



EUROPEAN COMMISSION

Directorate General Financial Stability, Financial Services and Capital Markets Union

INVESTMENT AND COMPANY REPORTING
Economic Analysis and Evaluation

CONSULTATION DOCUMENT

FINTECH: A MORE COMPETITIVE AND INNOVATIVE EUROPEAN FINANCIAL SECTOR

Disclaimer

This document is a working document of the Commission Services for consultation and does not prejudice the final decision that the Commission may take.

The views reflected in this consultation document provide an indication on the approach the Commission Services may take, but do not constitute a final policy position or a formal proposal by the Commission.

You are invited to reply **by 15 June 2017** at the latest to the **online questionnaire** available on the following webpage:

https://ec.europa.eu/info/finance-consultations-2017-fintech_en

Please note that in order to ensure a fair and transparent consultation process **only responses received through the online questionnaire will be taken into account and included in the report summarising the responses.**

This consultation follows the normal rules of the European Commission for public consultations. Responses will be published unless respondents indicate otherwise in the online questionnaire.

Responses authorised for publication will be published on the following webpage:
https://ec.europa.eu/info/finance-consultations-2017-fintech_en#contributions

Table of Contents

1	Fostering access to financial services for consumers and businesses	6
	Artificial intelligence and big data analytics for automated financial advice and execution	6
	Social media and automated matching platforms: funding from the crowd	7
	Sensor data analytics and its impact on the insurance sector.....	8
	Other technologies that may improve access to financial services.....	8
2	Bringing down operational costs and increasing efficiency for the industry	9
	Recording, storing and securing data: is cloud computing a cost effective and secure solution?	9
	Disintermediating financial services: is Distributed Ledger Technology (DLT) the way forward? ...	10
	Outsourcing potential to boost efficiency	12
	Other technologies that may increase efficiency for the industry	12
3	Making the single market more competitive by lowering barriers to entry	13
	FinTech has reduced barriers to entry in financial services markets.....	13
	But remaining barriers need to be addressed.....	14
	Challenges	17
4	Balancing greater data sharing and transparency with data security and protection needs	19
	Storing and sharing financial information through a reliable tool	19
	The power of big data to lower information barriers for SMEs and other users	20
	Security	20
	Other potential applications of FinTech going forward.....	21

FinTech: A more competitive and innovative European financial sector

A connected digital single market is one of the political priorities of the Juncker Commission, which supports the overall objective of creating growth and jobs. The Commission is committed to ensuring that the EU economy, industry and citizens take full advantage of digitalisation. This is why, in 2015, the Commission adopted the Communication "A Digital Single Market Strategy for Europe", with the main policy objectives to: (i) support digital infrastructure development; (ii) improve access to digital goods and services; and to (iii) design rules that foster technological development.

Beside other sectors, new technologies are also changing the financial industry and the way consumers and firms access financial services. "FinTech" describes technology-enabled innovation in financial services, regardless of the nature or size of the provider of the services. Non-disruptive FinTech triggers incremental innovation and increases efficiency, often in mature markets, whereas disruptive FinTech results in more radical breakthroughs that can create completely new markets. Both can enhance the competitiveness of the EU economy.

While technological innovation in finance is not new, investment in technology and the pace of innovation have increased significantly in recent years. Among other things, technological innovation is driving social networks, artificial intelligence, machine learning, mobile applications, distributed ledger technology (DLT)¹, cloud computing and big data analytics. They give rise to new services and business models by established financial institutions, technology companies and new market entrants. FinTech involves the entire financial sector, including front, middle and back-office activities, as well as services for both retail and wholesale markets.

Building on the single market, the European Commission promotes a thriving and globally competitive European financial sector that brings benefits to the EU economy and its society. New technologies can benefit both individual consumers and firms by enabling greater access to financial services, choice, efficiency, and a more competitive landscape. The financial sector should take advantage of the most cutting-edge technologies, while remaining financially sound, and safe for consumers and investors. FinTech should be able to offer solutions to increase cost efficiencies, address users' complex needs and generate value for the economy, but in order to deliver, appropriate policies on important issues, such as access to technology, data standardisation and security, personal data protection and data management, need to be put in place.

The Commission's stance on FinTech relies on three core principles: technological neutrality, proportionality, and market integrity. As a result, EU policies should be:

¹ Distributed ledgers are a type of database that is spread across multiple sites, countries or institutions, and is typically public for all participants, whose activities are encrypted. Records are stored one after the other in a continuous ledger, rather than sorted into blocks, but they can only be added when the participants reach a quorum.

- i. **Technology-neutral** to ensure that the same activity is subject to the same regulation irrespective of the way the service is delivered, so that innovation is enabled and level-playing field preserved.
- ii. **Proportional**, reflecting the business model, size, systemic significance, as well as the complexity and cross-border activity of the regulated entities.
- iii. **Integrity-enhancing**, as application of technologies to financial services should promote more market transparency to the benefit of consumers and businesses without creating unwarranted risks (e.g. market abuse, misselling, cyber security issues, systemic risks).

The European regulatory and supervisory framework should encourage firms operating in the EU single market to benefit from financial innovation and provide their customers with the most suitable and accessible products. In this respect, acknowledging the potential of FinTech, the Commission has set up a Task Force on Financial Technology across all relevant services working on financial regulation, technology, data, access to finance, entrepreneurship, consumer protection and competition to ensure that its assessment reflects the multi-disciplinary approach that FinTech requires.

Technological innovation has been at the heart of recent EU legislation, e.g. with the adoption of the revised Payment Services Directive². Several recent consultations and actions launched in the context of the Capital Market Union or the Green Paper on retail financial services have covered questions how to best accompany the digital transformation of finance. In parallel, the Call for Evidence³ has highlighted elements of EU regulation that may not yet be conducive to technological development. The Commission is also taking a number of horizontal actions related to the Digital Single Market, for instance, by exploring technology-induced business areas, including the preconditions for their take-up and their implications in terms of security and personal data protection, or, more recently, by exploring the basic structure of the data economy. The Communication "Building a European Data Economy", adopted on 11 January 2017, sets out the objective to ensure that new business models based on access to data can flourish and that new market entrants, in particular start-ups, have a fair chance to compete with established firms⁴.

Beyond the Commission, EU policy discussion around FinTech is also taking place, e.g. in the European Parliament⁵, at the European Economic and Social Committee, at the European

² Directive 2015/2366/EU of the European Parliament and of the Council of 25 November 2015 on payment services in the internal market, amending Directives 2002/65/EC, 2009/110/EC and 2013/36/EU and Regulation (EU) No 1093/2010, and repealing Directive 2007/64/EC.

³ See Communication "Call for Evidence - EU regulatory framework for financial services", COM(2016) 855 final of 23.11.2016.

⁴ See Communication "Building a European Data Economy", COM(2017) 9 final of 10.1.2017. The accompanying Commission Staff Working Document SWD(2017) 2 final of 10.1.2017 recognises that the increased use of automated auctioning systems, automated trading in stock markets and new digital technologies, more generally (such as distributed ledger technology), deserve particular attention in the context of traditional civil and contract law concepts and rules.

⁵ For example, see European Parliament resolution of 26 May 2016 on virtual currencies (2016/2007(INI)), as well as draft report "FinTech: the influence of technology on the future of the financial sector" (2016/2243(INI)). In addition, the EP has agreed to fund a pilot project which aims to monitor DLT and its applications, develop necessary technical and regulatory expertise, foster awareness and analyse benefits and risks of DLT, identify standards for best practice, update EU legislation in response to significant and systemic DLT use, develop stress tests for applications and develop use cases.

Supervisory Authorities (ESAs)⁶ and within the ECB and the European System of Central Banks. At the international level, FinTech is a priority area for the G20, and the Commission contributes to policy discussions at the Financial Stability Board and other international fora.

This consultation seeks input from stakeholders to further develop the Commission's policy approach towards technological innovation in financial services. It seeks input in terms of stakeholders' perspectives on new technologies' impact on the European financial services sector, both from the perspective of providers of financial services and consumers, and whether the regulatory and supervisory framework fosters technological innovation in line with its three core principles. The feedback will help the Commission to gauge how FinTech can make the single market for financial services more competitive, inclusive and efficient. The goal is to create an enabling environment, where innovative FinTech products and solutions take off at a brisk pace all over the EU, while ensuring financial stability, financial integrity and safety for consumers, firms and investors alike. The consultation is structured along four broad policy objectives that reflect the main opportunities (as well as the relevant challenges) related to FinTech:

1. Fostering access to financial services for consumers and businesses;
2. Bringing down operational costs and increasing efficiency for the industry;
3. Making the single market more competitive by lowering barriers to entry; and
4. Balancing greater data sharing and transparency with data security and protection needs.

Section 1 explores the benefits that FinTech can offer to consumers, investors and firms in terms of access to financial services and strengthening financial inclusion. The section also seeks feedback on the potential challenges and risks posed by financial innovations to consumer protection and stability of the financial sector.

Section 2 reviews how FinTech can improve services, reduce operational costs, increase efficiency and speed up innovation in the EU financial services industry by streamlining processes in the provision of services, with a simultaneous look at the challenges that these developments bring for financial stability and financial sector employment.

Section 3 describes the opportunities of FinTech in increasing the competitiveness of the single market, through lowering barriers to entry for newcomers, while preserving fair competition, a level playing field and incentives to innovate. This section also explores how regulators, supervisors and industry can best support innovation in the financial sector.

Section 4 assesses the impact of FinTech on the capacity to estimate and monitor risk in the financial sector via access to larger amounts of data than traditional channels have offered, while protecting individuals' need for privacy and control over their personal data.

The following sections discuss a sub-set of applications of new technologies to financial services that could be a representative sample of what are the key opportunities and challenges that FinTech creates. This is not in any way an exhaustive list of all possible applications of new technologies to the provision of financial services.

⁶ These are the European Banking Authority (EBA), the European Securities and Markets Authority (ESMA) and the European Insurance and Occupational Pensions Authority (EIOPA).

1 Fostering access to financial services for consumers and businesses

FinTech can be an important driver to expand access to financial services for consumers, investors and firms, bringing greater choice and more user-friendly services, including at lower prices. Current limitations in traditional financial service markets (e.g. opacity, lack of use of big data, insufficient competition), such as financial advice, consumer credit or insurance, may foreclose access to some categories of individuals and firms. New financial technologies can thus help individuals as well as small and medium-sized enterprises (SMEs), including start-up and scale-up companies, to access alternative funding sources for supporting their cash flow and risk capital needs. At the same time, it is important to ensure that these benefits are not compromised by any risks to the established standards as regards consumer protection.

Question

- 1.1. What type of FinTech applications do you use, how often and why? In which area of financial services would you like to see more FinTech solutions and why?

Artificial intelligence and big data analytics for automated financial advice and execution

The combined use of artificial intelligence with big data analytics (e.g. robo-advice) has the potential to improve services and to significantly lower the price of financial advice. This could facilitate access to advice for those households and firms that previously could not afford it, most notably in the areas of investment services, loans and insurance. Customers could thus end up with products that are better tailored to their individual needs, allowing them to more efficiently manage financial risk. Automated digital advice also reduces the need for geographical proximity and promotes access to cross-border services and investments (see section 3). For these reasons, technologies applied to financial advice could make an important contribution to the Capital Markets Union and the Digital Single Market agendas.

Widespread application of new technologies to financial advice may, however, raise financial stability and conduct risks. In particular, standardisation of risk profiling characteristics across automated financial advice providers could encourage herding and pro-cyclical investment behaviour. Regulators and supervisors need to ensure that automated advice does not undermine consumer and investor protection, and existing disclosure requirements (e.g. on remuneration or risks). Finally, collecting information in an automated environment may produce errors, requiring systems to be capable of double checking the content of the provided data. Automatic collection of data and artificial intelligence also raise the issue of liability allocation in case of economic damage, as it may be challenging to identify the liable actor and to establish what went wrong⁷.

⁷ For example, see Communication on "Building the data economy" COM(2017) 9 final of 10.1.2017 and Staff Working Document accompanying the Communication on "Building the data economy" SWD(2017) 2 final.

Questions

- 1.2. Is there evidence that automated financial advice reaches more consumers, firms, investors in the different areas of financial services (investment services, insurance, etc.) and at what pace? Are these services better adapted to user needs? Please explain.
- 1.3. Is enhanced oversight of the use of artificial intelligence (and its underpinning algorithmic infrastructure) required? For instance, should a system of initial and ongoing review of the technological architecture, including transparency and reliability of the algorithms, be put in place? What could be effective alternatives to such a system?
- 1.4. What minimum characteristics and amount of information about the service user and the product portfolio (if any) should be included in algorithms used by the service providers (e.g. as regards risk profile)?
- 1.5. What consumer protection challenges/risks have you identified with regard to artificial intelligence and big data analytics (e.g. robo-advice)? What measures, do you think, should be taken to address these risks/challenges?

Social media and automated matching platforms: funding from the crowd

The combination of crowd-based activities, social media and automated matching platforms that apply innovative technology (e.g. cryptocurrencies, big data analytics) may significantly change the way consumer/SME credit is contracted and the way equity investment flows into start-ups, scale-ups and SMEs more generally. Non-bank financing, including peer-to-peer/marketplace lending, reward and investment (or equity) crowdfunding, as well as e-commerce finance, invoice and supply chain finance platforms, is offering new channels of access to finance for individuals and small companies facing difficulties to tap the traditional banking channels, especially due to the lack of appropriate collateral or provide historical credit information (e.g. low income borrowers or start-ups).

The use of big data analytics on these matching platforms may help produce credit scoring for individuals, entities and sectors. Equity crowdfunding creates traction on projects and can also attract venture capital or business angels, which can be a tool to reveal information about the quality of the underlying project and to produce metrics that are also useful for traditional banking and capital markets channels, improving informational efficiency.

The rise of crowdfunding, nonetheless, also raises questions about the potential impact on consumer protection, collection and use of personal data, and financial stability. It is important that investors and lenders are aware of the risks they are undertaking on these platforms (e.g. market risk, difficulties to exit their investment position, counterparty risk). The sector may also be vulnerable to fraud, money laundering, terrorism financing and misselling. Ensuring that incentives are aligned for fundraisers to provide sufficient information to investors/lenders, and to build metrics to assess performance, remains a fundamental objective for the crowdfunding industry. In this context, some national regulatory regimes mandate different disclosure rules, which may constitute obstacles to a single market for crowdfunding.

Questions

- 1.6. Are national regulatory regimes for crowdfunding in Europe impacting on the development of crowdfunding? In what way? What are the critical components of those regimes?
- 1.7. How can the Commission support further development of FinTech solutions in the field of non-bank financing, i.e. peer-to-peer/marketplace lending, crowdfunding, invoice and supply chain finance?
- 1.8. What minimum level of transparency should be imposed on fund-raisers and platforms? Are self-regulatory initiatives (as promoted by some industry associations and individual platforms) sufficient?

Sensor data analytics and its impact on the insurance sector

The combination of big data analytics with new sensor technologies can have a significant impact on the financial services industry. In particular, it transforms the risk evaluation by insurance companies, allowing for more tailor-made pricing of insurance products, as well as for covering bespoke risks that were 'uninsurable' before. Technology in cars transmitting driving data to the insurer to help further differentiate car insurance pricing was one of the first examples. As a result, low risk consumers might become able to afford supplementary insurance products and manage risk better, since sensor data would confirm their low risk profile and correspondingly result in lower insurance premia.

At the same time, such technologies may also have the opposite effect of excluding hitherto covered high risk consumers from the insurance market by making the premia unaffordable in case they reveal their substantially higher risk profile. As these tools allow for far more granular commercial price discrimination, one needs to ensure that it is based on objective and tangible criteria to be properly supervised. Finally, such technologies are sensitive because they touch people's daily lives, reducing their space for privacy. Any regulatory approach to this application will therefore need to strike the right balance between facilitation and compliance with the EU legal framework on personal data protection (see section 4 for more details).

Questions

- 1.9. Can you give examples of how sensor data analytics and other technologies are changing the provision of insurance and other financial services? What are the challenges to the widespread use of new technologies in insurance services?
- 1.10. Are there already examples of price discrimination of users through the use of big data? Can you please provide examples of what are the criteria used to discriminate on price (e.g. sensor analytics, requests for information, etc.)?

Other technologies that may improve access to financial services

Question

- 1.11. Can you please provide further examples of other technological applications that improve access to existing specific financial services or offer new services and of the related challenges? Are there combinations of existing and new technologies that you consider particularly innovative?

2 Bringing down operational costs and increasing efficiency for the industry

FinTech has the potential of bringing benefits, including cost reductions and faster provision of financial services, e.g., where it supports the streamlining of business processes. Nonetheless, FinTech applied to operations of financial service providers raises a number of operational challenges, such as cyber security and ability to overcome fragmentation of standards and processes across the industry. Moreover, potential redundancy of specific front, middle and back-office functions or even of entire market players due to automation via FinTech solutions might have adverse implications in terms of employment in the financial industry, even though new jobs would also be created as part of the FinTech solutions. The latter, however, might require a different skill mix, calling for flanking policy measures to cushion their impact, in particular by investing in technology skills and exact science education (e.g. mathematics).

Questions

- 2.1. What are the most promising use cases of FinTech to reduce costs and improve processes at your company? Does this involve collaboration with other market players?
- 2.2. What measures (if any) should be taken at EU level to facilitate the development and implementation of the most promising use cases? How can the EU play its role in developing the infrastructure underpinning FinTech innovation for the public good in Europe, be it through cloud computing infrastructure, distributed ledger technology, social media, mobile or security technology?
- 2.3. What kind of impact on employment do you expect as a result of implementing FinTech solutions? What skills are required to accompany such change?

RegTech: bringing down compliance costs

An entire category of financial technology solutions helping firm comply with regulatory requirements has become known as RegTech. It has the potential to reduce regulatory compliance costs even in areas where business processes remain unchanged. RegTech also provides an opportunity for regulators to access data more easily and to customise the compliance requirements, whilst enabling the regulated entities to reduce their compliance costs and to lower operational risks without compromising on regulatory objectives.

Question

- 2.4. What are the most promising use cases of technologies for compliance purposes (RegTech)? What are the challenges and what (if any) are the measures that could be taken at EU level to facilitate their development and implementation?

Recording, storing and securing data: is cloud computing a cost effective and secure solution?

Cloud computing is a readily available technological solution that can be applied to any data-intensive financial service. Outsourcing data processing and storage capacity (as opposed to acquiring and maintaining proprietary IT systems) gives firms substantial flexibility in terms of

scalability of their business solutions, as well as transforms substantial parts of their capital expenditures into operational expenditures. This is particularly important for start-up companies with limited capital for investment. Firms can be much more agile in reacting to sudden demand changes, both on the upside and downside, without the need to ponder about how to deal with legacy IT assets.

Nonetheless, cloud computing may also induce cybersecurity, compliance and operational risks, as any other IT system. Regulated firms using cloud computing services have to ensure that outsourcing requirements are fulfilled in the sense that all risks are sufficiently managed and that supervisors can have effective oversight. This may explain why the vast majority of banks are still running core banking applications on their in-house IT systems. There is also the broader question of data storage location and whether cloud computing users effectively retain full control over their data. Access to cloud computing services at fair conditions for small business users, such as FinTech start-ups, becomes a central policy issue as highlighted in the European Cloud Initiative⁸.

Questions

- 2.5. What are the regulatory or supervisory obstacles preventing financial services firms from using cloud computing services? Does this warrant measures at EU level?
- 2.6. Do commercially available cloud solutions meet the minimum requirements that financial service providers need to comply with? Should commercially available cloud solutions include any specific contractual obligations to this end?

Disintermediating financial services: is Distributed Ledger Technology (DLT) the way forward?

DLT is often described as an enabler that will result both in disruptive creation of new markets and transaction types, as well as in numerous incremental efficiency gains in mature markets. The European Political Strategy Centre Strategic Note of July 2016 “Opportunity Now Europe’s Mission to Innovate” lists the key innovation priorities in the EU for the years ahead, particularly emphasising the potential of DLT and its application to financial services and beyond.

Overall, there appear to be many potential applications of DLT to financial services and beyond, especially where existing processes are slow and costly. DLT systems could enhance efficiencies and lower costs by improving processes and making resource-intensive back-office functions redundant. It may also make regulatory reporting more resilient and faster. In the longer run, DLT systems could also disintermediate many market players, further reducing transaction costs. So far, DLT is being tested (mostly in the form of proofs of concepts, in a few cases in the form of prototyping) in several areas of financial services, such as payments, insurance history and policy issuance, custody and securities settlement, among others (see Box 1 below for a selection of potential use cases).

Box 1. Potential financial services applications of distributed ledger technology to operations

There are a variety of ways in which DLT might impact different operations in the field of financial services. For example:

- F0 B1 In the area of international (non-SEPA) payments, of DLT could speed up both transfer and

⁸ COM(2016) 178 final of 19.4.2016 - European Cloud Initiative - Building a competitive data and knowledge economy in Europe, pag. 3.

settlement, reducing liquidity and operational costs by eliminating the role of correspondent banking.

- DLT could also facilitate syndicated lending by automating the syndicate formation, underwriting and fund disbursement.
- In the area of post-trade (clearing and settlement) and custody, DLT has the potential to disintermediate and automate processes, reducing counterparty and operational risk. The latter would also imply lower margin requirements. To name a few potential DLT applications, DLT could provide for secure, real-time transaction matching, with automatic delivery versus payment on the distributed ledger.
- Primary issuance of securities could be performed directly onto a distributed ledger with common reference data. Holders of such securities could better access voting in the general meeting of shareholders or bondholders' meetings using DLT, which could improve the governance by creditors and shareholders.
- DLT could also be used to track and manage asset re-hypothecation, including real-time reporting of asset history and enforcement of regulatory limits and investment restrictions. Events related to the management and administration of investment funds could be taken into account automatically, improving the service to fund-holders, accounting and administration.
- In the field of financial reporting and compliance, DLT may support automated reporting both to investors and regulatory and supervisory authorities with increased reliability and at reduced cost.

At the same time, DLT emerged less than a decade ago and its application is yet to be fully tested. Most of the potential DLT applications would require first solving a number of technological, operational and regulatory challenges in terms of scalability, interoperability, standards and governance, personal data protection and digital identity management to ensure fair and secure access to data stored on a distributed ledger. DLT applications also involve substantial legal risks:

- There are jurisdictional issues as regards the law applicable to distributed ledgers, as well as liability issues as regards the ultimate responsibility for events taking place on the ledger;
- There is also the question of legal recognition that distributed ledger data is true and accurate, and has legal value. The same applies to the legal validity of documents produced/stored on the ledger, including smart contracts. These are all issues that are yet to be resolved and tested in real-life legal systems.

Once they will be much more widespread, DLT applications may give rise also to financial stability risks, both when they exist in parallel to legacy systems and when they entirely replace such systems.

ESMA has recently consulted on the DLT applied to securities markets, reviewing its possible applications, benefits, risks and how it maps to existing EU regulation. ESMA's position is that regulatory action is premature, as technology is still in early stage of development⁹. In this context, the Commission is seeking stakeholders' views on how to facilitate the application of DLT in the financial sector, whilst safeguarding market integrity, investor protection and financial stability.

⁹ See <https://www.esma.europa.eu/file/21298/download?token=L3KmGxpA> for more details.

Questions

- 2.7. Which DLT applications are likely to offer practical and readily applicable opportunities to enhance access to finance for enterprises, notably SMEs?
- 2.8. What are the main challenges for the implementation of DLT solutions (e.g. technological challenges, data standardisation and interoperability of DLT systems)?
- 2.9. What are the main regulatory or supervisory obstacles (stemming from EU regulation or national laws) to the deployment of DLT solutions (and the use of smart contracts) in the financial sector?

Outsourcing potential to boost efficiency

Cost reduction can also be achieved by simply outsourcing certain non-core business functions provided they can be acquired externally at a lower cost. FinTech applications in financial services have the potential to multiply such opportunities, further helping to reduce operational costs. However, a certain level of standardisation and interoperability will be required before financial service providers would be able to reap the full benefits that outsourcing can deliver. In terms of risks, increased outsourcing may make the monitoring and management of these processes more challenging, with potential prudential and market oversight implications.

Questions

- 2.10. Is the current regulatory and supervisory framework governing outsourcing an obstacle to taking full advantage of any such opportunities?
- 2.11. Are the existing outsourcing requirements in financial services legislation sufficient? Who is responsible for the activity of external providers and how are they supervised? Please specify, in which areas further action is needed and what such action should be.

Other technologies that may increase efficiency for the industry**Question**

- 2.12. Can you provide further examples of financial innovations that have the potential to reduce operational costs for financial service providers and/or increase their efficiency and of the related challenges?

3 Making the single market more competitive by lowering barriers to entry

A key factor to achieving a thriving and globally competitive European financial sector that brings benefits to the EU economy and its society is ensuring effective competition within the EU single market. Effective competition enables new innovative firms to enter the EU market to serve the needs of customers better or do so at a cheaper price, and this in turn forces incumbents to innovate and increase efficiency themselves. Under the EU Digital Single Market strategy, the EU regulatory framework needs to be geared towards fostering technological development, in general, and supporting the roll-out of digital infrastructure across the EU, in particular. Stakeholder feedback can help the Commission achieve this goal by highlighting specific regulatory requirements or supervisory practices that hinder progress towards the smooth functioning of the Digital Single Market in financial services. Similarly, such feedback would also be important to identify potential loopholes in the regulatory framework that adversely affect the level playing field between market participants as well as the level of consumer protection.

Questions

- 3.1. Which specific pieces of existing EU and/or Member State financial services legislation or supervisory practices (if any), and how (if at all), need to be adapted to facilitate implementation of FinTech solutions?
- 3.2. What is the most efficient path for FinTech innovation and uptake in the EU? Is active involvement of regulators and/or supervisors desirable to foster competition or collaboration, as appropriate, between different market actors and new entrants. If so, at what level?

FinTech has reduced barriers to entry in financial services markets

The financial services sector is traditionally known for its high barriers to entry. In the past, any successful large scale provision of financial services has been characterised by unique in-house expertise, extensive distribution channels and hold large amounts of proprietary data, making it hard for challengers to compete. In addition, the compliance costs to meet the regulatory and prudential requirements are high and consumers face switching costs when leaving existing service providers. Yet, innovation has already been able to reduce some of these barriers to entry in a number of ways, for example:

Through disrupting traditional distribution channels

A key feature of traditional financial service provision is the ability to offer a wide range of products and services through an exclusive distribution channel. However, technology has allowed for alternative customer channels. For instance, firms now have to compete for customers on digital payment platforms, p2p lending solutions, and mobile applications.

Through lowering production costs

As discussed in section 2, FinTech and innovation has the potential to substantially lower costs for firms. For instance, the digitalisation of financial advice reduces overhead costs and thereby facilitates its unbundling from the traditional value chain of financial services. It may also allow for

further integration of these carved out services into new service bundles, creating new economies of scope and scale for incumbents and newcomers alike. In addition, many incumbents carry the costs of expensive legacy systems, whereas new entrants may be able to harness FinTech solutions with increased efficiency.

Through more advanced data analytics

Another feature of traditional service providers is that of possessing wide customer base and customer information. This makes it easier for them to price loans appropriately, and sell additional services based on customer needs. However, new technologies have enabled challengers to use alternative methods and data sources, including social-media and data on online transactions, to develop their own credit scoring and to gauge customer preferences. These methods have allowed new entrants to compete more effectively, even in the absence of an existing customer relationship.

Through promoting the mobility of customers

Online platforms can aggregate the offerings of multiple banks for loans, credit cards, deposits, insurance, and more and receive payment from the banks for generating new business. As a result, this increases competitive pressures on financial service providers.

But remaining barriers need to be addressed

There are some barriers that technology alone cannot address. To secure the EU's thriving and globally competitive market for financial services, innovative solutions developed in one Member State should be allowed to expand easily and freely in other markets. Together with supervisors and industry, the Commission is committed to ensuring that any unjustified legal and practical barriers to setting up and scaling up FinTech services across the Single Market are removed, whilst protecting consumers and monitoring the potential impact on financial stability.

Role of regulation: licensing, proportionality and outsourcing

There are different approaches across Member States to licensing requirements for services that are challenging traditional business models, including online platforms acting as brokers/intermediaries, p2p insurance, virtual currencies and automated investment advice. This is costly and may reduce incentives for innovation. The Commission is therefore considering issuing guidelines regarding how certain business models fit under the current regulatory regime. It will also investigate the need for new licensing regimes for the relevant activities at EU level. For instance, some stakeholders have argued for an all-encompassing 'FinTech' licence.

Our regulatory framework is technology neutral: the same activity should be subject to the same rules. Nevertheless, it must also be applied in a proportionate manner, reflecting the business model, size, systemic significance, as well as the complexity and cross-border activity of the regulated entities. More proportionate rules will help promote competition and enhance the resilience of the financial system by safeguarding its diversity without compromising prudential and conduct of business objectives, such as financial stability, financial integrity and consumer protection. To support innovation in financial services, it is important to ensure that this proportionality principle is applied, especially when authorizing and supervising smaller start-ups.

Some FinTech firms are not seeking to directly provide financial services, but rather offer regulated firms tools to improve their client service and operations to compete more effectively. These firms can help with, e.g. data analytics, digital claim handling, customer digital identification and

infrastructure services. They are not directly regulated themselves and cooperate with regulated firms under various arrangements (e.g. appointed representation, acquisition, outsourcing). The Commission is considering whether the current regime strikes the right balance between allowing for such cooperation, while sufficiently managing the additional risks it may introduce.

Questions

- 3.3. What are the existing regulatory barriers that prevent FinTech firms from scaling up and providing services across Europe? What licensing requirements, if any, are subject to divergence across Member States and what are the consequences? Please provide details.
- 3.4. Should the EU introduce new licensing categories for FinTech activities with harmonised and proportionate regulatory and supervisory requirements, including passporting of such activities across the EU Single Market? If yes, please specify in which specific areas you think this should happen and what role the ESAs should play in this. For instance, should the ESAs play a role in pan-EU registration and supervision of FinTech firms?
- 3.5. Do you consider that further action is required from the Commission to make the regulatory framework more proportionate so that it can support innovation in financial services within the Single Market? If so, please explain in which areas and how should the Commission intervene.
- 3.6. Are there issues specific to the needs of financial services to be taken into account when implementing free flow of data in the Digital Single Market? To what extent regulations on data localisation or restrictions on data movement constitute an obstacle to cross-border financial transactions?
- 3.7. Are the three principles of technological neutrality, proportionality and integrity appropriate to guide the regulatory approach to the FinTech activities?

Role of supervisors: enabling innovation

Innovative firms, both start-ups and incumbents, can be subject to disproportionate, inconsistent or over-cautious application of regulatory requirements, as supervisors may lack the experience, expertise and guidance to respond to new developments. A number of national supervisors have already taken effective initiatives to better understand and support technological innovation in finance for both FinTech start-ups and innovative existing players. Some European supervisors set up dedicated teams and departments to support FinTech developments, the so-called "innovation hubs" that aim to provide guidance to innovative firms (regardless of their size) and help them understand regulatory requirements. Other supervisors also started a more systematic monitoring of innovation by establishing a regular forum with relevant stakeholders. Finally, some are setting up regulatory sandboxes¹⁰ to work with pre-selected firms in testing innovative technologies.

Several options may be considered to support supervisors in these endeavours:

-  **Enhancing the understanding of FinTech by supervisors through regular forums with all stakeholders** (industry, ESAs, supervisors, Financial Intelligence Units, technology

¹⁰ Sandboxes are mainly supervisory tools for firms and supervisors to explore how regulation should be interpreted and applied in light of a firm's new solution, through running live tests.

companies, consumer organisations, etc). Further thought could also be given to ways how to pool knowledge across EU supervisory authorities.

Introducing basic principles for firm support at EU level (e.g. criteria for support, what type of support should be given). This could eventually lead to an automatic referral system between these support hubs, so firms could easily find help across the EU. However, a simple list of regulators with contact details may already be sufficient.

Facilitating or creating regulatory sandboxes. Regulatory sandboxes for financial services are currently being applied by a number of national supervisors. While this should continue, there could be scope to reflect to what extent a sandbox approach could also apply to FinTechs that want to operate cross-border. For example, the Commission or the ESAs could work with national competent authorities to test new FinTech solutions (e.g. digital onboarding or DLT for reporting) to be used in cross-border context. Further reflection could finally be given to developing a European sandbox targeted specifically at FinTechs that want to operate cross-border, and matched with a European pool of supervisory expertise.

Questions:

- 3.8. How can the Commission or the European Supervisory Authorities best coordinate, complement or combine the various practices and initiatives taken by national authorities in support of FinTech (e.g. innovation hubs, accelerators or sandboxes) and make the EU as a whole a hub for FinTech innovation? Would there be merits in pooling expertise in the ESAs?
- 3.9. Should the Commission set up or support an "Innovation Academy" gathering industry experts, competent authorities (including data protection and cybersecurity authorities) and consumer organisations to share practices and discuss regulatory and supervisory concerns? If yes, please specify how these programs should be organised?
- 3.10. Are guidelines or regulation needed at the European level to harmonise regulatory sandbox approaches in the MS? Would you see merits in developing a European regulatory sandbox targeted specifically at FinTechs wanting to operate cross-border? If so, who should run the sandbox and what should be its main objective?
- 3.11. What other measures could the Commission consider to support innovative firms or their supervisors that are not mentioned above? If yes, please specify which measures and why.

Role of industry: standards and interoperability

As technology takes an ever larger place in the delivery and management of financial services, so do the requirements on interoperability and standardisation. Seamless management and delivery of services is highly dependent on interoperability of systems and applications. New products and services need to be able to connect to and interact with existing and developing financial infrastructure in an efficient and secure manner. This in itself depends on strong standards that allow technology and financial services providers to develop their product and services offerings that can integrate and interact with the broader financial infrastructure. For standardisation to be competition-friendly, participation in standard-setting must be unrestricted, procedures for adoption of standards must be transparent and access to standards must be granted on fair,

reasonable and non-discriminatory terms in order to prevent foreclosure of new entrants. Fragmentation of processes and lack of standardisation can impair market efficiency. Harmonisation, development and adoption of standards should be a basic building block for achieving interoperable services.

The European Commission is already engaged in developments in this area¹¹ and stands ready to consider further action for the more widespread use of unique identifier standards for entities and products, in particular if conducive to more efficient and secure application of new technologies to financial services. The Commission and ESAs also stand ready to provide further support in bringing the key players together to make tangible progress with the development of common standards and interoperability. Work has already started in this respect in the area of payments with the aim of giving data access for payment initiation services and account information services under the revised Payment Services Directive¹².

Questions:

- 3.12. Is the development of technical standards and interoperability for FinTech in the EU sufficiently addressed as part of the European System of Financial Supervision? Is the current level of data standardisation and interoperability an obstacle to taking full advantage of outsourcing opportunities?
- 3.13. In which areas could EU or global level standards facilitate the efficiency and interoperability of FinTech solutions? What would be the most effective and competition-friendly approach to develop these standards?
- 3.14. Should the EU institutions promote an open source model where libraries of open source solutions are available to developers and innovators to develop new products and services under specific open sources licenses? What other specific measures should be taken at EU level?

Challenges

Securing financial stability

In the current low interest rate environment, many incumbent firms are struggling to make income from their core banking activity of maturity transformation (so-called "net interest income"). At the same time, technological innovation and the arrival of FinTech firms may put pressure on other sources of income, including payments, exchange transactions, advice and asset management. Technological developments may therefore threaten the business models, profitability and capital

¹¹ A project on Financial Data Standardisation (FDS) has recently been launched by the Commission services and represents one of the major follow-up actions to the Call for Evidence. It will investigate the reported issues as regards perceived overlaps, duplications and inconsistencies in the regulatory framework in terms of available standards and the lack of interoperability in the reporting and disclosure requirements. The project aims to examine/identify processes and ways of sharing financial data more efficiently by enhancing the interoperability of (existing) data standards and identify ways of reducing compliance costs that arise in the context of legal reporting requirements by applying the "once for all" principle in reporting.

¹² Directive 2015/2366/EU of the European Parliament and of the Council of 25 November 2015 on payment services in the internal market, amending Directives 2002/65/EC, 2009/110/EC and 2013/36/EU and Regulation (EU) No 1093/2010, and repealing Directive 2007/64/EC,

positions of incumbents. To the extent that incumbents are firms of a systemic nature or are performing critical economic functions, this trend could have implications for financial stability. At the same time, the emergence of new entrants and diversification of suppliers in financial services will reduce systemic risk by addressing the "too big to fail" challenges. It is important that supervisors closely monitor the adaptation process of incumbents to new technologies.

Question

3.15. How big is the impact of FinTech on the safety and soundness of incumbent firms? What are the efficiencies that FinTech solutions could bring to incumbents? Please explain.

4 Balancing greater data sharing and transparency with data security and protection needs

Merging complex technology with data about preferences, investment performance, as well as other information about consumers, investors or entrepreneurs running SMEs can improve credit risk evaluation and allow for new services. It can also reduce operational costs in managing data and promote better asset allocation via better quality financial services and products.

As new technologies (such as artificial intelligence) will become increasingly able to factor in behavioural and cognitive biases, FinTech promises to lower information barriers. Digitalisation produces detailed and reliable records that can be in turn used to evaluate the quality of financial services exposure and improve firms' compliance with regulatory requirement. It also strengthens supervisors' monitoring ability by providing more information and a greater ability to match them across entities and their activities. In managing vast amounts of data, financial services providers use not only internal data from users, but also data gathered from external sources, such as data vendors and social media.

Therefore, this new environment relies on greater transparency and data sharing needs in both the commercial and supervisory space. As a result, important questions about personal data processing, data management policies, data standardisation, data sharing, security and ability to access and supervise data from (licensed) providers of financial services should move to the forefront of the policy agenda for FinTech. Mismanagement in these important areas can cause loss of trust and disruption in the market that would require policy intervention. At the same time, unwarranted restrictive interpretation of personal data protection rules by authorities may stifle innovation and competition. Access to data and their transfer presents rich opportunities to innovate. In particular, an important issue related to data sharing emerges where a party with superior bargaining power holds the data and a weaker party, often a start-up, does not obtain access to the data to realise its innovative business model, or only obtains such access subject to unfair contractual clauses or lock-in effects. There is, in fact, preliminary evidence that big companies holding large amounts of data do not give data access to other businesses¹³.

Question

- 4.1. How important is the free flow of data for the development of a Digital Single Market in financial services? Should service users (i.e. consumers and businesses generating the data) be entitled to fair compensation when their data is processed by service providers for commercial purposes that go beyond their direct relationship?

Storing and sharing financial information through a reliable tool

The use of cryptography to sign messages, as well as to store and transmit data, is at the heart of DLTs and could become a secure and reliable method of storing and sharing financial data. DLT also allows data portability across different service providers, provided that the relevant systems are based on the same data standards. This can reduce costs of data management by financial services

¹³ COM(2016) 178 final of 19.4.2016 - European Cloud Initiative - Building a competitive data and knowledge economy in Europe.

providers, standardise recording of even complex transactions and provide automation of regulatory compliance. While DLT offers the potential to generate advantages in terms of transparency and flexibility, it may also give rise to challenges in terms of personal data protection and data security.

Questions

- 4.2. To what extent could DLT solutions provide a reliable tool for financial information storing and sharing? Are there alternative technological solutions?
- 4.3. Are digital identity frameworks sufficiently developed to be used with DLT or other technological solutions in financial services?
- 4.4. What are the challenges for using DLT with regard to personal data protection and how could they be overcome?

The power of big data to lower information barriers for SMEs and other users

Non-bank funding providers cannot easily access credit and financial information on SMEs. Financial and credit information on SMEs is usually scant and limited to basic business register data, with additional information often disclosed through relationship banking. This information asymmetry is a barrier to SMEs' access to finance. Big data analytics, often combined with match-making platforms and credit information sharing between bank and non-bank financial services providers, could deliver significant results, if properly applied.

This FinTech development offers the possibility to enter into contact with a wide range of different categories of alternative funding providers from one single place, so reducing search costs. Moreover, as pointed out in section 1, sensor data analytics and other personal data collected from individuals for financial services like insurance can improve pricing of financial services and products, but it also increases data protection concerns and raises the question of how to ensure information sharing that does not adversely affect the fundamental rights of a person¹⁴.

Questions

- 4.5. How can information systems and technology-based solutions improve the risk profiling of SMEs (including start-up and scale-up companies) and other users?
- 4.6. How can counterparties that hold credit and financial data on SMEs and other users be incentivised to share information with alternative funding providers? What kind of policy action could enable this interaction? What are the risks, if any, for SMEs?

Security

Security and operational integrity and resilience are essential preconditions for confidence that confidentiality, integrity and availability of data and that of financial assets and infrastructures are

¹⁴ The EU rules on lawful processing of personal data, including big data are already laid down in the EU GDPR and will be applicable as from May 2018. See Regulation (EU) 2016/679 of the European Parliament and of the Council of 27 April 2016 on the protection of natural persons with regard to the processing of personal data and on the free movement of such data, and repealing Directive 95/46/EC (General Data Protection Regulation), OJ L 119, 4.5.2016.

assured. The most important challenge is likely to be the security, resilience and recovery of those systems against potential cyber-attacks¹⁵.

Questions

- 4.7. What additional (minimum) cybersecurity requirements for financial service providers and market infrastructures should be included as a complement to the existing requirements (if any)? What kind of proportionality should apply to this regime?
- 4.8. What regulatory barriers or other possible hurdles of different nature impede or prevent cyber threat information sharing among financial services providers and with public authorities? How can they be addressed?
- 4.9. What cybersecurity penetration and resilience testing in financial services should be implemented? What is the case for coordination at EU level? What specific elements should be addressed (e.g. common minimum requirements, tests, testing scenarios, mutual recognition among regulators across jurisdictions of resilience testing)?

Other potential applications of FinTech going forward

The proliferation of applications in areas like compliance services (RegTech), data management, credit evaluation and corporate governance can take several forms, but a key challenge will be the integration with existing systems both from the perspective of the industry and the supervisors.

Question

- 4.10. What other applications of new technologies to financial services, beyond those above mentioned, can improve access to finance, mitigate information barriers and/or improve quality of information channels and sharing? Are there any regulatory requirements impeding them?

¹⁵ For instance, the principles of integrity and confidentiality of personal data require data to be processed in a manner that ensures appropriate security of the personal data, including protection against unauthorised or unlawful processing and against accidental loss, destruction or damage, using appropriate technical or organisational measures (see Article 5(1) (f) of Regulation (EU) 2016/679).