

Quaderni FinTech  
(FinTech papers)

# The development of FinTech

Opportunities and risks for the financial industry in the digital age

*C. Schena, A. Tanda, C. Arlotta, G. Potenza*

## Preface to the series dedicated to FinTech

*Edited by G. D'Agostino and P. Munafò*



**CONSOB**

COMMISSIONE NAZIONALE  
PER LE SOCIETÀ E LA BORSA

1

March 2018

*The Quaderni **FinTech** (**FinTech** Papers) Series  
collects research papers  
on the of 'FinTech' phenomenon in its many aspects,  
in order to promote reflection and  
stimulate debate on issues relating  
to the economy and the regulation  
of the financial system*

***This is a translation of the Italian original.  
In case of discrepancies between this English  
translation and the Italian original,  
the latter shall prevail.***

All rights reserved.  
Reproduction is allowed  
for educational and non-commercial purposes,  
on condition that the source is mentioned.

## **CONSOB**

00198 Roma Italy- Via G.B. Martini, 3

**t** +39.06.84771 switch board

**f** +39.06.8477612

20121 Milan Italy - Via Broletto, 7

**t** +39.02.724201 switch board

**f** +39.02.89010696

**h** [www.consob.it](http://www.consob.it)

**e** [studi\\_analisi@consob.it](mailto:studi_analisi@consob.it)

ISBN 9788894369755

# Preface to the series dedicated to FinTech

Edited by G. D'Agostino and P. Munafò<sup>(\*)</sup>

## 1 Aims and objectives of the project

In September 2016, CONSOB launched an applied research project called '*FinTech: digitalisation of financial intermediation processes*', in collaboration with leading Italian Universities<sup>1</sup>.

The results of the project have been collected in a dedicated series of essays. This first issue provides an overview and general framework of FinTech; the series will then continue with more detailed analysis of more specific aspects, as shown below.

This research starts with questions on the breadth and depth of the changes that the current digital revolution and the application of smart technology can bring to the financial system as a whole and proceeds with the need to understand the related dynamics, challenges, risks and opportunities.

Transformations prompted by the so-called '*digital disruption*' concern all segments of financial intermediation and have a deep impact on the capacity of the current 'law' and related enforcement mechanisms to cope with the new risks (which are not necessarily attributable to the 'economic sphere' only) and the new cases, without hampering innovation.

Furthermore, the speed and multi-dimensionality of current developments seem to be parameters so hard to measure that even the results of a specific analysis only help make assumptions on the evolution of the financial system.

Dynamics and interactions between mutually interdependent variables (internal and external to the financial intermediation sector) – as a matter of

<sup>(\*)</sup> Giuseppe D'Agostino (CONSOB) and Pasquale Munafò (CONSOB) oversaw the general coordination of the FinTech project and the organisation of the editorial plan of publications on research topics investigated in collaboration with the several Italian Universities involved.

The opinions expressed in this Preface are personal to the authors and do not represent the official stance of CONSOB.

<sup>1</sup> In particular, about 70 people including professors and researchers, belonging to 15 Italian Universities, participated in the project.

example: technological developments, strategies of financial intermediaries currently operating in the market, the competitive capacity of FinTech operators, the approach of the so-called Big-Techs, public regulatory policies, the conduct of companies and individuals – are not easily predictable.

Therefore, which forms of organisation and services will be established is still an open question.

Even within the conceptual limits set forth above, the general objectives of research on FinTech may be defined as follows:

- Outline the broad direction of this process of digitalisation of the financial system and the structural changes prompted by competition in intermediaries' business models;
- Highlight the main open issues, with a view to preserving the smooth running of the financial market, preventing risks to investors, but also to safeguarding the innovation capability of operators (and potential new comers);
- Predesign the viable public policy (wide-ranging) actions, where deemed useful.

Specifically, the overall research work intends to (i) identify the most relevant economic and legal profiles arising from multiform and flexible intermediation strategies aimed to 'satisfy' the differentiated needs of individuals and businesses in the vast field of financial services, by virtue of the considerable adaptability of new technologies, and (ii) form ideas that may contribute to the international debate on public policy actions with a view to balancing general purposes and interests at stake<sup>2</sup>.

CONSOB has implemented this project in cooperation with Universities, recognised as cultural institutions whose mission is to approach knowledge in an independent and impartial manner, combining observation of current events and situations with prospective analysis.

The collaboration has involved the sharing of project objectives and its material implementation, as well as the use of different sources as for example: the collection of institutional, academic or research documents produced by market advisory firms, interviews and testimonies from operators part of FinTech and merchant bank representatives and the responses to ad hoc questionnaires distributed among intermediaries specialist in financial advice.<sup>3</sup>

- 2 Specifically, the issue under discussion is how to allow the financial sector to benefit from the introduction of new smart technologies, balancing the need to ensure market integrity/stability and investor protection with that of supporting innovation and encourage new operators and consumers to enter the market.
- 3 The interviews/testimonies carried out at the CONSOB offices in Milan and Rome involved:
  - 23 Italian FinTech operators (lending marketplace, equity crowdfunding, invoice finance, automated advice, payment services, credit rating segments);
  - 4 universal merchant banks and 7 network banks;
  - 3 operators/intermediaries with DLT investments.

The resulting overall work forms part of a wider research that has recently benefited from the contribution of other Italian institutions.<sup>4</sup>

## 2 The strategic and institutional scenario of reference

The relationship between technological innovation and financial intermediation is being explored – from different perspectives – in numerous public and private international forums, in consideration of the current impact of technological transformation on the financial system on an international scale<sup>5</sup>.

Indeed, technology-driven changes to financial services markets have a much deeper and broader political and strategic scope than merely redesign the traditional components of financial system as we know them today (primarily financial markets and intermediaries). These developments must be considered in the framework of a more general process of digitalisation of the economy prompted by the combined effect of (i) an extensive and profound use of Information and Communication Technology (ICT), (ii) new social behaviour and (iii) the spread of business models based on digital marketing. All these factors are giving rise to a swirling mass of information and knowledge and an unprecedented strengthening of the globalisation process.

Many studies show that digital technological innovation is deeply changing the structural characteristics of modern economic systems, encouraging integration between different industrial sectors, opening up new markets, expanding existing ones and radically transforming business models and the organisation of company

4 See Commissione Finanze della Camera dei Deputati (November 2017), *"Indagine conoscitiva sul FinTech"*, a survey based on a long series of hearings involving experts in the sector, scholars and representatives of Supervisory Authorities; Bank of Italy (December 2017), *"FinTech in Italia"*, focused on a questionnaire aimed at detecting the adoption of technological innovations applied to financial services.

5 Merely by way of example, the following is a sample of the documents published by international and European institutions in the last two years, on the subject in question:

Financial Stability Board (FSB): Artificial intelligence and machine learning in financial services. Market developments and financial stability implications, (November 2017); Financial Stability Implications from FinTech, (June 2017); FSB and BIS-CGFs: FinTech credit. Market structure, business models and financial stability implications, (May 2017); International Monetary Fund: IMF Staff Discussion Note, FinTech and Financial Services: Initial Considerations, (June 2017); IOSCO: Research Report on Financial Technologies (FinTech), (February 2017); Final Report Update to the Report on the IOSCO Automated Advice Tools Survey (December 2016); IOSCO Report on the IOSCO Social Media and automation of Advice Tools Surveys, (July 2014), IOSCOPD445 Bank of International Settlements (BIS): Sound Practices: Implications of FinTech Developments for Banks and Bank Supervisors, (February 2018); BIS (Committee on Payments and Market Infrastructures): Report on Distributed ledger technology in payment, clearing and settlement – An analytical framework, (February 2017), D157; WFE-IOSCO (AMCC): Financial Market Infrastructures and Distributed Ledger Technology (Survey), (August 2016); European Parliament: ECON Draft Report on FinTech: the influence of technology on the future of the financial sector – 2016/2243(INI) (January 2017); European Commission: FinTech: a more competitive and innovative European financial sector, Consultation Document (February 2017); the ECB: Consultation Draft on Guide to assessments of FinTech credit institution license applications, (September 2017); Occasional Paper on Distributed ledger technologies in securities post-trading Revolution or evolution?, (April 22, 2016); ESMA: Discussion Paper on the Distributed Ledger Technology Applied to Securities Markets (January 2017); EBA: Discussion paper on the EBA's approach to financial technology (FinTech), (August 2017).

work. However, it is also leading to changes in social behaviour and lifestyles<sup>6</sup>, which are not always based on conscious and reasoned choices (indeed, the risk of passive adaptation and acting through imitation and conformation remains high).

Thus, we are witnessing innovations that are affecting economic, financial and social relations as a whole, which are all characterised by the same digital nature, giving rise to a new ecosystem in which individuals, businesses and private organisations can communicate, share information and knowledge and perform commercial transactions easily, quickly and at extremely low costs<sup>7</sup>.

The digitalisation of economic and social relations (in the broadest sense) is favouring the development of 'environmental conditions' in which technology can create, shape, connect and coordinate a variety of services - previously segmented - for information and operational purposes and without limits of space and time, thus considerably expanding the scope of action of individuals and small enterprises and also enabling access to markets for previously overlooked or completely excluded individuals.

The driving force of economy's digital transformation is the rapid development of online service platforms that provide easy communication and access for consumers/users and enterprises to goods and services markets. The use of increasingly powerful and flexible infrastructural resources (Internet, telematic networks, Big Data, digital security systems) and the rising capacity of the research, processing, storage and secured transmission of information (Big Data analytics, machine learning, artificial intelligence, cloud-computing, Distributed Ledger Technology, etc.) are paving the way for a bright future of the so-called (*Data Platform Economy*) through its wide dissemination.

In particular, acquisition of an enormous mass of detailed data, generated and disseminated by a multiplicity of tools and sources<sup>8</sup>, combined with the ability to analyse them, is used to generate knowledge on social preferences, individual consumption patterns, business activities and more, which form the basis of how the digital economy works<sup>9</sup>.

6 The OECD has produced many studies and research on the topic of digitalisation of the economy, among which we mention: OECD (2017), *Key-issues for Digital Transformation in the G20*; OECD (2016), *Stimulating Digital Innovation for Growth and Inclusiveness*, (OECD Digital Economy Papers n°256/2016); OECD (2016), *The Internet of Things*, (OECD Digital Economy Papers n° 252/2016); OECD (2015), *Data-Driven Innovation – Big Data for Growth and Well-Being*, OECD Publishing, Paris.

7 The diffusion of e-Government modes extends digital relations to public institutions and public administration.

8 With reference to the techniques for tracking websites, individual consumer behaviour online, social networks (social media, blogs, discussion forums). also operated by sensors (so-called "machine-generated data") and more. The topic raises numerous sensitive issues of data protection, privacy and the correct use of information by big data "managers", even in relation to properly competitive profiles.

9 See the European Commission, "*Building a European Data Economy*", COM(2017) no. 9 final of January 10, 2017, Staff Working Document on "*Free Flow of Data and Emerging Issues of the European Economy Data*", SWD(2017) 2 final of January 10, 2017.

From that perspective, a fundamental component of the European strategic scenario for FinTech is the one outlined by the European Commission within the policy document named 'Strategy for the Digital Single Market in Europe' of May 2015.<sup>10</sup>

This official paper sets out a 'framework programme' of legislative initiatives, possible guidelines and other measures needed to develop Europe's digital economy, which is increasingly driven by data and information management and processing, with the aim at promoting the conditions for overall growth and competitiveness, ensuring that businesses and individuals can fully benefit from digitalisation.

This strategic approach is also relevant to the design of financial industry service models in light of ongoing changes to user expectations, preferences and behaviour.

A second milestone is provided by the implementation of the '*Action plan for the creation of the Capital Markets Union*' published in September 2015<sup>11</sup> and accompanied by a specific FinTech Action Plan.<sup>12</sup> The Action Plan had the purpose of (i) allowing companies with innovative financial activity models to operate in any European Union jurisdictions on the basis of a single licence (in particular, the main regulation proposal concerns online crowdfunding platforms for financing in the form of loans or capital for start-ups or small-sized enterprises), (ii) encouraging the introduction of new technology to financial services, and (iii) increasing the technological and information security (cyber security) of the financial system.

Through it the European Commission expressed the intention to adopt an open approach to FinTech, also in view of the expansion and integration of capital markets in the European Union.

10 See the European Commission Communication COM(2015) 192 final of May 6, 2015 (later revised by the Communication COM(2017) 228 final of May 10, 2017). The Digital Single Market Strategy has three macro-objectives: 1) improve access to digital goods and services for consumers and businesses; 2) create a favourable environment and equal conditions for digital networks and innovative services to flourish; 3) maximise the growth potential of the digital economy.

11 See the European Commission Communication COM(2015) 468 final of September 30, 2015 (later revised by the Communication COM(2017) 292 final of June 8, 2017). The implementation of the Action Plan on the so-called *Capital Markets Union* (CMU) is aimed at creating a more robust and integrated financial system at the European Union level through the implementation of regulatory measures aimed at: (i) facilitating venture capital investments in start-ups and developing companies; (ii) encouraging cross-border financial investment; and (iii) facilitating SMEs' access to equity and bond markets. The CMU plan, together with the completion of the Banking Union and the Action Plan for the integration of retail financial services markets, is an integral part of the Financial Union project outlined in the Five Presidents' Report on the Plan to Strengthen Europe's Economic and Monetary Union (June 2015).

12 With reference is to the European Commission Communication COM(2018) 109/2 of March 8, 2018, "*FinTech Action plan: for a more competitive and innovative European financial sector*".

### 3 FinTech and the digital economy

FinTech stakes roots and develops within the more general framework of digitalisation of the economy. FinTech is part of this new ecosystem in which the spread of innovative technologies and the digital organisation of production, as well as the speed of information flows and the easy transmission of knowledge, trigger a process of continuous learning through the experimentation of new services by new operators, based on dynamic relationships between traditional financial intermediaries, businesses, institutions, academia, individuals and other organisations.

The term FinTech comes from the crasis of the words 'finance' and 'technology' and may be broadly translated as 'technology applied to finance'. Actually, this term does not have a clearly defined operational meaning<sup>13</sup>, mainly because FinTech is a cross-sector phenomenon. Moreover, investments in technology and knowledge (including through the use of artificial intelligence) enable the fast and cost-effective rewriting of operating methods to (i) make traditional financial activities (e.g. within payment services, investment services, asset management, banking, credit or insurance activities or financial market infrastructures) more profitable, as well as (ii) design new services and new business models (e.g. enabling the creation of web-based applications for automated advice, digital business financing platforms, through both peer-to-peer and in-portfolio investment of digitalised credit, invoice financing, equity crowdfunding, or platforms for collateral management, etc.), with a significant impact on market structures and financial institutions.

As a result, the notion of FinTech more specifically refers to a wide range of innovations – found in the financial field in its broadest sense – that are made possible by the use of new technologies (i) in the offering of services to end users and in the internal 'production processes' of financial operators, as well as (ii) in the design of financial marketplaces, without prejudice to possible new configurations of cross-sectoral activities.<sup>14</sup>

The topic of Distributed Ledger Technology (DLT) deserves a separate discussion.<sup>15</sup> Recognised as one of FinTech's most 'distinctive' technologies – together with artificial intelligence, cloud computing and big data – its large-scale application in financial markets could only be a matter of time. Because of its distinctive features, DLT is associated with the possibility of achieving a significant increase in

13 " 'FinTech' is an umbrella term encompassing a wide variety of business models" in ECB, Guide to Assessments of FinTech Credit Institution Licence Applications, (Sept. 2017 below);

14 In the introduction of the abovementioned FinTech Action Plan (p. 2) it is correctly stated that " *FinTech sits at the crossroads of financial services and the digital single market*".

15 In the aforementioned FinTech Action Plan (COM(2018) 109) it is highlighted that the European Commission is working towards a global strategy on the applicability of the Distributed Ledger Technology (DLT) for all sectors of the economy. The DLTs are decentralised systems of shared digital registers, based on Blockchain technology, which ensure, through cryptography, security in virtual asset transactions carried out on a peer-to-peer network (from node to node) and the non-transferability of the related registrations.



operating efficiency, thanks to the reduction - if not elimination - of steps and interventions along the securities trade life-cycle. For this reason, DLT, integrated with the use of the so-called 'smart contracts' could end up competing with the traditional mechanisms of operation of financial markets and become the 'new infrastructure' of financial instruments' world: from limited use to specific post-trading activities (clearing and settlement, in the first instance) - more intrinsically linked to the registration and data-base functions inherent to DLT- to a more general use throughout the entire life cycle, starting from securities' issuance.<sup>16</sup>

For the above-mentioned reasons, FinTech's innovations are likely to render obsolete the traditional economic and legal categories/cases and the approaches followed so far for the application of the underlying rules.

This means that FinTech appears to represent what is known as 'technologically enabled financial innovation'<sup>17</sup> rather than being a pre-defined 'industrial' sector. By means of a grammatical metaphor, we could say that it is an adjective rather than a noun.

We are therefore facing a new way of thinking about problems and their solutions in an increasingly complex world. FinTech is a cultural phenomenon, more than a technological one. It may be attributable to the philosophy of simplification from a user perspective. Indeed, FinTech strives for being "technology to make life easier" applied to financial services.

In Europe, FinTech was born and is developing to become an integral part of the dynamics of structural changes in the economy towards the digitalisation of trade and (economic and social) relations and the intensive use of data. This strengthens existing trends and, at the same time, generates independent drives of transformation and actions on the 'value chain' of the financial industry.

Drawing on the logic of the digital economy and the concept of open innovation, FinTech helps to design an accessible, ongoing network of modular services for businesses, individuals and banking, financial and insurance intermediaries and, so doing, it is deemed to be a powerful force to accelerate integration policies for financial services markets in the EU.

FinTech's approach is intrinsically modular, benefiting from the considerable reduction in the costs of production, research, organisational coordination and transaction charges. In this regards, the use of technology and algorithms to design services is one of the key elements, in a scenario of progressive elimination of material and operational barriers to undertake new initiatives. Activities and services in the financial sector, previously attributable to a sole intermediary, can be now

16 The wide diffusion of the *Initial Coin Offerings* (ICOs) in 2017, regardless of specific comments on the purpose and characteristics of such operations, denotes the relative simplicity and flexibility of use of the DLT in various fields of securities-(trade)-life-cycle.

17 See p. 2 of the Financial Stability Board and Bank of International Settlements Report (CGFS) on "*FinTech Credit. Market Structure, Business Models and Financial Stability Implications*", (May 22, 2017).

individual fields of experimentation and competition by new specialised operators. These latter make established financial services more efficient by unblinding and redesigning them, introducing innovative services for different users by meeting the demands of consumers and businesses that are still in the making, and open up new channels of intermediation.

This leads to a push towards the micro-segmentation of the target markets and the offer of tailored services to the public, through an extensive use (and sometimes abuse) of data collected - to achieve the detailed profiling of potential customers - and by virtue of unprecedented operational flexibility ensured by digital technology.

In this context, leading players in the digital field (in particular Big Tech companies such as Apple, Amazon, Microsoft, Google, Alibaba and Facebook), able to dominate their reference markets thanks to the management of relational and commercial "Big Data", represent a serious 'threat' to the (not always linear) competitive dynamics of the financial sector. Indeed, the Big-Techs are in a position to provide financial services directly to their users/customers or to provide FinTech companies with digital marketing mechanisms, inclusive of the benefit of brand reputation, through the creation of dedicated online platforms.

As a result, the structure of the financial services industry is expected to change dramatically and quickly<sup>18</sup>, going beyond the usual distinction between sectors (financial, banking and insurance).

Indeed, given that most of the activities carried out by traditional intermediaries can be digitally reproduced in a very easy way, financial markets could experience a process of supply decentralisation led by a number of specialized, highly-innovative FinTech operators. Big-Techs interested in providing integrated service platforms could act as the missing link of this process, thanks to their attractive power and centripetal force, contributing to the breakdown of the financial intermediation value chain (and, thus, towards disintermediation).

The intermediary-customer relationship changes radically when financial services are provided via digital channels and become an important point of comparison between the service models offered by intermediaries already present on the market (incumbents), FinTech operators and leading TechFin entities. Nevertheless, the 'complexity' of this relationship is likely to slow the orientation of the user-investor to choices that are based solely on the quality and efficiency of transactions.

Obviously, the direction and intensity of the competitive dynamics of financial services market will also be the result of strategies put in place by

<sup>18</sup> In a data driven digital economy, the expansion of specialist businesses is favoured by the reduction of transaction costs (research, negotiation and coordination), due to the strong compression of many market frictions through the intervention of digital mechanisms for the guidance and coordination of transactions (such as online platforms).

incumbents and regulatory policies implemented at European level. Among the latter, this concerns not only the Capital Markets Union project (in general) and FinTech (in particular), but also other topics related to technological innovation (e.g. the application of Blockchain or DLT in different fields, previously only used in relation to cryptocurrency); competition policy; digital service consumer/user protection; privacy issues in view of the increasingly intensive (and often improper) use of Big Data; the control of the correct use of information by online platforms (which are real pivot-companies for the reference markets), economic and financial inclusion issues and other relevant issues (cyber security, digital identity, management of non-personal data)<sup>19</sup>.

"How to regulate" (e.g. by extending the current European legal framework according to an activity-based approach) and "what" (in terms of objectives) remain key topics of the European debate on FinTech, also in light of its protean nature and close interdependence with the digital economy *tout court*<sup>20</sup>.

In this context, it is highly likely that the new financial services based on the extensive use of technology may fall outside the current framework of activity-based European regulation, with the risk that they will continue to be regulated at the level of each individual Member State.

The danger of regulatory fragmentation is well known to the European institutions, which aim to promote the creation of a level playing-field for the EU financial sector and to enhance process and service innovation, including through experimentation spaces for FinTech businesses (i.e. innovation hubs, incubators and/or regulatory sandboxes).

The approach that will be followed in Europe is therefore crucial to achieving the objectives outlined above, taking account of the fact that technological innovation is much faster than the regulators' ability to introduce appropriate, effective standards.

The authors of the different essays in this series have reasoned and expressed their opinions on the questions described here briefly and the subject of extensive debate among market operators, in academia and in international institutions.

19 For an extended discussion of possible competitive scenarios for banks in a world characterised by the fast spread of financial technology, see above. BANK OF INTERNATIONAL SETTLEMENTS-BCBS: *Sound Practices: Implications of FinTech Developments for Banks and Bank Supervisors*, (February 2018).

20 The European institutions have undertaken to assess the adequacy of the current regulatory framework in regulating the multiple FinTech configurations.

## 4 The research plan structure

This CONSOB series, organised on multiple logical and thematic levels<sup>21</sup>, collects various contributions to research on Fintech.

The paper *"The development of FinTech: Opportunities and Risks for the Financial Industry in the Digital Age"* provides the general framework outlining the main FinTech classification criteria used in the economic literature and in documents from the main international public fora; it also provides details on the different business models adopted by FinTech companies, with a description of the types of risk and their degree of operational affinity with respect to traditional financial intermediation activities. The paper outlines a number of guidelines stemming from the European debate on regulation and is completed by a preliminary examination of the strategic choices that financial intermediaries (primarily banks) are making in this new competitive scenario.

The second paper, *"Fintech and the Problems of Legal Framework"* (which collects contributions from three distinct research groups), emphasises important legal aspects within the context of the general provision of digital services. It focuses on several aspects, starting from an approach that touches on jurisdictional elements in the sector regulation: issues relating to the application of EU law (GDPR), the free cross-border movement of data and information and the security of their processing, alongside the regulations found in the new EU Payment Services Directive (PSD2), the EU Anti-Money Laundering Directive (AMLD4) and the EU Network and Information Systems Security Directive (NISD), in addition to significant legal issues on Big Data (data ownership, access and liability for damages in case of poor data quality), which emphasizes a general e-privacy problem (which can lead to a serious breach of the privacy of individuals-users using financial services). The paper ends with the analysis of certain criminal aspects of the digitalisation of the economy (and finance), such as the protection under criminal law of digital identity, privacy offences, (the risks of) illegal FinTech activity in the presence of regulation that introduces a reservation of law in favour of entities qualified for specific activities.

The research plan also envisaged the discussion of five specific 'operational issues' in separate documents of the Series:

- the first issue relates to automated advice and will be developed within three distinct contributions by different research groups. In particular, research on *"The digitalisation of financial investment advice"* will examine the different robo-advice service models offered in Italy by both new independent firms or companies of banking origin and directly by merchant banks, in order to grasp the characteristics of the phenomenon and its evolutionary prospects. It will also focus on the application of the regulatory framework of reference to this new mode of service supply. The contribution *"Robo-advice, risk perception and trust: experimental evidence"* will illustrate the results of a laboratory experiment to

<sup>21</sup> The list shown in the paragraph does not correspond to the temporal order of publication of individual contributions.

explore the impact that the digital channel may have on the perception of financial risk and propensity to invest by following the advice received, also in light of the most relevant behavioural biases in the interaction between an individual and an on-line platform. The final contribution, entitled '*The evolution of robo-advice from relationship to algorithm: a qualitative survey*', will examine whether the provision of advisory services through a digital channel can help to increase the propensity of retail investors to use the support of an expert in their investment decisions;

- a second research topic focused on online lending platforms for consumers and businesses ('*Marketplace Lending: towards new forms of financial intermediation?*') aims firstly to describe the multiple microstructural configurations of lending mechanisms implemented via digital platforms that use innovative enabling technologies for information processes and credit risk analysis. These digital intermediation channels weaken the boundaries with both bank credit and the market for debt securities issued by SMEs, thus pre-designing the possible rethinking of consolidated theoretical systems and the related regulatory frameworks (for investor protection, payment services, investment services, etc.), with a view to cross-cutting regulation and in line with a risk-based approach;
- a third study on equity crowdfunding platforms. '*Equity-based Crowdfunding: operational and regulatory aspects*' shows the results of the comparative analysis of existing domestic regulatory regimes in Europe, highlighting a complex and uneven legal framework, which hampers the growth in size of this type of activity to channel venture capital towards start-up businesses. The study reveals a marked diversity of models in the offer of equity crowdfunding platforms, limitations in the financial instruments that can be subscribed to and the lack of consolidated disinvestment mechanisms;
- the fourth topic is the use of Distributed Ledger Technology in trading financial instruments ('*DLT and Securities Markets*'), with specific regard to the operational and legal aspects in comparison to the regulated post-trading infrastructures;
- finally, the fifth study looks at the role of Financial Data Aggregators ('*Financial Data Aggregation and Account Information Services*') in the retail financial services market, in light of the provision included in the EU PSD II on the consolidation of information concerning personal current accounts held with multiple intermediaries at the request of a customer.

To complete the plan, the research includes a contribution ("*FinTech: the international debate on regulation and the measures taken*"), aimed at providing, in its first part, an organic representation of the main issues for discussion on FinTech in international public forums and, in its second part, the comparative analysis of the main regulatory or organisational measures taken in support of the experimentation and innovative development of FinTech companies.

Finally, the study "*FinTech and Financial Inclusion*" investigates the issue of financial inclusion/exclusion of people/businesses from the world of digital services, starting with a general overview of financial inclusion in direct correlation with online channel access data, with analysis of the most frequent behavioural traps for digital users. It also addresses key investor protection profiles and provides an overview of the "new frontiers" of digital scams.

## 5 Conclusions

FinTech is recognised as an increasingly important driver of simplification, efficiency and transformation of the financial ecosystem and, therefore, should be considered as a strategic asset to be preserved within a renewed policy for innovation.

Our entire set of knowledge, rules, economic behaviour and consolidated operational practices needs to be reread accordingly.

The rising impact and widespread application of digital technology and artificial intelligence requires increasing awareness and capabilities as well as flexible and adaptive behaviour from all players involved (non-bank financial intermediaries, merchant banks, market infrastructure operators, other entities of the financial system and even the supervisory authorities).

The research that CONSOB is set to publish in this special Series dedicated to FinTech - thanks to the fundamental work of the Universities and related teams that drafted the various essays - is intended to be an intellectual contribution to promote an innovation policy as a driver of economic and social development, in compliance with the general principles of market integrity and investor protection. Indeed, it is up to the institutions to safeguard the value system of an open economy for the benefit of society as a whole.

# The development of FinTech

Opportunities and risks for the financial industry in the digital age

*C. Schena\**, *A. Tanda\*\**, *C. Arlotta\*\*\**, *G. Potenza\*\*\*\**

## Summary of the work

The research analyses the operation of FinTech companies, highlighting the benefits and risks that their development generates in terms of competitive stimulus within the financial system and streamlining its operating mechanisms, broadening the accessibility of financial services for customers and improving the satisfaction of their financial needs, the correct and efficient allocation of financial resources to the benefit of economic growth, as well as the correct and transparent management of information and risks linked to financial services, especially when directed at retail investors.

First of all, the work qualifies the type of FinTech companies, clarifying the fact that they are a fully-fledged new component of the financial industry, since they perform financial activities using innovative technological solutions. FinTech, therefore, is a phenomenon that is developing within the financial services industry, in the wake of the more general process of creation of the digital economy.

In particular, the work highlights the product and process innovations introduced by these new financial operators, as well as the extensive areas of overlap or affinity identified on the operating plane for intermediation performed by traditional intermediaries and financial

\* Cristiana Schena, Professor of Economics of Financial Intermediaries, University of Insubria, [cristiana.schena@uninsubria.it](mailto:cristiana.schena@uninsubria.it)

\*\* Alessandra Tanda, Research fellow, University of Genoa, [alessandra.tanda@unige.it](mailto:alessandra.tanda@unige.it)

\*\*\* Carlo Arlotta, Lecturer, University of Insubria and Consilia B.M Partner, [carlo.arlotta@uninsubria.it](mailto:carlo.arlotta@uninsubria.it)

\*\*\*\* Gianluca Potenza, Senior Manager of Consilia B.M., [gianluca.potenza@consiliabm.com](mailto:gianluca.potenza@consiliabm.com)

The authors would like to thank Giuseppe D'Agostino, Rossella Locatelli and Pasquale Munafò for their useful comments on previous versions of this paper. We also thank FinTech companies and bank representatives for the interviews conducted with CONSOB in the first half of 2017. Any error or inaccuracy is ascribable to the authors only.

The opinions expressed in this issue of *Quaderni FinTech (FinTech papers)* are those of the authors alone and do not involve in any way the liability of CONSOB. Therefore, in citing this work, it is incorrect to attribute the opinions expressed to CONSOB or its Top Management.

markets subject to supervisory rules. In addition, the analysis reveals the different business models adopted by FinTech companies, through the development of direct and indirect digitalised financial intermediation channels. Particular attention is also paid to the examination of risks linked to FinTech operation, as well as the critical aspects that may be identified with regard to both the management of the services offered and the fairness and transparency towards customers.

Overall, this paper makes a series of considerations that contribute to the on-going international debate on the opportunities and methods of regulating FinTech and that support the definition of a regulatory architecture that is more activity-based than today's more prevalent entity-based structure, which is not sufficient to ensure, on the one hand, neutral rules for the technological solutions adopted by individual financial operators and, on the other, equal protection for customers.

The regulatory decisions that are to be made may have as yet unpredictable effects on the development of market shares and the range of offering of new operators, on the degree of competitiveness of the financial industry and on its evolution in the different countries.

However, considering that the digitalisation of financial activities is an incontrovertible process and a structural feature of the new financial industry, the final part of the paper highlights the strategic choices that financial intermediaries (namely banks) are making in this changed market scenario.



# The development of FinTech

Opportunities and risks for the financial industry in the digital age

*C. Schena, A. Tanda, C. Arlotta, G. Potenza*

## Abstract

FinTech is a new part of the financial industry that is radically innovating the way financial services are built and offered. In this paper, we analyse FinTech characteristics, their activities and related risks, highlighting analogies and differences in the activities performed by the financial intermediaries and the financial markets that are subject to specific regulation. In general, the study underlines the opportunity to pursue an effective balance between the urge to stimulate innovation and competition in the financial markets to bring benefits to the customers, on the one hand, and the need to ensure market stability both at micro and macro-level, transparency and fairness towards customers, as well as the prevention of unlawful activities, on the other hand.

Additionally, the paper provides an overview of the main strategies that incumbents are following in the new market conditions.

JEL Classification: G29 Financial Institutions and Services – other; G28 Government Policy and Regulation.

Keywords: FinTech, digitalisation, innovation, financial industry, incumbents, business model, marketplace, financial services, lending, crowdfunding, payment services, risks, fairness and transparency towards customers, financial stability.

# Contents

1 Objectives and structure of the research	5
2 FinTech: definition and lines of development	8
3 FinTech activities and risks	16
3.1 The map of activities: financial intermediation services and instrumental activities	18
3.2 Taxonomy of risks	43
4 Considerations on possible legislative review based on a balance of interests	66
4.1 "Whether" to regulate	67
4.2 "How" to regulate	71
4.3 Actions of the Supervisory Authorities in the national context	76
5 The impact of technological development on the strategic choices of incumbents	79
5.1 Perspective scenarios for the evolution of the financial system	80
5.2 External factors	82
5.3 Possible strategic choices and internal influences	85
5.4 The empirical evidence	88
6 Conclusions and research opportunities	95
References	101

## 1 Objectives and structure of the research

The rapid and significant technological developments witnessed in recent years are widely regarded as the engine of the fourth industrial revolution that is behind the creation of the digital economy. This powerful innovative process, with its significant impact on production and distribution processes, is radically changing social and economic relationships and gives rise to the need to rethink the traditional business models adopted in the various industries.

With specific reference to the financial sector, the application of new digital technologies has led to the development of companies called "FinTech companies", which provide financial services that were previously only offered by financial intermediaries subject to specific regulation.

As revealed by the numerous surveys undertaken in academic, operational and institutional fields, the debate surrounding this topic is broad and inconclusive, which is understandable, given that it refers to a phenomenon that is currently in progress and whose boundaries are still sufficiently blurred, in view of its high degree of innovation and the speed of its global evolution. The multiple areas of focus of the analysis investigate the impact that FinTech is generating on the operational content of financial activities and on the methods of offering financial services to customers, as well as the effects of the competitive positioning of FinTech companies on restructuring the financial industry and the long-term effects of this phenomenon, not only on financial processes but also on the economic system.

This also leads to regulatory considerations aimed at understanding the FinTech regulatory opportunities and methods, as well as investigating the degree of completeness and extensibility to these operators of the rules and regulations currently applied to the traditional financial sector, i.e. to supervised intermediaries and financial markets.

To date, the prevailing choice at international level has been to provide for a more favourable regulatory framework for FinTech, in view of a series of factors which, however, are not unequivocally shared; these include, notably: the marginality of market shares and the small size of these operators; the lack of knowledge about their operational characteristics and the consequent difficulty in defining an adequate regulatory framework; the desire to stimulate competition within the financial sector, multiplying service access channels and favouring conditions of operational efficiency to the benefit of customers.

Moreover, at the research level, the development of digitalisation and FinTech raises questions, some of which are still open, that make it necessary to examine the validity and topicality, on the one hand, of the financial intermediation theory that forms the basis for justifying the existence of financial intermediaries, and, on the other, the objectives pursued to date by the architecture of the supervisory rules and regulations in terms of investor protection, the financial soundness and efficiency of financial intermediaries and markets and systemic stability.

Starting from this evidence and in line with wishes of the FSB (2017) that calls for the development of a line of research to understand how the structure of the market and the business models of the FinTechs and supervised financial intermediaries (the so-called incumbents) are changing, the main objective of this paper is to achieve more in-depth knowledge of these new methods of offering financial services, as well as the benefits and risks generated by the development of this phenomenon. In this regard, the analysis focuses on five main topics:

- a) discussion on the definition of FinTech company;
- b) the distinctive characteristics of FinTech company production and distribution processes;
- c) the risks emerging from such activities and their impacts on the various parties (FinTech companies, customers, etc.);
- d) the degree of affinity or differentiation between services offered by these companies and supervised intermediaries and financial markets;
- e) The strategies used by incumbents in response to competitive pressures generated by the increasing customer digitalisation and the innovative and competitive solutions adopted by FinTech companies within the scope of the different possible market scenarios.

More in particular, a first objective pursued in this study is to clarify the nature of FinTech companies (paragraph 2); this aspect was considered preliminary to the operational analysis because of the misleading nature of the definition widely used today that leads to include in this category all companies that develop activities based on new information and digital technologies applicable in finance; in fact, this means that the term "FinTech" is often used to identify generically companies that offer extremely diverse types of service, not all of which are strictly financial.

The third section of the paper (paragraph 3) focuses on the activities carried out by FinTech companies and the associated risks. The main two issues on this topic are the following.

With reference to the activities (paragraph 3.1), we offer an original mapping as compared to what is currently available in the literature. We first divided the different types of new operators into two main categories, in order to separate FinTech and TechFin companies, which essentially offer strictly financial services, from Tech companies, which instead develop IT products and services for other industries. In addition the financial intermediation activities were divided into four different business areas (equity and debt financing, investment services, payment services, insurance services). This allows us to include and compare the services offered by FinTechs (and TechFins) and the incumbents. In order to investigate the operational features, we mainly referred to activities carried out by FinTechs operating in Italy (gradually surveyed during 2017 and updated as far as the beginning of March 2018), also clarifying the specificities of the regulatory choices made nationally as compared to that observed abroad.

With regard to risks (paragraph 3.2), a broad taxonomy is taken into consideration, which combines the typical risks connected to the general features of financial intermediation with those specifically connected with digitalisation and the use of telematic channels in the production and distribution of financial services. On this basis, an accurate assessment is made of the parties affected by the risks emerging from the financial services offered by FinTech companies, including in comparison with those of supervised intermediaries and financial markets. This original perspective has not previously been examined in sufficient depth in the previous studies available on the risks of FinTech.

The analysis is conducted on the specific characteristics of FinTech companies, the areas of financial innovation and the areas of operational overlap with supervised financial intermediaries and markets: it both examines in detail the operational and management aspects and, most importantly, reveals that FinTech can no longer be considered a niche or marginal phenomenon and that the operations of these companies might call for a revision of the exemption of FinTechs from the rules generally applied to financial activities carried out by supervised entities, especially in light of the problems that have arisen in terms of fairness and transparency towards customers, as well as the stability of individual operators and of the financial system as a whole. At the same time, it is clear that the digitalisation of financial activities is an indisputable process and a structural factor of the new financial industry that can have beneficial effects on the economic system, which should also be fully internalised and employed by the incumbents.

For these reasons, it is interesting to summarise the analysis of the criticalities and risks arising from the development of this new component of the financial system that is not fully and organically regulated. We also offer some food for thought on the advisability of more effectively pursuing the necessary balance between the interest in stimulating innovation and competition within the financial system for the benefit of customers and, on the other hand, the objectives of micro and macro-economic stability, fairness and transparency towards customers and the prevention of unlawful acts (paragraph 4). The analysis of the regulatory framework and the opportunity for regulation are discussed in light of the guidelines outlined at European and international level and that find in the recent Communication from the European Commission (2018b) another important piece of the puzzle for the qualification and enhancement of the financial system's digital development.

Moreover, aware that the speed and intensity of the development of this phenomenon are clearly greater than the time required for the rethinking of the regulatory framework for the financial sector, it is also important to assess if and how the regulated financial intermediaries – primarily banks – are reacting in the new and more competitive market scenario. Therefore, in the last part of the study (paragraph 5), having considered the possible market scenarios defined in the recent report on FinTech by the Basel Committee (BIS-BCBS, 2018), we discuss the main strategies adopted by the incumbents for redesigning business models to avoid the risk of being crowded out operationally. Furthermore, with specific reference to the Italian financial system, we highlight the external and internal factors that may

affect the timing and effectiveness of the implementation of these action plans and provide the information currently available on what has been achieved by banks.

The analysis concludes by highlighting the results achieved by this study and indicating some areas of research worthy of future investigation (paragraph 6).

## 2 FinTech: definition and lines of development

The application of technological innovation within the financial sector is not new in itself, but in recent years, we have witnessed an increasingly intense and rapid diffusion of technological innovations to financial intermediation products and processes (Arner et al., 2016).

Technological innovation is considered by many as a disruptive to the traditional financial industry, given that the acceleration in the development of new technologies constitutes a strong element of discontinuity. Indeed, it can, on the one hand, erode the traditional entry barriers generated by the availability of (confidential) information and the capacity of banks – and, more generally, supervised financial intermediaries – to make substantial investments in Information and Communication Technology (ICT)<sup>1</sup>; on the other hand, it can significantly change the relationship between customers and operators offering financial services (Locatelli et al., 2017).

In this context, the development of FinTech, based on new structuring methods and/or providing and distributing financial services, has found its place and is exerting increasingly intense competitive pressure on the regulated financial system.

Academic studies and analysis carried out by supranational institutions have provided progressive clarification of the phenomenon in terms of definition and operation, contributing to the debate – still very much alive and open – on regulatory decisions.

However, the definition of FinTech, even today, is neither unique nor widely shared, as emerges from the plurality of meanings used to qualify it. In common terminology, this term refers indistinctly to a group of companies united by the development of activities based on new information and digital technologies, which are applied in the financial sphere. This means that FinTech includes companies that offer a wide variety of different services: only some of these companies actually offer financial intermediation services (exclusively or in addition to other activities), whereas other companies only offer services that are functional or instrumental to financial intermediation.

1 Sannucci (2016) points out that technological innovation has led to: a drastic reduction in the cost of automatic data processing; the possibility to transmit huge amount of data through the Internet network securely, without having to use expensive dedicated networks; the availability and usability of an ever-increasing quantity of information, the so-called "big data".

We therefore consider it appropriate to provide preliminary clarification on the nature and origin of these companies, since a more precise definition is useful to better classify the type of FinTech operators for the purposes of both operational analysis and determining how supervisors should approach this phenomenon<sup>2</sup>.

An initial definition is provided by Arner et al. (2016), who highlight that *"FinTech refers to the application of technology to finance"*, underlining that nowadays, unregulated entities use technology to provide financial solutions that in the past were only offered by regulated financial intermediaries<sup>3</sup>.

The definition of the FSB (2017) is more precise: *"FinTech is defined as technology-enabled innovation in financial services that could result in new business models, applications, processes or products with an associated material effect on the provision of financial services"*.

In this perspective, FinTech is a "horizontal" phenomenon within the financial services sector that is developing within the broader framework of the digital economy.

FinTech companies, therefore, do not represent a "new industry", but instead constitute a new component of the financial industry that questions the business models traditionally adopted by the so-called incumbents, i.e. financial intermediaries subject to supervision<sup>4</sup>. These companies, in fact, address their customers by leveraging process or product innovations or, again, new channels and distribution methods, multiplying the (telematic/virtual) markets on which it is possible to match the demand and supply of financial services. Thus they are classified as financial operators in competition with the incumbents.

A distinction should however be made between FinTech (Financial Technology) companies, as defined above, and other companies often incorrectly included in this definition. This is the case in particular for companies in the technological sector (Technology companies, therefore Tech, but not Fin) that develop services and useful applications for financial activities<sup>5</sup>. These, unlike FinTech, they do not operate in competition with the incumbents, but rather may act as suppliers or partners, in support of their technological and operational development.

2 The relevance of the definition is also highlighted by a recent analysis carried out by the Basel Committee (BIS-BCBS, 2018), which points out that most of the surveys and reports on FinTech do not explain the definition used, although the effects of this aspect in terms of the applicability of regulations for markets and financial intermediaries are important.

3 Similarly Zetzsche et al. (2017) state that "FinTech in its broadest sense refers to the use of technology to deliver financial solutions".

4 In the following pages of the study we clarify the different considerations that may be drawn from this operational "demarcation" in terms of innovation profile of processes and financial products, as well as risks and possible sanctionary regime.

5 Examples include digitalised data management services, blockchain technologies, digitalised identification and authentication applications, risk management and supervision solutions (RegTech). For more information please refer to the mapping of activities in paragraph 3.1.

The fundamental difference between these two sets of companies is that, for FinTech, technology is a "tool", a productive factor<sup>6</sup>, whereas, for Tech companies, it is the object of production. It follows that they should be classified as belonging to different industries, i.e. the former to the financial industry and the latter to the technology one.

However, the fact remains that it is the most technologically advanced companies (operating in various industries) that are the most capable of diversification, adding one or more digitalised financial services to their production chain. These cases involve multi-product companies (or groups) that can be classified as TechFin.

Zetzsche et al. (2017) provides an interesting classification to this regard: starting precisely from the observation of the great variety of "new entrants" in the financial sector, they distinguish FinTech, which are created with the main purpose of offering exclusively financial services, from those companies originally founded in the technology or distribution sector ("pre-existing technology and e-commerce companies"), that subsequently developed financial services and are defined as TechFin.

This distinction is in line with our classification, since it does not question the financial nature of the activities performed by FinTech and TechFin companies nor their operational differentiation with respect to purely technological companies (Tech). It also has the advantage of adding an assessment of the company's origin, which is particularly useful for understanding the different competitive potential vis-à-vis the incumbents. In fact, unlike FinTechs, TechFins enter the financial industry with an established customer base acquired from pre-existing activities of a non-financial nature and, therefore, they use the information already gathered to develop their offer of financial services.<sup>7</sup> For this reason, in addition to the enormous financial availability<sup>8</sup>, these companies are potentially much stronger and more aggressive competitors for both supervised financial intermediaries and FinTechs, especially start-ups<sup>9</sup>.

6 Technology is a "transversal" productive factor, i.e. it can be used in different fields and industrial sectors. As a matter of fact, technologies underpinning the development of FinTech are not only applicable to the financial sector but also to various other areas that vary from bioscience to artificial intelligence.

7 Arner et al. (2016) and Zetzsche et al. (2017) point out that TechFins reprocess information to provide financial services, on the basis of the data collected on their own customers for other commercial purposes (big data). It is worth highlighting that this qualification evokes situations that are already known to the financial sector, attributable to so-called captive financial companies (e.g. leasing and consumer credit companies set up within industrial groups to assist customers interested in purchasing production goods), as well as conglomerates, that are subject to financial regulations when the weight of financial activities on the total turnover of the conglomerate is large.

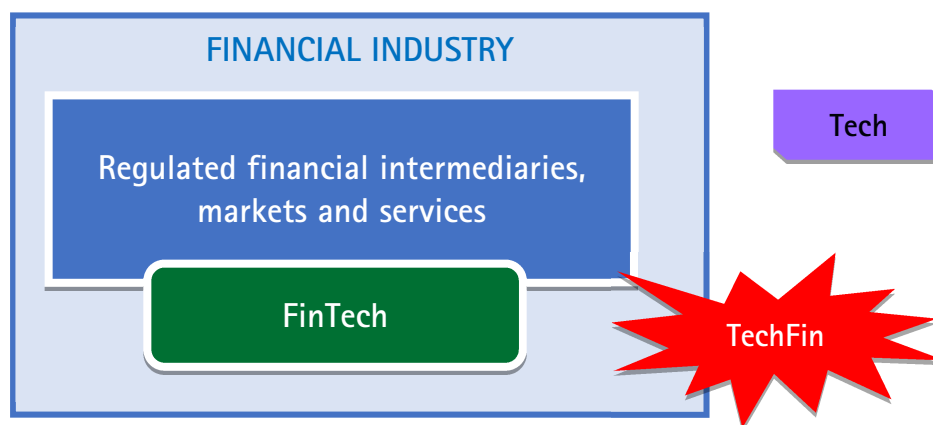
8 As pointed out by the Bank of Italy (2017a), these companies have a high liquidity accumulated in their activities and a very substantial market capitalisation, also in comparison with the main international banks.

9 Zetzsche et al. (2017) consider that "TechFins represent an Uber moment in finance" and to emphasise the distinction between the two categories of new entrants, identify FinTechs as "financial intermediaries" and TechFins as "data intermediaries". For the reasons already cited, in this study we prefer not to adopt this classification, as it does not distinguish with sufficient distinction Tech companies from financial operators (i.e. supervised financial intermediaries, FinTechs and TechFins).



Figure 1 shows graphically that described above regarding the redefinition of the financial system, which no longer includes regulated financial intermediaries and markets only, as in the past, but also non-regulated operators (FinTechs and TechFins). At the same time, for the reasons set out above, we exclude Tech companies from the area of financial industry and, therefore, from more correct definition of "FinTech" used in this study.

**Figure 1: The redefinition of the financial industry**



Source: authors' own figure

By referring to the possible regulatory considerations raised, we would like to provide some initial indications regarding the operational features of the new entrants and the intensity of the phenomenon.

Surveys on FinTech multiply day by day, offering a variety of classifications for FinTech companies, the activities they perform and the technological solutions they adopt in production and distribution.

By summarising the analyses available, we can see, on the one hand, that the global growth of FinTechs is very fast and exponential in terms of numbers and turnover<sup>10</sup>; on the other hand, over time, the areas of operational positioning and the plurality of services that these companies offer reflect an increasingly broad diversification that is now far from the niche phenomenon that essentially only concerned the area of payment services at the very beginning.

10 The positive expectations for the development of the sector are widely demonstrated by the fact that the amount of equity financing allocated to these companies increased tenfold between 2010 and 2015 (Accenture, 2016). BIS-BCBS (2018) cite a KPMG report that points out that the number and amount of venture capital funds allocated to FinTechs has increased substantially since 2010. The market shares of FinTech companies are today still contained with respect to the traditional financial system, but are growing rapidly and substantially. In this regard, UBS (2016) reports the results of an analysis conducted in 24 countries worldwide, involving around 28,000 consumers and 177 banks, highlighting the threats and opportunities generated by the development of FinTech within the traditional financial system. Another interesting study (Zhang et al., 2016b) conducted by the Cambridge Centre for Alternative Finance at the University of Cambridge Judge Business School involved 376 operators of "online alternative finance" (crowdfunding, peer-to-peer lending, other online alternative finance intermediaries) active in 32 European countries, which represent 90% of the total market (of which 273 platforms were not operating in UK); the survey showed that this market has exceeded the start-up phase and in 2015 grew by 92%, although it is still distant from the volumes of US and Chinese operators.

Over the years, in fact, FinTechs have developed activities in financing, investment services, asset management and advisory services, applying a series of technological innovations in the financial field that are in continuous evolution (from blockchain and smart contracts to robotics, from the artificial intelligence to the internet of things)<sup>11</sup>, which enable the satisfaction of the financial needs of different types of customer (individual and institutional investors, unbanked customers, SMEs and start-ups, etc.). However, it is worth noting that the financial activities developed by FinTechs do not always require the use of particularly advanced technologies<sup>12</sup>; therefore, at least in principle, the solutions identified in these areas should be easily and quickly replicable by supervised financial intermediaries, since no particularly substantial investments or specific IT skills are required.

The current stage of FinTech evolution highlights the fact that these companies propose a modularisation of financial activities and a multiplication of the direct intermediation channels, offering specific services in given operational areas (Figure 2). This strategic approach of gradual and specialised market penetration through exclusively telematic distribution channels allows FinTechs to operate with particularly streamlined and flexible structures.

This, at least for now, distinguishes FinTechs from supervised financial intermediaries and, in particular, from banks, which over time have expanded their areas of activity, becoming all-inclusive suppliers of financial services and products. Banks have in fact followed specific business models (universal bank or *bancassurance*) and adopted organisational solutions (group and conglomerate structures) that have led to the development of complex structures, intended to offer a varied clientele an integrated and diversified range of products.

Moreover, in the future, FinTechs may also diversify their activities in search of cost savings and, above all, to satisfy a variety of customer needs in an integrated manner. This process of gradual expansion in areas similar to those of primary specialisation is indeed visible in the payment services sector, in which FinTechs have now been operating for several years, demonstrating their ability to combine financial management and investment services (see par. 3.1).

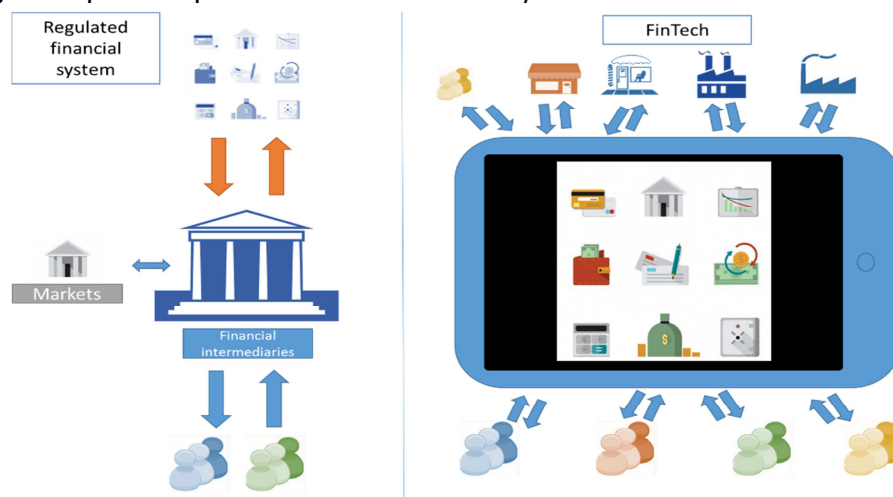
Figure 2 also shows that the expansion of the financial system created by FinTechs corresponds to a substantial change in intermediation processes. In fact, the development of these new financial operators allows customers to meet their financial needs directly and in innovative ways, whereas in the past customers

11 On the increasing operational heterogeneity of FinTech, see the UBS (2016) and Moneyfarm (2017) surveys. The study by McQuinn et al. (2016) is particularly interesting and provides an extensive review of FinTechs individual operational development areas. A more recent study by OICV-IOSCO (2017) examines in depth the technological solutions adopted by FinTech for the development of activities and the distribution of services and makes a comparative analysis to highlight the lack of homogeneity in the legal treatment of these companies in the different countries analysed.

12 For example, some equity crowdfunding platforms that only advertise investment schemes by companies and that do not allow funds or securities to pass through their platform, only require a website, whose level of sophistication is likely to be low and absolutely not comparable to that of other FinTechs that develop their activities on the basis of advanced technologies (such as DLT, artificial intelligence systems or predictive behaviour).

necessarily had to turn to supervised financial intermediaries to carry out all financial transactions through indirect and direct circuits (markets).

Figure 2: Operational processes in the financial industry



Source: authors' own figure

A further aspect worthy of attention is the observation that individual countries feature different degrees of diffusion of FinTech. For example, in Italy, the phenomenon is still limited compared to the rest of Europe and is far from that found in Britain, America and Asia<sup>13</sup>. The reasons for this, on the one hand, are attributable to the different regulatory decisions made in relation to FinTech in individual countries and legal systems, and on the other, are ascribed to supply and demand factors deriving from the degree of customer confidence and the perception of risks associated with this type of activity.

Despite this lack of consistency among countries and geographical areas, the phenomenon observed at world level is absolutely not limited to a few start-ups operating on limited business lines with a low competitive impact on traditional financial systems. On the contrary, the market now features large operators, not only among pre-existing TechFin companies (Google, Amazon, Apple, Alibaba, Tencent, Paypal, Square, etc.), but also among new FinTech entrants. Among the many possible examples of successful FinTechs is Seedrs, which, about five years after its foundation, has become one of the most important crowdfunding platforms in the world<sup>14</sup>; among the TechFins, we can mention Amazon as an example of a leading US

13 An analysis of the Italian market was conducted by Politecnico di Milano (2017a, 2017b). The study offers an overview of Italian platform characteristics and shows the need for refinement and qualification of regulations from the FinTech operators' point of view. The delay in dissemination of FinTech activities emerges from these surveys: in Italy FinTech is still far from constituting a crowd phenomenon, although between June 2016 and June 2017 the number of operators increased, as well as the volumes intermediated by platforms. For further guidance on the rapid growth in of FinTechs lending volumes in Italy in 2017, see <http://www.p2plendingitalia.com/prestatore/197-balzo-dimensionale-per-il-p2p-lending-italiano-nel-quarto-trimestre-2017>. An even more recent survey on FinTechs based in Lombardy (Regione Lombardia - Politecnico di Milano, 2018) provides key balance sheet indicators that highlight the still marginal, albeit growing, shares of these operators.

14 Launched five years ago, Seedrs has raised £210 million for some 500 companies so far and, together with its rival platform Crowdcube, dominates the equity crowdfunding sector in the UK. In May 2017, it announced the creation

e-commerce company that has also developed financial services, launching Amazon Pay, which allows users to pay for purchases made on third party subscriber websites using their Amazon account<sup>15</sup>.

The dimensional development of the sector is performed through internal and external growth strategies, which are determining dominant positions in some operational areas<sup>16</sup>. This is certainly important from the point of view of antitrust regulation and the rules on conflicts of interest which can become more important with the increase in size and diversification of activities<sup>17</sup>. These issues are also of interest for the purposes of assessing the fairness and transparency of operations and customer protection, especially with regard to the quality and objectivity of information provided by FinTech and - even more so - by TechFin, both for the purposes of choosing services (comparators) and for financial decisions (payment, investment, financing, etc.)<sup>18</sup>.

It should also be noted that, although the diffusion of FinTech is still highly differentiated among individual countries and geographical areas, these companies - by their very nature - are able to cross easily national borders and operate cross-border using telematic and digital channels, interfacing with a significant number of customers (be they individuals, companies or institutions) of different nationalities.

Therefore, the threat of the traditional financial system's disintermediation is not necessarily linked to FinTech's degree of diffusion in a given geographical area.

Similar considerations can be made with reference to the demand for financial services, in that customers may be inclined to use and interested in using FinTech services irrespective of the presence of these operators in the same

of a secondary trading market, which will allow investors to divest their shareholdings in exchange with other platform users at a fair value, defined by Seedrs' valuation policy. In this way Seedrs wanted to offer users a way of managing liquidity risk, which can dissuade investors from resorting to crowdfunding equity, given that most of the issuers supported by the platform do not land on the stock exchange and, therefore, their securities are non tradable. It should also be noted that in Italy various platforms would be interested in the creation of secondary markets, but in our legal system there are greater obstacles to the implementation of such solutions. See <http://www.crowdfundingbuzz.it/seedrs-lancera-un-mercato-secondario-le-azioni-acquistate-equity-crowdfunding/>; <https://www.seedrs.com/secondary-market>.

15 The service offered by Amazon Pay, to compete with PayPal, was launched in April 2017 also on the European market (Italy, France and Spain) in view of the success it had in other countries (USA, UK, etc.) recording 33 million users in 2016, compared to 23 million in 2015. The objective of the service is to simplify and secure payments relating to purchases made on various websites without having to enter card details every time and recovering only the ID and password for your Amazon account; the service is free for the customer, while for sellers a commission payment and deduction of a percentage of the purchase price is required. See <https://www.economyup.it/fintech/fintech-amazon-pay-in-italia-da-il-via-alla-battaglia-dei-pagamenti-digitali/>

16 Among the most recent acquisitions, we mention, for example, the one announced at the beginning of July 2017 by Vantiv, the American payment systems leader, who will acquire another sector leader, the English operator Worldpay, for 9.9 billion dollars, thus creating a global group of payment systems, able to serve customers in the global electronic commerce market, both in stores and online. See [http://www.aifi.it/private\\_capital\\_today/79288-vantiv-acquisisce-worldpay-per-creare-un-gruppo-mon](http://www.aifi.it/private_capital_today/79288-vantiv-acquisisce-worldpay-per-creare-un-gruppo-mon).

17 Although it does not strictly relate the financial industry, it is interesting that the European Antitrust Commission has recently imposed an exceptionally large fine on Google for the abuse of dominant position as Internet search engine; the Commission found Google took advantage of its position to favour another product of the same company (Google Shopping), providing customers with information aimed at influencing their purchasing choices.

18 These issues are analysed below in paragraph 3.

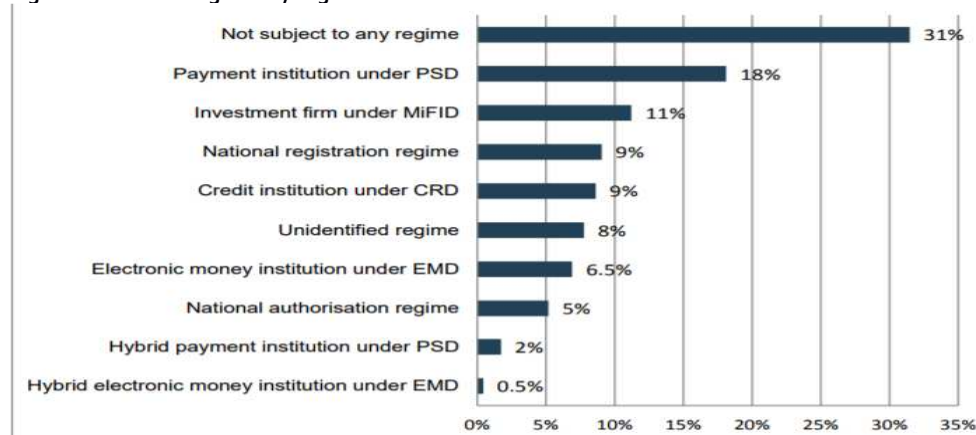
geographical area, being able to contact FinTechs based in geographically distant locations, or even abroad, easily via the internet<sup>19</sup>.

A perfect example of this is the Italian market, where, in the face of a still limited diffusion of FinTech operators (Politecnico di Milano, 2017b), bank customers express a particularly strong interest in using services offered by FinTechs, higher than in other countries with various degrees of diffusion of the phenomenon (UBS, 2016, p. 53, figures 49 and 50).

The ability of FinTech companies to overcome operating limits linked to their geographical position and to operate cross-border to offer services to customers through telematic distribution channels also emphasises the importance of regulatory and supervisory decisions, both those already made and those to be outlined in the future, in view of the very different ways that FinTechs are currently treated in the different legal systems<sup>20</sup> (Figure 3). In fact, in this context, FinTechs can adopt regulatory arbitrage, as they have been seen to do in their international operations.

The considerations made so far lead us to consider it useful to investigate the operational aspects and risks associated with the activities performed by these new operators, in order to achieve a better understanding of the benefits and critical profiles determined by the dynamics of FinTech development.

Figure 3: FinTech regulatory regime around the world.



Source: EBA (2017b).

19 This phenomenon has also affected Italian users, as, for example, in the case of Stamplay, a technology company set up by Italians in 2013 with an operating base in Rome and registered offices in London. In 2014, this company made use of the aforementioned Seedrs, carrying out one of the main equity crowdfunding operations of the English platform. Stamplay today represents a successful case for Tech companies, which collaborates with leading companies (Cisco, Visa, IBM), offering a development platform, allowing the combination of several APIs (Application Programming Interfaces) without the need for a developer (<http://www.crowdfundingbuzz.it/equity-crowdfunding-societa-italiana-tra-le-top-funded-2014-su-seedrs/>; <https://www.economyup.it/startup/l-open-innovation-vista-da-una-startup-la-collaborazione-fra-stamplay-e-cisco/>).

Thanks to the specific equity crowdfunding regulation issued by CONSOB in 2013 and amended in November 2016 and November 2017, greater legal certainty has been created, which has certainly contributed to the most recent development of these activities in Italy and to increasing the platform users trust level.

20 In this regard, the misalignment of FinTech legislation in Europe should also be noted, where some Member States ask for greater regulation of the phenomenon, while others believe that the current regulation is sufficient, if not already too incisive (Zhang, 2016a).

### 3 FinTech activities and risks

To date, numerous studies have analysed and FinTech companies' activities which have led to the definition of different classifications based on the operational areas examined or the analysis objectives.

Our study considered the mappings proposed by Arner et al. (2016), McQuinn et al. (2016) and the OICV-IOSCO (2017), who, in turn have the advantage of being based on a series of analyses, duly summarised, and of highlighting a significantly broad range of operations and technological methods applied to the various services offered by FinTechs.

The original objective of this study is to examine the FinTech activities, linking them to macro-areas of activity that reflect the different financial needs of customers targeted by these new financial operators and that, at the same time, allow a comparison of their offer with that of traditional intermediaries and regulated markets. In this way, it is possible to highlight the degree of affinity or, vice versa, originality of the offer compared to the activities carried out by supervised financial intermediaries. In the case of innovative services, the study verifies whether this innovation can be defined as the process or product innovation (*infra*, paragraph 3.1).

The aim is also to clarify the degree of operational consistency between financial intermediaries, traditionally subject to supervisory regulations, and unregulated FinTech companies. At the same time, the analysis allows us to highlight the operational areas for which different regulations are envisaged for the same financial service offered to customers, not only between supervised financial intermediaries and FinTechs, but also - and in many cases - among FinTechs operating in the same country, as well as among FinTechs operating in different countries.

It is possible in this way to classify further the results of previous studies on regulatory inconsistency concerning FinTechs under the different legal systems, which can give rise to regulatory arbitrage and differentiated customer treatment<sup>21</sup>.

In addition, the study considers companies active in the various operational areas examined, thus creating cases studies of reference of the business models actually adopted by FinTech companies.

The sample examined is mostly made up of FinTechs operating in Italy with registered offices in Italy and abroad. Therefore, some considerations are influenced by the specific decisions made so far in relation to FinTech in the national context, which are not necessarily the same as the legislative and regulatory decisions made in other EU and non-EU countries.

21 As highlighted by Zetzsche et al. (2017), (2017), the central policy issue of the FinTech phenomenon is not so much the use of technology to provide financial services, but the entity that provides them, which, not being regulated, is not subject to the rules and regulations typically provided for intermediaries operating in financial markets, which aim at preserving the protections worthy of interest (such as investor protection).

It is useful to underline the fact that the Italian Supervisory Authorities have been particularly focused on the FinTech phenomenon; this has resulted in a delimitation of the permitted FinTech operational areas, in compliance with the current legal status awarded to supervised financial intermediaries and, more generally, the actions allowed by the current regulatory framework<sup>22</sup>. The Italian case proves peculiar, showing itself – to date – to be less flexible than the regulations adopted in other – even European – countries. The future evolution of the decisions made at a supranational level on the regulation of FinTech operators, will reveal whether the "Italian case" has constituted a best practice to be exported at a regulatory level.

It is also clear that the actions of the Supervisory Authorities, in Italy as in other countries, cannot go beyond the current regulatory framework and legislation, which still fails to cover all the problems revealed by the progressive development of this phenomenon<sup>23</sup>.

This is clearly confirmed by this study, which shows that the efforts made nationally by the Supervisory Authorities are not sufficient to resolve all the new issues raised by the operation of FinTech companies, not only in terms of uniformity of regulations between financial operators and supervised financial intermediaries, but also, and above all, in terms of customer protection. Therefore, the case studies examined in this work also help to identify issues that could be taken into consideration in the context of legal analysis to reinterpret the European legislation, which forms the basis of nationally recognised regulatory and supervisory limitations.

Another objective pursued in the study and equally relevant is the clear identification of the entities that must bear the risks deriving from FinTech activities, in order to highlight, in this area as well, the similarities and differences that emerge from a comparison with intermediary operations and regulated financial markets (infra, paragraph 3.2).

Our analysis is original with respect to existing mappings, not so much for the taxonomy of risks taken into consideration (essentially taken from OICV-IOSCO, 2017), as for the specific identification of the entities exposed to risks generated by the financial activities examined. With reference to this aspect, the existing mappings seem indeed incomplete or, in some cases, misleading in relation to the objectives pursued in this study<sup>24</sup>.

22 Paragraph 3.1 refers to the specific initiatives undertaken by CONSOB on equity crowdfunding platforms, the solutions identified by Bank of Italy regarding the authorisation system and social lending activities, the IVASS initiatives on the subject of comparators and the positions of national Supervisory Authorities on a series of criticalities raised by the development of FinTech.

23 As highlighted by Mansilla-Fernandez (2017), there is not a single European regulation that covers the whole range of tools and services offered by FinTech. Moreover, given the inconsistency of FinTech regulations at European and international level, there is no clear vision of regulation advisability and methods (among others, see EBA, 2017b; ESMA, 2017a; European Parliament, 2017; FSB, 2017; OICV-IOSCO, 2017; Zhang, 2016b). The theme is more systematically addressed in paragraph 4 of this work.

24 For example, the general indication provided in the mappings of a credit risk that is predictable for a P2P lending platform does not make it possible to grasp that the financing contract risk falls on the customer, who provides the

These insights allow us to highlight more clearly the risks to which customers using the financial services provided by FinTechs are exposed, insofar as essentially and in most cases, these companies create additional direct financial intermediation circuits.

This study also focuses particularly on the type of customer targeted by FinTechs (i.e. retail, professional, institutional investors, etc.), in view of the fact that, within the scope of supervisory regulation, these different categories have corresponding different levels of protection, which must be guaranteed by supervised financial intermediaries and which is enhanced for the retail investors group. Since FinTech companies find retail investors to be their preferred area of development (targeting predominantly the crowd), examination of this aspect is useful to highlight the cases in which customers dealing with unregulated FinTechs have less protection than they would have if they had requested the same financial services from a supervised financial intermediary.

The overall results achieved clearly show that, in the face of the risks emerging from FinTech operations (i.e. online companies that are largely unregulated at international level and that perform activities whose risks are borne mainly by third parties), the current, mostly "entity-based" regulatory system that leverages legal reservations and the trend of sectoral specialisation of the areas of supervision, limits the current scope of action of Supervisory Authorities with regard to these new operators. Furthermore, it emerges that the regulatory decisions are particularly complex, insofar as an extension of the current regulations envisaged for supervised financial intermediaries pursues the objective of technological "neutrality" but, at the same time, is revealed as insufficient, due to the innovations and specific operational features that characterise FinTechs. These require both consideration of new regulatory paradigms and international coordinated actions by Supervisory Authorities, so that they can act in a more uniform manner within a renewed legal framework.

### 3.1 The map of activities: financial intermediation services and instrumental activities

The map of activities is shown in Table 1. We refer back to the classification of companies operating in the sector proposed earlier (paragraph 2). We first identify two macro-areas:

- A) the first relates to the *financial intermediation* attributable to FinTechs and TechFins (for convenience, hereinafter jointly referred to as FinTechs);
- B) the second relates to *instrumental or functional activities for financial intermediation*, performed by Tech companies.

funds, and not on FinTech, which operates as a marketplace that favours the demand and supply of financial resources.



Financial intermediation includes four different business areas:

- 1) *Obtaining financial resources*, including *equity based financing and debt financing*.
- 2) *Investment activities and services*, including trading, financial management and financial advice.
- 3) *Payment services*, relating both to the (domestic or international) transfer of money and currency and payment solutions.
- 4) *Insurance services*, also called InsurTech<sup>25</sup>.

For each operational area, Table 1 also specifies the FinTech operating methods, to highlight whether it operates as a marketplace or, conversely, performs specific financing activities directly (provision of funds, underwriting, guarantee, etc.) and securities brokerage activities (investor solicitation, trading, etc.); this helps to classify the degree of uniformity/lack of uniformity of their activities with those of supervised financial intermediaries and to identify the risks assumed by FinTechs or third parties.

The activities performed by FinTechs are examined by analysing the cases of the leading companies operating in Italy, whose operating information was also available on their websites<sup>26</sup>. These companies are limited in number and business volume, confirming the delay of the Italian market in the development of FinTech, which, in many respects, is still in the start-up phase. Therefore, the sample examined is extremely small compared to the number of companies in the sector that operate at international level; however, it is fully representative of the universe of companies operating in Italy<sup>27</sup>.

The sample surveyed in this study (Table 1) consists of 98 companies; it includes the main Italian companies or the main companies operating in Italy (including 60 FinTechs and 14 Techs) and some foreign FinTechs that are not active in Italy or for which it is impossible to identify specific operations in Italy (11 FinTechs and 13 Techs). The inclusion of some examples of foreign operators (specifically

25 The mapping of activities proposed in this work finds important confirmation in the recent report by the Basel Committee (BIS-BCBS, 2018), which classifies FinTech activities (excluding those of InsurTech, which are outside its scope of competence) into three main areas: (1) loans, deposits and the provision of equity resources; (2) payments, clearing and settlement; (3) investment management services. In addition, the Basel Committee distinguishes these financial activities from the set of "market support" services (i.e. technological services related to cyber security, cloud computing, big data, etc.), which have been defined in this study as "instrumental" and included in the scope of Tech.

26 Indeed our analysis was also enriched by interviews conducted during the first half of 2017 at the CONSOB with the main FinTech operators in Italy, whom we thank for their availability and their useful contribution. However, in order to ensure the confidentiality of the opinions expressed, comments on business models are made anonymously on the following pages.

27 The number of Italian FinTechs is constantly growing and sufficiently consistent information is not always immediately available; the preliminary versions of this work were based on an initial sample of about 30 companies, surveyed in July 2017, against the final sample of 74 companies, to which 24 foreign cases are to be added, for a total of 98 companies (Table 1). It should also be noted that, to date, no sources are available to ensure data completeness; some information may be taken from the Italian Banking Association (ABI, 2017), which indicates the existence of 136 FinTechs in October 2017, including multiple operational entities ranging from FinTechs in the strict sense, to microfinance, up to Tech companies offering instrumental services to financial activities.

highlighted in the legend of Table 1) was considered appropriate in cases where, at the date of the census (March 2018), there were no Italian operators in a given operating area, or in order to highlight specific activities already developed abroad.

However the analysis is not affected by the sample number examined, given that analysis of the type of activities and operating methods is performed with reference to the international context provided by the aforementioned mappings.

Again with reference to the companies analysed, Table 1 distinguishes between supervised and non-supervised FinTechs in order to highlight separately those companies that have some form of authorisation or are subject to regulation and those that, instead, carry out financial activities without being subject to an authorisation regime or the supervision of Authorities. This also makes clear that today, both supervised and non-supervised FinTechs may operate even within the same operational area, in addition to supervised financial intermediaries. This is an aspect that certainly raises some questions on the issue of fair competition.

There are also some interesting examples that lead to considerations on possible regulatory arbitrage. In this regard, sample analysis shows that FinTech companies operating in Italy are based in Italy or abroad (specific indications are provided in the legend of Table 1). Therefore, even when supervised, they may refer to the Supervisory Authorities in different countries (Italy, UK, Cyprus, France, etc.) and authorisation schemes (due to the different treatment of FinTechs in the various legal systems considered).

Therefore, overall, Table 1 shows that FinTech operators operating in Italy in the various areas fall into different categories, i.e.:

- *non-supervised FinTechs*
- *FinTechs supervised by foreign Authorities*
- *FinTechs supervised by Italian Authorities, including:*
  - *regulated operators*, i.e. FinTechs operating as equity crowdfunding platforms subject to specific provisions by CONSOB; it should be noted that this category includes the largest number of active FinTechs in Italy;
  - *supervised financial intermediaries*, i.e. payment institutions, EMIs, intermediaries under art. 106 of the Consolidated Banking Law, which are subject to authorisation by the Bank of Italy. Table 1 shows that certain supervised financial intermediaries (in particular, Italian investment firms or branches of foreign banks, authorised by their respective Supervisory Authorities) also present themselves on the market as FinTechs, given their use of technology for the provision of services of performance of core activity.). At present, there are also certain insurance brokers (InsurTechs) operating in Italy that are subject to IVASS supervision.

We can now examine the individual operating areas of the FinTechs that fall within the two macro-areas of activity identified.

**Table 1: FinTech activities**

**(A) FINANCIAL INTERMEDIATION ACTIVITIES**

Areas of activity	Subcategory	FinTech operating mode	Supervised FinTechs	Non-supervised FinTechs
<b>1) Finding financial resources</b>				
<b>Equity based financing</b>	Pure Crowdfunding (retail)	Marketplace	AssitecaCrowd [1], Baldi Finance (Invest-re) [1], Crowd4capital [1], CrowdFundMe [1], Cofyp [1], Ecomill [1] [2], Fundera [1] [2], CrowdFunding Idea [1] [2], Italyfunding [1] [2], MuumLab [1], MamaCrowd [1], NextEquity [1], Opstart [1], SiamoSoci [1](entered via MamaCrowd), Starsup [1], The ING project (former TipVenture) [1], Tifosy [3] [4], UnicaSeed [3], Walliance [1], WeareStarting [1]	Equitystartup [2], Startzai [2]
		Underwriting (in whole or in part)		
	Club deal (selected investors)	Marketplace	SiamoSoci [1], Clubdealonline [1], Epic [5]	
		Underwriting (in whole or in part)	Equinvest [1][6]	
<b>Debt financing (loans and purchase of debt securities)</b>	Lending Crowdfunding (or social lending) and P2P lending	Marketplace	Borsa del Credito [7], Lendix [8], Smartika [7], Soisy [7], Tifosy [3][4]	
		Issue (in whole or in part)	PrestaCap [4], Prestiamoci [9]	
	Short-term loans:			
	Invoice lending)	Marketplace	Credimi [9]	CashInvoice, CashMe Crowdcity, [10], Workinvoice
	Trade credit	Marketplace		Sardex, Venex Samex,
	Clubdeal (selected investors)		Epic [5], Younitedcredit [11]	
	Funding through securities underwritten by institutional and/or qualified investors		Epic [5]	
<b>2) Investment activities and services</b>				
<b>Trading</b>	Trading for retail and institutional customers	Platform (including copytrading and e-trading)	EToro Ltd [12], Wisealpha [4][13]	Euklid
	Informative services	Website		
<b>Financial management</b>	Cash management service		Pariti [4][13]	
	Electronic moneybox		Gimme5 [14], Oval Money [4][13]	
<b>Financial Advice</b>	On third-party products	Traditional financial advice and robo-advice	MoneyFarm [4], Robobox [5], YellowAdvice [14]	AdviseOnly, Aerialist, SelfieWealth
	On own products	Traditional financial advice and robo-advice		

Areas of activity	Subcategory	FinTech operating mode	Supervised FinTechs	Non-supervised FinTechs
<b>3) Payment Services</b>				
Currency transfers	Fiat money (paper/legal)		Azimo [4], Revolut [4], TransferWise [4]	
	Only virtual (cryptocurrency)			Chainblock, Sardex, Venex Samex,
Payment solutions	Fiat money (paper/legal)		Satispay [15], Klarna [13] [16]	Growish [17], Jusp Opentech, Software Engineer, Tinaba, Acasa (already Splittable ) [13], Osper [13], yoyowallet [13]
	Only virtual (cryptocurrency)			BitCoin, LiteCoin, Ethereum, Chainblock, Sardex, Venex Samex,

#### 4) Insurance services (InsurTech)

Insurance contracts			Gruppo Mutui Online [18], MioAssicuratore [19], Verti (already DirectLine) [19], Clark [13] [20], Lemonade [13], Oscar [13], ZhongAn Insurance [13]	
---------------------	--	--	---	--

### (B) INSTRUMENTAL OR FUNCTIONAL ACTIVITIES TO FINANCIAL INTERMEDIATION

Areas of activity	Subcategory	FinTech operating mode	Supervised FinTechs	Non-supervised FinTechs
<b>5) Other (Tech)</b>				
Data management, Big data and data analytics	Data management services (repository)			
	Rating/scoring		ClearScore [4][13], ModeFinance [21]	
	Reprocessing data and information on the markets			CityFalcon [13], VisibileAlpha [13], Scorechain [13]
Blockchain Technologies / DLT	development of algorithms to support the various activities			Axon [13], DigitalAssets [13], R3 [13]
Security, Compliance and Personal Data Protection Services	Predictive intelligence, AI, fraud detection, cyber security, identity and authentication			Jumio [13], Securekey [13], uComply, KYC3
Regtech				Droit [13]
Services for the insurance business				Amyko, Darwininsurance, D-Heart, Laqy, Neosurance, TiAssisto24, ResponSA, Spixii SysDev,
Service comparators and aggregators			Gruppo Mutui Online [18], Trussle [4] [13]	CashInvoice, Fintastico,

Legend:

- [1] Companies listed in the ordinary section of the register kept by CONSOB.
- [2] Not active.
- [3] Companies listed in the special section of the register kept by CONSOB.
- [4] Authorised by the Financial Conduct Authority (FCA).
- [5] Italian investment firm listed in the register kept by Bank of Italy.
- [6] Equinvest is the sole venture fund of a Luxembourg closed-end fund, reserved for institutional investors and High Net Worth Individuals, managed by QIAM Sarl.
- [7] A payment institution listed in the register kept by the Bank of Italy.
- [8] Authorised by the French authority ACPR (Autorité de contrôle prudentiel et de résolution) and using Lemon Way (payment institution authorised by ACPR).
- [9] Listed in the register kept by the Bank of Italy pursuant to Art. 106.
- [10] Partners with foreign payment institution (Lemon Way) authorised by ACPR (Autorité de contrôle prudentiel et de résolution).
- [11] Authorised by the French ACPR and registered with the Bank of Italy as a foreign bank branch.
- [12] Authorised by Cyprus Securities & Exchange Commission.
- [13] Does not operate in Italy.
- [14] Service offered by an intermediary supervised by the Bank of Italy.
- [15] EMI registered at the Bank of Italy.
- [16] It defines itself as a credit-market company and is subject to supervision by the Swedish Financial Supervisory Authority.
- [17] It relies on the foreign electronic money institution Mango pay, authorised by the Luxembourg authority Commission de Surveillance du Secteur Financier (CSSF)
- [18] Holding for a number of supervised companies.
- [19] Authorised by IVASS.
- [20] Authorised by the German Supervisory Authority BaFin (Bundesanstalt für Finanzdienstleistungsaufsicht).
- [21] Credit Rating Agency (CRA) registered with the ESMA.

Source: Elaboration on OICV-IOSCO (2017), BeBeez (2017), Deloitte (2016c). Websites of FinTech and Tech companies.

### 3.1.1 Obtaining financial resources

This area includes a series of activities carried out by FinTechs to provide a response to the customers' needs to obtain financing in the form of capital and debt.

#### *Equity based financing*

With reference to equity-based financing, two main subcategories of FinTech companies are identified.

The first is equity crowdfunding, which we call "pure" insofar as it is directed towards retail investors (the crowd).

Equity crowdfunding platforms allow retail investors to access private equity investments (OICV-IOSCO, 2017), typically start-up or early stage companies. According to the more detailed and extensive definition given by CONSOB (2016a, p. 4), *"the term 'crowdfunding' refers to the process by which several people ('crowd') give money (funding), even of a modest amount, to finance a business project or initiatives of various kinds by using websites ('platforms' or 'portals') and sometimes receiving a reward in exchange. [...] equity-crowdfunding requires that the lender be granted a holding in the company's share capital in exchange for the money disbursed to the proposing company. In summary, crowdfunding is defined as 'equity-based' when a real equity security in a company is acquired through online investment: in this*

*case, in exchange for a loan, a combination of dividend and voting rights deriving from the equity investment in the company is received".*

In this case, the innovation lies in the channel used to invest (i.e. platform or portal) and in the direct mode of investment, i.e. without the use of financial intermediaries. Compared to the list of regulated activities, this is a novelty resulting from technological innovation. In Italy, CONSOB intervened in 2013 to regulate the entry of equity crowdfunding operators and their mode of operation, later updating these provisions in November 2016 and November 2017<sup>28</sup>. Companies operating in Italy as equity crowdfunding platforms must be authorised by CONSOB and listed on a register (ordinary or special section<sup>29</sup>) in accordance with the provisions of article 50-quinquies of the Consolidated Law on Finance.

At present, other countries do not have special equity crowdfunding regulations, but some apply investment limits for retail investors or stipulate that investors may withdraw within a certain period of investment (e.g. Taipei, Malaysia and Korea); other jurisdictions establish the conduct that platforms must adopt (e.g. they may not provide advice on the investments featured on their website) (OICV-IOSCO, 2017). The European Commission has recently published a proposal for regulation that includes the issue of an "EU passport" for crowdfunding platforms, i.e. a European licence that allows them to operate in a harmonised regulatory environment within the European Union and, consequently, to offer their services to all investors residing in the Member States (European Commission, 2018)<sup>30</sup>. The same proposal also requires platforms to comply with applicable legislation and that they be subject to supervision by ESMA.

Based on data updated as of December 2017, in Italy, there are 20 portals listed in the ordinary section, 1 Italian investment firm in the special section and 1 company authorised by the FCA that applied for registration in the special section using the EU passport<sup>31</sup>. The censuses carried out by sector operators (BeBeez, 2017) revealed the existence of two other platforms, which are not currently listed on the register and, in any case, are not active.

Based on the information gathered from the surveyed company websites (see Table 1), the "pure" equity crowdfunding category includes platforms that serve as "showcases" for investment projects and can be defined as marketplaces. These

28 The Regulation on equity crowdfunding adopted in 2013 by CONSOB originates from the delegation provided for by the "Decreto crescita bis" (Law no. 221 of December 17, 2012) on the rules applicable to online portal management and the offers for raising capital; subsequent amendments to primary legislation have made it necessary to update related regulations. See CONSOB (2017c).

29 Article 50-quinquies clarifies that the "ordinary section" must include portal managers authorised by the CONSOB, following verification of requirements imposed by the Consolidated Law on Finance and the Regulation adopted by the CONSOB with Resolution no. 18592 of June 26, 2013, and subsequent amendments and additions; the "special section" records banks and investment firms already authorised to provide the related investment services, which have notified CONSOB of their operating as portal managers, prior to commencing operations.

30 The same document limits licence to carry out the platform activities to entities based in a Member State. This provision will have a major impact on operators who initially decided to establish their registered office in the United Kingdom and who may not benefit from the European licence due to the consequences of Brexit.

31 The company is a special case for crowdfunding platforms, as it specialises in raising funds for sports initiatives.

FinTechs provide a platform on which companies that need to raise funds can publicise their initiatives and, at the same time, retail investors can acquire information on possible investments. The platform's source of revenue is mainly a commission received on the total funds collected by the company<sup>32</sup>. As shown in Table 1, there are currently no "pure" equity crowdfunding platforms operating in Italy that co-invest in the presented projects.

In addition, there are a number of platforms for so-called "*club deals*", i.e. they raise funds from investors specifically identified according to certain criteria<sup>33</sup>.

Among these, some platforms serve only as project "showcases" (marketplaces). In particular, this area includes a supervised intermediary (an Italian investment firm), a platform listed in the ordinary section of the equity crowdfunding portal register and a company to which a platform registered in the same section is attributable.

In terms of instruments, Italian investment firms may also offer securities from companies that do not fall within the category of start-ups and innovative SMEs; conversely, at least until the end of 2017, these were the only two types of companies that could be the subject of equity crowdfunding activities in Italy. Thanks to the recent legislative changes, implemented in the update of the CONSOB Regulation, the possibility of accessing the equity market through online portals is now permitted for all small- and medium-sized enterprises (SMEs) as well<sup>34</sup>.

Another important aspect concerns the type of investors.

Platforms registered in the ordinary section may independently establish any access criteria, identifying specific capital- or experience-related requirements. It is important to note that these criteria do not derive from regulatory provisions but can be determined voluntarily by individual platforms.

On the contrary, the characteristics of the investors that can access the investments proposed by supervised intermediaries are identified by the MiFID and CONSOB<sup>35</sup> regulations, given that participation in the club is reserved for professional investors.

32 Source: interviews of FinTech operators with CONSOB.

33 These include a sufficiently high level of expertise, previous work experience in the financial industry and/or specialist training profiles (degree in Economics), or membership in a business angels network. Source: interviews of FinTech operators with CONSOB.

34 With Resolution no. 20204 of November 29, 2017 (published in the Official Gazette no. 289 of December 12, 2017) CONSOB made some amendments to the "Regulation on the raising of venture capital by innovative start-ups through on-line portals", issued in 2013 and already amended in 2016. In particular, the Resolution modified the scope of application by replacing the reference to "innovative start-ups and innovative SMEs" with "small and medium-sized enterprises". See CONSOB (2017c).

35 For persons " at least two of the following requirements must be met: – the customer has executed significant transactions on the market in question, averaging 10 transactions per quarter in the previous four quarters. – the value of the customer's financial instrument portfolio, including cash deposits, must exceed 500,000 euro; – the customer works or has worked in the financial sector for at least one year in a professional capacity which presumes awareness of the transactions and services envisaged". See CONSOB, 2016b, Annex 3, point II, CONSOB Regulations on intermediaries, adopted with Resolution no. 16190 of October 29, 2007 and subsequent amendments.

Therefore, the level of protection awarded to the investor differs significantly, as, in the first case, it is the platform that decides the criteria and may not even adopt the capital or experience thresholds provided for, which are instead provided for by the regulations applied to supervised financial intermediaries for the purposes of defining professional or qualified investors. The platforms can, therefore, allow selected, but not "professional", investors to participate in the investment club; in this way, a FinTech could publicise its investment proposals without this falling within the definition of investor solicitation.

Last but not least, it should be noted that orders placed by investors through a supervised intermediary are subject to a series of regulatory requirements regarding investment services and activities (Chapter II of the Consolidated Law on Finance) and anti-money laundering (Legislative Decree no. 231/2007)<sup>36</sup>; on the other hand, such regulations do not appear to be directly and fully applicable to authorised equity crowdfunding platforms that operate as marketplaces or club deals. In addition to being unable to execute orders directly (as they must necessarily rely on a banking intermediary or an Italian investment firm), platform operators in the Italian legal system cannot perform financial consultancy activities. Investors that use platforms therefore invest on their own and on the basis of their own evaluations, without receiving any advice.

In spite of these differences, which may however be differently graded in legal systems in which a different degree of regulatory flexibility is awarded to FinTechs, the operation of these equity crowdfunding platforms is similar to the intermediation and brokerage involving equity instruments, traditionally carried out by supervised operators and brokers (in addition to banks and Italian investment firms, consider also online brokers active in online trading).

We will have the opportunity to discuss the risks in more detail in section 3.2 below. However, we would like to point out here that, from the investor's point of view, the risks are the same as those of any investment, except that - with regard to the use of FinTech companies - the investor does not benefit from the same regulatory protection as when using a supervised intermediary; in fact, to date, FinTech platforms are not subject to capital constraints in relation to the risk exposure for the activity performed, or to governance rules and internal control systems<sup>37</sup>.

36 On the risk of money laundering and the regulatory framework applicable to FinTech, see paragraph 3.2.

37 It should be noted, however, that while FinTech platforms are completely exempt from supervisory rules in some countries, as already indicated in the text, with reference to the Italian context and limited to equity crowdfunding platforms, the regulations dictated by CONSOB take an important step in defining the legal framework of the phenomenon. The European Commission's proposed regulation on crowdfunding seems to accept, at least in part, the Italian experience; in fact, it provides, for example, for the maintenance of a register of European crowdfunding operators and establishes a set of requirements for authorisation granting, and regulates the issue of conflicts of interest, as well as compliance with rules of fairness of marketing policies (European Commission, 2018). It should also be noted that the CONSOB Regulation, as amended in 2017, provides for minimum capital requirements that must be met and maintained in order to be recorded in the equity crowdfunding portal register; these consist of subscription to an indemnity scheme, or subscribing of an insurance policy (CONSOB, 2017c). Further considerations are made in paragraph 3.2 below.



Again in the category of equity financing through club deals, there is also an authorised crowdfunding platform, registered in the ordinary section, that performs its own transactions, underwriting all or part of the issue. Investors may, in this case, co-invest in transactions selected by the platform and may subscribe units of a Luxembourg fund, a SICAV-SIF sub-fund supervised by the CSSF (Luxembourg Financial Market Supervisory Commission).

### *Debt financing*

A second area in which FinTech companies are developing their services, within the macro-area of obtaining financial resources, is debt financing, which includes loans and the purchase of debt securities. In this way FinTechs offer solutions to customers interested in raising finance for debt financing, generally by putting them in contact with potential lenders through the online platform (marketplace); more rarely - in Italy, and abroad - FinTechs operate directly as a lender, while still using the online channel to facilitate customer access and make the services offered quickly usable.

There are four main subcategories:

- a) Lending crowdfunding (or social lending) and peer-to-peer lending (P2P lending).
- b) Short-term loans by invoice lending or trade credit.
- c) Club deal.
- d) Fund raising from qualified or institutional investors through debt securities.

Below, we focus above all on the first two types of debt financing, given their current greater relevance in terms of operation.

#### *a) Lending crowdfunding (or social lending) and peer-to-peer lending (P2P lending).*

In most cases, FinTech companies operating in this area of activity do not provide the loan themselves. Under these conditions, FinTechs differ from credit intermediaries (including banks) which typically act as a contractual counterparty to the fund borrower. Therefore, in this case, the innovation consists of the possibility of directly concluding a financing contract (through debt or debt securities) between third parties that are customers of the same platform. In this way, a sort of "collective loan" is created (Bank of Italy, 2017a), thanks to interaction between multiple entities that channel financial resources through a digital platform, to the advantage of funding applicants. This solution also ensures a faster response to the financial needs of borrowers.

FinTech's platform therefore serves as a marketplace, i.e. as a direct telematic platform for the meeting of surplus and deficit units. Through the creation

of these online platforms, a variety of *"interested parties can request repayable funds from potential lenders, for their own personal use or to fund a project"*<sup>38</sup>.

It should be highlighted that, according to provisions of the Italian legal system, the aforementioned operations do not constitute the collection of savings, provided that negotiations are personalised, i.e. the borrowers and lenders must be able to express their will in determining the contractual clauses between them and, at the same time, that the portal manager is limited to providing support in the negotiations preceding the conclusion of the contract<sup>39</sup>.

The case in which a FinTech platform co-participates in loans to borrowers is very different, directly exposing itself to the counterparty's credit risk, at least on a pro-rata basis. In this capacity, the FinTech acts as a credit intermediary and is subject to the authorisation and supervision of the Bank of Italy<sup>40</sup>; of course, here too there is a ban on sight deposits by savers, unless the FinTech requests authorisation to act as a bank operator<sup>41</sup>.

Other relevant aspects in this context are the interactions between platform customers and the way in which the platform operates with regard to customers.

38 In this way, the Bank of Italy (2016) defines social lending (or lending based crowdfunding, according to the most diffused international term).

39 The Bank of Italy expressed this opinion (2016) issuing the "Provisions on the collection of savings by parties other than banks", aimed at strengthening protection of savers who lend funds to parties other than banks and came into force on January 1, 2017. The indications regarding social lending are intended to clarify the limits within which the activity may be carried out, in compliance with the prohibition, for entities other than banks, to carry out collect "sight deposits" (which includes both deposits repayable at the request of the depositor, immediately or with less than 24 hours' prior notice, as well as deposits for which a longer prior notice is required if the person who raised the funds reserves the right to reimburse the depositor immediately on the latter's request or before the expiry of the prior notice period). For the purposes of this work, it is also useful to note that the Bank of Italy has no powers of investigation or sanction in this matter against non-banking entities collecting savings; in fact, infringement of the regulations is governed by criminal law and is, therefore, the responsibility of the judicial authorities. However, these provisions are only a first step in an ongoing regulation (Bofondi, 2017), given that the Bank of Italy itself specifies that the section on social lending has the nature of a survey and that the list of reserved activities that may be relevant in this area is to be intended merely by way of example.

40 In fact, in compliance with this regulatory provision, the first Italian lending crowdfunding operators have been authorised by the Bank of Italy as intermediaries pursuant to Art. 106 of the Consolidated Law on Banking. See Politecnico di Milano (2017b) and Table 1 in this work.

41 The regulatory framework described in the text refers to the Italian case and reflects the actions that Bank of Italy has been able to take in the current regulatory setting. At the international level, including in the context of lending based financing, the procedures for regulating FinTechs are varied. In the initial phase of development of FinTech the European Commission did not consider necessary to propose ad hoc regulation at the EU level, in consideration of the limited size of operators and the innovativeness of the phenomenon (see European Commission, 2014). Within this framework certain countries, over time, have decided to define a regulatory regime (for example France, Portugal, Spain and United Kingdom), in the belief that a certain regulatory setting favours a more orderly development (see Bofondi, 2017). The risk of the market expanding towards the most risky debtors and the opportunity to design uniform rules to guarantee financial stability were also taken into careful consideration. In particular, the EBA (2015) underlines that lending crowdfunding lies within its competences, expressed itself clearly in favour of a harmonisation of regulations at the European level, which appears desirable in order to prevent regulatory arbitrage, ensure fair competition, increase market participants' confidence in financial innovation and contribute to the development of the single market. The evolution of the context has led the European Commission to carry out a public consultation on FinTech throughout 2017; in the summary document that followed, the Commission announced interventions on financial market places, which, in practice, were translated into the aforementioned proposal for crowdfunding regulation, published in March 2018 (European Commission, 2017a, 2017b, 2018). Further regulatory development will depend on the decisions of the Parliament and the European Council; if the proposal is accepted, it will result in a harmonisation of the framework in which crowdfunding platforms operate, with positive effects in terms of customer protection as well.

In general terms, the marketplace is the channel that allows individual lenders to acquire information about projects and entities in need of financial resources and to choose between them.

Typically, in operations managed through marketplaces, borrowers of funds (private, self-employed or business) register on the platform expressing their financing needs (usually short-term). The platform enables these needs to be matched with the funds available from the lenders (in some cases retail investors and, in others, institutional investors) registered on the platform. This allows lenders and borrowers to conclude a bilateral contract.

In fact, the funding selection methods may differ according to the operating model adopted by the individual platform<sup>42</sup>.

The adoption of the "direct model" implies that lenders can choose individually the loans they wish to extend; in this case, the platform can decide ex-ante which projects to host on its platform, defining the scope of the investment choices.

If, instead, the platform uses the "diffused model", the lender identifies the risk/return class to which it wishes to subscribe, but it does not choose the individual project to finance. In the latter case, the financing parties rely on the rating assigned by platforms to take their financing decision. This rating, expressed through scoring (or, in some cases, through the definition of risk classes), is often formulated by the platform using an algorithm that processes the information entered by the borrower; only in some cases, but not frequently, this scoring is validated by the platform using human resources.

It is important to point out that, based on that which is publicly available on websites, platforms do not provide information on how funding applications are assessed nor on how information is processed using the algorithm.

In section 3.2, we highlight the risks associated with this type of activity performed by FinTech companies; especially when the "diffused model" of loan selection is applied, this type of activity is similar to the credit activity, although in this case the risk is borne by the platform customer and not the intermediary, unlike the activity performed by credit institutions.

Turning to the cases identified in Table 1, the lending crowdfunding and P2P lending companies operating in Italy are all authorised, albeit by different supervisory authorities, and operate as payment institutions, payment agents and marketplaces supported by payment institutions or, again, authorised entities pursuant to art. 106 of the Consolidated Banking Law.

42 As clarified by the Politecnico di Milano (2017b), although P2P lending and lending crowdfunding are sometimes used as synonymous, there is a difference, albeit often blurred in the operation of Italian platforms, that makes the definition of activities more suitable when distinguishing between the "direct" and the "diffused" model.

In this context, FinTech companies operating as marketplaces apply the diffused model, matching funding requests with the funds available from investors. However, the business models proposed are differentiated.

According to a first model, the platform not only connects (exclusively retail) investors with fund borrowers (small and medium enterprises), but also evaluates borrowers, assigns them a rating and then matches the proposals.

A second business model allows the platform's customers to make purchases from partner resellers with the possibility of paying the total sum (in general sufficiently limited and at most 15,000 euro) in instalments. The purchase is financed by retail investors that pay retailers in advance and are reimbursed in instalments by the platform's customers. Today, investors can only base their investment choice on the rating of the funding applicant as defined by the platform. However, they cannot choose the purpose of the investment. The rating is based on the borrower's credit and socio-demographic information (provided by the borrower or by CRIF) and is then screened by platform staff. The platform also defines a maximum limit for investment, today fixed at 50,000 euro.

Unlike in other contexts (for example in the UK), in Italy there is only one marketplace operating with a mutual guarantee moneybox, in favour of lending retail investors, against any outstanding amounts; subscription to this guarantee mechanism is voluntary and involves the devolution by customers of a share of the interest. Table 1 also shows the cases in which FinTech platforms participate (in whole or in part) in financing, assuming the risk of the transactions. The elective scope of these companies is that of personal loans (consumer credit) and, therefore, their business must be subject to supervision. The cases listed in Table 1 show that operating authorisation is issued by the Authority of the country of establishment (in this context, the Bank of Italy has issued authorisations pursuant to art. 106 of the Consolidated Banking Law).

#### *b) Short-term loans via invoice lending or trade credit*

Some lending-based financing platforms allow their customers to obtain credit via invoice lending with or without recourse. The operating mechanisms are similar to those previously examined for lending platforms (marketplaces or platforms co-participating in financing) the only difference being that, in order to support their application for financing, the borrowers of funds present their receivable invoices or other credit instruments to be discounted. Therefore, it is possible that these platforms also provide a model of "direct" financing selection by individual customers (in this case, the platform may select applications according to scoring or acceptance criteria). Alternatively, the platform may apply a "diffused" model, in which case it will group funding applications into homogeneous classes, thus having a greater effect on the creditworthiness assessment of the borrower and, consequently, on the funding choices and risk borne by the lenders.

As shown in Table 1, there are several FinTechs operating in Italy in this area, one of which is supervised. This supervised FinTech operates as a credit intermediary (pursuant to art. 106 of the Consolidated Banking Law) and performs matching, as well as borrower assessment. Through the initial activity of mapping and computerisation of the traditional process of invoice lending, this digital lender can assess a company's creditworthiness very quickly (within two days), using standard workflow automation technologies. For each contracting party, the lender checks whether the risk falls within the limits of acceptability and, if it does, determines the probability of loss; the pricing to be applied to the invoice is determined according to this parameter. If the pricing meets the expectations of the investor, the invoice amount is transferred within a few days. The platform advances the invoice amount for the individual customer, according to the so-called "supply chain credit", which allows the advance of invoices issued by industrial groups or large companies with many small suppliers. The funding required is provided exclusively by institutional investors that, to date, are funds with which FinTech has signed a partnership agreement.

The other active platforms in this area are not supervised, as they offer an invoice lending service based on business models different from that described herein.

In particular, they operate as a marketplace to the benefit of customers wishing to mobilise their receivable invoices, who are matched via the platform with interested investors. Depending on the cases, the assessment of credit applications may be performed by FinTechs themselves or using external information sources (for example Cerved). An even more innovative solution is adopted by some platforms, following an invoice trading model that envisages that the disposal of trade credit is undertaken at a fixed cost by an online auction between investors, which may also be a competitive electronic auction. Furthermore, it should be noted that one of the FinTech companies in question not only operates as a marketplace for institutional investors that receive customer applications through the platform, but also acts as a comparator of third-party offers for the payment of invoices to companies borrowing funds<sup>43</sup>. In consideration of the different business models adopted, in only two of these cases does the FinTech company rely on a payment institution to conduct activities.

Overall, therefore, the non-regulated FinTechs active in invoice lending operate as "showcases" for investment proposals, similar to crowdfunding platforms, although these are markets on which credit supply meets the demand, instead of equity. However, unlike the equity crowdfunding marketplaces, which are required to register and comply with the provisions of CONSOB, these new debt financing markets are not subject to regulation.

This is an opportunity for providing further clarification on the general information about lending based products offered by FinTechs.

43 On comparators see paragraph 3.1.5.

The services described above do not constitute an innovation of the product's technical characteristics (financing, consumer loans, invoice lending, underwriting of debt securities issued by start-ups and SMEs, etc.). However, what is innovative is the fact that this type of contract is offered on direct financial circuits (stipulation between FinTech customers), telematic circuits (platform or website) by operators that are largely non-regulated (and therefore are not required to comply, *inter alia*, with the transparency requirements on the methods of negotiation and pricing), which process information via algorithms and define scorings, influencing the assessment of the risk that, however, they do not assume.

Another new element is the full automation of the information acquisition processes traditionally required in the assessment of counterparty reliability. Some providers offer access gates for the acquisition of data relating to trial balances, pro-forma financial statements and other information which, in addition to speeding up information processing, allows the platform to monitor the company's economic and financial situation in real time. The important process innovation that FinTech is able to offer in this traditional field of activity is therefore clear; the success that this type of initiative is enjoying, in Italy as well as abroad, and that translates into rapidly growing market shares, indicates the scarce capacity of financial intermediaries to use the even larger and more consolidated dataset that they have to satisfy the basic financial needs of their customers in a timely and effective manner. There are also some platforms that meet companies' short-term financing needs, allowing them to benefit from invoice lending or obtain trade credit in "closed" trade credit circuits. In Italy, several FinTechs have also set up a number of trade credit circuits in certain geographical areas (Sardinia, Veneto, Sannio) (see Table 1). These solutions allow FinTechs to offer their members (mainly companies, but also professionals) the possibility to make payments avoiding the use of legal money and offsetting debt and credit positions. In this way, a sort of "barter" of goods is produced, even if revisited in an innovative way on the level of the telematic solution. For example, material purchases may be made on these circuits without any cash outlay and the debt is repaid at the end of the year without interest, reselling the goods produced to the other members of the circuit. In this way, members of the consortium may offset their debts with credit towards the circuit subjects, without committing money liquidity, except for any imbalances that may arise from the calculation of the balance at the end of the year.

This activity is an alternative to traditional trade credit and short-term credit provided by banks or other financial intermediaries for participating companies. However, debt and credit relationships arising from the purchase and sale of goods develop directly between companies, and the FinTech platform provides a virtual space where exchanges may occur, increasing opportunities for the commercial development of companies participating in the circuit.

It must be said, however, that on the basis of the information available on these companies' websites, some aspects that may be useful for assessing their service are not entirely clear, namely: how the circuit operates; whether the platform selects entities that can join it and what the criteria are; whether the platform

assesses the creditworthiness of the circuit members; the ways in which the credit (or debt) can then be transformed into a credit to be claimed (or a debt to be paid) in legal currency.

#### *c & d) Club deal & fund raising from qualified or institutional investors through debt securities*

As part of financial debt collection activities, clubdeal solutions may also be identified, i.e. activities carried out by FinTechs that focus exclusively (or predominantly) on institutional or specifically identified investors interested in subscribing to debt securities issued by companies presented on the platform.

This creates telematic markets on which funds may be raised on maturities that are currently concentrated on the short term.

To date, only supervised FinTechs operate in this area and include Italian investment firms and branches of foreign banks (see Table 1).

### *3.1.2 Investment activities and services*

With reference to the second area of financial activity shown in Table 1, we can first point out that there are several operators specialised in this field, offering simple information services or trading platform services, financial management services and advisory services.

#### *Trading*

Trading services are understood in the broad sense, as they may relate to the provision of aggregated and revised information on financial markets or to the provision of a trading platform (for retail or institutional customers), including copy-trading and e-trading activities.<sup>44</sup>

Among the initiatives activated in this field (see Table 1) we find Euklid, founded by Italians but based in London, which uses artificial intelligence to elaborate trading strategies; this service was initially dedicated to trading in cryptocurrency, but the company aspires to expand its own activity (Magnani, 2016).

In the absence of Italian trading platforms, we use some examples of UK FinTechs, which provide advisory services or development of trading strategies; the activities are similar to those of traditional intermediaries, but are performed using advanced technologies. As shown in Table 1, the FinTechs considered operate under

<sup>44</sup> E-trading platforms are trading interfaces that allow end investors (including retail investors) to trade securities on markets based on an agreement with their provider. These are tools that have already been on markets for several years and that are also offered by some traditional intermediaries. Copy-trading platforms, according to the definition adopted by the Basel Committee (BIS-BCBS, 2018), are similar to traditional e-trading platforms, but differ from the latter in that they add the ability for investors to automatically copy the trading strategies of other traders and combine the aspect of trading with the social aspect.

an authorisation system and are regulated. In particular, Wisealpha, under the supervision of the FCA, offers a trading platform for senior corporate bonds. The company eToro, also supervised, is a social trading platform, which allows its customers to "copy" the investment strategies of other traders; we also point out that the British company (eToro UK) is supervised by the FCA, whereas the company operating in the European market (eToro Ltd) is authorised by the Cypriot Supervisory Authority.

### *Financial management*

At the time of writing, there was only one active FinTech in Italy in the field of financial management; for this reason, it was considered interesting to also include in the sample examined two other foreign experiences, as an example of the range of activities that are being developed in this area. This category includes, firstly, treasury management services, i.e. revenue and expenditure management services.

In most cases, this service consists of the possibility for the customer to view and "plan" expenses; only a few FinTech companies also associate this service with a payment application. In particular, the service offered makes it possible to manage the expenses and income on the customer's accounts and credit cards in a unified way. It represents one of the many services that could be provided by banks (which already have customer data) and that are disintermediated by non-supervised operators, to which the customers give permission to access their bank data, through technological applications.

Another type of financial management service is the so-called "electronic moneybox". In this case customers use an App to set aside an amount of money for each purchase made. At the time of writing, there is an App that acts as a pure electronic moneybox and another that also allows investment. In the first case, the App does not allow investments directly through the FinTech and the money is not bound for a predefined period, but is always accessible to the user. Since this service has not previously been provided in similar terms by financial intermediaries or other parties, it constitutes a product innovation, made possible by the use and diffusion of IT tools and the Internet. There is also a second, more recent operator that allows the money accumulated in the moneybox to be invested in funds, according to the desired risk/return profile. This activity could be similar to an accumulation plan, since, in addition to the electronic moneybox service, an investment service is provided. The operator providing the service is a supervised intermediary (asset management company).

### *Financial Advice*

Some FinTech companies offer financial advisory services on third-party products or their own brand products.



Automated advice is a way of providing service that, as is well known, is largely regulated by European and national standards. In the domestic context, there is a plurality of entities providing automated advice; they have different characteristics as well as different organisational and business models. In line with foreign experience, it is possible to distinguish the so-called pure model from the hybrid model. The first is characterised by the automation of all stages of the service (the so-called Pure Robo-Advice). The second model combines and/or alternates the human and digital elements in one or more stages of the value chain (so-called Hybrid Robo-Advice). A third model, known as Robo-for-Advisor, supports the advisor with automated tools, thus qualifying as B2B (business to business).

Table 1 shows cases with different business models.

A case concerns a non-regulated operator that via a website offers customers advice on different financial instruments which investors must then buy through their broker or bank.

A second case relates to a FinTech authorised and supervised by the FCA, which operates as an independent advisor in the field of asset management, accumulation plans and asset analyses.

In both cases we are faced with a process innovation, since advice is not a new service, being among those traditionally offered by supervised intermediaries.

The essential difference is the digital medium. FinTechs, in fact, offer their services operating exclusively online and make use of algorithms that analyse data without any direct interaction between the investor and an advisor<sup>45</sup>. More specifically, the use of algorithms allows the user information entered online to be processed in such a way as to formulate investment strategies identified based on the risk/return objectives derived from this information<sup>46</sup>.

These innovative automated advisory services (robo-advice) are widely spreading internationally, both within FinTechs and among incumbents, while in Italy they still remain limited in number, albeit growing.<sup>47</sup>

Foreign experiences also allow us to observe the different approaches used.<sup>48</sup>

45 The implications in terms of risk are discussed in paragraph 3.2.

46 For the analyses carried out on the development of this service and on possible lines of regulatory intervention, see: Capgemini-EFMA (2017) and the CONSOB (2017a, pp.9-10).

47 With reference to the Italian market, we only would like to mention that - alongside the two "pioneering" FinTechs (Moneyfarm and AdviseOnly, seen Table 1), which have been operating in the field of advisory and robo-advisor services since 2011 - the banks and supervised financial intermediaries (of various sizes) that have developed digitised services in this field - operating either on their own or in collaboration with FinTechs - have increased in number since 2016. Among them, are, by way of example: CheBanca!; Invest Banca; Fineco X-Net; Giotto SIM; Fundstore and the web platform of Banca Ifigest, which operates in collaboration with AdviseOnly; some cooperative credit banks (BCCs), on their own or allowing customers to take advantage of the automated management services offered by the multimedia platform RisparmioEPrevidenza (asset management company of the ICCREA banking Group).

48 For a more detailed examination of cases, see, inter alia, Politecnico di Milano (2017a).

FinTechs offer exclusively automated services, which allow a significant containment of costs and the offering of which may be "personalised" at different degrees; in fact, digital services are identified based on clusters of homogeneous investors, up to "digital" private banking services based on the profile of the specific investor.

Conversely, incumbents have used the digital channel to position themselves in a complementary manner to their traditional offering, but the levels of automation of the investment process vary. In particular, the large traditional international players in asset management and private banking use "advanced" digital platforms for investment advice (robo advisors) in a few cases, and more frequently have set up digital platforms that offer real-time tools, analysis and information. Most incumbents, therefore, assist their customers in a traditional way and use digitally advanced tools to improve the quality of services and contain costs, especially for the customers with low investment volumes, and it is just this the logic underlying the development of the so-called robo-for-advisor.

### *3.1.3 Payment Services*

The third area of activity shown in Table, which is the area of FinTech's original international development, includes numerous initiatives which can be grouped into two sub-areas: money transfers and payment solutions.

These services may cover both legal currency and virtual currency (so-called cryptocurrency).

For this reason, before going into the characteristics and methods of intervention of FinTech companies in payment services, we believe it is useful to pause to consider cryptocurrencies and, in particular, on BitCoin.

BitCoin is not the only digital currency, but is one of the most widespread. It is used both as an investment and as a means of payment, as an alternative to legal currency<sup>49</sup>.

It should be stressed that BitCoin, like other virtual currencies, differs from the so-called "close trade circuits" FinTech platforms, which are intended for transactions similar to "bartering" above described, in which the use of non-legal currencies with conventional value is aimed exclusively at identifying the debt/credit relationships that are determined based on the exchange of goods and merchandise between the members of the circuit.

Moreover, these currencies should not be confused with the payment instruments used in traditional regulated payment circuits. In fact, BitCoin and other

<sup>49</sup> In this regard, it should be noted that some platforms have begun to use virtual currencies to finance crowdfunding (Polytechnic, 2017b) and that the Falcon Private Bank was recently authorised by the Swiss Supervisory Authority (FINMA) to offer digital currency products and services in Switzerland (Guidoni, 2017).

cryptocurrencies are not recognised as legal currencies<sup>50</sup> and, as a consequence do not enjoy the protection provided by the regulations for the retail investors.

Unlike legal currencies, cryptocurrencies do not necessarily have to pass through financial intermediaries authorised to provide payment services and, therefore, the identity of those who exchange virtual currency is not known and verifiable (see Ferrari et al., 2016).

In addition, the operators (providers) offering services functional to the use, exchange, preservation and conversion of virtual currencies into legal currencies, are not subject to specific controls or to uniform rules at supranational level, including in the field of anti-money laundering.

These few elements alone highlight the inherent risks of cryptocurrencies, which have been the object of international and national consideration, including with reference to the legislative proposals on anti-money laundering, which are discussed further in paragraph 3.2. This issue is particularly relevant in view of the growing number of virtual currencies and interest shown by the public<sup>51</sup>, which explains the significant growth recorded at international level by FinTechs operating as a virtual currency provider.

#### *Currency transfer (national or international)*

Several FinTech systems enable fast and inexpensive money transfers using technology.

The cases listed in Table 1 include companies that offer multi-currency accounts or money transfer services, which may be combined with the possibility of purchasing goods and services in instalments or money transfer services even between telephone numbers.

The companies examined in this context are authorised by the FCA. The need for an authorisation system is justified by the fact that, given that they perform activities reserved for financial intermediaries, these companies must meet certain requirements (including capital requirements) in order to be able to perform their activity, even if they carry it out online or exclusively using technological means.

Once again, the innovation concerns the process and not the product, when referring to legal money transfer services.

50 BitCoin (together with other cryptocurrencies) cannot be considered a complete currency because they do not satisfy the defining characteristics of money (exchange intermediary or exchange medium; unit of account and value measure; reserve instrument or value fund); it is also not electronic money (as it is not regulated) and is not a monetary type (Ferrari et al., 2016).

51 As highlighted by the results of a survey carried out on Twitter by the European Central Bank and announced in February 2018, 75% of 30,000 respondents said they considered BitCoin as a valid alternative to legal currency (see <https://twitter.com/ecb/status/953945215299194880>). This seems to reflect the poor perception on the user's part of the risks inherent to non-legal currencies, even though they are widely highlighted in various authoritative locations; we focus on this in paragraph 3.2.

### *Payment Solutions*

In regard to payment solutions, however, there are several FinTechs, mostly non-supervised, offering application solutions for making payments at resellers', or to create online pots.

Distinction must be made between FinTechs allowing payments (which must be payment institutions or EMIs, or rely on a payment institution), and FinTechs which only provide a payment support service, since the latter do not carry out an activity subject to legal reservations and therefore do not need specific authorisations.

As shown in Table 1, only one FinTech operates in Italy as an electronic money institution (EMI), authorised and supervised by the FCA; this company offers a money collection service via the web and allows payment with many Italian commercial outlets through its app.

Other non-supervised FinTechs, listed in Table 1, rely on payment institutions (not always Italian) to provide their payment services through apps, whereas others have adopted a different business model, as they provide their money exchange or payment services in commercial outlets with which they have specific agreements, thanks to collaborations with supervised intermediaries.

The case analysis reported in Table 1 offers the opportunity to also mention an innovative service for the Italian market, which concerns an application dedicated to commercial outlets and professional firms, allowing smartphones to be transformed into a POS.

There is also a company active in Italy that develops solutions for payments and mobile banking, including for banks and other financial intermediaries. Among these, it has developed a wallet called "openpay", which has been used in apps for payments and money transfers, but also by some banks for monitoring account activity (BNL and the subsidiary Hello Bank, CheBanca!, Swiss Bankers and Unicredit for the tablet version).

A glance at the wider range of services offered in this field abroad, allows to grasp innovative developments that, in the future, could also affect our market. In particular, FinTechs are developing bill collection and payment services, mobile wallet services, prepaid cards for children connected to apps that allow parents to monitor the size and type of expenses incurred by their children, or applications to support online purchases. These services and functions do not represent financial activities in the strict sense; they are technological tools that allow a different use of payment instruments and, therefore, the activities carried out through them are not entirely comparable to those of supervised financial intermediary. The analysis of the operational applications also shows that these solutions are implemented thanks to the collaboration between supervised financial intermediaries and FinTechs. For example, prepaid cards, used within the scope of the services described above, may be issued by an authorised intermediary (which may also be based in a country other than that in which the FinTech's service is offered) and, therefore, the traditional

circuit of payment instruments is used; in addition, the FinTech company provides the customer with an application for the use of the card, for example to connect it to the parents' smartphone, who use the app to pay funds onto a prepaid card and monitor the money spent by their children.

There is also an operator in Italy that provides payment and money transfer services to wallets (from legal to virtual currency) and that has some ATMs installed at commercial outlets, with the aim of facilitating the handling of virtual currency and allowing holders to make payments to merchants. This is currently possible only in a shop in Northern Italy, according to the company's website.

### *3.1.4 Insurance Services (InsurTech)*

The fourth area of business shown in Table 1, includes FinTech's insurance services, also referred to as InsurTech. Analysis conducted at a global level predicts a substantial growth in InsurTech platforms in the coming years and indicates that this will allow the offer of increasingly customised policies and an important change to occur in the value chain in the insurance market<sup>52</sup>. Among the many InsurTechs established abroad, we point out the cases of two insurance companies operating exclusively online that have achieved in a few years significant operating volumes, namely ZhongAn Insurance (China) and Oscar (USA).

Lemonade, an InsurTech that uses artificial intelligence techniques and offers its products through chat bots, without the intervention of human brokers but only through computerised chats, was also created and developed in the USA; moreover, the company can decide to donate any extra profits to a charitable cause, identified by the customers themselves (transaction subject to the decision of the board of directors).

It is also worth mentioning one of the major European companies, Clark, Germany's leading digital insurance broker, which offers insurance products from more than 160 companies and helps customers find the best deals through robo-advisor technology.

In Italy, some insurance companies also operate through telematic channels, but InsurTech is currently underdeveloped, although it is attracting growing interest from operators<sup>53</sup>.

Table 1 shows the case of an Italian group operating in digital mode, to which companies authorised as credit brokers and insurance brokers belong, providing financial services; in addition, the group provides outsourcing services for credit, portfolio management and insurance claims. Another player, already present on the Italian market for some time, has recently re-branded itself and has focussed on the development of the online channel for the distribution of its products.

<sup>52</sup> See EY (2017b); StartupBusiness (2017), with reference to the Juniper Research Report, Fintech Futures: Market Disruption, Leading innovators Et Emerging opportunities 2016-2021.

<sup>53</sup> For the interesting operational developments of InsurTech in Italy, see ANIA (2017).

There is also another Italian operator operating as InsurTech (Table 1), offering products from various companies and different risk areas (accidents, third party liability, etc.).

All operators on the Italian market are subject to IVASS supervision (the National Authority on Insurance companies).

The objectives pursued by InsurTech, which only recently arrived in Italy, are essentially to simplify the choice between products and customer support in the management of policies and claims or, even, in related services (fines, car repairs, etc.).

Other Italian start-ups carry out activities that can be defined more correctly as "instrumental", which are discussed in the following paragraph.

### *3.1.5 Instrumental or functional activities to financial intermediation*

We now move on to a brief examination of the second macro-area of activities shown in Table 1, which does not refer to financial intermediation activities, but to activities carried out by Tech companies, which develop tools and services that are instrumental or functional to operations in the financial sphere. As already explained (paragraph 2), Tech companies do not carry out financial intermediation activities and there is no question of their being subject to supervisory regulations, at least until they diversify their activities in the financial sphere, becoming TechFin.

These instrumental services can be useful for the development of the activities carried out by FinTechs as well as by intermediaries and financial markets.

The analysis of these cases is useful for understanding the evolution of the market and the prospects for the development of financial activities, determined by increasingly advanced technological supports that are applicable in various fields (e.g. back office, compliance, trading, financial advice, data management, etc.).

In Table 1 we identify the main types of services offered by these Tech operators, briefly listed below.

- Data management, big data and data analytics companies providing data management services (repositories), ratings or scoring<sup>54</sup> and data processing.
- Many companies have specialised in the development of blockchain or DLT (Distributed Ledger Technology) technologies, in support of various activities, including non-typically financial activities.
- Given the importance of the IT risks and cyber security, many Tech companies are being set up and developing in the areas of security, compliance and personal data protection services; this category includes services of predictive

<sup>54</sup> An example is ClearScore, which defines the rating of customers who request it. This company, which is not active in Italy, has been authorised by the FCA to access sensitive data from its customers, even though it does not operate as a financial intermediary.

intelligence, artificial intelligence, detention and fraud prevention, as well as the aforementioned cyber security.

- Tech companies pay significant attention to the development of useful applications for the so-called RegTech activity, which not only involves financial intermediaries, but also the Supervisory Authorities<sup>55</sup>; RegTech, in fact, identifies technological applications that allow supervised financial intermediaries to verify, almost in real time, the impact of regulation on their activities and exposure to risks, with benefits also in terms of regulatory compliance<sup>56</sup>.
- The technological applications in the insurance sector are also particularly interesting and this explains the large number of Tech companies that are also developing a wide range of services in Italy. In particular, they offer useful technological solutions for the development of activities to insurance companies, such as apps for the purchase of policies, risk and damage assessment systems, disease specific control technologies, wearable devices to store health information on customers<sup>57</sup>.
- There are also companies providing comparison services (between offers of financial services and other related services) and service aggregator websites.

#### *Comparators and information management methods*

With reference to comparators and information management tools, it should be noted that the term "aggregator" means a website that collects and presents information of various kinds on a single topic, but does not make comparisons of commercial offers. An example of an "aggregator" is Fintastico, a company that provides information on the FinTech world; in particular, the website takes census FinTech operators and collects news and general information on FinTechs, but does not provide - let alone compare - product offers, terms and conditions or costs.

The term "comparator" refers to a "comparator" website, which provides a comparison of financial products and services (e.g. leasing, mortgage, current account) offered by different suppliers; they can also perform ancillary functions (e.g. pre/post sales assistance).

As shown in Table 1, in addition to the abovementioned group, which makes comparisons between mortgages, personal loans and insurance products, another example is Trussle, a mortgage broker authorised by the FCA but not active in Italy; in addition to offering a mortgage comparison service, this company carries out a

55 As indicated by the ESMA (2017a), "Reg Tech can be defined as technology-based solutions whose aim is to facilitate the compliance with regulatory requirements. Unlike Fintech, Reg Tech is not specific to the finance sector because Reg Tech can be used in any regulated sector. In addition, while the objective of Fintech is to create new business opportunities by changing the way financial markets operation, the aim of Reg Tech is to help market participants and regulators to comply with regulation in a more efficient manner".

56 For more information on RegTech, see Arner et al. (2017), IIF (2016) and Deloitte (2015).

57 For a more extensive discussion of cases, see StartupBusiness (2017); for further operating indications, see ANIA (2017).

service to monitor contractual conditions on behalf of its customers, as well as supporting the debtor in the transfer of the mortgage<sup>58</sup>.

The business models outlined in this context show an area of overlap between the provision of information services, instrumental to the development of the financial activities of third party operators (Tech), and the direct performance of financial activities in the capacity of brokers, credit brokers or other types of financial operators (FinTech).

Moreover, and more generally, the issue of comparators applied in the financial field is particularly delicate because this type of service is able to guide customer payment, investment and financing choices. This obviously raises all the issues related to the completeness of the information used, the correctness of its processing, the degree of transparency of information and fairness towards the customer, as well as any conflict of interest situations that could affect the behaviour of the company offering these services.

This specific problem has already been addressed in Italy, with reference to the insurance sector<sup>59</sup> and the initiatives taken, both by the National Supervisory Authority for the insurance sector and by the Supranational Supervisory Authorities and the European Commission, may certainly offer useful indications for the entire regulated financial industry. At the same time, they are not sufficient in view of the evolution of the market and the development of operators not subject to supervision.

We would like to note here that the legal studies that have been undertaken have raised important questions on the advisability of taking action at Community level to remove and regulate the obstacles that currently exist to consumer protection<sup>60</sup>; this in view of both the development of unregulated operators, using online platforms and digital tools for the provision of financial services, and the policies outlined at European level on the cross-border development of the marketing of services and the creation of a single digital market in Europe.

From a legal point of view, therefore, the issue of comparators is only "the tip of an iceberg" of a wider problem, namely consumer protection, which emerges in all the examples of computer and digital innovation and highlights the opportunity for a review of European regulations<sup>61</sup>.

58 It should be noted that in Italy there are specific rules governing the behaviour of supervised financial intermediaries to protect customers who intend to subrogate (portability) mortgages; therefore, customers should, first of all, be informed of these rules in order to be better protected in the event that they intend to carry out a mortgage portability transaction.

59 We refer to the outcome of the survey conducted by IVASS in 2014, which could only be carried out on the comparator sites of supervised intermediaries; see IVASS (2014). There are also initiatives implemented by other Authorities (see, for example, AGCOM <https://www.agcom.it/motori-di-calcolo-per-la-comparazione-tariffaria>). However, greater coordination of initiatives would be useful in order to avoid incorrect behaviour on the part of "comparators" (not managed by supervised financial intermediaries) who only offer products from their trading partners, without - among other things - declaring conflict of interests resulting from such agreements.

60 On this subject, see Paracampo (2016).

61 In this sense, see Siclari-Sciascia (2016), who also indicate the possible guidelines for a change in European legislation on these issues.



### 3.2 Taxonomy of risks

Having examined the differences and similarities between the financial activities of FinTechs and supervised financial intermediary, we now focus on the risks they generate.

As is well known, financial activities are intrinsically linked to risks (and not only to financial ones) and the application of technological innovation in this area brings with it new and/or more intense exposure to risks, especially of an operational and strategic nature.

Clearly, due to the nature of FinTech companies, these two elements combine with each other, in view of the fact that FinTechs carry out their financial activities by means of IT and digital applications.

At the same time, as supervised financial intermediaries evolve their IT systems and make use of new technological applications (telematic and digital), their exposure to these risks increases. These risks can be defined as "emerging" compared to those typically associated with more traditional activities.

Table 2 provides a necessary and a taxonomy of the risks to which all financial operators (whether supervised financial intermediary, FinTechs or TechFins) are potentially exposed. Clearly, the actual level of exposure to each type of risk depends on the business model adopted by the individual financial operator and, therefore, on the specific activities carried out by each of them and on the technological applications adopted for this purpose.

The analysis is carried out by trying to more thoroughly assess whether financial activities that are similar or homogeneous are managed in the same way by the different types of financial operators and, consequently, whether and how many differences can be found in terms of risk consequences.

This type of analysis is not easy and, therefore, we do not believe that the results achieved here cover all of the many problems associated with the wide range of applications. However, this study perspective is deemed appropriate as it may contribute to reflections on the important issue of the degree of affinity between supervised financial intermediaries and FinTechs and, consequently, on the evaluation of the degree of regulatory inconsistency that today characterises the financial industry.

In particular, the effort to identify the parties who bear the risks of activities carried out by the various types of financial operators, makes it possible to highlight the problems that arise for these operators as well as the impact they have on the other parties involved in financial intermediation activities, i.e. primarily customers (Table 2).

Table 2: Risks of FinTech operations

RISKS FOR FINTECHS	
<i>Credit/counterparty risk</i>	<i>If the FinTech does not only operate as a marketplace but also finances (in full or in part) the borrower</i>
<i>Market risk</i>	<i>If the FinTech does not only operate as a marketplace but also finances (in full or in part) the equity issuer</i>
<i>Operational risk</i>	Legal risk (including cross-border risk)
	Conflict of interests
	Fraud by users (customers or third parties)
	ICT risk, including:
	Cyber risk
	Errors or inadequacies of the algorithms operational risks related to third parties providing services ( <i>including cloud computing</i> )
<i>Compliance risk</i>	transparency and fairness ( <i>transactions not carried out in the full interest of the customer</i> )
	Risk of carrying out unauthorised activities
	Risk of money laundering or use for terrorist purposes
<i>Strategic risk</i>	Governance capacity
	Macroeconomic Situation
	Technological environment (adoption of new systems, scalability, interoperability)
	Competitive environment
<i>Reputational risk</i>	
RISKS FOR CUSTOMERS	
<i>Credit /counterparty risk</i>	<i>If the FinTech operates as a marketplace</i>
<i>Market risk</i>	<i>If the FinTech operates as a marketplace</i>
<i>Liquidity risk (absence of secondary market)</i>	
<i>Operational risk</i>	Legal risk
	Fraud or misconduct of FinTechs (platforms)
	data protection and privacy risks: risk of loss or improper use of customer data by the platform; unauthorised access by third parties to personal data provided by the customer via the platform
<i>Risk of overconfidence and behavioural bias</i>	
<i>Risk of poor diversification of customer portfolio</i>	

Source: Authors' processing of OICV-IOSCO (2017) and BIS-BCBS (2018).

The first topic offers some food for thoughts on the opportunity to define a level playing field between the supervised financial intermediaries and other financial operators, which are currently not equally regulated.

The second helps to clarify the centrality of customer protection in the dynamics of FinTech development, especially with reference to retail investors, who as already mentioned in paragraph 3.1, are the "elective" (although not exclusive) type of customers of these financial operators.

It should be noted that, precisely in view of the attention paid to those bearing the risks of FinTech activities, we have also included in the risk taxonomy shown in Table 2 two cases ("overconfidence risk" and "risk of poor diversification of the customer's loan and/or investment portfolio") to which financial operators are not exposed while customers are. This is for the sole purpose of underlining the existence of these risks in relation to individual operating cases that are particularly important in the context of the activities carried out by FinTechs and to provide a more complete understanding of the issues discussed herein. In this regard, as will be clarified, the analysis shows that the degree of protection provided through regulation to customers (including retail investors) of supervised financial intermediaries is significantly higher than that (extremely low) provided to the customers interacting with FinTech operators that are not subject to regulatory supervision.

The objectives outlined above are discussed below, in consideration of the risks associated with some of the main financial intermediation activities previously described in paragraph 3.1, i.e. equity and debt financing, as well as payment services. The other risks that transversally affect the activities carried out by financial operators are then analysed.

In addition, with reference to each operating area, the main types of entities affected by the risks examined are highlighted for each case; in particular, the following categories are considered:

- FinTech platforms. As emphasised in the previous paragraph, in most cases, the platforms do not operate on their own account (indirect intermediation circuit), but provide a virtual place where supply and demand of funds meet (marketplace, i.e. direct intermediation circuit). Consequently, the risks connected with the activities carried out through the marketplace are fully borne by the customers. The individual types of risk will also be analysed by comparison with the risk that emerges when the activity is carried out by supervised financial intermediaries rather than by the platform.
- FinTechs' customer fund providers, i.e. those registering on the platform or interfacing with the FinTech to invest or grant loans to third parties (fund borrowers); in this context, the main interest relates to retail investors.
- FinTechs' customers receiving funds, i.e. entities registered on the platform or interfacing with the FinTech to apply for funds through financing or investment by third parties (fund providers).
- FinTech's customer money providers and receivers, i.e. those who make payments (in legal or virtual currency) against payment services using alternative or supplementary channels or applications compared to traditional ones (debit and credit cards, online banking, etc.).

### *3.2.1 Equity based financing risks*

With regard to equity based financing activities, it should be noted first of all that the investors who subscribe the securities offered on the platform by the companies requesting funds, become shareholders of the company, with all the related consequences in terms of the dividend and voting rights that derive from the type of shares that are offered by each specific project. This applies to any investor who decides to acquire shares in a company, even those that are not listed, as is usually the case with FinTech corporate customers.

It is precisely the peculiar nature of FinTech companies' customers (the majority of which are start-ups and SMEs) that brings out two critical aspects: the suitability of the price and the suitability of the investment.

With regard to the first aspect, according to a recent study by Politecnico di Milano (2017b), companies that apply for funds through Italian FinTech platforms are not suitable to be subjected to due diligence by institutional investors; in the face of this, in a self-regulation logic, the platforms that are most attentive to reputation may provide better criteria for the preparation of project proposals and pre-selection mechanisms entrusted to incubators<sup>62</sup>. However, the problem remains that the methodologies generally adopted in the evaluation of the offer price (similar to those of venture capital) may generate an overvaluation of securities; among other things, the crowdfunding platform cannot be equipped with the monitoring and governance tools that venture capitalists normally adopt<sup>63</sup>. This explains why the securities offered to platform customers have a particularly high risk profile.

The importance of the second aspect (suitability of the investment) is therefore immediately evident, especially from the retail investor point of view. The investment should be the conscious result of a careful risk profile analysis, which the investor must be able to carry out independently, if they do not want to rely solely on the platform's opinion. The ability to do so not only depends on the investor's expertise but also on their ability to retrieve information or critically evaluate the information provided by the platform. Furthermore, if it is the platform that selects - on behalf of the fund lender - the investments deemed suitable based on the risk profile of the latter, the customer does not receive any further information on that specific company.

The risks associated with this type of activity are obvious and, in the various countries where FinTech is not regulated, they are borne by customers who, beyond their skills and awareness, may not be able to decide to whom to allocate their investments. In particular, the choice cannot be made if the FinTech is to channel the investments and there is no mechanism for direct selection of investment proposals.

62 Source: FinTech operator interviews with CONSOB.

63 See. Politecnico di Milano (2017b).

These risks are particularly critical in contexts where platforms are not subject to any form of regulation<sup>64</sup>.

In Italy, the regulations issued by CONSOB established that equity crowdfunding platforms, which also address retail investors, must submit a suitability questionnaire to the customer. The platform managers are required to warn investors of the unsuitability of the investment chosen, as established by CONSOB Regulation. We must note, however, that unsuitability of investment does not prevent investment from being finalised. Analysis of the platforms' websites shows that the investor has the possibility of making the investment in case of unsuitability as well<sup>65</sup>. Therefore, according to CONSOB Regulation, the platform must have the requirements and structures necessary to assess the suitability of investments for the retail investor, but the decision and responsibility for making investments (and, therefore, the related risks) fall on the platform's retail customer<sup>66</sup>.

It should be noted that, even when investors use a supervised financial intermediary to make a purchase of shares (or more generally of securities) without access to advisory services (e.g. through online trading platforms), they can choose the securities to purchase on their own, because the supervised financial intermediary in this case acts purely as the executor of the investors' orders. However, before buying (and anyway, at regular intervals) the investor must undergo the MiFID profiling that determines the suitability of the investment based on the investor's knowledge, competence about markets and financial instruments and risk propensity. Moreover, the investor has the possibility to access a series of informative documents that must be made available by the supervised financial intermediary. In this sense, the provision contained within Art. 16 of the aforementioned regulatory proposal by the European Commission is to be welcomed, according to which crowdfunding platforms would be required to provide a *key investment information sheet* which must contain the main information on the risks and characteristics of the proposed investment (European Commission, 2018).

In addition, it is also useful to emphasise that using an online trading channel to independently evaluate and choose an investment, assuming the risk of its possible unsuitability, is different from entrusting funds (savings) to those who select

64 The crowdfunding survey published by ESMA (2015) points out misalignments in national regulations (11 countries have introduced specific regulations on the subject) and, in addition, highlights that the platforms are able to circumvent European regulations, that the application of the exemption from capital requirements has been interpreted differently in the various Member States and that there are different national provisions on the mandatory nature of prospectuses. In 2017, ESMA reaffirmed the need for harmonised regulatory intervention on crowdfunding at European level, considering that this would ensure investor protection and market integrity and help promote the development of the Capital Market Union (ESMA, 2017a). On the perspectives for Europe-wide regulation opened up by the European Commission's proposal (2018), see paragraph 3.1.

65 For example, the investment guide provided on FinTech Crowdfundme's website states "Whatever the result of the [suitability] test, the investor may enter the amount he/she wishes to invest". See [www.crowdfundme.it](http://www.crowdfundme.it).

66 Despite the absence of uniform regulation at supranational level, in various countries (including Italy) limits have been introduced to protect investors (e.g. limits on investment by retail investors in equity crowdfunding have been introduced in Mexico, Canada and the US). In other countries, however, the FinTech is not regulated. It is therefore appropriate to highlight that investors who have access to investment schemes on foreign unauthorised (i.e. offshore) platforms are exposed to a series of other risks, including in particular the legal risk, which materialises when an eventual dispute must be addressed in a foreign jurisdiction (OICV-IOSCO, 2017).

(and then decide) in what to invest, according to a selection procedure that is not sufficiently transparent.

In addition, it should be noted that the platforms may not be subject to specific obligations in the event of errors or misconduct or conflicts of interest, as was also the case in Italy until 2017. However, in Italy, as previously mentioned (paragraph 2.1), when amending the Regulation (in November 2017<sup>67</sup>), CONSOB decided that the portal managers that do not meet the requirements set out in Art. 59 of the Consolidated Law on Finance, should subscribe an indemnity scheme or take out an insurance contract to cover professional liability. For this purpose, a transition period is envisaged, so that the platforms may equip themselves with the hedging instruments mentioned above without compromising regulatory compliance, which is necessary to maintain authorisation and registration in the register; therefore, the Regulation came into force on January 3, 2018, whereas the term for fulfilling this obligation has been postponed by six months. Also on the subject of conflicts of interest, the European Commission's proposed regulation stresses that crowdfunding platforms must act as "neutral" entities between investor customers and customers applying for funds, and establishes certain criteria to be respected for the platform to operate in the absence of a conflict of interest (European Commission, 2018).

The guidance given by the European Commission in favour of a precise regulation on crowdfunding platforms is considered fully reasonable. In fact, the analysis carried out so far shows that the boundary between the activities of these platform and asset management appears blurred and certainly worthy of a more general reflection on regulation at the supranational level, aimed at reconsidering the activities carried out by any financial operator whether this operates as a broker, manager, advisor, etc.

It is also true that equity crowdfunding platforms could have reputational incentives in selecting crowdfunding campaigns to advertise on their portals. It is, however, equally likely that the multiplication of platforms may bring a certain fragmentation of the offer; it appears therefore to be unlikely that all initiatives presented on platforms are the best (or even "excellent") investment opportunities as the platforms say.

Although not discussed here, the issue of the effectiveness of the reputational mechanism, as well as self-regulation and self-regulation initiatives, is a very critical issue and deserves further study.

67 It is useful to remember that in July 2017, CONSOB opened a public consultation on the revision of the Regulation on equity crowdfunding aimed at strengthening its control over conflicts of interest. The Regulation as amended (with Resolution no. 20204 of November 29, 2017) explicitly includes (in Art. 13, para. 1) a list of portal manager's obligations, which also include the prevention and management of conflicts of interest. The amended Regulation also explicitly prohibits portal managers registered in the ordinary section to display offerings on their portals regarding financial instruments issued by themselves or issued by their controlling, controlled or jointly controlled entities, if "conflicts of interest cannot be managed adequately, so as to avoid negative effects for investors" (CONSOB, 2017c).

### 3.2.2 Debt financing risks

In the case of debt financing (raising finance through debt instruments or loans), it is necessary first of all to reiterate the difference between the activities carried out in this area by FinTechs (lending crowdfunding and P2P lending) and those of supervised credit intermediaries<sup>68</sup>.

If the platform participates in the financing of fund applicants, it carries out an "actual" credit activity and assumes its own credit or counterparty (pro-rata) risk: If, instead it acts as a pure marketplace, as is more frequently the case, the financed projects' risks are borne entirely by the fund lender customers (Table 2).

The average risk profile of the projects financed by the individual platforms will depend on the type of operations and customers (borrower of funds) chosen by these platforms; it should be noted that the range of customers may also extend to "unbanked" customers, given that one of the FinTech objectives is the diffusion of financial services in favour of customers not served by supervised financial intermediaries<sup>69</sup>.

In order to analyse the risks to which the financing entity is exposed, we must first clarify the various dynamics that develop when the FinTech company participates or does not participate in the financing activity (Table 2).

Where the FinTech company is involved in the financing and/or underwriting of debt securities, it has a strong incentive to verify the identity and creditworthiness of the fund applicant in order to reduce the platform risk and credit risk inherent to this type of business and which, in this case, the FinTech assumes on itself. As highlighted in paragraph 3.1, a FinTech company operating in this way in Italy is subject to the issue of an authorisation by the Bank of Italy to operate as a credit intermediary or Italian investment firm. We would like to add, however, that, even regardless of the regulatory framework, the direct assumption of risks generates a system of incentives that leads the FinTech to manage exposure to these risks (credit

68 From the point of view of regulation and, therefore, investor/financial protection there is currently no specific and uniform regulatory framework at European level for P2P lending, despite the EBA recommendation to converge towards shared regulation among countries (EBA, 2015). The EBA also details the possible regulatory interventions on lending crowdfunding, highlighting the opportunity that portal managers are authorised or registered with national authorities, that the risks for marketplace participants (disclosure) are clarified and explained on the platforms, even indicating whether the companies requesting funds were subjected to due diligence. Furthermore, the EBA stresses the need for the platform to verify the identity and contact details of the fund borrower (KYC) and the need to establish a form of investor/creditor protection to be activated in case of non-payment of the debt. To date, regulatory requirements are still uneven. Having already referred to the provisions issued by the Bank of Italy on social lending (paragraph 3.1.1), we would like to add here that in other countries, the requirements for market participation as the loan originator or lender are regulated. For example, in the UK, origination is subject to FCA authorisation for P2P lending. The same is true in France, where there are also criteria for both fund lenders and borrowers. In Germany and the USA, there is no specific legislation on P2P, but US legislation sets out what requirements loan originators must meet and what criteria apply to investors in terms of the financial adequacy of their investment. See AIAF (2015); OICV-IOSCO (2017); BIS-FSB (2017), TAB.5. The proposal formulated by the European Commission (2018) launches a harmonisation process of the crowdfunding regulation, at least within the European Union.

69 Politecnico di Milano (2017b) indicates that this group of customers can also be found within FinTechs on the Italian market. In the interviews conducted at CONSOB with FinTech operators, the latter highlighted the significant risk to which they are exposed when working with unbanked customers in Italy or, more generally, in countries where financial services have been widely used for some time.

risk, risk of fraud by fund users, etc.) and limit the negative impacts that could be had on the company's profit and balance sheet. It should also be noted that if the loans are extended by institutional and qualified investors, the FinTech will be subject to a precise assessment by these parties, which should naturally lead the FinTech to a correct and efficient risk management in a medium/long-term perspective.

The incentive system changes and could be significantly weakened if the FinTech company operates as a pure marketplace, i.e. without assuming the risks associated with the financial services offered by the platform, as well as in cases where it mainly targets retail investors. In this context, especially in the absence of regulation, the FinTech's conduct would essentially be determined by reputational concerns and thereby strengthen its confidence of its customers, who bear the risks.

It is, therefore, important to increase analysis from the customer and fund provider's point of view, and to this end, we refer to the two platform operation models, already mentioned in paragraph 3.1.

In the case of application of the direct model, the platform allows the individual investor to choose independently which entities and/or projects to finance. However, the case analysis shows that, even when using the direct model, the platform can still formulate a scoring (often based on an algorithm) on the fund borrower, in order to guide the choices of the lender, in which case the same considerations apply that we will do a little further with reference to the diffused model.

Looking now at the hypothesis of an independent choice made by the customer – fund lender, some observations can be added as to that which has already emerged with regard to equity crowdfunding. In this case, the customer should have the appropriate skills, information and tools not only to make an informed and correct selection of projects prior to concluding a contract, but also to take (ex post) specific actions in the event of the debtor's creditworthiness deteriorates or in case of debtor's default. It does not seem plausible to believe that these conditions may fit a retail investor, who generally is the target customer of these platforms; nor does it seem to us that these problems may be overcome by platform initiatives in the absence of incentives that go beyond self-regulation aimed at protecting reputation. The operational evidence indicates a further critical aspect, which may be found regardless of the selection model (direct or diffused) of funding adopted by the individual platforms. The credit risk to which investors are exposed is further accentuated by the fact that FinTechs, which are usually also authorised to recover defaulting loans on behalf of investors, generally operate with limited financial resources, which could restrict the use of traditional recovery methods which are typically costly.

We observe, therefore, (as with reference to the efficiency of the assessment carried out by the platform) that investor protection involves costs that the platforms will not necessarily want to bear spontaneously.

Turning now to the application of the diffused model, the fund lender carries out a self-assessment and chooses the risk/return class for the loan or debt



securities; the platform assesses the fund applicant's risk profile (through scoring<sup>70</sup> or, more rarely, through the identification of risk classes) and then proceeds with the matching between borrowers and lenders based on the risk profile. As a result, the lender for debt financing (as seen above for the venture capital investor) bears the credit or counterparty risk of a project assessed and selected by the platform.

Indeed, this mechanism allows easier diversification of financing/investment portfolio of the fund lender customer. However, it is equally clear that it exposes the same customer to the credit risk associated with the fund borrower (or rather to the plurality of borrowers included in the same risk class), and also to a number of other risks that may be generated by the platform's choices. These risks may be caused by conduct in conflicts of interest, as well as the choice not to use data from authorised Credit Rating Agencies or, again, the use of an algorithm that later turns out to be incorrect. It is worth discussing these important aspects in depth.

First of all, the platform matching described between fund borrowers and lenders highlights the problem of possible conflicts of interest, which, in the absence of regulation, may be particularly critical from the perspective of the lender-customer. In fact, the interest of the customer is to contain the credit or counterparty risk assumed, whereas the interest of the platform is to carry out a growing number of transactions. No less important are the conflicts of interest that may arise if the platform favours the operations of affiliated or partner companies. Also on this subject, we remember merely that supervised financial intermediaries are required not only to act in the interest of the customer, but also to disclose any possible conflict of interest.

In addition, the platform's choices on the arrangement of its work and the procedures may have a significant impact on the quality of the service it provides to its customers.

Consider, by way of example, the risk that the algorithm used by the platform is not correct or updated and maintained; that the platform does not use the relevant information or that it does not price credit risk correctly (OICV-IOSCO, 2017); or, moreover, that the identified pool of loans is not homogeneous and that the lender is exposed to a credit risk greater than expected.

In addition to algorithms, computer calculation and assessment procedures, the type and historical depth of the data and information on which the platform bases its evaluations are also important; therefore, the quality of the data and, therefore, of the assessment made will also depend on the willingness of the platform to bear costs that, ultimately, serve to protect the customer<sup>71</sup>.

70 This paper does not discuss the validity or comparability of the scoring systems applied by FinTech with those applied by supervised financial intermediaries. We simply point out that some authors (AIAF, 2015) believe that the validity of the models and variables used to achieve a credit scoring should be subject to certification by a third party, in order to mitigate reputational and operational risks.

71 During the FinTech operators interviews with CONSOB, this availability did not always emerge; in particular, some FinTechs consider the costs related to the purchase of the databases (Crif, etc.) to be too high.

The organisational and operational choices of the platform may also give rise to legal risks for the customer, as well as risks linked to data and privacy protection (Table 2), which are discussed in section 3.2.4.

With regard to the possible legal risks for customers, the analysis carried out on lending-based financing platforms operating in Italy (paragraph 3.1) shows, by way of example, that they often use foreign payment institutions, probably due to more favourable regulatory framework being applied to these operators in their respective countries of registration. In this case, as in all cases involving entities in different jurisdictions, or in cases where there is a regulatory mismatch between different jurisdictions allowing regulatory arbitrage, the legal risks to which financing transaction counterparties and, first and foremost, the fund lenders are exposed increase (Table 2).

Similar considerations may be made with regard to the product characteristics and their degree of comparability, an issue that becomes even more complex for non-standard products, especially if offered in different jurisdictions. In the field of lending-based products, the issue is immediately evident, considering the financing operations typically proposed (by individuals and/or start-ups and SMEs) on crowdfunding platforms and which we have already discussed at length.

Therefore, overall it can be observed that, in the case of online platforms managed by non-regulated operators, it is not certain that the instruments are standardised or that the proposals are explained to customers with transparency and fairness that are sufficient or comparable to those required by the supervised financial intermediary regulations (Bofondi, 2017; Siclari-Sciascia, 2016).

In terms of the lack of product standardisation, there is also the further and important liquidity risk linked to investments and funding via FinTechs (Table 2), as there is no secondary market to exit the investment or exchange the instruments invested.

In view of the problems linked to liquidity risk, some platforms (equity crowdfunding platforms only, excluding debt financing platforms, to the best of our knowledge) have taken action to create a sort of secondary market with the support of specialist intermediaries (Italian investment firms). In particular, they intend to propose an exchange of shares between users of the same platform via an "ads" blog; so that those wishing to sell their shares may place an ad and await a response from those interested in buying<sup>72</sup>. This would, once again, create a direct circuit, the functioning and pricing rules of which may only be assessed in the future, as well as the degree of transparency of information to investors.

Another risk to which investors and lenders may be exposed through FinTech platforms is that of low portfolio diversification (Table 2). As mentioned, the high number of platforms leads to a fragmentation of the offering of debit/lending and equity products between different FinTech operators. Investors, especially if retail, could make their own investment decisions without looking at the set of proposals on

72 Source: FinTech operator interviews with CONSOB.

the market, but focusing on one (or a few) platforms. As a result, the subsequent portfolio may suffer from a lack of diversification (geographical, but also sectoral or by type of instrument). The limits imposed in some jurisdictions, including Italy, on the amount of loans and investments that a retail entity may grant through online platforms seem useful in this regard<sup>73</sup>. It should be noted, once again, that in order to effectively manage risks, the correctness of the information provided by platforms to investors is also important<sup>74</sup>.

The discussion on equity and debt financing shows that the problems associated with FinTechs' operations are not exclusively solved (although it would be a useful step forward) by providing greater disclosure. This allows platform customers to understand the various risks and consequences, in order to make a more informed and correct assessment of the services offered by a FinTech, which goes beyond the sole (and possible) economic advantage.

In particular, it emerged that customers do not move in a "neutral" market in which they can make their investment/financing choices, but rather in a sufficiently opaque and risky direct circuit, in which "their choices" are conditioned by third party assessment. In this context, it seems to us that the issues of financial competence and possible behavioural biases are less relevant<sup>75</sup>. The discussion above clearly shows that the priority is to define explicit mechanisms or incentives that are able to ensure that non-supervised FinTechs comply with conditions of fairness and transparency towards the customer. This could help to raise customer awareness for the purposes of assessing the assets' risk/return profile and also to define the responsibilities of the various parties involved in the different phases of the decision-making process, prior to the loan disbursement or the subscription of securities, the effects of which now only fall on the customer providing funds.

73 For a review of solutions adopted at international level, see OICV-IOSCO (2017). With specific reference to the Italian legal system, Art. 17, para. 3 of the CONSOB Regulation provides for the following limits and conditions for investors operating on equity crowdfunding portals: a) orders are issued by investors-individuals and the relative value is higher than five hundred euro for each order and one thousand euro considering the total annual orders; b) orders are issued by investors-legal persons and the relative value is higher than five thousand euro for each order and ten thousand euro considering the total annual orders.

74 For example, the Crowdcity platform, which operates in the field of invoice trading (Table 1) and puts companies who wish to discount their invoices in contact with investors. Among the investor benefits indicated on its website, this platform adds that: "Potential risks mitigated through the correct due diligence of the invoice portfolio, the diversification and the insurance coverage" (<https://www.crowdcity.it/en/investitori>). This statement appears "strong" and could lead the investor to consider an investment in such instruments as substantially "risk-free". It should be noted that diversification may not be sufficient to reduce the risk of the operation, given the limited number of investment opportunities. Finally, although the platform provides insurance cover in the event of insolvency, from the publicly available information, it is not possible to trace the policy counterparty, the conditions of cover, nor the cost; there is only a general reference to "policies with leading insurance companies in the trade finance business, the costs of which are subject to separate quotation."

75 Behavioural biases, which can characterise financing and investment choices, has already been extensively analysed in the literature and is also included in the OICV-IOSCO report (2017). In fact, the use of online platforms, with little control (e.g. see discussion on unsuitability) could increase the risk of overconfidence. In fact, the bias induces investors to be over-confident in their analysis and investment capabilities and this leads them not to seek information or advice from independent consultants or supervised intermediaries. The most critical point of these biases is that the investor is not aware of them (Gentile et al., 2016). This risk can be mitigated in the event that the retail investor (or lender) addresses a supervised financial intermediary, which implements all the procedures required by law to identify the saver's effective skills and the actual propensity to risk, which is required to declare any conflicts of interest.

### *3.2.3 Risks of payment services and virtual currencies*

With regard to payment services, we would like to point out that the main risks faced by FinTech customers active in this area are those connected to system failure, the possible use of funds for the purposes of money laundering and the financing of illegal activities, as well as fraud.

A particularly critical aspect that payment service users should consider is that the money deposited in accounts opened at a FinTech (or at any non-bank entity) will become unavailable should FinTech fail. Such a risk may arise, for example, if a person uses an app allowing payments at an approved retailer (in legal or virtual currency), using funds that are not from his/her own bank account, but from the FinTech account, which is set up, by way of example, by a rechargeable credit card issued by a FinTech. The risk may be made even worse if the FinTech is based in another jurisdiction, which provides a lower degree of consumer protection.

Cases of failure attesting to the extent of this risk in relation to virtual currencies have already occurred<sup>76</sup>; however, we believe that the risks that these technical solutions may generate more generally in the absence of regulatory measures, even in the area of the legal currency use, must be carefully considered.

With specific reference to cryptocurrencies (in the many types that are being developed, including BitCoin, LiteCoin, Ethereum, etc.), it should be noted that these entail exposure to additional risks related to the generality of payment services, given that they are used without the safeguards provided for legal currency users, both directly and indirectly in view of the supervision undertaken for the supervised financial intermediaries that manage the payment system. In particular, the risks of fraud, volatility (deriving from significant and sudden changes in value) and liquidity emerge. The latter is determined by the fact that, against payments made in virtual currency, the link with the legal currency and conversion methods are not necessarily explicit or disclosed. The liquidity risk therefore arises when the virtual currency is not immediately convertible into legal currency. Particularly critical, from this point of view, is the case of platforms that do not have legal currency that ensure the exchange of virtual currency.

In 2012, the ECB had already published a report on virtual currencies (ECB, 2012), clarifying the many risks inherent in their use, including the risk that they may easily be used for illegal purposes, fraud and money laundering, given that they are not legal currencies subject to controls.

Subsequently, the European Banking Authority identified more than 70 risks associated with the use of virtual currencies. However, at the same time, the Authority explained that a regulatory intervention in this area would take a long time for the definition of a complex architecture of provisions relating to capital requirements and governance, as well as for the creation of Authorities responsible

<sup>76</sup> Take, for example, the failure of some platforms that allowed BitCoin trading, which led to the loss of large amounts by customers who had accounts at the platforms in question, which were unable to protect and preserve the accounts of their customers (FSB, 2017).

for the integrity of virtual currency schemes (EBA, 2014). Based on these considerations, the EBA invited the National Supervisory Authorities to discourage credit, payment and e-money institutions (EMIs) from trading in (buying, selling or holding) virtual currencies. It also called for the extension of the European anti-money laundering legislation to virtual money providers. Moreover, the European Parliament, in its Resolution of May 26, 2016, expressed its agreement with the EBA assessments. On the one hand, it stressed the potential of virtual currencies and DLT technologies in making trade cheaper, faster and have greater privacy protection; on the other, they also highlighted the significant risks associated with them and the problems that may arise in terms of both consumer protection and systemic stability and the lack of effectiveness of monetary policies should these virtual currencies spread as substitutes for legal currencies. Another relevant aspect is the possibility that virtual currencies may be subject to speculative bubbles, which are outside the scope of regulation and supervision by the Supervisory Authorities (European Parliament, 2016).

The positions expressed at European level and referred to so far, therefore, highlight that virtual currencies pose problems linked not only to the risks to which the individual user is exposed, but also to the risks that could arise both from their widespread use (in terms of repercussions on the payment system and, therefore, on the financial system<sup>77</sup>), and from their use for money laundering and other illegal activities.

Moreover, there is no international convergence of views on this issue either.

In 2017, the Japanese Central Bank recognised BitCoin as a legal currency and decided to regulate the BitCoin market; in Switzerland, as already noted (paragraph 3.1.3), the Supervisory Authority (FINMA) authorised the offering of banking products and services in digital currencies.

Conversely, in other countries, the use of cryptocurrencies, although not yet considered illegal, has been strongly discouraged by Central Banks, which, in Europe for example, have moved in this direction, sharing the stance expressed by the EBA (2014)<sup>78</sup>. The attitude taken at European level is further confirmed by the recent joint statement from the three European Supervisory Authorities (ESMA, EBA and EIOPA), published on February 12, 2018, in order to signal the significant risks of virtual currencies to investors (ESAs, 2018).

The Chinese experience should also be mentioned, in view of the choices made following a period of very significant virtual currency expansion, which led

77 From this point of view, it is not superfluous to point out - also with a view to a future regulatory consideration - that the progressive diffusion of virtual currencies has the potential to generate a crowding out of the world banking system and Central Banks (Locatelli, 2017), which ensure the circulation of legal money within the payment system, with the latter being also subject to important controls and rules of conduct. For example, a wide adoption and diffusion of virtual currencies could interfere with the monetary policy transmission strategies by the Central Authorities, thus limiting their effectiveness (European Parliament, 2016).

78 The warning on the risks associated with the use of "virtual currencies" published by the Bank of Italy (2015) can be read within this framework.

China to become one of the main cryptocurrency markets in the world and the country in which the main cryptocurrency platforms are located. Notably, the Chinese government has decided to ban virtual currencies since 2017, believing - in agreement with the People's Bank of China (PBC) - that they do not have legal value and cannot circulate or be used as currencies in the market (PBC, 2017). In this respect, the Chinese Government is working to limit this phenomenon, which is particularly complex to manage. In fact, after having banned the initial coin offerings (PBC, 2017), closed the local markets where virtual currencies were traded and restricted the use of BitCoins or Ethers, the Government has reaffirmed, through the PBC representative, its action in combating the phenomenon, resorting to the closure of websites and establishing sanctions (Reuters, 2018). These further actions were necessary because, despite the bans already defined at national level, the exchange of virtual currencies continued in China through foreign websites and offshore platforms.

The Chinese experience highlights the effects that can occur with the use of virtual currencies on a large scale, in view of a number of factors, including: the cross-border nature of the activity of providers that provide regulated financial services in cryptocurrency, the multiple ways in which these currencies are used, their speculative nature, the repercussions in terms of allocation of savings in the economic system, all the more consistent as the spread of digital currencies increases. Another important topic, which is highlighted by numerous analysis conducted by the Supervisory Authorities at the international level, is that of the evolution of the methods for using cryptocurrencies, which is achieved through the creation of complex and highly speculative instruments.

In particular, the recent work by the Financial Conduct Authority (FCA) on DLTs, ICOs (Initial Coin Offerings) and cryptocurrency CFDs<sup>79</sup>, allows us to observe that, alongside speculative investments in virtual currency, financial instruments with virtual currency as their underlying currency are becoming more widespread. It is useful to underline that, in this way, savings are channelled into complex and risky instruments, which are no longer linked to legal money.

Indeed, ESMA has been investigating issues raised by the spread of CFDs and other speculative instruments for some time, and has even formulated, within the current European regulatory framework, a proposal to limit or prohibit the offering of certain complex and speculative products to retail investors (ESMA, 2017d).

ESMA's focus on investor protection is further reflected in the two warnings it has published on the ICO<sup>80</sup>, targeting investors and operators involved in these

79 See, in particular: the Discussion Paper on DLT (Distributed Ledger Technology), which reiterates that virtual currencies are not subject to regulation but that providers fall within the perimeter of interest of the Supervisory Authorities (FCA, 2017a); the warning of September 12, 2017, on ICOs (Initial Coin Offerings), which highlights the high risks of this type of transactions, which are carried out in the absence of any regulatory framework and protection for investors and are attributable to high price volatility, lack of transparency and potential fraud (FCA, 2017b); the warning of November 14, 2017, on cryptocurrency CFDs, i.e. contract for difference with virtual currencies as the underlying the investment, enabling investors to speculate on price fluctuations of such currencies, such as Bitcoin or Ethereum (FCA, 2017c).

80 See ESMA (2017b and 2017c) and related information published in Italy by CONSOB (2017e).

transactions, which are growing rapidly and significantly at the international level<sup>81</sup>. In particular, in its warning to investor, ESMA firstly qualified ICOs (also known as initial token offerings or tokens sale) as an innovative means of raising money from the public, through which an entity offers "coins" (virtual currencies) and/or "tokens" (digital crypto-currency "tokens") in exchange for legal or virtual currency. It also stressed the high level of risk involved in these instruments (risk of complete loss of capital and illiquidity) and the possibility that these operations might escape the application of the rules laid down to protect investors and serve illegal purposes (money laundering, fraud). In the other warning, ESMA requested operators to verify whether their activities in ICOs fall under the scope of the financial investment legislation, i.e. the Directives on prospectus, markets in financial instruments (MiFID), alternative fund management (AIFMD) and anti-money laundering (AML).

These indications relating to ICOs clearly show the distance that, to date, is detectable in the treatment of financial investments and investor protection in FinTechs, compared to that provided for supervised financial intermediaries<sup>82</sup>; they also show that current legislation does not always manage to regulate innovative financial transactions, which can generate high risks for investors<sup>83</sup>.

More generally, that highlighted so far on the subject of virtual currencies indicates there is still a lack of a comprehensive regulatory framework at a supranational level for virtual currencies and providers.

The call for early action has been made at various levels, not only taking into account individual investor concerns but also the potential risks of instability in the financial system<sup>84</sup>.

In this regard, it is worth mentioning the position expressed by the Governor of the European Central Bank on February 5, 2018, during his report presentation to the European Parliament. In fact, as well as recalling that cryptocurrencies constitute a high-risk, unregulated investment for banks too, he clarified that the ECB does not detect any systemically important holdings of virtual currencies by European banks at present, even though these currencies have sparked the interest of customers. He added, however, that the launch of the market for Bitcoin futures on the US market

81 The ICOs are developing with important volumes especially in the USA but also in Asia and Europe (<http://tech.eu/brief/european-icos-funderbeam/>). According to information from CBInsights, in the first 3 quarters of 2017 alone, more than USD1.6 billion was raised through ICOs by many companies, some of which have not yet finalised the product or service for the target market (<https://s3.amazonaws.com/cbi-research-portal-uploads/2017/08/08153016/2017.09.08-ICO-Market-Map-v2.png>).

82 It does not seem superfluous to point out that, following the crisis that began in 2008, the evolution of supervision legislation on supervised financial intermediaries aimed at ensuring strong customer protection; see for instance MiFID 2, which introduced so-called product governance and product intervention.

83 In the future, these problems could be at least partially mitigated in view of the entry into force of MiFID 2 and the consequent application of product intervention, which reserves the power to the Control Authority to prohibit the offering of products deemed too risky based on their definition. See CONSOB (2017d) on the subject.

84 Among the most recent interventions in this direction, Agustín Carstens, general manager of the Bank for International Settlements (BIS), who, after having defined Bitcoin as "a combination of a bubble, a Ponzi scheme and an environmental disaster", highlighted that "To date, many judge that, given cryptocurrencies' small size and limited interconnectedness, concerns about them do not rise to a systemic level. But if authorities do not act pre-emptively, cryptocurrencies could become more interconnected with the main financial system and become a threat to financial stability". See Arnold (2018).

could lead to the spread of cryptocurrencies in bank portfolios, including European banks. If this is the case, a regulatory assessment will be required and the European Supervisory Authorities are currently assessing the potential risks of banks holding cryptocurrencies.

Finally, we would like to comment on the issue of virtual currency use for money laundering and other illegal activities, which, as previously explained, is one of focuses at international level for the overall assessment of cryptocurrency risks.

In this respect, it has already been widely argued on several occasions that blockchain systems can allow traceability of transactions while at the same time also ensuring anonymity.

It is therefore clear that, in the absence of a specific regulatory framework for virtual currencies and their providers, virtual currency transactions may escape any form of control<sup>85</sup>. In this perspective, the first important step towards regulation of this phenomenon made in Italy through the enactment of Legislative Decree no. 90 of May 25, 2017, "Implementation of Directive (EU) 2015/849 on the prevention of the use of the financial system for the purposes of money laundering or terrorist financing" should be welcomed.

In addition to transposing the Forth EU Directive on the subject, this provision, in force since July 4, 2017, has actually anticipated some of the innovations of the Fifth Directive<sup>86</sup>, providing for an important extension of the scope of application of the anti-money laundering regulations (hereinafter, AML), already imposed for some time on supervised financial intermediaries and certain professional categories with Legislative Decree no. 231/2007.

In particular, Legislative Decree no. 90/2017 also imposes anti-money laundering obligations on providers of services relating to the use of virtual currency, identified as "natural or legal persons who provide third parties, on a professional basis, with functional services to the use, exchange, preservation of virtual currency and conversion into legal tender currencies".

The inclusion of cryptocurrency providers in the category of "other financial operators", subject to anti-money laundering legislation, means that, in order to be able to carry out their activities in Italy, these entities must be registered in a special section of the register kept by the OAM (Organismo degli Agenti e dei Mediatori, the body for the management of lists of financial agents and credit mediation companies). The Decree also entrusts the Ministry of Economy and Finance (MEF) with the task of establishing the methods and timing with which service providers, relating to the use of virtual currency, will be required to report their operations in Italy to the same Ministry (BanKer, 2017; De Dominicis, 2017).

85 For more information on the money laundering risks through the use of BitCoins or virtual currencies, see also the Compliance Journal (2017).

86 Bank of Italy (2017a).



On February 2, 2018, the MEF submitted the Ministerial Decree text, provided for in Legislative Decree no. 90/2017, for consultation, highlighting that the obligation to notify anyone interested in providing virtual currency-related services in Italy also applies to trade operators that accept virtual currencies as payment for any services relating to goods, services or other utilities. The MEF has also clarified that the communication to be made by operators will serve as an initial systematic census of the phenomenon, starting with the number of operators in the sector that, when fully operational, will have to register in the special section of the register kept by OAM (MEF, 2018).

Finally, it should be noted that operators subject to anti-money laundering regulations are required to adopt suitable controls and procedures for assessing and mitigating the risk identified in carrying out their activities, and also to comply with a series of obligations, mainly including:

- the due diligence of the customer and the beneficial owner of the account;
- the obligation to retain documents, data and information useful to prevent, detect or verify money laundering or terrorist financing;
- the obligation to report suspicious transactions (SOS), which must be sent to the FIU (Financial Intelligence Unit of the Bank of Italy) directly or through the financial intermediary.

The implementation of these provisions by cryptocurrency providers is not easy and will require a significant regulatory compliance effort. Moreover, this commitment will make it possible to limit the risk for cryptocurrencies being used for illegal transactions and, therefore, to combat money laundering and terrorism more effectively, but also, and more generally, to maintain customer confidence and the integrity and stability of the financial system.

The extensive analysis conducted so far on cryptocurrencies highlights the efforts made at a national and European level within the perimeter defined by the current regulatory framework; however, at the same time, it allows us to note that only a residual part of the activities involving virtual currencies are currently regulated.

This is because, as in other areas of FinTech development, the innovative phenomenon cannot be easily and completely traced back to the regulations in force, which do not always show sufficient flexibility to adapt to technological progress in a timely manner (Bank of Italy, 2017a).

The cryptocurrency case is emblematic, since it can only partly fall under the traditional financial activities subject to regulation and can involve the competences of several Supervisory Authorities, whose coordination and direction may only be defined at a supranational level within the guidelines of a renewed regulatory framework.<sup>87</sup>

<sup>87</sup> As the President of CONSOB pointed out during the debate held at the FinTech Hearing (CONSOB, 2017d), the virtual currency phenomenon "is still being studied by the Financial Stability Board (FSB), which has not yet clearly decided

### 3.2.4 Operational risk

Passing to the analysis of "transversal" risks, which are found in most of the activities carried out by FinTechs, we first of all deal with operational risk, which is particularly relevant for FinTechs, especially in the components relating to legal risk (with particular reference to situations of conflict of interest and cross-border activities), to the risk of fraud and IT risk (Table 2).

With regard to legal risk, already emerged and discussed in this study, we would just like to add that, on the one hand, conflicts of interest are difficult to identify unless they are directly disclosed by the operator and, on the other, retail investors may have poor perception of and, more importantly, be incapable of assessing the protections offered by other legislations in the case of cross-border activities. This allows a better understanding of the importance of the choice made by CONSOB, albeit limited to the case of equity crowdfunding, to explicitly regulate the formalisation and management of conflicts of interest, including compensation schemes<sup>88</sup>.

Interesting considerations also emerge in relation to the risk of fraud. In fact, the new methods of carrying out financial activities (cross-border telematic activity; use of sensitive customer data; creation of direct circuits with a lack of transparency on fund borrowers; creation of virtual circuits) and the new activities (virtual currencies) largely or completely unregulated, leave ample room for the possibility that a FinTech may behave incorrectly or even fraudulently to the detriment of third parties.

The risk of fraud takes on new dimensions that are hard and complex to control, but that at the same time highlight the weak effectiveness of solutions based on self-regulation of FinTech operators. The underlying reasons for the failures to date in this sector make this issue abundantly clear<sup>89</sup>.

Finally, it should be noted that the risk of fraud also applies to unfair or fraudulent conduct by customers or third parties which may damage FinTechs, for example by providing a false identity or false company financial statement data or stealing information or currency from FinTechs<sup>90</sup>. These events are mainly linked to the digital execution of the customer relationship management process phases and, for this reason, are often identified as "platform risks".

*whether it is a currency, in which case the monetary authorities will have to intervene". At the same time, Bitcoin cannot be classified as a "financial product today, as there is no single producer", and it is rather an exchange between entities; moreover, in the case of offering to the public, it is not subject to regulation if it is carried out with "peer to peer" methods. It is therefore necessary to "await general regulation."*

88 As already mentioned with regard to the CONSOB Regulation of November 2017, it is worth nothing here that the coverage provided by article 7-bis must be, for each indemnity claim, at least equal to 20,000 euros and, for the total amount of the indemnity claims, at least equal to one million euros per year, for the operators of equity crowdfunding platforms who carry out the suitability verification directly, or at least equal to 500,000 euros per year for other operators (CONSOB, 2017c).

89 Among the cases of crisis due to fraudulent behaviour, we mention those of Ezubao, Lending Club (USA), Trustbuddy (Sweden), Qianbao.com (China). See BIS-FSB (2017), OICV-IOSCO (2017), Baarlam (2018).

90 Such a case has recently occurred in Italy as well, involving a cryptocurrency platform with a shortfall of approximately USD 200 million due to unauthorised withdrawals from the FinTech. See Caparello (2018).

The IT risk is of strategic importance with reference to the digitalisation of financial activities, not only in terms of the risk of IT system failure, but also cyber risk (i.e. the risk of a cyber-attack)<sup>91</sup>. All companies using IT and digital resources/channels are exposed to these risks, not just financial operators. However, the interest sparked by financial activities in the context of cyber-attacks and the specificities of FinTechs (which are "open systems" that base their core business on telematic and digital media), make these companies particularly vulnerable to this type of risk, especially when data may be transferred to third party operators, who, in turn, have the power to transfer them and sell them to other parties in different jurisdictions.

It should also be noted that the occurrence of these risks in a large FinTech could cause a micro-economic effect (company bankruptcy and / or "limited" damage to its customers), but also a reputational impact on the sector (on which we comment in paragraph 3.2.6).

Awareness of the significant consequences that the occurrence of cyber risks may cause (e.g. on the correct execution of activities<sup>92</sup>, on business continuity, on the protection of data and information relating to customers, etc.) has led the Supervisory Authorities to intensify controls as well as patrimonial and technical (recovery plan, etc.) protection mechanisms that the supervised financial intermediaries are required to carry out, even in case of outsourcing<sup>93</sup>.

In this area, too, the growing awareness of Supervisory Authorities of the risks arising from the application of technology to financial activities leads to a further increase in the regulatory compliance burden for the supervised financial intermediaries. At the same time, the absence of any regulation of FinTechs means that the management of operational risks - which, moreover, constitute the main type of risk for these financial operators - is entrusted to the independent choices of the individual companies.

The reflections on the regulatory misalignment between supervised financial intermediaries and FinTechs, with the same risks inherent in the performance of their activities, find a useful contribution in the recent document from the Basel

91 The FSB (2017) points out that FinTech generates new risks, mainly related to cyber risk.

92 In this context, issues related to the use of algorithms and computational procedures, which exposes the company to the risk of incorrect algorithm specification, are of particular importance. For example, this could lead to an underestimation or an overestimation of the probability of default of a potential borrower of funds (in the example of the loan) and, consequently, to misinformation underlying the financing/investment decision of the user of the platform. Alternatively, an error in the algorithm specification could lead to a distortion of the investment mix offered to the customer as part of an advisory service. Errors may also occur in the execution of payments in respect of transactions in currency or securities. More generally, the algorithm may be too complicated or too simple, or it may contain errors. Of course, this risk may arise for anyone applying algorithms (FinTech or supervised financial intermediary).

93 In this sense, lastly, see the FSB (2017), which highlights that cyber attacks testify to the difficulty in managing and mitigating this risk, which is intensified when several entities are connected by computer (first of all, the Internet). In fact, the increase in the interconnection network allows hackers to locate multiple access points, the same can happen for the dissemination of information through payment systems (e.g. digital wallets). At the same time, the FSB states that FinTech could help limit the effects of cyber risk, as it increases competition and thus reduces system concentration.

Committee (BIS-BCBS, 2018), which stresses that the protection of privacy and cyber security are, along with consumer protection, the primary objectives of policies and prudential supervision. On this basis, the Committee believes that collaboration between competent authorities on different issues may contribute to a harmonious development of FinTechs and the financial markets.

The same document also includes considerations on the competitive dynamics that may arise from decisions to outsource services, intended to seize the opportunities to simplify and streamline issues relating to the management of IT systems, as well as the efficiency and cost containment offered by the application of new technological solutions to the performance of financial activities. This is particularly evident when one considers the case of cloud computing services, i.e. outsourcing - to an external and non-regulated entity - data and information management, which constitute the strategic resource for the performance of financial activities<sup>94</sup>.

If it is true that the assignment of services to unregulated third parties poses the need to maintain risk responsibility for supervised financial intermediaries outsourcing activities, it is equally evident that the increase in compliance costs for supervised financial intermediaries may make outsourcing less convenient and that this approach is "limited" as it does not resolve the issue of operational risk management methods by non-regulated FinTechs. At the same time, we are aware that, also with reference to this problem, the regulatory issue may not be resolved by the Supervisory Authorities, each of which is responsible and competent for the control of the specific sector or area assigned to them by the current regulatory framework<sup>95</sup>.

It should also be borne in mind that the acquisition of information on customers of banks and supervised financial intermediaries by Tech companies operating as providers of cloud computing services, provides these non-regulated companies with an important competitive advantage that could make it even easier

94 Please refer to paragraph 5 below for further considerations on the choices to outsource services in light of the strategies adopted by incumbents. It should be noted that specific attention has long been paid to the issue of cloud computing, which may involve the simple storage or, in various ways, processing of a bank's information (ENISA, 2015; CSA, 2016). The attention of the issue, not only from the point of view of the bank, but also from that of protection of the customer to whom the information refers, has led the European Banking Authority to submit for consultation specific guidelines on cloud computing (EBA, 2017), which complement and qualify the rules applied to banks on outsourcing, already defined by CESB (Committee of European Banking Supervisors). Please refer to ESMA (2017a) for operational risk considerations arising from outsourcing to non-EU providers and guidance on how to implement cloud computing in accordance with EU legislation, including rules on security and the protection of personal data. The most recent document from the Basel Committee (BIS-BCBS, 2018) highlights the difficulty that emerges in the absence of uniform rules on cloud computing at a supranational level ("*Banks and bank supervisors are currently dealing with the global bigtech firms on a national level, and in different ways*") and highlights the substantial differences in the approaches adopted at a global level by the individual supervisory authorities on the subject of third-party providers, including FinTech and Tech companies (BIS-BCBS (2018), Annex 2).

95 As explicitly stated in the BIS-BCBS document (2018), the Committee's analysis is based on a need to understand the phenomenon, that is considered preliminary to any proposals for regulatory intervention. These proposals, however, do not fall within its sphere of competence, as FinTech does not fall within the scope of banking activities. In particular, it states that "*The BCBS also acknowledges that fintech-related issues cut across various sectors with jurisdiction-specific institutional and supervisory arrangements that remain outside the scope of its bank-specific mandate*".

for them to transform Tech companies into TechFins, as already pointed out in paragraph 2. This was one of the reasons why banks did not use cloud computing services for a long time, as they felt that this choice would protect their information assets to a greater extent<sup>96</sup>.

### *3.2.5 Compliance risks*

All companies have compliance risks, including FinTechs, which varies depending on the rules and regulations to which they are subject in the countries where they are located. Clearly, the compliance risk is significantly lower if the FinTech is not subject to the rules and regulations applicable to supervised financial intermediaries; however, this does not exempt FinTechs from compliance with other rules and regulations applicable under the laws of the country in which they are based (e.g. regulations on privacy, personal data protection, taxes, etc.).

As emerged in this research, the fact that in some countries FinTechs may benefit from simpler and less burdensome regulatory regimes may induce them to make regulatory arbitrage choices, locating their company's registered office abroad while operating cross-borders, exploiting the possibilities offered in this regard by the use of IT platforms or the telematic channels of contact with customers.

It should be noted, however, that FinTechs operating cross-borders may be exposed to complex compliance risk management due to a variety of situations and issues. This is the case, for example, when the company operates in areas or countries where an authorisation is required that it does not possess<sup>97</sup>; or when it does not provide the information required by the legislation in force in a given country on a specific financial activity or conflict of interest; or, even if it does not provide the information required by the legislation governing the contracts on forms to be filled in by customers. In terms of compliance risks, the profile relating to the risk of money to be used for money laundering purposes or terrorist financing and other illegal activities is particularly relevant for the same reasons that we have set out with regard to the risk of fraud.

We have already pointed out that this risk is very high in relation to the use of virtual currencies and that, in Italy, the application of the Anti-Money Laundering

96 The document of BIS-BCBS (2018) reads "Cloud computing allows the sharing of on-demand computer processing resources in a way that promotes efficiencies and economies of scale. Such cost-cutting may be attractive for banks, but concerns over safety and privacy seem to have initially inhibited banks from using cloud computing infrastructure. Now, however, many banks are experimenting with public cloud operations. (...) On the infrastructure side, bigtech firms are already dominant providers of cloud services worldwide. (...) While cloud computing helps both incumbent banks and new players, it is more of an enabler for new players and therefore fits scenarios that challenge the current banking system (all scenarios apart from the better bank). Incumbent banks can be considering the use of cloud computing to develop new solutions and migrate away from legacy systems. In doing so they may face the challenge of integrating the new technology with the old, which is usually not an easy task. For new players, on the other hand, cloud computing could be a pure enabler as they would have traditionally had to invest time and money in building up their own infrastructure. The use of cloud computing could therefore allow them to focus on their business and increase their scale as the business grows".

97 Among others, BuyaBeerCompany.com, whose fund-raising activity was suspended by the SEC as the platform had not been given the necessary authorisation to carry out investment solicitation activities (Lerro, 2013).

(AML) legislation towards cryptocurrency providers has recently been provided for, in implementation of the EU Directive on this subject. The aim is to achieve a uniform regulatory framework, at least at the European level<sup>98</sup>.

For those FinTechs that do not operate in the virtual currency sector and do not act as supervised operators, there are no money laundering risk management obligations, since they do not fall within the specific entity categories (supervised financial intermediaries, professionals, auditors, other financial operators) to which the current legislation delegates tasks due diligence and suspicious transaction reporting. As a result, platforms often verify the identity of individuals by requiring them to send scanned documents or photos (selfies) attached to documents, while profiling for anti-money laundering purposes is delegated to banks where accounts are opened and fund crediting/debiting is carried out<sup>99</sup>.

If FinTechs do not carry out further controls, suspicious transactions may not be intercepted by the banks.

The lean organisational structures typically used for FinTech management, combined with the circumstance of operating remotely with a fragmented clientele, for transactions of generally very limited amounts, represents a further complication in the performance of due diligence for anti-money laundering purposes<sup>100</sup>. It should also be noted that customer due diligence activities, carried out to prevent money laundering and combat terrorist financing, have been governed in Italy by particularly burdensome rules, such as those concerning the maintenance of a Centralised Computer Archive (AUI, Archivio Unico Informatico). However, this situation may change, since this obligation has been removed following the enactment of Legislative Decree 90/2017 and the Bank of Italy shall issue new implementing provisions regarding data retention obligations provided for by this Legislative Decree (Bank of Italy, 2018).

### *3.2.6 Strategic risk and reputational risk*

Strategic risk also deserves attention, as it plays a key role in dynamic environments and new markets with a high level of innovation. Companies that operate in financial activities with a high technological content (whether a FinTech or supervised financial intermediary) may, in fact, incorrectly assess market expectations on the development of a competitive environment; they may be incapable of regulating the operational evolution; or, even, may be incapable of assessing the opportunity to offer a certain service or adopt an emerging standard (e.g. in the field of DLT or RegTech tools). Strategic risk may concern competitors, but

98 For information on the different regulatory approaches to AML in other countries, see FSB 2017.

99 Source: FinTech operator interviews with CONSOB.

100 With regards to AML controls, it should be noted that the development of solutions to optimise this activity is a practical example of the instrumental services offered by the Tech companies mentioned in Table 1. In fact, some companies have developed applications to improve identification procedures for supervised financial intermediaries and, therefore, make money laundering risk management more efficient (BNY Mellon, 2015; Deloitte, 2016b). For example, these include uComply, an anti-money laundering software adopted on a global scale (Deloitte, 2016c).

also the technological environment. For this reason, the opportunity to develop and adopt interoperable and scalable technologies has been stressed by many (OICV-IOSCO, 2017).

As already mentioned, reputational risk is the most important incentive for self-regulation in the management of production processes and risks. In response to this, it was observed that the use of process certifications, for controls aimed at increasing transparency towards third parties (investors, lenders, borrowers of funds and Supervisory Authorities), as well as the systematisation of internal procedures, may result in mitigating reputational risks and related operational risks (e.g. legal risk)<sup>101</sup>. We believe that, in this area too, the cost and organisational adequacy of FinTechs may be a problem.

### *3.2.7 Systemic risk*

As has already emerged for certain aspects, awareness is growing at an international level of the possible systemic risks that the FinTech may generate, which mostly escape controls by Supervisory Authorities, although to date, there has been no agreement achieved in terms of regulations

In particular, the document published by BIS-FSB in May 2017 highlighted the risks posed by the development of the FinTech and its possible impact on the financial system (deterioration of lending standards, pro-cyclical impact, erosion of banks' profit margins and incentive for aggressive pricing policies). Despite this evidence, the benefits linked to the phenomenon (financial inclusion, diversification of channels for raising finance, competitive pressure on incumbents) are considered prevalent in the same document. This led to the conclusion that it was still not appropriate to subject the FinTech to supervisory rules, largely determined by the consideration of the small size of these financial operators, which are unable to have a significant impact on the stability of the financial system.

The most recent document published in July 2017 by the Financial Stability Board (FSB, 2017) places greater emphasis on the risks associated with the FinTech and the speed with which this phenomenon is evolving. Therefore, while highlighting that the current innovations introduced by the FinTech do not generate a financial stability risk, the document identifies 10 points that are worthy of attention by the Authorities; 3 of these points are considered priorities in the logic of international collaboration and useful for promoting the stability of the financial system.

In particular, the three priorities set out by the FSB are:

- Managing operational risks from third-party service providers;
- Mitigating cyber risks;
- Monitoring macro-financial risks, including the risk of: contagion between FinTech operators and supervised financial intermediary; pro-cyclicality of

<sup>101</sup> See AIAF (2015) for an example on P2P lending.

investments and financing; market volatility induced by the speed of information; systemic importance, or excessive market concentration (currently not detectable, but possible in the future).

It is worth mentioning the issue of operational risks associated with third parties providing services (outsourcing), which constitute a new type of operational risk generated by technological development (Table 2), to which the FSB assigns paramount importance, believing that they may be the cause of systemic risk. The FSB, in fact, considers the risk that may arise, in terms of outsourced services, in the event that more than one intermediary uses the same provider.

The issue is therefore the risk of an excessive concentration and therefore excessive dependence on a plurality of financial intermediaries from a single entity. The difficulties that could arise for the provider (operating blocks due to computer default, but also fraud and cyber-attacks) could in fact have repercussions on several intermediaries, endangering the stability of the financial system.

This issue is particularly important with regard to cloud computing. In this case, several financial intermediaries depend on a provider that does not fall within the scope of the supervisory regulation, and to which, as already clarified, they entrust the management of their information. As a result, systemic risk increases as the number and importance of interconnected entities in the cloud increases.

In this context, the FSB prioritises the need for Authorities to work together at an international level to assess the adequacy of current regulatory framework for third-party providers. This policy indication from the FSB was endorsed by the Basel Committee (BIS-BCBS, 2018), which placed particular emphasis on the potential systemic risks arising from increased market interconnection, made possible by technology, as well as the potential negative effect of significant operational risks, both at systemic and idiosyncratic levels<sup>102</sup>.

Finally, it is the case to recall some of the other seven points brought to the attention of the Authorities by the FSB (2017), that include: governance and disclosure framework for big data (within which it is still necessary to assess consumer benefits and protection); the definition of a regulatory perimeter, to be updated timely on the basis of a neutral approach to technology; the study of alternative configurations of digital currencies and the possible effects they may have on the national and global payments system, also for the systemic importance they may have and the link with possible illegal activities.

## 4 Considerations on a possible legislative review guided by a balance of interests

The analysis conducted so far of the business models adopted by FinTech companies to compete with incumbents, helps in assessing the benefits and risks

<sup>102</sup> With regard to the Basel Committee's in-depth analysis on third parties, please refer to paragraph 3.2.4.



associated with the development of these new financial operators. This assessment may also prove useful for a reflection on the on-going debate, at the national and supranational levels, on "if" and "how" to regulate the FinTechs.

It is clear that the legislative task ahead in this area will be difficult and complex. Moreover, since the objectives, methods and time frames of this legislative plan are not currently uniformly shared at an international level, the legislative process may not be immediately organic and will require a long time for implementation and application.

The findings of this paper clarify the dangers of not providing an effective regulatory framework for FinTechs and, therefore, the dangers of the current situation, which is largely based on the self-regulation of these operators. In particular, conflicting interests were highlighted: on the one hand, the objective of facilitating FinTech development to increase competition between financial operators and, as such, diffusing services and making them more efficient for customers; on the other hand, the importance of customer protection and equal regulatory treatment with respect to intermediaries and supervised financial markets, to protect savings and promote fair allocation of financial resources to the benefit of the growth of the economic system and the stability of the financial system.

For this reason, the following reflections also aim to highlight the importance of the regulatory challenge, which requires to ensure a balance between the various interests at stake in the development of the FinTech<sup>103</sup>.

#### 4.1 "Whether" to regulate

As just noted, the definition of a shared regulatory framework at the international level has not yet begun, despite the national and supranational Supervisory Authorities having progressively provided over time important contributions. These highlight the greater intensity of the risks arising from the development of new non-regulated operators, as well as the lack of effectiveness of regulatory solutions undertaken in the individual legal systems. This holds especially in view of the limits placed on the intervention of Supervisory Authorities by the current regulatory framework, as well as the cross-border operation of FinTechs.

Up until now, therefore, the prevailing considerations have focused on the possible benefits of FinTech: these include greater financial inclusion, diversification of channels for raising funds and financing opportunities, and competitive pressure on incumbents (BIS-FSB, 2017). Therefore, many of the new operators, markets and tools that the FinTech phenomenon creates are currently non-regulated, although there is a growing belief that failure to comply with supervisory rules may create risks for the system as a whole (Bofondi and Gobbi, 2017; Vives, 2017).

<sup>103</sup> On this topic, CONSOB (2017b) states that, "Regulators on all levels will have to deal with these realities, looking for a balance between risks and benefits, with the aim of providing investors and the market with an appropriate level of protection and, without opposition to innovation and competitiveness, to break down the cost for savers".

In principle, the opportunity to regulate FinTechs arises from the financial nature of these operators.

We have established that FinTechs and TechFins (but not Tech companies) can and should be considered as financial intermediaries, since they offer financial services and develop financial circuits (marketplaces), thanks to which customers are able to meet their financial needs. This leads us to believe that the grounds of the current financial sector regulations are also valid with reference to FinTechs, i.e. the need to ensure conditions of sound, prudent, fair and efficient management of intermediaries and financial markets, customer protection and systemic stability.

If this were not the case, it would be necessary to reflect upon the reasons why financial intermediaries and the financial markets comparable to FinTechs (in terms of similar activity), are now subject to supervisory rules.

It should also be noted that these reasons do not depend on the size of the individual financial intermediaries, since within the financial system the aim has been to ensure a level playing field, based on the principle of equal supervisory rules for the same activities and risks, in compliance with the principle of proportionality.

This leads us to reflect on the frequent reasons put forward, in different instances, as to whether FinTechs should not be subject to regulation or whether different and less stringent rules should be laid down rather than those imposed on supervised intermediaries and markets. In particular, they relate, firstly, to the need not to impose a regulation on start-ups or small businesses that could affect their development and, therefore, limit innovation and competition within the financial system<sup>104</sup>; secondly, to the observation that the crisis cases to date have only concerned limited-sized FinTechs, which are not relevant from the systemic risk point of view<sup>105</sup>.

With reference to the first order of reasons, we believe that the size issue cannot constitute a discriminating principle for the choice of subjecting new operators to regulations, although it is understandable that caution in the definition of further regulation is needed. This may be because of: an initial phase of the phenomenon's development, the marginality of the size and market share of new operators, as well as the need for in-depth analysis of the operational characteristics and risks of the innovations introduced.

In support of this view, at least two aspects can be highlighted. First of all, as already explained (paragraph 2), not all FinTech companies are start-ups and, conversely, their great potential in the direct relationship with a very high number of

104 This issue was also proposed in the FinTech consultation document published by the European Commission (2017a) and prompted a number of comments. It should be noted that in 2016, the European Commission set up a Task Force to examine the FinTech in greater depth and formulate policy recommendations and proposals for measures (see CONSOB, 2017a).

105 The BIS-FSB report (2017) expresses this point; however, the same document (Box B) highlights some cases of crisis for FinTech credit operators (in the USA, China and Sweden), all caused by frauds.

users, including cross-border users, thanks to the support of technology already leads to the conclusion that there are medium- and large-sized operators which could also reach dominant market positions in some areas. Moreover, it should be recalled that the application of differentiated access thresholds at the authorisation stage and the principle of proportionality on going concern are criteria traditionally applied to financial intermediaries. These criteria have been defined with the primary aim of recognising the existence of different business models (more or less diversified and risky) that financial intermediaries may choose to develop and, consequently, to "grade" the regulation intensity.

Consequently, the lack of regulatory compliance, as well as the provision of different or less intense regulations, does not appear to be justified by the size of the company<sup>106</sup> and leads to unequal treatment of supervised intermediaries and financial markets<sup>107</sup>, especially those of a smaller size and those which apply (or will apply in the future) technological solutions.

Additionally, the claim that regulations currently envisaged for the financial sector are excessively costly should be reconsidered. This issue should be examined at a regulatory level especially for small-sized and technologically innovative FinTechs, in order to assess whether it would be appropriate to streamline regulations or apply the proportionality principle more effectively, to the benefit of the plurality of small financial operators, whether supervised financial intermediaries or FinTechs.

Also with reference to the second type of reason, namely the lack of relevance of systemic effects perhaps caused by FinTech company crises, it is worth making some remarks.

Although few studies<sup>108</sup> have been carried out with specific reference to the FinTech company crises and the impact they can generate, in this research we have been able to highlight some critical areas in which crises with systemic effects could occur, but also and more generally, the negative effects that could affect customers, the resource allocation process and, as such, the economic systems, as a result of a FinTech crisis.

106 In this sense, also see ESMA (2017a), which emphasises that, "Regarding how best to regulate Fintech start-ups, one should be cautious about the idea of regulating and supervising these companies in a different manner for the reason that they are start-ups and they would need more flexibility to develop. What should be regulated is the provision of a service or an activity independent of the form of the firm providing this service or activity. The aim should be to regulate and supervise entities providing the same type of service on an equal foot. Therefore, we do not see a strong case for the creation of specific licensing categories for Fintech start-ups".

107 In this sense also see CONSOB (2017b): "FinTech's network moves in a sort of regulatory limbo, which favours its action. This is exactly the opposite of what is happening in the traditional credit sector, burdened by massive regulation, stratified over time. If we do not want the Far West, the new phenomena will need regulating".

108 The subject of the crises of FinTech companies has so far been scarcely investigated and does not appear simple. Boot (2016) highlights "Also from a financial stability point of view, the fintech revolution is challenging. We just do not know what the future structure of the industry will look like" and mentions the opinions of the two Supervisory Authorities on the same subject: "The Bank of England has formulated the question whether (...) the distress of failure of a technology-enabled alternative finance provider have implications for financial stability" (Bank of England, 2015). The Dutch Central Bank has identified not just risks in the (new) fintech type operations and players, but also stability risks coming from existing institutions that could lose out in the technology race (DNB, 2016)".

In particular, the technological development and its application to finance are showing that it is possible to create a "parallel" financial system, outside any kind of control, that is more easily suited to the financing of illegal activities or fraud and that may cause instability in the financial system. Ransoms for cyber-attacks are often demanded in virtual currencies and there are numerous cases of fraud on ICOs. The crises that have occurred so far have not had systemic effects, but show that, due to new technologies, the "traditional" Ponzi scheme is more easily replicable and becomes massive<sup>109</sup>; failure to apply DLTs to central counterparties could have systemic effects<sup>110</sup>.

These phenomena can therefore damage customers and undermine their confidence, jeopardise the payment system or the functioning of the markets, or even cause systemic effects, also involving supervised financial intermediaries.

In addition, they risk undermining or, at the very least, weakening considerably the efforts made to date to ensure proper and efficient functioning of the regulated financial system, and this would also have negative effects on the development of economic systems.

In this regard, it is worth recalling that the major review of regulation and controls on the markets and supervised financial intermediaries carried out in recent years was mainly driven by the evidence that emerged following the financial crisis that exploded in 2008 and the effects of the subsequent global recession. That crisis, in fact, was largely determined by financial transactions and corporate solutions that were implemented outside of any form of control and had devastating effects on investors and economic systems worldwide<sup>111</sup>.

This should lead to the definition of a renewed regulatory framework with greater determination, with respect to the development of a globalised and constantly interconnected financial system, within which FinTech operators often operate free from any regulation.

Therefore, even in the event of disregarding considerations on the lack of regulatory treatment uniformity with respect to supervised financial intermediaries, we believe that the financial nature of FinTech operators should lead it becoming appropriate, in the general interest, to subject them to supervisory rules that are useful in the physiological and pathological phases of management.

In fact, we are convinced that policy interventions must allow the financial sector to benefit from technological innovations, but at the same time preserve a safe

109 As indicated by the BIS-FSB (2017), mentioning a recent case of fraud, "Ezubao was a massive Ponzi scheme".

110 On this, see FSB (2017).

111 It does not seem irrelevant to also note that, for these reasons, the subsequently issued rules have aimed to a progressive increase to customer protection, through defining stricter rules on the transparency and fairness of supervised financial intermediary conduct; conversely, in the case of FinTechs, the prevailing idea seems to be that customers must, and know how to, protect themselves.

market for investors<sup>112</sup>. In addition, customer protection should also be a priority from FinTech's perspective, as it is a precondition for ensuring a high level of confidence in the financial industry and an increasing development of financial activities and markets.

## 4.2 “How” to regulate

On the basis of these initial considerations, it is appropriate to focus on the proposals made within the regulatory debate on “how” FinTechs should be regulated.

A first important aspect, which has been highlighted in light of FinTech development, is the opportunity to proceed with the definition of a regulatory framework inspired by a principle of neutrality.

This principle has been adopted by the European Parliament and determines that, for the same financial activity, equivalent rules be applied to all operators and equivalent safeguards be guaranteed for all customers, regardless of the IT and digital media used to perform these activities (European Parliament, 2017)<sup>113</sup>.

Moreover, on the basis of that which has also emerged from our research (paragraph 3), it should be noted that the application of this principle cannot be immediately pursued through a “simple” extension to FinTechs of the current financial sector regulations<sup>114</sup>. Moreover, this is not sufficient to regulate the complex phenomenon of FinTechs, considering the peculiarities that characterise certain operational innovations and the dynamics of risks (including systemic risks) that it may cause.

With regard to the first aspect, it should be noted that the current supervisory control architecture is mainly inspired by an entity-based approach, consolidated on the basis of a regulatory framework that has defined the perimeter of the “legal reserves” entrusted to the individual Supervisory Authorities (Bank of Italy, 2017) over time. This approach is not very flexible, because it does not allow for the plurality of new players to be traced back to the pre-existing categories of intermediaries and financial markets, nor does it allow for the generality of innovative services to be included within the scope of regulated services. As a

112 In this regard, we agree with the position of ESMA (2017a): “Actions from the European Commission aiming at making the regulatory framework more proportionate to support innovation in financial markets should not be done at the detriment of investor protection and fair competition across various types of actors (...) such an approach would run the risk of being outpaced by future technological developments”.

113 As indicated by ESMA (2017a) in response to the European Commission's consultation on FinTech: “As stated in the Consultation, in most cases, legislation aims at being technology neutral (i.e. not prescriptive in terms of innovation) which means that market participants are able to compete on same terms and are free to use the technology they want as long as they comply their legal obligations. ESMA supports this approach which ensure a level playing field among stakeholders operating in the digital and 'traditional' markets as well as ensuring a similar level of protection for consumers of financial services”.

114 For an analysis of the possible extension of current supervisory regulations to FinTechs, see, among others, Ferrarini (2017).

consequence, FinTechs' activities are similar to those of supervised financial intermediaries but cannot be controlled by the Supervisory Authorities, in the absence of specific regulatory provisions that broaden the scope of regulated activities and identify the competent Authority.

With reference to the second aspect, it has already been pointed out that innovative activities are developing under FinTechs that are not covered by the regulations in force, as they are not carried out by supervised financial intermediaries nor within the regulated financial and monetary circuits.

The analysis of FinTechs' operational specificities leads us to believe, therefore, that an "activity-based" regulatory approach could prove more useful and effective, both to ensure a neutral application of the rules with respect to the technology used and the type of operator, as well as to regulate the various activities and introduce updates based on product and process innovations that occur over time (Bank of Italy, 2017).

As indicated by the European Commission in September 2017, in the summary of its FinTech consultation document, a new interpretation of the regulatory framework is therefore required, inspired by a principle of proportionality, capable of grasping the specificities of FinTechs, regulating the activities carried out by the multiple financial operators in a uniform manner and with equal risks. Additionally, the renewed framework should assign powers of intervention to the Supervisory Authorities, consistent with this new architecture and allowing them to extend the controls on the multiple issues posed by the application of technology to financial activities (European Commission, 2017b).

Another aspect significant for the purposes of the effective redesign of the regulations is that technological innovation enables FinTechs to operate, by definition, in a "cross border" fashion. To date, in the absence of specific rules for FinTechs, the individual legal systems have made different choices in relation to individual FinTech activities (e.g. lending crowdfunding, equity crowdfunding, etc.); this allows operators to undertake regulatory arbitrage, on the one hand and, on the other, makes the management of issues related to "global" operators that use telematic distribution channels particularly complex.

It follows, therefore, that the choices made in the individual legal systems may prove ineffective, not because the underlying principles are incorrect, but because they can be easily overcome through regulatory arbitrage, which encourages FinTechs to establish their registered office and conclude partnership and distribution agreements in the most "flexible" or "favourable" legal system. It should also be noted that under the stricter legal systems (i.e. those where greater entry barriers are in force on FinTech's operators through civil, tax, as well as supervisory regulations), it may not be possible to preserve the traditional financial industry from disintermediation, nor to further protect customers from the inherent risks of financial services offered by FinTechs. In fact, the use of digital channels allows

customers to cross national borders, turning to FinTechs that are regulated by foreign laws, which perhaps provide less timely and effective rules of transparency and fairness for customers<sup>115</sup>.

An opportunity therefore emerges for supranational coordination<sup>116</sup>, preceded by the sharing of priority objectives within the broader legal framework, within which the supervisory regulations for the financial system are developed. The development of the FinTech calls for a rethinking of the rules specifically dedicated to the financial sector, but also of those areas of regulation that govern the technological activities performed by most businesses. These include privacy and data protection regulations or tax regulations, which can significantly influence the choices of FinTechs on where to establish their headquarters and where to develop their operations.

The aforementioned issues highlight that the current lack of homogeneity in regulations may lead to problems in the competition between FinTechs, as well as between FinTechs and supervised financial intermediaries.

With reference to this second aspect, we cannot agree with the current conditions of competition between FinTechs and supervised financial intermediaries are optimal, nor that these conditions can determine benefits for customers.

This does not mean that we do not share the view that competition can have beneficial effects. On the contrary, we are convinced that the entry of these new operators can usefully stimulate operational innovation and accelerate the efficiency of traditional methods for offering financial services to customers. This can be true especially in our country, given the time it is taking the Italian banking system to redefine the strategic plans and operational implementation required in the light of technological innovation and the renewed market scenario (*infra*, paragraph 5).

At the same time, we believe that competition is beneficial only when based on equal conditions. We note that the significant misalignment expected in the conditions and charges for supervised financial intermediaries and FinTechs that carry out the same activities could have negative effects that may well outweigh the desired benefits. In this regard, the FSB also points out that aggressive competitive dynamics and imitation phenomena<sup>117</sup> could be triggered, which, in the long term could worsen the quality of services offered to customers or even lead to crisis; in addition, a phenomenon of disintermediation could arise to the detriment of supervised financial intermediaries with consequent crises. The possibility should not be underestimated: a persisting situation of unequal treatment may trigger banks or other financial intermediaries to make regulatory arbitrage choices, thus increasing risks within the financial system (Bofondi-Gobbi, 2017).

115 In this sense, also see CONSOB (2017d), which adds that it is necessary to have a homogeneous regulatory intervention at a global level for this reason or, at least at a European level to begin with.

116 It is useful to recall that the FSB (2017) has highlighted the need for the regulatory authority to adopt a pragmatic, flexible, supranational and coordinated approach based on a continuous dialogue with the industry.

117 In this sense see FSB (2017) on *procyclicality*.

Clearly, these risks are all the more plausible when the regulatory treatment of different types of financial operators active in the same operating areas is more uneven. This inequality may result in the development of the FinTech leading to an increase in risks within the financial system and, even, to direct and indirect systemic instability, with obvious negative consequences for a multitude of parties, first and foremost the customers.

If, on the other hand, competition were equal from a regulatory point of view, the scope for regulatory arbitrage would be reduced and the competition between FinTechs and supervised financial intermediaries would favour those actually more capable of achieving operating efficiency conditions, in compliance with conditions of sound and prudent management and fair conduct.

It should be added that legislation uniformity is not to be understood as over-regulation. Therefore, the definition of a new legislative framework will be all the more effective when it is able to grasp the innovations introduced into the financial system by the development of the FinTech, to regulate the multitude of financial operators in a homogeneous way and to provide for appropriately graded applications according to the degree of risk exposure. This makes it even clearer that the principle of proportionality must be applied effectively, as already pointed out, in order to avoid excessive compliance burdens on smaller operators<sup>118</sup>, whether are these FinTechs or innovative financial intermediaries.

A similar configuration for the new regulatory architecture is widely considered as being able to pursue that balance of interests between the need for innovation and customer protection (ESMA, 2017a, CONSOB, 2017b, Bank of Italy, 2017a), which seems to be the priority in regulatory terms, to ensure the proper investor protection and proper allocation of resources.

In view of the importance of this issue, in the study (paragraph 3) we have also tried to verify a further aspect that is important in policy choices, namely whether the FinTech actually creates the advantages considered in international studies (FSB, 2017), including greater financial inclusion, lower prices thanks to more efficient services and greater information transparency due to better data processing and the consequent reduction in information asymmetries.

The results of our analysis do not contradict these expected benefits, but at the same time highlight possible costs that may largely offset them.

<sup>118</sup>In this sense also see Bank of Italy (2017a), which highlights that "Regulatory arbitrage should be avoided, guaranteeing equal conditions between countries. (...) Equal conditions between traditional operators and new operators should also be guaranteed in order to stimulate healthy competition, based on the principle according to which, at equal risk, equal regulations and controls are applied. (...) The regulatory framework must be neutral with respect to the technological factor. There is the need to carefully apply the principle of proportionality to avoid excessive charges borne by smaller operators. Customer protection should be placed at the forefront to ensure confidence in the financial system. Transparency and information are essential in order to allow customers to make informed decisions".



It is clear that the direct intermediation circuits created by FinTechs are often opaque or, in any case, significantly risky. The risk of financial transactions falls fully on the (often retail) investor, but FinTechs carry out a series of activities that influence the investor's financing and investment decisions, without however being obliged to comply with rules of transparency and fairness towards customers. Protections granted to FinTech customers are significantly lower than those provided when the same financial service is offered by a supervised financial intermediary. In addition, reputational incentives do not appear to be sufficient to ensure that FinTechs take steps to bear the costs necessary to manage risks that they do not assume directly and therefore fall on their customers.

These observations also highlight the urgent need for a uniform regulation of the FinTech phenomenon at a supranational level, especially in view of the speed and intensity with which the FinTech is evolving and the risk that further episodes of crisis will increasingly undermine customer confidence in the financial system and in control systems, as well as damage economic growth.

For this reason, the initiatives launched at European level, which are beginning to provide answers to the needs of operators and supervisory authorities at EU level and which could constitute an important element of international regulation, are to be welcomed.

In this context, the Communication announced by the European Commission for the first quarter of 2018 is particularly important, following the above-mentioned consultation on FinTechs carried out in 2017 (European Commission, 2017a, 2017b). In fact, as part of a broader programme of actions to intensify integrated supervision, to strengthen the Union of capital markets and financial integration, the Commission had planned to present a specific EU action plan in 2017. The plan details the initiatives to be taken to meet the challenges posed by the development of the FinTech and create an integrated market for digital financial services (European Commission, 2017). This document was therefore highly anticipated in order to know the Commission's guidelines on certain fundamental principles, such as technological neutrality (the same risk as the rules themselves), proportionality in the application of the rules, as well as integrity with respect to privacy, transparency and security (CONSOB, 2017d).

The Communication was published by the Commission in March 2018 (European Commission, 2018b) and identified a series of actions attesting to a collaborative process at European level, aimed at the definition of regulatory lines and the development of initiatives to support growth in the potential of digital applications in the financial sector (EU Financial Technology Laboratory; Blockchain Observatory and Forum; consultation on digitalisation of information published by European listed companies; seminars on cyber-security; a programme with best practices on spaces for regulatory experimentation, based on the guidelines provided by European Supervisory Authorities).

The first stage of the plan was the aforementioned proposal to regulate crowdfunding service providers (European Commission, 2018). Among others, this proposal includes the recording of platforms wishing to operate in the European Union in a specific register, the provision of key information on the investment and assessment of its suitability for the customer, as well as a specific set of rules for the management of conflict of interest and commercial policies, and the submission of platforms to supervision by ESMA.

This document is particularly important as it explains the approach chosen by the European Commission in addressing the issue of FinTech. It states that in some Member States crowdfunding services are subject to regulations, such as MiFiD and MiFiR, which the Commission considers disproportionate for small activities and which apply only to some of the products or services offered by the platforms. For these reasons, the best solution considered by the Commission is the provision of a specific regulation for crowdfunding to be harmonised at European level, so that platforms can offer their services throughout the European Union, without duplication of regulatory work and within a known framework, which is a source of protection for customers and market stability (European Commission, 2018).

It should also be recalled that, at European level, appropriate steps are also being taken in other regulatory areas that are important in light of the digital development of financial activities<sup>119</sup>. In this regard, as indicated in the European Commission's 2018 programme (European Commission, 2017d), work is currently underway on a number of relevant issues, including online platforms, taxation of profits generated by multinationals through the digital economy, and a legislative proposal for a European framework on crowd and peer to peer finance.

It is hoped that the important action plan launched at European level can be shared and further developed, with a view to global international collaboration.

#### 4.3 Actions of the Supervisory Authorities in the national context

Pending the planned legislative action at European level and, hopefully, at an international level in the near future, the Supervisory Authorities are working in various directions.

With specific reference to the Italian case, in this paper we have already highlighted a series of interesting aspects: the control activities carried out on a national basis; the interventions made by Supervisory authorities to manage the problems posed by the evolution of the FinTech, within the current regulatory framework; the contribution of Supervisory Authorities to the on-going debate on FinTech, both at a national level (including the aforementioned hearings in the Chamber of Deputies) and at a European and international level.

<sup>119</sup> By way of example, see some of the most recent stances expressed on the subject of electronic payment services (European Commission, 2017) and personal data protection (European Commission, 2018a).

There are certainly numerous other initiatives developed by individual Authorities, also setting up think-tanks on issues of specific interest<sup>120</sup> and launching new methods of debate with FinTech scholars and operators<sup>121</sup>.

In addition, the Italian Supervisory Authorities have assessed the advisability of initiating more structured forms of dialogue with FinTech operators, following solutions already tested abroad and suggested by supranational and EU institutions (OICV-IOSCO, 2017; FSB, 2017; European Commission, 2017a). These would envisage a different degree of involvement of the Authorities in supporting innovation. These methods include regulatory sandboxes, innovation hubs and incubators. They all allow debate and dialogue with operators, useful not only for the Supervisory Authorities for the exchange of knowledge and for guiding FinTechs towards development in compliance with the regulatory framework<sup>122</sup>.

In this regard, it is worth noting that the recent document from the Basel Committee (BIS-BCBS, 2018) provides an updated mapping of initiatives undertaken by Supervisory Authorities at an international level with regard to FinTech, which helps in understanding the various guidelines issued to date and the growing interest dedicated to this topic in terms of application.

Figure 4 shows that, where an initiative has been undertaken, the Authorities of all the countries surveyed have set up at least one innovation hub. A more limited number opted for the sandbox, whereas five countries also established an incubator (or accelerator). The Basel Committee also points out that it is too early to assess the success of these initiatives, which are all very recent, or to identify best practices.

On the views expressed by the Italian Supervisory Authority, CONSOB has stated that, pending the achievement of a uniform European regulatory regime it is preferable to have less pervasive regulation over FinTechs in the start-up phase (CONSOB, 2017d). Therefore, it is appropriate to allow experimentation, under due supervision, and the gradual application of specific rules that increase in severity with the size of the companies (CONSOB, 2017b). To this end, CONSOB has also begun to recruit additional human resources with specific skills in the digital sector<sup>123</sup>.

120 One example is the joint conference held by the ECB and the Bank of Italy in December 2017 on innovation in digital payment services, including instant credit transfer, which is an interesting response by the incumbents to FinTechs' competition in payment services.

121 In 2016, CONSOB set up a forum with a significant number of Italian universities, giving rise to research initiatives, which were enhanced by direct meetings with FinTechs and the incumbents. The first results of this initiative were presented in December 2017 (CONSOB, 2017f). This study is also part of this process of collaborative confrontation.

122 In this sense see, for example, ESMA (2017a): "Fintech start-ups might need more advice or help from supervisors to navigate the applicable legal framework. In that sense, innovation hubs or other dedicated structures recently created in some national competent authorities and that are aimed at guiding and advising Fintech start-ups are interesting and should be encouraged".

123 CONSOB (2017b) states that the Authority has hired five engineers whose skills will be useful for decrypting the algorithm content underlying the services offered by FinTech and, therefore, for understanding whether the brokerage processes carried out by these companies are effectively functional to the needs of customers (households and businesses).

Figure 4: Actions taken by Supervisory Authorities worldwide

	Innovation facilitators		
	Innovation hub	Accelerator	Regulatory sandbox
	A place to meet and exchange ideas	"Boot-camp" for start-ups, culminating in a pitch presentation	Testing in a controlled environment, with tailored policy options
Australia	ASIC	ASIC	ASIC
Belgium	NBB/FSMA		
ECB	SSM <sup>33</sup>		
France	ACPR/AMF	BDF	
Germany	BaFin		
Italy	BOI		
Hong Kong SAR			
	HKMA	HKMA	HKMA/SFC/IA
Japan	BoJ/FSA		
Korea	FSC		FSC
Luxembourg	CSSF		
Netherlands	DNB/AFM		DNB/AFM
Poland	FSA		
Singapore	MAS	MAS	MAS
Switzerland	Finma		Finma
United Kingdom	BoE/FCA	BOE	FCA <sup>14</sup>

Source: BCBS-FSB survey.

Since fintech companies interact with prudential supervisors and also with conduct authorities or financial market agencies, the BCBS has looked at initiatives and programmes put in place by both member and non-member agencies. Box 7 outlines the distinctive features of these various approaches.

Source: BIS-BCBS (2018).

In addition to that indicated in Figure 4, a sandbox project was launched in Italy in the insurance sector, thanks to a collaboration between the Supervisory Authority (IVASS) and the industry association (ANIA). As clarified by ANIA (2017), the project aims to promote financial innovation, ensuring that the existing regulatory framework is "digital-friendly", i.e. technologically neutral and flexible enough to be easily adaptable to the digital age. In this framework, it is considered appropriate not to create entry barriers for start-ups that are active in InsurTech, but rather to create tools to support innovation for the benefit of consumers, which should be made available both to InsurTech and traditional insurers that are developing innovative products and services<sup>124</sup>.

124 The definition provided by ANIA (2017) of regulatory sandboxes should be indicated, as it clarifies the type of initiative undertaken in collaboration with IVASS. In particular, it states that this solution identifies a "controlled environment for testing financial innovations that meet predefined criteria. Typically, sandboxes reduce barriers to carry out testing within an existing regulatory framework, ensuring adequate protection for all participants (businesses and customers). If, after the trial period, the company wants to offer its services to a wider market, it must comply with the current regulatory framework applicable to that type of activity". Therefore, the sandbox differs significantly both from the innovation hub, through which "regulators offer ad hoc assistance to companies that are not accustomed to financial regulation and/or have doubts about the application of legislation to their business", and from other solutions, such as incubators and public-private partnerships, in which "public authorities help private entities, creating a forum for traditional operators and start-ups, aimed at the exchange of resources, know-how and experience, and cooperating in the financing and development of innovative solutions". ANIA also stresses that all these types of initiatives must respect the key principles of supervision: technological neutrality, proportionality, market integrity and, above all, consumer protection.

The Bank of Italy (2017a) has recently set up an innovation hub, launching the FinTech Channel (<https://www.bancaditalia.it/compiti/sispage-mercato/fintech/index.html>) on its website, which allows operators to follow the updates provided on the subject and talk to the Authority, also asking questions. As explained by the Bank of Italy (2017a), this tool was considered the most appropriate to encourage dialogue with FinTech operators and boost the financial system without compromising its security and stability and with a view to protecting customers. In particular, the Bank of Italy believes that this solution may be useful both for the Authorities, to understand the phenomena in progress and the market needs, and for operators, to have clear and reliable information. It also allows companies to provide information on compliance and interpretation of the rules and can play a proactive role in view of changes to the regulatory framework.

It is important to point out that the Bank of Italy (2017a) has also underlined the opportunity for a legislative intervention to regulate these forms of interaction and support of FinTechs, so that the dialogue with operators "can take place within a clear and certain regulatory framework, even in the presence of services outside the perimeter of regulated activities".

In this regard, we can recall that the European Commission itself (2017) announced that one of the aspects on which specific indications would be given was, precisely, that relative to "national technological innovation instruments and tools such as innovation hubs or sandboxes set up by national supervisors". This was followed by the specific indications contained in the aforementioned Communication regarding the EU action plan to create an integrated market for digital financial services by the European Commission (2018b), especially in relation to the definition of a programme with best practices on regulatory experimentation areas, based on the guidelines provided by the European Supervisory Authorities.<sup>125</sup>

## 5 The impact of technological development on the strategic choices of incumbents

In the complex and constantly evolving market scenario examined so far, it is clear that competitive dynamics are being modified more and more intensely and quickly, and that this requires a response from the "traditional" financial system, despite the uncertainty that characterises regulatory choices.

Opinions on the incumbents' ability to find effective solutions are many and differ according to the degree of optimism/pessimism towards them<sup>126</sup>. Overall, we

<sup>125</sup> It should also be noted that the European Commission, in the proposed regulation of the Crowdfunding Service Providers (European Commission, 2018), has also made clear that the integrated EU supervisory framework needs to be adapted and, therefore, that the European Supervisory Authorities will have to consider related to innovation and technological development when exercising their functions.

<sup>126</sup> According to Barba Navaretti et al. (2017), banks will not be replaced in most of their key functions, as they will be able to adopt new technologies and compete with FinTechs. Also Morgan Stanley (2017), with particular reference to the blockchain, believes that the role of incumbents will not be affected by their ability to implement technology. Other analyses highlight the competitive disadvantage that has arisen for supervised financial intermediaries and strongly

can highlight, on the one hand, the opportunities offered by technological development and the consequent possibility to increase production and distribution efficiency, as well as to innovate and qualify the range of services, are highlighted. On the other hand, there are also the threats deriving from the growing presence of new competitors (FinTechs and TechFins) and from the inability, especially of banks, to implement effective strategic and organisational renewal processes<sup>127</sup>. Many studies also highlight the benefit that banks can have from cooperating with FinTechs for these reasons<sup>128</sup>.

Although it is clear that technological evolution is already having an impact on supervised financial intermediaries, it is not possible to predict how much the application of new technologies to financial services will allow FinTech companies to erode supervised financial intermediary profit margins in the different markets and within the customer groups (Dermine, 2016).

In fact, the intensity of the phenomenon can vary over time, according to the conditions that will occur not only within the individual supervised financial intermediaries, but also – and to a significant extent – outside them.

More specifically, it is not obvious that individual supervised financial intermediaries are capable of and/or have the necessary conditions to effectively reconsider their strategies and business model and to promptly and effectively redefine a profitable competitive repositioning. An important effect could be determined by the degree of willingness of the financial industry to identify within itself collaborative solutions, which can facilitate and make the strategic, organisational and operational updating process less burdensome. Last but not least, the extent of crowding out will depend on the actions taken by other relevant players in the current challenge, i.e. competitors and users of financial services, as well as the legislator.

## 5.1 Perspective scenarios for the evolution of the financial system

Before detailing the external and internal factors that may influence the strategic choices of the incumbents and verifying what has actually been achieved so far, it is useful to highlight the interesting indications provided in the recent analysis by the Basel Committee (BIS-BCBS, 2018) on the scenarios that can be envisaged in view of the impact of financial digitalisation development.

In particular, the Basel Committee formulates five possible scenarios for the future evolution of the market context, which differ according to the varying degree of disintermediation of the traditional financial system that could be determined by

point out that they, and especially banks, will only be able to overcome this disadvantage if they are able to properly update their information systems, reorganise their distribution channels and use big data to a greater extent (Bofondi, 2017). Further evaluations are even more critical, predicting the disappearance of the current financial industry, where players are not able to evolve into digitalised and highly computerised intermediaries, highlighting the organisational and cultural difficulties that stand in the way of achieving this objective (Sperimborgo, 2016).

<sup>127</sup> For an effective survey of threats and opportunities, see Deloitte (2016a).

<sup>128</sup> Among others, see Goodbody (2017).

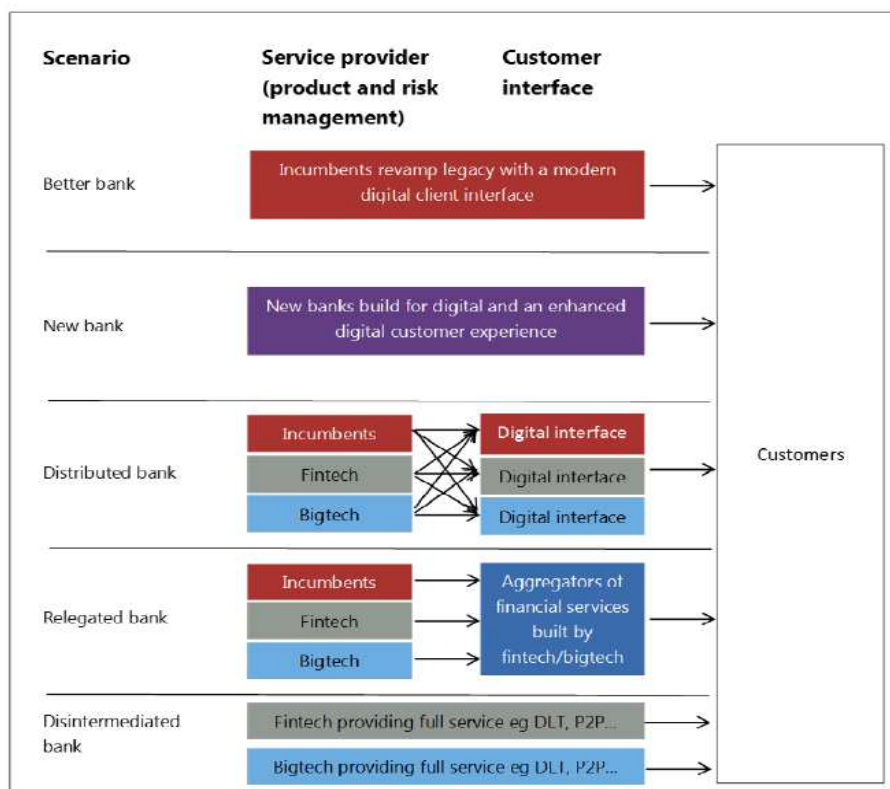
the development of FinTech (Figure 5).

A first scenario envisages the reaffirmation of the banks' dominant position, assuming that they are able to leverage a renewed business model, capable of meeting technological innovation challenges and improving customer relations, returning to being primary providers of financial products and services.

At the other end of the spectrum, a scenario of complete disintermediation of banks by FinTechs and Bigtechs is expected, with FinTechs and Bigtechs becoming exclusive providers of financial services, playing the role of pure marketplaces.

Three "intermediate" scenarios are then highlighted, with different grades for the role of incumbents and new entrants, as well as a different range of offerings and final interfaces with customers.

Figure 5 - strategic scenarios and the role of players



Colour code: red indicates incumbent banks; purple new players; grey specialised fintech companies; and blue bigtech companies.  
Source: BCBS illustration of scenarios based on the BankNXT study *The future of banking: four scenarios*, October 2015, [banknxt.com/53478/future-banking-scenarios/](http://banknxt.com/53478/future-banking-scenarios/).

Source: BIS-BCBS (2018), Graph 5.

The different formulations, therefore, reflect to the question of whether there is still room for an intermediation function, based on a relationship of trust, which is justified by the necessity or preference to interpose the financial statements of a financial intermediary for financial transactions or whether, conversely, there are sufficient marketplaces and technologies capable of achieving direct matching between customers to satisfy their financial needs.

As highlighted by the Basel Committee, at the moment the hypothesis of complete crowding out of the incumbents seems implausible. Despite this, it should not be underestimated on the basis of the visible elements on the most competitive operational fronts proposed by FinTech. In turn, it is conceivable that, in reality, different combinations of the various intermediate scenarios will be determined.

This analysis is certainly stimulating and highlights the need for a revamping of the incumbents that is not merely technological and, at the same time, a careful reflection on the possible effects on the proper allocation of financial resources and on economic growth, in the absence of financial intermediaries responsible for the centralised management of resources and risks..

Furthermore, the current operation of FinTech, extensively explored in paragraph 3, and the critical issues that emerge on the profiles of correct and efficient response to the financial needs of customers, suggest the opportunity that the redefinition of the financial industry may be inspired by those same principles of investor and customer protection on the basis of the rules of conduct traditionally required by supervised financial intermediaries.

## 5.2 External factors

For the purpose of analysing the external factors that may affect the responsiveness of the incumbents, we do not dwell on legislative and supervisory choices, having already amply clarified that they are able to significantly influence the degree of disintermediation of the traditional financial sector determined by the development of FinTech: a more or less stringent approach towards FinTech and the distance between the predictions relating on FinTech operators and those for incumbents, may in fact have a significant influence both on their operations and profitability.

Furthermore, the crowding out of the supervised financial intermediaries will become faster and more intense as FinTech companies improve their ability to intercept financial needs and acquire and process information relating to the potential customers. This is especially true for the "soft information" that underlies the peculiar role traditionally played by banks and other supervised financial intermediaries. In this sense, the considerations by Gobbi (2016) are particularly interesting, who emphasises that, *"The markets where banks are likely to suffer the most are those for services, where the production function is highly intensive in data processing such as payments, standardized consumer credit, brokerage of securities, and passively managed funds. If technology allows soft information to be sufficiently substituted with an effective analysis of big data, other markets, such as small and medium enterprises loans, could also be at risk"*<sup>129</sup>.

129 On the different nature of hard and soft information and their application in the financial field, see Liberti and Petersen (2017). Here we briefly recall that, according to the theory of financial intermediation, one of the main reasons for the existence of supervised financial intermediaries is their greater capacity to manage information asymmetries, precisely because they have confidential information and they are able to effectively select the relevant information to identify and manage risks.



This observation helps to clarify why TechFin companies have a competitive advantage over FinTechs and are more intimidating for incumbents. As a matter of fact, like FinTechs, they are more attentive than supervised financial intermediaries in facilitating access to services and in providing timely responses to the financial needs expressed by customers<sup>130</sup>. In addition, TechFins have data and information on "existing" customers (i.e. those acquired through the development of their original non-financial assets) and therefore a greater customer experience<sup>131</sup>, which FinTechs must build up over time and which is often one of their main problems in competing with supervised financial intermediaries<sup>132</sup>.

It must be said, however, that the entry into force of the PSD2 Directive may affect the banks' information assets to the benefit of FinTechs and TechFins and, consequently, may significantly accelerate the growth of competition and broaden the impact on the profitability of banking activities<sup>133</sup>. In fact, in a sufficiently short term perspective, FinTechs and TechFins will be able to combine soft information, linked to bank account data, with information gathered from customer profiling based on big data.

The other important and, in many respects, direct external factor is the demand for financial services. Demand varies for different customer groups (individuals and businesses; retail and wholesale; Millennials, Generation Z, etc.) and for individual users of services. Other factors also influence the demand for financial services: the differences in financial needs and technological "propensity", the simplicity and accessibility of services, the level of financial expertise, and the trust placed in supervised or non-supervised operators offering financial services. As a

130 Supervised financial intermediaries appear slower to meet customer needs than FinTech companies, despite the competitive advantage of their information assets. In this regard, the recent report by Capgemini-Efma (2017) shows that the fast development of FinTechs is explained by the lower regulatory burden to which they are subject and also by their ability to give importance to the customer, rather than the product/service offered; this is leading to a gradual increase in customer confidence in FinTechs, especially among the younger and digitalised groups.

131 It is no coincidence, therefore, that the largest Internet Companies in the world (Google, Amazon, Facebook, Apple, Alibaba and others) are also defined as "digital disruptors", in view of their ability to customise services, substantially increasing the level of customer experience and radically changing the schemes established so far in the value chain (Sperimburgo, 2016). Moreover, the "Google case", which we have already mentioned (see paragraph 2, footnote 17), clearly shows the risks associated with the management of information, which are specifically relevant from a customer protection point of view.

132 In terms of fairness and transparency of FinTechs towards their customers, it is clear that information is a strategic asset and incumbents should be able to exploit it to a greater extent. This issue is particularly relevant in the Italian case. In this regard, Visco (2017) pointed out that the most important challenge of the Italian banking system is to exploit the amount of information available on companies and the economic system. This will enable banks to make the industry competitive and generate value for the economy.

133 As known, Directive (EU) 2015/2366 (Payment Services Directive 2 - so called PSD2) allows third party providers to access bank account data, subject to the consent of the account holder. By doing so, FinTech companies may benefit, free of charge, from particularly valuable information which was previously held exclusively by the banks. With reference to the Italian market, these providers will be subject to supervisory controls by the Bank of Italy, in order to preserve customer protection. Finally, on January 13, 2018, Legislative Decree No. 15 of December 15, 2017, came into force. In March 2018, the Bank of Italy issued a first "Communication" addressed to payment institutions (IP) and electronic money institutions (EMIs), aimed at reiterating the need for these operators to carry out a compliance check with new regulations. This includes capitalisation, organisation and risk management requirements, as well as requirements regarding the protection of all funds received from customers (payment service users), even if not registered in payment accounts or received against issued electronic money, which must be separated from the payment institution's assets.

result, supply-side solutions are particularly complex to define, since they involve an assessment of the distribution channels and methods that the financial operator is able to activate, but also of the multiple and not exclusively technical motivations that determine the demand for financial services.

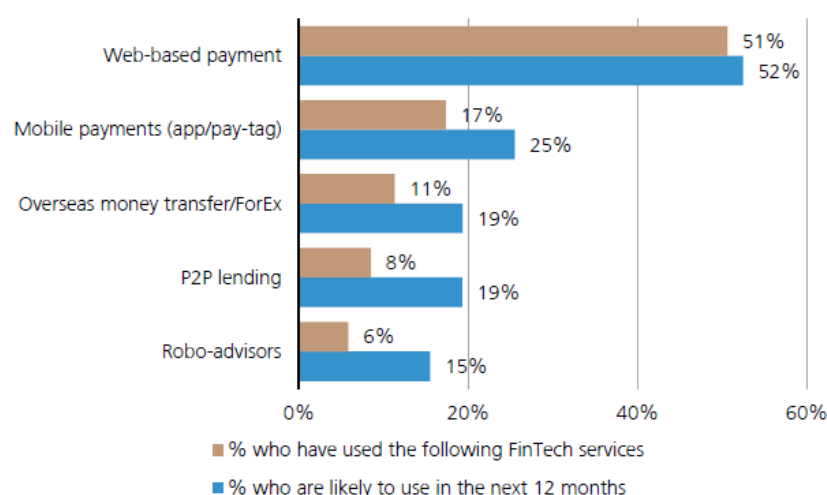
One of the demand factors frequently highlighted in recent studies on the subject is the degree to which customers are inclined to digitalise. The UBS survey (2016) shows that in the 24 countries surveyed, not all customers are ready to use FinTech for credit and, more importantly, investment activities, while the number of customers that are interested in or use FinTech for payments is much higher (Figure 6).

Some studies also highlight other important aspects in the definition of strategic choices and customer relationships.

In particular, Rossi (2017) stresses that the simplicity and high accessibility of services offered by FinTechs "have facilitated the approach of cohorts of older and less digitally literate people", thus allowing new operators to find a useful solution even in the face of the low propensity of customers to digitalisation.

Conversely, Locatelli (2017) recalls the sociological aspect linked to this issue, stating that crowd capitalism could be interpreted as an expression of a loss of confidence towards traditional institutions and that the fall in bank reputation can help to strengthen this approach. In the same vein, Arner et al. (2016) mention the example of more than 2000 P2P lending platforms in China, as proof of the fact that a large part of the population no longer believes that banks can be considered as trusted depositaries of wealth.

**Figure 6 - Percentage of customers that have used or intend to use a FinTech company's services over the next 12 months**



Source: UBS Evidence Lab. For P2P lending, if current P2P users are incorporated, as many as 23% of respondents are likely to use this service

Source: UBS (2016)

In order to further evaluate the competitive levers used by FinTechs, it would be interesting, in the long term, to perform sample studies that survey whether and to what extent the interest in FinTech services is actually linked not only to price factors but also to the quality and degree of service innovation, the fair conduct of the operator, as well as the possibility for the user to access alternative solutions. Carrying out this type of analysis is certainly not easy, also because the reasons underlying the choice may differ for individual types of service<sup>134</sup>. However, these analyses could be useful for assessing not only the behaviour of users and their degree of awareness in taking risks, but also for obtaining important application indications on the degree of transparency and fairness of FinTechs towards their customers.

### 5.3 Possible strategic choices and internal influences

Before analysing the internal factors that may influence the competitive position of the supervised financial intermediaries on the market, we should point out that, at least in principle, their choices might reflect different strategic approaches (which may also translate into different business models) as briefly highlighted below.

- a) *Passive approach (wait and see)*: means not monitoring new technologies and continuing with the traditional operational approach, which exposes the supervised financial intermediary to a high risk of being crowded out not only by new FinTech operators, but also by supervised financial intermediaries that seize financial digitalisation opportunities more efficiently, together with the renewed demands of customers and the new market context.
- b) *Internal dynamic approach*: in-house development for new ways of producing and offering financial services, through the adoption of new technologies (including platforms) and new (digital) distribution channels aimed at more effectively and efficiently responding to customer needs and at achieving a competitive market positioning, also with respect to the FinTech sector. This approach involves an assessment of the impact that technology may have in terms of efficient data processing for both internal and distribution purposes and increased exposure to risk. In fact, as seen in paragraph 3.2, in addition to the traditional operating risks associated with IT applications, there are "new" risks associated to the digitalisation of processes.
- c) *Collaborative approach*: the development of partnerships in the FinTech sector to seek operational advantages and synergies and/or to reduce the number of competitors perceived as a credible threat to the own market positioning. This

<sup>134</sup> By way of example, individual customers may choose financial services on FinTechs that are particularly convenient or timely, or offered by only a FinTech (i.e. not available from any other operators) or, again, because the customer has no access to alternative ways of raising finance. It should also be noted that, due to these different reasons underlying the use of the platforms by fund borrowers, there are different consequences in terms of exposure to risk of FinTech's customers acting as fund lenders; for more details on this subject, see paragraph 3.2.

may include different strategic choices, which are not necessarily mutually alternative:

- acquisitions of shareholdings, aimed at the inclusion of FinTech companies within the group;
  - joint ventures based on the participation of several supervised financial intermediaries and operators in a FinTech initiative;
  - partnerships aimed at benefiting from the collaboration of FinTech companies or, conversely, at offering them support in the development of certain process phases and/or new services and distribution methods;
  - the choices to outsource specific service/activity production to FinTechs;
  - outsourcing to Tech companies to take advantage of specific services (e.g. data processing, cloud computing<sup>135</sup>, etc.).
- d) Elusive approach: outsourcing financial activities to non-regulated FinTech companies in order to avoid regulations in force for supervised financial intermediaries, or radical changes to the business model, aimed at taking advantage of non-regulated space for the development of financial activities<sup>136</sup>.

The actual choice and implementation of these options is, however, largely influenced by some internal factors that assume significant importance and which are worth commenting on, albeit briefly.

A first particularly important aspect is the level of corporate culture, which is primarily expressed by governance and is also widespread in the operating structure. Indeed, it determines the ability to know about external events, be aware of market innovations and be able to assess the degree of business model vulnerability, also in light of the competitiveness of other operators active on the same markets, on similar customer segments and with comparable products and services. In this perspective, the different level of culture, on the one hand, can make the digitalisation development and FinTech an opportunity or, vice versa, a more or less relevant and credible threat; on the other, it can lead to the definition of a strategic plan more or less aware of the complexities and conditions useful for the

<sup>135</sup> On the subject of cloud computing and third-party providers, see paragraphs 3.2.4 and 3.2.7.

<sup>136</sup> Although the fact that FinTech is not subject to regulation leads to the conclusion that it is plausible, at least theoretically, for a bank to seek to outsource a specific activity to reduce regulatory compliance costs (Bofondi and Gobbi, 2017), this solution does not seem feasible, at least for banks based in the EU. In fact, according to current regulations, even if the bank decides to outsource, the risk and responsibility of outsourced activities remain with the bank, as reaffirmed - among others - by BIS-BSBC (2018). Therefore, within the EU, the case only seems possible if an operator, currently authorised to operate as a supervised financial intermediary, decides to abandon this qualification and transform itself into a FinTech in order to take advantage of the regulatory advantages available. From a more general perspective, however, the issue is nevertheless relevant, especially when one considers the unpredictability of the choices that could be made in the future by the incumbents if conditions remain largely uneven in the regulation of FinTech and third-party providers at a global level. The same report by the Basel Committee highlights that the control over service outsourcing choices is only exercised in some jurisdictions and only through certain types of supervised financial intermediaries (mainly banks in the European context); moreover, it highlights that *"as fintech evolves, scope exists for greater outsourcing of bank operations, which would then potentially take place outside a supervised environment"* (BIS-BCBS, 2018).

creation of value and, consequently, can lead to a more or less effective competitive repositioning on the market.

The human and financial resources available for operational development and the investments needed to implement the chosen strategies are also of fundamental importance.

This factor is particularly critical for small banks and financial intermediaries, which often lack the resources necessary for technological innovation; they are particularly exposed to very high potential competition from FinTech platforms (P2P lending, crowdfunding, robo advisors, etc.), which make timely and low-cost offerings to retail customers, who are generally the elective reference segment of smaller financial intermediaries.

We have already noted (paragraph 3) that some technological solutions adopted by FinTechs are simple and easily affordable; therefore, ideally, they could also be within reach of smaller supervised financial intermediaries, especially if they cooperate between them. However, it should be noted that FinTech companies active with these relatively simple solutions have been very successful with their customers. As a matter of fact, this may only partially be explained by the possible different types of customers to whom they are addressed (e.g. unbanked customers). It seems instead more plausible that this is also the result of the type of relationship established with customers and the limited ability of the incumbents to respond effectively to their financial needs. A careful reflection on such aspects within the single financial intermediaries, could prove useful to rebuild a confidence relationship, which is suffering greatly today, and limit the disintermediation by FinTechs.

It is worth comparing FinTechs and supervised financial intermediaries in terms of investments, considering that the cost of setting up and operating a FinTech can also be reasonably low, especially if it adopts less-advanced technologies, whereas studies of financial intermediaries highlight the extremely high cost of their technological development plans. This significant difference is largely because FinTechs are lean organisations, generally specialised in specific areas of business and with a light organisational structure which relies on a few human resources with computer and digital skills as well as management skills. Conversely, the implementation of new IT systems and digital applications within a complex organisation (e.g. a supervised financial intermediary) requires costly integration with existing IT systems and technologies (Bank of Italy, 2017a). In addition, the fact that FinTech is not subject to supervisory regulations means that these companies do not have to bear the costs of complex governance and risk control systems, closely linked to every operational aspect of a supervised financial intermediary.

It follows that the definition of new business models is expected to be particularly costly for supervised financial intermediaries, where the strategies are not merely imitative, but truly innovative and capable of generating value in the current context of intense and qualified technological development. Costs will be

high especially for the recruitment of personnel with adequate computer and digital skills.

Significant investments, within the reach of the larger supervised financial intermediaries, are also required for research and development (in order to design projects that may have an effective and profitable economic impact), for the acquisition of new IT systems, for the operational and distribution reorganisation required by the development of digital channels against the downsizing of physical channels and, possibly, also for the acquisition of equity investments for the development of operational partnerships.

Also from this point of view, the strategic levers that may be used by small banks appear significantly limited<sup>137</sup>.

#### 5.4 The empirical evidence

The actual situation at the international level shows that banks (and supervised financial intermediaries) are reacting with different intensity and that the initiatives are mainly undertaken by large-sized banks.

The strategies appear to be diversified because it emerges that banks are investing heavily for the purpose of external development; this is proof that the main banks consider the adoption of new technologies a strategic priority for market presence.

Although various studies have long highlighted the usefulness and desirability of forms of collaboration with FinTechs (Santander Innoventures et al., 2015), this strategy has been actually adopted more recently and has yet to realise its potential (BIS-FSB, 2017 - Box (C)).

Figure 7, taken from a survey by Accenture in 2016, shows the concentration of deals made in FinTech development areas. Of the investments made in areas of possible competition with traditional financial intermediaries, most are directed towards payments and loans and, to a slightly lesser extent, deposits and wealth management. Competition in this context could lead to important consequences for the revenues of traditional financial intermediaries as well as a decline in their market shares and a loss of customers.

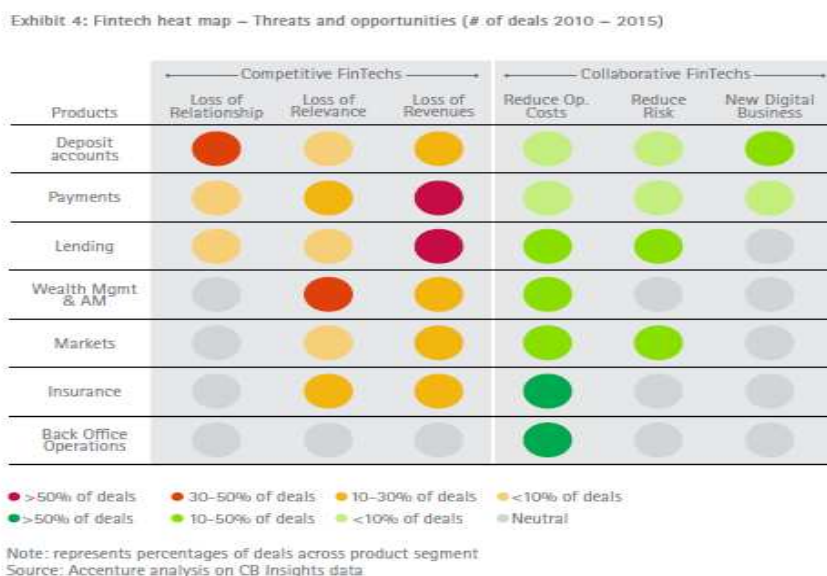
On the other hand, with reference to areas of possible cooperation with the FinTechs, Figure 7 indicates that most of the investments appear to be aimed at reducing operating costs, with numerous deals in back office transactions and insurance.

The increasing number of strategic solutions involving collaboration with FinTechs and with Tech companies also emerges from the most recent analysis

<sup>137</sup> The Bank of Italy (2017b) also underlined that "for smaller brokers the probability of remaining passive could be even higher, given the high investments required and the coordination problems between numerous players, for the definition of strategies and the creation of common interest service platforms".

conducted by Ernst & Young on banking, insurance and wealth and asset management<sup>138</sup>. Interesting examples of partnerships or consortia set up by banks at the international level are also listed by Capgemini-EFMA (2017) and show that these solutions are mainly dedicated to blockchain and advanced DLT development projects.

**Figure 7 – FinTech: The opportunities and threats**



Source: Accenture (2016).

Despite the considerable financial commitment that the major incumbents are facing<sup>139</sup>, the strategies adopted to respond to the highlighted phenomena have not always proved effective and profitable<sup>140</sup>; this can also be the result of experiment certain technological solutions that can prove to be ineffective or obsolescent even before being able to generate a return on investment<sup>141</sup>, evidence of the considerable importance of strategic risk within the financial industry.

The attention to return on investment reflects the degree of awareness of the necessary processes for investments in ICT, technologies and alliances or partnerships with FinTech operators to generate actual operational applications to the benefit of customers and, therefore, the incumbent's market share.

138 Cfr. EY (2017a); EY (2017b); EY (2017c).

139 As an example, the ten largest US banks have invested in 56 FinTech companies showing interest especially in blockchain, payment systems and data analytics. In addition, the mapping of investments by the three largest US banks reflects the shared interest in the same FinTech companies. This witnesses that partnerships among incumbents for joint investments in FinTechs are becoming more common, with the aim to generate greater synergies and returns on investment. See Caparelllo (2017).

140 Ample reference is made to Sperimborgo (2016) for an analysis of the strategic and management processes that must inspire the redefinition of the banks' business model and the complex operational implementation that is necessary to make investments profitable and to generate value.

141 It is the case, for example, that some large US banks (JP Morgan, Morgan Stanley and Goldman Sachs) in 2018 preferred to leave the R3 consortium, which deals with the development of blockchain technologies and in which other American banks continue to have investments. Cfr. CB Insight (2018b).

The most recent PwC survey (2017), carried out among 1,300 operators in 71 countries, shows that the vast majority of banks, insurance companies and asset managers interviewed intend to increase their partnerships with FinTech companies over the next three to five years, with an expected average ROI of 20% on innovation projects.

Indeed, partnership with the FinTech is extremely useful if the incumbents intend to accommodate change effectively rather than adopt "meek" or "defensive" approaches.

Amazon and JP Morgan provide a particularly important example of the major changes which can be determined for individual banks and for the entire banking industry as a result of the truly innovative strategic choices and dialogue and collaboration between the incumbents and the FinTech. The e-commerce giant and the US Bank have begun talks for the creation of a product with the Amazon brand that should be similar to a current account (Financial Times, 2018). Although at this preliminary stage no details about the operation are available, it could be an interesting way of reducing the competitive threat of TechFins, as well as a sign of the intensity and rapidity with which further changes can be made in the "connotation" of the financial industry.

In the study by PwC (PwC, 2017) focus on Italy (20 operators interviewed, 75% of them banks and 15% FinTechs) confirms that the country is still lagging behind but, at the same time, reveals the start of cooperation between banks and FinTechs<sup>142</sup>. In particular, the research shows two areas of attention that emerge from the comparison between the results of the interviews of operators in Italy and the rest of the sample. The first is that lower returns are expected (10% against 20%) from projects related to FinTechs; the second is that the Italian companies are less willing to embrace the disruptive nature of FinTechs (36% vs. 56%) and to invest in internal resources for innovation. It emerges at the same time that the Italian banks are investing to a greater extent compared with the global context, in enabling technologies that can help reduce the gap with regard to cyber security and blockchains, as for example technologies for enhancing IT assets (data analytics)<sup>143</sup>.

The importance for the Italian banks to accelerate the process to increase the efficiency of the structures and technological adaptation was strongly emphasised by the Bank of Italy (Visco, 2017). The latter highlighted the continuing need for a significant containment of costs aimed at raising the levels of efficiency and to redirecting spending to favour of investments that allow opportunities offered by digital technologies to be seized; up to today, in fact, data reveals that a significant number of financial intermediaries are struggling to make headway in the reorganization of distribution channels and that both the digitalisation of distribution

<sup>142</sup> This indication is also confirmed in an analysis conducted by ABI (2017).

<sup>143</sup> In fact, globally many banks are paying attention to the application of blockchain technology in different operational areas (payments, clearing and settlement services, securities trading, etc.), which can determine a reduction of the costs and the times certain activities take. These applications may significantly modify the production processes of the banking industry and also the banks' possibility of increase revenues. See CB Insights (2018a).



channels and the investments in technological innovation - while growing - can be referred to a limited number of large groups.

An important indication of the actions planned by Italian banks can be drawn from the results, recently published by the Bank of Italy (2017b) of a survey on the adoption of technological innovations by financial operators active in Italy. The analysis was carried out on a sample representative of the Italian financial system, consisting of 93 supervised financial intermediaries<sup>144</sup> (of which 92.4% provided the information requested) and also extended to 18 innovative enterprises providing information technologies and services.

It was thus possible to acquire information about planned investments (283 schemes, for a total value of 135 million euro) and about constraints perceived by the financial intermediaries with regard to technological development.

Also from this survey it clearly emerges that the total amount of the investments planned today is still limited in comparison with other European countries and that the investment is significantly concentrated in the larger banking groups.

The latter are working to reorganise their business model, increase profit margins and improve the service to customers by offering innovative services with a highly technological content; however investments in so-called disruptive technologies are still limited compared to the market (big data, cloud computing, etc.), in line with the PwC results (2017) mentioned above.

Among the smaller banking groups, a limited number shows a dynamism in terms of investments and initiatives and is focussing on the payment sector with service development strategies through collaboration with providers of technological solutions<sup>145</sup>.

As regards the other supervised entities, in a few cases they created lending or crowdfunding platforms (on this aspect see paragraph 3.1).

The Bank of Italy analysis also shows that the low propensity to invest is due to the significant cost of investments against expected profits. The operators interviewed currently consider profits too uncertain in view of both the potential development of the market, where demand is still not considered sufficiently mature, and uncertainty about how legislation will evolve.

Supervised financial intermediaries' assessment of the regulatory framework is also particularly interesting, showing that the legislation is not fully effective and suitable for the innovative ways with which the technologically advanced services are

144 In particular, the sample consists of: 13 major Italian banking groups; 4 Italian subsidiaries of European SI banks; 53 less significant banking groups; 23 non-bank intermediaries (payment institutions, EMLs, asset management companies and investment firms).

145 An example is ICCREA, the banking group which has acquired a stake in Satispay, specialising in e-payment, and in Ventis, active in e-commerce; in this way ICCREA makes an online platform available to companies, customers of cooperative credit banks (BCCs) spread over the country, on which they can sell their own products and payments can be made with Satispay.

provided, placing uncertainties or excessive constraints in critical operating areas (privacy policy, Anti Money Laundering, transparency and fairness, etc.). These assessments highlight the difficulties caused by the current legal framework, which is not sufficiently suitable for regulating the technological innovations in the financial field, with consequent problems both in the application of rules to FinTechs and in the possibility for the incumbents to respond effectively to competitors without incurring the risk of infringing the rules to which they are subject.

As seen (paragraphs 3 and 4) an important improvement will be possible in case the proposal of the European Commission to regulate crowdfunding platforms (European Commission, 2018) is approved, although many other steps remain to be taken.

However, the evidence that has so far emerged shows that the difficulties and the delay by a large part of the Italian banking system in renewing their strategic plans and business models to cope with the new competitive market are not due solely to regulatory issues, but also to the management and organisational choices of individual banks. This is especially important in light of the expected expansion of FinTechs in all segments of the market, which could lead in the next ten years to an erosion of 60% of the profits that banks derive from the retail segment (Bank of Italy, 2017a).

These aggregated results are also confirmed in - albeit few - studies available today of projects in progress at individual Italian banks.

An initial review carried out in 2017 shows that the main banks still also focus very much on the reorganisation of branches and distribution channels (Gualtieri, 2017).

This presumably comes from the already mentioned need to rebalance the income statement and therefore the resulting need to resize branch networks that even today are still too large with respect to the needs of the market and the increasingly digitalisation of customers. The attention of the banks has been therefore directed mainly towards the ways and methods to provide services to customers; however, a digital evolution that allows to dominate the market or even that proves to be competitive with respect to the FinTech can certainly not be based on just this item<sup>146</sup>.

Similar considerations emerge from an even more recent analysis, although based only on the banks located in Lombardy (Regione Lombardia - Politecnico di Milano, 2018). It points out that the financial technology initiatives were activated mainly by the larger banks in the sample and focused primarily on the payments system, crowdfunding and automated advice services; moreover, the banks surveyed are initiating several projects on enabling technologies (artificial intelligence, big data, etc.), as already pointed out in the studies mentioned above (Table 3).

<sup>146</sup> Source: Meeting with the panel of FinTech experts held at CONSOB on 25.5.2017.

**Table 3 – the products offered and the FinTech projects underway at the major banks in Lombardy**

FinTech services and technologies	Banks	Product/service	
Crowdfunding	Equity crowdfunding	BNL BNP Paribas Ing	Equity crowdfunding Equity crowdfunding
	Invoice trading	Banco BPM	Digital omnichannel transformation
	Social lending/P2P lending	Nexi	Digital business
		Ing	Instant lending
Payments	Instant payments and peer to peer	Banco BPM	Digital omnichannel transformation
		Nexi	XPAY, Mobile POS, Smart POS, ACH, Nexi Self-banking solutions,
		UniCredit	Uniweb, Buddybank
		Banca Sella	X, VAS@POS, Hype
Automated services for customers	Initiation service	Nexi	XPAY
	Automated financial advice	Banco BPM	Digital omnichannel transformation
		Ubi Banca	Personal finance manager UBI Money
	Comparators		
	Information services on accounts	Ubi Banca	UBI Money
Bots and chatbots	UniCredit	My Business Manager	
Tools and technologies for completing contracts in distance		Banco BPM	Digital omnichannel transformation
		UniCredit	UniWeb
DLT and smart contracts		Banco BPM	Digital omnichannel transformation
		UniCredit	Platform DTC
Virtual currencies			
Support technologies and services	Big data	Banco BPM	Digital omnichannel transformation
		Ubi Banca	Optical character recognition
		Banca Sella	IT architecture under development
		UniCredit	ExCeed, My Business View, CRM platform
	Artificial Intelligence	Banco BPM	Digital omnichannel transformation
		Ubi Banca	Optical character recognition
		UniCredit	Cross technology
	Cloud Computing		
	Open banking (API)	Banco BPM	Digital omnichannel transformation
		Ubi Banca	UBI Money, Optical character recognition
		Nexi	ACH
		Banca Sella	Portal for third parties
		UniCredit	Under development
UniCredit		Buddybank	
Internet of Things (IoT)	Banco BPM	Digital omnichannel transformation	
Other	Nexi	NexiSelf-banking solutions	

Source: elaboration on Regione Lombardia - Politecnico di Milano (2018).

## 6 Conclusions and research opportunities

This study analyses the operation of FinTech companies, highlighting the benefits and risks that this phenomenon generates in terms of: competitive stimulation within the financial system and efficiency of its operating mechanisms; an increase in the accessibility of financial services for customers and in the satisfaction of their financial needs; the fair and efficient allocation of financial resources to the benefit of economic growth; the fair and transparent management of information; and other risks linked to financial services, especially when directed at retail investors.

First and foremost, we provided a definition of FinTech companies, departing from the more generic definition commonly used today, which tends to include an extremely diverse set of operating categories.

As can be observed, in fact, only some FinTechs actually offer financial intermediation services exclusively (these are the financial technology companies, which we call "FinTechs" in the strict sense) or in addition to other types of activity (i.e. the "TechFins", meaning pre-existing technology and e-commerce companies that subsequently diversified their range of activities and also developed financial services). Vice versa, other companies operating in the technology sector (i.e. the technology companies, identified in this paper as "Tech" companies) do not offer financial intermediation services themselves, but merely offer functional services and products or services and products that are instrumental for the activity of financial intermediation (e.g. digitalised data management services, blockchain technologies, RegTech and cloud computing services, etc.). Therefore, for these companies, technology is the object of the production, whereas for the FinTechs and TechFins it is a productive factor used in offering financial services.

This clarification of their definition allows us to underline the fact that FinTechs are financial companies and that they fall, for all intents and purposes, within the perimeter of the financial industry. At the same time, it also allows clarifying that the FinTech is not a new sector nor even a sector in itself but rather constitutes a strongly innovative component in the financial sector.

The "New Digital Finance", therefore, has substantially changed the financial system, placing a plurality of new operators (FinTechs and TechFins), new markets (marketplaces and digital platforms) and new financial circuits (virtual currency circuits, etc.) largely non-regulated at the international level, alongside the markets and supervised financial intermediaries.

The analysis also clarifies the fact that FinTech can no longer be considered a "niche" phenomenon limited to a few start-ups specialising in certain production lines. In fact, we are globally seeing a proliferation of FinTech companies and an ever more intense development of financial activities offered by large-sized TechFins, which are gradually gaining increasing market share with different tiers of customers (individual and institutional, "banked" and unbanked), meeting a broad spectrum of

financial needs (from payment services to equity and debt financing, up to lending, corporate finance and asset and wealth management services).

It also emerges that the digitalised nature of financial activities carried out by the FinTechs drastically changes the variables that contribute to define the conditions of competition on a given market. On the one hand, because this allows national boundaries to be overcome and competitive pressure to be exerted even in national contexts where FinTech companies are not physically present. On the other hand, because the online communication channels create the conditions for a larger and more intense disclosure of information, for greater accessibility of financial services by customers, as well as for a significant reduction of production costs.

The insights made by mapping the financial services offered by FinTechs and risks connected to them allows us to grasp both the product and process innovations introduced by FinTech companies and the extensive areas of overlap or similarity with respect to the intermediation activities carried out by the traditional financial intermediaries and markets subject to supervision.

From this analysis, it is possible to draw a number of significant considerations.

In many cases FinTechs do not propose productive processes or innovative financial services in the strict sense (think, for example, about invoice lending, which is essentially invoice discounting, or advisory services on investment), as they rather offer – via the telematics channel – services that are sufficiently simple, on which they are able to gain rapidly increasing market shares. This occurs thanks to their ability to activate very efficient operational processes and provide timely responses to the needs of customers. It is not to be excluded however, that these market dynamics are also due to the traditional ways incumbents cover these operational, in a changed market scenario in which they have lost their attractiveness to customers. In these cases, the production process is highly specialised, highlighting the unbundling of financial services performed by FinTechs compared with traditional financial intermediaries. This is not necessarily due to the start-up phase of the FinTech company, but may be a strategic choice that allows it to maintain a lean structure managed by few professional figures with specific expertise. Whilst offering financial services that are identical (even in terms of the related risk profiles) to those provided by financial intermediaries, they are not always (and not uniformly in the different countries) subject to the same regulations as those imposed on the incumbents.

Greater innovation is displayed by FinTechs that allow customers to meet the same financial need, traditionally covered by incumbents, using different solutions, as well as those that offer innovative financial instruments and financial services using new technologies.

The new instruments or financial services can mainly be seen today in the area of payment services and of virtual currencies.

With reference to the innovative methods of offering, particularly relevant is the context of raising of finance for equity or debt financing. The new element is

given by the creation of online communication or digitalised platforms, which constitute direct intermediation channels (marketplace). Thanks to these channels, financial contracts are concluded directly between customers, without the FinTech acting as an intermediary and, therefore, without it assuming the risk. In this way an alternative is generated to the role typically played by traditional financial intermediaries in the context of lending and subscription of debt and equity securities as well as by insurance intermediaries. In fact, these intermediaries, classified as QATs (Qualitative Asset Transformers), manage and transform the risks, concluding on their own financial contracts as the counterparty of the customers. It should also be noted that the failure of FinTech companies to assume risks tends to lessen the incentives for these operators to incur costs for investment in staff training and improvement of service offered, as well as ensuring fair and efficient management of information to the benefit of customers.

The development of FinTech is therefore profoundly changing the ways of financial resource allocation and risk management processes. It will be interesting to understand, in perspective, if the multiplication of the direct intermediation circuits (marketplaces) replacing intermediaries, will determine a more efficient allocation of resources or if, vice versa, adverse effects will prevail that may arise from the fragmentation of the markets and by information asymmetries. In the latter case, the financial intermediaries will reaffirm themselves as capable of channelling the resources in the system, professionally managing and transforming risks and providing credit and loans to creditworthy individuals and companies.

The analysis also highlights differences in the face of the large area of financial services similar or analogous to those offered by traditional financial intermediaries and markets, which essentially derive from considerations linked to the type and the methods for the management of information used by FinTech companies for providing their financial services to customers. Within this scope are, for example, crowdfunding platforms or portals offering investment or financing services, with the portal managers determining the risk classes of borrowers and lenders and thereby influencing the composition of investment or loan portfolios. These aspects are conditioned by the incentives that these companies have, in the absence of specific rules and regulations, to ensure quality and to assess the adequacy of their services with a view to investor protection.

Another theme emphasised in this paper (that is also extremely interesting for future research on financial intermediation theory and the reasons underlying the regulation of the financial sector) comes from the observation that in a digitalised world, despite the greater potential availability of information, the conditions of information asymmetry and the ability to select truthful and qualifying information are not necessarily reduced. This is particularly evident when the task of due diligence is entrusted exclusively to individual (retail) customers, or, even worse, when the entity that selects and manages information based on the customer's financial choices is not monitored in any way for fairness and transparency. Of particular interest in this perspective are the operational mechanisms, not only of the market places in which the FinTech operators perform portfolio selection or contracting party

ranking, whilst not assuming any risk themselves, but also the mechanisms of comparators, especially when they are managed by non-regulated operators who also offer financial services, directly or indirectly.

Overall this research also reveals that the current scenario involves financial intermediation activities that, while producing the same risks, are treated differently under the rules and regulations, depending on the operator that offers the service, leading to different impacts on financial operators, customers and the stability of the financial system.

These findings provide a contribution to the reflection in progress at an international level regarding the opportunities and ways of developing a more flexible regulatory framework. The revised regulatory architecture must be more suited to the evolution of context, as well as based to a greater extent on an "activity-based" approach rather than the "entity-based" approach currently applied to supervised financial markets.

As of today, the legislation does not prove to be fully neutral in relation to the type of financial operator or the type of technology and channel of financial intermediation used, which is an important concern. First of all, it affects the competitive conditions within the financial sector, with a series of consequent effects on individual financial operators and at systemic level, but also in terms of the consequences on the effective and efficient allocation of financial resources within the economic system, customer protection and the prevention and monitoring of illegal acts.

The analysis of specific operational features of the FinTech and the multiple positions that emerge at the international level on the opportunities and ways of regulating these new financial operators clarifies that the task that lies ahead on the regulatory plane is particularly complex and difficult, and that the effectiveness of the result will depend on the willingness to proceed along sufficiently homogeneous regulatory lines at a supranational level and define new forms of cooperation between Supervisory Authorities which are suitable for preventing the risks generated by the globalisation of digital finance.

If there is a lack of uniformity in the regulatory decisions made by the individual countries and at supranational level, the conditions of regulatory arbitrage will suffer. This situation is already observed today and is the focus of scholars and Supervisory Authorities in view of the risks that may be generated. Moreover, the likelihood of these risks occurring has already been proven by events of crisis or instability, also generated by regulatory misalignments in the context of financial markets (e.g. shadow banking) which can determine serious consequences especially when some entities can completely escape the reach of Supervisory Authorities.

In addition, based on the "degree of neutrality" that the legislation will be able to express in relation to the type of financial operators and technology, different conditions of competition on the markets and different effects on users of financial services will be determined.

In this perspective, the action that has been launched at European level is particularly important. The most recent documents of the European Commission set important guidelines for its development as well as for the development of a regulatory framework for the financial sector and the plurality of initiatives required to "drive" technological development while ensuring a balance of interests.

It will be interesting to follow the further development of legal studies on these topics, which will certainly prove useful to deepen the opportunities and methods to extend the regulation already in place for the traditional financial system to the new financial operators, in cases where risks and safeguards deserving of similar regulation are found. Development of legal studies will also contribute to defining an innovative regulatory framework applicable to the plurality of financial operators (be they FinTechs or incumbents), in the face of new operational issues and new risks determined by the digital development of financial activities<sup>147</sup>.

It must also be noted that the decisions effectively to be taken on the regulatory plan will determine over time unpredictable effects on the development of market shares and the range of offerings from new operators, the competitiveness of the financial industry and its development in various countries. At the same time, the results of our analysis show that the digitalisation of financial activities is a process that cannot be reversed and is a structural factor of the new financial industry; the competitive potential of FinTech is very high and therefore the threat of disintermediation of the traditional financial system appears very credible, where said traditional system does not tackle the structural nature of the digitalisation phenomenon and fails to adapt its strategic and operational choices promptly and effectively.

The market scenarios highlighted in the recent contribution of BIS-BCBS (2018) provide clear evidence about this issue. For these reasons, the concluding part of this research has focused on the incumbents and banks in particular, attempting to understand how they are reacting to the development of digitalisation and FinTech.

To this end, first of all mention was made again to the different strategic choices that the incumbents may make to prevent the FinTech phenomenon from being truly disruptive, or to adapt their business model to the new market context and look for conditions of operating efficiency and diversification of the channels and services offered, through paths of internal or external growth (acquisitions, partnerships, etc.).

Several main factors until now, have slowed down the possibility of a sufficiently fast and effective response from the Italian financial system. According to the analysis proposed, problems emerge not only related to the availability of adequate human and financial resources, but also the ability to fully understand that the response to the FinTech and digitalisation phenomena may not prove effective if it is based solely on a diversification of distribution channels. Indeed, we believe that

<sup>147</sup>For a more thorough legal examination we refer you to the contributions, soon to be published in this CONSOB Editorial collection, "FinTech and legal characterization issues" and "FinTech: the international debate on regulation and the measures adopted".



it is necessary a profound rethinking of customer relations and reputational risk management, to increase operational skills and develop an offering capacity that is able to meet the actual financial needs of customers; a thorough examination is also necessary of the conditions under which investment in ICT, technology and FinTech companies are able to generate operational applications that are truly effective for customers and reasonably profitable for banks.

The analysis of the context does however shows that – in Italy, in line with what may be found abroad – the main processes implemented to redefine business models are generally seen among larger financial intermediaries. Furthermore, incumbents in Italy expect significantly lower economic returns on projects related to FinTech companies than those expected abroad. Additionally, they are investing to a greater extent in enabling technologies that can help to reduce the technological gap and update systems in a way consistent with renewed management needs. Examples of this are investments in technologies aimed at enhancing the IT resources (data analytics), in blockchain technologies and in the field of cyber security.

The survey recently conducted by the Bank of Italy (2017b) on FinTechs in Italy provides greater detail on investment programmes and the areas of scheduled digital development initiatives for a representative sample of the Italian financial system. Case studies are being developed and will allow greater understanding of the strategies behind the development of the individual banks in response to technological innovation and competition exerted by the FinTech.

It will certainly be interesting to continue research in order to assess the ability of the plurality of financial operators (FinTechs and supervised financial intermediaries) to evolve business models over time with the objective of generating profitability and delivering effective responses to the customers' demand, ensuring fairness of conduct and sound and prudent management.



## References

- ABI (2017), Audizione del Direttore Generale G. Sabatini presso la VI Commissione Finanze della Camera dei Deputati sul tema "Indagine conoscitiva sulle tematiche relative all'impatto della tecnologia finanziaria sul settore finanziario, creditizio e assicurativo", 5.12.2017. [https://www.abi.it/DOC\\_Info/Audizioni-parlamentari/Presentazione%20per%20Audizione%20DG%20Commissione%20Finanze%20Camera%204%2012%202017.pdf](https://www.abi.it/DOC_Info/Audizioni-parlamentari/Presentazione%20per%20Audizione%20DG%20Commissione%20Finanze%20Camera%204%2012%202017.pdf)
- Accenture (2016), Fintech and the Evolving Landscape: Landing Points for the Industry, April.
- AIAF (2015), P2P lending, Quaderni AIAF online, n 164, Marzo 2015.
- ANIA (2017), Audizione del Presidente di ANIA M. B. Farina presso la VI Commissione Finanze della Camera dei Deputati sul tema "Indagine Conoscitiva sulle tematiche relative all'impatto della tecnologia finanziaria sul settore finanziario, creditizio e assicurativo", 6.12.2017.
- Arner, D.W., J. Barberis e R.P. Buckley (2016), The evolution of fintech: new post-crisis paradigm, *Georgetown Journal of International Law*, vol. 47(4): 1271-1320.
- Arner, D.W., J. Barberis e R.P. Buckley (2017), FinTech, RegTech, and the Reconceptualization of Financial Regulation, *Northwestern Journal of International Law & Business*, vol. 37(3): 371-413.
- Arnold, M. (2018), Bitcoin freeloards on institutions' trust, warns BIS, *Financial Times*, 6.2.2018, <https://www.ft.com/content/47127c32-0b35-11e8-839d-41ca06376bf2>
- Baarlam R. (2018), Il Madoff cinese che ha truffato 5 miliardi di dollari con un sito, *Il Sole 24 Ore*, 30.1.2018.
- Bank of Italy (2015), Avvertenza sull'utilizzo delle cosiddette valute virtuali, 30.1.2015. <https://www.bancaditalia.it/compiti/vigilanza/avvisi-pub/avvertenza-valute-virtuali/index.html>.
- Bank of Italy (2016), Provvedimento recante disposizioni per la raccolta del risparmio dei soggetti diversi dalle banche, 8 novembre 2016.
- Bank of Italy (2017a), Audizione del Vice Direttore Generale della Bank of Italy F. Panetta presso la VI Commissione Finanze della Camera dei Deputati sul tema

- "Indagine Conoscitiva sulle tematiche relative all'impatto della tecnologia finanziaria sul settore finanziario, creditizio e assicurativo", 29.11.2017.
- Bank of Italy (2017b), Fintech in Italia. Indagine conoscitiva sull'adozione delle innovazioni tecnologiche applicate ai servizi finanziari, Roma, 21.12.2017.
- Bank of Italy (2018) Comunicazione della Banca d'Italia in materia di obblighi antiriciclaggio per gli intermediari bancari e finanziari, 9 febbraio 2018, <https://www.bancaditalia.it/compiti/vigilanza/normativa/archivio-norme/comunicazioni/com-20180210/index.html>
- Bank of England (2015), One Bank Research Agenda, Discussion paper, February.
- BanKer (2017), Valute virtuali e normative antiriciclaggio, *Dirigenza Bancaria*, n. 188.
- Barba Navaretti G., G. Calzolari e A.F. Pozzolo (2017), FinTech and Banks: Friends or Foes?, *European Economy*, vol. 2: 9-31
- BCE (2012), Virtual currency schemes, October 2012.
- BeBeez (2017), Ecco perché il fintech non è un Far West. Le startup rispondono a Vegas, 15 maggio 2017, <https://bebeez.it/2017/05/15/perche-fintech-non-un-far-west-le-startup-rispondono-vegas/>
- BIS – FSB (2017), FinTech credit. Market structure, business models and financial stability implications, Report prepared by a Working Group established by the Committee on the Global Financial System (CGFS – Bank of International Settlement), and the Financial Stability Board, 22.5.2017.
- BIS-BCBS (2018), Sound Practices. Implications of fintech developments for banks and bank supervisors, Basel Committee on Banking Supervision – BIS February 2018, <https://www.bis.org/bcbs/publ/d431.pdf>.
- BNY Mellon (2015), Innovation in Payments: The Future is Fintech.
- Bofondi, M. (2017), Il lending-based crowdfunding: opportunità e rischi, *Bank of Italy, Questioni di Economia e Finanza*, n. 375.
- Bofondi, M. e G. Gobbi (2017) The big promise of Fintech, *European Economy*, vol. 2: 107-119
- Boot, A. (2016), Understanding the Future of Banking Scale & scope economies, and fintech, University of Amsterdam, mimeo.
- Caparelllo A. (2018), Criptovalute: furto da 200 milioni di dollari su una piattaforma italiana, 12.2.2018, <http://www.wallstreetitalia.com>
- Capgemini – EFMA (2017), World FinTech Report 2017, <http://www.worldfintechreport2017.com>
- CB Insights (2017), Visualizing Where Major US Banks Have Invested in Fintech, June 13, <https://www.cbinsights.com/blog/fintech-investments-top-us-banks>
- CB Insights (2018a), How Blockchain Could Disrupt Banking, 8.2.2018.

- CB Insights (2018b), Where Top US Banks Are Betting On Fintech, 1.2.2018.
- Compliance Journal (2017), Le strade virtuali del riciclaggio, Redazione.
- CONSOB (2016a), Regolamento sulla raccolta di capitali di rischio tramite portali online, Adottato con delibera n. 18592 del 26 giugno 2013, Aggiornato con le modifiche apportate dalla delibera n. 19520 del 24 febbraio 2016
- CONSOB (2016b), Regolamento CONSOB n. 16190 del 29 ottobre 2007 recante norme di attuazione del decreto legislativo 24 febbraio 1998, n. 58 in materia di intermediari.
- CONSOB (2017a), Relazione per l'anno 2016, Roma, 31 marzo 2017.
- CONSOB (2017b), Incontro annuale con il mercato finanziario, Milano, 8.5.2017.  
<http://www.consob.it/documents/11973/1102412/dsc2017.pdf/4b129aa8-b702-4f6f-91e8-94d38ede6114>
- CONSOB (2017c), Regolamento sulla raccolta di capitali di rischio tramite portali online - Adottato con delibera n. 18592 del 26 giugno 2013 e Aggiornato con le modifiche apportate dalla delibera n. 20204 del 29 novembre 2017.
- CONSOB (2017d), Audizione del Presidente G. Vegas presso la VI Commissione Finanze della Camera dei Deputati sul tema "Indagine Conoscitiva sulle tematiche relative all'impatto della tecnologia finanziaria sul settore finanziario, creditizio e assicurativo", 30.11.2017.
- CONSOB (2017e), Offerte di monete virtuali, Consob Informa" n. 44 del 4 dicembre 2017,  
[http://www.consob.it/web/area-pubblica/avvisi-ai-risparmiatori/documenti/tutela/esma/2017/ct20171204\\_esma.htm](http://www.consob.it/web/area-pubblica/avvisi-ai-risparmiatori/documenti/tutela/esma/2017/ct20171204_esma.htm)
- CONSOB (2017f), Fintech: presentati i risultati preliminari della prima ricognizione di Consob e mondo accademico, Comunicato Stampa, 5 dicembre 2017  
[http://www.consob.it/documents/46180/46181/comunicato\\_20171205.pdf/1f17249d-b137-41bd-a80b-b5f112857c56](http://www.consob.it/documents/46180/46181/comunicato_20171205.pdf/1f17249d-b137-41bd-a80b-b5f112857c56)
- CSA (2016), The Treacherous 12. Cloud Computing Top Threats in 2016, Cloud Security Alliance – Top Threats Working Group.  
<https://cloudsecurityalliance.org/group/top-threats/>
- De Dominicis N. (2017), Obblighi di antiriciclaggio per agenti finanziari e mediatori creditizi, Dirigenza Bancaria, n. 188.
- Deloitte (2015), RegTech Is The New FinTech. How Agile Regulatory Technology Is Helping Firms Better Understand and Manage Their Risks.
- Deloitte (2016a), Marketplace Lending. A Temporary Phenomenon?.
- Deloitte (2016b), Robo Advisor ed evoluzione del ruolo della Funzione Compliance.
- Deloitte (2016c), How can Fintech facilitate fund distribution. June 2016

- Dermine, J. (2016), Digital Banking and Market Disruption: a Sense of Déjà Vu?, in AA.VV. Financial Stability in the Digital Era, Banque de France, Financial Stability Review, vol. 20.
- DNB (2016), Technological Innovation and the Dutch Financial Sector (in Dutch), working paper, De Nederlandsche Bank (Dutch Central Bank), January.
- EBA (2014), Opinion on "virtual currencies", EBA/Op/2014/08, 4 July 2014.
- EBA (2015), Opinion of the European Banking Authority on lending-based crowdfunding, EBA/Op/2015/03, 26/02/2015
- EBA (2017), Consultation paper – Draft recommendations on outsourcing to cloud service providers under Article 16 of Regulation (EU), No 1093/2010, EBA/CP/2017/06, 17/05/2017.
- EBA (2017b), Discussion Paper on the EBA's approach to financial technology (FinTech), EBA/DP/2017/02, 4 August 2017.
- ENISA (2015), Secure Use of Cloud Computing in the Finance Sector. Good practices and recommendations, European Union Agency For Network And Information Security.
- ESMA (2015), Investment-based crowdfunding, Insights from regulators in the EU, ESMA/2015/856, Ann 1, 13.5.2015. [https://www.esma.europa.eu/sites/default/files/library/2015/11/esma-2015-856\\_ann\\_1\\_esma\\_response\\_to\\_ec\\_green\\_paper\\_on\\_cmu\\_-\\_crowdfunding\\_survey.pdf](https://www.esma.europa.eu/sites/default/files/library/2015/11/esma-2015-856_ann_1_esma_response_to_ec_green_paper_on_cmu_-_crowdfunding_survey.pdf)
- ESMA (2017a), ESMA response to the Commission Consultation Paper on Fintech: A more competitive and innovative financial sector, ESMA50-158-457, 7 June 2017.
- ESMA (2017b), Statement - ESMA alerts investors to the high risks of Initial Coin Offerings (ICOs), ESMA50-157-829, 13 November 2017.
- ESMA (2017c), Statement – ESMA alerts firms involved in Initial Coin Offerings (ICOs) to the need to meet relevant regulatory requirements, ESMA50-157-828, 13 November 2017,
- ESMA (2017d), Statement on preparatory work of the European Securities and Markets Authority in relation to CFDs and binary options offered to retail clients, 15 December 2017, ESMA71-99-910.
- ESAs (2018), WARNING - ESMA, EBA and EIOPA warn consumers on the risks of Virtual Currencies, <https://www.esma.europa.eu/press-news/esma-news/esas-warn-consumers-risks-in-buying-virtual-currencies>
- European Commission (2014), Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions Unleashing the potential of Crowdfunding in the European Union, COM(2014) 172 final, Brussels 27.3.2014.

- European Commission (2017), Communication from the Commission to the European Parliament, the Council, the European Central Bank, the European Economic and Social Committee and the Committee of the Regions, Reinforcing integrated supervision to strengthen Capital Markets Union and financial integration in a changing environment, COM(2017) 542 final, Brussels, 20.9.2017.
- European Commission (2017a), Consultation document - Fintech: A more competitive and innovative financial sector, Brussel, 23.3.2017.
- European Commission (2017b), Summary of contributions to the 'Public Consultation on FinTech: a more competitive and innovative European financial sector', Brussel, 12.9.2017.
- European Commission (2017c), Communication from The Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions - Commission Work Programme 2018 - An agenda for a more united, stronger and more democratic Europe, Strasbourg, 24.10.2017, COM(2017) 650 final, [https://ec.europa.eu/info/publications/2018-commission-work-programme-key-documents\\_en](https://ec.europa.eu/info/publications/2018-commission-work-programme-key-documents_en)
- European Commission (2017d), Payment services: Consumers to benefit from safer and more innovative electronic payments, Brussels, 27.11.2017.
- European Commission (2018), Proposal for a Regulation of the European Parliament and of the on European Crowdfunding Service Providers (ECSP) for Business, Brussels, 8.3.2018, COM(2018) 113 final, 2018/0048 (COD).
- European Commission (2018a), Communication from the Commission to the European Parliament and the Council, Stronger protection, new opportunities - Commission guidance on the direct application of the General Data Protection Regulation as of 25 May 2018, COM(2018)43final Brussels, 24.1.2018.
- European Commission (2018b), Communication from the Commission to the European Parliament, the Council, the European Central Bank, the European Economic and Social Committee and the Committee of the Regions FinTech Action plan: For a more competitive and innovative European financial sector, COM(2018) 109 final, Brussels, 8.3.2018.
- European Parliament (2016), Resolution of 26 May 2016 on virtual currencies, (2016/2007(INI)), P8-TA(2016)0228.
- European Parliament (2017), Report on FinTech: the influence of technology on the future of the financial sector, (2016/2243(INI)), Committee on Economic and Monetary Affairs, Rapporteur: Cora van Nieuwenhuizen, RR\1124611EN, 28.4.2017.
- EY (2017a), Scaling new heights. M&A integration in banking & capital markets, Ernst & Young Global Limited.

- EY (2017b), Scaling new heights. M&A integration in insurance, Ernst & Young Global Limited.
- EY (2017c), Scaling new heights. M&A integration in wealth & asset management, Ernst & Young Global Limited.
- FCA (2017a), Discussion Paper on distributed ledger technology, DP17/3, April 2017, <https://www.fca.org.uk/publication/discussion/dp17-03.pdf>
- FCA (2017b), Consumer warning about the risks of Initial Coin Offerings ('ICOs'), Statements, 12.9.2017, <https://www.fca.org.uk/news/statements/initial-coin-offerings>
- FCA (2017c), Consumer warning about the risks of investing in cryptocurrency CFDs, 14.11.2017, <https://www.fca.org.uk/news/news-stories/consumer-warning-about-risks-investing-cryptocurrency-cfds>
- Ferrari, A., E. Gualandri, A. Landi, e P. Vezzani (2016), Il Sistema finanziario: funzioni, mercati e intermediari, Giappichelli editore, Torino, quinta edizione.
- Ferrarini, G. (2017) Regulating FinTech: Crowdfunding and Beyond, European Economy, vol. 2: 121-142.
- Financial Times (2018), Amazon in talks with JPMorgan to offer bank accounts, 5.3.2018.
- FSB (2017), Financial Stability Implications from FinTech, Supervisory and Regulatory Issues that Merit Authorities' Attention, 27.6.2017.
- Gentile, M., N. Linciano e P. Soccorso (2016), Financial advice seeking, financial knowledge and overconfidence, CONSOB – Quaderni di Finanza, n. 83, marzo.
- Gobbi, G. (2016), The troubled life of the banking industry, Intervento del Capo del Servizio Stabilità Finanziaria della Bank of Italy, Wolpertinger Conference, Verona, 2 settembre.
- Goodbody (2017), UK Banks - The Challenger Playbook, Goodbody Stockbrokers UC.
- Gualtieri, L. (2017), Integrarsi a caro prezzo, Milano Finanza, 29 luglio 2017.
- Guidoni, F. (2017), Private e bitcoin, la Svizzera sdogana le gestioni in valute digitali ([www.advisoronline.it](http://www.advisoronline.it)).
- IIF – Institute of International Finance (2016), Regtech in financial services: technology solutions for compliance and reporting, March.
- IVASS (2014), Indagine sui siti comparativi nel mercato assicurativo italiano, novembre.
- Lerro, A.M., (2013), Equity Crowdfunding. Investire e finanziare l'impresa tramite Internet, Il Sole24Ore, Milano
- Liberti, J.M. e M.A. Petersen (2017), Information: Hard and Soft, Northwestern University, mimeo.



- Locatelli, R. (2017), La rivoluzione digitale e i servizi offerti dalle banche, Intervento al Convegno Banca 2025: tra rivoluzione digitale e nuovi modelli di servizio, organizzato da EDIVA – CreaRes – First Cisl dei Laghi e svolto presso l'Università dell'Insubria, Varese, 23 giugno 2017, dattiloscritto.
- Locatelli, R., C. Schena, E. Coletti e A. Uselli (2017), Business Model delle banche europee e implicazioni per il sistema bancario italiano, capitolo 2, Osservatorio Monetario, n. 1/2017, ASSBB – Università Cattolica del S. Cuore, Milano.
- Magnani, A. (2016), Euklid, la «banca del futuro» viene valutata 10 milioni, Il Sole24Ore, 22/11/2016.
- Mansilla-Fernandez, J.M. (2017) Institutions, European Economy, vol. 2: 41-50.
- McQuinn, A., W. Guo e D. Castro (2016), Policy Principles for FinTech, ITIF – Information Technology & Innovation Foundation, vol. 1-52.
- MEF (2018), Valute virtuali: in consultazione pubblica lo schema di decreto per censire il fenomeno, Ministero dell'economia e delle finanze – Comunicato stampa n. 22 del 02/02/2018, [http://www.mef.gov.it/ufficio-stampa/comunicati/2018/documenti/comunicato\\_0022.pdf](http://www.mef.gov.it/ufficio-stampa/comunicati/2018/documenti/comunicato_0022.pdf)
- Moneyfarm (2017), The Fintech Bible.
- Morgan Stanley, (2017), Blockchain: Unchained?.
- OICV-IOSCO (2017), IOSCO Research Report on Financial Technologies (Fintech), February.
- Paracampo, M.T. (2016), La nuova stagione dei siti di comparazione dei prodotti assicurativi: dagli interventi delle Authorities europee alle innovazioni della direttiva sulla distribuzione assicurativa, Rivista di diritto bancario, n. 2.
- PBC – People's Bank of China (2017), Public Notice of the PBC, CAC, MIIT, SAIC, CBRC, CSRC and CIRC on Preventing Risks of Fundraising through Coin Offering, [http://www.pbc.gov.cn/english/130721/3377816/index.html?\\_\\_hstc=172477884.47f4fea8ab884286c11d72f5acbde2a.1512086400087.1512086400088.1512086400089.1&\\_\\_hssc=172477884.1.1512086400090&\\_\\_hsfp=528229161](http://www.pbc.gov.cn/english/130721/3377816/index.html?__hstc=172477884.47f4fea8ab884286c11d72f5acbde2a.1512086400087.1512086400088.1512086400089.1&__hssc=172477884.1.1512086400090&__hsfp=528229161)
- Politecnico di Milano (2017a), Digital Rethinking nel Banking e Finance, Osservatorio Digital Finance, gennaio 2017.
- Politecnico di Milano (2017b), 2° Report italiano sul CrowdInvesting, Osservatorio CrowdFunding, luglio 2017.
- PwC – PricewaterhouseCoopers (2017), Redrawing the lines: FinTech's growing influence on Financial Services, Global FinTech Report.
- Regione Lombardia – Politecnico di Milano (2018), I servizi FinTech per le PMI lombarde. Guida pratica, febbraio 2018.

- Reuters (2018), <https://www.reuters.com/article/us-china-bitcoin/pboc-official-says-chinas-centralized-virtual-currency-trade-needs-to-end-source-idUSKBN1F50FZ>, 15.1.2018.
- Rossi, S. (2017), Idee per il futuro del sistema finanziario italiano, Intervento del Direttore Generale della Bank of Italy e Presidente dell'IVASS, Courmayeur, 23 settembre.
- Sannucci, V. (2016), Il futuro del sistema bancario italiano: discontinuità, tra innovazione e regolazione, Intervento del Vice Direttore Generale della Bank of Italy, ASSBB, Perugia, 19 marzo.
- Santander InnoVentures, Oliver Wyman e Anthemis Group (2015), The Fintech 2.0 Paper: rebooting financial services.
- Siclari, D. e G. Sciascia (2016), Innovazione finanziaria e rafforzamento del mercato unico per i servizi finanziari retail: sfide, rischi, risposte della regolazione, Rivista trimestrale di diritto dell'economia, n.2.
- Sperimborgo, S. (2016), Banche e innovazione tecnologica. Come avere successo nella tempesta perfetta della rivoluzione digitale, Bancaria, n.12.
- StartupBusiness (2017), <https://www.startupbusiness.it/le-insurtech-italiane-e-internazionali-da-seguire-nel-2017/90204/>
- UBS (2016), Global banks: Is FinTech a threat or an opportunity?, Q-Series, UBS Global Research, 26/07/2016.
- Visco, I. (2017), Intervento del Governatore della Bank of Italy all'Assemblea dell'Associazione Bancaria Italiana, Roma, 12 luglio 2017.
- Vives, X. (2017) The Impact of Fintech on Banking, European Economy, vol. 2: 97-105.
- Zetzsche, D.A., R.P. Buckley, D.W. Arner e J.N. Barberis (2017), From FinTech to TechFin: The Regulatory Challenges of Data-Driven Finance, EBI Working Paper Series, n. 6.
- Zhang, B., P. Baeck, T. Ziegler, J. Bone, e K. Garvey (2016a), Pushing Boundaries: the 2015 UK Alternative Finance Industry Report, U.K., University of Cambridge and Nesta.
- Zhang, B., R. Wardorp, T. Ziegler, A. Lui, J. Burton, A. James e K. Garvey (2016b), Sustaining Momentum, the 2nd European Alternative Finance Industry Report, University of Cambridge, KPMG and CME Group Foundation.