NOVA SCHOOL OF LAW

EDUARDO ANDRADE LIMA VIDAL DE ARAÚJO

FINTECHS, FINANCIAL INNOVATION AND FINANCIAL INCLUSION:

A legal assessment of public sector intervention through open banking regimes and instant payment schemes

Dissertation to obtain a Master's Degree in Law, in the specialty of Law and Financial Markets.

Supervisor:
Dr. Miguel Azevedo Moura, Professor of NOVA School of Law

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Declaro por minha honra que o trabalho que apresento é original e que todas as minhas citações estão corretamente identificadas. Tenho consciência de que a utilização de elementos alheios não identificados constitui uma grave falta ética e disciplinar.

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Eduardo Andrade Lima Vidal de Araújo

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I hereby declare that the work I present is my own essay and that all my citations are correctly acknowledged. I am aware that the use of unacknowledged extraneous materials and sources constitutes a serious ethical and disciplinary offense.

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Eduardo Andrade Lima Vidal de Araújo

DEDICATIONS

To my family, and especially my late father, who have always incentivized me towards my goals and dreams.

To my beautiful and beloved wife, Ana Beatriz Alves Coimbra, who abdicated the presence of her family and joined me in this endeavor overseas.

To Tobias and Olivia, my daily inspirations.

To my dear friend, Caio Rangel Praes, who revised this dissertation and encouraged me to seek this challenge.

To the Central Bank of Brazil that gave me the opportunity to study abroad.

LIST OF ABBREVIATIONS

AdC: Portuguese Autoridade da Concorrência
AFI: Alliance for Financial Inclusion
AI: Artificial Intelligence
AISP: Account Information Service Provider
API: Application Programing Interfaces
BaaP: Banking-as-a-Platform
BCB: Brazilian Banco Central do Brasil
BIC: Business Identifier Code
BIS: Bank for International Settlements
BNDES: Brazilian Banco Nacional de Desenvolvimento Econômico e Social
B.P.: Portuguese Banco de Portugal
B2B: Business to Business
B2C: Business to Client
CMN: Brazilian Conselho Monetário Nacional
CMVM: Portuguese Comissão do Mercado de Valores Mobiliários
CPMI: Committee on Payment and Market Infrastructures
CVM: Brazilian Comissão de Valores Mobiliários
CFR: EU Charter of Fundamental Rights
CNBV: Mexican Comisíon Nacional bancaria y Valores
ECB: European Central Bank
EU: European Union
FICO: Fair Isaac Corporation credit score
GDP: Gross Domestic Product
GDPR: General Data Protection Regulation
GLOBAL FINDEX: World Bank's report on Financial Inclusion
IBAN: International Payment Account Number Identifier
ILO: International Labor Organization
ISP: Portuguese Instituto de Resseguros de Portugal
KYC: Know Your Client
M&A: Merger and Acquisitions
NPCI: National Payments Corporation of India
PISP: Payment Initiation Service Provider
PSD1: I EU Payment Services Directive
PSD2: II EU Payment Services Directive
PSP: Payment Service Provider
QR-codes: quick response images
ROE: Return on Equity
SCA: Strong Customer Authentication
SCT: SEPA Credit Transfer Scheme
SCT-inst: SEPA Instant Credit Transfer Scheme
SME: Small and Medium Enterprises
SIBS: Portuguese Forward Payment S.A.

SPB: Brazilian Sistema de Pagamentos Brasileiro
STJ: Brazilian Superior Tribunal de Justiça
Techfins: big technological firms that also provide financial services
TEU: Treaty on European Union
TFEU: Treaty on the Functioning of the European Union
UI: User Interface
U.K.: United Kingdom
U.K. CMA: CMA: U.K. Competition and Markets Authority
U.K. FCA: U.K. Financial Conduct Authority
U.K. OBIE: U.K. Open Banking Implementation Entity
U.S.: United States of America
WWI: First World War
WWII: Second World War
24/7: service available 7 days a week and 24 hours a day

DECLARAÇÃO

Eu, Eduardo Andrade Lima Vidal de Araújo, informo que a parte principal desta dissertação de mestrado contém um total de 197.749 caracteres. Conforme os Regulamentos da Faculdade NOVA de Direito, o limite é de 200.000, incluindo notas de rodapé e espaços.

STATEMENT

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RESUMO

Esta dissertação avalia algumas das recentes intervenções do Estado no domínio econômico no contexto dos mercados financeiros com vistas à promoção da inclusão financeira. A intervenção estatal na economia e as suas ferramentas, particularmente a regulação e a indução econômica, têm sido utilizadas para impulsionar uma agenda pública sobre questões de inclusão financeira e de desenvolvimento sustentável em todo o mundo, especialmente nos mercados emergentes. O Direito Constitucional e, mais importante, o Direito Econômico, foram aperfeiçoados para lidar com a interação do Estado e das forças econômicas da sociedade. Esta discussão centra-se em duas recentes inovações jurídicas conectadas ao fenômeno Fintech: iniciativas de open banking (open finance) e sistemas de pagamentos instantâneos. As primeiras fazem parte de uma agenda pública que elege os usuários como verdadeiros proprietários de seus próprios dados digitais. Num contexto mais amplo, estão ligadas às leis e diretivas gerais de proteção de dados. As infraestruturas de pagamentos instantâneos são a próxima geração dos tradicionais sistemas de pagamentos de varejo e da lei de pagamentos. Embora os países europeus tenham estado na vanguarda da introdução dos regimes de open banking, particularmente o Reino Unido e Portugal, conclui-se que, no que concerne ao tópico de pagamentos instantâneos integrados, se encontram atrás da curva, quando comparados com os mercados emergentes, nomeadamente Brasil, China e Índia, embora algumas diretivas da UE sejam continuamente atualizadas. Não obstante, em ambas as inovações, os mercados emergentes podem se beneficiar da experiência da União Europeia na concepção e aplicação de disposições específicas e próprias sobre regras de responsabilidade civil, proteção do consumidor e mecanismos de resolução de litígios, especialmente após a implementação da Diretiva PSD2. Finalmente, neste contexto de uma agenda pública que busca promover a competição nos mercados financeiros, cumpre apontar que os tradicionais bancos necessitarão reavaliar a sua função dentro dos mercados. Possivelmente, ao atuar como fornecedor de uma plataforma financeira aberta e neutra, os bancos incumbentes poderão usufruir da sua experiência e credibilidade para conectar ambos os setores do mercado, suprindo as necessidades da demanda por serviços (clientes e usuários finais) como da oferta (empreendedores, startups, Fintechs).

Palavras-chaves: Direito Econômico, Intervenção estatal, mercados financeiros, open banking, pagamentos instantâneos.

ABSTRACT

This paper discusses some of the recent public interventions in the financial markets in the context to foster financial inclusion. Public intervention in the economy and its tools, particularly regulation and economic induction, have been used to promote a public agenda on the matters of financial inclusion and sustainable social and financial developments worldwide, especially in emerging markets. Constitutional Law, and more importantly, Economic Law, have been refined to deal with the interaction of the State and the economic forces of the society. This discussion centered on two recent juridical innovations linked to the Fintech phenomenon: open banking (open finance) initiatives and instant payment schemes. The first is part of a public agenda that assigns users as true owners of their own digital data. In a broader context, they are linked to general data protection laws, directives, and resolutions. Instant payment schemes are the next generation of traditional retail payment networks and payments law. Although European countries have been at the

vanguard of introducing open-finance regimes, particularly the United Kingdom and Portugal, is believed that, on the topic of integrated instant payment schemes, they are behind the curve, when compared to emerging markets, namely Brazil, China, and India, even though some EU legislations are continually updated. Notwithstanding, in both innovations, emerging markets can benefit from the European Union's experience in designing and enforcing specific and tailor-made provisions on liability rules, consumer protection and dispute resolution mechanisms, particularly after the implementation of the PSD2 Directive. Finally, in this context of a public agenda promoting a pro-competition outlook in the financial markets, incumbent banks might have to reassess their role and functioning within the market. Possibly by acting as a provider of an open and neutral financial platform, century-old banks might enjoy their expertise and credibility to connect both the demand (customers and end-users) and the supply (entrepreneurs, startups, Fintechs) sides.

Key words: Economic Law, State intervention in the economy, financial markets, open banking regimes, instant payment schemes.

INTRODUCTION

This paper discusses some legal public intervention in the financial markets in the context to foster financial inclusion. In broad context, public intervention in the economy and its tools, particularly regulation and economic induction, has been used to promote a public agenda on the matters of financial inclusion and sustainable social and financial developments worldwide. This is especially interesting for less developed countries, in Latin America, Asia and Africa, but also for European countries.

This high-level agenda is intrinsically linked to the fast developments in the financial markets due to the combination of technology innovations and finance (Fintechs), which have lowered the barriers to entry, overall costs, and prices. Thus, market agents perform more efficiently. There has been strong evidence worldwide of positive outcomes on human development, stronger social safety networks and financial stability due to the promotion of financial inclusion. This paper shows and discusses legal latest developments throughout the world, especially in the fields of the open-finance initiative and instant payment schemes.

The former is linked to the public goal to deal properly with digital data and the correct assignment of users as owners of their own produced data, particularly in the context of General Data Protection Regulation (GDPR), whilst the latter has increased the banked size of the population particularly in less developed countries, with special success in India and Brazil. While European countries have been in the vanguard of the introduction of open-finance infrastructures, particularly the United Kingdom (U.K.), Portugal and others, they are behind the curve, when compared to emerging markets, in the topic of integrated instant payment schemes, even though some EU directives and initiatives are in place.

This dissertation has six components, including this brief introduction. Section two assesses why financial inclusion is an important common goal for modern societies, its economic and social benefits, and the role the financial sector plays in that matter. As studies show there has been evidence of improvements in financial inclusion and financial literacy worldwide because of Fintechs and public efforts to level the playing field.

Section three deals with the theoretical approach to why the public sector should intervene in the economic sector towards the promotion of public objectives, including, when publicly appointed, financial inclusion. It first assesses the role of the State in modern societies, as well as the definition and promotion of fundamental rights, one of the key elements in the concept of a modern State.

Then it deals with the rationale behind the fundamental proactive approach of the State to dictate norms to the private sector through economic intervention, particularly economic regulation, one of the most efficient public tools, when properly used to promote public interests. These topics have been studied in the context of the juridical research field of "Law and Economics". To this manner, one shall discuss the introduction of technical, independent agencies with the task to regulate and supervise specific economic sectors and the regulatory capture's theory, where the agency (or the public sector) pursues private interests and protects nominated sectors and companies.

Further sections assess some legal initiatives related to promoting financial inclusion in the European financial sector and compare them to local developments in Brazil, India, Mexico, and other emerging markets. Section four discusses open banking initiatives and the reduction of economic and legal barriers. Section five assesses the development of instant payments schemes within the European Union (EU) and named jurisdictions. Section six brings some conclusions to this discussion.

2. FINANCIAL INCLUSION AND FINTECH INNOVATION

2.1. Financial inclusion and its social benefits

Most modern societies nowadays pursue common goals linked to prosperity, justice, equality, and individual and social welfare. Over history the development of the theory of State has evolved to protect fundamental rights, written in formal documents, named Constitutions or Fundamental Laws. Internationally, it can be seen in many declarations and treaties and, nationally, in States' constitutions and legislations. For instance, one can argue the Treaty on European Union (TEU, articles 2 and 3), the EU Charter of Fundamental Rights (CFR), and the 1948 United Nations' Universal Declaration of Human Rights, and in national constitutions like the 1976 Portuguese Constitution (articles 1 and 2) and the 1988 Brazilian Constitution (articles 1 and 3). In the pursuit of these public objectives, financial inclusion has taken a major interest from policymakers, legal practitioners, and scholars due to its strong evidence of social and economic benefits.

Financial inclusion can be explained by drawing the "unbanked" fraction of the population into the formal, regulated financial system so this segment can access an expanded range of financial services and products (Hannig and Jansen 2010; Voica 2017, 6). It also refers to “the increase of relevant services and of quality of those services for people who already have a bank account but are underbanked” (Plaitakis and Staschen 2020, 6). Financial inclusion can also "refer to the effort of making financial services available and affordable to individuals and businesses" (Senyo and Karanasios 2020, 1) and its role is to "create bridges between excluded groups and banks" (Voica 2017, 2).

With respect to the desire for more concrete equality[1], financial inclusion holds the promise to poverty reduction and to provide for sustainable development and economic growth. The desire for more equality, moreover, helps to prevent political instability and social crisis. Financial deepening can promote more labor and firm formalization, especially for small and medium enterprises (SME), which leads to higher government revenues and strengthens social safety nets. (Dabla-norris et al. 2015).

The boost in social safety mechanisms and the distribution of government benefits to the lowest income-level of the community, moreover, can reinforce the introduction of

[1] Often inequality is measured according to the Gini coefficient, an index that measures the wealth distribution amongst individuals in a certain area. The coefficient varies from 0 (perfect equality) to 1 (perfect inequality). Brazil, in 2017, had a Gini coefficient of 53.3 while Portugal, 35.5 (Hayes 2022).

basic financial services (e.g., basic bank accounts) to this segment. It is a virtuous cycle that promotes human development. In Brazil, for instance, with the Covid-19 pandemic outburst, the central government used multiple financial channels to deliver, monthly and in an efficient manner, stimulus checks to close to 35 million individuals (G1 2021, 1). They used state-owned and private banks as well as non-bank financial institutions, including Fintech companies in this regard. At the same time, the United States of America (U.S.), the richest country in the world and home of capitalism, relied on traditional couriers, such as the local post office (Foster and Bankrate LLC 2021; Hawrylack and Ladders Inc 2021).

There is strong evidence that a developed financial system eases access to funds that are needed to invest in profitable projects. It also enhances capital accumulation and poverty alleviation. (Hannig and Jansen 2010, 5; Voica 2017, 2). Conversely, entrepreneurs can be constrained to their own funds or to specific money lenders, like shark loans, in underdeveloped financial systems. Briefly, the higher the costs and the lower the availability of funds, the fewer economic activities could be financed and thus the lower the economic growth of the region. (Mohan 2006, 4). As such, financial inclusion provides for a better allocation of capital among the society, the reduction of financial costs and the reduction of informal credit providers (Voica 2017, 2). Many countries, hence, have invested public efforts in the field of financial inclusion and have declared it as a high-priority public policy objective.

Around the world, there are several initiatives in order to promote financial inclusion. Voica (2017, 2) illustrates some government-led initiatives in the U.S. (Community Reinvest Act), France (Law of Exclusion) and the U.K. (Financial Inclusion Task Force), as well as others led by the private banking sector in Germany, South Africa, and India. Two biggest actors in the field, nevertheless, are the Alliance for Financial Inclusion (AFI) and the World Bank (Voica 2017, 3–7).

The AFI has members in more than 90 countries. In 2011, they issued the Maya Declaration, a global initiative with common principles on the development of financial inclusion policies. As of September 2021, the alliance’s members had committed to almost 900 concrete projects worldwide, while 42% of them were finished by that time(AFI 2022a). Latin America and Africa regions accounted for more than 500 of total initiatives, which highlights the degree of importance and dedicated attention to design efforts on less developed countries (AFI 2022b, 26). In the former, furthermore, the great concern relates to consumer empowerment and market conduct, topics that are connected to consumer protection and financial literacy. In the latter, it also focuses on digital financial services, including agent banking, national payments services and mobile and e-money financial services (AFI 2022b, 33–39).

The World Bank collects and reports more than 100 indicators on financial inclusion in its "The Global Financial Inclusion" (Global Findex) report. It started in 2011 with information from about 700 million account holders worldwide, which represented 51% of the estimated number of adults (Voica 2017, 5). By 2021, this figure has reached as high as 76% of the global population (World Bank Group et al. 2022, 11). Figure 1 shows the rates of account ownership across the world. Nevertheless, in 2021 the World Bank estimates that at least 1.4 billion adults still do not have access to a bank account, according to Figure 2. The report also shows that Covid-19 pandemic boosted the adoption of digital financial services: it is expressed that one-third of adults in emerging economies paid at least one utility bill directly from their account for the first time ever and about 40% of adults in these countries made a digital merchant payment through card, phone, or the internet.

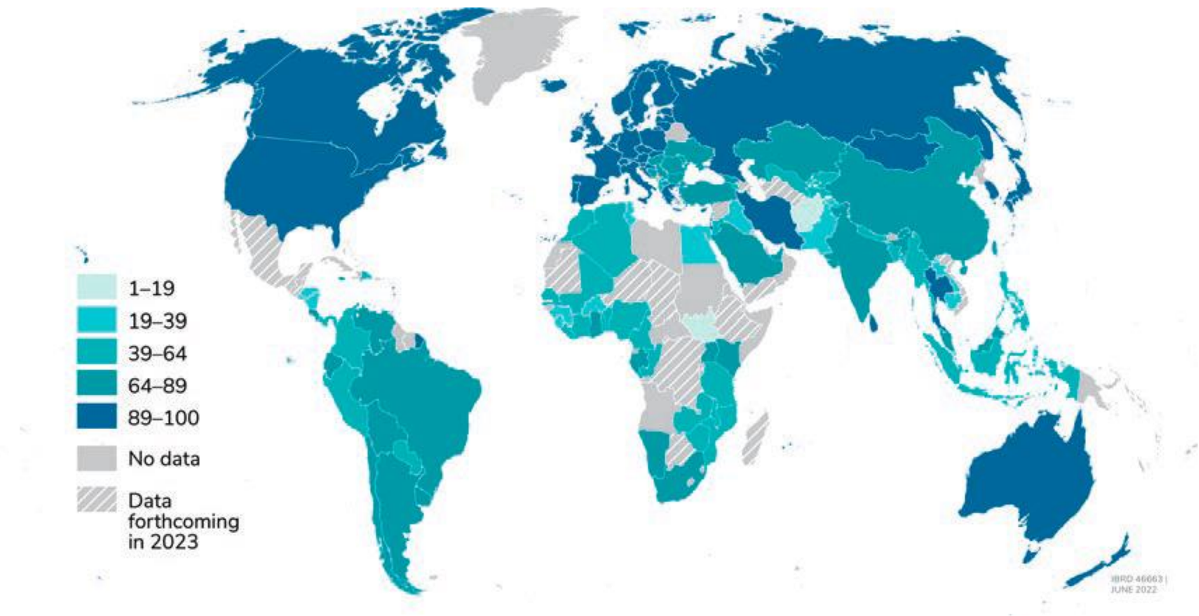

Figure 1: Account ownership rates across the world as of 2021
Source: Global Findex Database 2021

Figure 2: Adults with no account, as of 2021
Source: Global Findex Database 2021

The historical approach towards financial inclusion can be segregated in 3 different stages: (*i*) government-directed credit subsidy; (*ii*) market-led development due to deregulation; and, finally, (*iii*) institutional and organizational improvements to balance government and market failures (Hannig and Jansen 2010, 5–7).

At the first step, direct credit programs were designed to help poor agents to afford market interest rates through subsidized-rate loans. The goal was to channel public funds to targeted groups like small farmers. These programs were financially expensive, and they did not help to enhance the usage of other financial services at the targeted group. Nevertheless, these programs have their own merit in terms of food produced and cultivated area, and, therefore, they are still in place in some regions. For instance, for the 2022/2023 harvest, Brazil's central government has invested €20 billion to finance small and medium farmers (Vilela 2022), while 2022/2023 India central government's fiscal budget books Rs 18 lakh crore (€2.3 billion[2]) to agricultural credit (Press Trust of India 2022).

The second stage involves the development of a new approach focused on the performance of market agents and their products and services for the unbanked segment of the population. The focus is on institutions, rather than targeted groups, and it is known as

[2] As of September 9th, 2023.

"banking with the poor" (Hannig and Jansen 2010, 2). Most emerging countries have experienced this second stage, that includes the development of microcredit and microfinance (a full range of financial services, including loans, deposits, insurance, payments, and remittances). Kiva, for instance, is a nonprofit company that has helped more than 4.5 million people in almost 80 countries to raise almost US$ 2 billion in small loans, with a repayment rate close to 97% (Kiva 2022). Additionally, Brazil has a specific banking license for institutions that grants credit and financial collateral to micro entrepreneurs and SME. They operate with less onerous regulations and less capital requirements (BCB 2022).

The third stage does not supersede the previous ones but work closely with them. It focuses on mitigating market failures by combining public and private efforts. It also involves the use of modern technologies to expand the provision of services (Hannig and Jansen 2010, 2). The technology reduces the cost of connecting agents and other transactional costs. It expands targeted groups that can receive subsidized-loans, or it can foster microfinance products through modern risk management techniques and risk-profile data aggregation. It also produces positive spillover effects into a broader range of services, like the amplification of retail payments infrastructures.

It is also important to clarify the distinction between poverty and financial exclusion, even though they can be linked together. Usually, the former is defined as households living below the US$ 2/day threshold (Hannig and Jansen 2010, 12). Financial exclusion, on the other hand, is related to the lack of access to fair, safe, and affordable financial products and services provided by the regulated financial sector. (Mohan 2006, 5). Financial exclusion can also be measured concerning the quality of financial services and products provided or by the degree of usage, including permanence and depth of financial products (Hannig and Jansen 2010, 3–4).

To this distinction, in many countries the number of unbanked individuals exceeds the population living below the poverty line (see figure 3). This might indicate that other factors contribute to the size of the adult population without access to financial services. As such, Thorsten Beck (2020, 3) clarifies that financial inclusion is sometimes limited by several different reasons. It might include the width of the local financial markets; the higher costs associated; the lack of conditions for market agents to diversify risks; the lack of formal documentation and collateral provided by lower-income individuals and SME; the less frequent transactions; and the smaller amount transferred. All constitute barriers for traditional financial agents to act in these markets.

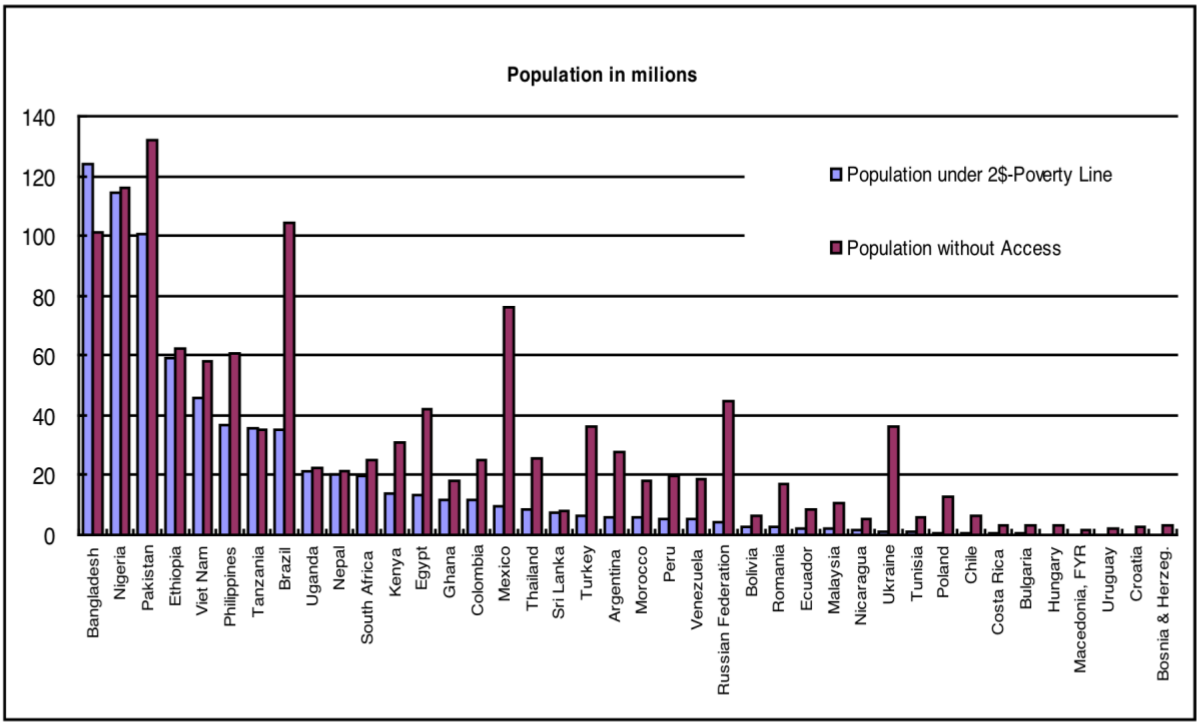

Figure 3: Poverty and financial exclusion in absolute numbers
Source: Hannig and Jansen (2010, 9)

Mohan (2006) has also demonstrated that financial exclusion can impact a society both at a macroeconomic and microeconomic level. First, it creates difficulties on cash-flow management for households and SME. These agents often rely exclusively on banknotes to transact, and thus they have more irregular and unstable cash flows. Second, the lack of financial security and financial planning limits the options for retirement at old age. Moreover, the absence of formal savings channels excludes low-income agents from the possibility to earn interest rates and tax advantages that are available to the richer (Mohan 2006, 6).

Hence, many countries have invested efforts, money, and human capital to address financial inclusion issues, as it is a real life-changing mechanism to promote equality and social prosperity among citizens. Nowadays, one of the most trusted channels to achieve these goals relies on financial innovation through technology.

2.2. Fintech innovation and its impacts on financial inclusion

This century has witnessed major changes in the provision of goods and services, social interaction, and consumer experience. Since the launch of smartphones, a great number of individuals have gained access to the internet, and it has reduced overall business' costs. It has led to overcoming barriers to entry in many markets, by providing new gateways for new entrepreneurs. It also has led to financial disintermediation by the democratization of access to financial services as many different players compete with traditional incumbent banks for the attention and money of financial clients (Philippon 2019, 1). Also, most financial services have been restructured in different forms to meet different client's needs using technology. This phenomenon is known as Fintech innovation.

Fintech is a new term that is broadly used to describe many aspects regarding the use of technology within financial markets. Thorsten Beck (2020, 2) refers to it as "technology-enabled innovations in financial services that are often associated with new business models, new processes, new products and new providers". This means that these innovations can be applied both by incumbent banks and by new agents. On the other hand, the term Fintech usually refers exclusively to these new actors, technology-driven players that aim to compete with incumbent institutions (Senyo and Karanasios 2020, 1). The World Economic Forum also conceptualizes it as "technology companies that disintermediate formal financial institutions and provide direct products and services to end-users, often through online and mobile channels" (Acar and Çıtak 2019, 3).

These agents can either be a completely new enterprise, such as a startup, funded by venture capital, or a traditional company in a different market, such as telecommunications or e-commerce companies (Beck 2020, 12). In the latter case, additionally, they are more strictly defined as Techfins[3], tech companies that have relevant market power in their field of expertise and decide to invest in the provision of financial services, first to their own clients and then to the overall market (Setiawan and Maulisa 2020, 219). This competition, by the way, has been increased with many public regulatory measures around the world, including the Open Finance initiative, the payment services

[3] Also known as Bigtechs.

legislations (e.g., PSD2 directive in Europe[4]) and the implementation of instant payments schemes, topics later discussed.

This new sector has taken massive interest by investors. In 2010, the total capital invested in alternative financial technology was just about US$ 1.8 billion. By 2021, the total Fintech deals reached an impressive figure of US$ 210 billion, accounting for more than 5,000 M&A deals (KPMG 2021, 4). Most Fintech investments are allocated in four financial services areas: payments and transactions, lending, insurance, and wealth management services. Furthermore, the impact of technology-driven innovations in financial markets can be seen in (1) new financial products; (2) innovative financial processes and (3) organizational framework.

The first way Fintech firms are known to act in the market is in the form of substitute agents that compete with incumbent banks (Senyo and Karanasios 2020, 1). In this regard, most of Fintech's success comes from the use of mobile technology to expand financial services without the need of brick-and-mortar branches. In 1999, Smile, the first internet-only bank, was launched in the U.K. (Acar and Çıtak 2019, 3). With the mass use of smartphones, this approach has grown even faster. It is particularly useful for serving low-income customers with less frequent financial demands and to expand the number of potential financial clients. Moreover, it has addressed some cash demand issues through the issuance of e-money, digital wallets, and digital payments (Beck 2020, 7).

E-money and digital payments have probably been the most well-known successes in the combination of finance and technology. The most studied case might be the issuance of M-Pesa in Kenya. Now this product is also available in other eastern African and Asian countries, like Egypt and India.

In Kenya, in 2007, local telecommunications companies took advantage of their pre-existing infrastructure to launch M-Pesa, a financial service in which consumers could send money to each other through traditional, non-smartphones. At that moment, Kenya relied almost exclusively on cash-based transactions. M-Pesa's main characteristic was to

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[4] PSD2 directive refers to Directive 2015/2366/EU of 25 November 2015 on payment services in the internal market. Available at: https://ec.europa.eu/info/law/payment-services-psd-2-directive-eu-2015-2366/law-details_en. Access: October 31st, 2022.

convert banknotes into electronic deposits. This led to a high increase of the Kenyan banked population, from 27% in 2006 to 83% in 2019 (Beck 2020, 5).

In Ghana, additionally, the traditional, formal, pre-existing banking sector could not reach a significant part of the population. This resulted in significant financial exclusion in that country. Nevertheless, this fraction of society was still seen as potential clients to the incumbent banks (a dilemma that has perpetuated financial exclusion in the country and a frictional, unstable, and small financial sector). The presence of Fintech firms helped to fill up part of this gap through the pre-established telecom networks (Senyo and Karanasios 2020, 6). In this sense, a partnership between different agents has helped to increase the number of banked individuals: the mobile operator provides the network, the startup firm leverages it and can access more individuals at a lower cost and the traditional banking sector is responsible as custodian of deposited funds and gives credibility to the overall operation.

Other examples of successes can be worldwide witnessed. In Latin America, Mercado Libre Inc. and Nubank Inc. increased the banked size of local communities. In the U.S., the presence of Techfins caused a disruption in the local banking market. In Asia, e-money products had a huge impact in less developed countries such as Mongolia and Bangladesh (bKash initiative, for instance), where mobile accounts represented almost 20% of financial penetration in 2017 (Beck 2020, 6–12). In Europe, one can argue the launch of N26 firm or Revolut firm, which helped to extend the banked size of the population in the region.

Payments' new financial products overcome some of the financial constraints that preclude the expansion of the financial markets because it reduces variable costs and therefore allows for small operations to happen within the pre-existing network, which are too costly to run through conventional banking channels. Also, they do not rely on traditional bank branch structures, as they can be provided through cheaper infrastructures, like banking agents' networks, such as "M-Pesa kiosks" (Beck 2020, 5). In Brazil, for instance, initially customers could deposit money through agent networks or paying invoices in the formal banking system. Once the deposit was available, which could take up to two business days before the launch of the local instant payment scheme, clients could use the e-money in any conventional way: pay bills, invest, remittances, etc.

The second step is the provision of credit and savings accounts' solutions. In Africa, again with the widespread use of M-Pesa, telecom companies launched M-Shwari in 2012.

It is a savings and small loan service. The government of Kenya also launched a fixed income government bond that could only be purchased over mobile phones. It is known as M-Akiba, a three-year digital bond designed to raise funds for infrastructure projects (Beck 2020, 7–9).

To this regard, often small loans are also not offered by banks, because they have sunk costs on client's appraisal, document assessments and credit bureau registrations. Because of these constraints, small loans are not just profitable enough. With Fintech's solutions, small villages in Ghana now have access to mobile-based small loans and, in less than a day, the process is completed, and the funds are available (Senyo and Karanasios 2020, 7).

Another good example is the flourish of 007fenqi, a Chinese Fintech startup, that grants loans almost exclusively to college students. These loans are uncollateralized, and the applicants often have low credit scores. To this regard, they would undoubtedly be excluded from the traditional Chinese banking industry. By 2015, 007fenqi was one of the five largest agents in this market with more than 300,000 users. (Leong et al. 2015, 2). The main goal of this Fintech is to offer a complete financial service experience based on this segment's demands: spend, borrow, earn, and invest.

Other financial products and services are also being developed to meet consumers' needs or to enhance positive financial habits. For instance, there are platforms designed to connect market participants, like peer-to-peer lending platforms. In Mexico, in 2001, for instance, a public bank launched an online infrastructure to provide factoring services tailored to SME (Beck 2020, 8). The goal was to discount low-value invoices, a product that most traditional banks were not interested to offer due to infrequent operations and higher costs. Other efforts are linked to text message reminders that help credit repayments and insurance premium payments on due date or the establishment of saving goals. These text messages contribute to creating positive behavioral incentives.

With regard to financial processes and organizational framework, it is important to remember that the degree of development of any financial market is constrained by costs and the ability to diversify risks (Beck 2020, 2). Phillipon (2019, 1) also shows that the cost of intermediation has been stable by 200 basis points above interest rates for more than a century, even though many technological improvements have been inserted in the market (including the emergence of computers, ATM machines, internet, and others). This high cost was a common issue blocking the expansion of financial services, particularly to the poorer segment, but Fintech improvements have helped to reduce this cost in the last 10 years (2009-2019). The successful process involves new financial procedures, including automated asset management techniques and robo-advisors, but also the usage of machine learning, big data, and artificial intelligence (AI).

Automated asset management and robo-advisors can help to reduce fixed costs and increase the amount of people served by financial advisors, especially fewer wealthy households. Abraham *et al*. (2019, 1) define them as “online platforms that use algorithms to automatically build and manage client’s portfolios”. They offer advisory and management services, including periodical portfolio rebalancing and tax management. Like other Fintech innovations, these new tools have been applied not only by startups, but also by large financial players such as Charles Schwab (the biggest broker in the U.S. market), the BlackRock company (the biggest asset manager in the world), and Bank of America Inc. (second largest bank in the U.S. market and fourth in the world), among others. This new sector accounts for large sums of invested capital: it is estimated to reach US$ 1.5 trillion by 2023 (Abraham, Schmukler, and Tessada 2019, 1).

The benefits for using robo-advisors are (*i*) easy accessibility, at anytime and anywhere, based on internet or mobile connection, (*ii*) lower costs and (*iii*) diversification benefits, among others. It also does not rely on physical stores, which often have high maintenance costs, or require expensive salaries to hire financial experts. Phillipon (2019, 10), furthermore, shows evidence that the use of this innovation allows more individuals to access and benefit from financial advisory services. By using technology in the financial services, Fintech’s improvements provide for an indirect subsidy where the rich individuals pay the capital needed to set up the infrastructure, such as firms’ fixed costs and research costs. Hence, poorer clients benefit from cheaper financial services.

Moreover, the use of robo-advisors leads to lower minimum investment amounts: Bank of America Inc., for instance, requires minimum funds of only US$ 5,000 to open an automated investment account, compared to US$ 25,000 to open an account with private (and human) financial advice (Abraham, Schmukler, and Tessada 2019, 3). In Brazil, a robo-advisor Fintech requires as low as R$ 100 (€19)[5] to open an account[6]. In Europe, a Fintech

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[5] As of September 9th, 2023.

[6] Information available at: https://warren.com.br/quanto-custa/. Access on October 31st, 2022.

firm offers advisory solutions with minimum required funds as low as €1,000[7]. Fintech firms also charge less fees: as low as 0.25% of assets under management, while the common practice of the market reaches 1.5% or more (Abraham, Schmukler, and Tessada 2019, 3).

With regard to big data and AI, Bartlett *et al.* (2022) show evidence that it can help to reduce non-statistical discrimination (prejudice). Studies indicate that Fintech's processes discriminate 40% less than traditional, face-to-face lenders (Bartlett et al. 2022, 6). In addition, Phillipon (2019, 11–16) illustrates how the combination of traditional credit scores (e.g., Fair Isaac Corporation credit score - FICO, in the U.S.) and other sources of data can produce better results in that regard. The former might include consumer behavior, such as utility and phone bills, shopping patterns, or browsing and internet histories. The amplification of data sources and their combination is particularly important because, in the U.S., for instance, almost 50 million adults do not have a FICO score and another 50 million have low figures, more often due to noisy and poor information. As such, the scholar concludes that when Fintech's algorithms become more accurate, they almost certainly improve the well-being of the minority. However, if Fintech's codes are embedded with engineers' prejudice, it might decrease the precision of the amplified credit scoring model.

Relative to regulatory improvements, the government can have an important role in the topic of innovation. However, scholars argue that, even though it might be an important component, it cannot be the sole reason to push innovation forward (Beck 2020, 15). Traditionally, financial regulators are concerned with the risks arising from unsuccessful innovation. Likewise, this can be a great concern on financial stability, institutional architecture, and consumer protection. In order to mitigate these risks and highlight the positive impacts of innovation, regulators now have different approaches at their hands.

Setiawan and Maulisa (2020) assess many different regulatory approaches being deployed. It can vary from the traditional and formal approach to other "laissez-faire" techniques. As for the traditional approach, usually it means that "any innovation that is deemed to be too risky to grow" shall be carefully assessed on an ex-ante basis. As for the latter, modern regulatory techniques include what is known as "the wait and see" and the "test and learn" approaches.

[7] See: https://etfmatic.com/faq/. Access on October 31st, 2022.

The "wait and see" approach comprises many different stages. It starts with the notion that some innovations are "too small to care", and thus they should thrive without any regulatory intervention until they reach a meaningful point. This landmark, theoretically, shall be the "too large to ignore" stage – but, in many cases, nothing is done until a later point called "too big to fail". In the former, regulators can design a specific legal framework where relevant changes can be addressed in a comprehensive regulatory approach. In the latter point, unfortunately, regulators' work is often deemed to be too late, and they might have an arduous task to regulate and supervise an entire new industry that they do not know the specifics of (Setiawan and Maulisa 2020, 220).

The "test and learn" approach, on the other hand, is a different regulatory technique where the innovation can be tested beforehand, under certain and controlled circumstances. This either can be done via a case-by-case scenario or via the implementation of an open-space framework. The first technique is also known as "*ad hoc* approach", where a case-by-case test is performed in an experimental procedure according to the pre-existing prudential and conduct supervision mandates. The disadvantage of this technique is the lack of standardized policies and safeguards.

In the latter technique, also known as "regulatory sandbox"[8], a specific legal framework is designed, which provides for a living environment to test the innovation, but without the burden of following some or all of traditional requirements, like prudential or operational provisions. In exchange, the innovation is applied according to predefined restrictions (Setiawan and Maulisa 2020, 220–21; Beck 2020, 16). The goal is to implement the innovation with a lower regulatory burden, that in many cases might be an important component in order to let the innovation flourish. In some situations, perhaps, the current regulatory framework is not the best option to deal with the benefits and risks arising from the innovation. Hence, regulators must not be omitted and adjustments in the framework shall be made. To some scholars, this is considered to be a win-win-win environment for all interested parties: Fintech innovators can try their products and services with legal certainty; regulators can learn about the innovation and prepare themselves and their regulations to it;

[8] The term "Regulatory Sandbox" resembles, to some authors, a shallow box in the playground filled with sand for children to play in a safer environment; to others, a testing environment in a computer system in which new or untested software or coding can be run securely (Cambdrige 2022; Feigelson 2018).

and the general public is exposed to new providers and solutions only after they are vetted (Beck 2020, 16).

In Brazil, for instance, Complementary Law 182/2021 enables the possibility for sectoral regulators to implement experimental frameworks. To this regard, a temporary and limited license is granted for companies to develop and test innovative products, services, or processes under simplified and special conditions, defined by the regulator. This has been applied locally with the efforts of the Brazilian Central Bank (BCB) and the Securities Commission (CVM), in the banking and capital markets sectors, respectively. In Mexico, at its side, "Fintech Law" was enacted in March 2018 to set up financial sandboxes and to cover other Fintech provisions, including open banking regimes. Concerning regulatory sandboxes, the law covers both the case when the player is a new agent, not previously regulated (articles 80 to 85) and when the new model, product, process, or solution is developed by regulated agents (articles 86 to 88)[9].

This section has assessed the importance of financial inclusion and how financial innovation can improve it. There is strong evidence that Fintechs' innovations have led to more democratized financial markets around the world, especially in emerging markets. One should argue if the public sector shall intervene in the economic forces to enhance financial inclusion through technology. To this regard, it is important to assess the theoretical legal basis to this intervention in modern societies. The next section deals with it.

[9] See Mexican Law to "Regulate Financial Technology Institutions" (*Ley para Regular las Instituciones de tecnología financiera*), available at http://www.ordenjuridico.gob.mx/leyes#gsc.tab=0. Access on February 27th, 2023.

3. PUBLIC INTERVENTION IN THE ECONOMIC SECTOR

3.1. Theory of State and Fundamental Rights

Conceptually, the State consists of a community of people linked by a pre-established juridical power and by general and impersonal norms (Vasak 1982, 1:5–6). These people are considered citizens of the State (or, in some cases, vassals), for which the law provides rights and assigns duties (Miranda 2017, 11). The State is based on five elements: (*i*) people, the human element; (*ii*) territory, the spatial element, (*iii*) government, the authority to impose legal norms, (*iv*) sovereignty, which has two facets, an external component corresponding to the absence of legal subordination to other States and an internal component corresponding to the lawful use of violence, and (*v*) the pursuit of common public objectives, which is the most relevant to our discussion. Most modern societies nowadays seek out common goals connected to individual development, social welfare, and equality.

The Theory of State is linked to the application of the Rule of Law and to the protection and implementation of fundamental rights and human dignity[10] (Novais 2006, 25–26; 2012, 17–18). As Jorge Novais says, it is the starting point of the assessment of the State as well its ending point. The former because the definition and delimitation of the fundamental rights shall be the essential core of State's objectives, and the latter because the State shall protect and promote them in an efficient manner.

Rafael Oliveira (2022, 629–30) summarizes the evolution of the relation of the State and the economic forces of the civil society (economic sector) in three distinguishing phases. The first phase is linked to the idea of the “invisible hand of the markets”, a lesson developed by Scottish philosopher and economist Adam Smith in his work named "The Wealth of Nations", in the century XVIII. The second phase, “the interventionist State” is linked to the promotion of equal conditions and the State acting directly in the economic or through strong economic dirigisme. The third stage denotes the exhaustion of the second phase due to the state’s inefficiency. We shall assess these phases[11].

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[10] Please refer to Jorge Reis Novais' initial keynotes in his work: "Contributo para uma Teoria do Estado de Direito" (2006).

[11] The third stage, also known as “The Regulatory State”, is better discussed in the following section 3.2.

In the first phase, the doctrine developed at that time – known as liberal doctrine, liberal constitutionalism or even “The minimum State” – argued for the separation between the State and civil society, particularly on economic issues (Novais 2006, 73–74; 102–10; 179; Grau 2018, 16–29). In this field, the State’s objectives were limited to promote the supreme values of private initiative, private ownership and the capitalist system developed by the rising bourgeoisie. The State focused as well on the protection of individual political rights. It is not a coincidence that the bourgeoisie class was the group of the society that was benefiting the most from these rights, which, seen as humans’ natural rights, were established prior to the State and above it. In this sense, they were true limits to the State's actions, protecting this new privileged group (Novais 2006, 77; 103–4).

At that time, any intervention from the State would be considered inappropriate, as the capitalist system and the free market were considered flawless[12], in line with Adam Smith's work. Thus, any intervention would harm the natural equilibrium of the market. Undoubtedly, the incipient capitalist system, alongside with the Industrial Revolution, in the XVIII-XIX centuries, have created a better world: the increase of urban population, easier access to better goods and services, transportation developments and the reduction of distances are among the main examples.

However, during this period, the world also has witnessed the increase in inequality between capitalists and workers and between urban and rural populations. Long working hours in exchange for penny salaries and a massive amount of unemployed people were common issues. This situation led to countless worker revolutions and claims for better conditions, like the Chartist movement in England (1838-1857) and French Paris commune (1871) (Lenza 2012, 959). Thus, later this notion of perfect liberalism and the previous separation of the State and the economic forces were then reassessed even for most liberal regimes – like the U.S. and the U.K. (Moncada 2018, 7–9).

After the I World War (WWI), most of the western societies shifted their legal systems away from these liberal economic postulates towards a social constitutionalism, where the State shall take more proactive actions in order to protect individual rights and to reassure and materialize them in daily situations. Mexican 1917 social constitution, German

[12] Some scholars argue that, in the liberal doctrine, the Economy was the true queen, and the Law was only its obedient servant (Moncada 2018, 7–9).

1919 Weimar constitution[13] and Brazilian 1934 social constitution as well as the 1919 Treaty of Versailles and the creation of the International Labor Organization (ILO) are examples of national constitutions and international agreements that included in their core objectives the notion to promote social equality among citizens and equal opportunities[14]. This new phase can be referred to by many names: "Providential State", "Administrative State" or "Welfare State".

In fact, Rafael Oliveira (2022, 629–30) clarifies that, at this second phase, the presence of the State, as a major actor in public and private relations, could balance the "natural" forces of capitalism that often lead to concentration of power and wealth in the hands of a few selected members or groups. Its presence had been reshaped to promote equality and reduce poverty and discrimination (Novais 2006, 187–88). Eros Grau (2018, 27–28; 62) also argues in the same direction: the "natural" forces of the economic markets can result in permanent damages and "not only humans and the natural resources shall be protected from the consequences of a self-regulated market, but also the organization and structure of capitalism itself". Luis Moncada (2018, 7–9), moreover, explains that the first economic laws in defense of competition on the markets, established in the U.S. in late XIX, were enacted as a mechanism to proportionate better functioning to the market. Therefore, the liberal capitalism turns into social capitalism.

However, in the path to a more inclusive society there was the II World War (WWII) and the atrocities perpetrated by totalitarian regimes, like the Nazi Regime in Germany and the Fascist Regime in Italy, which spread to other countries (e.g., Portugal and Spain). Following WWII and its lessons, western societies, mainly in Europe and then in Latin America, developed a new doctrine that promotes fundamental rights inserted in local constitutions and reconnects legal systems to the morale and individual protection (post-positivism)[15].

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[13] The 1919 Weimar Constitution enshrined the term *fundamental rights* in the context of essential rights before the State that reflect the fundamental relation between the State and the society. These rights benefit from the inherent guarantees of the normative force of the Higher Law (Miranda 2017, 13).

[14] The 1933 Portuguese Constitution was inspired by the 1919 Weimar Constitution on the goal to balance liberal ideas with social protection. However, political turmoil and the implementation of dictatorship in Portugal limited many of expressed fundamental rights (Botelho 2013, 9–10). In 1976, a new democratic constitution was enacted and enabled the social state to flourish within Portuguese society (Miranda 2017, 38).

[15] Many authors argue that the Nazi German Regime strictly followed the legality principle, because all its actions were disciplined by law (the positivism doctrine). Nevertheless, all the regime's atrocities are still seen as immoral and unethical (Lenza 2012, 66).

The 1949 Basic Law of the German Federal Republic is seen as a milestone to overcome the atrocities of Nazi regime. It refers, for the first time in German legal documents, to *sozialer Rechtsstaat* (social constitutional state), i.e., the combination of the State, the Rule of Law, and the new principle of sociality (Novais 2006, 192–94). This principle provides legal support for the State's actions towards concrete interventions in the society and in the economy, in order to promote and ensure the development of individuals freedom, personalities and opportunities.

After WWII and its aftermath, moreover, human dignity was repositioned as a core element of the legal system and the fundamental rights were reassessed in concept, essence, and functioning. Thus, they are evaluated as a system of values or order of values (*Wertordnung* and *Wersystem*, according to the German Constitutional court) that can be used to modify and adjust the written law[16]. The new post-war postulates, additionally, introduce a modified constitutional jurisdiction, which now gains new powers and duties in order to substantiate the fundamental rights and protect them from momentary majority political forces, a jurisdictional technique that has been common practice by many constitutional courts (Queiroz 2010, 65–67; Lenza 2012, 61–67).

In Germany, at the historical Lüth Case, for instance, the Federal Constitutional Court certified the Basic Law as a concrete order of values (Queiroz 2010, 57), i.e., an "expression of an objective order of constitutional values that amounts to a fundamental constitutional decision and therefore applies to all areas of law" (BVerfGE 1958, 1). In this paradigmatic case, Erich Lüth's calling for a boycott on Veit Harlan’s Immortal Lover movie[17] could not be always contrary to public interest and to the written law of the German Civil code (BCB §826), as it corresponds to the freedom of expression and opinion (BVerfGE 1958). Therefore, judges are allowed to give effect to its content in concrete cases by drawing on general clauses or “general laws”. This case first established the application of fundamental rights in disputes between individuals, apart from the State.

At this point, therefore, the fundamental rights not only act as a limitation on the State's actions, taking in consideration the protection of individual's autonomy, freedom,

[16] Before WW2, in most of Europe, it was common to apply the notion of the supremacy of the Parliament's decisions, i.e., the written law, according to British and French doctrines, was an expression of the people's will, and therefore it should be respected by the jurisdictional branch.

[17] Allegedly, Veit Harlan was a film director known to produce many movies during the Nazi regime in Germany. After the war, he was charged with aiding and abetting the persecution of Jewish people, but then acquitted. (BVerfGE 1958)

rights, and private property (liberal doctrine), but also act as the core element of the social dimension of the State (social doctrine). The public sector shall aim at the correction of inequalities through concrete actions, according to the procedures presented in the Higher Law, in a complex, plural, and heterogeneous society (Miranda 2017, 31).

For instance, the liberal fundamental right of proprietorship needs to be assessed alongside with the fundamental right of the property's social function. Each of them must be exercised continually and together. The arbitrary use of private property, hence, in many legal systems (e.g., Germany[18], Spain[19], Italy[20], Sweden[21] and Brazil[22]) can be seen as an abuse of right that needs to be redressed by the constituted public powers.

This new social component is also argued by the Catholic Church, for which private ownership is a consequence of man's nature, a fruit of human labor and, is a guarantee of freedom and human dignity. Nevertheless, the notion of social function, the Church argues, is inherent to private property, as presented in article 22 of Pope John XXIII's *Pacem in Terris* Encyclical. The private property, hence, must also fulfill the requirement of meeting collective needs (Vatican 1963).

However, what are the fundamental rights? Assessing their theory, Robert Alexy (1999, 58–62) explains that the "fundamental" component of human rights corresponds to the act of disposal of one community through a social contract embedded in the internal Higher Law or, in some cases, through judicial or social practices. They correspond to aspirations of the internal community. Thus, this component works together with other attributes assigned by Alexy: universality, morality, precedence, and abstractness. In fact, human rights, when inserted in the Higher Law, do not lose their moral validity or their precedence (humans as subject of law). In contrast, they get an additional layer and juridical protection. They act as a sharper sword in this sense (Alexy 1999, 62). As such, the development of the notion of fundamental rights is linked to the goal of integration of any person to his community (Alexy 1999, 59).

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[18] German Basic Law, articles 14(1) and 14(2).

[19] Spanish 1978 Constitution, articles 33(1) and 33(2).

[20] Italian 1947 Constitution, article 42.

[21] Swedish 1974 Constitution, article 15.

[22] Brazilian 1988 Constitution, articles 5(23) and 5(24).

Included in the internal Higher Law, fundamental rights are constitutional norms and therefore benefit from key aspects of constitutional law: *(i)* the higher position of the constitution, *(ii)* the normative, materialistic force of it, as defined by Konrad Hesse, German jurist and German Federal Constitutional Court justice and (iii) the vagueness and the constant transformation of their content, known as open catalog of fundamental rights, and (iv) the constitution's specifics interpretation techniques (Alexy 1999, 62–64).

The constitution is the fundamental juridical order of a community[23]. It is a political project designed to build a new juridical order, different from the previous one, legally innovative. It also has the power and duty to shape the society. (Queiroz 2010, 50). Moreover, the constitution defines the boundary between the lawful and the illegal. The latter, therefore, must be revoked and deleted from the legal system. And in order to do so, the constitution has a higher position: it gives legitimacy to the rest of the legal system, a key component from which other laws and State's actions cannot survive. (Queiroz 2010, 50; Lenza 2012, 239–40).

Jorge Reis Novais (2012, 17–20) also clarifies that the notion of Rule of Law goes beyond the classic aspects of supremacy of the Law and the legality principle. It corresponds to the application of material and moral values by the State, including the human dignity principle and the fundamental rights. It is linked to objective actions to seek and protect fundamental goals of the community. To this regard, Rudolf Smend clarifies that fundamental rights cannot be seen only as part of guarantees against the arbitrariness of the State, but rather must be understood as a "unifying relationship", where each free individual can join in the "public space", as taught by Peter Häberle. This works together with the equality principle and corresponds to the "open feature" of them. It also gives reason to the definition provided by the German Constitutional court as a "flexible, mobile and open" catalog of these rights, as a whole, which shall be effectively protected (Queiroz 2010, 60–63).

Even though the fundamental rights in each constitutional system must be understood as an undivided system of rights that reflect the philosophical-political postulates of a specific society (Queiroz 2010, 88), they can be further studied into categories,

[23] The definition of a constitution can be found in century-old legal documents such as the 1776 Virginia Declaration of Rights and 1789 French Declaration of the rights of man and citizen, namely article 16. (Queiroz 2010, 48; Canada 2022).

according to specific topics of analysis (e.g., content, structure, different ways to exercise them, objects, Georg Jellinek four status[24]). A well-known study[25] divides the open catalog of fundamental rights into different dimensions. It was popularly associated with the famous phrase of the French Revolution at the end of 18th century: liberty, equality, and fraternity (Reid 2019; Lenza 2012, 957–58)[26].

The first category links to the idea of individual freedom and encompasses individual's civil and political rights. It relates to two big sub-groups linked to life and physical security and civil political liberties (or empowerments). It is also related to the Jellinek's negative status or *libertatis status*, where the State shall refrain to act against the freedom and civil liberties of individuals (Miranda 2017, 108). Main examples are: some of the fundamental tasks of the Portuguese State (article 9, subsections b) and c) of Portuguese Constitution), the right to life (article 24), right to physical and civil integrity (article 25), right to freedom and security (article 27), freedom of expression and information, freedom of conscience, of religion and of form of worship (article 41), right to participate in public life (article 48), right to vote (article 49), right of access to public office (article 50), right to private property (article 62) and others[27].

The second category encompasses social and economic rights and the promotion of equality within the society (Vasak 1982, 1:111–14). It gives rise to Jellinek's positive status – or *civitatis* status – where citizens have the right to demand concrete public actions (public claims). This second category is traditionally linked to the social revolutions in late XIX and the issuance of the before mentioned social constitutions. It includes the fulfillment of basic human needs (e.g., nutrition and healthcare), economic needs (fair wages, better living standards, social security) and social needs (education, culture, practice of sports and

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[24] Jellinek organizes people's public rights according to four statuses: negative, positive, passive, and active. Each one of them summarizes the conditions where an individual is presented to the State as a community member: They refer, respectively, to freedoms from the State, claims towards the State, duties to the State and participation in State's decisions.

[25] This classical classification was first developed by French-Czech jurist Karel Vasak in 1979 and published in his work called "the international dimension of human rights" in 1982.

[26] It is important to mention that many other authors further developed Vasak's theory and now list more fundamental rights' categories, including a fourth dimension (democracy, information, pluralism of thinking and the essence of a Social State and the right of bioethics – Noberto Bobbio), a fifth dimension (right to peace between nations – Paulo Bonavides) and a sixth dimension (drinking water – Bernardo Gonçalves) (Zouein 2019; Miranda 2017, 28–30; Lenza 2012, 957–61).

[27] On the Brazilian Constitution please refer to article 5 and its 79 subsections, alongside with other 1st dimension rights distributed in the remaining part of the text, like nationality rights (article 12), political rights (articles 14 to 17) and fiscal protection ("no taxation without participation" postulate) and fiscal immunities (article 150).

leisure). The underlying goal is to promote real, concrete conditions to all citizens through positive actions of the State (positive obligations) (Reid 2019). Main examples in the Portuguese Constitution are presented in article 9, subsections d), f) and h) (fundamental tasks of Portuguese State) and in Title III (economic, social, and cultural rights and duties): right to work and workers' rights (articles 58 and 59), countless social rights (articles 63 to 72), and cultural and education rights (articles 73 a 79)[28].

The third dimension, linked to the French revolution's objective of fraternity, encompasses a wide range of rights, all related to the development of a community and its political status (Reid 2019; L. F. D. Santos 2011, 75; Lenza 2012, 960). Main examples are shown in article 9, subsection e) and g) and refer to the protection of the environment for this and further generations, the protection of public properties, of cultural and natural heritage, of natural resources (article 66) and refer to other community rights, such as the legal procedures of collective civil protection[29].

Many States include in their fundamental tasks the goal to build a fair and solidary community and to promote the well-being of all citizens. Moreover, in these jurisdictions, the financial system often is structured and developed in order to promote the public interest and the social and economic development of the country. For instance, it is expressed in article 101 of the Portuguese Constitution and article 192 of the Brazilian Constitution. Hence, it seems that the promotion of financial inclusion can be used to achieve many of the desired equality and the promotion of diverse fundamental rights. Thus, the use of technology and the expansion of financial services are well fitted tools to achieve a higher level of society.

The public interest linked to the financial markets, hence, includes the opportunity to undertake new business, to fairly access financial products and services and to mitigate financial risks in an effective manner. The desire for more financial inclusion has led many governments to intervene in the economic forces. In the pursuit of States' objectives, it is not only desired, but also demanded. However, these public actions need to be non-arbitrary and

[28] In Brazil, one can argue for article 3, subsections I, III and IV (fundamental task of Brazilian State) articles 6 (social rights), articles 7 to 11 (workers' rights) and for the entire Title VIII (of social order).

[29] Among others, please refer to article 225 of Brazilian Constitution (environment protection), article 216 (cultural heritage) and article 231 (indigenous heritage).

need to respect fundamental rights. The next section assesses the theoretical basis for public intervention and its different solutions, including economic regulation.

3.2. State Intervention in the Economy

The current stage of State's theory, with connection to the protection of fundamental rights, and the relevant status of human dignity are the background components that correspond to development of a new juridical line of study: "Law and Economics", also known as Economic Law. According to the lessons of French author Gerard Farjat in his work "*Pour Droit Économique*" (for an Economic Law), it corresponds to a normative legal system, with principles and prescriptive rules, developed to study and regulate the interaction between the State and the economic forces within a community (*apud* Grau 2018, 57–66)[30]. Economic regulation is one of the intervention's tools at the State's disposal to achieve nominated public interests.

The underlying perspective is to achieve better results that would not be feasible without the combination of public and private efforts towards a common goal, like low employment rates, better work conditions, distribution of wealth, the expansion of social security networks and the promotion of human dignity[31]. Also, other public interests can be prioritized, such as the preservation of the environment and the reduction of social negative outcomes arising from the economic sector (Moncada 2018, 7–9).

As defined by the French author, the Economic Law is different from traditional, classical, public law. The latter is set to preserve the social peace and social structure, while the former seeks to shape the economic framework in a certain, chosen direction. Moreover, the classical regime, he continues, is based on permission clauses that are the juridical baseline, like the freedom of speech, the political rights and the structure of the civil law, and prohibition norms are exceptional, while the Economic Law consists of a broad set of tools, including prohibition clauses as well, but not limited to it. It includes, for instance,

[30] Many other scholars follow this definition, like José Simões Patrício (Economic Law Course, 1981, publisher: Lisbon Law School Academic Association), Vital Moreira (Economy and Constitution, 1974, Economic Sciences Boletin, Coimbra) and Antonio Sousa Franco (Notions of Economic Law, 1982-1983, publisher: Lisbon Law School Academic Association).

[31] For instance, see the opening article (art. 170) of the economic section of the Brazilian Constitution. This article resembles article 151 of 1919 Weimar Constitution, illustrating the impact of this legal document in the western societies, as discussed in section 3.1. (Grau 2018, 64).

limitations on the freedom to contract and to engage in certain economic activities due to potential negative externalities.

This normative system in many legal regimes can also have the status of constitutional norms, such as the Portuguese Constitution, Part II (articles 80 to 107) and Brazilian Constitution, Title VII (articles 170 to 192). This is common practice in many programmatic constitutions, which not only establishes the basic form of government and fundamental rights (statutory constitutions), but also defines directives and objectives to be pursued by the constituted powers (Grau 2018, 73–74). This constitutional normative system is called, by many scholars, including José Gomes Canotilho, "Economic Constitution": a set of postulates organizing a specific economic order (the factual world), but also a set of principles and rules governing the economy (juridical world) (*apud* Grau 2018, 77–81). It is materialized through public intervention.

The phenomenon of market's globalization[32] and the reduction of distances due to technology improvements are also part of the expansion of "Law and Economics" and key components to the social and political transformations that have occurred in public administrators. As such, in the late 1980s, Chalmers Johnson introduced a new perspective to understand and study the rapid economic growth of certain countries: the capitalist developmental state model (Cai 2010).

By studying Japan's golden age of economic growth, Jonhson explains that this economic model is not either a pure free market- or a socialist-oriented model. Rather, it is a rational and capitalist-oriented plan where the central government has legitimacy and authority to regulate it and, in some cases, decide the allocation of capital within the national economy (Cai 2010, 2). This kind of model has later been used to assess and explain the theory of economic development elsewhere, especially in other Asian countries (like India) and Latin America (e.g., Chile, Brazil, and Mexico). In the late 1990s, following the Asian and emerging markets financial crisis, this model was reshaped as the “regulatory state” or “post-developmental state” (Cai 2010, 3; Oliveira 2022, 630–39).

Feina Cai (2010, 2–3) points out some of the characteristics of the developmental model: (i) economic growth is a national high-level priority, (ii) it connects state’s

[32] Globalization can be understood as not only the growing integration of local economies worldwide but the spread of social, cultural, and political norms and practices (Cai 2010, 3).

bureaucracy, the local social infrastructure and the private sector in a way that important business and industrial decisions are under State's guidance or influence through public intervention (or economic regulation) and (iii) policy instruments are designed and chosen by a small group of local elites, combining high-level State bureaucracy and private sector agents.

At the “regulatory state” model, as an improvement of the previous one, the State also focuses as a guarantor of legal and social conditions and “seeks to produce the kind of subjects that are attractive to global capital”, including highly-skilled technical workers but also an affluent portion of consumers, who can enjoy better global goods and services. Likewise, Rafael Oliveira (Oliveira 2022, 630) explains that this model, the third stage of the relationship between the State and economic forces[33], is based on the State’s inefficiency on acting directly in the economy (through public companies) and thus the return of certain economic activities to the private sector (denationalization, deregulation, and a higher level of economic freedom).

As a private sector-driven phenomenon, globalization's advocates also argue for the application of liberalism (or neoliberalism) models, including the privatization of public enterprises, the deregulation of local economies and the liberalization of foreign trade and capital flows. This strategy has been applied in many countries, in different times and regions, for instance in Latin America in the 1990s (Brazil, from 1990 to 2002, Mexico, starting in 1990s and so on, Peru and Venezuela, in the same timeframe).

However, according to studies[34], only a few developed countries and global companies have truly enjoyed the benefits of economic development embedded with globalization. These global companies are often headquartered in developed countries, like the U.S. or jurisdictions in Europe, and they outsource fractions of the production chain to less developed countries, often seeking for cheaper labor or less strict labor legislations, which usually are connected to inhuman conditions of hygiene, work, and life. For instance, in 2022, many of the biggest U.S.-based companies publicly listed in local stock exchanges (known as S&P 500 index), had roughly 40% of their revenues generated outside their home country (Beniaminov, Maier, and Cluver 2022).

[33] The first two phases were discussed at the former 3.1 section.

[34] Please refer to several academic studies presented in Feina Cai’s essay, “The developmental state in the Globalizing World”.

For less developed countries, therefore, the potential of public intervention in the economy can be used to achieve national interests. These interests account not only for economic growth but also for the expansion of social welfare networks and for the reduction of inequalities and better distribution of wealth. In Brazil, for instance, there is a link between social and economic development, where the free initiative principle shall harmonize with the social justice principle[35] (Oliveira 2022, 631). The same goes for the Portuguese society, where the general principles of the organization of the economy are listed in articles 80 and 81 of Part II of Portuguese Constitution. Hence, the capitalism form of these societies is linked to social objectives (social capitalism). The private profit is undoubtedly an object of concern, but it is not isolated from the rest of public interests, namely the promotion of fair equality and human dignity, among others.

For analysis purposes, public intervention can be global, sectoral, or punctual. Global interventions are made through general norms and affect the whole economy (like national economic plans), while sectoral interventions are designed to regulate a defined economic sector. Examples can be given: fiscal benefits can be used to develop specific sectors of the economy, like the tourism or the export sectors, or wine, coffee, and sugar productions. Punctual intervention relates to specific, particular situations, like when one company celebrates an agreement with the State or needs to be shut down due to failure or fraud (Moncada 2018, 44–46; Laubadère 1985, 28–31).

Public intervention can also be further categorized as either direct and stronger through direct public engagement (like State's companies) or indirect and softer through regulation, economic induction, or economic stimulus, or even a combination of these tools (Oliveira 2022, 629–74). Eros Grau (2018, 87–148) also provides a doctrinal classification of public intervention. He distinguishes between direct and indirect as well but refers to them as intervention through absorption of the market (e.g., public monopolies); intervention through participation in the market (e.g., State's companies in competition with the private sector); intervention through direction (e.g., public regulation); and intervention through induction (e.g., premium sanctions and stimulus).

When discussing economic intervention in the economy, this first important notion concerns economic planning. It is prior to any State’s material activity, either direct or

[35] As appointed in article 1º and article 170 of Brazilian constitution.

indirect. The action of the state is not arbitrary, but is bound by the promotion of public interests and the promotion of a well-functioning public sector's activity, as well the protection and promotion of fundamental rights (Oliveira 2022, 633–34).

Public planning refers to the appointment of the chosen public interests, their goals, and ways to achieve them through public actions. As such, public planning is a fundamental step, due to many – or sometimes infinite – public interests available (or demanded by local citizens) and scarce economic resources available. It is formally set in legal acts containing the assessment of the economic activity and the ways to achieve the nominated interests (Moncada 2018, 603–5).

In capitalist societies, like Brazil, the public planning must harmonize with the free initiative principle, private ownership, and freedom to contract. Therefore, the local constitution brings out that public planning is imposing on the public sector and indicative on the private sector (article 174). The same goes to Portuguese society, as announced in article 80, subsections c), f), and g) as well the entire article 81 of local constitution, which dictates the priority duties of the state in the economy[36].

It is imposing on the public sector due to the discussed notion of the Rule of Law. Public planning is presented in many laws and public documents. Therefore, public agents shall act in conformity to it. Notwithstanding, public planning, in a democratic society, shall be open to public opinion in the form of public audiences and suggestions, as well the collaboration of the Parliament, work unions and other associations of the civil society (Moncada 2018, 614–23).

In this discussion, our focus relates to the State's indirect actions. It can happen in many different forms: price controls, the promotion of competition, and most importantly, among others (A. C. dos Santos, Gonçalves, and Marques 2014, 211–15). At the indirect approach, the State does not engage directly in the production and commercialization of goods and services. He guides, conducts, or manages economic efforts, as well as oversees and imposes sanctions. The business agents can either be private or public entities. These economic actors engage themselves in business activities, but not the State itself (Moncada 2018, 44–46). In Portugal, for instance, from the 1930s to 1970s, fruit production and exports

[36] Subsection f) of the article 81, thus, is seen as constitutional authorization for public regulation in local markets (Moncada 2018, 51–52).

were regulated and managed by the Junta Nacional de Frutas, a cooperative organization of economic coordination created by the Portuguese State. It aimed to streamline and modernize the agricultural sector of its economy.

On the other hand, direct engagement takes form when the State assumes the role as business agent. It either directly engages in the provision of public services, or when the State assigns certain public monopoly sectors (where the private initiative is excluded, like the imports of sugar, in Portugal, centuries ago, or the oil sector in Brazil until 1995) or when the State competes with the private sector in the economy with its companies (Moncada 2018, 44–46). Examples can be given: in Brazil and Portugal, the banking sector is one of special public interest. In each country, the State controls many commercial or developmental banks like, in Brazil, Caixa Econômica Federal, Banco do Brasil S.A, Banco Nacional de Desenvolvimento Econômico e Social (BNDES), among others, or in Portugal, Caixa Geral de Depósitos and Banco Português de Fomento.

Concerning the direct engagement of the State, the economic activity initially shall be reserved to the private sector, according to the free initiative principle. First, the State has other concerns, including the provision of public services, national security, public health, and education. Second, the private sector is best suited to offer better goods and services. It is more innovative, and it has fewer restrictions, when compared to the public sector. Nevertheless, in some cases, the public interest demands the presence of the State in the provision of goods and services, directly engaging in economic activity. This public interest can be the correction of market failures, such as abusive market power, abusive price controls, or due to national security. As such, the direct engagement of the State is set forth by the subsidiary principle. It only has legitimacy to engage when a high-level public interest is in place and when the private sector is less capable to achieve the best outcome on its own (Oliveira 2022, 665–69).

Even when the State engages directly, in most legal regimes, public privileges cannot be summoned up. For instance, in Brazil, public companies competing in economic activities are bound by the same restrictions and legal norms that apply to the private sector. This was not always the case. Prior to the 1988 Brazilian Constitution, public companies could benefit from public privileges, including tax privileges when compared to the private sector. Now, this is unconstitutional as imposed by article 173, § 1º. All economic agents have the same legal rights and obligations, including labor and tax rules. This is the concrete application of free competition on the market.

Due to some priority national interests, often the State appoints economic sectors that shall be constituted as public monopolies. Moreover, as exceptions to the free initiative principle and as a restriction of fundamental rights, public monopolies usually can only be established by the Constitution. This is the case in Brazil where only specific sectors are chosen. There, they all refer to oil production and transportation and to nuclear materials. The public interest is clear in these cases: it is linked to national security and national economic sovereignty as well the protection of the environment and its citizens from nuclear disasters.

For some economic schools of thought, the direct presence of the State can even be stronger. The State, they argue, shall be more directly present in order not only to protect fundamental rights, but also to govern economic activity, whether public or private. This line of work postulates that the market itself has ulterior motives (e.g., arbitrary increase of profits or abusive control of the market), and is concerned for social improvements. As such, for them, the State shall provide direct funds, guidance, orientation, and oversight to the private sector. This happened, for instance, in Brazil, during the early years of the 2010 decade. It was called the "new economic matrix"[37] (Safatle, Borges, and Oliveira 2016, 83–84), where the presence of the Brazilian State in the economic sector was more active.

At that time, Brazilian public banks funded specific chosen private companies, linked to strategic economic sectors. These private companies were nominated as "national champions" (Safatle, Borges, and Oliveira 2016, 125). They would lead the Brazilian economy to a new level of employment and wealth. Public companies, as well, could bear higher economic losses, as long as nominated social strategic outcomes were achieved.

The Brazilian State's direct participation in the banking sector, for instance, grew from 33% of the outstanding credit in January 2008 to 56% in May 2016. BNDES credit lines to companies, alone, reached an expressive amount of R$ 523 billion (€162[38] billion), the equivalent to 8.7% of Brazilian GDP (Safatle, Borges, and Oliveira 2016, 89; 131–35).

[37] This designation was first documented in early December 2012 by the Brazilian Government. It aimed to change the macroeconomic policy established after the 1996-1999 emerging market economic crisis to a new model based on lower interest rates, favorable foreign exchange rates to exports and lower level of taxes to specific sectors, particularly those labor-intensive (Safatle, Borges, and Oliveira 2016, 83–85).

[38] As of historical foreign exchange rate of December 31st, 2013.

Also, in late 2013 the public banks' market share exceeded private banks' share. After the artificial control of economic indexes and excess of intervention, the years following the "new economic matrix" witnessed economic recession, at least 60 million Brazilians (one third of its population) had credit restrictions and could not bear their debt (Safatle, Borges, and Oliveira 2016, 134–35).

On the other hand, several types of State's interventions happen through regulation. Rafael Oliveira (2022, 635–45) gives two important definitions to it: (i) a narrow one, where it corresponds to the public activity exclusively through legislative acts or other form of legal statutes; (ii) a broader definition, which encompasses the former but also corresponds to the public coordination and conformation of the private activity. The latter definition better explains the notion of public regulation and it is in line with the definition provided by António Santos, Maria Gonçalves and Maria Leitão Marques.

According to these authors (2014, 207–9), public regulation corresponds to a set of "legislative, administrative and conventional acts in which the constituted powers, by themselves or their agents or technical bodies, settle, control or provide influence on the economic agents' behaviors". It is also in line with the lessons of Pedro Gonçalves[39], in which "regulation is an external State's intervention (hetero-regulation) in the economic sector, in the market and, in general, in private activities developed within the context of competition".

Regulation, therefore, encompasses three important public tools: (i) the enactment of legal norms; (ii) the concrete material actions to implement these norms, such as authorizations and licenses grants; (iii) the public oversight on compliance and the ability to punish those who deviate from it. Regulation is also linked to the referred globalization phenomenon and the (re-)application of liberal ideas. As said, the privatization of many public companies withdrew the State from direct engagement in the economy and thus reoriented its actions on regulation to promote public interests, like consumer protection and market competition (Moncada 2018, 50–54).

The enactment of public norms can be done by the legislative branch (traditional position) or by sectoral regulatory bodies established by constituted powers, with the responsibility to regulate and to oversee a predefined sector or public interest. The latter is quite common in the U.S. legal regime and has been a source of inspiration to other nations

[39] *Apud* Ricardo Miguel Goncalves' essay, "Catch Theory: an introductory approach" (2014, 8).

(like European countries in late 70s and early 80s, Brazil and other Latin American countries in the 1990s). After the 1929 economic crisis, the U.S. government issued the New Deal Project (Franklin D. Roosevelt administration) and established a new juridical-economic model where regulatory bodies would intervene in the economy to rectify market failures (Oliveira 2022, 101–14). In the US-model, these regulatory bodies are part of the executive branch, even though they have technical autonomy. The same goes for Brazil (Oliveira 2022, 99–113). In European countries, they are considered independent from the classical three government branches (Moncada 2018, 51).

This US-based model is linked to the notion to respond quickly to market changes, with a specialized and technical body. The legislative procedure is deemed to be too slow to respond to market demands and, therefore, a technical body is better suited to issue specific regulations and technical standards and oversee private compliance. Nevertheless, this strategy still operates in line with the postulates of the Rule of Law because all public norms shall respect the predefined legal standards that legitimize them.

This process corresponds to the exclusion of certain aspects from the legislative procedure (*domaine de la loi*) and their transference to the regulation procedure (*domaine de l'ordonnance*)[40]. The US-based model is better defined by Thomas Merrill:

> The agency is a centralized source of governmental authority that can bring coordinated solutions to social and economic problems throughout its jurisdiction (which in the case of a federal agency, is the entire country). It combines all governmental powers, legislative, executive, and judicial, under one convenient roof. Its leadership is expected to be nonpolitical (...). And its staff is expected to have the specialized information and systematic knowledge, in other words, the expertise to comprehend complex problems and to fashion rational solutions to them. (Thomas Merrill 1997, 1049)[41].

Moreover, as the State can also compete in different sectors with private agents (intervention through participation, in the Eros Grau's lesson), technical bodies, relatively independent from the State, are better suited to provide neutral, impartial rules to all economic actors. In modern days, it would be unusual – if not unfair – if the State, more often dictated by a transitional political agenda, could, by itself, impose special rules for its own benefit in economic sectors where it also competes with the private sector. If deemed necessary, the State can – or should – establish certain sectors as public monopolies, if there's

[40] In France, this process is established by article 38 of the 1958 French Constitution. It is deemed to be a temporary dislocation of the boundary between the domain of the law and that of regulation (Verpeaux 2006).

[41] *Apud* Jacqueline Lobão and Jean Carlos Dias' essay, "Theories of Economic Regulation: an approach according to Richard Posner" (2020, 3–4).

constitutional authorization. In any case, it shall respect the constitutional prevalence of fundamental rights and free initiative principle. As this is not the case, an impartial sectoral regulation shall be put in place.

Impartiality can be achieved by the nomination of agents, by the predefined length of their mandates, disconnected to the election cycle, and by certain guarantees to prevent the capture of the technical bodies by private interests or even by transitional public political agenda (Moncada 2018, 46–54). In Portugal, for instance, one can list several specialized bodies: Autoridade da Concorrência (AdC), Banco de Portugal (B.P.)[42], Comissão do Mercado de Valores Mobiliários (CMVM), Instituto de Resseguros de Portugal (ISP), and others. The same goes for Brazil with its peer agencies in all these economic sectors[43].

One important instrument of indirect intervention through regulation consists of the use of the so-called analysis of regulatory impact. This tool, available in many legal regimes, especially in OECD countries[44], seeks to assess the current and potential future effects of regulation, in line with the public planning objective and social participation (Oliveira 2022, 640–45). It is also based on the legal line of study named "Law and Economics", represented by most known authors Richard Posner, George Stigler, and others. In Brazil, for instance, it was first imposed in 2002 in broad general aspects. Later, it was imposed by Law 13,874/2019, better known as "Economic Freedom Law" (article 5), and Law 13,848/2019, which regulates the action of sectoral regulatory authorities, such as energy, oil, and telecom. The key notion corresponds to promoting better and more effective regulation. It also refers to assess the practical consequences of juridical norms[45].

An essential objective of regulation is promoting competition in the market. As said, in some legal regimes, it is also a constitution postulate of economic intervention[46]. This is the foundation basis for some public initiatives in the financial markets later discussed in the

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[42] B.P. governor and its 3 to 5 deputy governors are nominated by the Portuguese Council of Ministers for a 5-year mandate. See chapter V of Organic Law nº 5/98.

[43] In Brazil, Complementary Law nº 179/2021 established the formal autonomy for the BCB. Its governor and 8 deputy governors are nominated for a 4-year mandate with different expirations dates and disconnected to Brazil's general election cycle.

[44] OECD refers to the Organization for Economic Co-operation and Development, a forum where 37 western democracies collaborate to develop policy standards to promote sustainable economic growth. It encompasses 75% of world GDP and world trade (U.S. Department of State 2023)

[45] In Brazil, also see, articles 20 to 30 of Decree-Law nº 4,657/1942, amended by Law 13,655/2018.

[46] See article 170, subsection IV, of Brazilian Constitution and article 81, subsection g) of Portuguese Constitution.

following sections 4 and 5, i.e., the introduction of open finance regimes, and the implementation of instant payment schemes, respectively.

Promoting competition involves the idea of freedom to join the market, due to the elimination or substantial reduction of barriers to entry and the free opportunity to provide goods and services. For example, open banking schemes are set in articles 35 and 36 of the PSD2 directive. It establishes, respectively, mandatory, non-arbitrary and objective rules to provide to new agents, more often Fintechs, access to payments systems and access to accounts maintained in third-party credit institutions. This is linked to the essential facilities doctrine, where essential infrastructures maintained by monopolistic or oligopolistic agents shall be forced to be open to other competitors (Oliveira 2022, 647–49).

To this regard, many existing facilities cannot be easily replicated. Also, sometimes this replication is not desired by public interest, due to negative potential outcomes, such as market inefficiency or fragmentation. Thus, the public sector may impose objective rules granting access on private infrastructures to all interested parties.

This concept was first imposed on material assets like railways. Now it is also present on immaterial assets, like telecom network infrastructures or financial information, such as bank accounts, financial assets history, credit score, trade repositories, stock exchange clearing houses and others. For some, it may be seen as an intervention of private property. Notwithstanding, as discussed, it is linked to the promotion of the social function of the property as well as other public interests, like reducing information asymmetry.

Promoting competition also comprehends the freedom to set own prices in a free market, where more efficient agents can provide the same or better goods and services in exchange for lower compensation. For instance, the remuneration and duration of banking deposits is freely set by financial markets. Also, banking services usually are freely priced by its providers. Individuals and companies can choose the best suited financial provider to their demands.

Brazil's instant payment scheme (PIX), for instance, does not set the tariffs' values that can be charged to companies. Nor does it define minimum or maximum transfer values. It imposes the gratuity to individuals (when not acting in business activities), but not to companies. Financial agents, hence, can compete for clients and, in fact, several Fintechs in the country provide access to instant payments schemes (local and international, when combined with foreign exchange solutions) and access to different banking accounts through open finance schemes via Application Programing Interfaces (API). In many cases, they are now seen as better financial providers than banks, especially to SME, which usually are not well serviced by the traditional banking sector, as discussed in section 2.

Economic regulation also works to avoid market inefficiencies and market failures, including abusive market power, monopolies, negative externalities, and asymmetry information. This line of work is also known as "public interest" theory. The State's goal is to achieve economic equilibrium, in which perverse private interests are removed in benefit to the maximization of social welfare. Furthermore, economic regulation should be more prominent as these issues are more present (Lobão and Dias 2020, 4).

One important market inefficiency concerns asymmetric information. It happens when the distribution of information is unequal among economic agents, and it is a particular issue in the financial markets. Key literature examples concern adverse selection and moral hazard. The former occurs before transactions, and it corresponds to limiting the scope of the market only to less desirable choices or agents. The best products and services are estranged from the market due to the lack of information on key characteristics, such as quality or risk.

In the credit market, for instance, if creditors cannot distinguish between bad and good debtors (like using FICO score in the U.S.), the interest rate would have to be higher to achieve market equilibrium. At this higher rate level, however, only bad debtors would be willing to apply for credit and good debtors would be removed from the market because they would not be willing to apply for loans at this rate level. Economic regulation that eases access to credit score and financial information (e.g., open finance initiatives), therefore, acts to rectify this adverse selection issue.

As for moral hazard, it happens, most commonly, on an ex-post transaction basis. It occurs when an economic agent changes his behavior after its own interest is already secured. This new behavior is in detriment to other agents' interests. Microeconomic textbooks give the example of the car insurance market, where the insured agent, after being completely covered, neglects to protect his asset and therefore the insured event gets a higher probability to occur. Classic retention and deductible clauses are insurance tools used to mitigate the issue.

Moreover, in capital markets, one most known discussed reason for the 2007-08 economic crisis relates to moral hazard. Due to the interconnectedness of markets and the higher level of securitization products, originators would not bear the risk of their granted credit. It led to poor creditworthiness assessments as the risk was transferred to different agents and originators' profits were completely secured irrespectively of the credit performance. Also, as banks were confident that the public sector would bail any distressed financial provider out, moral hazard soared, and banks made careless decisions.

Economic regulation works better when enacted by the aforementioned independent, specialized, and impartial technical bodies, since they have more expertise to deal with the specifics of their supervised economic sector. Nevertheless, consideration must be taken to avoid the replacement of truly genuine public interest to sector-specific private interests. This concern is related by literature to the regulatory capture's theory, in which the State (or its agents or entities) acts to improve only nominated sectors, companies or business, in detriment to the public interest (Gonçalves 2014, 8–9; A. C. dos Santos, Gonçalves, and Marques 2014, 404–5).

This line of work, embedded in the Economic Law doctrine, argues that all agents, whether acting in their own personal lives or in the public forum, work to maximize their own utility function and its corresponding outcome, and therefore private agents seek to control State's regulation for their own benefit, according to Posner. The most-known author clarifies:

> This theory - which the term “capture” describes particularly well - states that over time, regulatory agencies end up being dominated by the regulated market. This formulation is more specific than that of the general interest groups theory. It highlights a particular interest group - regulated companies - as prevalent in the battle to influence legislation, and it provides for a regular sequence, in which the original purposes of the regulatory program are subsequently obstructed by pressure from interest groups. (POSNER 2004, p. 57)[47].

State’s indirect intervention, moreover, has further been promoted by the regulatory sandbox schemes, discussed in section 2. In a nutshell, this technique provides the opportunity to edit better regulations, tailored to the benefits and risks involved. It is more often discussed in line with the technological improvements present by startups, including Fintechs, as said.

47 *Apud* Jacqueline Lobão and Jean Carlos Dias' essay (2020, 5–7).

Regulatory sandboxes can be particularly important for regulation, as they allow regulators and the overall public sector to learn how the innovation works and thus better regulate and supervise it, when and if regulation is deemed necessary (Setiawan and Maulisa 2020). As of November 2020, more than 70 regulatory sandboxes have been tried out worldwide, most of them linked to digital financial services innovations (World Bank Group 2020). 23 sandboxes were related to financial inclusion themes, most of them in less developed countries, apart from Japan (2016) and the U.K. (2016). This list includes Brazil (2018), Colombia (2019), India (2019), Mexico (2018) and Thailand (2017 and 2020).

Indirect intervention can be further developed through incentives, stimuli, and premium sanctions. "Law and economics" dictate that humans not only respond to punitive sanctions but also to positive "sanctions", like rewards. It is common to assess this strategy in the field of soft law, where the juridical norm guides the action but does not impose a sanction. It is mainly used to conform agents' behaviors towards a public interest. In this manner, objectives and compensation can be defined in agreements between the public sector and private agents (Oliveira 2022, 650–59).

With regard to compensation, they could take the form of direct compensation and tax benefits or yet other non-monetary types. Typical cases involve tax preferential treatment to SME, access to credit at lower interest rate levels, or preferential treatment in public bindings and purchases. These small companies respond to the majority of employment levels, wealth, and public revenues in many countries. However, they cannot bear complex tax rules. Thus, different tax regimes often are established to improve and flourish them.

Concerning objectives, they can be economic goals, social goals, or a combination of them. Typical cases for economic goals are market performance, employment, or price levels. Traditional social goals often are linked to education rates and public health improvements. Financial education targets are too common nowadays, as they can be linked both to economic and social goals.

As a public objective, financial inclusion is a key aspect of the development of new regulations and directives to the financial system. For emerging markets, like Brazil, Colombia, India, Mexico and others, financial inclusion is as important as financial stability in order to deal with economic and social issues that may arise due to the lack of provision of financial services. In fact, due to their less sophisticated local financial sectors, the focus on the insertion of a sizable portion of the population in the domestic financial markets can produce better social outcomes (Gurrea-Martínez and Remolina 2019). As such, granting access to bank accounts and other basic financial services might be seen as a high-level public priority, when compared to the regulation of securitization or other complex financial instruments.

In India, for instance, the local central bank not only focuses its actions on inflation, like many developed peers, but also in economic growth, specifically inclusive growth, and financial deepening (Mohan 2006). This desire reflects Indian regulatory decisions to develop less onerous regulations in order to bring out the emergence of domestic Fintechs.

This section has assessed the theoretical basis of public sector intervention in the economy sector, all linked to promote fundamental rights and a better life for its citizens. In recent years, most of the financial sector's developments and public intervention in the field have been done to address the unbanked and underbanked part of the world.

The next sections discuss in depth two main revolutions in the provision of financial services and its benefits on financial inclusion. In many jurisdictions, the new framework is only possible due to public intervention in the financial sector, especially using regulation tools. Section four assesses open finance initiatives and section five deals with instant payments schemes.

4. OPEN FINANCE AS LEGAL TOOL TOWARDS FINANCIAL INCLUSION

Open banking is a new perspective to the use and share of financial data among stakeholders. For decades, consumer and commercial data were held only by directly involved agents, particularly banks. This process created data silos and exacerbated some common market failures, such as fragmentation of the market, a relevant level of market power for banks and high level of information asymmetry between economic actors. Data-sharing directives, legislations and regulations worldwide are breaking down these silos, mitigating existing market inefficiencies, and providing a full range of information for economic agents.

First this was addressed through data portability and data protection laws, in a broader context, such as GDPR in the EU[48-49] and its similar provisions in other jurisdictions[50]. For financial data specifically, open banking regimes create a framework for data sharing among players based on customer's consent. In many countries, this framework has leveled the financial playing field and has improved financial inclusion for the unbanked or the underbanked strata of the population (Plaitakis and Staschen 2020, 10–11). This section assesses these improvements and discusses its legal regime, particularly when focused on public intervention in the market.

Data privacy and data ownership have been a common issue worldwide. The protection of personal data is a fundamental right as set forth in article 8(1) of the CFR, article 39 of TEU and article 16(1) of Treaty on the Functioning of the European Union (TFEU) and, in other jurisdictions like Brazil[51] and Mexico[52]. As such, several jurisdictions have enacted legislation to legally assign individuals as owners of their own data, regardless of where it is stored, like traditional banks, insurance companies and brokerage agents. Nevertheless, the juridical postulates are not only applicable to the financial markets. They apply to other services, like utility and telecom providers (such as payment and use history) or big tech and e-commerce companies (e.g., usage history, search browsing, and consumer preferences) and social media providers. Individuals are entitled to their own digital

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[48] GDPR in the EU is ruled by Regulation (EU) 2016/679 of 2016. Available at: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A02016R0679-20160504 access on: March 15th, 2023.

[49] For instance, Law nº 58/2019, in Portugal.

[50] Law nº 13.709/2018, in Brazil, and *Ley Federal de Protección de Datos personales en posesíon de los particulares*, in Mexico.

[51] See article 5(LXXIX) of Brazilian constitution.

[52] See articles 6(II), 6(III), 6(VIII), among others of Mexican constitucion.

information, and they can request it and share it with whoever they might desire. This broader perspective has been known as "open data" or "data portability" (Plaitakis and Staschen 2020, 2–5).

Open banking – or data-sharing within the financial system – is a specific application of this perspective. Ariadne Plaitakis and Stefan Staschen (2020, 4), World Bank consultants, defines open banking regimes as a "consent-based data-sharing scheme mandated or supported by [financial] regulators toward the goal of creating competition and fostering innovation in financial services". International experiences vary from bilateral data-sharing contracts among financial agents to voluntary private sector initiatives (like Nigeria and the U.S.) and, most importantly to this discussion, mandatory public sector data-sharing regimes (like the European countries, due to PSD2 directive, and Latin American countries such as Brazil or Mexico).

Open banking regimes are essentially designed to overcome two market constraints: (*i*) the lack of competition among financial providers, and (*ii*) informational asymmetry. As for the former, open banking-enabled solutions provide an easy flow of information between providers, conditional on the user's consent. If the client is not satisfied with his current bank or financial supplier, he can switch to a different provider and he does not need to initiate a new financial relationship from the beginning, as he is the owner of his own data. This increases the possibility of competition in the financial markets. Likewise, the U.K. successes with open banking schemes has provided evidence that low-income customers are saving between 0.8% and 2.5% of their income that previously went towards paying financial fees since the local implementation in 2017 (Reynolds and Chidley, 2019, *apud* Plaitakis e Staschen, 2020).

Concerning information asymmetry, new economic agents usually lack pre-existing information in order to provide their goods and services in a better way. It is extremely difficult for agents to join the market and compete with traditional players, particularly century-old banks, if they also must gather data from the bottom. Open banking schemes can help fill this gap. They provide the ability to combine hard information (e.g., credit-linked information), mainly stored in incumbent banks, with soft information (e.g., level of aggregate income, consumer preferences, financial behavior). Moreover, non-bank agents usually have higher experience dealing with the latter (Plaitakis and Staschen 2020, 13).

First known as banking-information data-sharing, these regimes, notwithstanding, cover more information than just banking data. Commonly, this data relates to checking accounts, credit and debit cards, payments solutions and deposits. Within the framework, a full range of financial information can also be shared, based on individual consent. Insurance history, claims and payments, investment products and wealth portfolio, retirement investment products and foreign exchange services are among other financial data covered. Thus, "open finance", a term applied by many scholars, seems to be more suited to illustrate its potentials for applications[53].

Open finance regimes, as well, are not limited to data coming from financial markets. For less developed countries, furthermore, their applicability would be less relevant since the main part of the population are unbanked or underbanked, as discussed in section 2. Open banking-enabled solutions can also gather data from different non-financial sources, particularly digital data. The amount of information produced in the digital world, particularly social media, grows at exponential rates. Besides social iteration, it covers, for instance, airtime use, location data and consumer practices (Plaitakis and Staschen 2020, 10).

To that extent, big data, AI, and machine learning are tools developed to deal with such amounts of information and extract conclusions. The potential benefits to combine data from different sources (e.g., financial markets, utilities, and consumer transactions, or digital) are vast. It is not unusual, for instance, to travel abroad and, based on user location, receive an offer to hire low-cost travel insurance, provided by new agents. This is one of the aggregated data-solutions that has been offered[54]. The constraint now consists of how to combine different sectoral regulations from different technical bodies, an issue that the public sector has been trying to overcome.

As discussed in section 2, the application of a broad range of information has been a key factor for the design of new financial goods and services by traditional or new agents, particularly Fintechs. More information on consumers creates better solutions. In the U.K., for instance, open banking has facilitated the development of new payments services which

[53] For the purposes of this analysis, both terms "open banking regimes" and "open finance schemes" will be used interchangeably.

[54] Some European Fintechs offer travel insurance immediately as they identify that customers have bought air-fare tickets or used their credit card or other financial product abroad. For instance, see Revolut UAB (https://www.revolut.com/pt-PT/about-revolut/) or Moey! (https://moey.pt/sobre-a-moey). Access on April 25th, 2023.

could substitute current methods like cards and direct debits (U.K. CMA 2021). More information, additionally, enables lower credit risk and thus lower credit spreads, a traditional issue for the low-income strata of population. All these are initiatives that support financial inclusion and financial innovation, as well as expand the local financial market and clients' database.

The use of aggregated data can add value for the low-income customers in different manners: (i) improving access to credit, or at least, at better terms; (ii) improving financial management; and (iii) facilitating access to open and maintain financial accounts if there are standardized due diligence procedures; among others (Plaitakis and Staschen 2020, 7–10).

Concerning credit, its sustainable expansion can be achieved with open banking schemes. Alternative data can enhance credit scores (e.g., Serasa Experian and Cadastro Positivo, in Brazil, and Central de Relacionamento de Crédito, in Portugal). Thus, it can lower credit spreads or provide access to products that are more suitable for the lower income segment of population, apart from overdraft facilities, which, usually, are the main financial product used by these clients, even though these lines have higher interest rates and lower maturities dates. Innovative debt rehabilitation services are also suitable for open banking schemes. Through updated credit scores, financial solutions can be implemented to consolidate the credit lines being used and to create conditions for payment schedules that are affordable to households' budgets[55].

Moreover, financial management can add value to customers' lives. Unfortunately, not all financial clients have an adequate level of financial literacy or adequate control over their financial lives. Even though the public sector, in some jurisdictions, has increased its efforts to provide financial education to its citizens, the overall lower level of financial literacy is still an issue worldwide. In 2015, for instance, only one third of adults in the world had some level of financial literacy (Klapper, Lusardi, and van Oudheusden 2016, 4–5) and, in 2022, only 20% of low-income households were able to rely on emergency funds to cope with financial loss due to Covid-19 pandemic crisis (World Bank Group 2022, 29–31).

Thirdly, due diligence procedures are common practice within the financial system. They are imposed by legislators and regulators. Lack of documentation, on the other hand,

[55] Plaitakis and Staschen (2020) provide several examples of how open banking-enabled solutions have improved credit score assessments (e.g., Mojo Mortgages and Canopy), debt rehabilitation (Tully) and lower credit products (e.g., Tapa Buraco, Afluenta).

is also common, especially for the less wealthy and less educated strata of population. Thus, customer due diligence is often seen as costly and non-standardized. These shortcomings lead to a less developed financial system in many poor countries.

Nevertheless, public initiatives can overcome these shortcomings. They might include standardized know your client (KYC) procedures as well as centralized identification and financial databases. India, for instance, has created a public database, known as Aadhaar[56], containing information from almost 1.13 billion of its citizens – 99.5% of people over the age of 18. Hence, when this information is combined with alternative data, Fintechs and other economic agents can easily join the Indian market and expand the degree of financial deepening. Likewise, Aadhaar Payment System allows Indian registered clients to make payments using only their fingerprints and almost 400 million Aadhaar accounts are linked to bank accounts (Apolitical 2017).

Mandatory open finance schemes are set up in many jurisdictions. Even though the legal framework varies according to the local legal regime, public regulation plays an important role on this matter. The State does not engage directly in the provision of open banking solutions. Conversely, in many international study cases, it dictates provisions and rules that financial players must adhere to. As an indirect intervention in the financial sector, the goal is to have standardized procedures and thus greater competitiveness and innovation in the market, basic open banking objectives, as aforementioned. Regulation also aims to protect personal data – one fundamental right – and to reaffirm many of public objectives inserted in social-capitalist constitutions, like material equality, social justice, and the promotion of well-being.

The implementation of open banking initiatives in the EU have been promoted with the enactment of the PSD2 directive. To this regard, the U.K. is one of the first movers on the subject[57] and it has been extensively assessed. As of November 2021, more than 30 jurisdictions have studied and followed the U.K. implementation (U.K. CMA 2021).

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[56] Aadhaar refers to "Foundation" in the local language, Hindi.

[57] For more information on U.K. implementation, please refer to the website www.openbaning.org.uk. Access on March 28th, 2023.

The PSD2 directive reviewed the PSD1 normative[58] and expanded the provisions on new financial instruments. Key PSD2 objectives can be summarized as follows: (i) proportionate a more efficient and integrated European payments market; (ii) make payments more secure and efficient; (iii) enhance consumer protection; (iv) promote innovative payment solutions and (v) level the playing field among service providers (BDP 2023).

It also imposed one new security layer to confirm and process payments orders, known as strong consumer authentication (SCA). It refers to the need for the validation of the consumer's identity before processing the payment order. It can be done with at least two of the following independent components: (i) consumer knowledge, e.g., something the consumer knows, like a password; (ii) consumer possession, e.g., something he possesses, like a card, a random code generator device or an SMS sent to his cellphone; and (iii) consumer inherence, e.g., something linked to the actual consumer, like his fingerprint, voice recognition or face characteristics[59]. Notwithstanding, PSD2 allows for some exceptions, like low value payments, that, in case of failure or fraud, can be absorbed by service providers without too many implications (ECB 2018).

The revised PSD has regulated two emerging business models that were previously unregulated under the PSD1 – or even non-existent. These two new models are (i) "account information service provider" (AISP) and (ii) "payment initiation service provider" (PISP). These models are seen by some scholars as core elements to boost financial inclusion and financial literacy, as they are linked to new banking solutions and greater experience designed for the end customer. They are also linked with the possibility to see the banking sector as Banking as a Platform (BaaP), later discussed in this chapter.

AISP are third-party financial players that offer the solution to consolidate online financial information otherwise dispersed in several financial agents[60]. The information is presented on one user-friendly dashboard, not necessarily linked to the data's or the funds' holders. They are seen as important actors to break down aforementioned financial data silos,

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[58] PSD1 refers to Directive 2007/64/EC of 13 November 2007 on payment services in the EU internal market. See https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32007L0064. Access on April 24th, 2023.

[59] It can be common nowadays for service providers to require a face screenshot or video conference prior to confirm and process transactions.

[60] For instance, Yolt Pay and Moneyhub, in the EU, and Guiabolso, in Brazil Ariadne and Staschen (Plaitakis and Staschen 2020, 11–12; 33–34).

especially with the implementation of open banking regimes. Besides the provision of different user interfaces (UI), they provide personal financial management services and can also recommend more suitable financial products to its clients based on aggregated information. Guiabolso, for instance, has been working in Brazil since before the implementation of local open baking regime[61]. At that time, however, it needed to request user and password information to login into bank accounts and then read the data and download it, a situation that could raise security and data breach issues.

Within the EU framework, the most advanced regulations so far, this new business model has lower entry requirements levels, that only includes registration requirements and the absence of capital requirements, as set forth in article 33 of PSD2. This is possible because AISP mostly works as the user-facing provider without actually providing financial services and products, which can be offered by dispersed, different players. These other agents face regulatory requirements and product underwriting standards according to EU legislation (Plaitakis and Staschen 2020, 11).

PISP[62], on the other hand, offers emerging business opportunities and faster financial transactions for digital payments because it allows the customer to "separate the experience of performing a payment (online or in-person) from the [financial] agent that holds their accounts" (Plaitakis and Staschen 2020, 12). PISP agents do not hold client's funds, but they transmit payment orders.

They are different from credit cards, which technically work as an internal electronic ledger combined with credit solutions (e.g., revolving credit facilities, up to an agreed maximum amount), and also from debit cards, which work instructing the card-issuing bank to debit the client's account. Additionally, these cards only work within specific payment arrangements provided by non-financial players, such as Visa and Mastercard networks (Cranston et al. 2017, 393–94). These latter agents charge significant fees and royalties to offer their solutions, which are especially onerous to merchants and, ultimately, to customers. For instance, in the U.K., as of 2021, these network providers charged 1.15% and 1.3% for debit and credit transactions, respectively (U.K. Parliament 2022). In Brazil, the BCB issued a regulation to impose an 0.7% cap on prepaid fees (Reuters et al. 2022),

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[61] See. the Guiabolso website: www.guiabolso.com.br Access on April 24th, 2023.

[62] For instance, Google Pay worldwide and, most importantly, in the Indian market, and WhatsApp Pay, a Facebook Inc. service in Brazil (Plaitakis and Staschen 2020, 11–12; 33–34; RD Station 2023).

while local credit card fees are still up to 2.2% of transactions' values (Reuters and Ayres 2022).

PISP agents, conversely, transmit their orders directly from financial accounts and can be cleared through existing payment systems. These networks can both be retail infrastructures, like Faster Payments in the U.K., MBway in Portugal, PIX in Brazil and UPI in India or traditional larger payment transactions, like international SWIFT, Target2 in the eurozone, and Sistema de Pagamentos Brasileiro (SPB), in Brazil. As such, this emerging business model can both work as a business-to-client (B2C) or business-to-business (B2B) solutions. Therefore, the room for financial innovation expands, and transaction delays and costs reduce. Hence, it offers market efficiency and a broader base of clients. Brazil's PIX, for instance, has expanded the provisions of financial services to more than 50 million new clients, which had never used any digital transfer of values scheme (Duarte et al. 2022, 5).

PSD2 directive also provides lower regulatory requirements for agents to work as PISP. The initial capital requirement is lower (€ 50,000 vis-a-vis €125,000 to other payment service agents), as set forth in article 7. However, the PISP business model poses greater risk than AISP and other kinds of solely data aggregators. The former not only has the ability to retrieve client's data but it also transmits payment orders, which must be fulfilled by account holders. This raise concerns on fraudulent, negligent, and erroneous transactions and liability issues (Plaitakis and Staschen 2020, 27–28), discussed in this and in section 5.

Later, the PSD2 directive needed to be transposed by EU countries. In Portugal, PSD2 directive was transposed by Decree-Law 91/2018. This also happened in the U.K. (before Brexit agreements) as set by the Payment Services Regulations of 2017[63]. In 2016 as well, the U.K. Treasury ordered the establishment of an Open banking Working Group, aiming to design common API standards and the U.K. Competition and Markets Authority (U.K. CMA) mandated the nine largest local banks to join and form the U.K. Open Banking Implementation Entity (U.K. OBIE)[64]. Notwithstanding, this regulatory entity is led by an independent trustee, which has been tasked "with agreeing, implementing and maintaining open and common banking standards to a project plan and timetable approved by the [U.K.] CMA once the [U.K.] CMA has approved the composition and governance arrangements"

[63] See https://www.legislation.gov.uk/uksi/2017/752/contents/made. Access on March 28th, 2023.

[64] See https://assets.publishing.service.gov.uk/media/57ac9667e5274a0f6c00007a/retail-banking-market-investigation-full-final-report.pdf. Access on April 12th, 2023.

as set forth in section 13.5 of U.K. CMA 2016 Final Report (2016, 441–42). Therefore, the new entity has to follow public regulations in order to impose its rules and technical standards in the U.K. market.

Part 8 of the U.K. regulation provides guidance for an open banking regime in the country. It forces credit institutions (banks), especially the nine largest account providers, to give access to other services providers to their payments' accounts on an objective, non-discriminatory and proportionate basis. Also, this access "must be sufficiently extensive to allow the payment service provider to provide payment services in an unhindered and efficient manner", as set forth in article 105(2) of said regulation. If the bank refuses to grant or withdraw access, it must notify the regulator (Financial Conduct Authority - U.K. FCA) the motivated reasons. Thus, the regulator can decide on the concrete case.

As of March 2023, the U.K. open banking ecosystem comprises more than 330 regulated firms. It also accounts for more than 6 million active consumers, which corresponds to roughly 10% of U.K. digitally-enable consumers. It has reached impressive implementation figures, including 1 billion API calls, i.e., third-party integrated communications, as well as 5 million payments processed through the open banking regime, and the U.K. Treasury has collected £1 billion (€1.16 billion[65]) in taxes through the regime[66].

As for emerging markets, Brazil launched its public-mandated open banking regime on June 1st, 2020. It had different implementation phases over the years of 2020 and 2022. Since the first stage, Brazilian biggest banks are required to join the scheme and share data with other agents, based always on the user's prior consent. Other agents can voluntarily join the scheme, like smaller financial agents and non-financial actors. The scheme can cover not only financial data but also other financial products (e.g., insurance and investment products). However, the full integration of information was set to work only on the fourth phase of the regime, as it involves different regulators and different economic sectors (Plaitakis and Staschen 2020, 34–36). The integration with the open insurance mechanism, designed by the local insurance regulator, for instance, was still being developed as of May 2023 (BCB 2023a). Its legal regime relies on general provisions dictated by Brazil's BCB,

[65] As of September 9th, 2023.

[66] See information on U.K. landmarks available at https://www.openbanking.org.uk/delivering-the-roadmap/. Access on March 30th, 2023.

public norms that correspond to this agency's authority in the banking sector. Moreover, it is linked to the local GDPR provisions, in effect as of August 2020.

Notwithstanding, the Brazilian open banking regime foresees a convention to be drafted by local participants to cover technical procedures, like API standards and the cost of calls, as established by article 44 of Joint Resolution BCB-CMN nº 1. Moreover, it shall also cover dispute resolution mechanisms and liability rules, including customer refunds procedures. Similarly, to the most-known U.K. study case, the public regulator must approve the structure responsible for the local governance, which shall comprise three layers, namely, the strategic, administrative, and technical levels.

The first level corresponds to the board of directors, with 6 counselors appointed by financial institutions and one independent counselor[67]. The second level works as a secretariat for the board of directors. The technical level discusses standardized API procedures and technologies that can be implemented in the local regime. Also, this third layer can be integrated by different people, not necessarily employees of the financial institutions with a seat on the board of directors. It gives the opportunity for other non-financial agents to join the local implementation. It also brings out the opportunity to a plural and diverse discussion on the specifics details and technologies applied in the local regime. Scholars, independent advisers, and the tech industry have joined this third layer.

Other Latin American country launched a mandatory-public open banking regime as well. In March 2018, Mexico enacted a specific law governing Fintech participation in the financial market. This Law provides specific provisions to open banking regimes[68]. Secondary regulation was issued in March 2020, by local financial regulator, *Comisíon Nacional Bancaria y de Valores* (CNBV)[69]. According to the legal provisions all companies within the scope are mandatorily required to join the scheme (Plaitakis and Staschen 2020, 37–39).

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[67] Articles 1 and 6 of Circular BCB nº 4,032/2020.

[68] See articles 76 and 77 of "Law to Regulate Financial Technology Institutions" (*Ley para Regular las Instituciones de tecnología financiera*), available at http://www.ordenjuridico.gob.mx/leyes#gsc.tab=0. Access on February 27th, 2023.

[69] See articles 326 to 328 of General Provisions on Applicable to Credit Institutions (*Disposiciones de Carácter General Aplicables a las Instituciones de Crédito*), available at https://www.cnbv.gob.mx/Normatividad/Disposiciones%20de%20car%C3%A1cter%20general%20aplicables%20a%20las%20instituciones%20de%20cr%C3%A9dito.pdf. Access on February 27th, 2023.

The Mexican legal framework was enacted to deal primarily with emerging financial agents (e-money, crowdfunding, cryptocurrency, and P2P lenders institutions) but it also set provisions to enable regulatory sandboxes in the financial markets. Mexican legislators appointed the public interests involved in the enactment of this "Fintech Law", as commonly known. It relates to promoting inclusion and financial innovation, as well as promoting financial competition and consumer protection, as set forth in article 2.

The data covered by the local scheme is extensive, since CNBV, the local regulator, has jurisdiction over 21 different types of entities and markets, including banking and credit institutions, brokerage houses, stock exchanges and investment fund operators. It covers financial services, plus location of access points and consumer transaction data, based on client consent, as well (Plaitakis and Staschen 2020, 37–39).

Two important issues need to be further discussed regarding open banking: (i) the apparent lack of liability rules and provisions on consumer protection at the regimes implemented so far; and (ii) the role traditional banks might play in the near future, as we move towards "Banking-as-a-Platform" (BaaP).

Ariadne Plaitakis and Stefan Staschen (2020) have assessed several open banking regimes worldwide, including those discussed in this paper[70]. They reach the conclusion that yet most of them do not prescribe specific provisions for liability rules and consumer protection, except for the implementation within the EU. The definition of security and liability rules, as well as dispute resolution mechanisms, according to the World bank consultants, are core elements of the design and governance of such infrastructures. These issues need to be addressed by the public sector, by the regulator or by local participants, when delegated.

According to PSD2 provisions, SCA requirements are put in place to assure the identity of the customer, and it shall be done through at least 2 of the appointed mechanisms (knowledge, possession, and inherence) before any data sharing. Moreover, PSD2 imposes liability rules to promote consumer protection as set forth in article 73 of the directive.

To this regard, PSD2 imposes on the account provider (bank, financial institution, or payment institution) the attribution to bear the loss of any unauthorized payment

[70] They assessed 12 open banking regimes in different jurisdictions, most of them in emerging markets with explicit financial inclusion objectives (e.g., Brazil, Mexico, Indonesia).

transaction, even when initiated through a PISP provider, as dictated by article 73(2). It aims to protect the financial client and restore its full balance prior to any discussion on fault, negligence, and responsibility between financial providers. In some legal regimes, for instance, this kind of resolution dispute could take months or even years if the client needed to wait for it until get his full refund.

Nevertheless, if the PISP is deemed liable to the unauthorized transaction, it should reimburse the account provider for its losses or the amount refunded to the payment user, according to default legal liability rules in any EU legal regime and as imposed by article 92, as indicated:

> 1. Where the liability of a payment service provider under Articles 73 and 89 is attributable to another payment service provider or to an intermediary, that payment service provider or intermediary shall compensate the first payment service provider for any losses incurred or sums paid under Articles 73 and 89. That shall include compensation where any of the payment service providers fail to use strong customer authentication.
>
> 2. Further financial compensation may be determined in accordance with agreements between payment service providers and/or intermediaries and the law applicable to the agreement concluded between them. (EU PSD2 Directive 2015, 103-104).

Moreover, if the client has suffered additional losses, besides the refunded amount, current EU liability laws that govern the contract between parties can also be applicable to mitigate such losses, as set forth in article 73(3):

> 3. Further financial compensation may be determined in accordance with the law applicable to the contract concluded between the payer and the payment service provider or the contract concluded between the payer and the payment initiation service provider if applicable. (EU PSD2 Directive 2015, 96).

Article 74 of the directive, notwithstanding, encourages the user to notify, without undue delay, any situation of theft or loss of the payment instrument. It aims at reducing the risk of unauthorized payments. It imposes the amount of €50 of losses that the user can bear. This threshold balances the risks and costs imposed on financial institutions, particularly account providers, and the benefits of high-level user protection, as informed in item 71 of PSD2 referrals. This amount, however, is not applicable if the user is not in a position to become aware of the loss, theft, or misappropriation of the payment instrument, due to his common lack of technical or financial expertise.

Notwithstanding, the limit of €50 on user's losses does not cover user's fraudulent or negligent actions, such as the intentional failure to fulfill its obligations, as imposed in article 69 of the directive. It also does not cover user's inability to perform common due diligence procedures, as expected by middle-man general liability rules, such as to keep passwords secret and properly protect payment devices. In these cases, the users might bear all the financial losses incurred by unauthorized or fraudulent transactions.

In that matter, the consultants found out that current open banking regimes designed by emerging markets are yet not adequately transparent on liability rules within their regimes. In fact, it is imperative to address this issue due to the potential growth of data share among different financial players. Additionally, upcoming cross-sector regimes, which would include different kinds of data such as telecom and utilities, will increase the complexity of the regime. Moreover, different players, from different sectors, may have some sector-specific rules. Therefore, a transparent and clear set of liability rules to the regime is deemed necessary to ensure a high level of consumer protection, even though general consumer law can be applicable to financial actors. In Brazil, the judiciary branch, in many opportunities ruled that local consumer law[71] is unquestionably applicable to financial service providers.

The Brazilian current framework has delegated the specific provisions on dispute resolutions and consumer protection, including compensation and reimbursement, to be jointly established by financial agents according to the signed convention. These rules should be more specific, tailor-made to data-sharing mechanisms when compared to traditional common legal liability rules.

Consumer reimbursement, in case of fraudulent third-party use, shall be established in undue delay, similarly to EU provisions. Financial players are best suited to verify fraudulent cases within the system. They have higher financial knowledge and ability to bear the burden of proof. The consumer, on the other hand, is the weak part of the relationship and, as said, usually lives on a paycheck-to-paycheck basis. Therefore, he cannot sit and wait until several different financial providers discuss liability among them. In this manner, Brazilian private convention should also establish specific channels for dealing with customer claims, but the public sector (and the financial regulator) shall oversee the level of claims to address with undue delay any malfunctioning of the system or to cut out any distressed financial actor.

[71] Law 8,078/1990 corresponds to the legal regulament of Brazil's fundamental right of consumer protection, as set forth in article 5(XXXII) of local constitution.

Concerning the second issue, the new competition arrangement within the banking sector, most probable, will lead to the coexistence of century-old incumbent banks and new tech-savvy institutions, Fintechs. As discussed in section 2, this competitive coexistence seems to promote public and private efforts to enhance financial inclusion (Acar and Çıtak 2019, 4). As such, traditional banks may have to assume a different role in the banking sector.

Banks, most certainly, will remain part of daily lives. For that matter, in this discussion, the term "bank" follows the definition provided by Ross Cranston, as organizations which:

> a) have been formally authorized to offer credit intermediation services, including acceptance of demand deposits;
>
> b) operate on the basis of fractional reserve model and enjoy authorized access to Lender of Last Resort liquidity support;
>
> c) participate in a deposit guarantee scheme; and
>
> d) are subject to:
>
> i) business structure and activity restrictions (the Volcker Rule, ring-fencing, or something similar);
>
> ii) prudential controls, including but not limited to capital, leverage, and liquidity requirements;
>
> iii) strictly prescribed corporate governance standards; and
>
> iv) special resolution regimes which operate independently of general bankruptcy law. (Cranston et al. 2017, 23–26)

This definition has a broader concept than that provided by EU laws[72], which defines "credit institutions" as "an undertaking the business of which is to take deposits or other repayable funds from the public and to grant credits for its own account". Cranston's definition assumes a more formalist (and legal) basis rather than a functional approach, mostly used by economists and financial markets experts.

Cranston's definition has been tailored to the post-2008 crisis era, following much of its shortcomings and public regulatory responses. It comprises elements that, when combined, at least gives more transparency on the boundary between formal, traditional banks and non-bank financial institutions, including Fintechs and organizations that work in the "shadow banking". These latter organizations provide some financial products and

[72] See Credit Requirement Directives (CRD) 2013/56/EU, article 3(1)(1) and Credit Requirements Regulation (CRR) nº 575/2013, article 4(1)(1).

services as well, like deposits in the form of money market funds and grants credit in the form of short- and long-term debt instruments. However, more often, they lack at least one of the core elements, especially public authorization in the form of letter a), the participation in deposit guarantee schemes mentioned in letter c) or one of the elements prescribed in letter d), above.

Incumbent banks, thus, might have to work in a new way, more open to third party applications, a movement that has been coined as BaaP[73]. Zacharisadis and Ozcan (2017, 10–14) explain this is particularly the case with the emergence of AISP and PISP business models. As referred, with the pro-competition new regulatory framework established worldwide, especially with the open banking public mandatory regimes, these new models tend to offer new financial solutions to clients, as well as consolidated financial information, previously dispersed among different data silos.

Banks can adopt a variety of different strategies to continue performing their services. Eisenmann et al. (2008) provides a useful taxonomy on the context of different kinds of platforms. They distinguish between *i)* demand-side platforms, *ii)* supply-side platforms, *iii)* platform providers, and iv) platform sponsors. The first two cover business strategies that are focused on the end-users' needs and API developers' needs, respectively. They are particularly linked to this discussion, as AISP and PISP offer their services to financial clients detached to the financial services and products themselves.

Following authors definitions, the third category refers to the infrastructure provider, which works as "users' primary point of contact with the platform". Microsoft Windows operating system is a classical example, as it provides room for different end-users and developers to perform in a relatively open scheme. It also might be the first step for the BaaP implementation, as banks provide the banking infrastructure to different clients and developers and simultaneously perform their financial duties and financial compliance, according to regulatory demands.

Lastly, the fourth strategy refers to the entity who exercises property rights and defines core rules and eligibility for participation (Zachariadis and Ozcan 2017, 11). One might argue the network established by credit and debit card providers, like Visa Inc. and

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[73] For a discussion on different types of platform-oriented business models, please refer to Eisenmann, T., G. Parker, & M. Van Alstyne (2008) "Opening Platforms: How, When, and Why?" Harvard Business School Working Paper, 09-030.

Mastercard Inc., which define network rules and approve financial participants within the system.

Neutral platforms in the banking system (and in other markets), can enhance network externalities, with the creation of value-add solutions to clients on both sides of the market, i.e., consumers and developers. General open data regimes and, particularly, open banking infrastructures expand these externalities as they mitigate "lock-in effects". This concept refers to the situation when users tend to adopt only one platform solution, as they are less inclined to leave it, if it is performing well (Zachariadis and Ozcan 2017, 13–14).

In the new pro-competition outlook, banks might have to shift their business strategy towards acting as "platform providers". In this new re-intermediation financial role, they shall provide trust between the two sides of the market, in the same way that other disruptive platforms have experienced in other markets, like e-commerce marketplaces (e.g., Amazon third-party marketplace) and ride-sharing services (e.g., Uber, Lyft, Bolt, and country-specific competitors). Nevertheless, in the same way, banks are entitled to charge premiums and fees for compensation of their provided services.

Furthermore, facilitating customer migration is particularly important when clients are price-sensitive, like the unbanked and underbanked strata of population. Even though clients may often exhibit a high level of stickiness and inertia, especially due to information asymmetries, eventually they might replace their financial supplier, when their needs are not well served. The public efforts discussed so far, combining more transparency from financial suppliers, a higher level of openness in the market and a pro-competition environment, are encouraging clients' migration to more suitable suppliers, be they Fintechs or incumbent banks. The introduction of technology in this pool has also reduced barriers to entry. Therefore, century-old banks, undoubtedly, must find their new role in the market.

This section dealt with public efforts towards the development of public and mandatory open banking regimes. In a nutshell, core basic goals of such schemes are to overcome the lack of competition within the financial sector and to address market failures. In order to promote a higher-level of financial inclusion and financial literacy, these public objectives are seen as important as financial stability and money purchase power by some financial regulators, specifically in emerging markets. Next section deals with the introduction of faster, instant payment schemes, another important public effort aimed at financial inclusion.

5. INSTANT PAYMENT SCHEMES AS LEGAL TOOL TOWARDS FINANCIAL INCLUSION

Instant payments result from the combination of different new developments mentioned in this discussion, particularly in section 2. They combine three major vectors: (*i*) the emergence of mobile phones, especially the widespread usage of smartphones and faster communications networks, (ii) the technology in the financial sector, particularly the flourishing of new agents, like Fintechs, AISP and PIPS; and (i) traditional payment infrastructure and payments law, including old and new contractual arrangements.

They are a worldwide phenomenon, presented in many different jurisdictions, like Portugal (MBway scheme), Spain (Bizum scheme) and other European countries, Brazil (PIX scheme) and India (UPI scheme). This section assesses these latest developments, in line with payments law and some issues that have arisen, particularly the risks linked to defective transactions and correspondent liability issues.

The concept of payment made through the banking system is not new. In fact, "banks are not essential to payment [and the discharge of contractual debts], (...) [nevertheless] in larger commercial transactions the alternatives are generally inconvenient, insecure, or impractical" (Cranston et al. 2017, 335–36). In fact, nowadays, even in retail transactions, particularly with instant payment schemes, the usage of banking networks[74] and payment laws have become widespread. In fact, the implementation has enhanced the size of the banked population in many jurisdictions. Cranston *et al.* (2017, 335–60) explains the basic components of payment: (*i*) mandate; (*ii*) payment order – or message; (*iii*) movements on accounts; and (*iv*) clearing and settlement.

Briefly, banks – when not acting on their own – work on the boundaries of a mandate to their customers. According to the contractual relationship, they do not necessarily guarantee any particular result, including the discharge of payment obligation. In contrast, payment law, in general, dictates that banks must comply strictly with the terms of the mandate and the payment instruction received and, shall act with reasonable care and skill in carrying out customers instructions. Thus, the payment order, "unconditional instructions to effect payment in favor of a payee" (Cranston et al. 2017, 337), flows in the

[74] For a detailed explanation of payment orders through the banking system, including the concepts of "in-house payment" (same bank), "domestic inter-bank payment" (local currency), "correspondent bank" (different jurisdictions) and "complex payment", please refer to chapter 12 in Cranston *et.al* (2017).

banking system in a chain of confirmation orders (messages) that work as receipt of payment to each node of the chain.

Payment involves the movement of several accounts, "following each receipt of payment message". Not only the payers' and payees' accounts, but also those of the banks involved. Also, it may impact any intermediary bank's account, especially in international transactions. More often, at the end, the funds of each bank are settled in the central bank's books and the central bank's money provides for a risk-free settlement of rights and obligations.

Lastly, clearing, which corresponds to "the process of transmitting and reconciling payment orders", and settlement, "the effective discharge of bank's own obligations and liquidation of funds", are the final payment process as they make funds available to the payee (Cranston et al. 2017, 336–37; BIS 2016, 7). These basic components are presented in common payment methods, including ancient paper-based, cheques, credit transfer, direct debit, and most recent models, including mobile phone orders and third-party payment orders (e.g., PISP).

Fast payment services are the next generation of payments infrastructures, mainly designed to deal with retail, low value transactions. They differ from traditional retail payment infrastructure mainly because of two key features that also define them: speed and continuous service availability. In these mechanisms, payment messages and availability of funds occur almost immediately, and the service is available on a 24-hour and 7-day basis (24/7).

For users, fast payment provides an efficient alternative to existing payment instruments, like physical cash and payment cards (credit and debit cards), with quick response and instantaneous finality. As for the public sector, fast payment schemes can promote many public objectives, especially those related to safety and efficiency of payments infrastructures and the collective financial sector, as well those related to users' needs and expectations, including financial inclusion, financial literacy, and overall business formality (BIS 2016, 1–2). Also, they enhance the banking system's efficiency and stability. As such, in many jurisdictions, State's intervention operates through local central banks or other national authorities, as they have public mandate and expertise to oversee local payment systems.

Figure 4, presented in the CPMI[75] report from the BIS (2016), shows the implementation of fast payments schemes worldwide as of 2016. Many of them are public-based solutions. Other not listed jurisdictions have also implemented their local solution, including Brazil (PIX - public scheme), in 2020, Portugal (MBway - private scheme), in 2015, Spain (Bizum - private scheme), in 2016, and India (UPI - public scheme), also in 2016.

India has two different solutions: IMPS, a real-time 24/7 interbank service that transfers funds from one bank account to another, launched in 2010, and UPI, a government-backed service, launched by National Payments Corporation of India (NPCI). Both schemes offer electronic funds transfers instantly, on a 24/7 basis. However, only the public scheme is free of charge. Conversely, Indian banks can charge for IMPS transfers, currently varying from ₹2.5 to ₹25 – from €0.028 to €0.28[76] (Vrushali and DesiDime 2023).

[75] It refers to the Committee on Payments and Market Infrastructures. See https://www.bis.org/cpmi/about/overview.htm. Access on July 12th, 2023.
[76] As of September 9th, 2023.

Fast payment implementations in CPMI countries[1, 2] Table 1

Existing fast payment implementations in CPMI countries

Country	Implementation	Year commenced[3]
Korea	Electronic Banking System (EBS)	2001
South Africa	Real-Time Clearing (RTC)	2006
Korea	CD/ATM System	2007[4]
United Kingdom	Faster Payments Service (FPS)	2008
China	Internet Banking Payment System (IBPS)	2010
India	Immediate Payment Service (IMPS)	2010
Sweden	BiR/Swish	2012
Turkey	BKM Express	2013
Italy	Jiffy – Cash in a flash (Jiffy)	2014
Singapore	Fast And Secure Transfers (FAST)	2014
Switzerland	Twint[5]	2015
Mexico	SPEI	2015[6]

Proposed fast payment implementations in CPMI countries

Country/geographical area	Implementation	Proposed year of commencement
Australia	New Payments Platform (NPP)	2017
SEPA[7]	Various implementations based on SEPA Credit Transfer instant (SCTinst) scheme including	2017
Netherlands	Instant Payments	2019
Belgium	Instant Payments	TBD
Saudi Arabia	Future Ready ACH (FR-ACH)	2017/18
Hong Kong SAR	TBD (name to be determined later)	2018
Japan	Zengin Data Telecommunication System	2018[8]
United States[9]	TBD	TBD

Figure 4: Fast payments schemes as of 2016
Source: Committee on Payments and Market Infrastructures (BIS 2016, 5)

Fast payments, as said, are defined to provide unconditional and irrevocable access to funds to the payee on an immediate basis. In many jurisdictions the time interval may differ according to local rules, but usually it takes no longer than one minute to confirm and make funds available. In Brazil, for instance, PIX payments shall occur not later than 40 seconds and usually they happen on a 10-second window (BCB 2023c, 8), whilst, in Portugal, MBway transfers, the second largest payment solution in the country, as of 2023, shall be effective in less than a minute (Vieira 2023).

As for 24/7 continuous availability, first it is important to explain that traditional payment orders are almost always collected and cleared in batches. Also, they are cleared and settled, more often, only on limited business days or hours. Thus, the availability of funds to the payee occurs only after his bank or payment service provider (PSP), in general, receives the funds from the payer's PSP. Furthermore, the process does not impose inter-system credit risk because the following inter-bank transaction in the chain only happens after the previous one is cleared and settled. At fast payment schemes, conversely, inter-PSP reconciliation may be deferred to the next business day since it is not the primary concern of the scheme. Figure 5 illustrates a payment order sent on a Sunday. In this case, using the faster solution, funds are immediately available to the payee on the same day.

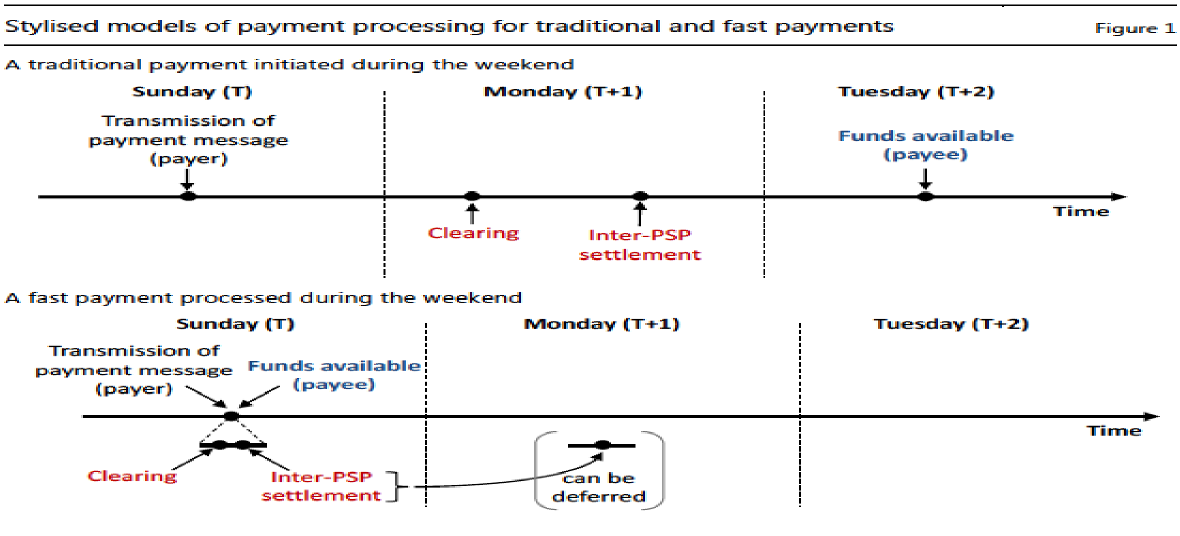

Figure 5: Stylized models of payment processing
Source: Committee on Payments and Market Infrastructures (BIS, 2016, 8)

Instant payment schemes may include other features that, even if not relevant for their definition, are important in the context of financial inclusion and public intervention. According to the CPMI report (BIS, 2016, pp. 11-20), these ancillary features might include: (i) coverage; (ii) instruments accepted; (iii) type of inter-agent settlement; (iv) openness of the scheme; and (v) cross-border arrangements. Since many worldwide implementations differ, these ancillary features equally assume specific local characteristics.

As for coverage, the larger the number of institutions and end-users that adopt the scheme, the stronger the network effects and positive externalities created. Ultimately, the degree of coverage is decided by the end-users as they adopt this payment solution. In many emerging markets, this solution has increased in popularity. As of 2022, India's UPI was the largest mechanism adopted worldwide (89 billion transactions), while Brazil's PIX was the second largest (29 billion transactions). China corresponded to the third largest scheme (17 billion transactions) (Vieira 2023).

For that matter, Brazil's PIX is the largest payment solution adopted in the country and accounts as much as the sum of all others combined, including payment cards, traditional retail payment orders and invoice orders (Matheus and Estadao 2023). Moreover, it is widely accepted by the population and merchants, including by the formerly unbanked size of the Brazilian population, like street or beach vendors[77]. One of the reasons for this success might be related to overall costs: while PIX transactions' costs are, on average, only 0.22% to merchants, traditional payment cards' costs are more expensive, from 1% to debit cards to more than 2.2% as for credit cards (Reuters and Ayres 2022).

The range of instruments that fast payments are built upon may also differ worldwide. Common practice relies on payment cards or bank account numbers. In Portugal, the MBway scheme is based on debit card numbers, which then are linked to the card-issuer bank and the account number. In Brazil and Spain, on the other hand, the schemes do not rely on payment card's infrastructures. In contrast, they associate payment account numbers directly. These accounts can be provided by banks (traditional checking and savings accounts) or by PSPs, like Fintechs, e-money accounts or prepaid accounts providers.

As for the PSPs, the last three ancillary features are quite important. As discussed, inter-agent settlement is not the main concern of fast payment schemes. Therefore, inter-agent settlement may vary. Early f implementations relied mostly on deferred net settlements, as described in figure 6. In these situations, credit lines between agents and the central bank, as well as posting financial collateral, may be required to assure that all transactions will be cleared and settled. This raises financial risks. Credit risk on inter-agent operations might be a concern, and single institution or system-wide operational risks shall also be observed. Scholars linked to the CPMI appoints these as some of the risks involved in fast payment schemes.

[77] Brazil and China also have some cases of begging processed through fast schemes and QR-code transactions.

Inter-PSP settlement model

Existing fast payment implementations in CPMI Countries Table 3

Country	Implementation	Inter-PSP settlement model
Korea	EBS	Deferred net
South Africa	RTC	Deferred gross
Korea	CD/ATM System	Deferred net
United Kingdom	FPS	Deferred net
China	IBPS	Deferred net
India	IMPS	Deferred net
Sweden	BiR/Swish	Real-time
Turkey	BKM Express	Deferred net
Italy	Jiffy	Deferred net
Singapore	FAST	Deferred net
Switzerland	Twint	Deferred net
Mexico	SPEI	Real-time

Figure 6: Inter-agent settlement models
Source: Committee on Payments and Market Infrastructures (BIS, 2016, 16)

Latest developments, like Brazil's PIX, conversely, require real-time inter-agent settlement on central banks accounts, even during weekends and bank holidays. In this latter case, PSPs shall maintain enough liquid funds to perform the transactions. As such, they have to give up overnight interest on fixed income applications in order to offer PIX services to their clients. Nevertheless, repo transactions and collaterals can be used in special, extreme situations. India's UPI, in contrast, even though launched in 2016, still relies on net arrangements. The UPI operator (NPCI) calculates each member position after clearing the transactions. Then he has each member's special authorization to credit and debit their accounts in the central bank's books (NPCI 2023).

Moving on, the openness of the scheme is extremely important and should be taken into consideration by the public sector, in order to achieve its nominated public objectives. In some cases, like Portugal and Spain, participation is limited only to local banks. In fact, the Iberian Peninsula solutions were developed by local banks and by a local private payment provider (SIBS[78] and Bizum S.L.[79]). The Portuguese banking association is also responsible for all ATM machines in the country as well. These arrangements lower the number of participating agents, including many European Fintechs that yet do not have a local banking license or branch (or even desire to request a local license). In fact, SIBS is facing

[78] SIBS refers to Forward Payment Solutions S.A, previously denominated as Sociedade Interbancária de Serviços S.A.
[79] See https://bizum.es/sobre-nosotros/. Access on August 28th, 2023.

administrative charges at AdC, competition's regulator and supervisor in Portugal, due to allegedly abusive market power practices. Key concerns are linked to intentional restrictions on market competition and innovation levels in the local payment service sector. The case is also based on reports on mandatory cross-selling or tied financial products and services (AdC 2020)[80]. Notwithstanding, it is expected the local central bank, B.P., launches its own fast payment solution in the near future.

The Indian and Brazilian versions, conversely, as public solutions, combined with public regulatory arrangements, allow the participation of many different agents, including AISP and PISP, e-money providers and other Fintechs. In fact, even though the Brazilian Central Bank is still developing the international layer of PIX scheme, many financial agents are already providing PIX transactions in international retail operations. Brazilian customers, for instance, can use PIX transactions to pay for goods and services in Paris, France, and some cities in Argentina (Digital and Spadoni 2023; Müzell and Grupo Folha S.A. 2022). These payment services, combined with foreign exchange solutions, are provided by Fintechs. They also can be combined with credit solutions, as Brazilian customers are used to paying in installments. In any case, the payee that decides to adopt this payment solution receives immediately the funds in the local currency (Euro or Argentine Peso).

To this point, moreover, cross-border arrangements are quite important for highly integrated jurisdictions, like EU countries and some African countries. In these regions, cross-border payments are part of daily citizens' lives and instant payment schemes have been upgraded to allow them. EU SEPA instant credit transfer scheme (SCT-inst) aims to overcome national borders and provide interoperability of local implementations. It is based on the previous SEPA credit transfer scheme (SCT). SCT-inst establishes a maximum execution time of just ten seconds and a maximum value transferred of €100,000, making it, therefore, feasible to common daily lives operations[81].

Moreover, PSPs participating in the SCT-inst can offer foreign exchange services and also hold payment accounts in other currencies even though SEPA transactions must be made solely in Euros. However, in contrast to the previous SCT scheme, which is mandatory

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[80] See case number PRC/2020/5 available at: https://extranet.concorrencia.pt/PesquisAdC/PRC_OR_INC_OR_PCC_Page.aspx?Ref=PRC_2020_5&IsEnglish=False. Access on July 9th, 2023.

[81] SCT-inst, nevertheless, allows participating agents to enter on bilateral or multilateral agreements in order to perform higher maximum amounts and shorter execution time.

applicable to all PSPs within the EU, and it is available in 36 European countries[82], the participation in the latest SCT-inst is still optional and reaches only 29 European countries.

As of 2023, 2326 payment providers have joined SCT-inst, representing more than 70% of all providers in the eurozone (European Payments Council 2023). Figure 7 shows the evolution of the SCT-inst scheme on total credit transfer transactions. It accounts for almost 15% of the volume transferred in 2023.

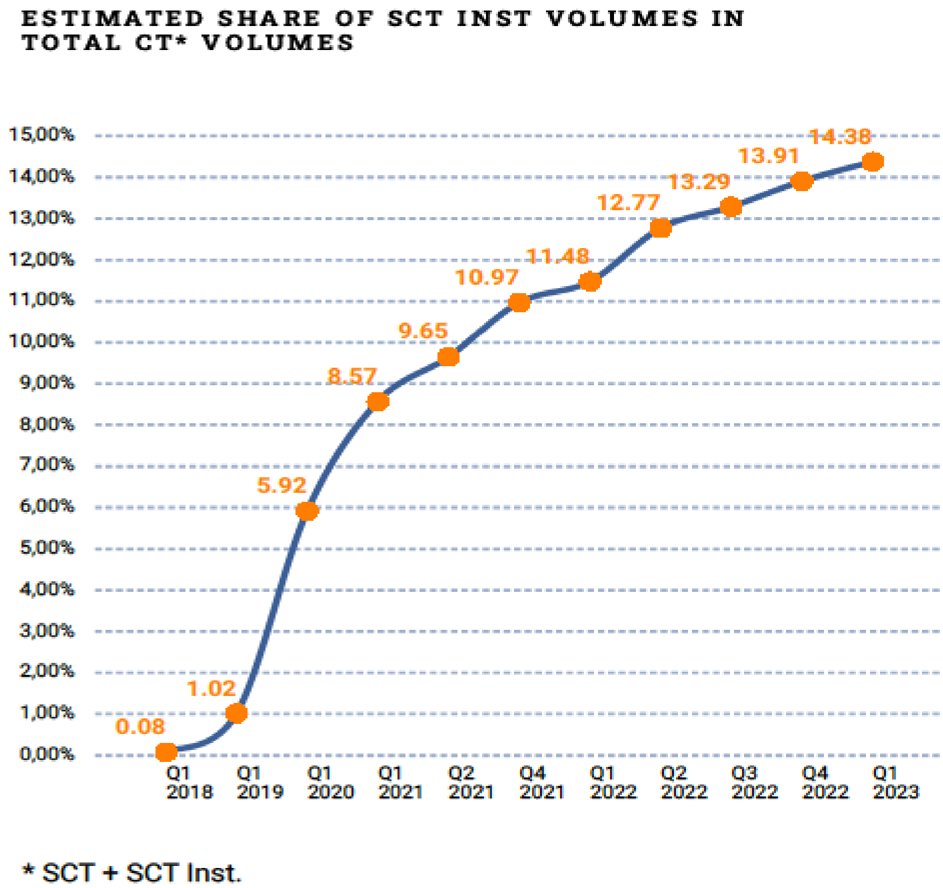

Figure 7: percentage of SEPA instant credit transfers
Source: European Payments Council – https://www.europeanpaymentscouncil.eu/what-we-do/sepa-instant-credit-transfer

SCT-inst is important in the context of the EU framework due to the risk of fragmentation of the European payments market. In fact, the harmonization of payments in Europe is one of the building blocks of the EU single market. It strengthens the EU's key

[82] 27 Member-States within the EU, 3 European Economic Area (EEA) and 6 non-EEA countries. See list available at https://www.europeanpaymentscouncil.eu/sites/default/files/kb/file/2021-03/EPC409-09%20EPC%20List%20of%20SEPA%20Scheme%20Countries%20v4.0.pdf. Access on June 12th, 2023.

principles and objectives, such as the creation of an integrated EU single market and the free flow of persons and goods.

Moreover, SCT-inst works together with other EU solutions to strengthen the internal market. These solutions include broad regulation on transfer of funds[83] and other EU cross-border schemes, like SEPA direct debit scheme, SEPA direct debit B2B scheme and the aforementioned SCT scheme. All of them were launched between 2008 and 2017 and are regularly updated every two years, in order to reassess the internal market's characteristics, financial developments and potential risks. It is also important to mention the standardization of technical information and procedures in order to ease communication among players, like International Payment Account Number Identifier (IBAN), a single, unique, and standardized code that identifies each PSP account, and the Business Identifier Code (BIC)[84], a unique identifier for each specific financial institution, as well as other technical standards, like the mandatory use of ISO 20022 XML standard.

However, still there isn't a well-functioning solution to send and receive funds among individuals within the EU, but located in different countries, based on an easier identifier than IBAN[85]. Some PSP have created private solutions that eases transfer among their own clients, but both parties need to be PSP's clients. Even though many Europeans have access to mobile phones or national IDs, solutions created are not capable of matching the parties when they are hosted in different banks. MBway's solution, for instance, only works within Portugal and the one provided by Wise Inc.[86] only covers its clients. This enhances the fragmentation of the market and produces "lock-in effects", in the opposite directions aimed by EU policymakers.

To that matter, the BIS announced in late 2022 its project called Nexus, a solution that central banks were jointly working on to combine several local instant payment schemes (Müzell and Grupo Folha S.A. 2022). Nevertheless, it is not easy work. This kind of worldwide project deals with complex obstacles, which might include foreign exchange real-time issues, different compliance requirements and diverse computer-languages used. It also

[83] Please refer to Regulation (EU) 2015/847 on information accompanying transfers of funds and Regulation (EU) 260/2012.

[84] See https://www.techtarget.com/searcherp/definition/BIC-bank-identifier-code#. Access on June 12th, 2023.
[85] For that matter, only a few distinguishing members can memorize by heart their own IBAN.
[86] See https://wise.com/ Access on July 13th, 2023.

deals with varied legal regimes and legal practices. Hence, a common baseline must be established.

Regulation (EU) 2015/847 brings out a definition to the meaning of "transfer of funds", which also includes instant payment schemes. Article 3(9) defines it as:

> any transaction at least partially carried out by electronic means on behalf of a payer through a payment service provider, with a view to making funds available to a payee through a payment service provider, irrespective of whether the payer and the payee are the same person and irrespective of whether the payment service provider of the payer and that of the payee are one (...). (EU Regulation 2015/847 2015, 8)

As such, electronic transfer of funds can work in several manners, which includes credit transfer, direct debit, money remittance, whether national or cross-border, through payment cards, electronic money instruments and so on. To this manner, Cranston et. al. (2017, 405–6) better explains that it can take basically two forms, a "push" or credit transfer (through payment account, payments cards or other electronic ways), when the payer initiates the transaction, and a "pull" or debit transfer (through direct debit into a payment account, payment card or others), when the payee initiates the process.

Concerning cross-border payments, Regulation (EU) 2021/1230 plays an important role laying down common rules and promoting transparency of any currency conversion charges within the Union. It imposes that any charges applicable by the PSP in cross-border electronic transactions in Euro are the same as ones applicable in domestic transactions in the market which the PSP offers its services (principle of equality charges). However, this principle does not apply to paper-based transactions, like cheques, due to the fact that they cannot be processed in the same efficient manner as the electronic payment[87].

Moreover, when the PSP applies foreign exchange conversion charges, these fees shall be standardized as "percentage mark-up over the latest available euro foreign exchange reference rates issued by the European Central Bank (ECB)" as set forth in article 4(1). These fees shall be disclosed to the payer prior to the initiation of the payment transaction. Hence, it enforces transparency and strengthens the competition among EU payment providers.

Cranston et. al. (2017, 405–12) also take further analysis and discuss some legal key features of credit transfer mechanisms, including instant schemes. They deal with the (*i*)

[87] See recitals 3 and 4 of Regulation (EU) 2021/1230.

legal nature of funds transfers; (ii) the nature of existing relationships; (iii) liability issues and (iv) irrevocable clause and effective discharge of the debt due.

First, transfer of funds is legally defined as operations that proportionate the creation and extinction of rights. When the payment order is processed, cleared, and settled, it extinguishes the payer's right against its own bank and creates an "entirely new right in the hands of the payee against his bank" (Cranston et al. 2017, 406). As such, payment mechanisms cannot be legally treated in the same manner as negotiable instruments. The latter, like cheques, almost in any situation, refers to unconditional orders in writing where it instructs the addressee to pay a certain sum of money (or cash-equivalent instruments). In many jurisdictions, moreover, the negotiable instruments can skip initial lawsuit judicial stages or even be executed without court order.

This legal definition has implications on the nature of relationships among interested parties. Traditional contractual relationships are presented in payment transactions, including any underlying commercial, consumer or civil relationship among payer and payee. It is this one that gives rise to the electronic transfer, as a way to correctly perform the obligations presented in the contract, namely payment. Also are presented traditional banking contractual relationships between the payer and his bank, as well as between the payee and his own bank. Legal duty of care and other banking usual obligations of banker-customer relationships are involved. Anew, payment orders do not rely on pre-existing contractual relationships between the paying bank and the payee.

More interesting issues concern the contractual relationship between the paying bank and the receiving bank. Nowadays these operations occur within electronic infrastructure that dictates its own rules, like aforementioned instant schemes. These standardized rulebooks often are drafted by the public sector (e.g., PIX in Brazil and UPI in India) and then signed by participating agents.

Rulebooks also can be drafted by private association organizations (e.g., the European Payments Council[88]), in correspondence to public sector regulations (like many of said EU regulations). As such, these books govern the relationship among PSPs, in the same manner as the open banking initiative conventions, discussed in section 4. It foresees

[88] This Council is an international organization formed by PSPs and their local associations.

technical procedures, dispute resolution mechanisms and liability rules[89]. Even though these rulebooks are agreements between participating PSPs, there have been judicial decisions indicating that when a customer decides to make an electronic transfer through one of these schemes, he implicitly agrees to its rules and procedures, like in *Tidal Energy Ld. v Bank of Scotland plc [2015]*, in the U.K. (Cranston et al. 2017, 408–9).

However, these rulebooks cannot weaken public legal consumer protection. This is the baseline decision rule applied in several other cases, *like Barclays plc v Bank of England [1985]* and T*urner v Royal Bank of Scotland plc [2001]*, in the U.K as well. Hence, customer's legal rights cannot be diminished by private agreements between participating PSPs. Therefore, especially when dealing with consumer cases, rulebooks only must be applicable to enhance consumer protection. As such, legal wording of rulebooks and their technical standards, even when drafted by private organizations, such as CHAPS in the U.K., or MBway in Portugal, are objects of public interest and must be accompanied by local authorities.

Thirdly, important issues for PSPs and overall users are the increasing figures of fraudulent transactions and related liability issues. In Brazil, for instance, after the launch of the PIX, reported cases of fraudulent breaches and fraudulent transactions soared. These cases included many techniques, like fake payee's account information, fraudulent QR-codes, malicious software programs that invade mobile phones and computers, fake WhatsApp accounts that are created to ask one's friends and relatives for money. As such, the local banking association estimates an increase of 165% of malicious financial hackings (Bolzani and Globo Inc. 2023). Reported cases of kidnapping also skyrocketed. São Paulo public security forces, the most developed region in the country, reported an increase of almost 40% in those crimes (Vitória 2021).

This situation in Brazil has led some regional governments to discuss the possibility of issuing regional laws forbidding the usage of PIX scheme in those places (Rangel 2021). Even though these laws are unconstitutional, since only the Brazilian central government can legislate on financial system issues[90], the possibility raised a red flag for local financial authorities. Also, as the enacted law has the relative presumption of validity and therefore

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[89] See SCT-inst rulebook, available at https://www.europeanpaymentscouncil.eu/what-we-do/epc-payment-schemes/sepa-instant-credit-transfer/sepa-instant-credit-transfer-rulebook. Access on June 12th, 2023.

[90] As indicated by the Brazilian Constitution, article 21, items VII and XIX and many Supreme Court's decisions.

must be obeyed, it would take time for the judicial branch to declare it unconstitutional and remove it from the legal framework. Several judicial cases could rise, and during the meantime, the implementation of the new technology would be harmed.

To this regard, Brazil's BCB, the agency responsible for implementing PIX infrastructure, issued new tools and procedures to deal with fraudulent cases. First, these tools included limits on value transactions on specific hours (like at night and weekends), the establishment of a minimum holding period between the registration of "trusted" third-parties accounts and the effective possibility to send money to them[91], preventing immediate registrations in situations of risk and the possibility for PSP to hold any suspect transaction for 30 minutes (day-time) or 60 minutes (nights and weekends) for better risk assessment (Vitória 2021).

Moreover, as instant payment schemes are broad-brush conceptualized to be used in low value transactions, it is highly probable that consumer protection laws shall be applicable in these cases. In fact, in Europe, according to PSD2 directive and related legislative conversions (e.g., PSR 2017, in the U.K., and Decree-Law 91/2018, in Portugal), PSPs are, at first, liable to processed defective, unauthorized, and fraudulent transactions.

According to article 73 of PSD2 directive, the payer's bank shall, at first, be liable to refund and credit the client's account and take procedures to restore security levels. However, this is not the case when the payer has failed to fulfill its security obligations and keep security details safe, as informed on article 74. Also, payers shall be liable for their own fraudulent or negligent actions, in the same manner previously discussed.

One point that needs further analysis is when the payment services are well served but it results in fraudulent breach. As discussed, payment law and banking law refer to mandate-based principles: PSPs work on the basis of the mandate and the instructions issued by their clients.

In detail, in many fraudulent cases, the information provided by the client about the payee's account is later proved incorrect. Literature refers to "defective execution of authorized transactions" (Cranston et al. 2017, 408–9) The account information provided by the payer leads to a different account that is not the intended. It is more common when

[91] Registered "trusteed" accounts have the benefit of higher pre-authorized values that would not trigger specific compliance or security mechanisms.

intended payee's and fraudulent payee's names are closely similar or with QR-code-based transactions. Nevertheless, even in these situations, the PSP fully performs the instructions received and, therefore, according to payments law, he is not liable to refund the payers' account. This is relatively clear in the European legislations and directives, like article 88 of PSD2 directive and related transpositions PSR 2017, article 90, in the U.K., and article 129 of the Decree-Law 91/2018 in Portugal.

In Brazil, in contrast, many judicial cases apply a stricter responsibility theory to consumer suppliers, including PSPs. According to local consumer law (Lei 8,078/1990), supplier responsibility is based on strict responsibility. In detail, the plaintiff (in most cases the consumer victim) does not need to prove the provider's fault or guilt. He only has the burden of proof on other basic elements of responsibility theory: PSP's action (processing payment, for instance), the presence of some harm occurred due to that action and its tie-in. The supplier has the burden of proof on any legitimate excuse for action.

Most judicial cases in the country are related to fraud situations, as they have soared. However, even when consumer law applies, courts are imposing a distinction between typical electronic fraud cases, when the bank is held accountable, and situations where the victim was exclusively misled by third parties, completely unrelated to the PSP. As such, if the bank has failed to fully perform its obligations, including the obligation to provide the service safely and to perform compliance requirements, according to the legislative act and technical regulations issued by BCB, the bank shall reimburse the client. This situation is highly typical, and as such, the highest non-constitutional court, Superior Tribunal de Justiça (STJ), issued the legal Synthesis 419 to clarify its conclusions, in which: "financial institutions have strict liability for damages caused by internal fortuitous events and crimes committed by third parties in the context of banking operations".

The academic literature makes a distinction on internal fortuitous events and external ones. Basically, it refers to events where PSPs have expertise dealing with and therefore should make efforts to avoid it, in honor of the duties to mitigate its own loss and third parties' losses. These principles are linked to the notion of the principle of objective good faith in the matters of contracts[92]. For instance, if a third-party had access to client's

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[92] For instance, see STJ decision on case REsp 1.995.458/SP. Available at https://processo.stj.jus.br/SCON/GetInteiroTeorDoAcordao?num_registro=202200971883&dt_publicacao=18/08/2022. Access on June 20th, 2023.

history transactions in the PSP system and used that to misled him, the PSP is held accountable[93].

Conversely, when the fraudulent case succeeds entirely due to the victim's actions, like in defective authorized transactions, PSPs are not liable and shall not reimburse the client. Nevertheless, as the same manner prescribed in referred article 88 of PSD2 directive, both payer's and payee's PSPs (*i*) shall make reasonable efforts to recover the funds and (ii) to cooperate by communicating all relevant information to the affected party. Moreover, the payer's PSP shall provide all information available to the client, upon request, for him to file legal lawsuits (civil and criminal). For instance, this was the decision rule applied in a legal case where the fraudulent agent misled the victim by assuming the identity of the victim's daughter, via WhatsApp, with her profile and exact photo but a different mobile phone number and asked her for money through a PIX transaction[94].

In order to enhance security and safety in PIX transactions and avoid misuse of the scheme, in May 2023, Brazil's BCB issued new procedures for it. They include the possibility for financial institutions to share among themselves their concerns about specific accounts being used in fraudulent cases with the option to flag accounts, social security numbers and other indicators as being used in fraud or suspicious cases. New regulations also include harder compliance procedures for any PSP joining the PIX scheme. These regulations aim to enhance consumer protection and personal data protection, as well the efficiency and security of the local financial and payment systems (BCB 2023b).

Ultimately, another issue that needs to be discussed is the possibility (or not) to revoke the instruction provided to the PSP and the moment where the irrevocable clause applies. Since instant payment schemes are designed to complete transactions in seconds it is almost impossible to revoke an instant payment order. This is the reason why Brazil's BCB allowed PSP to hold transactions for a longer time (30 minutes on weekdays and 60 minutes on weekends). Any suspicious, not-ordinary PIX transactions can be held for further compliance and security reviews.

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[93] See case AgInt no AREsp 1728279 / SP, of 17 May 2023. https://processo.stj.jus.br/SCON/jurisprudencia/toc.jsp?livre=%28%28AINTARESP.clas.+ou+%22AgInt+no+AREsp%22.clap.%29+e+%40num%3D%221728279%22%29+ou+%28%28AINTARESP+ou+%22AgInt+no+AREsp%22%29+adj+%221728279%22%29.suce. Access on July 10th, 2023.

[94] See case 0701996-36.2022.8.07.0006 https://www.tjdft.jus.br/consultas/jurisprudencia/jurisprudencia-em-temas/dano-moral-no-tjdft/servicos-bancarios/transferencia-via-pix. Access on June 20th, 2023.

In the EU, article 80 of PSD2 directive governs situations where the client may revoke his instructions. In general terms, users cannot revoke payment orders after the PSP has received the instructions. Nevertheless, in situations related to deferred payment orders, like a payment schedule, users can revoke the order at least until the end of business day preceding the agreed date, as set forth in article 80(4) combined with article 78(2).

Likewise, payment infrastructures, like Faster Payments in the U.K and MBway in Portugal, dictates that once the payment order has entered the scheme, it is irrevocable (Cranston et al. 2017, 409–12). The same goes for Brazil's PIX and India's IPI. In order to enhance the security framework, therefore, the mandatory application of security independent layers is highly important in the context of instant electronic transactions.

Some consideration must be taken when assessing local transpositions of PSD2 directive to local legislation. In Portugal, for instance, local rule authorizes PSP to assess the situation and hold reimbursement, which could take up to 13 months, as set forth in article 112(1) of local Decree-Law 91/2018. This is clearly not the intent of PSD2 directive since most users live on a paycheck-to-paycheck basis.

Legally, without specific wording on underlying contract between payer and payees, the debt is deemed discharged after it is irrevocable. Hence, the discharge of the underlying transaction, in the absence of specific terms in the contract, is linked to the moment where the payee's PSP takes the unconditional decision to credit the payee's account, even without funds availability or other internal administrative process (e.g., the processing of data). In the absence of specific terms in the contract as well, the discharge of underlying debt does not depend on any specific notice to the payee. Prior to the implementation of instant payment schemes, the PSP only made the unconditional decisions after the full process of clearing and settlement as described in previous figure 5. Now, the scheme focuses on availability of funds to the payee, while inter-PSP settlement can be deferred.

This section dealt with the ongoing implementation of instant payment schemes worldwide. The benefits arising from these schemes are clear in the form of financial inclusion, financial literacy, and the provision of other financial services to a bigger size of the community. Most of these goals were targeted as high priority to the public sector, especially in emerging markets.

Nevertheless, these implementations are accompanied with financial and operational risks among financial institutions, especially in those regimes where the inter-bank settlement is deferred. These new regimes have brought further concerns to legal authorities and financial authorities, as many cases of fraudulent use have soared, especially in less secured jurisdictions. Notwithstanding, the benefits to the population outweigh its risks, especially when new security layers, and targeted public regulations and procedures are set up to deal with them.

Therefore, judges, lawyers and scholars must be familiar with the technical wording of public sectoral regulations, which include not only high-level directives and legislations but also technical regulations.

CONCLUSION

At this discussion, we assessed the importance of financial inclusion and how financial innovation has helped to diminish the size of the unbanked and underbanked populations in several countries. We also discussed the theoretical background on how the public sector intervenes in the economy to promote a public agenda on high-level priority objectives. Especially to emerging markets, these goals are linked to the promotion of the equality principle and sustainable social and financial developments, which are embedded in many local constitutions, international treaties, and declarations. The joint efforts of the public and private sector on the matter of financial inclusion can help achieve them.

Financial inclusion can be explained as public and private efforts to make financial services available, affordable, and secure to a higher level of individuals and businesses. There has been strong evidence worldwide of positive outcomes on human development, stronger social safety networks and financial stability due to the promotion of financial inclusion.

Particularly, it has quickly flourished due to recent financial innovations, including the emergence of Fintech firms, and the legislative and regulatory initiatives leveling the playing field in financial markets. This discussion centered on two recent innovations: open banking (open finance) initiatives and instant payment schemes. Nevertheless, the public incentive in economic matters cannot be done in arbitrary terms. The notion of the State, its current theoretical development and Economic Law's theory shapes the public's actions.

The concept of the State and its actions on the economic sector have continually evolved in the history of mankind, particularly after the Industrial Revolution and the birth of the incipient capitalist system. The notion of the State, nowadays, is intrinsically linked to the notion of fundamental rights. The definition and delimitation by one community of what is important, and which high-level public objectives shall be pursued, all materialized on the fundamental rights inserted in the Higher Law, are the core elements that constitute the State.

Indeed, the social doctrine in the present days informs that the public sector has obligations linked to promote concrete conditions for the development of the personality and aspirations of individuals, as well as social justice and social welfare. In this context, in many jurisdictions, including Brazil and Portugal, the financial system is structured and developed in order to promote the public interest and to help achieve the dictated high-level objectives.

Furthermore, the financial system has the obligation to create solutions for entrepreneurs undertaking new business and for the society to access fair, safe and affordable financial products, and services. Public sectoral intervention in the financial system, therefore, not only is desired but demanded. These are the baseline structures for the juridical line of study known as Economic Law or "Law and Economics".

Economic Law corresponds to a normative legal system, which encompasses principles and prescriptive rules, developed to study, interact, and regulate the relationship between the State and the economic forces. In many jurisdictions, some of these norms are also inserted in local constitutions, which give rise to what José Canotilho named as "Economic Constitution". It means constitutional norms set to organize a specific economic order (the factual world), but also to govern the economy (juridical world).

Moreover, the "regulatory model" is inserted in this context. It regards the interaction of the State and the economy, mainly due to the shortcomings of previous models, i.e., "the minimum State", centered on liberal ideas of the XVIII century and the exhaustion of the "State's social dirigisme" after WWI. Economic regulation, as such, is part of the public sector's toolkit for indirect intervention developed in this context. It encompasses a broad set of normative instruments, including legislative, administrative, and conventional acts. These are used to control or influence economic agent's behavior and to mitigate the presence of market failures. Additionally, it embraces the privilege to oversee private compliance and to punish those who deviate from it.

In many jurisdictions, these public norms are issued by technical and specialized bodies. Even though they might be part of the executive branch in some cases, they enjoy a higher level of autonomy and legal protection to its members. They are designed to better intervene in economic activity, to quickly respond to market changes and demands, and to rectify the presence of market failures.

However, even though regulation usually works better when enacted by these technical bodies, consideration must be taken to avoid the replacement of truly genuine public interest to sector-specific private interests. This phenomenon is better explained by the regulatory capture's theory in which the public sector (or parts of it) acts to promote only nominated sectors, companies, or private interests.

Economic regulation, moreover, helps to level the playing field by promoting competition among economic actors. In fact, linked to these regulations' targets, the essential facilities doctrine dictates that when vital infrastructures are kept by monopolistic or oligopolistic agents, even though built by private players, they shall be forced to be open to other competitors. These notions are part of recent financial markets' regulations, particularly in the context of trade repositories, stock exchanges, brokerages, and others. Recently, they are expressed in initiatives concerning open finance and the mandatory share of financial data.

This discussion has shown that public efforts, especially pro-competition regulations, have expanded account holder's figures worldwide, especially in poor regions (Latin America, Asia, and Africa). In these areas, AFI members are committed to promote financial inclusion policies linked to financial innovation, consumer empowerment and consumer protection.

Likewise, the recent Fintech phenomenon has brought to the market creative products, services, or solutions to address some of the current financial market failures that limit financial inclusion. Often, these constraints include abusive market power, negative externalities, and information asymmetry; all of them are particularly relevant nowadays in the financial sector and are constant concerns of regulators, legal practitioners, and the overall public sector.

Fintech's most well-known successful cases are inserted in four areas: payments, lending, insurance, and wealth management services. The issuance of M-Pesa in Kenya in 2007, particularly, has been extensively studied due to its concrete results on the expansion of the banked size of the local population, which reached up to 83% in 2019. Notwithstanding, other successful examples on e-money projects can be seen in different regions as well. The lending sector and wealth management sectors, moreover, have been promoted with Fintech's improvements. These include the combination of different technological solutions.

For instance, in the latter sectors, an important innovation consists of the combination of alternative data sources, soft information, with credit information in order to correctly assess borrower's creditworthiness. These soft data include utility and phone bills, shopping patterns and social media history, among others. Also, other solutions comprise robo-advisors, machine learning, big data, and AI. Jointly, they have been responsible for reducing financial and transactional costs, which led to the expansion of people being attended by the financial sector, notably the poorer individuals and SME.

Likewise, there has been evidence that the combination of such information and these financial improvements can produce more accurate results and less prejudice, which has always been an issue to the minority. Open finance initiatives help to fill the gap on needed data.

Fintech's innovations have also led to regulatory transformations that are intended to level the playing field and enforce competition among financial players. Regulatory sandboxes are regulatory techniques in which the innovation can be tested in a living environment, with adequate requirements and oversight.

On the public sector's side, the introduction of open finance regimes is trying to address some of the above market failures, especially when private participation is imposed by the public sector. Especially in emerging markets, these regimes have been designed to promote financial inclusion and financial literacy. For instance, Mexico's "Fintech Law" expressively nominates these items as public objectives. The same goes for Brazil's open finance implementation.

These regimes are part of the discussed higher agenda protecting fundamental rights linked to digital data, the equality principle, and fair opportunities to all. They are inserted in the broader context of enacted laws protecting personal data, such as GDPR in the EU and its similarities worldwide. Indeed, they can be understood as a data-sharing scheme in the financial sector, mandated or sponsored by the public sector, designed to achieve the listed goals. It is based on the user's consent, as he is the true owner of his data, constitutionally protected. He can request his own information stored by agents and share it with whoever he might want.

This leads to three conclusions: financial clients do not need any more to start a new financial relationship with another agent from zero; Fintech, startups and other players can faster join the market; and more suitable products can be offered. Thus, the century-old bank which does not keep up with innovation is doomed to perish. Clients, at some point, will seek for better financial suppliers. In the U.K., for instance, low-income end-users are already saving between 0.8% of 2.5% of their household budget that previously was used to pay financial fees.

Additionally, open finance regimes do not cover only banking data, even though many of them started in this way. They also can be combined with soft information. As such, inter-sectoral open finance schemes are in the timetable of different regulators worldwide. Nevertheless, they increase the complexity of the regime. Oversight and other regulators obligations must be well defined and transparent, so all interested parties that join the scheme can perform their business well. It is a constraint that the public sector is still trying to overcome.

Emerging markets can enjoy the experience of more advanced countries. In fact, the well-established U.K. regime has been studied by more than 30 jurisdictions. The U.K's structure was introduced as part of the PSD2 directive in the EU. The revised PSD assigns, in detail, specific provisions on liability rules, consumer protection and dispute resolution mechanisms, items that emerging markets' solutions have yet to address.

In Brazil, for instance, the local regulator has delegated some issues to be addressed by a private convention, drafted by participating agents, that will govern these and other items, including technical API standards and clients' reimbursement procedures. It is a different form to address these concerns. No doubt, Brazilian local rules, drafted by agents, will be tailor-made to deal with local characteristics. Nevertheless, the regulator, overall public sector, legal practitioners, and other stakeholders shall follow it and be familiar with the terms used. If liability rules and security standards are left to be addressed by general consumer laws, without tailor-mode components, this could lead to a significantly lower level of client protection. Specific provisions can be designed to work without prejudice of general law, thus enhancing consumer protection. Same conclusions apply to instant payment mechanisms and the need for public oversight.

Additionally, incumbent banks might have to reassess their role in the market in the new pro-competition outlook that the State has been promoting. Emerging new solutions that integrate and consolidate information in a single user-friendly application, are continually launched.

Notwithstanding, banks, meaning the traditional concept of supervised organizations that grant credit and receive deposits, subject to regulatory requirements (e.g., solvency, liquidity, compliance), among others, no doubt, will remain in the market. Overall Fintechs, including deep pockets Techfins, might not be able to perform all financial sector's activities, due to lack of knowledge, regulatory restrictions, or other issues. Thus, in the near future, banks will assume a new role, a movement that has been coined BaaP.

It refers to the establishment of open platforms that can serve both the demand-side (clients, often) and the supply-side (e.g., vendors, entrepreneurs, and startups). It also provides positive network effects, including the chance to avoid "lock-in effects" and market fragmentation. Acting as "platform providers", banks, in the same manner as other big companies in other segments of the economy, like ride-sharing, house-sharing and products' marketplace, might enjoy their century-old expertise and credibility to connect both sides. The role as money custodian might also stay with banks.

The combination of many vectors discussed in this paper, including technology and regulation, have also launched fast payment schemes. Considered as the next generation of payments infrastructures, they are especially designed to deal with low value (retail) transactions. They have two key prominent features: they operate on a 24/7 basis, and the funds are almost immediately available to the payee, including on weekends and holidays. The operation, in fact, usually takes no longer than a minute to be cleared and settled.

Fast schemes are also inserted in the public agenda drafted to promote financial inclusion and literacy and overall business formality. In fact, this solution has been very popular and has increased the size of the banked population. In Brazil, the local scheme accounts for more than the sum of all other payment transactions, including payment cards. In Portugal, local solution MBway is the second largest mechanism. India is the world champion and has processed more than 89 billion transactions in 2022.

Besides their two key features, other reasons for success might be overall costs. Usually, this kind of transactions are free for end-users and cost pennies on a euro to entrepreneurs. They are much cheaper than payment card solutions, for instance. In some jurisdictions, moreover, they don't even need smartphone devices to operate. The referred M-Pesa solution works in old cell phones, a local characteristic of Kenya and many other less developed countries.

Notwithstanding, fast payment schemes are also popular because they work on the basis of common identifiers used by the population. In some places, payment accounts are labeled and identified by a person's national ID, e-mail, mobile phone and others. They too might work with random QR-code identifiers when the user is concerned about sharing his personal data or about security issues.

However, the public sector, when it does not provide itself the solution, shall also follow private initiatives. Openness of the scheme is a key component to promote the high-level public agenda. In fact, in Portugal, MBway was designed by private banks and their association. Currently, the local provider is facing administrative charges imposed by local competition's authority. It is accused of deliberately limiting the participating agents, excluding non-Portuguese banks and Fintechs, thus restricting the market. Conversely, when publicly designed, fast payment schemes tend to be opened to overall PSPs, thus strengthening competition. In fact, it is expected that B.P. launches its government-backed solution in the near future.

Additionally, for integrated regions, like Africa and the EU, cross-border features are high-level priority. In the EU, one of the building blocks of the single market is the harmonization of payments infrastructure. In the matter, a lot has been done, including the enactment of specific directives and the launch of SEPA SCT-inst. Yet, more work is needed. The internal market's characteristics, new financial developments and potential risks shall be assessed continually.

In fact, still there isn't a well-functioning EU solution to send and receive funds between individuals that are in different EU countries in a fashionable and easy way. The standardized IBAN is not enough. It is not an easy task to memorize their up-to-34-numbers IBAN, especially when common identifiers are part of our daily lives. Many current private solutions only work within certain countries (like Portugal's MBway or Spain's Bizum, which are based on mobile numbers), or even can create other issues, including "lock-in effects". The project Nexus, announced by BIS, holds the promise to facilitate cross-border fast transfers. Nevertheless, this kind of worldwide project deals with complex obstacles and varied legal regimes and legal practices. Hence, a common baseline must be established.

Security and liability issues are also a concern when discussing fast payments schemes. The rulebooks that govern the operation, most of the time, are drafted by private organizations. Technical discussions and procedures, including when linked to consumer protection and client's reimbursement, are often left to private conventions or documents. The public sector only oversees the agreement.

Notwithstanding, these private agreements, drafted by participating agents, shall not diminish public law consumer protection. They must be only understood in order to enhance it, with tailor-made solutions, according to local characteristics.

As said, in the EU, the PSD2 directive governs, in detail, security and liability procedures. However, when transposed to local European legal regimes, some countries adjust a set of key items that weaken consumer protection. For instance, defective unauthorized transactions shall be reimbursed with undue delay by providing PSP. In Portugal, in contrast, local transposition authorizes PSP to hold reimbursement for up to 13 months, clearly in the opposite direction of Europeans leaders' intentions.

In some emerging markets, as well, judicial courts still struggle to rule liability cases linked to defective authorized transactions processed through these schemes. PSP have, no doubt, their responsibility to deal with fraudulent internal fortuitous events, but they cannot be held accountable for any fraudulent case that happens due to third-party malicious capacity to mislead clients. This would impose an extreme burden on PSPs that would stop innovation.

Therefore, the approximation of the financial markets and its practices, new technology standards, technical regulatory regulations and the law is a fact that must be understood by legal practitioners, regulators, and overall stakeholders. Open banking regimes and fast instant payments are recent examples of this approximation that has leveraged financial inclusion and financial literacy worldwide. The outcome in these topics due to financial innovations and a pro-competition public agenda are already noticeable. Yet more work and legal research are yet to be done to assess potential risks and constraints which the Law shall deal with.

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