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FinTech: the role of the supervisory authority in a changing market

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1. Introduction

I would like to thank the ADEIMF for inviting me to their 2019 Winter Convention, which this year is entitled ‘Finance and the challenges posed by FinTech’ – a theme that is central to the future of companies, the world of finance, and supervisory authorities.

The term ‘FinTech’ refers, as we know, to numerous sectors of activity (including payments, digital currencies, crowdfunding, and peer-to-peer lending) and to various techniques and tools (such as robot advisors, big data, and artificial intelligence). This makes it an extremely complex and ever-changing subject and it is difficult to make a summary that will survive the passage of time.

I will focus here on some of the more important aspects from the perspective of the supervisory authority, which increasingly includes the need to ensure effective risk management without discouraging innovation and without disturbing, as far as this is possible, the underlying stability of the rules and hence their ‘certainty’.

2. The digital revolution and the market

The digital revolution represents a clear break in continuity in the markets for goods, services and transactions, in relationships between companies (and between companies and final consumers), and in the conduct of consumers themselves.

For some time now, companies have been exploiting technology to optimize the various stages of production, develop new trading policies, and improve payments and cash-flow management. It is no surprise that this conference is focused on Industry 4.0 – the part of industry that is keenest on innovating processes via digitalization. This is the sector that has most to gain from innovative financial services.

Starting with the large multinationals (BigTechs),¹ FinTech companies’ strategies are directed towards sectors where technology can create value by automating repetitive activities or by collecting and processing information to satisfy personalized needs, in real time and with simplified procedures. These companies are very diverse, but they have one thing in common: they actively rely on technology, adopt streamlined procedures, operate few or no branches, and have a small but highly specialized workforce.² They have ‘unbundled’ banking services so as to focus on specific segments (payments, loans and investments) in order to capture a greater share of the market, partly because they can use very aggressive pricing policies. Going forward, it may be possible to create a new kind of bundling, based on BigTechs providing retail financial services that make use of the wealth of client data they have acquired through other channels.

¹ Usually in reference to GAFA (Google, Amazon, Facebook and Apple).

² A growing number of financial intermediaries have identified the professions involved in this area, i.e. IT and digital product specialists, engineers, physicists and mathematicians.

The most important developments have taken place in relation to the payment system, but they are rapidly spreading to other areas, firstly to the lending sector³ but also to securities trading, risk management, and compliance (RegTech).

In the payments sector, there are success stories where it has been possible to manage the entire transactional cycle (known as three-party schemes, involving a payer, a payee and an intermediary).

This structure produces multiple benefits, including the possibility of enhancing the brand, reducing interchange fees, and fully exploiting the data connected to a payment.⁴ From this standpoint, the marketing approach is not limited to managing just the transaction but extends to an evolved model that encompasses the entire consumer experience, from collecting information on the consumer's need to purchase a good or service to supplying or delivering it.

New operators often manage to use the information that customers have provided for free, (gaining far more in terms of value than the service provided). This has been the subject of European and national debate for some time, confirming the importance of customer profiling and the protection of personal data in the digital economy. EU legislation dealt with this issue in Regulation (EU) 2016/79 (the General Data Protection Regulation – GDPR), in force since last May, which places restrictions on the use of personal information and helps to create a harmonized personal-data market, increasing competition and, in this way, encouraging the development of FinTech companies.

Aware of the need to adapt to the changing market landscape, the incumbent banking operators are responding with different strategies and at a different pace. They tend towards the development of 'platform services', which involve the integrated management of processes and banking services that are open to other operators following a 'multichannel' approach. This has already been tested in other sectors, especially telecoms: in this market, partly as a result of the liberalization of the 'last mile', we have witnessed the progressive and uninterrupted development of infrastructural services that have completely transformed the previous competition paradigms.

In some cases, acquisitions or alliances between banking intermediaries and FinTech companies have led to physical channels being integrated into virtual ones. On other occasions, we have seen the launching of digital-only banks, with no branch networks and extremely reduced cost structures.

At global level, investment in the FinTech sector grew significantly in the first half of 2018, with \$57.9 billion being put into 875 transactions, a substantial increase on the \$38.1 billion invested during the whole of 2017.⁵ Countries whose intermediaries are traditionally more active in this

³ The Financial Stability Board's recent *Global Monitoring Report on Non-Bank Financial Intermediation 2018* (4 February 2019) gives an account of the development of FinTech credit in recent years. There has been rapid growth worldwide, although volumes vary considerably from country to country. This reflects differences in economic development and financial market structure: the higher a country's income and the less competitive its banking system, the greater will be the volume of FinTech credit.

⁴ This last aspect is very important: on the one hand, the information acquired on buyers enables their purchasing preferences to be screened continuously and accurately so that targeted offers can be made according to their buying habits; on the other hand, the management and control of the sales network associated with the scheme facilitates contact between the point of sale and the user, thanks to geolocation technologies.

⁵ KPMG International, 2018.

sector are the United Kingdom, the United States, and China. More recently there has been strong investment growth in France, Japan, and South Korea.

In Europe too, there was significant growth in FinTech investments in 2018; the UK alone accounted for more than half of the total volume (\$16 billion in the first half of 2018 against \$26 billion for Europe as a whole).

A fact-finding inquiry on FinTech published by the Bank of Italy in 2018 highlighted the fact that Italian banks and financial intermediaries were working on a large number of projects, although the value of the related investments was fairly modest, and less than that of the other main European countries.

A study conducted last year by Abilab showed that more than half of Italian banks are developing innovative projects in the payments sector, followed by the security (more than 35% of banks) and investment and lending platforms sectors (more than 20%). As regards the technologies being tried out, more than a third of banks are working on big data analytics, blockchain, distributed ledger technology (DLT) and artificial intelligence; a quarter of banks are prioritizing cloud computing and digitalization of traditional services. According to the *Osservatorio FinTech & Digital Finance del Politecnico di Milano*, in 2017, some 16% of Italians used a FinTech service at least once and 56% of bank customers accesses the services of their own bank via PC, tablet or smartphone.

The most recent evidence indicates that some ‘significant’ banks are developing projects based on biometric identification. Big data and artificial intelligence are also being used to segment the market for commercial purposes, in the detection of fraud, in the analysis of cyber threats, in the automation of processes, in anti-money laundering applications and more generally, to observe compliance obligations (RegTech).

RegTech continues to develop, partly as a result of the proliferation of new regulations following the recent financial crises. The range of RegTech applications is very wide: policy, management of regulatory updates, reporting, and the processing and use of company data. The most interesting aspect is the trend towards using innovation not only passively for compliance purposes, but actively to make use of the regulatory framework to develop competitive capacity, especially by increasing the efficiency of the organizational infrastructure.

The banking industry is also paying close attention to DLT, which focuses on ‘distributed’ data, i.e. independent of any one centralized entity. This is advantageous in terms of the transparency and accessibility of information, control capacity, and speed of execution of operations and heralds a completely new vision of the relationships between the participants in the system and the idea of a ‘value chain’.

For traditional companies, the use of new technologies, even the most advanced ones, is not in itself sufficient to guarantee the digital transformation of their business models. They also need access to ‘digital talents’ that can use technology to improve business models based on the everyday digital experience of their customers on the web or on mobile devices such as smartphones and tablets. As a result, banks are moving in two directions: they are stepping up their investment in training programmes and they are making more effort to find new talent. The latter objective could prove crucial, not only because it increases competition between companies in this segment of the labour

market, but also in relation to the limitations currently imposed by more rigid pay and career structures compared with other sectors.

The pressure of digital transformation on banks' operating structure and organization – together with the need to keep costs down, including by reducing branch networks – highlights the need to manage the resulting staff surplus appropriately. While digitalization and changes in customer preferences undoubtedly make the traditional bank branch less necessary, equally, it is also possible to retrain some staff to focus on other roles, such as consulting and customer support services. Cutting costs can also be achieved more easily through innovation in banking processes and practices, as well as by making savings from selling off property following the downsizing of branch networks.

In order to study how the banking industry is responding to the changes taking place, the Bank of Italy is launching a new survey of the entire financial system in order to identify existing or planned FinTech projects covering the next two years. The survey will also look at some specific aspects of particular importance, such as how the new technologies are being used to combat money laundering and the financing of terrorism.

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The market scenario described – characterized by the drive to innovate that is not supported by sufficient investment in digital technologies – is about to suffer an unprecedented shock as a result of the implementation of the Payment Services Directive 2 (PSD2 – 2015/2366), which has given full legal recognition in Europe to an 'open banking' model, built around the idea of different operators in the financial ecosystem sharing their databases. To avoid fragmenting the most innovative payment services component and to improve competition between new and traditional financial actors, the PSD2 has opened the world of bank accounts to non-banks for the first time. The underlying idea is that the most valuable piece of the production chain is the 'data' and the ability to read them horizontally is becoming the real value-added of the digital economy. The 'payment accounts system' itself rises to the level of a *sui generis* 'essential infrastructure', with a significant impact on the system of relationships that tie operators together.

The PSD2 may have a disruptive effect on the banking market. This is demonstrated by the open acceptance shown by those operators that are most sensitive to the need to do away with the existing monopolies, along with severe criticism from that part of the industry that fears aggressive competition and disruption of the 'culture of security' that has been laboriously built up over the years between banks and their customers.

The potential for breaking down barriers to entry is substantial: in addition to the host of instruments already available for transactions online, there are more and more opportunities for using applications that manage the flows of customers accessing accounts.⁶ The market will be the one to tell us how great this change will be.

A targeted survey, just completed by the Bank of Italy, of all the Italian banks and payment institutions, revealed that, on the whole, operators are crafting technical solutions to comply with the PSD2. There are two alternative approaches being taken. Some intermediaries, mainly large

⁶ The EBA's regulatory technical standards (RTS) on customer authentication and secure communication with TPPs that provide payment initiation and account information services will take effect starting in September.

ones, are developing proprietary solutions that will radically alter their business models; these operators are not limiting themselves to merely satisfying their compliance obligations but rather are seizing the opportunities inherent in the change to involve FinTechs, through various types of collaboration, in the creation of new products for households and firms. The remaining intermediaries (around 80%) are instead focusing on multi-operator platforms, planning solutions that also in this case go beyond mere regulatory compliance.

The intensive outsourcing of IT infrastructures and services is potentially a key factor for banks. While it is true that thanks to outsourcing it is possible to improve operational efficiency and managerial flexibility, it should also be borne in mind that it carries the risk of weakening banks' ability, from a strategic standpoint, to take full advantage of digital leverage, owing to the limitations connected with the technological legacy imposed by external entities. This calls for further reflection, given that the incumbents need to be able to face current and future changes in competition, including by rapidly repositioning themselves.

It is critical that banks choose quickly what role they intend to play in the digital financial services sector to effectively meet head on a revolution that is already under way in foreign markets and that is destined to profoundly change the national one as well.

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The benefits deriving from technological innovation and changes that impact consumer behaviour and the competitiveness of the banking system are obviously being weighed along with the risks that accompany the new technologies.

In this environment, cyber risk is becoming increasingly important. For some types of cyber attacks, single-State security measures are simply not enough; we must draw up defence plans that take a sector-based approach (national and international), strengthening coordination between the authorities of the different countries and fostering the integration of national cybersecurity frameworks. The cooperative approach is even more necessary if we consider that the threats originate, in many cases, in hostile countries that have developed offensive capabilities in a military context.

With these coordination/collaboration needs in mind, the European Parliament and Council issued Directive 2016/1148 on Network and Information Security (NIS) that, in addition to introducing harmonized security rules and measures for cybersecurity in vital sectors of the economy and society, encourages cooperation between authorities in handling cyber incidents.

The regulation requires that the operators of essential services (OES) in certain critical sectors, including the financial sector, be identified and requires that the Computer Security Incident Response Team (CSIRT) be notified of any significant incidents.

As to the topic of security, the NIS and the PSD2 Directives form a single body of regulation: the first focuses on systemic macroprudential risks, while the second introduces specific security requirements of a microprudential nature for payments.

The Bank of Italy actively collaborates with all the bodies and authorities responsible for maintaining cybersecurity and systematically cooperates with intermediaries to protect the integrity and reliability of our financial system.

3. The response of regulatory and supervisory authorities at international level

Banking and financial regulations, at this stage mainly issued at international level, do not always keep up with the rapid changes brought about by FinTech. The supervisory authorities have a complicated job: on the one hand, they must continue to preserve the security and soundness of the financial system; on the other, they have to be suitably flexible in ‘maintaining’ the secondary regulations and in applying them alongside the primary legislation, formulated in a pre-digital age.

Given this situation, it is necessary to ensure certainty of rules - and, with this, competitive balance - guaranteeing that like activities receive like regulatory treatment; the risks that justify supervision remain unchanged, whatever the nature of the entity considered. Unlike the banking market, subject to pervasive regulation on an international scale, that of FinTech is less standardized in that it can focus on diverse and specific segments of the production chain; as a result, the opportunity for regulatory arbitrage, heightened by the absence of technological barriers to cross-border supply, therefore increases.

To tackle this complex task, three approaches have been followed at international level. They envisage the involvement, to varying degrees, of the supervisory authority in developing and/or testing innovation, namely: i) innovation hubs, i.e. spaces in which the competent authority meets with supervised entities and others, offering clarification and guidance; ii) regulatory sandboxes, which enable FinTech firms to enjoy temporary regulatory derogations to test technologies and services on a small scale for a limited period of time;⁷ and iii) incubators, where the competent authority plays a more active role, being directly involved in developing and testing projects, including through partnership and cofinancing arrangements.

Furthermore, there have been important initiatives at both international and European level to foster the growth of the FinTech sector and to study the associated risks. Foremost of these are the initiatives of the Financial Stability Board (FSB) and the Basel Committee on Banking Supervision (BCBS).

The Financial Stability Board monitors and assesses the development of FinTech under its mandate to promote international financial stability. According to the FSB, the main areas meriting authorities’ attention are: i) operational risk from service providers; ii) cyber risks; and iii) macrofinancial risks (shocks to the entire financial system, negative externalities, and so on). Within the Basel Committee on Banking Supervision – BCBS, a task force was set up to assess the risks and opportunities that innovation and digital transformation will bring to the banking system.

There is broad political support in Europe for greater financial innovation. The European Parliament supports the sector’s expansion; in May 2017 it adopted a specific resolution to that effect. Various EU agencies have formulated opinions on or published guides to FinTech to promote it. Last year, acting on a proposal of the European Parliament and the Council, the Commission launched the ‘FinTech Action plan: For a more competitive and innovative European financial sector’.

⁷ With the exception of the United Kingdom, this approach has not been adopted widely, in part owing to the need to take account of differences in legal systems. In Italy, the preferred approach is to find solutions that are consistent with the existing regulatory framework to enable new entrants that are capable of developing suitable business models to succeed.

The desired outcome is the development of a more future-oriented regulatory framework embracing digitalization in order to create an eco-system in which FinTech can develop and spread, benefiting from the Single Market without compromising financial stability or consumer and investor protection.

The European Banking Authority (EBA) has also taken steps in this direction, constructing, at the behest of the European Commission, the 'FinTech Roadmap', which sets out the FinTech priorities for 2018/2019. They include monitoring the regulatory perimeter, monitoring emerging trends and analysing the impact on supervised entities' business models, promoting best supervisory practices, and addressing consumer issues. The EBA also plans to leverage the knowledge and expertise that will be developed in the new 'FinTech knowledge hub' in which the European authorities will participate. The purpose of the Fintech knowledge hub is to contribute to the monitoring of the impact of FinTech, encouraging neutrality in regulatory and supervisory approaches, while taking account of the need to control shadow banking.⁸

For the national supervisory authorities of the EU member states, there is an additional factor that makes the matter more complex, connected with EU passporting and the freedom to provide services: given that the rules and practices have yet to be standardized, intermediaries can choose to establish themselves in countries where the regulations allow for greater flexibility and subsequently to operate in other states by taking advantage of 'passporting', which requires no filtering authorization on the part of the host authority. This could threaten the stability of financial firms and their customers. An excessively restrictive regulatory environment or an excessively rigid approach taken by national supervisory authorities risks creating a situation that encourages new firms to relocate and digital expertise to flee, thereby moving a nascent industry abroad, which can then penetrate national borders through passporting, in the absence of an appropriate safeguard against these risks.

In forums for international coordination, the Bank of Italy has warned that this increase in the number of operators offering innovative services in a regulatory context that has yet to be clearly defined and that is continually evolving could lead to 'competition in laxity of regulation'. In part for this reason, the PSD2 strengthened the framework for coordination among the various national authorities – reinforcing the EBA's role – and introduced measures to limit 'license shopping' (for example, requiring an operator that receives authorization in a member state to conduct its business in that state as well).

Another factor that creates commercial opportunities but is also potentially key is the degree to which some business models can be expanded and adapted. For example, an operator authorized to access the accounts of other intermediaries could use the information obtained to develop services (such as lending platforms) that go beyond the core services for which the authorization was granted (for fund transfer services). This is an aspect that could challenge both the effectiveness of supervisors' monitoring and the system based on passporting rights. On the one hand, public supervision, if focused on taking a formal and legalistic approach, might not be able to detect the

⁸ Among the new systemic risks arising from shadow banking, those deemed significant - at global, European and national level - may in fact be generated by the FinTech sector, see FSB, *Global Shadow Banking Monitoring Report 2017*, 5 March 2018 and European Systemic Risk Board (ESRB), *EU Shadow Banking Monitor*, No. 3, September 2018.

additional activities and associated risks; on the other, there would be room for engaging in non-typical cross-border activities, against which there are fewer safeguards by definition. To avoid these risks it is important to standardize implementation practices as far as possible to ensure that in all EU jurisdictions all intermediaries are treated in the same way during the authorization phase and when they are subject to ongoing supervision.

Very briefly, the regulatory and supervisory authorities have come to the realization that they need to remain constantly up-to-date and to understand thoroughly the changes taking place. They do not want to hold back current developments, but they are aware of the need for effective protection against possible ensuing risks; they have noted that in some cases the prudential rules are inadequate and recognized the need to make the severity of the rules reflect the risks associated with each kind of financial innovation.

4. The Bank of Italy's approach

The Bank of Italy intends to reconcile these contrasting needs and has launched a dialogue with technological and financial innovation operators. This will enable us to become acquainted with the new projects in order to understand the risks of FinTech without creating barriers to the diffusion of positive innovation. The dialogue also benefits market operators, as they can learn about the limitations of the regulatory framework before making an irreversible investment, and can gain greater awareness of the risks, costs and opportunities connected with their own project.

A very recent point of discussion is that of ways of 'onboarding' customers. Given the digital dimension of today's financial relations, we need to manage the customer 'engagement' phase in an immediate and simple way, something that may be hindered by the survival of material requirements in the process as a result of compliance constraints. The importance of onboarding is destined to grow, also thanks to the most recent regulatory innovations, as a result of the wider uptake of products and services, which customers can use on their devices non-stop.

There are two main contact points for the dialogue with FinTech operators: the first is the FinTech Channel on the Bank of Italy's website; the second is the unit within the Bank that grants authorizations to new entities wishing to enter the financial sector. This unit gives the Bank a vantage point from which to observe market trends and the areas that market players believe to be of greater potential. With a view to amplifying our ability to listen and react, we have recently added a dedicated 'FinTech sector' within the unit.

Through these two 'front doors', operators can access the numerous units in the Bank of Italy that study new technologies, adapt supervision methods, and conduct trials and testing in this domain.

4.1 Authorization

Evaluating FinTech projects can be quite complex owing to their innovative nature and the difficulty of obtaining time series and operational practices to use as a reference. To overcome this problem, the ECB has released guidelines on how to foster transparency and uniformity in the issuance of banking licences for similar activities.

The ‘programme of operations, a key document for any financial enterprise, is of special relevance in these cases. By examining it, the Bank, as the supervisory authority, can gain deeper insight into the sustainability of the business model not only in terms of compatibility with the traditional tenets of ‘sound and prudent management’ (against a backdrop of risk minimization and efficiency in the operational and organizational structure) but also in terms of its projected capacity to guarantee a level of profits that will enable a FinTech firm to maintain a stable market presence. The know-how acquired in this phase is important also with a view to steering ongoing supervision.

In managing the authorization process, the Bank of Italy has felt the need to adapt the traditionally accepted analysis models to the new situation. The authorization process for operators intending to manage platforms has highlighted risks going beyond those typical of traditional services and activities and which warrant safeguards – for example risks related to managing the responsibilities connected with the various relationships within a given platform (typically, those with technology providers). These risks, which can affect the quality of the service provided to end-consumers, make it necessary to revise the supervision parameters, at both the authorization and the going-concern stages, to take account of the specific features of each company.⁹

Changes are emerging from the authorization activity that affect both lending processes and the identification of new funding channels.

As regards lending, there has been a rise in crowdfunding projects,¹⁰ i.e. a funding channel that provides an alternative to credit institutions. Some of these platforms have applied for authorization as payment institutions or as entities managing accounts and financial flows between lenders and borrowers, while others have asked to be authorized as financial intermediaries under Article 106 of the Consolidated Law on Banking so that they can combine their own funds with those made available by their customers.

A second area of development regards technological platforms for trading non-performing loans (NPLs), which help to bring buyers and sellers into contact and make the market more efficient.

Sellers publish information on the platform relating to loans (both individual loans and loan portfolios), while potential buyers communicate the characteristics of the loans they wish to buy. The improved quality and standardization of the information required to access the platforms facilitates the trading of NPLs, ensuring that the market is more efficient, liquid, and transparent.

Staying on the asset side, we have recorded strong growth in digital lending in its two forms of instant lending and digital invoice lending.

The digital lending projects that were examined are based on an IT infrastructure and a platform enabling the real-time analysis of massive volumes of data (‘Big Data analytics’), both internal and external to the financial intermediary; this makes it possible to manage and analyse data in order to understand customers’ behaviour and needs and to offer customized products and services. Digital invoice lending is a new form of invoice discounting done through an Internet portal. By means of

⁹ The supervisory rules for the new services introduced by the PSD2 do not provide for prudential capital requirements for ‘third parties’ accessing the accounts; rather, they set organizational requirements as safeguards relating to strictly operational aspects such as security of transactions, IT, or privacy.

¹⁰ As regards social lending (or lending-based crowdfunding), guidance was provided in the Bank of Italy’s measure setting the rules governing non-bank funding (November 2016).

algorithms, in the space of a couple of hours the platform sends a ‘quote’ to the sellers which, if accepted, releases the funding, net of the fee for the service provided. On the basis of the analysis made by examining the projects submitted to the supervisory authority, among the users of invoice lending are SMEs facing difficulties in accessing the traditional banking channel and willing to pay a comparatively higher interest rate in order to benefit from the specific advantages of this type of funding (primarily, the rapid release of funds).

On the funding side, some banks have launched initiatives to acquire funds in innovative ways by offering their clients a targeted customer experience, thanks to a wider array of services connected to their bank account – partly in light of the open banking model – and to the security technologies facilitating identification (such as Face ID or Touch ID).

Some other solutions have been presented by foreign banks wishing to provide services in Italy such as instant lending or instant deposits and peer-to-peer payments. Some of these services would be provided in digital form only; other initiatives would give rise to a sort of ‘second-level bank’, with the customer base composed mainly or exclusively of financial operators.

4.2 ‘SupTech’

The impact of digital technologies extends naturally to the work of supervisors (‘supervision technology’, or ‘SupTech’): the ample availability of data and the new analysis and artificial intelligence techniques offer new opportunities to improve supervisory action.

Big data are increasingly perceived by central banks as an effective tool for macroeconomic and financial stability analyses: we observe their growing use for improving economic forecasting, economic and financial cycle analysis, and financial stability assessments. The availability of analytic and disaggregated data makes it possible to meet financial intermediaries’ requests for fewer reporting obligations. The ECB’s European Reporting Framework project, which the Bank of Italy has strongly advocated, will make it possible to reconstruct aggregates (lending, funding and so on) by using granular data collected on the basis of common definitions at European level. This will limit data duplication in statistical and supervisory reports.

At the Bank of Italy we are testing techniques to improve the prevention and the identification of risks to financial stability by using innovative methodologies (Big Data and machine learning) to analyse, for example, the correlation between the most common social media messages and the behaviour of banks’ customers when making deposit or investment decisions.¹¹

Exploiting Big Data requires the use of complex techniques and algorithms, such as machine learning. On this front, as on others, we have launched projects to integrate traditional data control programs with the new machine learning and artificial intelligence techniques. Moreover, we are devising projects for the use of the new natural language processing techniques to analyse historical data automatically in order to extract information of interest (e.g. a correspondence thread with a financial intermediary may be processed to extract indicators that help to correlate business

¹¹ See Banca d’Italia, *Temì di Discussione (Working Papers)*, 1165, 2018 – ‘Listening to the buzz: social media sentiment and retail depositors’ trust’ – by Matteo Accornero and Mirko Moscatelli, February, 2018.

decisions – be they strategic, financial or organizational – with market position). Going forward, it will be possible to apply these techniques to the enormous volume of information generated by social media and mobile devices in both structured and unstructured form (audio, video, or text).

Concrete and extensive use of the results of these innovative applications in analyses and policy choices will take time, also with a view to guaranteeing that the methodologies used are sufficiently robust and the estimates are reliable.

5. Conclusions

Technological innovation is generating new financial intermediation models and new financial services: its use makes it possible to gain unprecedented advantages in terms of both cutting costs and rationalizing production and distribution structures.

In an ever more competitive environment, it is crucial that traditional financial intermediaries firmly address the issue of change driven by digital technology, which can heavily impact the sustainability of the profit and loss account. This is no easy task: a conservative response seeking to minimize technological developments and limiting itself to meeting compliance requirements and nothing more might not be enough to ensure survival in the market. Incumbents can take on this challenge by leveraging the strength of traditional bundling and making the most of the synergies between their activities in a number of areas: deposits, investment, credit, and the provision of payment services. However, they must transform rapidly, turning resolutely to strategic and organizational solutions that are able to rationalize and shrink the cost structure.

Current market dynamics no longer leave room for development to financial intermediaries with redundant physical networks, which destroy shareholders' equity. Fragmentation will have to be reduced, including through greater concentration or by encouraging intermediaries to join forces in order to restructure robustly and incisively in order to produce a model that balances analogue and digital components.

The pervasiveness of technology in the products and services being offered to customers exposes the latter to an increased risk of accidental purchases: this calls for changes in the customer protection models so as to provide substantial safeguards against the risks linked to the structure of the contracts and to ensure transparency before, during and after the use of a given service. This is an especially important aspect, from a prudential point of view, also for traditional financial intermediaries, for whom the 'quality' of their customer relationships is an intangible but essential part.

Technology offers millions of people the opportunity to access financial services, helping individuals and firms to manage, save and invest their funds with increased awareness. There is a growing need to strengthen the rules laid down to protect fairness and transparency in the relationship between financial intermediaries and customers, as well as to develop financial education programmes that make users more aware of the opportunities and risks – especially regarding the most vulnerable customer segments – connected to highly technological services whose defining feature is speed.

The Bank's supervision department is committed to making its contribution so that innovative financial intermediation can foster sustainable development and generate benefits for households, firms and general government, in the context of a market ecosystem in which the technological revolution advances to promote social growth while protecting individuals.