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1. Introduction

Thank you for giving me the opportunity to be here today to talk about an exciting and challenging topic, the interaction between digital platforms and global law.

In the literature,[1] we can find different definitions of digital platforms that reflect the alternative perspectives (technical, socio-economic, economic, etc.) from which the topic could be addressed. This is clearly highlighted by the fact that the Digital Markets Act[2] recently approved by the two European co-legislators does not provide a general definition of digital platform, but only regulates the "gatekeepers", i.e. the providers of large platforms that play a specific role in the common market.

I will try to address the "platform" topic from the perspective of a central bank such as the Bank of Italy, which is entrusted with the core functions of central banking and is also in charge of prudential supervision and customer protection. Indeed, the interaction between finance and technology attracts what we may call "the platform economy" into an area that is clearly relevant for central banking because of its implications for financial stability and the smooth functioning of the payment system.

According to EIOPA[3], a platform may be defined as the technical infrastructure needed for multiple participants to connect and interact with each other to create and to exchange value. According to the EBA, a digital platform enables at least one financial institution to offer contracts for financial products and services to their clients, either directly or indirectly (through another intermediary).

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1 OECD, "An Introduction to Online Platforms and Their Role in the Digital Transformation", 2019 https://www.oecd.org/innovation/an-introduction-to-online-platforms-and-their-role-in-the-digital-transformation-53e5f593-en.htm; A. Asadullah, I. Faik, A. Kankanhalli, "Digital Platforms: a Review and Future Directions", September 2018. https://www.researchgate.net/publication/327971665

2 https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52020PC0842&from=en

3 On this point, see European Commission, "Request to EBA, EIOPA and ESMA for technical advice on digital Þnance and related issues", February 2021.

Regardless of the possible definitions, we can agree on the fact that digital platforms allow end-users and producers to carry out transactions.[4] They enable information and data sharing and allow different entities and systems to interact on the network using for example, application programming interfaces (APIs).

The platform is therefore a network, a cooperative mechanism in which all the actors involved can extract value using the available information.

Technology plays a central role in the platform economy, as it allows services to be unbundled and rebundled into new forms and to be used in different ways; it connects – sometimes to the point of mutual dependence – different parties (suppliers, technology providers, service providers, consumers, businesses) even in the absence of specific direct links.

The two technological features that characterize the structure of a digital platform, regardless of its nature (open or closed) and of how it operates (open or commercial), are the capacity to process a significant amount of data and the use of algorithms for customer profiling.

Indeed, the development of the platform economy is closely linked to the growth in the computation power of computers and to the correlated developments in artificial intelligence and in advanced data analytics, which have enabled the exploitation of an increasing amount of digitally generated data, known as Big Data.

A further element that characterizes digital platforms is the interdependence not only among individuals but also between different systems that increasingly connect with each other. Alongside platforms that match supply and demand for goods and services (eBay), there are platforms that offer mobility (Uber), payment (ALIPAY, Paypal, Apple Pay, Square) and investment (Mintos, Moneyfarm) services as well as real marketplaces (Amazon), i.e. virtual spaces that are able to combine the traditional sale of consumer goods with a comprehensive package of financial, insurance and payment services.

Going forward, it is reasonable to expect that interlinkages and interdependencies will also develop across different platforms thanks to the increasing interoperability between IT architectures facilitated, for example, by APIs. A recent example of the possible integration between different platforms has been the joint communiqué released by Apple and Google in March 2020 regarding the development of a new COVID-19 contact tracing technology.[5]

Needless to say, digital platforms are becoming ubiquitous in finance and banking. Last year's EBA report on digital platforms[6] points to the rapid increase in the use of digital platform solutions by financial intermediaries: this trend will consolidate as market operators try to satisfy customers' "search for convenience" and to reduce costs.

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4 Chesbrough H., *The future of open innovation*, LUISS University Press, 2021.

5 See 'Apple and Google partner on COVID-19 contact tracing technology'.

6 EBA, *Report on the Use of Digital Platforms in the EU Banking and Payment Sector*, September 2021.

The use of digital platforms presents – alongside the potential opportunities – a number of risks that are similar in nature to those of traditional finance, but with the major difference relating to the growing, and possibly dominant, role played by the non-financial component (operational, technological and cyber risk).

However, the feature that most distinguishes the platform economy from the traditional one is the presence of technological players with a key role in the ecosystem; this is particularly important in the case of the decentralized platforms that have recently emerged. The central role of these technological players can have profound effects on the oversight/supervision activities performed by central banks and other financial supervisory authorities; this issue becomes even thornier when the governance of the platforms is fragmented and cannot be reassembled because of the very nature of the new forms of financial, operational and reputational interdependence between the various participants, even in the absence of a specific legal or economic relationship.

In the cases, which are indeed widespread if not prevalent, where the technological component is the main nexus of relationships between all participants in the ecosystem, these governance features give rise to unprecedented scenarios and raise problems that have no simple solution I will now elaborate on this.

2. Synergies between platforms and decentralized technologies in finance

A case in point is the connection between the world of digital platforms and distributed ledger technology (DLT/blockchain) and its applications, among which crypto-assets are the best known.

DLT/blockchain is an emerging ecosystem of technological applications and protocols that makes it possible to reduce or eliminate the role of traditional intermediaries and of centralized processes in the provision of payment and financial services.[7]

One of the most important features of the application of decentralized technologies to financial services is that transactions can be carried out directly (i.e. without the intervention of external parties, such as intermediaries) between two or more entities, even if they ignore each other's identity.

Smart Contract are a key layer of blockchain finance (what is known as decentralized finance, or DeFi). These are software programmes stored on the blockchain that allow transactions, services and exchanges to be performed automatically. Their presence complicates a great deal the understanding of protocol governance and the identification of responsibilities. Their unique role alters the governance of a decentralized ecosystem, especially in case of crises or of mistakes in the execution of a transaction.

The use of software programmes that are automatically executed when predetermined conditions are met is not a new feature in finance. For example, if an intermediary sets a

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7 Financial Stability Board, *Decentralised financial technologies: Report on financial stability, regulatory and governance implications,* 2019.

specific price to buy or sell a financial instrument, software programmes automatically execute the transaction when the market price reaches the pre-defined threshold. The new element introduced by smart contracts is that, owing to the decentralized governance of the system, once the program is executed it is not possible to modify, block or unilaterally cancel the operation unless specific provision were specified ex ante in the code. Some scholars call this emerging new reality the coming into force of the *lex cryptographica*.[8]

Therefore, it is clear that smart contracts should be programmed with all the available ex ante information embedded in the code, since no ex post intervention is possible nor can traditional legal remedies be used. In fact, the governance of a DLT/blockchain does not envisage the use of judicial safeguards, and, in a decentralized world, an idea such as that of *forum loci* is difficult to apply.

In principle, all the information available ex ante could be incorporated into the code to mitigate the irrevocability of the consequences of the execution of a smart contract; nevertheless, given that it is not possible to foresee all the possible states of the world – let alone the cost of doing so – the risks associated with the absence of ex-post remedies remain.

The risks arising from a decentralized governance structure are further amplified when the platform rules provide for the allocation of "governance tokens" to entities with a particular role in the ecosystem (e.g. algorithm designers, crypto-asset issuers, capital providers), or in the event that the blockchain operates as a Decentralized Autonomous Organization (DAO, i.e. an entity managed by a network of individuals with equal rights and governed by deterministic rules laid down in the management software code).

These simple considerations clarify the central role played by DLT/blockchain developers, by smart contract programmers or by those who have the right to change the platform ground rules. These groups of individuals define the governance, i.e. the rules of the game for all other stakeholders (transaction validators, token holders and platform users).

Therefore, the smooth functioning of the ecosystem requires that the interests of all stakeholders be aligned and that appropriate incentives be in place in order to foster virtuous and cooperative behaviour aimed at enhancing the value of the ecosystem in the long term.

3. The role of central banks and supervisory authorities

In the scenario I have just outlined, central banks and supervisors need to rethink their monitoring and control framework, with the goal of taking advantage of the opportunities and of the benefits brought about by technological development. At the same time, they need to keep under control the risks to financial stability, to ensure the

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8 Primavera de Filippi and Aaron Wright "*Blockchain and the Law. The Rule of Code*", Harvard University Press 2018.

smooth functioning of the payment system and to maintain a high level of consumer protection.

Central banks and supervisor cannot achieve these goals by themselves. They rely on their regulatory power to steer, through incentives and binding rules, the actions of economic agents; however, this is not an easy task in the current era of technological transformation, because the complexities embedded in the transition from the analogical to the digital system pose a number of challenges that need to be rapidly addressed if we want market operators and infrastructures to adapt swiftly and smoothly to the new world.

Public authorities have a keen interest in the smooth transition of the banking, financial and payment system to a new operating environment based on the interaction and interdependence of different technologies (DLT/blockchain, open banking, cloud) and of different actors (intermediaries, technology service providers, technological infrastructure providers and digital platform operators).

The adaptation is needed because technological innovation is altering the competition between entities as new players enter the payment and banking markets. It is required because financial services are being produced in a radically different way using DLT/blockchain and self-executed protocols based on smart contracts. It is compelling because new products are emerging (think for example of flash loans).

In this new paradigm, the digital footprint is key because "technology suppliers" – by which I mean hardware, software, telecommunications networks – affect both the robustness of the ecosystem, through the resilience of the infrastructure component, and its governance, via protocols based on smart contracts.

Thus, the tech suppliers play a decisive role in both the profiling of services and the allocation of responsibilities to all the system participants.

It is clear that supervisory or oversight arrangements based on the old paradigms, where risks were clearly identified and responsibilities properly allocated among all market participants, may not be able to fully capture the interlinkages and interdependencies between all the entities on which the new ecosystem is based.

It is therefore necessary to start developing models based on a "scheme" approach, whereby proper attention is paid to the relationships between parties, infrastructures, instruments, services and smart contracts.

This is why we believe it essential to strengthen the interaction with the technology suppliers to detect phenomena that would otherwise be outside the scope of monitoring.

In this context, some references to establish an up-to-date monitoring system can be identified in international work carried out by the CPMI-IOSCO and, at the European level, under the ECB's PISA Framework (Payment Instruments, Schemes and Arrangements).

The PISA framework, which will enter into force at the end of this year, extends the oversight to the payment-based crypto-asset sector and to solutions that support

its supply and use (e.g. digital wallets). I would like to stress two aspects of this new framework that appear particularly innovative and important.

First, the framework moves beyond the notion of "transfer of funds" – traditionally performed by payment instruments – and considers that of "transfer of value", a much broader and more "liquid" notion. This change allows us to extend the monitoring to any form of organization aimed at transferring "value", including in the form of crypto assets.

Second, the framework clearly identifies not only payment schemes but also "payment arrangements" as an explicit target of the oversight, thereby broadening the overseer's scope to the whole set of relations, which, as I said, is one of the most distinctive elements of the new digital ecosystems.

These two elements significantly extend the scope of the typical central banking oversight function in an attempt to embrace the link between the new market structure, dominated by the platforms, and the pursuit of the mandate of financial stability and the smooth functioning of the payment system.

In this respect, the approach envisaged by the PISA framework should be kept in mind when defining new methods of control.

The complexity of the new ecosystem suggests, however, that we should do more and that an international discussion should be launched involving all stakeholders – public authorities, academia, suppliers and technology developers – in order to rethink and adapt the rules applicable to the platforms that operate in the financial sector.[9] From this perspective, a useful reference can be found in the experience of standardization of technical solutions and associated implementation practices that is already applied in some areas such as that of payment industry.

This is particularly important in areas where the set of entities potentially involved in the ecosystem is not well defined, so that it is impossible to establish who should and who should not be subject to regulation; in those instances, the definition of standards and practices developed according to public-private cooperation might contribute to fostering a "soft" principles-based regulation, which could help to keep up with a constantly moving technological frontier.

4. European regulation

The challenges posed by both technological innovation and the emergence of new business models, such as crypto-assets or digital platforms, have prompted the European Commission to review the EU regulatory framework so as to facilitate "responsible innovation" for consumers and businesses.

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9 On this point, see F. Bassan, *Digital Platforms and Global Law*, Edward Elgar 2021. [https://openlibrary.org/books/OL33933550M/Digital_Platforms_and_Global_Law]

To this end, in September 2020, the European Commission[10] published the "digital finance package", which introduced a specific regulatory proposal for crypto-assets[11] (the "Market in Crypto-Assets Regulation", or MiCAR). The Commission's objective is to stimulate innovation and competition between financial service providers, reduce the fragmentation of the digital single market, and ensure that the EU rules on financial services are fit for the digital age. This strategy is consistent with the recent release of the final texts of the Digital Markets Act and the Digital Services Act, the two building blocks of future European regulation.

MiCAR is a first important attempt to regulate the phenomenon of crypto-assets and, if possible, to anticipate market developments. This choice is commendable and needs to be supported as MiCAR aims at regulating in a harmonized way the issuance, provision to the public and admission to trading of crypto-assets that are not eligible for classification as financial instruments (and which are therefore not covered by existing EU financial services legislation) and the provision of related services. It is therefore a first step towards establishing a system of rules and controls that fosters good innovation and guarantees market stability and customer protection.

It might be worth recalling that even our own national legislation does not currently provide for specific rules on crypto-asset transactions, with the exception of the anti-money laundering legislation, which introduced specific requirements for crypto-asset service providers, and more recently the provision for exchangers to register into the ledger held by the Italian agents and brokers body (*Organismo agenti e mediatori*).[12] The forthcoming approval of MiCAR will therefore help to reduce regulatory uncertainty and facilitate the orderly development of our domestic crypto-asset market.

Despite all these progress, there are still issues that will require further regulatory action, because their are out of the scope of MICAR. As a matter of fact, at the current stage of the negotiations, no specific rules have been envisaged with regard to decentralized finance and in particular with regard to

1. governance tokens;
2. Decentralised Autonomous Organizations;
3. the cases in which there is no identifiable entity (i.e. issuers, tenderers, crypto-asset service providers) to be regulated;
4. the skills and the role of smart contact programmers and DLT/blockchain developers;

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10 See "Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions on a Digital Finance Strategy for the EU", September 2020.

11 The other three components of the strategy are: 1) the retail payments strategy; 2) the legislative proposal on digital operational resilience (DORA Regulation); 3) the framework for the pilot scheme for market infrastructures allowing the trading and settlement of transactions in financial instruments in the form of crypto-assets.

12 Ministerial Decree of 13 January 2022 published in the *Gazzetta Ufficiale della Repubblica Italiana* (Official Journal of the Italian Republic) on 17 February 2022.

5. unhosted wallets, i.e. software enabling peer-to-peer exchanges between DLT addresses, which can lead to AML and cyber risk issues.

Thus, MiCAR puts in place the first bricks towards the building of a regulation for this new world based on crypto-assets and platforms. However, it still follows an approach based on individuals, activities and products; it addresses only in part the central question of how to regulate the platforms and the arrangements, which are the new entities through which technology binds together different participants and affects both the governance and the profiling of financial products and services. For this reason, it is very important to continue to reflect on how to apply the new regulations in practice.

The perspective of central banks – which traditionally focuses on the whole "scheme" and not just on its single components, and therefore fully includes the technological variable – might help to better understand the phenomena in their entirety so that their monitoring, analysis and control can be more effective.

5. The Bank of Italy's commitment

The days we live in are characterized by a great deal of uncertainty and complexity, but are blessed with many opportunities, particularly when it comes to technological innovation.

The rapid development of DLT/blockchain platforms and applications is a tangible example of how, in finance, the use of new technological solutions can change not only the operating methods of intermediaries but also the market structure itself.

The reshaping of business models and the break-up of value chain production, due to the emergence of new technological solutions, in some cases based on decentralized approaches, require the definition of new risk measurement and control metrics.

Central banks and supervisors can play a key role in ensuring that positive externalities accrue to savers, businesses and governments.

The Bank of Italy is actively involved in this process in several ways.

First, we participate in the international work on crypto-assets and on the regulation of platforms within the standard-setting bodies (Basel Committee, CPMI, FSB, etc.).

Second, we engage a great deal in consumer protection. I would like to mention that since 2015 we have intervened several times, both directly and in cooperation with European and national authorities, to draw the attention of customers and supervised intermediaries to the risks arising from trading and investing in crypto-assets.

Third, with regard to the DLT/blockchain world, we have several main lines of commitment.

We are testing the use of DLT solutions for transaction settlement, in some cases in the context of the Eurosystem's activities. We are supporting the adoption of rules that allow

the market to experiment with the issuance of financial instruments on DLT, pending the entry into force in the EU of the so-called pilot regime.

We constantly interact with both the market and academia to act as a catalyst, for example through the Italian Payment Committee, which is a forum that brings together institutions, intermediaries, technology suppliers, consumers, associations and commercial firms.

As we are aware of how crucial the dialogue with the market is in order to understand, and if possible anticipate, developments in finance technology, we have also set up an integrated chain of innovation facilitators: the Fintech Channel, which is our online go-to point where anyone can interact with us on issues related to financial innovation. We also added the regulatory Sandbox (in coordination with the Ministry of Economy and Finance and alongside IVASS and CONSOB) and the Milan Hub, the Bank of Italy's innovation centre, which aims to support the digital development of our financial industry.

The times we are living in are characterized by the speed of change. Therefore, it seems wise to encourage a reflection on how the entire system – institutions, regulators, market participants – should react to the scenario we are facing.

In closing, I am pleased to share with you here today that, precisely to this end, pending the definition of a complete and harmonized taxonomy and of shared set of rules and standards at the European and international level, the Bank of Italy is reflecting on the possibility of defining a series of reference principles, including on risk management, through which it intends to draw the attention of the various players to the opportunities and problems associated with the use of decentralized technologies in finance and services relating to crypto-assets.

Thank you for your attention.

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