecosystem. It published a report in 2022 called "Digital Wallets: Market Forecasts, Key Opportunities and Vendor Analysis 2022-2026"

[14] GHOSH, P., VALLEE, B., & ZENG, Y., *FinTech Lending and Cashless Payments*, 2021.

data security is a major concern for governments, regulators, financial institutions and customers.

Cyber security is a threat that comes from different sources. The most important ones are unencrypted data in platforms, malware being introduced in smartphones or computers, using unreliable third-party services or tricking users with manipulated data[15]. To stop those cyber crimes, financial institutions establish protocols and software such as issuing digital certificates or using device identification.

Cyber risk and data security are regarded by far as the most prominent drivers of increased operational risk with a 88% agreement. 45% of responding banks also noted being subject to cyber-attacks in the first half of 2022[16].

Relevant efforts are being made by European institutions and private associations to create a juridical body of standards which set requirements to make financial operations more secure. An example is the recent European Commission proposal called Digital Operational Resilience Act (DORA). The European Banking Authority (EBA) is also contributing to the creation of the European Single Rulebook[17] which aims to provide a single set of harmonised prudential rules for financial institutions throughout the European Union. Among other topics, the EBA wants to develop technical standards, guidelines[18], opinions and other legal instruments to enhance the cyber resilience of financial institutions[19].

5. Consumer interface

This field has been subject to a huge development recently as it has been proved that it was a valuable area. In fact, some FinTech companies found success by offering similar services to traditional financial institutions with the main

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[15] These issues were listed as the most important sources of cyber security threats in the 1st International Conference on AI in Cybersecurity (ICAIC) which took place in 2022. Some of the insights that were defined in that conference were published in a paper called "Cyber Security Threats on Digital Banking"

[16] EUROPEAN BANKING AUTHORITY, *Risk Assessment Report of 2022*, 2022.

[17] To access the press release of EBA: https://www.eba.europa.eu/regulation-and-policy/single-rulebook

[18] The EBA has developed a set of guidelines related to the reporting of incidents and frauds under PSD2 with the cooperation of the European Central Bank. The objective of these guidelines targeted the security of retail payments in the European Union by credit institutions. The development of the guidelines required the collection and reporting of data by credit institutions, payment institutions and electronic money institutions (the differences between those institutions will be addressed in upcoming sections).

[19] European Union Agency for Cybersecurity, "*EU cybersecurity initiatives in the finance sector*", 2021, p.6. The European Union Agency for Cybersecurity, ENISA, is the Union's agency dedicated to achieving a high common level of cybersecurity across Europe.

difference being the consumer interface. Some examples can be found in the insurance industry.

Finance is sometimes complex and opaque for the individual users that do not understand the terms and conditions of the various products. By developing a optimal consumer interface the companies are capable of approaching the client in a tailored way.

Lastly, traditional banks have focused on this area, by simplifying their approach, which can be seen on their online and mobile financial services.

I would add a new category which is currencies, as this field has obtained a lot of attention and investment in recent years. The main interest of this area are cryptocurrencies, although it is also worth mentioning the development of FinTech companies in traditional currency exchange services.

This topic has lately attracted much interest from the regulatory point of view. In particular, a new regulation has been adopted in the European Union on June 2023. This regulatory body, called the Markets in Cryptoassets Regulation (MiCA), will enter into application in the upcoming years (probably between late 2024 and early 2025)[20]. It is presented as a pioneering legislative text that positions Europe as an attractive region in the crypto market. Therefore I find that this FinTech area should be introduced as it will be subject to an important development in the upcoming years, both economically and juridically.

A cryptocurrency is a digital or virtual currency, secured by cryptography, which makes it nearly impossible to counterfeit or double-spend. Most cryptocurrencies exist on decentralized networks using blockchain technology[21].

Cryptocurrency has blossomed after the creation of Bitcoin in 2009. Based in the blockchain technology, it allowed a decentralized and open system in which there are not central banks. In the last decade similar projects have appeared with slight differences but mainly the same principles. Despite the debate about whether the cryptocurrencies

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[20] Although MiCA has entered into force in June 2023, there is a period between 12 and 18 months to develop some measures before the entrance into application of the regulation. The situation of the process can be checked in the European Securities and Markets Authority webpage following this link: https://www.esma.europa.eu/esmas-activities/digital-finance-and-innovation/markets-crypto-assets-regulation-mica

[21] Retrieved from an article from Investopedia: https://www.investopedia.com/terms/c/cryptocurrency.asp Investopedia is a financial journal with more than 44 million monthly users and more than 36,000 articles.

(specially Bitcoin) can be considered money or not, they have grown in users and acceptance. In fact, some authors state that cryptocurrencies compete not with banks but with central banks[22]. The competition for commercial banks are various platforms that give access to crypto-assets and offer financial products. Indeed, Neobanks can offer crypto-related services to differentiate themselves from traditional commercial banks.

It is worth noting the strategy that central banks have chosen in this matter. Cryptocurrencies, as noted before, challenge central banks due to its properties, mainly decentralization. In fact, Bitcoin and other coins were born with the objective of not being bound to the central bank system.

Bitcoin controls the monetary offer by following its own protocol, which is public, transparent and can be traced back to the beginning of its blockchain. The information of the total number of bitcoins in existence in each moment can be easily checked as it follows a mathematical equation.

This approach is different from the one that Central Banks have, as they control the offer by printing or taking money out of the market. Those decisions usually follow a political and economic policy. As an example, the European Central Bank‘s monetary policy is to target an inflation rate of 2% in the medium rate[23]. However, this objective could be revised as it happened after the COVID-19[24].

To challenge the threat of decentralization, many Central Banks have initiated projects called CBDC (Central Bank Digital Currency) that share the main principles with cryptocurrencies with the exception of being decentralized. Although CBDCs and cryptocurrencies are not the scope of this project, it should be noted that its development can affect greatly the financial landscape of our markets.

Everything said highlights the importance of regulation in this topic, as there are major players such as central banks and governments which might be threaten by this

[22] STULZ, R., "FinTech, BigTech, and the Future of Banks" in *Journal of Applied Corporate Finance*, 2019, p.91. In this article, the author affirms that while FinTech companies usually pose a threat to commercial banks, cryptocurrencies pose a challenge to central banks.
[23] As it is stated in the monetary policy of the European Central Bank, the official objective is to obtain a regular inflation rate of 2% over the medium term.
[24] Extracted from a speech by Philip R. Lane, Member of the Executive Board of the European Central Bank, at the International Macroeconomics Chair Banque de France in which he reflected on the role of the ECB's monetary policy in response of the COVID 19 pandemic.

technology. Without a proper legislative framework the system may pose risks for incumbent participants (both institutions and non-licensed actors) and customers.

FINTECH LEGAL FRAMEWORK

The banking and financial sector is one of the most regulated industries worldwide. Some of the reasons can be found in the introductory chapter of this paper as the 2008 Financial Crisis was triggered by the Lehman Brothers collapse. Thus, given the financial impact in the global economy, it has been always subject to strict regulations.

The scope of this paper is to focus on the EU framework, as it is one of the most complete yet pioneer systems of the world. To do so, we are going to analyse 3 areas that define the current European legal framework. In the first section the licensing system will be examined because it structures and delimits the financial operability of each company. Secondly, the paper will focus on Open Banking and will explain it regarding mainly the Second Payment Service Directive. Despite being in relation with the payments license the importance of the revolution Open Banking intends is worth its own section to analyse it in depth. Finally, in a third section the Regulatory Sandbox will be studied as it is a innovative approach to regulation and supervision and embraces the particularity of FinTech companies.

Licenses

The current system is based on entry barriers to operate, called licenses. Regulators pose charters and licenses in order to maintain potential fraudulent actors and risks away from financial operations.

In general terms the following licenses are considered: the banking license, the electronic money license, participatory financing platform license and the payment institution license. The scope of this paper is to focus on the regulations in the European Union market (more specifically the European Economic Area).

The banking license

The banking license is one of the central licenses that can be obtained in the European Union system as it allows digital banks and traditional institutions to offer a full range of banking products. Nevertheless, the key aspect is that banks are allowed not only to take deposits (which other financial institutions also can do) but also to carry out banking activities, as will be seen.

The banking license is a very important authorisation in the banking industry. The trust in the financial system is backed by these licenses, which ensure the enforcement of good practices and supervision of its operations. Thus, licensing must prevent unsafe institutions, that can pose a threat to the financial system, from entering the banking market.

Since 2014, only the European Central Bank (ECB) has been competent to grant the banking licenses for the credit institutions based on Member States under the Single Supervisory Mechanism (SSM). This topic is regulated in the Council Regulation (EU) No 1024/2013 of 15 October 2013 conferring specific tasks on the European Central Bank concerning policies relating to the prudential supervision of credit institutions.

The main topics that the ECB assess in order to grant the authorisation are the applicant's capital levels, its operations programme, structural organisation and the suitability of managers and relevant shareholders.

The requirements and functioning of the license is mainly regulated in the Regulation No 575/2013 of the European Parliament and of the Council of 26 June 2013 on prudential requirements for credit institutions and investment firms, this text is also known as the Capital Requirements Regulation (CRR).

The definition of "credit institution" the CRR gives is "undertaking the business of which is to take deposits or other repayable funds from the public and to grant credits for its own account". Therefore there is some explanation to be made out of this definition, specifically the concepts of "deposits and other repayable funds" and "grant credit for own account" as they will have juridical transcendence. By defining the term credit institution the regulator is setting limits to the concept, allowing the activities contained in its boundaries.

When referring to deposits or other repayable funds, there is a wide array of financial products that it covers. For example, repayable funds such as deposits can consider long-term savings accounts, current accounts, immediately repayable savings accounts or funds in investment accounts. The banking sector is known for the range of products with different conditions it can offer, hence, the deposits are no exception. Therefore, it is useful to consider the interpretation given by the Court of Justice[25] which stated "that the term 'other repayable funds' in Article 3 of the directive refers not only to financial instruments which possess the intrinsic characteristic of repayability, but also to those which, although not possessing that characteristic, are the subject of a contractual agreement to repay the funds paid". Therefore, this term should be considered in a broad way.

The term "deposit" should also be interpreted in a broad sense as it is defined in the Directive 2014/49/EU of the European Parliament and of the Council of 16 April 2014 on deposit guarantee schemes. In that Directive it is delimited as "a credit balance which results from funds left in an account or from temporary situations deriving from normal banking transactions and which a credit institution is required to repay [at par] under the legal and contractual conditions applicable, including a fixed-term deposit and a savings deposit". The flexibility in the definitions allow the authorities to include products and services that have the main characteristics regardless of the name given by the financial institutions.

"Grant credit for own account" alludes to lending, where the financial institution takes de position of the creditor. Thus, the credits are viewed as assets from the bank's perspective. Some instruments that can be considered are consumer credits, credit cards, mortgage loans or factoring and financing of commercial transactions. Additionally, for "own account" refers that the bank takes part or the whole risk of the operation, as it is opposed to the role of an intermediary (like the Crowdfunding Platforms) that is not affected by the success or default of the payment.

The banking's core activity is hence the acquisition of funds from individuals or companies paired with the credit service, in which the institution grants credits for fees and interest. Normally, with the exception of the situation of the last decade with the interest rates plummeted, in order to attract funds from the public, banks would offer interests to certain passive accounts.

It is worth mentioning that with the definition given, some FinTech services would be based directly or indirectly on the granting of small or big credits. Consequently, as

[25] Judgment of the Court of Justice of 11 February 1999, Romanelli, C-366/97, ECLI:EU:C:1999:71, paragraph 17

will be shown, some FinTech companies will need a banking license in order to perform their services or partner with a credit institution. The applicant needs to develop both activities to be eligible to be a credit institution, but a certain degree of flexibility might be possible.

Other FinTech companies, such as transaction providers which do not take deposits neither grant credits or electronic money issuance providers will be subject to other licenses as will be shown below (electronic money or payments).

Nevertheless, the main commercial banks, through its different divisions, allow the client to access almost all the financial instruments. With the banking license there are a number of activities which can be authorised by “mutual recognition”, which is a procedure in which both the Member State’s authorities and the ECB grant or refuse an authorisation.

Those activities are listed on Annex I of the Directive 2013/36/EU of the European Parliament and of the Council of 26 June 2013 on access to the activity of credit institutions and the prudential supervision of credit institutions and investment firm, and are the following:

1. Taking deposits and other repayable funds.

2. Lending including, inter alia: consumer credit, credit agreements relating to immovable property, factoring, with or without recourse, financing of commercial transactions (including forfeiting).

3. Financial leasing.

4. Payment services as defined in Article 4(3) of Directive 2007/64/EC.

5. Issuing and administering other means of payment (e.g. travellers' cheques and bankers' drafts) insofar as such activity is not covered by point 4.

6. Guarantees and commitments.

7. Trading for own account or for account of customers in any of the following:

(a) money market instruments (cheques, bills, certificates of deposit, etc.);

(b) foreign exchange;

(c) financial futures and options;

(d) exchange and interest-rate instruments;

(e) transferable securities.

8. Participation in securities issues and the provision of services relating to such issues.

9. Advice to undertakings on capital structure, industrial strategy and related questions and advice as well as services relating to mergers and the purchase of undertakings.

10. Money broking.

11. Portfolio management and advice.

12. Safekeeping and administration of securities.

13. Credit reference services.

14. Safe custody services.

15. Issuing electronic money.

The banking license is not granted just if a company fits within this definition, this are the services that a bank can provide. In order to obtain a banking license, the institution should comply with very strict requirements. This procedures are set to guarantee that the client's funds are secure and that the bank has a structure that enables a balance between the money due and the credits.

The banking license is not the scope of this paper, therefore the requirements will just be mentioned as there is a whole framework in relation with banking requirements and compliance.

Most of the banking regulation currently sits on the capital requirements, as banks have very strict percentages of capital that have to be located in certain products or in safe accounts. An example of this is the Deposit Insurance Scheme.

Additionally, banking ownership is subject to strong regulations due to its importance. Shareholders holding more than a 10% of the capital or voting rights should be authorised by the ECB. Nevertheless, if there are no shareholders with such percentage, the twenty largest holders should be assessed. The topics to be investigated are the reputation, financial soundness and suspicion of money laundering or terrorist financing. On top of that, the directive and management should be examined. Likewise, the programme of operations and business model shall be analysed.

The Electronic Money License

The Electronic Money License allows the licensed companies to issue electronic money, becoming Electronic Money Institutions (EMIs). The normative body that regulates this issue is the Revised Electronic Money Directive (EMD2) and Payment Service Directive (PSD2). The PSD2 regulation will be subject to a detailed analysis in coming chapters. However, the EMD2 is going to be analysed below.

The Revised Electronic Money Directive (EMD2), by its full denomination "Directive 2009/110/EC of the European Parliament and of the Council of 16 September 2009 on the taking up, pursuit and prudential supervision of the business of electronic money institutions", was issued in 2009 and is still in force with its latest consolidated version dating of 2018. The directive sets the rules for electronic money operations with the objective of creating a single market for payments for the benefit of consumers and businesses.

Firstly, the directive grants two important definitions, in its Article 2 sets that:

"'electronic money institution' means a legal person that has been granted authorisation under Title II to issue electronic money".

"'electronic money' means electronically, including magnetically, stored monetary value as represented by a claim on the issuer which is issued on receipt of funds for the purpose of making payment transactions as defined in point 5 of Article 4 of Directive 2007/64/EC, and which is accepted by a natural or legal person other than the electronic money issuer".

Despite that the Electronic Money Institution definition states that the legal person has authorisation to issue electronic money, the fact is that the activities that it can perform are not constraint just to the issuance as it is referred in Article 6.

Article 6 includes all the relevant activities that the EMIs can perform with its license in addition to issuing money. According to Article 6.1. the institutions can operate payment systems and grant credit in relation with those services and engage in the activities listed in "Annex to Directive 2007/64/EC". Those activities include a vast array of financial operations like execution of payment transactions (with payment service providers) and by the means of digital, IT payment through telecommunication. In this activities the EMIs act as the intermediary between the payment service user (the customer) and the supplier of the product or service.

Article 6.2. sets a limitation on the issuing power of EMIs stating:

"Electronic money institutions shall not take deposits or other repayable funds from the public within the meaning of Article 5 of Directive 2006/48/EC."

Article 5 of Directive 2006/48/EC, although not in force currently, asserts that:

"Member States shall prohibit persons or undertakings that are not credit institutions from carrying on the business of taking deposits or other repayable funds from the public"

This is an important limitation as it will be decisive in the delimitation between the Electronic Money License and other licenses such as the Banking License. This idea is developed in article 6.3. and further in article 12 which set the following imperative:

Article 6.3."Any funds received by electronic money institutions from the electronic money holder shall be exchanged for electronic money without delay. Such funds shall not constitute either a deposit or other repayable funds received from the public within the meaning of Article 5 of Directive 2006/48/EC"

Article 12."Member States shall prohibit the granting of interest or any other benefit related to the length of time during which an electronic money holder holds the electronic money"

This reflects the transactional nature of the Electronic Money Institutions, which cannot hold the funds without doing the proper exchange. The operation should be carried immediately and cannot be considered a deposit or a repayable fund, therefore no interest shall be yielded. On the contrary, the Banking License allows the credit institutions to make payments or issue electronic money. Therefore, the scope of the Banking License is greater than the Electronic Money License as it includes its services (as seen in Annex I of the Directive 2013/36/EU).

The Participatory Financing Platform License

The Participatory Financing Platform License (PFP) refers to activities in which there is an intermediation between the public and the investment project, facilitated by electronic platforms. That is, as referred previously, the Crowdfunding models. A lack of regulation and supervision in this area may pose significant risks for the investors.

In the EU it is regulated by the "EU Regulation 2020/1503 of the European Parliament and of the Council of 7 October 2020 on European crowdfunding service providers for business". This regulation is quite recent, as it entered into force on 10th November 2021, providing more legal certainty and security for both the investors and the project owners.

This set of norms are regarded as common for the EU Member States, with a following development of national authorities. The key aspects brought by this regulation is the obligations of the Crowdfunding Service Providers and the measures to protect the investors. Currently, in Spain the law addressing these investment platforms is the "Ley 5/2015, de 27 de abril, de fomento de la financiación empresarial", which establishes a 3.000€ limit in each project for non accredited investors[26] (just for those investors which are individuals).

In its article 1, the Regulation states its subject matter and its exemptions. As it is declared:

"This Regulation lays down uniform requirements for the provision of crowdfunding services, for the organisation, authorisation and supervision of crowdfunding service providers, for the operation of crowdfunding platforms as well as for transparency and marketing communications in relation to the provision of crowdfunding services in the Union".

Among the exemptions of this regulation we can find the crowdfunding offers that amount more than 5 million euros (Article 1.2(c)) or projects based on personal reasons.

Article 2 gathers the essential definitions of the Regulation, in which the definition of crowdfunding service is highlighted:

[26] Article 82; *Ley 5/2015, de 27 de abril, de fomento de la financiación empresarial,* BOE-A-2015-4607

"'crowdfunding service' means the matching of business funding interests of investors and project owners through the use of a crowdfunding platform and which consists of any of the following activities:

(i) the facilitation of granting of loans;

(ii) the placing without a firm commitment basis […] of transferable securities and admitted instruments for crowdfunding purposes issued by project owners or a special purpose vehicle, and the reception and transmission of client orders […] in relation to those transferable securities and admitted instruments for crowdfunding purposes."

In order to be considered a Crowdfunding Service Provider, the legal person shall apply to the competent authority of the Member State in which it is established, complying all the requirements collected in Article 12. All the authorised Crowdfunding Service Providers are listed in a public register established by the ESMA (European Securities and Market Authority) as it is noted in Article 14.

On top of that, the Regulation sets certain obligations of the Crowdfunding Service Providers. Among them, it is worth noting the obligations of not accepting any reward for routing investor's orders to a particular crowdfunding offer, have in place effective and transparent procedures, carry out due diligence of project owners and provide national authorities with an annual confidential list of projects funded through its platform. When regarding the crowdfunding operations from a juridical standpoint (and in particular from a taxation law perspective), it is vital to make a distinction. If the crowdfunder expects to obtain a monetary or equity remuneration it will be considered as an investor, while if there is no monetary remuneration it can be considered a benefactor; and thus other laws will be applicable[27].

The Payment Institution License

The Payment Institution License is a license that allows an institution to process certain payments. In the European Union its regulation began in 2007 with the Payment Service Providers Directive (PSD). This was the first step to create a single payments

[27] SEDEÑO, J.F., *"Tributación del Crowdfunding"* in *Crónica tributaria*, 2021.

market in the EU. At that time the technology was much simpler and incumbent banks were the only financial institutions.

Therefore, as the situation developed, it was necessary an amendment, which came with the PSD2. In Spain, the Directive was transposed with some retard in the form of the "Real Decreto-ley 19/2018 de servicios de pago y otras medidas urgentes en materia financiera". In the practice, there are still some topics to fully apply from a technical and juridical standpoint[28].

The importance of this Directive is central to the current situation. The PSD2 is the cornerstone of the revolution that allowed FinTech companies, and Neobanks to offer services and products that could not be possible before. That revolution is named Open Banking and has changed the model in the whole banking industry as it allowed the entrance of new comers, creating a completely different environment. Thus, I consider that it is worth creating a section just to explain Open Banking and the PSD2.

Open Banking

Open Banking is a change in paradigm in the banking industry. The new system "is based on the data and information of the ownership of the clients, who can authorize access and use by third parties in order to enjoy new banking and financial services"[29].

The most valuable asset for banks nowadays is information as with the latest technologies (mainly Big Data and Machine Learning) it can base a competitive advantage. With Open Banking that valuable asset is being opened and shared with certain institutions that can be considered competitors for the incumbent bank. Therefore, this movement is changing the rules and the business approach of the banking sector as a whole.

Open Banking allows the clients of the financial service to transfer the payment information to other financial institutions of their choice. That gives to a certain extent

[28] BASCO, A. & DE BIASE, P., *PSD2, "*Escenario actual tras su implantación y retos jurídicos del Open Banking*"* in *Revista Jurídica Pérez-Llorca*, 2020, p.3. Specifically, it is found necessary a full technical implementation to the new standards related to secure communication through Application Programming Interfaces (APIs). It is deemed necessary to also shed light on the viability of certain business models such as the reinforced authentication for the electronic mail.
[29] *LÓPEZ, J.M., "*La «banca abierta» («open banking») y la prestación de servicios bancarios" in *"Revista del derecho del mercado de valores",* 2021.

power to the customer to choose other financial intermediaries, a power that the bank looses.

The mechanism that will be the main information conduct in Open Banking will be APIs. Application Programming Interfaces (API) are a "set of codes and protocols that dictate interactions between software components and allow different applications to communicate with each other"[30]. Although this architecture is technical, the main idea that can be extracted from the concept of APIs is that it is a door or a link to a certain information that can be reached and is stored in another platform. With APIs two systems work together, although one of them originally did not own the information needed.

In Europe, as advanced before, the basis of the Open Banking can be found on the Payment Services Directive II (PSD2) issued in 2015. Due to its importance, in this paper it will be analysed thoroughly.

PSD2 Directive

The aim of the directive

First of all, the aim of the PSD2 directive, as said in its preamble, is to open the payment markets to new entrants, leading to more competition, greater choice and better prices for consumers. Later will be discussed the new situation that PSD2 has created in the banking and payments sector due to its variation in incentives.

As stated in article 1.2, the PSD2 establishes rules concerning "the transparency of conditions and information requirements for payment services" and "the respective rights and obligations of payment service users and payment service providers in relation to the provision of payment services as a regular occupation or business activity". This set of rules apply to existing and new providers of payment services.

The elements that are introduced in the PSD2 have the objective of facilitating and making the operations more secure through a new service called payment initiation which operates between the merchant and the customer's bank. An entire system of controls is

[30] Definition extracted from an article from GoCardless, which is a network of bank payments used by more than 75,000 businesses globally

set to intensify the security of online transactions. As a result, the customers should be protected against fraud, abuse and payment incidents while boosting consumer's rights[31].

Therefore, we can understand its scope and that it aims at changing the framework of payments.

Important definitions

In Article 4 we can find the necessary definitions to understand the concepts brought by this Directive. The most important ones are the following:

Article 4.3. Payment services, which guides to Annex I, in which the payment services are listed. Therefore, it will be considered a payment service:

"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.

[31] ARAMENDÍA, M.M., *Retos y oportunidades jurídicas ante la digitalización*, 2020, p.214. In order to attain those objectives, it is established in PSD2 that both banking institutions and payment service providers should intensify the security in online payment transactions.

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

6. Money remittance.

7. Payment initiation services.

8. Account information services."

Thus, in the scope of this regulation all this services are included. It is worth noting the concept of payment account, which is defined in Article 4.12. as "account held in the name of one or more payment service users which is used for the execution of payment transactions". The user can introduce cash into a payment account, but also withdraw money and operate the account.

Other instruments are also included as a payment services such as the execution of direct debits, credit transfers and, most importantly because of the number of transactions held daily, payment cards. All those services will be subject to the PSD2 directive, that will allow the exchange of information between financial institutions.

In Article 4.4. there is a key definition, which is the one of payment institution, which is determined as "legal person that has been granted authorisation in accordance with Article 11 to provide and execute payment services throughout the Union".

If we look at Article 11 it refers to Article 1, therefore, what can be considered payment institutions are: credit institutions, electronic money institutions (as commented before in the licenses section), post office giro institutions, payment institutions, the European Central Bank and national central banks (when not acting as monetary authorities) and Member States (or regional and local institutions when not acting as public authorities). As can be seen, the list of payment institutions is not very extensive.

Parties

In the new ecosystem that the PSD2 Directive establishes, there are different actors.

First of all we find the Account Servicing Payment Service Provider (ASPSP), which are notably banks. Banks posses the vast majority of information about its clients. Clients have banking accounts (but also other instruments such as credit cards) that will receive or send money, and therefore, will need to be connected to payment institutions.

On the other side, the institutions that want to access the information from the ASPSP are called the Third Party Payment Service Providers (known as TPPs). These institutions can be divided into two distinct figures, which are the Account Service Information Providers (AISP) and Payment Initiation Service Provider (PISP) characterized by the service they provide.

Account Service Information Providers (AISP) do not carry out payments. Their role is based on the information, as they request authorisation from data holders (ASPSP) in order to use it. As it is an abstract concept, it can be exemplified by the case of an app which allows the user to have an overview of its general financial situation (taking into consideration all its banking accounts, regardless of the financial institution they belong to). Having all the relevant information in a single place allows the user to better manage and understand its personal finances.

Payment Initiation Service Providers (PISP) on the other hand are institutions that act on behalf of the consumer to initiate the payment.

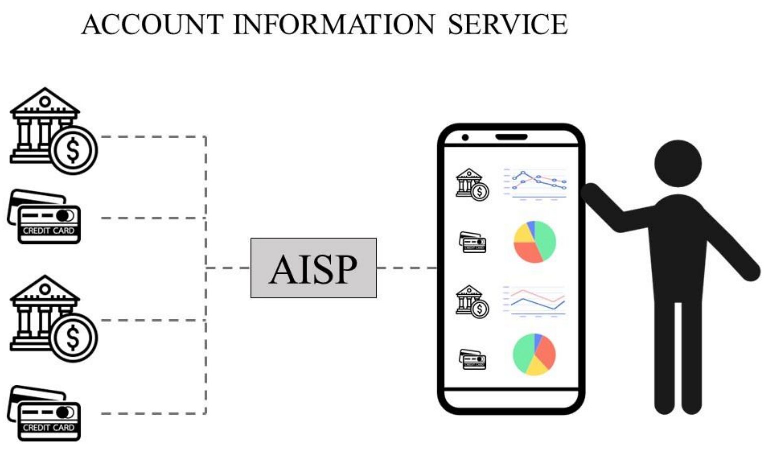
Both the AISP and PISP can access the client information under certain requirements that will be discussed.

How it works

Right before analysing the juridical content of the PSD2 Directive, an explanation of how the system works is necessary to understand the procedure.

As explained before, there are 2 types of services under this Directive, the Account Information Service and the Payment Information Service. I tried to illustrate it in Figures 2 and 3.

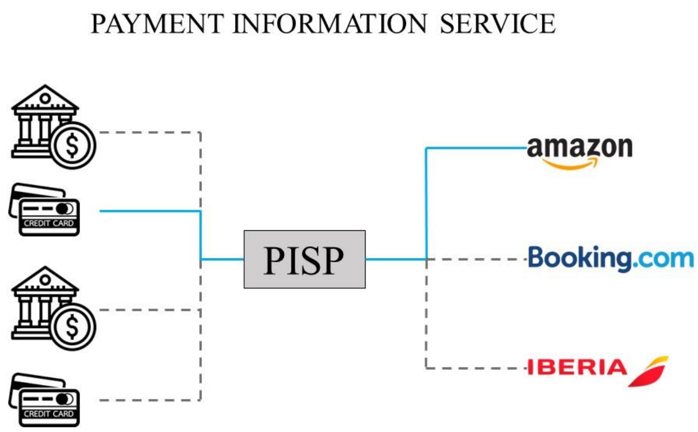
Figure 2: Diagram of the Account Information Service mechanics



Source: Own production, 2023

In the Account Information Service, the AISP seeks for information from the ASPSP (banks normally) APIs. In order to retrieve that information it should have the client's consent (as later will be explained, consent is a centrepiece in this regulation).

Figure 3: Diagram of the Payment Information Service mechanics



Source: Own production, 2023

The Payment Information Service is more complex as it intermediates between parties. On one hand it needs information from the bank, and in other hand it has to be communicated with the payer (the consumer) and the payee (a marketplace, for example).

Thus, it works as follows. The client (payer) wants to do a payment in an online shop with a banking credit or debit card. The client chooses one payment method (in this case the one of a certain PISP) and has already given explicit consent to the Account Servicing Payment Service Provider (ASPSP), which is the bank, to respond to request from that specific PISP. Then the PISP requests the bank a confirmation on the availability of funds for the total amount of the purchase that the client wants to do. The bank has to answer with a positive or negative response (not a statement of the account balance as regulated in Article 65). If the answer is positive the PISP operates the payment and the transaction takes place.

Juridical content

There are 4 main aspects that the PSD2 Directive regulates, which are, the licensing regime, the transparency conditions and information requirements, the rights and obligations of users and providers and the security requirements.

Licensing regime

Financial services framework, as mentioned before, is based on licenses. Thus, having a complete system to grant those licenses is necessary. This licenses or authorizations allow the licensed companies to provide certain services in the European Economic Area. The importance of the license is central, as it is the instrument to confer the trust of the system to a company or service. Consequently, the requirements to be eligible for the license try to ensure that a company is trustworthy.

The requirements to apply for the authorisation are found in Article 5. Because of the high number of provisions that it contains, just the most important ones are going to be addressed. The authorisation should comply with:

(a) a programme of operations setting out in particular the type of payment services envisaged

(b) a business plan with a forecast for 3 years

(c) evidences of the compliance with the capital structure requirements (that will be seen below).

(d) a description of the process in place to file, monitor, track and restrict access to sensitive payment data.

(e) identification of the critical operations, effective contingency plans and a procedure to regularly test and review the adequacy and efficiency of such plans.

(f) a description of the applicant's structural organisation

(g) the identity of directors and people responsible for the management of the institution and the evidences of their capabilities.

(h) in some cases, depending on the payment service provided, it is required to hold a professional indemnity insurance.

Articles 6 to 10 refer to ownership and structural requirements to ensure independency of the company and enough funds to cover the risk of the operations.

Article 11 comprehends the granting of the authorisation. First of all it highlights that all payment institutions must obtain an authorisation before commencing the provision of payment services.

In order to secure the authorisation the legal person should be established in a Member State. Such consideration can be affirmed when the payment institution has its head office in that Member State and carry out some of their operations there. Nevertheless, as Article 11.9. establishes the authorisation granted is valid in all Member States, thus allowing the institution to provide those services throughout the Union. This is an important point to make as an institution does not need to apply in each state.

The Directive determines in Article 12 a period of 3 months for the Member States to communicate a decision (whether to grant or not the license) to the company.

As it happened with other licenses, a register will be placed, in this case it will be developed by both the Member State and the European Banking Authority (EBA) with all the registers of the Member States. This register is public and can be easily accessed.

In order to maintain the authorisation, and with the aim to safeguard the trust of the system, the licensed companies shall be subject to an accounting and statutory audit annually according to Directives 86/635/EEC and 2013/34/EU, and Regulation (EC) No 1606/2002 of the European Parliament and of the Council.

Additionally, each Member State should designate a competent national authority, not only to authorise but also to supervise and control the payment institutions (Articles 22 and 23). Those national authorities shall cooperate with each other (Article 26).

Transparency conditions and information requirements

This matter is regulated in Title II of the PSD2 Directive. Although it has a lot of technical information, we will analyse the requirements that base the relationship between parties.

One of the main points of this Directive is found in this Title, specifically in Article 40, as it establishes that:

"1. The payment service provider shall not charge the payment service user for providing information under this Title.

2. The payment service provider and the payment service user may agree on charges for additional or more frequent information, or transmission by means of communication other than those specified in the framework contract, provided at the payment service user's request.

3. Where the payment service provider may impose charges for information in accordance with paragraph 2, they shall be reasonable and in line with the payment service provider's actual costs."

This is a key aspect for the development of the banking business model, as them (referred as payment service providers) must not only provide the information they have but also they should not charge for that service. So, the actors that have the information should give it for free to their competitors. That is one of the revolutions of Open Banking, and its consequences will be discussed more in depth in upcoming an upcoming section.

The Article also refers to the possibility to charge for additional information (which is not required to provide under this Directive). Nevertheless, the amount that the payment service provider charges "shall be reasonable and in line with the costs". Thus, this service cannot be translated into a business model for banks as they do not control freely its prices. The objective of this measure is to impede fees with no transparency that disguise abuses in information costs[32].

Hence, we must take a look at the information that must be provided by each party in the transaction. Although this may be quite technical, it allows to give a perspective of the amount of data provided and its sensibility, which is very important to relate with the cybersecurity that the financial institutions should have. As it will be shown, this is a system in which all parties should be continuously connected and exchanging information about the transaction.

According to Article 45, the Payment Service Provider should procure the user with the following information:

> *(a) a specification of the information or unique identifier to be provided by the payment service user in order for a payment order to be properly initiated or executed;*
>
> *(b) the maximum execution time for the payment service to be provided;*
>
> *(c) all charges payable by the payment service user to the payment service provider and, where applicable, a breakdown of those charges;*
>
> *(d) where applicable, the actual or reference exchange rate to be applied to the payment transaction.*

This is important information about the service that gives transparency to the operation on the user's side.

The Payment Initiation Service Provider (PISP) before initiating the payment should supply the payer with its credentials and contact details.

Once the payment is initiated, according to Article 46, the Payment Initiation Service Provider (PISP) should make available the following information to the payer, and if applicable, to the payee.

> *(a) confirmation of the successful initiation of the payment order with the payer's account servicing payment service provider;*

[32] FRATINI, F., *La tutela del usuario de servicios de pago en Payment Services Directive 2,* 2019, p.212. This statement can be regarded as a confirmation that PSD2 tries to recover the power over information costs, therefore impeding that it can be translated into a hidden lucrative business model. As part of the doctrine states, this provision is undoubtedly a legislative intromission in the area of tariff policies.

(b) a reference enabling the payer and the payee to identify the payment transaction and, where appropriate, the payee to identify the payer, and any information transferred with the payment transaction;

(c) the amount of the payment transaction;

(d) where applicable, the amount of any charges payable to the payment initiation service provider for the transaction, and where applicable a breakdown of the amounts of such charges.

Once the payment has been successfully carried out, the Payment Initiation Service Provider (PISP) should provide the payer with this information gathered in Article 48:

(a) a reference enabling the payer to identify the payment transaction and, where appropriate, information relating to the payee;

(b) the amount of the payment transaction in the currency used in the payment order;

(c) the amount of any charges for the payment transaction payable by the payer and, where applicable, a breakdown of the amounts of such charges;

(d) where applicable, the exchange rate used in the payment transaction by the payer's payment service provider or a reference thereto, when different from the rate provided in accordance with point (d) of Article 45(1), and the amount of the payment transaction after that currency conversion;

The data exchanged is designed to give security as both parties should be able to identify the transaction and main information points of the operation. As we can expect, these processes are automated, there is not human interaction, so the matching is done by software. Thus, the importance to have safety protocols and to comply with cyber security standards.

Rights and obligations of the parties

The first distinctive element when referring to the rights and obligations of the parties is the lack of disposition of the monetary resources by the PISP. It is certainly a pure intermediary which does not manage the money (this is directly administrated by the entity that manages the payment account). Therefore, this grants the PISPs a distinctive position because they are not bound by the solvency, capital and equity standards of the banking sector[33] (as long as they do not hold a banking license, as seen earlier). Instead, the PISPs are governed by specific regulations (in the case of Spanish PISPs it would be the *Real Decreto-ley 19/2018, de 23 de noviembre, de servicios de pago y otras medidas urgentes en materia financiera*). This Decree regulates different aspects such as capital, transparency and information requirements.

However, the key juridical element in this regulation is the consent. All of the information transactions between actors take place if the user has given the consent or authorisation. Consent is a prerequisite that creates a crucial condition for the conclusion of the contract that enables the regularity of payment transactions initiated by the PISP. The consent given by the user to the new operator enables the PISP to forward the payment order to the account entity without the need for a prior relationship. It is the element which creates the relationship. The contractual relationship between the user and the new PISP would resemble that of a mandate contract (regulated in Spanish law on Article 1709 Civil Code)[31]. Therefore, a customer who receives harm from a Third Party could directly claim their indemnity to the provider of the service.

Consent being central for the juridical relationship, it is worth to study its development in PSD2. It is reinforced by guarantees for the payer as it is shown in Article 64:

1. Member States shall ensure that a payment transaction is considered to be authorised only if the payer has given consent to execute the payment transaction. A payment transaction may be authorised by the payer prior to or, if agreed between the payer and the payment service provider, after the execution of the payment transaction.

2. Consent to execute a payment transaction or a series of payment transactions shall be given in the form agreed between the payer and the payment service provider. Consent to execute a payment transaction may also be given via the payee or the payment initiation service provider.

In the absence of consent, a payment transaction shall be considered to be unauthorised.

[33] PÉREZ DEL AMO, F., *Régimen de los TPPs y gestión del riesgo contractual: Perspectivas bajo la PSD2,* 2023

3. Consent may be withdrawn by the payer at any time, but no later than at the moment of irrevocability in accordance with Article 80. Consent to execute a series of payment transactions may also be withdrawn, in which case any future payment transaction shall be considered to be unauthorised.

4. The procedure for giving consent shall be agreed between the payer and the relevant payment service provider(s).

Some points are worth noting from this article. The first one is that the supervision of the consent rests with the Member States (more specifically to the Member States institutions which are meant to supervise). By default the consent should be given before the transaction and there is certain freedom in the way that the consent can be expressed. Another key point is that banks cannot refuse the Third-Party Providers the access to the data if customer allows it.

Therefore, if banks are obliged to give access to Third Party Providers, it is necessary to explicit the distribution of responsibility. PSD2 opts for a solution in which each party has to be accountable for the part of the operation under its control.

If there is not consent, the payment transaction should be considered unauthorised. The consequences of an unauthorised payment are found in Articles 73 and 74.

If the payment is unauthorised and it is the payment service provider's liability (Article 73), then the payment service provider should refund the payer immediately for the amount of the payment[34].

But, if it is the payer's liability (Article 74) there are different situations that can take place. If it is due to the "use of a lost or stolen payment instrument or from the misappropriation of a payment instrument" (unless already notified to the payment service provider) the payer should bear the losses up to 50€. There are some exceptions for this rule. It won't be applicable if the loss, theft or misappropriation of the payment instrument was not detectable to the payer prior to the payment, or if the loss was caused by lack of action by the payment service provider's side. Neither should the payer bear

[34] If the PISP wants to avoid bearing the loss, it must provide exculpatory evidence demonstrating, within its competence, the fulfilment of its duty of diligence in service provision, as well as the absence of technical or other failures attributable.

the losses if the payment service provider's interface does not require a strong authentication.

The obligations of the Third-Party Providers are relevant as they are the actors that access the sensitive information in order to provide their service.

In the case of the Payment Initiation Services Providers (PISPs), their obligations are gathered in Article 66. Not to include in this paper all of them, the most important ones are going to be listed.

The Payment Initiation Service Provider (PISP) shall:

- not hold at any time the payer's funds in connection with the provision of the payment initiation service;
- ensure that the personalised security credentials of the payment service user are not, with the exception of the user and the issuer of the personalised security credentials, accessible to other parties and that they are transmitted by the payment initiation service provider through safe and efficient channels;
- ensure that any other information about the payment service user, obtained when providing payment initiation services, is only provided to the payee and only with the payment service user's explicit consent;
- not store sensitive payment data of the payment service user;
- not request from the payment service user any data other than those necessary to provide the payment initiation service;
- not use, access or store any data for purposes other than for the provision of the payment initiation service as explicitly requested by the payer;
- not modify the amount, the payee or any other feature of the transaction.

In order to ensure that Payment Service Providers (PISPs) offer users easy-to-use and innovative payment services, PSD2 allows, in certain cases, for PSPs to be exempt from applying Strong Customer Authentication (SCA), as it can take some time that is not seen as necessary. Accordingly, it states (in its Article 98.1.b) that the technical regulatory standards should establish exemptions to the application of SCA, taking into account the following factors: the level of risk of the payment service, the amount or frequency of the transaction—or both—and the payment channel used (Article 98.3). The scenarios in which PISPs may not apply SCA: account information services (Article 10); contactless payments at the point of sale (Article 11); unattended terminals for transport fares or parking payments (Article 12); trusted beneficiaries (Article 13); frequent operations (Article 14); credit transfers between accounts held by the same natural or legal person (Article 15); low-value transactions (Article 16); secure corporate payments (Article 17); and low-risk electronic remote payment transactions (Article 18)[35].

With this obligations it becomes clear that PSD2 aims to give access to the information to the Third-Party Providers in order to create competition, but it just wants their figure to be strictly an intermediary. It does so by restricting their room for activity, as they cannot hold the funds, modify features of the transaction, or store sensitive information of the user. This creates a sort of balance as with the position of intermediary they may compete with banks in transactions, but not in the credit services, which have always been the core of banking.

It is worth noting that following the principle of technological neutrality (introduced in PSD2), the account-entities must uphold options for dialogue and collaboration with the PISP. The account-entity is exempt from investigating the contractual relationship between the customer and Third Party Operator, while it is required to presume, as a result of authentication and credential to access the account, that the PISP is acting based on the explicit consent previously gathered from the customer[36].

A similar situation can be seen in the case of the other Third-Party Provider class, the Account Information Services Providers (AISPs). Their obligations are collected in Article 67, and just as with the PISPs, we are going to list the most important features.

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[35] HERRERA, L., "Autenticación reforzada de cliente y responsabilidad en PSD2" in *Revista de Derecho del Sistema Financiero: mercados, operadores y contratos*, 2023. It is worth mentioning that in those cases the Directive is not exonerating the PISP to apply the SCA, but it is leaving room to the PISPs to determine if they want to apply it or not. The voluntary character means that, in case of an incident in which an unauthorised payment is processed, the PISP would have to cover the loss if it has not applied the voluntary SCA, unless that the payer acted in a fraudulent way.

[36] PÉREZ DEL AMO, F., *Régimen de los TPPs y gestión del riesgo contractual: Perspectivas bajo la PSD2,* cit. This approach is based on promoting free competition and non-discrimination by removing entry barriers for new payment service operators (PISPs)

The Account Information Service Provider shall:

- provide services only where based on the payment service user's explicit consent;
- ensure that the personalised security credentials of the payment service user are not, with the exception of the user and the issuer of the personalised security credentials, accessible to other parties and that when they are transmitted by the account information service provider, this is done through safe and efficient channels;
- access only the information from designated payment accounts and associated payment transactions;
- not request sensitive payment data linked to the payment accounts;
- not use, access or store any data for purposes other than for performing the account information service explicitly requested by the payment service user, in accordance with data protection rules.

The same conclusion can be extracted from this article, as PSD2 ensures that the AISPs just provide the service they are intended to do. Once again, the user's explicit consent is viewed as an essential requirement.

There are some other matters developed in this Directive that are not going to be analysed because they are very technical and do not offer much juridical depth, for example, the reporting, liabilities in case of late execution transactions or the authentication measures carried out by the providers. However, it should be emphasized in this section that PSD2 imposes the obligation on banking entities to bear the cost of programming and maintaining the necessary platforms to ensure a secure channel for access and transmission of information, while safeguarding the confidentiality and security of customer data.

Before closing this section, it is worth noting that some authors state that although most of the regulation is already in force, there are still some issues to tackle and implement in order to normalize the new communication standards that this Directive intends[37].

Similarly, other critics reflect on the same lines with a three- way approach[38]. Firstly, by challenging the holistic view of the PSD2 as it does not resolve all the existent issues. Secondly, there is a challenge referring to the central cornerstone of the Directive is the permission of the client, which is sometimes reluctant to share their data with Third Party Providers. And thirdly, by posing a question about whether the new framework will boost the consumer's products or it will make it harder for new entrants due to the opacity and complexity of the algorithms used.

However, the main European actors are pushing to fully implement this framework, so ideally it will just get better, safer and stronger.

PSD2 transposition to Spanish framework

The European Union, which started as a series of purely economical and commercial treaties, is now a whole system with political and regulatory mechanisms. Spain, as a Member State must comply with the obligations that its condition holds. The regulatory autonomy and sovereignty of a Member State is a controversial topic, however, its complexity can be the subject of a whole study. In this section, the transposition of PSD2 to the Spanish framework will be analysed.

Firstly, it is necessary to point that the Payment Services Directive 2 is, as its name indicates, a Directive. The European Union can create several outputs, each of them with its own implications. The Treaty of Rome (signed in 1957) established the European Economic Community, which was the previous designation of the European Union. In that first treaty, and in subsequent versions (Maastricht, Amsterdam and the current Nice Treaty) the juridical figure of Directives was present. This study will analyse the version in force, which is the Nice Treaty ratified in 2002.

In its Article 249, all the juridical figures are briefly explained:

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[37] BASCO, A. & DE BIASE, P., *PSD2, "escenario actual tras su implantación y retos jurídicos del Open Banking"* in *Revista Jurídica Pérez-Llorca*, cit.

[38] From the article "Los nuevos proveedores de servicios de pagos: una primera aproximación a la segunda Directiva de Servicios de Pagos" of the Journal "Revista General de Derecho de los Sectores Regulados"

"A regulation shall have general application. It shall be binding in its entirety and directly applicable in all Member States.

A directive shall be binding, as to the result to be achieved, upon each Member State to which it is addressed, but shall leave to the national authorities the choice of form and methods.

A decision shall be binding in its entirety upon those to whom it is addressed.

Recommendations and opinions shall have no binding force."

Therefore, the PSD2 shall be transposed into Spanish framework, as its content is binding. However, it leaves some freedom to the national authorities in the methods and form to apply it. Although this paper is not focused on the European Union juridical mechanisms, it is worth noting the consequence of not transposing a Directive for a Member State. At first, the Court of Justice of the European Union (CJEU) used the direct applicability as an effect of not complying with the already mentioned tasks[39]. Currently, the consequences are not direct. According to Article 260 of the Treaty on the Functioning of the European Union, the CJEU can specify the "amount of the lump sum or penalty payment to be paid by the Member State". Nevertheless, the Directive is binding to the Member State in a foreseen period (which is usually two years).

The lack of specificity can create complex situations among countries in the application of the Directive in national systems, as it leaves a grey area. The objective of community harmonization is balanced with the legislative autonomy of each country, leaving some freedom to establish the normative mechanisms that each Member State considers sufficient. Therefore, the transposition of a Directive holds a lot of importance, moreover in the case of PSD2 for the reasons explained throughout this study.

Alongside with Malta and Romania, Spain was one of the latest Member States to transpose the PSD2, in fact, it was completed after the deadline stablished which was January 2018. The transposition is made through three different norms: the *Real Decreto-ley 19/2018, de 23 de noviembre, de servicios de pago y otras medidas urgentes en materia financiera*, the *Real Decreto 736/2019, de 20 de diciembre, de régimen jurídico de los servicios de pago y de las entidades de pago* and the *Orden ECE/1263/2019, de 26*

[39] GORELLI, J., *La aplicabilidad de las directivas no transpuestas: la incidencia de la Jurisprudencia Social del TJCE*, 1998*, p.45*

de diciembre, sobre transparencia de las condiciones y requisitos de información aplicables a los servicios de pago[40].

The fact that the transposition is made through a "decreto-ley" holds importance, as it is approved by the Spanish government, while the Parliament just validates it. As there has not been a parliamentary discussion, the text is almost a direct copy of PSD2[41]. The effect is that the transposition holds almost all the characteristics of PSD2, although this study will analyse those aspects in which it differs.

The objective framework of the transposition is, as regulated in RDL 19/2018, applicable to the payment services that are performed with professional character in Spanish territory.

The main point to note in the transposition of PSD2 to Spanish law is that the later is almost an exact copy of the first. This situation translates into inefficiencies, controversies and inaccuracies as a proper adaption has not been made. There are slight changes in some terminology and two main material variations.

In reference to the terms adapted, there are two definitions to consider. The first one is related to the Payment Initiation Service Providers (PISPs), as its definition is substituted by "Entidades prestadoras del servicio de información sobre cuentas". The implications do not hold a lot of transcendence as in practice it just creates a new subcategory under PISPs for those entities which strictly provide information. Those companies cannot provide other payment services other than the information exchanges and, therefore, will benefit from a partial exemption from the norm in relation to those services that are excluded.

The second definition that differs from PSD2 holds importance. It is related to a central procedure in PSD2, which is the Strong Customer Authentication (SCA). It allows an entity to check if the payment order or petition comes from the real person that is logged in the system. The entity needs to authenticate the customer due to its implications in terms of legal responsibility. In the Spanish transposition, the SCA must ensure that the

[40] The recompilation of the national transpositions by Member State and its publication dates can be found in the following link: https://eur-lex.europa.eu/legal-content/ES/NIM/?uri=CELEX:32015L2366

[41] ZUNZUNEGUI, F., *Luces y sombras de la transposición de la Directiva de pagos (PSD2)*, 2020, p.2. The reflection that the author does holds importance, it is based on the fact that the transposition is made mainly through a copying mechanism. As he says, the lack of juridical accommodation of the Directive to the Spanish reality can create distortions and juridical insecurity in those aspects that do not fit in the Spanish framework without adaptation.

identification data's confidentiality is protected, whereas in PSD2 is the authentication data's confidentiality. Although it may seem equal, both terms are not. In fact, in Article 98 in PSD2 the Directive makes a difference between both concepts. The difference is that authentication data covers identification data, but also other kinds of data such as personalised security credentials. This is seen as an incorrect transposition that creates juridical uncertainty[42].

Related to the two material variations, the first one refers to the right of resolution of the frame contract. In the Spanish transposition, the entity has the possibility of modifying unilaterally the terms of the contract under certain circumstances. The situation needs a frame contract, in which an entity is providing a service to a customer, who is using a payment account for not only performing the service but also for complementary purposes. This is common, as normally the payment account in which the bank issues the payments of the mortgage is usually linked with credit or debit cards, other payments… Hence, in that situation the customer is obliged to maintain the payment account, giving the entity the power of modifying unilaterally the terms of the account (for example, the price of it). This juridical situation can be contrary to Article 1256 of the Spanish Civil Code, by which, it is prohibited to give the power of modifying the terms of a contract to one of the parties.

The second variation is that in Spanish framework there is not an Alternative Conflict Resolution system, as PSD2 intends. The first additional disposition of the first law transposed[43], previews the creation of an Alternative Conflict Resolution entity to solve the disputes within 8 months of the publication of the law. It has not been done yet and the competencies have been derived to the Market Conduct and Complaints Department of the Bank of Spain[44]. The problem is that this organism may lack independence and impartiality to provide this service.

Before closing this section, it should be emphasized that the fully development of this framework has not yet been accomplished. As the transposition laws are quite recent, there is not thorough jurisprudence or descriptive literature regarding this topic. In fact, Spanish Courts are applying the criteria established by the Bank of Spain. The criteria is

[42] ZUNZUNEGUI, F., *Luces y sombras de la transposición de la Directiva de pagos (PSD2)*, cit., p.8.
[43] Real Decreto-ley 19/2018, de 23 de noviembre, de servicios de pago y otras medidas urgentes en materia financiera
[44]The official name in Spanish is "Departamento de Conducta de Mercado y Reclamaciones". It operates within the framework of "Banco de España".

formed by complaints gathered by the Market Conduct and Complaints Department, considered as good banking practices that entities must observe in their operations. It is also worth noting a situation that arises in this type of judicial proceedings. The juridical framework for these topics is very complex and technical, hence, the judges find themselves in a difficult position. Unless there is an expert's report, it is usually difficult to determine the factual situation. From the judges side there is a lack of specialization in this matters, as there are multiple legal sources (both national and international) and technical regulations on top of the typical workload and time constraints that judges face in Spain[45].

Additional regulation

Along with this Directive there are other set of norms that constitute the Open Banking environment at the EU level.

As thoroughly analysed during this chapter, user's information play a central role in every transaction. Hence, there must be a system to grant the security of this asset. That system is held by the GDPR-2016/679 (General Data Protection Regulation), which is an EU law on data protection and privacy for the EU citizens. It came into force on 25 May 2018.

There is also a set of Implementing and Delegated regulations posed by the EU to develop the governance of the PSD2 Directive. Those norms are the following:

- Delegated Regulation (EU) 2017/2055 on the cooperation and exchange of information between relevant authorities, relating to the right of establishment and the freedom to provide services of payment institutions.
- Delegated Regulation (EU) 2018/389 (as amended by Delegated Regulation (EU) 2022/2360) on customer authentication and common and secure open standards of communication.
- Implementing Regulation (EU) 2019/410 on the details and structure of the information to be notified by relevant authorities to the EBA in the field of payment services.

[45] ZUNZUNEGUI, Fernando, *op.cit.*, p.4.

- Delegated Regulation (EU) 2019/411 on the development, operation and maintenance of the electronic central register within the field of payment services, and on access to the information contained in this register.
- Delegated Regulation (EU) 2020/1423 on the criteria for appointing central contact points within the field of payment services and on the functions of those central contact points.
- Delegated Regulation (EU) 2021/1722 on the framework for cooperation and the exchange of information between the relevant Member States' authorities in the context of cross-border provision of payment services.

As it can be seen, they further develop some aspects that have been established by the PSD2 Directive.

On top of that, other regulations that complete the PSD2 Directive have already been mentioned in this paper as the Directive 2009/110/EC of the European Parliament and of the Council of 16 September 2009 on the taking up, pursuit and prudential supervision of the business of electronic money institutions, also known as E-Money Directive.

It is worth mentioning an experiment performed by an association of companies called "The Berlin Group". The members of this association are major players in the payments industry that represent more than 25 billion card-originated transactions annually in the Euro area.

Their objective is to define open and common schemes, focusing on detailed and organisational requirements. Their approach is similar to the one of Incoterms in international trade. The Berlin Group tries to support the European Directives while developing standards that enable a more secure transaction with an open source philosophy. Its intention is to contribute its achievements freely to any interested party. All documentation is free to download in their webpage, they are open to consultation and organize events such as conferences.

The Berlin Group is developing additional norms and technical guidance to create a more complete Open Banking ecosystem. To achieve this purpose they have conceived their standards on diverse topics such as Open Finance, the PSD2 access to bank accounts, the mobile P2P interoperability, tokenisation, card clearing and authorisation. However, the standard that has experimented the most success is what they call the NextGenPSD2.

As they recognize in its webpage, they do not have formal means and mandates to foster implementation of the standards within or between schemes. However, the NextGenPSD2 has been implemented in all EU countries and even in countries outside the European Union and Europe that aim to operate and be compatible with European standards. In fact, more than 75% of European banks already develop their services with NextGenPSD2.

Consequences of Open Banking

The PSD2 Directive has allowed the appearance of different business models that were unattainable with the previous framework. New players, mostly FinTech companies, have come forth in this new ecosystem and are providing new services.

A service that has emerged in the market due to PSD2 s the "Buy Now Pay Later" wave allowed by the new regulation. This short-term financial concept allows clients to finance their purchases over time, usually with no interest. This service has grown considerably in recent years. In Spain nowadays most of the big retailers (such as Amazon, El Corte Inglés or Samsung) offer this service by partnering with FinTech companies. An interesting case to analyse is the one of Decathlon.

Decathlon offers different financing options for Spanish and United Kingdom markets, but both are based on FinTech companies, so it is illustrative to compare both services as they are very complete.

In United Kingdom's market it has partnered with Klarna, a Swedish company that has grown over the years to become one of the biggest European FinTech unicorns (term used in finance to refer to a start-up that is worth over 1 billion dollars). The service Klarna provides is to offer the end consumer the possibility of financing its purchase in a partner store (in this case it is Decathlon) in 3 interest-free instalments. Therefore, to the client it is completely fee-free and it is used as an incentive by the stores to attract and secure purchases. Klarna provides the credit product and bears with the risk of the operation, acting as a credit institution, in fact, Klarna is entitled with a Banking License[46]. On the other side, the store has to pay a fee for each transaction in which Klarna is

[46] To check the press release go to: https://www.klarna.com/international/press/klarna-europes-newest-bank-is-born/

involved. The payment is automatically collected each 30 days through the credit or debit card the client entered at checkout. This is an example of Payment Information Service Provider, as Klarna with the client's consent, retrieves the payment from the credit or debit card. On top of that, Klarna is also connected to Decathlon's API as in the case of an order return, Klarna communicates with the API and it should refund the payments to the credit card account.

It is worth noting that in its webpage[47], Decathlon informs that a client may not be eligible to the service Klarna offers as by conducting a profiling it can be considered too risky for the conditions stated. As it is said in the terms of the service: "The Pay later in 3 interest-free instalments payment option is automatically generated by algorithms that are dependent upon a number of factors including address details, cardholder details, amount of order, the online store, previous order history and item availability". This is an example of the use of Big Data and Machine Learning applied to risk management. Additionally, it can be noted that Klarna accesses Decathlon's information about the client like previous order history and item availability. This analysis is done automatically and immediately.

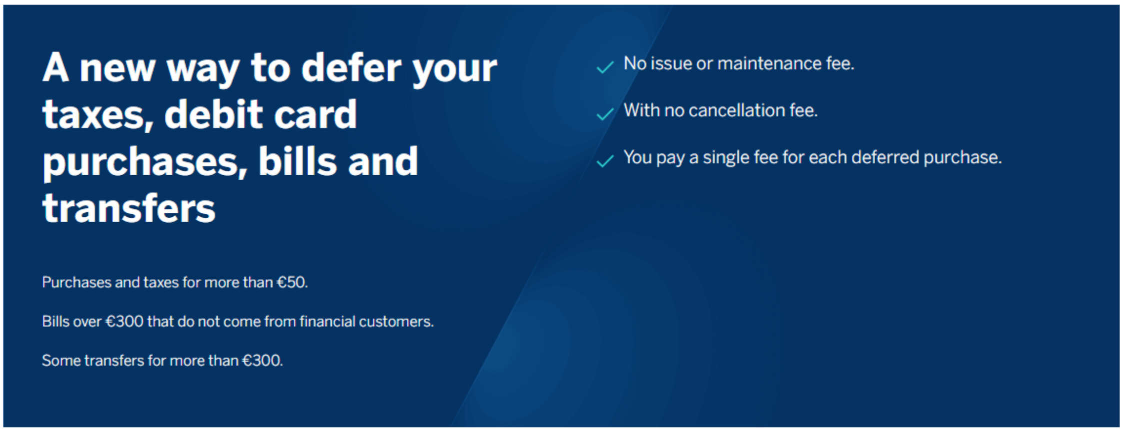
In the Spanish market Decathlon has partnered with Oney, a French company, which offers a slight different approach. The service is similar as it allows the Buy Now Pay Later. However, in this case it is not fee-free for the end consumer as it has to pay a management fee. Oney, with its service 3x 4x Oney offers an array of payment conditions ranging from 3 to 10 instalments with the management fees going from 3% to 5% of the purchase amount. As it happened with Klarna, and being a PISP, it connects with the financial institution and processes the payments automatically through the credit or debit cards.

If it was not for Open Banking the option to finance a purchase would have been to go to the bank and ask for a consumer credit. This credits usually has a high interest rate which the end consumer has to pay. Some retailers may have their own conditions agreed with a credit institution. The service is similar to the FinTech ones but the fact that it is a much saturated market, makes competition harder. FinTech companies offer an immediate service, online (so the client does not need to attend the banking branch) and

[47] In the following webpage, the main conditions of the service are displayed through a FAQ format: https://www.decathlon.co.uk/landing/klarna-faqs/_/R-a-klarna-faq

with very low fees and usually no interest. Therefore, banks have focused on this type of services with its credit and debit cards as it can be seen in Figure 4, from BBVA.

Figure 4: Deferring payment conditions in BBVA



Source: BBVA, 2023

This image is from BBVA, but can be found in almost every commercial bank. They offer this service in exchange for a small fee (in this case for each deferred purchase), while they bear the financial risk of the operation. In this case, BBVA pose a limit to each customer with the maximum of 1200€.

Buy Now Pay Later is an example of the shift of the business model in the banking industry because of Open Banking introduced by PSD2. The banking competitive advantage is now based on "being the primary custodian of financial data"[48]. On top of that they enjoy a preferred advantage as they are the ones with the native information and can leverage that position in they favour by implementing active strategies rather than passive ones (in which the customer has to ask and consent their services). Having both the information and the customers they are the perfect partners for the FinTech companies that want to implement their services.

Thus, PSD2 has also facilitated the collaboration between parties, as it is compulsory in some cases and it goes in the interest of both actors. Through collaboration, banks can offer a more holistic service to its clients. FinTech companies appear as

[48] PADOAN, P. C., *"The Impact of Open Banking in the Banks' Business Model"* in *European Economy*, 2022, p.105. This author states that traditional financial institutions can exploit an advantage that consists of being perceived as the ones providing the greatest protection to customers. This position holds great importance in the case of banks as holding deposits from clients is a central activity of their model, being vital for any transaction.

intermediaries and collaborators that enhance the user experience. For example, some FinTech can offer tools to facilitate fast payment initiation, identity verification, data security or financial overview and management. Those services, integrated in the bank's applications allow the financial institutions to offer a complete range of financial services tailored to each customer.

"Open banking in a restricted sense is a strategy of targeted customisation of value that shifts banking organisations from a silo culture to collaborative arrangements with innovators"[49]. This involves not only a technical challenge, being the interoperable exchange of data aligned with specific business models, but also introduces governance challenges linked to the collaborative provision of services between different actors. The secure share of financial transaction and account data is a key aspect in Open Banking, with banks taking on the responsibility of ensuring a robust and secure framework for such exchanges.

Traditional banks have opted to collaborate not only with each other but also with FinTech companies to provide payment services. On top of that it is worth mentioning that those banks that collaborate with Service Providers can leverage on the exposure that these companies give[50]. Therefore, traditional banks can offer their deposits as a service to the clients which are interested in the service offered by FinTech companies. This gives as a consequence an increase in the market size for banking deposits, which is translated into easier funding for banks and hence, a reduction in banking costs for interests.

A great example of this approach is the one of CaixaBank. This commercial bank, in its corporate structure has joint ventures that are main characters in the Spanish payment ecosystem. As mentioned before it participates in Bizum, but it does not end there. CaixaBank owns 41% of Servired, 49% of Global Payments Money To Pay S.L., 20% of Comercia Global Payments Entidad de Pago S.L. and 25% of Redsys[51], all of them used by the Spanish public in everyday online transactions. Additionally, CaixaBank

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[49] MARTÍNEZ, J.R., "Regulating for competition with BigTechs" in *Estabilidad financiera – Banco de España,* 2021, p.131. Parallelly to collaborative open banking, we find restricted open banking, which does not create positive externalities when comparing with collaborative open banking. This is due to the fact that without collaboration the projects do not tend to scale up, or, if they do, they face plenty of difficulties.
[50] GUIMARAES, R.,"El poder del open banking. Por qué el futuro pertenece a las plataformas" in *Técnica contable y financiera,* 2019.
[51] The corporate structure of CaixaBank can be checked in the following corporative webpage: https://www.caixabank.com/en/about-us/caixabank-group.html

partners with other FinTechs in which they do not hold any capital position to broaden their service offering.

If we look at customers, their position has improved greatly as they enjoy a wide array of new services which are cheap and with seamless integration. Customers are now better informed about their finances, allowing them to take more informed financial decisions. The final outcome has improved in their favour as they enjoy faster and cheaper products brought by more specialized services which focus on user experience.

REGULATORY SANDBOX

Introduction and concept

Throughout this paper it has been stated important points about the financial sector. On one hand that it is a very important and impactful industry which has a huge responsibility in the stability of the economy. On the other hand, that it is a highly regulated sector, based on licenses and strict requirements that pose entry barriers to potential new entrants. As we said, the balance of this system is based on trust and guarantees.

In this environment, new companies which want to revolutionize the sector with new business models and innovations find themselves between a rock and a hard place. The licenses they thrive for do not fit entirely their activities, while they take too long to be processed and pose operational limitations. This specific situation which affects mostly the FinTech start-ups restricts the development of new technologies and services.

Therefore, regulators have come up with different solutions for this type of situations. Namely, there are two models to boost innovation: innovation hubs and regulatory sandboxes. Both schemes are based in the same principles, although their approach is different.

Innovation hubs are a platform in which companies can raise questions and seek clarifications about the regulation. The topics that are addressed relate to compliance with the regulatory framework, licencing, registration requirements and supervision. Both the questions and answers can be non-biding to promote participation and flexibility.

Regulatory sandboxes are a more developed solution. In this scheme, "companies can test innovative financial products, services, or business models with actual customers in a controlled environment (a 'sandbox') pursuant to a specific testing plan agreed with the supervisor and subject to the application of distinct safeguards"[52].

Therefore the most complete answer appears to be the regulatory sandbox, a sort of regulatory experimentalism that creates a place where the innovations can be tested without risking the financial sector and allowing flexible solutions for the companies. On top of that, regulators can test new regulatory projects with nimbleness, while the companies test the viability of their solutions and the appetite of the market. It is a solution that aims to balance innovation while safeguarding interests like consumer and competition protection. In this chapter we will focus on regulatory sandboxes as they pose a more complete scheme with greater development.

The objective of FinTech companies is to test innovations, normally related to new products that target the needs of underserved or excluded customer segments, new distribution channels, operational efficiencies or new business models.

In the case of regulators and supervisors, the regulatory sandbox allows two applications. On one hand it serves to detect potential problems that can affect the industry with future innovations, while on the other hand tests the effectiveness of the regulation before applying it to the whole market.

A regulatory sandbox is "a framework set up by a financial sector regulator to allow small scale, live testing of innovations by private firms in a controlled environment (operating under a special exemption, allowance, or other limited, time-bound exception) under the regulator's supervision"[53].

Thus, the objective is to attain a more flexible framework, allowing dialogue between actors and regulators with limited liability. By retrieving valuable data with cooperation and experiment with new norms, the regulators can adopt a trial-and-error

[52] Policy Department for Economic, Scientific and Quality of Life Policies, *Regulatory Sandboxes and Innovation Hubs for FinTech. Impact on innovation, financial stability and supervisory convergence, 2020.* The Policy Department for Economic, Scientific and Quality of Life Policies is a body under the Secretariat-General of the European Parliament

[53] JENIK, I., & LAUNER, K., *Regulatory Sandboxes and Financial Inclusion*, 2017, p.1. This citation is extracted from Working Papers from CGAP (Consultative Group to Assist the Poor), which is a global partnership of more than 30 leading development organizations that works to advance the lives of people living in poverty, especially women, through financial inclusion.

model with controlled downside. Additionally, for FinTech companies, this incentivizes the creation of new innovative solutions as they can be tested and proved in a rapid way. Examples of those solutions may include a new biometric technology to verify payments or a new payment system across currencies.

The balance that Regulatory Sandboxes need to ensure is central as their objective is to "overcome the traditional (di)vision of work between regulation and competition and change our perspective from a tedious and defensive issue of competences towards a new form of anticipatory competition policy by concentrating on the establishment and evolution of new digital markets"[54].

Despite being a win-win situation for regulators and new entrants, regulatory sandboxes not only have benefits but also risks that need to be discussed.

How do regulatory sandboxes work

A regulatory sandbox does not consist solely on the testing phase, there is much more that makes it a whole process with different phases. According to the European Securities and Markets Authority (ESMA), the phases can be differentiated between application, preparation, testing and evaluation[55].

Firstly, in the application phase the companies submits an application if they qualify for it. Normally the criteria, number of vacancies and requirements are published in the regulator's basis. The decision is made by the competent authority. This decision is normally made in a discretionary manner, but is always based on the criteria of the application. Some criteria may include the scope of the proposition, its innovativeness, the need for testing or the readiness of the company to actually test it. All those factors

[54] PONCIBÒ, C., & ZOBOLI, L., *European Union Law Working Papers. The Methodology of Regulatory Sandboxes in the EU: A Preliminary Assessment from a Competition Law Perspective,* 2022. The authors suggest that the primary goal of a sandbox is primarily to promote innovation, and, subsequently, competition. Regulators use it as a tool to monitor the rapid evolution of FinTech without stunting its innovative potential (while providing protection to the parties which are testing the functionalities).

[55] EUROPEAN SECURITIES AND MARKETS AUTHORITY, *FinTech: regulatory sandboxes and innovation hubs,* 2018, p.22. The ESMA is the EU's financial markets regulator and supervisor whose mission is to enhance investor protection, promote orderly financial markets and safeguard financial stability. The description of the phases that involve the operativity of a regulatory sandbox is also based in this report.

are subject to be judged, so the competent authority has room to choose among the candidates.

In the preparation phase both parties (the regulator and company) have to make the necessary adjustments. The competent authority must settle the parameters that wants to test such as limitations in the number and size of transactions. Meanwhile the company has to adapt its technology or business plan to the foreseeable regulation. For example, if a license is needed to offer certain service or provide an operation, the company must apply for the appropriate license. In this phase the parties should exchange insights in order to prepare the testing phase as setting operational requirements like reporting systems. An important issue to determine is the potential arrangements for clients in case that they suffer losses due to some malfunction in the testing phase. In the testing phase the company experiments with its proposition, checking if it is viable, the response of the market or technical issues. The company has to test its proposition according to the parameters of the test imposed by the authority. In this phase the competent authority monitors the process, retrieving valuable information. Some regulatory sandboxes have placed a determined time frame to cover this phase (for example 6 months in the case of United Kingdom and Denmark), while others such as Netherlands determine the time period on a case-by-case basis.

The last phase is the evaluation, where the information and results of the testing phase are reviewed. This data allows the regulators to determine if certain approach is appropriate for its regulatory or supervisory objective. Depending on the criteria or conditions of the regulatory sandbox, after this phase the regulator may allow the company to continue to offer the product or service outside the regulatory sandbox. Other options may include to prolong the testing phase if it is seen as insufficient or discontinue the product or service.

Benefits and risks

Benefits include that regulators are able to learn rapidly about the impact of their norms. This is translated into less costs for both regulators and incumbent companies in the market. In the case of regulators, they do not need to apply the new regulation in the entire market, supervising its compliance and enforcement in the companies and testing its influence in their operations. In the case of the incumbent enterprises in the market, they are not required to comply with regulations that may be amended, changing their business models, investments or overall strategy.

Additionally, both new and incumbent companies that want to develop new technologies or processes benefit from the regulatory sandboxes as it lowers the entry barriers to the market. The increase in competition can be translated into more products and services and to a wider range of customers, which would benefit from the broaden in consumer choice.

Another key factor worth mentioning is the reduction of regulatory uncertainty that the companies suffer which affects the whole sector and attracts investment and innovation. On top of that, regulatory sandboxes are usually free of charge and pose timing requirements for the enterprises in order to restrict underdeveloped solutions.

An important risk associated with regulatory sandboxes is the fact that the regulatory institution is favouring certain entrants. This situation goes against the principle of equality in the markets as some companies enjoy a given regulatory framework which is more flexible. This poses some threats and questions about the requirements to enter the program of the regulatory sandbox, which are usually limited to a number of entrants. As will be seen, the entrance to a regulatory sandbox is normally discretionary. For this reason, the regulatory institutions should at least provide transparency in their decisions.

Both the potential entrants to the program that are not allowed to participate and the incumbent companies of the market may suffer from an inequal treatment based of a sort of government-granted privilege. Thus, it increases the entry barriers to some potential entrants while lowering for others.

This is explained in the "sandbox paradox"[56], in which is explained that in order for a sandbox to be attractive, it must convey a certain benefit to the admitted companies. However, any advantage granted to these companies has the potential to weaken overall competition in the market. Parallelly, another phenomenon happens with regulatory sandboxes, which is the incentive to engage in a "race to the bottom"[57]. This means that

[56] KNIGHT, B. & MITCHELL, T., *"The Sandbox Paradox: Balancing the Need to Facilitate Innovation with the Risk of Regulatory Privilege"* in *South Carolina Law Review*, 2021, p.445-475

[57] SANTOS, M., *"Régimen jurídico del 'regulatory sandbox' en España"* in *Revista de Derecho del Sistema Financiero: mercados, operadores y contratos*, 2021, p. 199. According to the author, the areas of financial regulation that are more likely to be affected with the race-to-the-bottom phenomenon are those related to

there is an international competition to grant administrative authorizations to support the development of innovative projects (which have the potential of being very beneficial for a national market). It is done with the aim of attracting foreign investment to the respective national territories and generating wealth through increased tax revenue and improved employment opportunities while creating an attraction effect for new promising startups. The "race to the bottom" works specially for FinTech companies because they are able to lever on regulatory arbitrage due to the ability to relocate their businesses geographically.

Sandbox experiments in the European Union

The regulatory sandbox in the European Union is at a turning point at the moment. Until now, regulatory sandboxes regarding financial services were carried out by Member States. Therefore, the testing was performed in domestic markets and ruled by national authorities. Some Member States have developed regulatory sandboxes as they grow in popularity. Some examples are Austria, Hungary, Netherlands, Poland or Norway[58]. However, other governments such as the German and Swedish ones have decided not to set a regulatory sandbox[59].

In the Spanish case, there is a law in force under the name of "Ley 7/2020, de 13 de noviembre, para la transformación digital del sistema financiero". This regulation has allowed the recent creation of innovation hubs[60] and a regulatory sandbox[61].

Relating to the risks associated with regulatory sandboxes, the inequalities among companies increase in a domestic system. Companies can be found in a competitive

customer protection, financial markets stability and anti-laundering. Those areas are precisely the ones that have attracted more regulatory changes in the last decade.

[58] The list of innovation hubs and sandboxes can be found in the European Insurance and Occupational Pensions Authority: https://www.eiopa.europa.eu/about/governance-structure/joint-committee/innovation-facilitators-eu_en

[59] POLICY DEPARTMENT FOR ECONOMIC, SCIENTIFIC AND QUALITY OF LIFE POLICIES, *Regulatory Sandboxes and Innovation Hubs for FinTech. Impact on innovation, financial stability and supervisory convergence*, 2020. The German Government has consistently stated that it does not intend to set up a regulatory sandbox. Sweden considered setting up this model but finally decided against it.

[60] To check the innovation hub created by Banco de España check the following link: https://sedeelectronica.bde.es/sede/es/menu/tramites/supervision/Consultas_sobre_38cf3819d2ba361.html?_gl=1*mipd6e*_ga*MTE0MzI5NjU2OC4xNjkxMzkzNjg1*_ga_GJB7F10M0K*MTY5MjYzOTM0OC40LjEuMTY5MjYzOTY0Ni4wLjAuMA..

[61] The conditions and requirements can be checked in the following webpage: https://www.tesoro.es/sandbox/solicitudes-para-el-espacio-controlado-de-pruebas

disadvantage depending on the Member State in which they are based, creating a competitive regulatory battle between countries in order to attract innovation. Hence, if regulators enter this battle by lowering requirements and standards, the ultimate damaged may be the consumer in case of a malfunction.

On top of that, having regulatory sandboxes established at a national level can impede the scaling up of financial innovations across the European Union.

For those reasons, the European Commission tasked the European Supervisory Authority to carry out some reports to analyse the situation.

In the article 9.4. of the Regulation No 1094/2010 of the European Parliament and of the Council of 24 November 2010 establishing a European Supervisory Authority (European Insurance and Occupational Pensions Authority), it is stated as a task for the ESA:

The Authority shall establish, as an integral part of the Authority, a Committee on financial innovation, which brings together all relevant competent national supervisory authorities with a view to achieving a coordinated approach to the regulatory and supervisory treatment of new or innovative financial activities and providing advice for the Authority to present to the European Parliament, the Council and the Commission.

For this purpose, on the report created in 2018 by the ESMA the Authority reflected on the necessity of providing a EU network and a common approach with the guidance of the European Supervisory Authorities[62].

Although there has not been a unification of domestic sandboxes, some advance has been made. In fact, there has just been developed starting in 2023 a regulatory sandbox at a European Union level. The field of this sandbox is related to FinTech as the targeted technology is Blockchain, with many financial applications.

The initiative from the European Commission aims to establish a "pan-European framework for regulatory dialogues to increase legal certainty for innovative blockchain technology solutions"[63]. The program will accept 20 cohorts that will be elected by discretionary selection according to the following criteria: "maturity of the business case,

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[62] EUROPEAN SECURITIES AND MARKETS AUTHORITY, *FinTech: regulatory sandboxes and innovation hubs,* cit., p.40.

[63] The following link relates to the main page of the European Commission in which the development of the program is explained:https://ec.europa.eu/digital-building-blocks/wikis/display/EBSI/Sandbox+Project

legal/regulatory relevance and their contribution to the EU's wider policy priorities". As an incentive, the most innovative regulator will be awarded a prize.

One thing seems clear, regulatory sandboxes potentiate the entrance of innovation both in technology and business models, while enhancing the regulatory and supervisory framework. It is not a perfect solution yet it is seen as a beneficial instrument. Therefore, probably in the future there will be more projects at a European Union level which aim to create common regulatory sandboxes.

Conclusion

Throughout this paper the FinTech phenomenon has been dissected. Despite the complexity that it poses, this study has aimed at analysing the main factors behind such an astonishing development. After the 2008 Global Financial Crisis, there was a shift in public perception and in regulation (brought firstly by Basel III) which changed the banking business model. The dispositions about minimum capital requirements, transparency, liquidity of assets and structure of the bank's balance created some inefficiencies that could be targeted by new entrants. However, the entry barriers made difficult for new players to pose a significant challenge for traditional banks. Hence, two factors were needed: a technological development which allows smaller companies to create products that could reach millions of customers, and a change in regulation. The later is studied in detail in this paper, focusing on PSD2, the current European Union Directive addressing payments in the Euro area. Open Banking targeted payments in particular as they were seen as a great area of development for FinTech companies because it had room of improvement thanks to the efficiency that technology can provide in the use of digital methods to pay (both physically and online). On top of that, FinTech companies started with a small capital investment compared with traditional banks, so an intermediation service, in which, there is not a need of risking own funds is the only option. Once FinTech companies grow, they start offering new services and products.

Within the regulatory framework in the European Union, a different entry barrier appears in the financial industry. Licenses allow certain chartered companies to offer services, which maintain potential fraudulent actors out of the system. Although there are mainly four licenses, this study has focused on the banking license, as it is the most complex and comprehensive. It is worth noting the importance of banks as they usually play a central role in payments transactions, taking the position of the account payment provider (via deposits and other repayable funds). In fact, banks are key players in the payment area, as they are also able to process payments. Moreover, with the development of Fintech services, some banks have joined and created companies to offer different technological solutions. An illustrative example is Bizum, which is owned by Spanish banks and offer an instant and free payment service despite the fact that those same banks provide a similar service (money wires) at a price for their customers. The heterogeneity of the situation escalates as some Fintech institutions have obtained the banking license, creating a more competitive environment (examples such as Revolut or N26 in Spain).

In this situation, Open Banking appears as a democratizing power, lowering the entry barriers for FinTech companies. The shift does not only change the competition but also the availability of the customer's data, who decides to grant its information to players of its choice through its consent. PSD2 sets a whole system of intermediation (that have been described in detail in the paper) in which traditional commercial banks have to collaborate with new entrants to operate the transactions. Similarly to what happened with Banking Licenses, to obtain the Payment Institution License there are certain requirements to attain before the competent authority of a Member State grants it.

The Account Payment Service Provider (usually the banks) are obliged to collaborate with the Payment Initiation Service Providers at no cost for certain services. PSD2 also contemplates the possibility of charging a "reasonable" amount for additional services. Hence, with the consent of the user, a Fintech can obtain the necessary information to process a payment in the name of the user by their direct competition. Although this could create a commercial confrontation, it has been demonstrated that in some cases there are synergies that can be exploited. Most banks have developed their own intermediation services thanks to PSD2, while others have acquired the solutions developed by FinTech companies.

The intricate system that PSD2 creates is reviewed in this study. It is equally important to observe not only the functioning but also the juridical implications of the transactions. The functioning of the service creates right and obligations for the parties. In an operation with several players it is sometimes difficult to assess where the responsibility lies. PSD2 opts to distribute the responsibility by determining that each party has to be held accountable for the part of the operation under its control. This statement means that each party needs to ensure that the customer is meticulously identified (by the Strong Customer Authentication) and that the technical standards are enforced.

Being a European Directive, PSD2 must be transposed into national framework. In the case of Spain, the transposition is made almost entirely exact to PSD2. However, there are slight differences which are condensed in term and material variations. Among the definitions that have been transformed in the transposition it is worth highlighting an error which consists on considering interchangeable the terms identification data and authentication data. This transposition flaw can hold importance in the SCA process, as some information can end up being unprotected by the Spanish framework, hence, harming the position of the customer's data. Referring to the material variations, the transposition has created a situation in which the payment account provider could modify unilaterally the conditions of the frame contract (for example, the price of the service). This situation creates juridical uncertainty and is contrary to Article 1256 of the Spanish Civil Code. Nevertheless, the main critic that can be made in the transposition is the lack of adaption of the original text, which is translated into a lack of coherence with the Spanish reality and juridical context. On top of that, Spain also lacks a Alternative Conflict Resolution mechanism that ensures independence and impartiality. Currently, this position (considered in the original PSD2) is being performed by a department of the Bank of Spain. However, it was planned to create an autonomous Alternative Conflict Resolution body in the law 7/2017 within a 8 month time period. In fact, as the First Additional Disposition of the mentioned law explained, all financial entities will be obliged to participate in the procedures before this institution. Hence, although this institution has not been created yet, it is important to warrant impartiality and independence in the financial field.

In this context, it is worth mentioning the legal experimentation under the name of Regulatory Sandbox and Innovation Hubs. The financial system is not yet fully designed and new technologies are being developed to boost efficiency. However, the financial industry cannot be subject to the uncertainty that changes in technology and regulation may pose, as it is based on mutual trust. Regulators face constraints when proposing new solutions whereas FinTech companies find that their innovations are being restricted, slowing down the development of potential business models. Therefore, to test new regulatory propositions while protecting the financial environment, Regulatory Sandboxes and Innovation Hubs were created. Specifically, Regulatory Sandboxes are a great mechanism of reducing legal uncertainty while testing new solutions in a empirical way. Although there are already some functioning, there will probably be a boost in Regulatory Sandboxes in the near future, as their benefits are larger than their downsides. In fact, some European Union initiatives seem to target this type of instruments as a tool to enrichen the legal framework.

However a position must be taken. Although it is true that Open Banking has not fully accomplished its goals, it has opened the market to new entrants. The result is that now, as users, we have access to a wider range of financial products and services at mostly no cost. The aim of this paper was to understand the blooming of FinTech services through the change in the regulation of payments. With Open Banking the reality seen in the financial markets in the last decade is being shifted to a more levelled playfield. However, this study does not aim at overlooking the flaws that PSD2 has, as its application cannot be yet considered fully satisfactory. There are some areas that were not comprehensively regulated This is specially true in the case of the technical design of APIs.

PSD2 is not the finish line, but a path that the European Union wants to traverse in order to democratize the financial services, and hence, offer a wider and better offering to customers. To do so it is important that all shareholders in this equation are willing to have a level of tolerance to errors: companies, customers, PISPs and banks are needed to design a robust and comprehensive system while some drawbacks may occur . The next reality drives through Open Banking, and opens the scope to include all type of information, which will be called Open Finance. The next steps in this transition are already being designed. On June 2023 the European Commission published a proposal for the Third Payment Services Directive (PSD3) and a new Payment Services Regulation (PSR)[64], with a foreseen date of approval at the end of 2024. It should be considered that this type of Directives usually allow a 18 month transition period, so its applicability would have to wait until 2026.

[64] It is worth noting that the PSD3 will be a Directive, hence, will be transposed into national laws. However in the case of the PSR, as it is a Regulation, it will have direct effect in all Member States after entering into force. The European Union aims at harmonizing the payments system all over the Economic Area, creating less differences among Member States. Therefore the PSR will regulate the main points that are currently regulated in PSD2, plus the modifications and new incorporations, while PSD3 will focus on the licensing and authorisation of the Member States. As Member States are usually in charge of granting licenses via its national authorities, there Directive allows the necessary flexibility to ensure this objective.

The main core objectives of this texts are strengthening user protection and confidence in payments, improving the competitiveness of Open Banking services[65], improving the enforcement and implementation in Member States and improving access to payment systems and bank accounts for non-bank PSPs. As it can be seen, this objectives are just a development of the current PSD2, continuing in the same direction. PSD3 and PSR are meant to overcome the flaws that have become apparent after 8 years of transactions and changes in the payment industry. Hence, the new Directive and Regulation will probably focus on reinforcing the Strong Customer Authentication as a core process in transactions, with even more secure technical standards. The idea is to offer a safer buying experience, preventing fraud while authenticating the identity of the user in an accessible way to all types of customers (accessibility for elderly people will be considered). In this direction, service providers will be liable in cases of fraud when they failed to apply the corresponding SCA, encouraging them to maintain the highest technical quality of service. A second line of improvement will come from the access to payment systems. As it has been mentioned throughout this study, there are some areas that PSD2 has failed to design completely. Specifically, the APIs system has brought some problems to institutions in the interoperability of the networks, lacking a clear standard for all players. The new requirements will focus on standardisation of the system, levels of availability and on response times (latency). On top of that, some transparency and supervisory obligations will be incorporated, like the duty for banks and financial institutions to share statistics about their API performance quarterly.

The result will probably be a richer and wider market which ensures transparency and trust between players thanks to a solid regulatory framework. These are just the first steps in the construction of a system in which the customer will be able to grant access to its entire financial footprint.

[65] A great example is the Electronic Money License, analysed in this paper. It is planned that the Electronic Money Directive will be absorbed by the new regulations. Hence, the Electronic Money Institutions will disappear. This seems like a logical move as, when analysing the licenses, there were not significant differences between a Payment Institution and an Electronic Money Institution. The new PSD3 plans on requiring all institutions to seek re-authorisation in a 24 months period from the entering into force of the Directive. This, although a huge challenge for national authorities, will mean that all institutions will have to modify its operation to fit into the new standards.

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